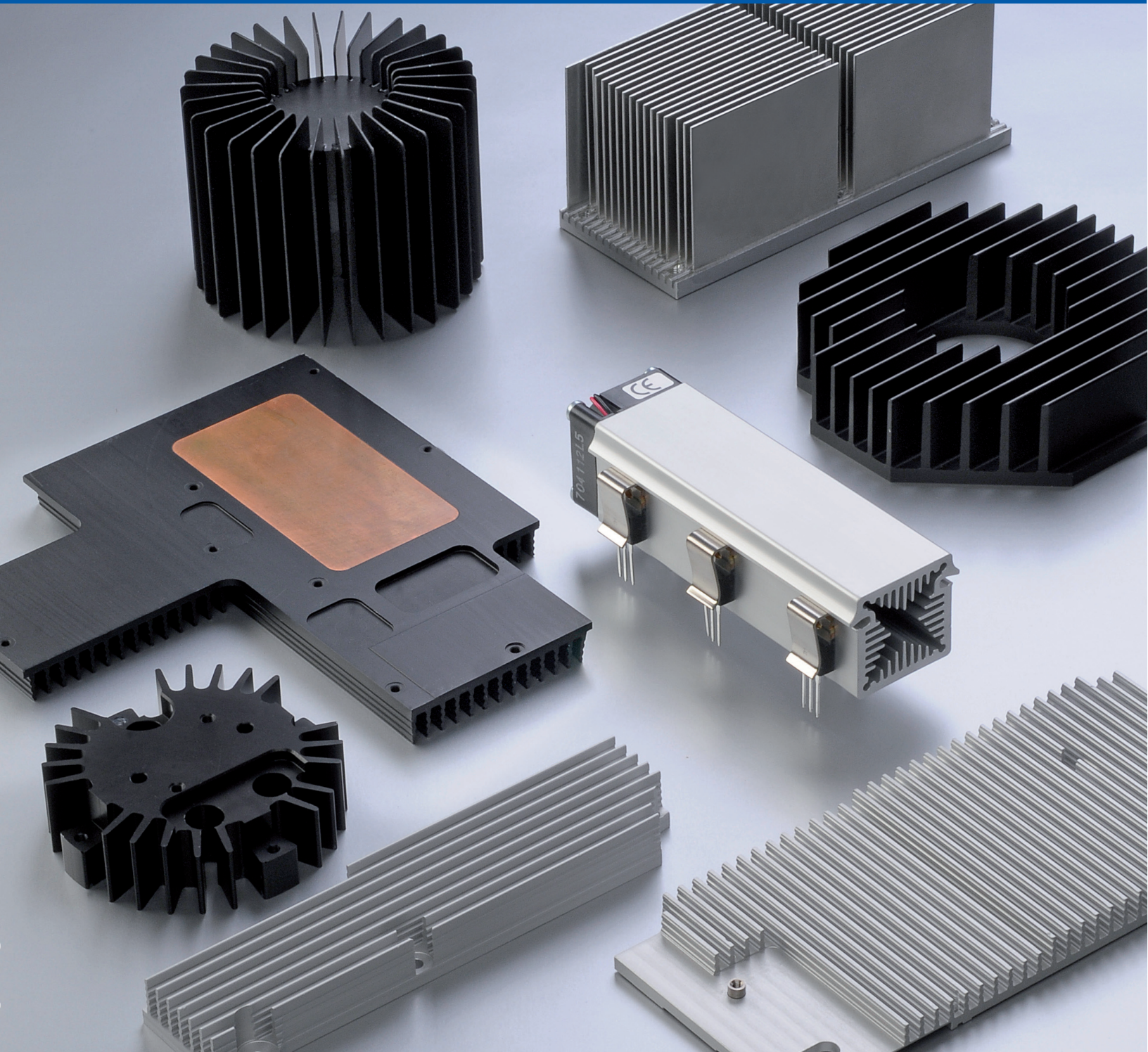


fischer elektronik

to cool to protect to connect




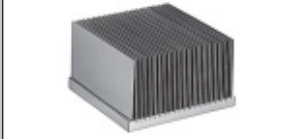


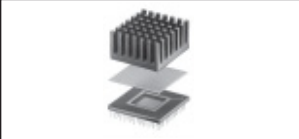
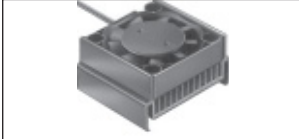
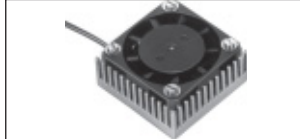







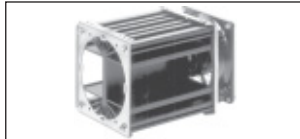


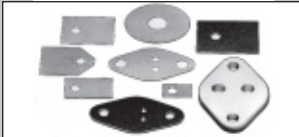




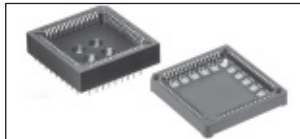


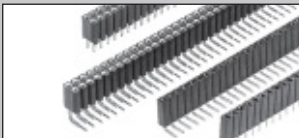


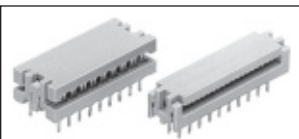













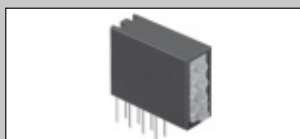




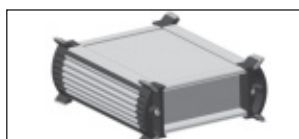




f.cool.e 2013

 made
in
Germany



ISO 9001
ISO 14001
ISO 27001

Extruded heatsinks LED heatsinks Cooling aggregates

A	A 1 - A 138				
B	B 1 - B 54				
C	C 1 - C 22				
D	D 1 - D 36				
E	E 1 - E 50				
F	F 1 - F 26				
G	G 1 - G 78				
H	H 1 - H 14				
I	I 1 - I 28				
K	K 1 - K 32				
L	L 1 - L 10				
M	M 1 - M 48				
N	N 1 - N 82				

Extruded profiles:

extruded heatsinks, extruded heatsinks with solder pins, fin coolers, fluid coolers, high-performance heatsinks

A 1
–
A 138

A

Heatsinks for processors and LED:

heatsinks and fan coolers for universal PGA/BGA, DIL, PLCC, Intel Pentium Xeon, Intel Pentium IV, heatsinks for LED

B 1
–
B 54

B

Finger-shaped heatsinks, small heatsinks:

finger-shaped heatsinks, heatsinks for transistors in plastic case, attachable heatsinks, small heatsinks, copper heatsinks for D PAK and others

C 1
–
C 22

C

Cooling aggregates:

miniature cooling aggregates, heatsink cooling aggregates, high capacity cooling aggregates, multi module cooling aggregates, hollow-fin aggregates

D 1
–
D 36

D

Accessories for electronic components:

mounting parts for heatsinks, thermal transfer compound, thermally conductive material, aluminium oxide and mica wafers, silicone washers, guide rails, solder stop plug, Clip fastening for mounting rail

E 1
–
E 50

E

Sockets:

IC-sockets for DIL, PLCC, sockets for transistors, LED displays, crystal oscillators and connector-sleeves

F 1
–
F 26

F

PCB connectors and accessories:

male and female headers, grid spacing 2.54, 2.00 and 1.27 mm, high precision contact strips, jumpers

G 1
–
G 78

G

IDC connectors:

design DIL, single and double row female headers, lockable connectors, flat band cable

H 1
–
H 14

H

D-Sub connectors:

male and female headers, connectors with mounting brackets, connectors for flat band cable, SMD and mixed layout, D-Sub shells, cut-out covers

I 1
–
I 28

I

Brackets:

brackets for PC and PCI with or without fixing tab, retainer for ISA versions

K 1
–
K 32

K

Optoelectronics:

LED-holders for front panel assembly, LED-holder without mounted LED, LED-holder with mounted LED, light pipes for SMDs

L 1
–
L 10

L

Cases:

desk consoles, shell cases, extruded assembled cases, combination cases, tube cases, miniature aluminium cases, design cases, cooling cases, ventilation frames, feet and bushings, special front panels, sheet constructions

M 1
–
M 48

M

19" Extension systems:

plug-in chassis, subracks, bench cases, system cases, insert modules, part front panels, rack handles, PC-board holder, extender cards

N 1
–
N 82

N

Alphanumerical product list

art. no.	page	art. no.	page	art. no.	page	art. no.	page
ABM 2550	E 36	DR 140 V0	E 38	FK 233 220	C 8	FS 6 110	E 25
ABM 3050	E 36	DR 145 V0	E 38	FK 234 SA L 1	C 4	FS 6 120	E 25
ABM 4070	E 36	DR 150 V0	E 38	FK 234 SA L 2	C 4	FS 6 130	E 25
ABM TE 04	E 37	DR 710 V0	E 38	FK 234 SA L 3	C 4	FS 85	E 26
ABM TE 04 DIN	E 37	DR 711 V0	E 38	FK 234 SA L 4	C 4	FS 85 50	E 26
ABM TE 06	E 37	DR 712 V0	E 38	FK 235 MI L 1	C 4	FS 85 60	E 26
ABM TE 06 DIN	E 37	DR 713 V0	E 38	FK 235 MI L 2	C 4	FS 85 70	E 26
ABM TE 08	E 37	DR 714 V0	E 38	FK 235 SA L 1	C 4	FS 100	E 25
ABM TE 08 DIN	E 37	DR 715 V0	E 38	FK 235 SA L 2	C 4	FS 109	E 25
ABP 2550	E 36	DR 720 V0	E 38	FK 236 220	C 9	FS 151 P	E 24
ABP 3060	E 36	DR 725 V0	E 38	FK 236 CB	C 9	FS BF 06	E 27
ABP 4080	E 36	DR 730 V0	E 38	FK 237 SA 220 H	C 14	FS BF 07	E 27
AHG K 27	E 29	DR 735 V0	E 38	FK 237 SA 220 O	C 13	FS BF 10	E 27
AHG K 28	E 29	DR 740 V0	E 38	FK 237 SA 220 V	C 14	FS BF 11	E 27
AHG L 7	E 29	DR 745 V0	E 38	FK 237 SA 220 VL	C 14	FS BF 13	E 27
AHG V 14	E 29	DR 750 V0	E 38	FK 238 SA L 1	C 8	FS BF 15	E 27
AHG V 17	E 29	DR 760 V0	E 38	FK 239 SA 32	C 6	FS BF 19	E 27
AHM 3260	E 37	DR 810 V0	E 38	FK 240 SA 220 H	C 14	FS BF 20	E 27
AHM 4380	E 37	DR 811 V0	E 38	FK 240 SA 220 O	C 13	FS BT 06	E 27
AKK 127	A 123	DR 812 V0	E 38	FK 240 SA 220 V	C 14	FS BT 08	E 27
AKK 191	A 123	DR 813 V0	E 38	FK 240 SA 220 VL	C 14	FS BT 10	E 27
AOS 3	E 15	DR 814 V0	E 38	FK 241 SA 218 V	C 11	FS BT 11	E 27
AOS 3 P	E 15	DR 815 V0	E 38	FK 242 SA 220 H	C 14	FS BT 13	E 27
AOS 3 P 2	E 15	DR 820 V0	E 38	FK 242 SA 220 O	C 13	FS BT 15	E 27
AOS 3 P SL	E 15	DR 825 V0	E 38	FK 242 SA 220 V	C 14	FS BT 16	E 27
AOS 5	E 15	DR 830 V0	E 38	FK 242 SA 220 VL	C 14	FS BT 19	E 27
AOS 18	E 15	DR 835 V0	E 38	FK 243 MI 247 H	C 12	FS BT 20	E 27
AOS 32	E 15	DR 840 V0	E 38	FK 243 MI 247 O	C 12	FSF 52 P	E 18
AOS 66	E 15	DR 845 V0	E 38	FK 243 MI 247 V	C 12	FS LP 05	E 28
AOS 93	E 15	DR 850 V0	E 38	FK 244 08 D2 PAK	C 21	FS LP 07	E 28
AOS 127	E 15	DR 860 V0	E 38	FK 244 08 D3 PAK	C 21	FS LP 08	E 28
AOS 218 247	E 15	ELS 3	A 88	FK 244 08 D PAK	C 21	FS LP 10	E 28
AOS 218 247 1	E 15	EPN 1	E 42	FK 244 13 D2 PAK	C 21	FS LP 11	E 28
AOS 220	E 15	FK 201 SA	C 2	FK 244 13 D3 PAK	C 21	FS LP 13	E 28
AOS 220 3	E 15	FK 201 SA 3	C 2	FK 244 13 D PAK	C 21	FS LP 15	E 28
AOS 220 4	E 15	FK 201 SA CB	C 2	FK 245 MI 247 H	C 12	FS LP 16	E 28
AOS 220 SL	E 15	FK 202 SA	C 2	FK 245 MI 247 O	C 12	FS LP 17	E 28
AOS 247	E 15	FK 202 SA 3	C 2	FK 245 MI 247 V	C 12	FS LP 22	E 28
AOS P 1	E 16	FK 202 SA CB	C 2	FK 247 220	C 7	FS LP 30	E 28
AOS P 1.1	E 16	FK 205 SA L	C 2	FK 248 SA 220	C 11	FS S 06 2	E 27
AOS P 2	E 16	FK 206 SA L	C 2	FK 249 SA 220	C 5	FS S 07 2	E 27
AOS P 3	E 16	FK 207 SA L	C 2	FK 250 06 LF PAK	C 22	FS S 08 2	E 27
AOS P 4	E 16	FK 208 SA L	C 2	FK 250 08 LF PAK	C 22	FS S 10 2	E 27
AOS P 5	E 16	FK 209 SA 32	C 6	FK 250 10 LF PAK	C 22	FS S 11 2	E 27
AOS P 6	E 16	FK 210 SA CB	C 6	FK 251 06 LF PAK	C 22	FS S 12 2	E 27
AOS P 7	E 16	FK 211 32	C 7	FK 251 08 LF PAK	C 22	FS S 13 2	E 27
AOS P 8	E 16	FK 212 CB	C 7	FK 251 10 LF PAK	C 22	FS S 15 2	E 27
AOS P 9	E 16	FK 213 SA 32	C 6	FK 252 SA 220 H	C 15	FS S 16 2	E 27
AOS P 10	E 16	FK 214 SA CB	C 6	FK 252 SA 220 O	C 15	FS S 19 3	E 27
CLIP 151	E 24	FK 215 32	C 7	FK 252 SA 220 V	C 15	FS S 20 3	E 27
DR 071 V0	E 38	FK 216 CB	C 7	FK 252 SA 220 VL	C 15	FS S 21 2	E 27
DR 072 V0	E 38	FK 217 SA CB 2	C 3	FK 253	C 16	FS S 21 3	E 27
DR 073 V0	E 38	FK 218 32	C 8	FK 254 SA 3	C 2	FS U 06	E 28
DR 074 V0	E 38	FK 219 CB 1	C 9	FK 255	C 16	FS U 11	E 28
DR 075 V0	E 38	FK 219 CB 2	C 9	FK 256	C 22	FS U 20	E 28
DR 076 V0	E 38	FK 219 CB 3	C 9	FK 257	C 16	GBM 2550	E 35
DR 077 V0	E 38	FK 220 SA 220	C 10	FK 258 SA 220	C 10	GBM 3050	E 35
DR 078 V0	E 38	FK 222	C 7	FK 318 SA	C 2	GBM 4070	E 35
DR 079 V0	E 38	FK 222 THF	C 7	FK 318 SA 3	C 2	GBM 5080	E 35
DR 081 V0	E 38	FK 223 SA	C 3	FL 0,55	A 126	GBP 3060	E 35
DR 082 V0	E 38	FK 223 SA 3	C 3	FL 1,1	A 126	GBP 4080	E 35
DR 083 V0	E 38	FK 223 SA CB	C 3	FLKI 80	A 129	GEL ...	E 11
DR 084 V0	E 38	FK 224 ... 218 1	C 11	FLKI 80 G 200	A 130	GEL G ...	
DR 085 V0	E 38	FK 224 ... 218 2	C 11	FLKI 80 G 300	A 130	GEL 27 S ...	E 13
DR 086 V0	E 38	FK 224 ... 220 1	C 11	FLKI 80 G 500	A 130	GEL 28 ...	E 12
DR 087 V0	E 38	FK 224 ... 220 2	C 11	FLKR 1	A 131	GEL 28 G ...	
DR 088 V0	E 38	FK 224 ... P SIP	C 10	FLKU 140	A 129	GEL 60 ...	E 13
DR 089 V0	E 38	FK 225 SA L 1	C 5	FLKU 140 G 200	A 130	GEL 60 G ...	
DR 105 V0	E 38	FK 225 SA L 2	C 5	FLKU 140 G 300	A 130	GS 3	E 17
DR 110 V0	E 38	FK 227 SA L 1	C 8	FLKU 140 G 500	A 130	GS 3 P	E 17
DR 115 V0	E 38	FK 228 SA L 1	C 5	FS 6 065	E 25	GS 3 P SL	E 17
DR 120 V0	E 38	FK 229 SA L 1	C 5	FS 6 070	E 25	GS 32 P	E 17
DR 125 V0	E 38	FK 230 SA L 1	C 5	FS 6 080	E 25	GS 66 P	E 17
DR 130 V0	E 38	FK 231 SA 220	C 6	FS 6 090	E 25	GS 218	E 17
DR 135 V0	E 38	FK 232 220	C 8	FS 6 100	E 25	GS 220 4	E 17

Alphanumerical product list

art. no.	page	art. no.	page	art. no.	page	art. no.	page
GS 220 C	E 17	ICK LED R 29 x 11,5	B 33	ICK S 18 x 18 x 10	B 22	ICK S R 32,5 x 10	B 28
GS 220 P	E 17	ICK LED R 29 x 11,5 G	B 33	ICK S 25 x 25 x 6,5	B 22	ICK S R 32,5 x 20	B 28
IB 1	E 50	ICK LED R 32 x 14	B 33	ICK S 25 x 25 x 12,5	B 23	ICK S R 36,5 x 20	B 29
IB 2	E 50	ICK LED R 32 x 14 G	B 33	ICK S 25 x 25 x 18,5	B 23	ICK S R 40 x 10	B 29
IB 3	E 50	ICK LED R 33 x 10	B 33	ICK S 29 x 29 x 10	B 23	ICK S R 40 x 20	B 29
IB 4	E 50	ICK LED R 33 x 10 G	B 33	ICK S 29 x 29 x 20	B 23	ICK S R 40 x 30	B 29
IB 5	E 50	ICK LED R 33 x 16,5	B 34	ICK S 32 x 32 x 10	B 23	ICK S R 45 x 30	B 29
IB 6	E 50	ICK LED R 33 x 16,5 G	B 34	ICK S 32 x 32 x 20	B 23	ICK S R 45 x 45	B 29
IB 7	E 50	ICK LED R 35 x 10	B 34	ICK S 36 x 36 x 10	B 24	ICK S R 50 x 10	B 30
IB 8	E 50	ICK LED R 35 x 10 G	B 34	ICK S 36 x 36 x 15	B 24	ICK S R 50 x 20	B 30
IB 9	E 50	ICK LED R 36 x 12	B 34	ICK S 36 x 36 x 20	B 24	ICK S R 50 x 30	B 30
IB 10	E 50	ICK LED R 36 x 12 G	B 34	ICK S 40 x 40 x 10	B 24	ICK S R 50 x 45	B 30
IB 11	E 50	ICK LED R 40 x 10	B 34	ICK S 40 x 40 x 20	B 24	ICK S R 54 x 20	B 30
IB 12	E 50	ICK LED R 40 x 10 G	B 35	ICK S 40 x 40 x 25	B 24	ICK S R 54 x 30	B 30
IB 13	E 50	ICK LED R 40 x 27	B 35	ICK S 45 x 45 x 10	B 25	ICK S R 54 x 45	B 31
IB 14	E 50	ICK LED R 40 x 27 G	B 35	ICK S 45 x 45 x 20	B 25	ICK S R A 40 x 20	B 29
IB 15	E 50	ICK LED R 45,7 x 16,5	B 35	ICK S 50 x 50 x 20	B 25	IK 3	E 49
IB 16	E 50	ICK LED R 45,7 x 16,5 G	B 35	ICK S 50 x 50 x 25	B 25	IK 341 3	E 49
IB 17	E 50	ICK LED R 50,8 x 16,5	B 36	ICK S 50 x 50 x 40	B 25	IS 1	E 47
IB 18	E 50	ICK LED R 50,8 x 16,5 G	B 36	ICK S 50 x 50 x 50	B 25	IS 2	E 47
IBT 1	E 50	ICK LED R 50 x 10	B 35	ICK S 98 x 98 x 45	B 26	IS 3	E 47
IBT 2	E 50	ICK LED R 50 x 10 G	B 36	ICK S D 12 x 12 x 7,5	B 27	IS 4	E 47
IBT 3	E 50	ICK LED R 54 x 20	B 36	ICK S D 18 x 12 x 7,5	B 27	IS 5	E 47
IBT 4	E 50	ICK LED R 54 x 20 G	B 36	ICK S D 24 x 18 x 7,5	B 27	IS 6	E 47
IBT 6	E 50	ICK LED R 66 x 40	B 36	ICK S D 98 x 98 x 10	B 27	IS 7	E 48
IBT 7	E 50	ICK LED R 75 x 10	B 37	ICK SMD A 5	B 45	IS 8	E 48
IBT 8	E 50	ICK LED R 84 x 40	B 37	ICK SMD A 8	B 45	IS 53	A 125
IBT 9	E 50	ICK LED R 100 x 40	B 37	ICK SMD A 10	B 45	ISAB 3 A	E 30
IBT 10	E 50	ICK LED R 160 x 40	B 37	ICK SMD A 13	B 45	ISAB 3 B	E 31
IBT 11	E 50	ICK LED R 200 x 40	B 38	ICK SMD A 17	B 45	ISAB 3 C	E 31
IBT 12	E 50	ICK PEN 3 FC	B 49	ICK SMD A 22	B 45	ISAB 4 A	E 30
IBT 14	E 50	ICK PEN 3 XE	B 48	ICK SMD B 5	B 45	ISAB 4 B	E 31
IBT 15	E 50	ICK PEN 3 XE 1	B 48	ICK SMD B 7 SA	B 45	ISAB 4 C	E 31
IBT 18	E 50	ICK PEN 38 F	B 49	ICK SMD B 10 SA	B 45	ISAB 5 B	E 31
ICK 6 8 L	B 44	ICK PEN 38 W	B 49	ICK SMD B 13 SA	B 45	ISAB 5 C	E 31
ICK 14 16 B	B 44	ICK PEN 45 W	B 49	ICK SMD B 19	B 45	ISAB 6 A	E 30
ICK 14 16 L	B 44	ICK PGA 6 x 6 x 14	B 11	ICK SMD B 19	B 45	ISAB 6 B	E 31
ICK 14 H	B 44	ICK PGA 8 x 8 x 12	B 11	ICK SMD BOX 1	B 47	ISAB 6 C	E 31
ICK 16 H	B 44	ICK PGA 9 x 9	B 11	ICK SMD C 7 SA	B 45	ISAB 6 C	E 31
ICK 18 H	B 44	ICK PGA 11 x 11	B 11	ICK SMD C 10 SA	B 45	ISAB 25 A	E 30
ICK 20 L	B 44	ICK PGA 11 x 11 x 8	B 11	ICK SMD C 17	B 45	ISAB 25 B	E 31
ICK 24 B	B 44	ICK PGA 11 x 11 x 12	B 12	ICK SMD E 15 SA	B 46	ISAB 25 C	E 31
ICK 28 B	B 44	ICK PGA 14 x 14	B 12	ICK SMD E 22 SA	B 46	ISAM 2 A	E 32
ICK 35 SA	A 122	ICK PGA 14 x 14 x 10	B 12	ICK SMD E 29 SA	B 46	ISAM 2 B	E 32
ICK 36 B	B 44	ICK PGA 14 x 14 x 12	B 12	ICK SMD F 8	B 46	ISAM 2 C	E 32
ICK 40 B	B 44	ICK PGA 14 x 14 x 14	B 12	ICK SMD F 10	B 46	ISAM 3 A	E 32
ICK 1000 B	B 44	ICK PGA 15 x 15	B 12	ICK SMD F 17 SA	B 46	ISAM 3 B	E 32
ICK 1000 H	B 44	ICK PGA 16 x 16 x 8	B 13	ICK SMD F 19	B 46	ISAM 3 C	E 32
ICK BGA 10 x 10	B 17	ICK PGA 16 x 16 x 10	B 13	ICK SMD F 21	B 46	ISAS 25 A	E 33
ICK BGA 10 x 10 x 10	B 17	ICK PGA 16 x 16 x 12	B 13	ICK SMD F 26	B 46	ISAS 25 B	E 34
ICK BGA 14 x 14	B 17	ICK PGA 17 x 17	B 13	ICK SMD G 8 MI	B 46	ISAS 25 C	E 34
ICK BGA 14 x 14 x 10	B 17	ICK PGA 17 x 17 x 8	B 13	ICK SMD G 10	B 46	ISAS 30 A	E 33
ICK BGA 21 x 21	B 18	ICK PGA 17 x 17 x 12	B 13	ICK SMD G 13 SA	B 46	ISAS 30 B	E 34
ICK BGA 23 x 23	B 18	ICK PGA 18 x 18	B 14	ICK SMD G 17 SA	B 46	ISAS 30 C	E 34
ICK BGA 23 x 23 x 10	B 18	ICK PGA 19 x 19	B 14	ICK SMD G 19 SA	B 46	ISAS 40 A	E 33
ICK BGA 27 x 27	B 18	ICK PGA 19 x 19 x 12	B 14	ICK SMD G 21	B 46	ISAS 40 B	E 34
ICK BGA 27 x 27 x 10	B 18	ICK PGA 20 x 20	B 14	ICK SMD H 8	B 46	ISAS 40 C	E 34
ICK BGA 27 x 27 x 14	B 18	ICK PGA 20 x 20 K	B 15	ICK SMD H 10	B 46	ISAS 50 A	E 33
ICK BGA 27 x 27 x 22	B 19	ICK PGA 20 x 20 x 8	B 15	ICK SMD H 17	B 46	ISAS 50 B	E 34
ICK BGA 31 x 31	B 19	ICK PGA 20 x 20 x 10	B 14	ICK SMD H 19 SA	B 46	ISAS 50 C	E 34
ICK BGA 31 x 31 x 10	B 19	ICK PGA 20 x 20 x 12	B 15	ICK SMD H 25	B 46	ISAS 60 A	E 33
ICK BGA 35 x 35	B 19	ICK PGA 21 x 21	B 15	ICK SMD K 8	B 46	ISAS 60 B	E 34
ICK BGA 35 x 35 x 10	B 19	ICK PGA 22 x 22	B 15	ICK SMD K 10 SA	B 46	ISAS 60 C	E 34
ICK BGA 37 x 37 x 6	B 19	ICK PGA 25 x 25	B 16	ICK SMD K 13	B 46	ISP 218	E 43
ICK BGA 37 x 37 x 10	B 20	ICK PLCC 28	B 44	ICK SMD K 17	B 46	ISP 220	E 43
ICK BGA 40 x 40	B 20	ICK PPC 51	B 48	ICK SMD K 19	B 46	ISP 220 V	E 43
ICK BGA 40 x 40 x 10	B 20	ICK PRO 40 W	B 49	ICK SMD K 21	B 46	ISP 247	E 43
ICK BGA 42,5 x 45	B 20	ICK R	B 44	ICK SMD M 8 SA	B 46	K 0,55	A 126
ICK EM 25	B 48	ICK S 10 x 10 x 6,5	B 21	ICK SMD M 10 SA	B 46	K 1,1	A 126
ICK LED R 23,5 x 14	B 32	ICK S 10 x 10 x 12,5	B 21	ICK SMD M 17 MI	B 46	K 3	A 124
ICK LED R 23,5 x 14 G	B 32	ICK S 14 x 14 x 6,5	B 21	ICK SMD M 19 SA	B 46	K 3 T	A 124
ICK LED R 27 x 10	B 32	ICK S 14 x 14 x 10	B 22	ICK SMD M 21 SA	B 46	K 5	A 124
ICK LED R 27 x 10 G	B 32	ICK S 17 x 17 x 15	B 22	ICK S R 28,5 x 6,5	B 28	K 9	A 124
ICK LED R 28 x 15	B 32	ICK S 17 x 17 x 20	B 22	ICK S R 28,5 x 10	B 28	K 15	A 125
ICK LED R 28 x 15 G	B 33	ICK S 18 x 18 x 6,5	B 22	ICK S R 28,5 x 12,5	B 28	KAP 1 P	E 14
				ICK S R 28,5 x 18,5	B 28	KAP 3 G	E 14

Alphanumerical product list

art. no.	page	art. no.	page	art. no.	page	art. no.	page
KAP 3 K	E 14	LA HLV 3	D 28	MS 34 518	E 44	SK 23	A 79
KAP 218	E 14	LA ICK 15 x 15 F 05	B 50	MS 53 3	E 44	SK 25	A 61
KAP 218 O	E 14	LA ICK 15 x 15 F 12	B 50	MS 53 7	E 44	SK 28	A 63
KAP 220 G	E 14	LA ICK 17 x 17 F 12	B 50	MS 53 25	E 44	SK 30	A 67
KAP 220 K	E 14	LA ICK 17 x 17 F 12 A	B 50	MS 54 25	E 44	SK 31	A 72
KAP 220 O	E 14	LA ICK 17 x 17 W 05	B 50	MS 56 15	E 44	SK 32	A 76
KAP 247 O	E 14	LA ICK 17 x 17 W 12	B 50	MS 58 5	E 44	SK 33	A 42
KF 5/10	C 18	LA ICK 18 x 18 F 12	B 50	MS 58 7	E 44	SK 34	A 67
KF 5/15	C 18	LA ICK 18 x 18 W 12	B 50	MS 58 15	E 44	SK 36	A 66
KF 5/5	C 18	LA ICK 21 x 21 F 05	B 50	MS 84 4	E 44	SK 39	A 67
KK 1 3,96	C 17	LA ICK 21 x 21 F 12	B 50	MS 183 7	E 44	SK 40	A 82
KK 1 6,35	C 17	LA ICK 21 x 21 W 05	B 50	MS 183 25	E 44	SK 42	A 48
KK 1 12,7	C 17	LA ICK 21 x 21 W 12	B 50	MS 183 35	E 44	SK 44	A 90
KK 1 19,05	C 17	LA ICK PEN 2 K 12	B 52	MS 184 7	E 44	SK 45	A 63
KK 32	C 19	LA ICK PEN 3 XE	B 52	MS 184 25	E 44	SK 46	B 39
KK 92	C 19	LA ICK PEN 4 1 K	B 52	MS 184 35	E 44	SK 47	A 49
KK 562 GS	C 18	LA ICK PEN 8 F 05	B 51	MS 510 15	E 44	SK 48	A 73
KL 35 50	E 23	LA ICK PEN 8 F 12	B 51	MS 923 25	E 44	SK 49	A 51
KL 35 75	E 23	LA ICK PEN 8 W 05	B 51	MS 3518 25	E 44	SK 50	A 37
KL 35 100	E 23	LA ICK PEN 8 W 12	B 51	MS 3518 35	E 44	SK 51	A 61
KL 35 K 40	E 23	LA ICK PEN 16 K 12	B 51	MS 4016	E 44	SK 52	A 74
KL 35 K 50	E 23	LA ICK PEN 16 W 12	B 51	MSHV 90	E 26	SK 53	A 74
KL 35 K 75	E 23	LA ICK PEN 16 W 12 A	B 51	MST 3	E 42	SK 55	A 83
KL 35 K 100	E 23	LA ICK PEN 18 W 12	B 51	MST 220	E 42	SK 56	A 53
KTE 1	A 127	LA ICK PEN 38 W 12	B 51	MST3 3	E 42	SK 57	A 64
KTE 2	A 127	LA ICK PRO 25 F 12	B 51	MST3 220	E 42	SK 58	A 44
LA 1 01	D 5	LAM 1	D 9	MSVL 50	E 26	SK 59	A 60
LA 1 02	D 5	LAM 2	D 9	MSVL 60	E 26	SK 60	A 74
LA 1 03	D 5	LAM 3	D 10	MSVL 70	E 26	SK 61	A 82
LA 1 04	D 5	LAM 3 K	D 10	MSVL 85	E 26	SK 63	A 62
LA 1 05	D 5	LAM 4	D 11	MSVL 100	E 25	SK 64	A 70
LA 1 06	D 5	LAM 4 K	D 11	SFP 005	A 133	SK 65	A 70
LA 1 07	D 5	LAM 5	D 12	SFP 006	A 133	SK 66	A 54
LA 1 08	D 5	LAM 5 K	D 12	SFP 007	A 133	SK 67	A 69
LA 1 09	D 5	LA V 6	D 16	SFP 016	A 133	SK 68	A 89
LA 1 10	D 5	LA V 7	D 16	SFP 028	A 133	SK 69	A 71
LA 2 01	D 7	LA V 8	D 16	SFP 029	A 133	SK 71	A 64
LA 2 02	D 7	LA V 9	D 18	SFP 037	A 133	SK 72	A 63
LA 2 03	D 7	LA V 10	D 18	SFP 046	A 133	SK 73	A 64
LA 2 04	D 7	LA V 11	D 18	SFP 054	A 133	SK 74	A 71
LA 2 05	D 7	LA V 14	D 20	SFP 057	A 133	SK 75 25	A 104
LA 2 06	D 7	LA V 15	D 20	SFP 058	A 133	SK 75 25 STS TO 220	A 104
LA 2 07	D 7	LA V 17	D 22	SFP 060	A 133	SK 75 25 TO 220	A 104
LA 2 08	D 7	LA V 18	D 22	SFP 067	A 133	SK 75 37,5	A 104
LA 2 09	D 7	LA V 21	D 24	SFP 074	A 133	SK 75 37,5 STS TO 220	A 104
LA 2 10	D 7	LA V 22	D 24	SFP 076	A 133	SK 75 37,5 TO 220	A 104
LA 4	D 14	LA V 24	D 25	SFP 079	A 133	SK 75 50	A 104
LA 5	D 14	LS 101	E 41	SFP 090	A 133	SK 75 50 STS TO 220	A 104
LA 6	D 15	LS 102	E 41	SFP 100	A 133	SK 75 50 TO 220	A 104
LA 7	D 15	LS 103	E 41	SFP 106	A 133	SK 75 75	A 104
LA 8	D 15	LS 104	E 41	SFP 112	A 133	SK 75 1000	A 104
LA 9	D 17	LS 105	E 41	SK 01	A 66	SK 76 25	A 104
LA 10	D 17	LS 106	E 41	SK 02	A 66	SK 76 25 STS TO 220	A 104
LA 11	D 17	LS 107	E 41	SK 03	A 66	SK 76 25 TO 220	A 104
LA 14	D 19	LSD 07520	E 40	SK 04	A 64	SK 76 37,5	A 104
LA 15	D 19	LSD 08910	E 40	SK 05	A 62	SK 76 37,5 STS TO 220	A 104
LA 17	D 21	LSD 08920	E 40	SK 06	A 79	SK 76 37,5 TO 220	A 104
LA 18	D 21	LSD 13510	E 40	SK 07	A 72	SK 76 50	A 104
LA 20	D 34	LSD 13520	E 40	SK 08	A 73	SK 76 50 STS TO 220	A 104
LA 21	D 23	MD A 04	E 46	SK 09	A 59	SK 76 50 TO 220	A 104
LA 22	D 23	MD A 06	E 46	SK 11	A 79	SK 76 75	A 104
LA 25	D 33	MD A 07	E 46	SK 12	A 121	SK 76 1000	A 104
LA 26	D 33	MD A 09	E 46	SK 12 SA 2 x 32	A 122	SK 78	A 61
LAGI 40	D 36	MD A 12	E 46	SK 12 SA 32	A 122	SK 79	A 73
LAGI 60	D 36	MD B 07	E 46	SK 13	A 121	SK 80	A 74
LAGI 80	D 36	MD B 10	E 46	SK 13 35 SA 220	A 122	SK 81	A 40
LAGI 92	D 36	MD B 11	E 46	SK 13 35 SA 220 3,2	A 122	SK 82	A 75
LAGI 119	D 36	MD B 12	E 46	SK 13 35 SA 220 3,5	A 122	SK 83	A 79
LA HL 1	D 27	MD B 15	E 46	SK 14	A 67	SK 84	A 68
LA HL 2	D 27	MD C 13	E 46	SK 15	A 77	SK 85	A 46
LA HL 3	D 27	MD C 22	E 46	SK 16	A 72	SK 86	A 75
LAHL D 1	D 29	MLW 32	E 45	SK 18	A 62	SK 88	A 73
LAHLR 1 500	D 35	MLW 44	E 45	SK 19	A 63	SK 89	A 77
LA HLV 1	D 28	MLW 51	E 45	SK 20	A 68	SK 90	A 47
LA HLV 2	D 28	MRL 20	E 45	SK 21	A 70	SK 91	A 51

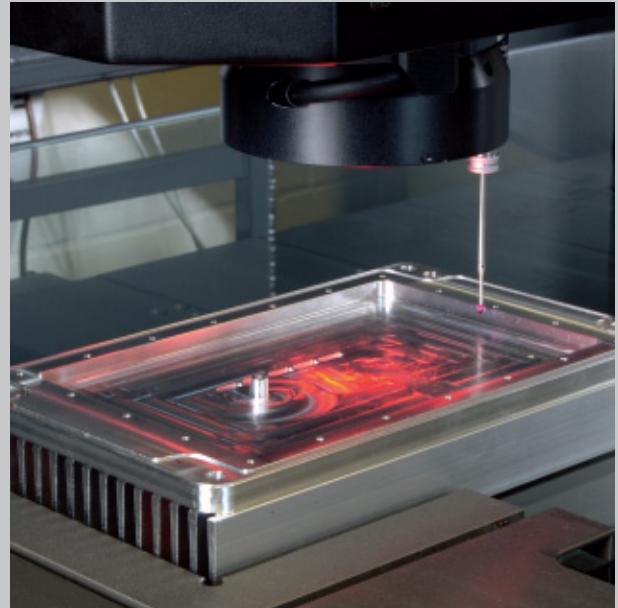
Alphanumerical product list

art. no.	page	art. no.	page	art. no.	page	art. no.	page
SK 92	A 41	SK 145 37,5 STS TO 220	A 105	SK 411	A 42	SK 456 20 1 x M3 L	A 110
SK 93	A 55	SK 145 50 STC	A 105	SK 412	A 47	SK 456 40 2 x M3 L	A 110
SK 94	A 48	SK 145 50 STS TO 220	A 105	SK 413	A 43	SK 456 60 3 x M3 L	A 110
SK 95 15	A 107	SK 147	A 74	SK 414	A 90	SK 458	D 30
SK 95 15 SOT 32 S	A 107	SK 148	A 68	SK 415	A 90	SK 459 ... STC	A 100
SK 95 15 STS SOT 32 S	A 107	SK 149	A 52	SK 416	A 46	SK 459 ... STIC	
SK 95 25	A 107	SK 150	A 61	SK 417	A 45	SK 459 ... STCB	
SK 95 25 1 x M2,5 1 x M3	A 107	SK 153	A 83	SK 418	A 58	SK 459 ... STS	A 100
SK 95 25 2 x M3	A 107	SK 154	A 45	SK 419	A 70	SK 459 ... STIS	
SK 95 25 SOT 32	A 107	SK 155	A 45	SK 420	A 30	SK 459 ... STSB	
SK 95 25 STS SOT 32	A 107	SK 156	A 36	SK 421	A 47	SK 459 25 2 x TO 220	A 101
SK 95 25 STS TO 220	A 107	SK 157	A 54	SK 422	A 32	SK 459 25 M	A 101
SK 95 25 TO 220	A 107	SK 158	A 58	SK 423	A 32	SK 459 37,5 2 x TO 220	A 101
SK 95 1000	A 107	SK 159	A 58	SK 424	A 33	SK 459 37,5 M	A 101
SK 96	A 91	SK 160	A 58	SK 425	A 33	SK 459 50 2 x TO 220	A 101
SK 97	A 62	SK 161	A 58	SK 426	A 36	SK 459 50 M	A 101
SK 98	A 65	SK 162	A 58	SK 427	A 35	SK 460 25	A 111
SK 99	A 36	SK 163	A 78	SK 429	A 37	SK 460 37,5	A 111
SK 100	A 38	SK 165	A 61	SK 431 1	A 122	SK 460 50	A 111
SK 101	A 54	SK 166	A 48	SK 431 2	A 122	SK 461	D 30
SK 102	A 50	SK 168	A 50	SK 431 3	A 122	SK 463	A 43
SK 104 ... LS	A 97	SK 172	A 81	SK 432	A 82	SK 464	A 39
SK 104 ... STC	A 96	SK 173	A 59	SK 433	A 41	SK 466	A 43
SK 104 ... STIC		SK 174	A 30	SK 434	A 35	SK 467	A 33
SK 104 ... STCB		SK 175	A 83	SK 435	A 81	SK 468	A 36
SK 104 ... STS	A 96	SK 176	A 78	SK 436	A 37	SK 469	A 23
SK 104 ... STIS		SK 177	A 27	SK 437	A 24	SK 469 ... STS	A 109
SK 104 ... STSB		SK 178	A 28	SK 437 ... STC	A 108	SK 470	A 22
SK 105	A 90	SK 179	A 30	SK 437 ... STC 2	A 108	SK 470 25 STS	A 109
SK 106	A 31	SK 180	A 36	SK 437 ... STS	A 108	SK 470 30 STS	A 109
SK 107	A 60	SK 181	A 60	SK 437 ... STS 2	A 108	SK 470 35 STS	A 109
SK 108	A 80	SK 181 94 C 3 x TO 220	A 60	SK 438	A 52	SK 470 50 STS	A 109
SK 109	A 80	SK 182	A 39	SK 439	A 55	SK 471	A 28
SK 110	A 80	SK 184	A 68	SK 440	D 30	SK 472	A 31
SK 111	A 81	SK 185	A 73	SK 441	D 30	SK 473	A 25
SK 112	A 89	SK 185 25 STC TO 220	A 103	SK 442	A 42	SK 475	A 35
SK 113	A 48	SK 185 25 STS TO 220	A 103	SK 443	A 59	SK 476	A 24
SK 115	A 121	SK 185 25 TO 220	A 103	SK 444	A 38	SK 477	A 24
SK 118	A 50	SK 185 37,5 C TO 220	A 103	SK 445	A 34	SK 478	A 23
SK 119	A 46	SK 185 37,5 STC TO 220	A 103	SK 446	A 53	SK 479	A 55
SK 120	A 45	SK 185 37,5 STS TO 220	A 103	SK 447	A 26	SK 480	A 84
SK 121	A 41	SK 185 37,5 TO 220	A 103	SK 448	A 26	SK 481	A 85
SK 122	A 60	SK 185 50 C TO 220	A 103	SK 448 20 1 x M3 L	A 110	SK 482	A 86
SK 124	A 71	SK 185 50 STC TO 220	A 103	SK 448 40 2 x M3 L	A 110	SK 483	A 87
SK 125	A 91	SK 185 50 STS TO 220	A 103	SK 448 60 3 x M3 L	A 110	SK 484	A 109
SK 126 25	A 106	SK 185 50 TO 220	A 103	SK 450	A 34	SK 485	A 37
SK 126 25 2 x M3	A 106	SK 187	A 76	SK 451	A 91	SK 486	A 25
SK 126 25 STS TO 220	A 106	SK 189	A 31	SK 452	A 27	SK 487	A 87
SK 126 25 TO 220	A 106	SK 190	A 52	SK 452 20 1 x M3	A 95	SK 489	A 85
SK 126 37,5	A 106	SK 191	A 55	SK 452 20 2 x M3	A 95	SK 490	A 84
SK 126 37,5 2 x M3	A 106	SK 193	A 49	SK 452 40 2 x M3	A 95	SK 492	A 84
SK 126 37,5 STS TO 220	A 106	SK 194	A 81	SK 452 40 4 x M3	A 95	SK 493	A 27
SK 126 37,5 TO 220	A 106	SK 195	A 71	SK 452 60 3 x M3	A 95	SK 494	A 83
SK 126 1000	A 106	SK 197	A 65	SK 452 60 6 x M3	A 95	SK 495	A 87
SK 128	A 91	SK 198	A 53	SK 452 80 4 x M3	A 95	SK 496	A 22
SK 129 ... STC	A 102	SK 199	A 51	SK 452 80 8 x M3	A 95	SK 497	D 30
SK 129 ... STIC		SK 400	A 28	SK 452 100 5 x M3	A 95	SK 498	D 30
SK 129 ... STCB		SK 400 20 1 x M3 L	A 110	SK 452 100 10 x M3	A 95	SK 499	A 87
SK 129 ... STS	A 102	SK 400 40 2 x M3 L	A 110	SK 453	A 32	SK 500	A 72
SK 129 ... STIS		SK 400 60 3 x M3 L	A 110	SK 454	A 24	SK 501	A 53
SK 129 ... STSB		SK 401	A 63	SK 454 20 1 x M3	A 95	SK 502	A 49
SK 130	A 55	SK 402	A 62	SK 454 20 1 x M3 L	A 110	SK 503	A 46
SK 132	A 44	SK 403	A 64	SK 454 20 2 x M3	A 95	SK 504	A 44
SK 133	A 44	SK 404	A 65	SK 454 40 2 x M3	A 95	SK 505	A 41
SK 134	A 28	SK 405	A 47	SK 454 40 2 x M3 L	A 110	SK 507	A 40
SK 135	A 39	SK 406	A 38	SK 454 40 4 x M3	A 95	SK 508	A 41
SK 136	A 48	SK 407	A 39	SK 454 60 3 x M3	A 95	SK 509	A 29
SK 138	A 91	SK 408	A 40	SK 454 60 3 x M3 L	A 110	SK 510	A 46
SK 139	A 52	SK 409 ... STC	A 99	SK 454 60 6 x M3	A 95	SK 511	A 32
SK 140	A 77	SK 409 ... STIC		SK 454 80 4 x M3	A 95	SK 512	A 84
SK 144	A 82	SK 409 ... STCB		SK 454 80 8 x M3	A 95	SK 513	A 31
SK 145	A 59	SK 409 ... STS	A 99	SK 454 100 5 x M3	A 95	SK 514	A 86
SK 145 25 STC	A 105	SK 409 ... STIS		SK 454 100 10 x M3	A 95	SK 515 05 10	A 93
SK 145 25 STS TO 220	A 105	SK 409 ... STSB		SK 455	A 33	SK 515 05 10 S	A 93
SK 145 30 STC	A 105	SK 410	A 44	SK 456	A 30	SK 515 05 23,5	A 93

Alphanumerical product list

art. no.	page	art. no.	page	art. no.	page	art. no.	page
SK 515 05 23,5 S 2	A 93	SK 582	A 24	SWP 15	A 133	WLK DK 10	E 22
SK 515 05 37	A 93	SK 583	A 52	SWP 23	A 133	WLK DK 50	E 22
SK 515 05 37 S 3	A 93	SK 584	B 41	SWP 25	A 133	WLK M 4	E 22
SK 515 10 S TO 220	A 93	SK 585	B 39	SWP 29	A 133	WLK M 50	E 22
SK 515 10 TO 220	A 93	SK 586	A 22	SWP 36	A 133	WLK P	E 22
SK 515 23,5 S 2 x TO 220	A 93	SK 587	A 29	SWP 40	A 133	WLP 004	E 19
SK 515 23,5 TO 220	A 93	SK 588	A 45	SWP 55	A 133	WLP 035	E 19
SK 515 37 S 3 x TO 220	A 93	SK 589	A 86	SWP 57	A 133	WLP 300 S	E 19
SK 515 37 TO 220	A 93	SK 590	B 42	TF 3 2	E 48	WLP 500	E 19
SK 516 15 S TO 218	A 93	SK 591	A 49	THF 104	A 114	WLP 500 S	E 19
SK 516 15 TO 218	A 93	SK 592	B 41	THF 129 TO 220	A 114	WLPF 05	E 19
SK 516 33 S 2 x TO 218	A 93	SK 593	A 87	THF 220	A 114	WLPF 10	E 19
SK 517	A 92	SK 594	A 38	THF 220 17	A 114	WLPF 20	E 19
SK 518	A 92	SK 595	A 42	THF 247	A 114	WLPF 50	E 19
SK 519	A 47	SK 596	A 76	THF 247 4	A 114	WLPF 300 S	E 19
SK 520	A 49	SK 597	A 27	THF 249	A 114	WLPK 3	E 20
SK 521	A 23	SK 598	B 39	THF 409 220 1	A 114	WLPK 5	E 20
SK 522	A 22	SK 599	B 41	THF 409 220 2	A 114	WLPK 10	E 20
SK 523	A 54	SK 600 ... STC	A 98	THF 409 SOT 32	A 114	WP 4030 100	A 123
SK 524	A 51	SK 600 ... STIC		THF 409 TO 220	A 114	WP 4030 100 3	A 123
SK 525 15	A 94	SK 600 ... STCB		THF 600	A 114	WS 3	E 4
SK 525 15 ST	A 94	SK 600 ... STS	A 98	THFA 1	A 120	WS 3 M	E 4
SK 525 20 ST	A 94	SK 600 ... STIS		THFA 2	A 120	WS 3 P	E 4
SK 525 25 ST	A 94	SK 600 ... STSB		THFA 3	A 120	WS 3/4	E 4
SK 525 30	A 94	SK 601	A 43	THFA 4	A 120	WSC-220	E 4
SK 525 30 ST	A 94	SK 602	B 39	THFK 220	A 115	WSF 16	E 10
SK 526 30 ST	A 94	SK 603	D 31	THFK 247	A 115	WSF 32	E 10
SK 527	A 35	SK 604	D 31	THFM	A 115	WSF 635	E 10
SK 530	A 57	SK 605	D 31	THFMG	A 115	WSFS 635	E 10
SK 531	A 57	SK 606	D 31	THFU 1	A 117	WSI 220 210	E 5
SK 533	A 57	SK 607	D 31	THFU 2	A 117	WSI 220 225	E 5
SK 535	A 57	SK 608	D 31	THFU 3	A 118	WSI TO 3 PL	E 5
SK 536	A 57	SK DC 2 1 76 SA	A 113	THFU 4	A 118	WSI TOP 3 235	E 5
SK 537	A 57	SK DC 4 1 117 SA	A 112	THFU 5	A 118	WSI TOP 3 280	E 5
SK 538	A 57	SK DC 5 1 59 SA	A 113	THFU 6	A 119	WSM-220	E 4
SK 539	A 57	SK DC 5 59 SA	A 113	UK 14 SA 220	A 121	WST 30	E 4
SK 540	A 57	SK DC 6 1 60 SA	A 112	UK 14 SA 220 3,2	A 121	WST 36	E 4
SK 544	A 76	SK DC 7 1 117 SA	A 113	UK 14 SA M3	A 121	WST 85	E 4
SK 545	A 38	SK DC 7 117 SA	A 113	US 58 4	E 44		
SK 546	A 40	SK DC 8 1 60 SA	A 112	US 512 4	E 44		
SK 547	A 31	SK DC 8 60 SA	A 112	WB 3	E 4		
SK 548	A 34	SK DC 10 60 SA	A 112	WB 3 P	E 4		
SK 549	A 29	SKK 56	C 19	WBT 30	E 4		
SK 550	A 27	SKK 58	C 19	WBT 300	E 4		
SK 551	A 25	SKK 510	C 19	WG 3	E 4		
SK 552	A 23	SK LED 1	B 43	WG 3 P	E 4		
SK 553	A 43	SK LED 2	B 43	WGT 300	E 4		
SK 554	A 25	SK LED 3	B 43	WK 3	E 4		
SK 555	A 51	SMP 410 A	E 39	WK 3 P	E 4		
SK 556	A 77	SMP 410 B	E 39	WK 3/4	E 4		
SK 557	A 50	SMP 410 C	E 39	WKT 24	E 4		
SK 558	A 23	SMP 415 A	E 39	WKT 300	E 4		
SK 559	A 25	SMP 415 B	E 39	WL 0,55	A 126		
SK 560	A 26	SMP 415 C	E 39	WL 1,1	A 126		
SK 561	A 26	SMP 515 A	E 39	WLF 9010 R 25	E 9		
SK 562	A 29	SMP 515 B	E 39	WLF 9010 R 50	E 9		
SK 563	A 29	SMP 515 C	E 39	WLF 9010 R 100	E 9		
SK 564	A 30	STP 4	A 134	WLF 9015 R 25	E 9		
SK 565	A 22	STP 5	A 134	WLF 9015 R 50	E 9		
SK 566	A 26	SU 02	A 133	WLF 9015 R 100	E 9		
SK 567	A 34	SU 03	A 133	WLF 9020 R 25	E 9		
SK 568	A 53	SU 05	A 133	WLF 9020 R 50	E 9		
SK 569	B 40	SU 09	A 133	WLF 9020 R 100	E 9		
SK 570	B 40	SU 16	A 133	WLF S 900 K R 25	E 9		
SK 571	B 40	SU 27	A 133	WLF S 900 K R 50	E 9		
SK 572	B 40	SU 29	A 133	WLF S 900 K R 100	E 9		
SK 573	A 85	SU 32	A 133	WLFT 88 ...	E 8		
SK 574	A 86	SVP 01	A 134	WLFT 404 ... /	E 7		
SK 575	A 84	SVP 04	A 134	WLFT 405 .../			
SK 576	A 85	SVP 10	A 134	WLFT 414 ...			
SK 577	B 39	SVP 12	A 134	WLK 5	E 21		
SK 578	B 39	SVP 13	A 134	WLK 10	E 21		
SK 579	A 54	SWP 02	A 133	WLK 30	E 21		
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SK 581	A 28	SWP 10	A 133	WLK DK 4	E 22		

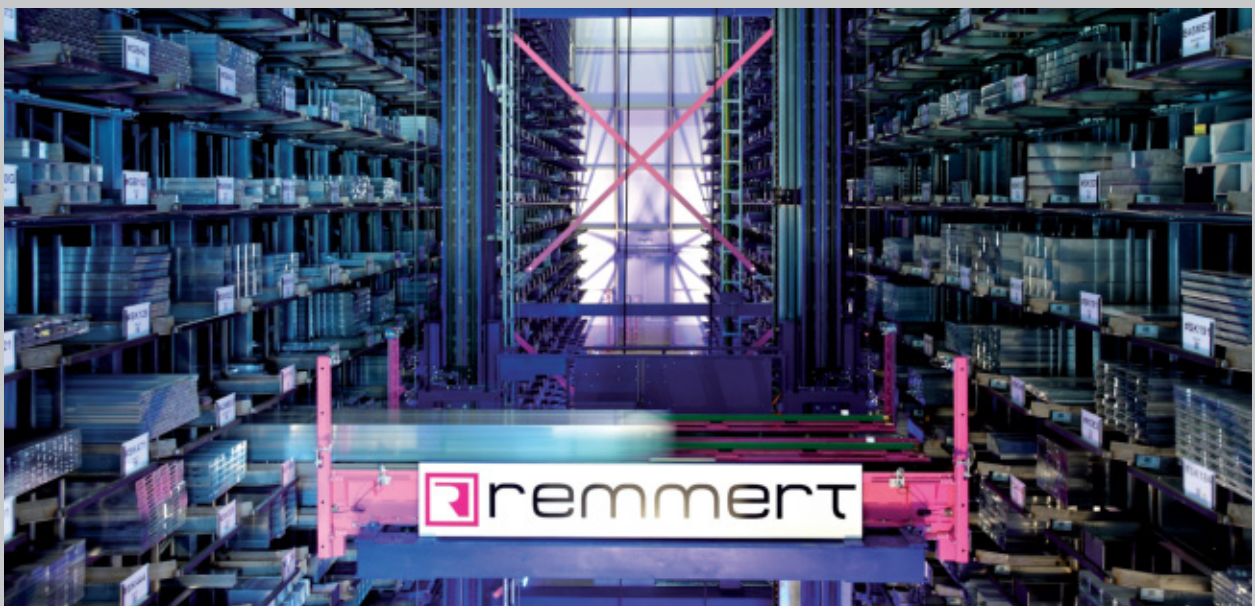
Active heatsinks for processors	B 50-53
Aluminium flat-, quadrangular-, angled-, U- & T-profiles	A 133-134
Aluminium oxide wafers	E 15-16
Attachable heatsink	C 10-16
Cooling aggregates with axial fan	D 14-29
Cooling aggregates with radial fan	D 33-35
Die-cast heatsinks	A 123-126
Distance sleeves and spacers	E 30-38
Extruded heatsinks for DC/DC converter	A 112-113
Extruded heatsinks for lock-in retaining spring	A 84-88
Extruded heatsinks for PCB mounting	A 89-111
Fastening for mounting rail	E 23
Fin coolers	A 127
Finger shaped heatsinks	C 2-9
Fluid coolers	A 129-132
Guide rails	E 24-29
Heat conductive foam and gel foils	E 10-13
Heatsinks for BGAs	B 17-20
Heatsinks for DIL-IC, PLCC and SMD	B 44-47
Heatsinks for D PAK and others	C 21-22
Heatsinks for LEDs	B 32-43
Heatsinks for PGA	B 11-16
High-performance heatsinks	D 30-32
Insulating caps and insulator sleeves	E 49-50
Insulating clamping parts for power transistors	E 43
Kapton insulator washers	E 14
Mica wafers	E 17
Miniature cooling aggregates	D 9-13
Mounting kits for insulation of power transistors	E 42
Mounting parts for heatsinks	E 47-48
Mounts	E 44-46
Passive heatsinks for processors	B 48-49
Pin heatsinks	B 21-31
Protection grid for fans	D 36
Retaining springs for transistors	A 114-120
Segment cooling aggregates	D 5-9
Small heatsinks	C 17-20
Standard extruded heatsinks	A 22-83
Thermally conductive adhesive	E 21-22
Thermally conductive foil both sides adhesive	E 7-9
Thermally conductive foil made of siliconelastomer	E 2-6
Thermal transfer compound and thermal interface film	E 18-20
U-Extruded heatsinks	A 121-122
Vibration dampers and solder terminals	E 39-41



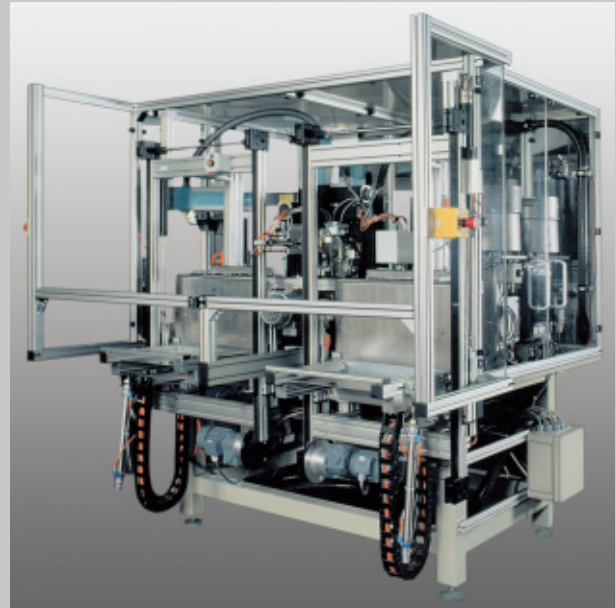
certified quality management



own tool-making department



foresighted storekeeping



efficient special machines



precise punching department



up-to-date milling technology



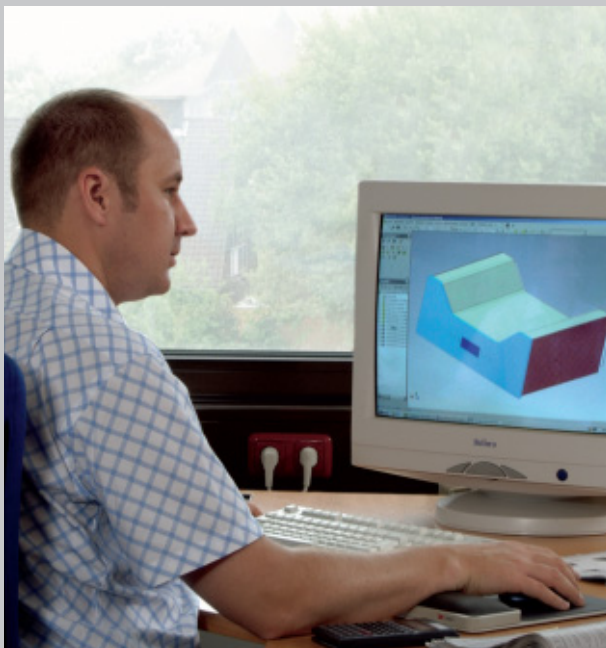
foyer of the company



motivated employees



committed field service



innovative product development



Quality-Management System DIN EN ISO 9001

We are certified to DIN EN ISO 9001.

This process-directed quality management system implies a constant focus on satisfying the demands of customers, and this is the major objective of our company.

The implementation and further development of our quality management system demonstrably ensures

- guaranteed customer satisfaction and thus the success of our company,
- compliance with customers' requirements at all times through defined processes,
- early detection and prevention of errors, and
- checking of both process effectiveness and efficiency on a regular basis together with steady improvement.

It is through constant vigilance and the provision of evidence that we deliver flawless products, which fully comply with quality requirements, that we maintain our quality certification.

In order to secure lasting company success and to meet our customers' expectations now and in the future, we define measurable objectives within the framework of our quality system, which are regularly checked and developed.

We are committed to constant measurement and improvement of our performance.

Our quality management system applies to all processes carried out by our company.

Certificate

Standard **ISO 9001:2008**

Certificate Registr. No. 09 100 4274

TÜV Rheinland Cert GmbH certifies:

Certificate Holder: **fischer elektronik**

Fischer Elektronik GmbH & Co. KG
Nottebohmstraße 28
D - 58511 Lüdenscheid

Scope: Design/construction, manufacture, assembly and technical advice for heatsinks, sockets, connectors, mounting parts, cases, 19" assembly systems, computer accessories

An audit was performed, Report No. 4274. Proof has been furnished that the requirements according to ISO 9001:2008 are fulfilled.

The due date for all future audits is 31-10 (dd.mm).

Validity: The certificate is valid from 2012-11-01 until 2015-10-31.
First certification 1994

2012-10-23


TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln



DGA-ZM-58-05-00

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 **TÜVRheinland®**
Precisely Right.

Certificate

Standard **ISO 14001:2004**

Certificate Registr. No. 01 104 8209

TÜV Rheinland Cert GmbH certifies:

Certificate Holder: **fischer elektronik**

Fischer Elektronik GmbH & Co. KG
Nottebohmstraße 28
D - 58511 Lüdenscheid

Scope: Design/construction, manufacture, assembly and technical advice for heatsinks, sockets, connectors, mounting parts, cases, 19" assembly systems, computer accessories

An audit was performed, Report No. 8209. Proof has been furnished that the requirements according to ISO 14001:2004 are fulfilled.

The due date for all future audits is 31-12 (dd.mm).

Validity: The certificate is valid from 2011-01-01 until 2013-12-31.
First certification 1998

2010-12-13


TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln



DGA-ZM-58-05-00

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Environmental Management System DIN EN ISO 14001

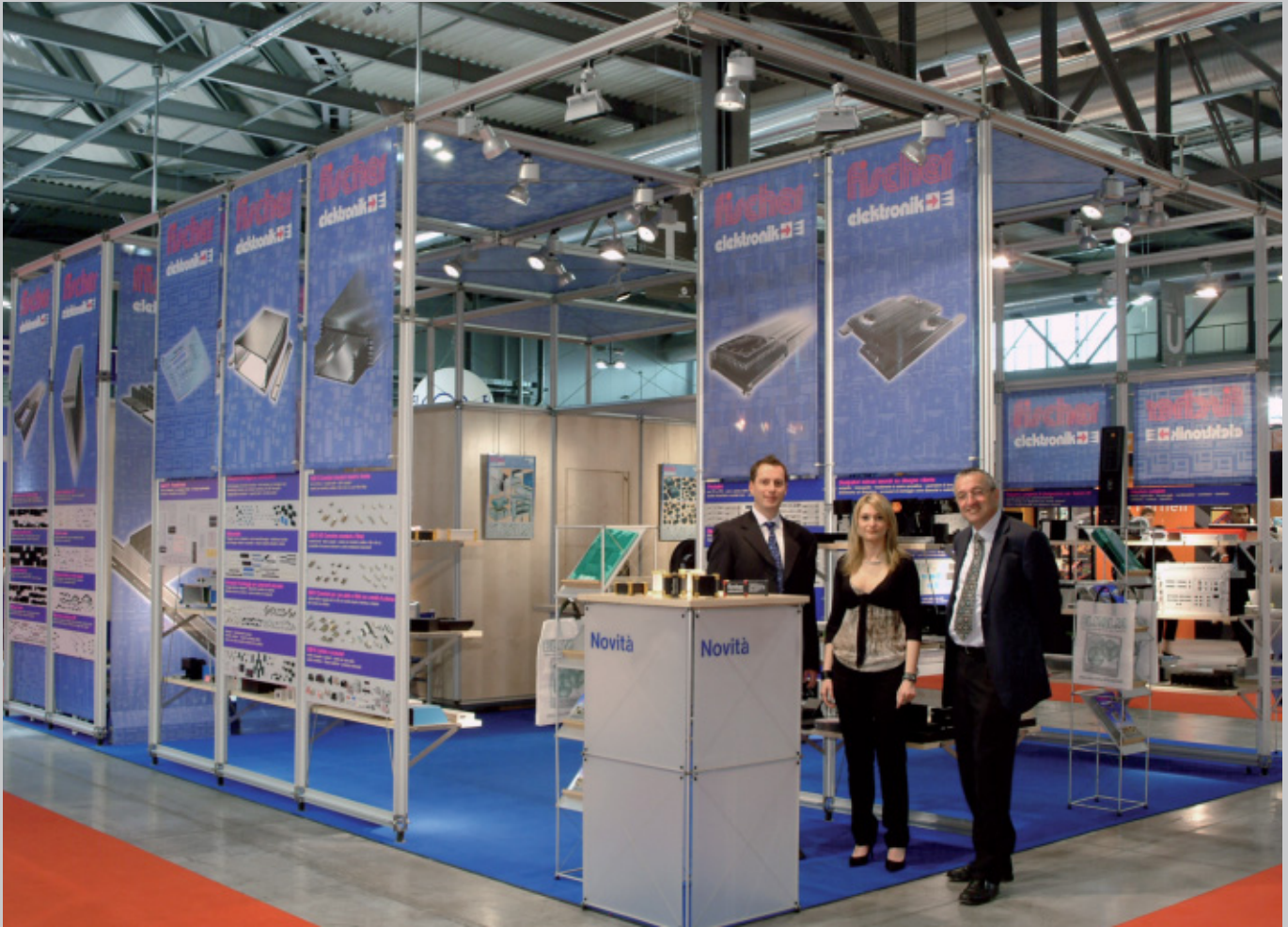
Fischer Elektronik consider protection of the environment and saving of natural resources entrepreneurial tasks of high priority.

Aware of this, Fischer Elektronik were the first German heat-sink manufacturer to implement, in 1998, the environmental management system in accordance with DIN EN ISO 14001.

Our entrepreneurial responsibility comprises preventing accidents, safeguarding against occupational diseases, designing workplaces to suit human requirements, developing products which are safe to use, saving resources and avoiding environmental impact to the maximum extent possible.

We already consider environmental compatibility at the product and process development stage. The environmental impact of our activities is documented, assessed and in a continuous improvement process reduced to a minimum.

Implementation and consistent working on and with the environmental management system is a vital process and a constant challenge but finally it will always lead to better results.



BIAS, Milan

I



Electronica, Tel-Aviv

IL



PCIM, Nuremberg

D



Electro Salon, Budapest

HU



Elkom, Helsinki

FI



embedded world
Exhibition & Conference

Nuremberg D
26. 2. - 28. 2. 2013
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Nuremberg D
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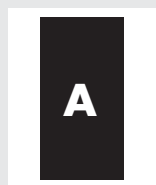
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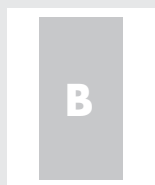
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2014
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Explanations – references – printings



... index area:
shows topics/categories

“current”



... index area:
shows topics/categories

“further”



... page number

Standard aluminium profiles	→ A 129 - 130
Technical explanations	→ A 2 - 7
Extruded heatsinks	→ A 20 - 81
Assignment table	→ A 9 - 11

... footnotes, give references to pages with combinable or similar products

SA = black anodised
MI = solderable surface
ME = clear anodised
TP = chrom-free transparent passivated

... option for surface finishing



... link to page



... length on stock in mm



... hole pattern



... symbol of heatsink geometry



... thermal resistance in K/W



... thickness of sheet/plate



... air/speed in m/s

Imprinting of heatsinks - Your and our time is expensive

An order for imprinting must state the font, the font size and the exact position of the imprint with dimensions, taking due account of countersunk holes etc.. When placing the first order, the company logo must be supplied as a vector file. If these conditions are not complied with, the order for imprinting may have to be turned down, or additional costs will have to be charged.

Compliance with the following criteria ensures smooth handling:

Adobe Illustrator (.ai)

CorelDraw (.cdr)

Macromedia FreeHand (.fh)

QuarkXPress (.qxd)

without half-tone images, fonts transformed into paths or supplied

all fonts enclosed; half-tone images colour-separated (full-tone or scale colours) and with correct resolution (300 dpi colour, black / white 600 dpi), no RGB

All this takes additional time and consequently incurs extra costs. The usability must be checked by our printing shop:

In most cases, Adobe Acrobat (.pdf); screen formats (.jpg, .gif, .png) and paper copies, stickers and the like are not suitable for preparing printer's copies!

Copies that definitely cannot be used:

Imperfect copies such as fax copies / Microsoft Office files (.doc, .xls, .ppt) can only be used for information or for transmitting texts.

Please always add dimensional drawings (.dxf) to the parts to be imprinted! Please note as a general rule:

Retouching work extending beyond the standard time will be invoiced additionally at cost price.

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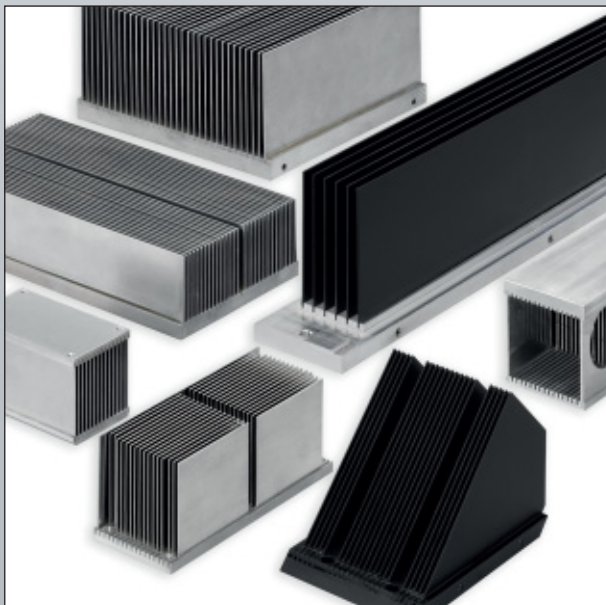
Machined heatsinks

- several hundreds of extrusion profiles available
- future orientated stockkeeping of heatsink profiles in a fully automatic honeycomb warehouse
- precise milling treatments in highest quality
- effective heat spreading by means of heatsinks with grouted copper areas
- designs and modifications according to your demand



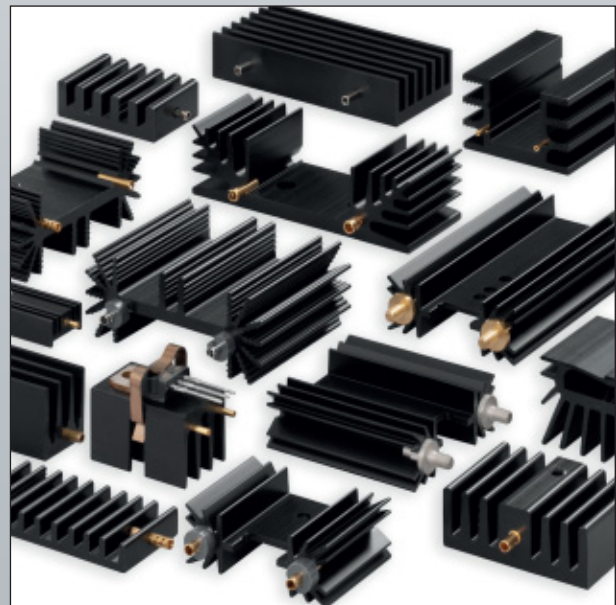
Fluid heatsinks

- fluid heatsinks for dissipation of big heat flow volumes
- compact design with internal lamella structure
- thick bottom plates for optimal heat dissipation
- I- and U streamed versions
- Water connection or mounting flange for your special application
- Customized treatments and solutions



Lamella heatsinks

- compact lamella heatsinks with a big surface
- special design for forced convection
- thermotechnical optimal fitted lamellas
- precise milled flat semiconductor mounting surface
- single and double sided bottom plate made of aluminium or copper
- production according to customer specified demands



Extruded heatsinks with solder pins

- solid pressed in soldering pins and threaded bolts for a direct pcb-mounting
- for horizontal and vertical mounting position
- standard drilling patterns and transistor retaining springs for various semi-conductive elements
- soldering pins with insulation for spacing help
- variations and modifications according to drawing

1. General points

In order to provide optimum performance of semi-conducting devices it is essential not to exceed the maximum junction temperature indicated by the manufacturer.

Generally this maximum junction temperature can only be maintained without exceeding it by running the device concerned at lower power outputs.

At outputs approaching the maximum ratings semi-conductor devices have to be cooled by so called heatsinks, sometimes called dissipators.

The thermal performance of these heatsinks primarily depends on the thermal conductivity of the material from which they are made, size of surface area and mass.

In addition, surface colour, mounting position, temperature, ambient air velocity and mounting place all have varying influence on the final performance of the heatsink from one application to another.

However, a figure for thermal resistance can be experimentally determined in a reliable manner and used in the equations that follow in part 2.

There are no agreed international standard methods for testing electronic cooling systems or for the determination of the thermal resistance.

Therefore the diagrams and values given in our catalogue have been determined under practical operating conditions and therefore allow the most suitable heatsink from the range to be selected.

We expressly point out that all information and data is given to the best of our knowledge and belief. The user is solely responsible for the proper use of our products and he should check their suitability for the intended application.

Fischer Elektronik do not assume any warranty, whether expressed or implied, for the suitability, function or merchantability of their products in specific or general applications, and they cannot be held liable for accidental or consequential damage due to non-observance of the above.

Furthermore Fischer Elektronik reserve the right to carry out technical modifications to their products at any time. All orders are subject to the General Sales Conditions of Fischer Elektronik.

2. The determination of thermal resistance

The thermal resistance is the parameter that is the most important in cooler selection, apart from mechanical considerations.

For determination of the thermal resistance the following equation applies:

$$\text{Equation 1: } R_{thK} = \frac{\vartheta_j - \vartheta_U}{P} - (R_{thG} + R_{thM}) = \frac{\Delta\vartheta}{P} - R_{thGM}$$

In case of an application where the maximum junction temperature is not exceeded the temperature has to be verified. When the case temperature has been measured the use of the following equation will enable the maximum junction temperature to be calculated:

$$\text{Equation 2: } \vartheta_j = \vartheta_G + P \times R_{thG}$$

The meaning of the determinants:

ϑ_j = maximum junction temperature in °C of the device as indicated by manufacturer.
As a »safety factor« this should be reduced by 20-30 °C.

ϑ_U = ambient temperature in °C.
The rise in temperature caused by radiant heat of the heatsink should be increased by a margin of 10-30 °C.

$\Delta\vartheta$ = difference between maximum junction temperature and ambient temperature.

ϑ_G = measured temperature of device case (equation 2).

P = maximum power rating of device in watts

R_{th} = thermal resistance in K/W

R_{thG} = internal thermal resistance of semiconductor device (as indicated by manufacturer)

R_{thM} = thermal resistance of mounting surface. For TO 3 cases the following approximate values apply:

- | | |
|-----------------------------------------------------|------------------|
| 1. dry, without insulator | 0.05 - 0.20 K/W |
| 2. with thermal compound/without insulator | 0.005 - 0.10 K/W |
| 3. Aluminium oxide wafer with thermal compound | 0.20 - 0.60 K/W |
| 4. Mica wafer (0.05 mm thick) with thermal compound | 0.40 - 0.90 K/W |

R_{thK} = thermal resistance of heatsink, which can be directly taken from the diagrams

R_{thGM} = sum of R_{thG} and R_{thM} . For parallel connections of several transistors the value R_{thGM} can be determined by the following equation:

Equation 3:
$$\frac{1}{R_{thGM \text{ ges.}}} = \frac{1}{R_{thG1} + R_{thM1}} + \frac{1}{R_{thG2} + R_{thM2}} + \dots + \frac{1}{R_{thGn} + R_{thMn}}$$

The result can be substituted into equation 1.

K = Kelvin, which is now the standard measure of temperature differences, measured in °C, therefore 1°C = 1 K.

K/W = Kelvin per watt, the unit of thermal resistance.

Calculation examples:

1. A TO 3 power transistor with 60 watt rating has a maximum junction temperature of 180 °C and an internal resistance of 0.6 K/W at an ambient of 40 °C with aluminium oxide wafers. What thermal resistance is required for the heatsink?

given:

- $P = 60 \text{ W}$
 $\vartheta_i = 180 \text{ °C} - 20 \text{ °C} = 160 \text{ °C}$ (for safety margin)
 $\vartheta_u = 40 \text{ °C}$
 $R_{thG} = 0,6 \text{ K/W}$
 $R_{thM} = 0.4 \text{ K/W}$ (average value)

find: R_{thK} using equation 1
$$R_{thK} = \frac{\vartheta_i - \vartheta_u}{P} - (R_{thG} + R_{thM}) = \frac{160 \text{ °C} - 40 \text{ °C}}{60 \text{ W}} - (R_{thG} + R_{thM}) = \underline{1,0 \text{ K/W}}$$

2. Same conditions as above but for three devices with equally distributed power ratings.

solution use equation 1 and equation 3
$$\frac{1}{R_{thGM \text{ ges.}}} = \frac{1}{0,6 + 0,4 \text{ K/W}} + \frac{1}{0,6 + 0,4 \text{ K/W}} + \frac{1}{0,6 + 0,4 \text{ K/W}} = \frac{3}{1} \text{ W/K}$$

$$R_{thGM \text{ ges.}} = \frac{1}{3} \text{ K/W} = \underline{0,33 \text{ K/W}}$$

substitute into Equation 1 gives:

$$R_{thK} = \frac{160 \text{ °C} - 40 \text{ °C}}{60 \text{ W}} - 0,33 \text{ K/W} = \underline{1,67 \text{ K/W}}$$

With these values determined, the tabulation on page A 13 - 17 can be used to give a choice of possible heatsink profiles. Then by examination of the drawings and curves the final choice can be made.

3. A transistor with power rating of 50 W and internal thermal resistance of 0.5 K/W has a case temperature of 40 °C. What is the actual value of junction temperature?

données:

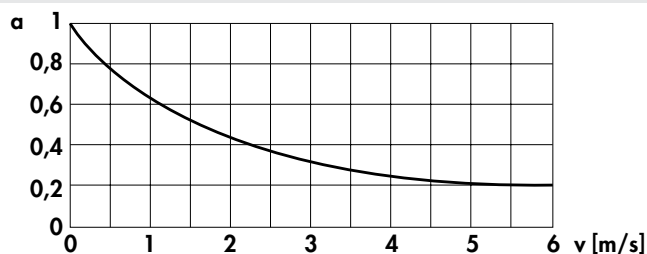
- $P = 50 \text{ W}$
 $R_{thG} = 0,5 \text{ K/W}$
 $\vartheta_G = 40 \text{ °C}$

find: ϑ_i using equation 2

$$\vartheta_i = \vartheta_G + (P \cdot R_{thG}) \quad \vartheta_i = 40 \text{ °C} + (50 \text{ W} \cdot 0,5 \text{ K/W}) = \underline{65 \text{ °C}}$$

Thermal resistances of any profiles with forced convection

- $R_{thKf} \approx a \cdot R_{thK}$
 R_{thKf} = thermal resistance with forced convection
 R_{thK} = thermal resistance with natural convection
 a = factor of proportion



Remarks:

- The values indicated in the diagrams apply only for heatsinks with black anodised surface, mounted vertically and natural convection.

Correction factors: natural surface: +10 to 15 % for horizontal mounting: + 15 to 20 %

- Heatsink profiles are extruded to European standard DIN EN 12020 (former DIN 17615).
For profiles exceeding a circumscribed circle of 300 mm, the tolerances to DIN EN 755 (former DIN 1748) apply.

Important note:

Manufacturers of certain electronic components, especially modules with a large surface area, IGBT etc., specify installation surfaces for heatsinks etc. with an flatness, which is beyond standard tolerances. Such perfect flatness can only be achieved by milling the installation surface. Furthermore, it should be noted that threaded wire inserts may be required in order to reach higher tightening torques in aluminium (e.g. Heli-Coil or similar.). Please observe the semiconductor manufacturers' information.

- The mentioned heatsink profiles in our catalogue contain so called extrusion marks between the fins for a profile identification. To avoid misuse the operator has to check the size and position for the mechanical treatment or placement of the components.
- Profile extruded threaded channels are no threads conforming to standards, as they have no thread pitch. The thread pitch is imitated by staggered webs (ribs). The customer is responsible for appropriate use.
- Machining of our extruded and non extruded profiles conforms to requirements of DIN ISO 2768 m - unless otherwise stated. For all ICK S types DIN ISO 2768c is valid.
- The lengths of extruded profiles [↔] and the pin layouts [⚙] indicate only the standard range. We offer every profile cut to customer's exact length and machining requirement made to drawing or sample. We bore, countersink, mill, saw, grind and cut threads into your heat sink to meet your specific requirements. With our modern machine tools including CNC machining centres, multispindled drills (up to 26 drillings/threads at the same time) and digital milling and stamping tools plus our own "in house" tool room we are able to manufacture competitively priced prototypes as well as batch and mass produced parts with short lead times.
- The standard material of our heatsinks is warm age-hardened aluminium alloy according to EN AW 6060 - T66 (former AlMgSi05 - F22 acc. to DIN 1748). Our standard surface treatments are raw degreased aluminium (Al) and black anodised (SA). On request, we anodise clear natural (ME) or decorative in any colour that is technically possible.
- If you cannot find a suitable profile within our range of approx. 400 profiles, 13 small heatsinks and 50 finger shaped heatsinks, we can design and produce to your requirements. Please contact us at the start of your next project so that we can work together, either directly or through our representatives. Remember that we have the ability to find the solution for "your" cooling problem.
- Note on tolerances

All dimensions given in this catalogue for products, items and machined parts are acc. to DIN ISO 2768 m if not otherwise stated. Not included are items like extruded profiles, diecasts, handles, vibration dumpers etc. for which different standards apply.

Update - January 2013

The information given in this catalogue were established and examined carefully.

Nevertheless, mistakes or printing errors, and especially technical modifications and updating and improvement of our products, cannot be excluded.

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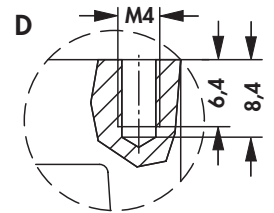
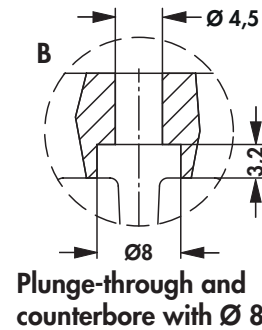
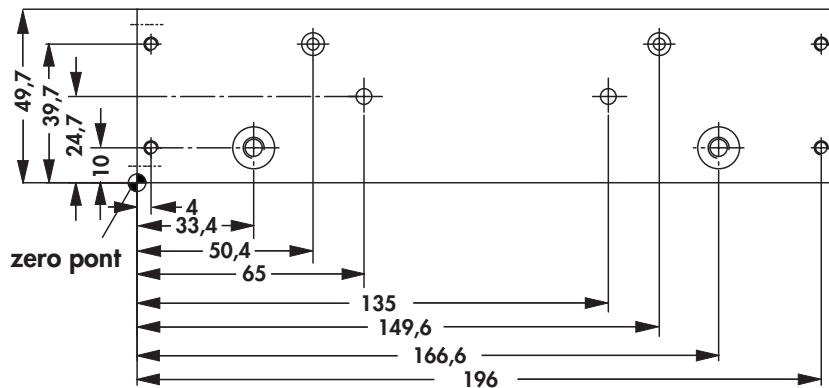
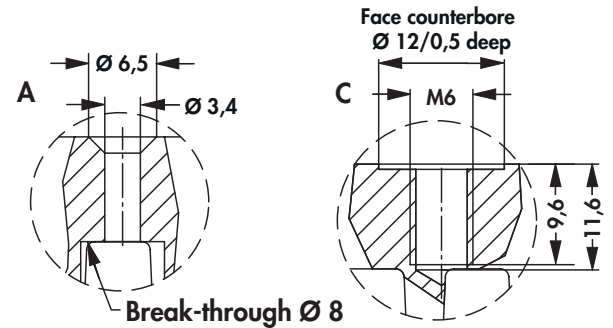
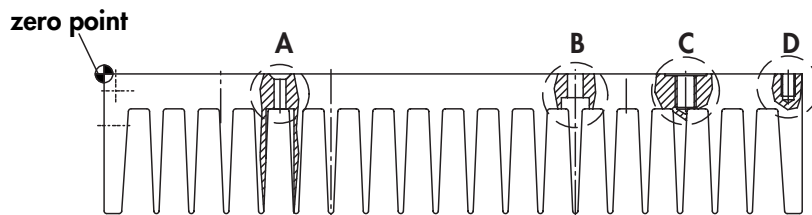
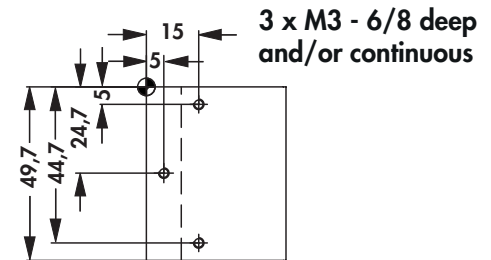
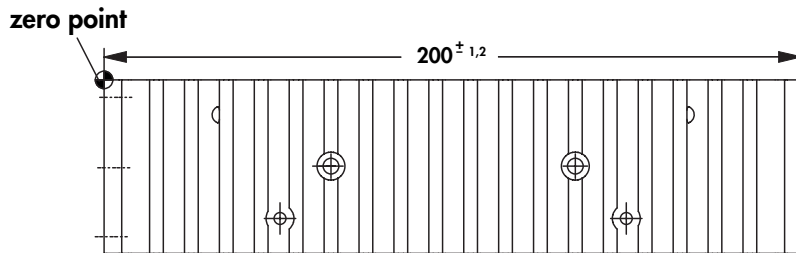
Heatsinks profile-overview → A 13 - 17
Heatsink special design → A 135 - 136
Special profiles → A138
Heatsink as visual & decor-parts → A 10

Heatsinks for SSR → A 11 - 12
Die-cast heatsinks → A 123 - 136
Assignment table → A 18 - 20
Order example → A 21

General information

Blind holes are produced after anodising. Through holes are produced before anodising. With completely visual parts, additional painting is recommended. The sections are extruded according to DIN EN 12020. For sections that exceed a circumscribed circle of 300 mm, DIN EN 755 apply. The machining tolerances are specified according to DIN ISO 2768 m.

Visual parts: Please indicate at which place **clamp points** are allowed! We recommend e.g. supplementary laquering.



Technical introduction

Information for dimensioning, shown on SK 47 general:

The deflection can be up to 0.8 mm concave, 0.2 mm convex. If a certain flatness of the bottom surface is required the bottom thickness can be decreased by a maximum of approx. 0.8 mm by means of face-milling. This situation must be taken into consideration with the bore hole depths for blind holes.

Counterbores and bore hole diameters are to be produced according to DIN 74, if not explicitly stated otherwise. The depth of thread should be calculated as follows.

Example M 5:

thread: $\langle M \rangle 5 \times 1.6 \text{ mm} = 8 \text{ mm}$

core bore: $8 \text{ mm} + 2 \text{ mm} = 10 \text{ mm}$

Examples:

cutout A: Through-hole according to DIN 74 A m 3, counterbore bottom side, undercut of the fins.

cutout B: Through hole with break-through of the fins according to DIN 74 H m 4, counterbore on fin side.

cutout C: Thread M 6. Depth of thread $1.6 \times 6 \text{ mm} = 9.6 \text{ mm}$, bore depth $9.6 \text{ mm} + 2 \text{ mm} = 11.6 \text{ mm}$. Bore hole on fin base is plunged through. Face counterbore dia. 12×0.5 on bottom side.

cutout D: Blind thread M 4. Depth of thread $1.6 \times 4 \text{ mm} = 6.4 \text{ mm}$, bore depth $6.4 \text{ mm} + 2 \text{ mm} = 8.4 \text{ mm}$.

Extrusion tolerances – production tolerances

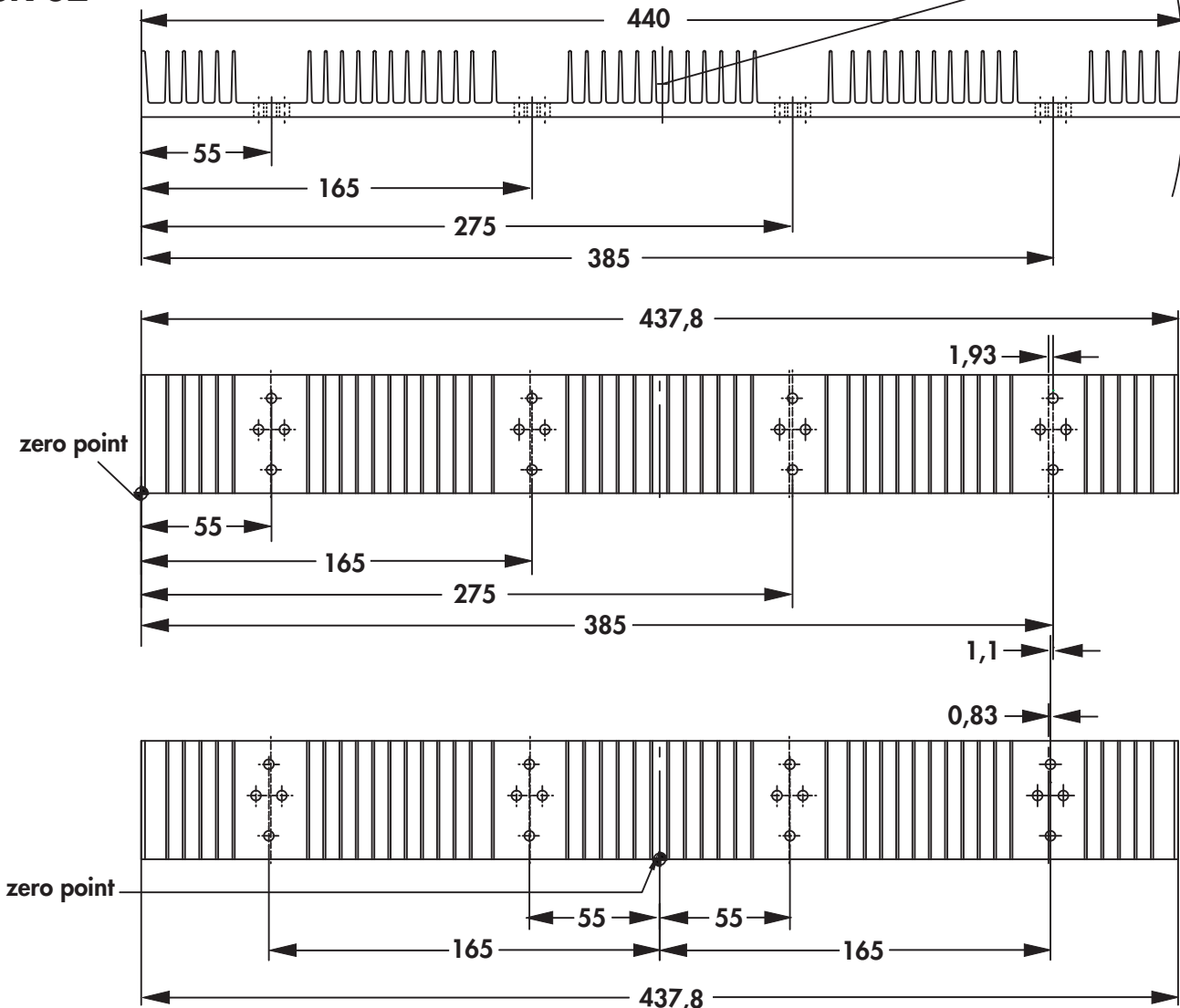
There is often the problem, that the production tolerances cannot be adhered to, due to the extrusion tolerances. The two examples show how the production tolerances can be cut in half by means of suitable dimensioning (here: extension of the zero point from the outer edge to the center of the section).

When taking unfavourable extrusion tolerances into consideration a difference of 1.1 mm arises between the two types of dimensioning with respect to the axis of symmetry.

SK 82

extrusion tolerance $\pm 3.5 \text{ mm}$

R220,75



Heatsinks profile-overview

→ A 13 - 17

Heatsink special design

→ A 135 - 136

Special profiles

→ A138

Heatsink as visual & decor-parts

→ A 10

Heatsinks for SSR

→ A 11 - 12

Die-cast heatsinks

→ A 123 - 136

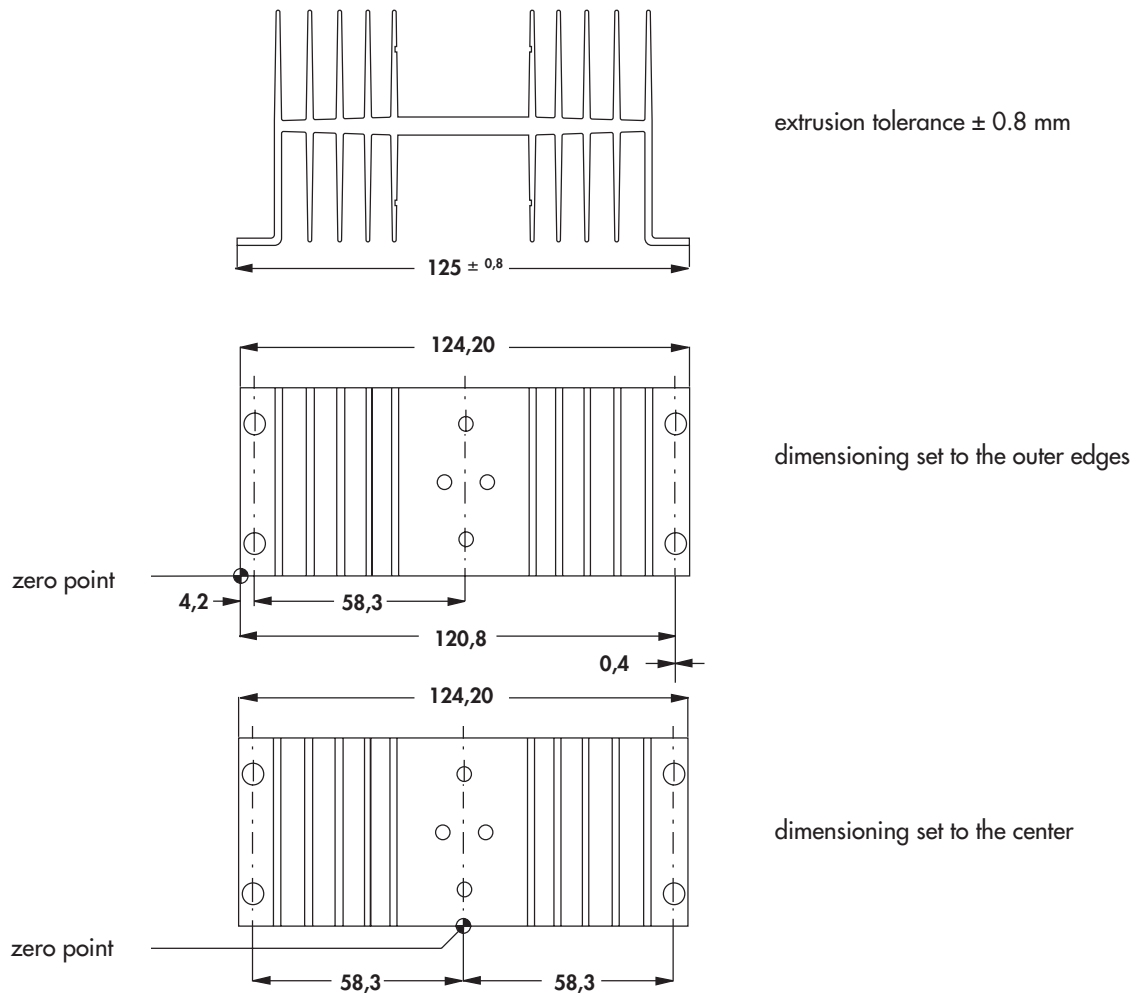
Assignment table

→ A 18 - 20

Order example

→ A 21

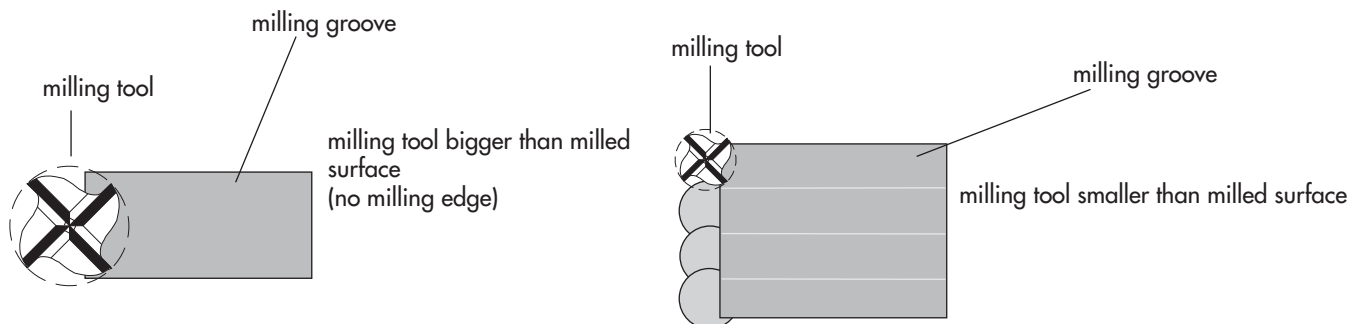
SK 34

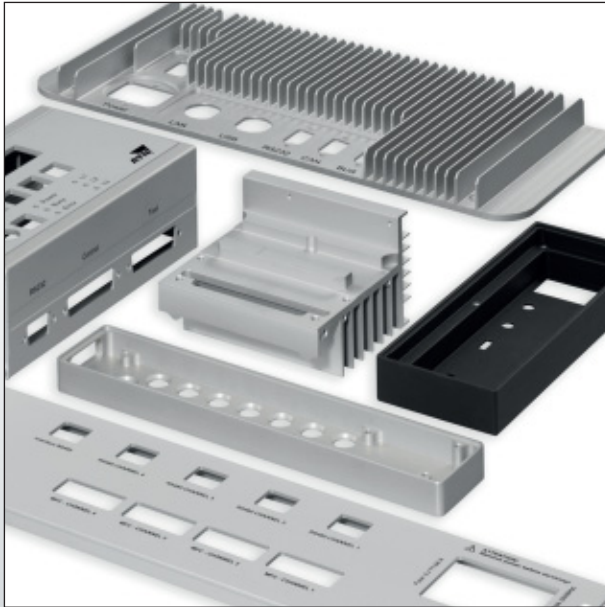


When taking unfavourable extrusion tolerances into consideration, a difference of 0.4 mm arises between the two types of dimensioning with respect to the axis of symmetry.

Milling

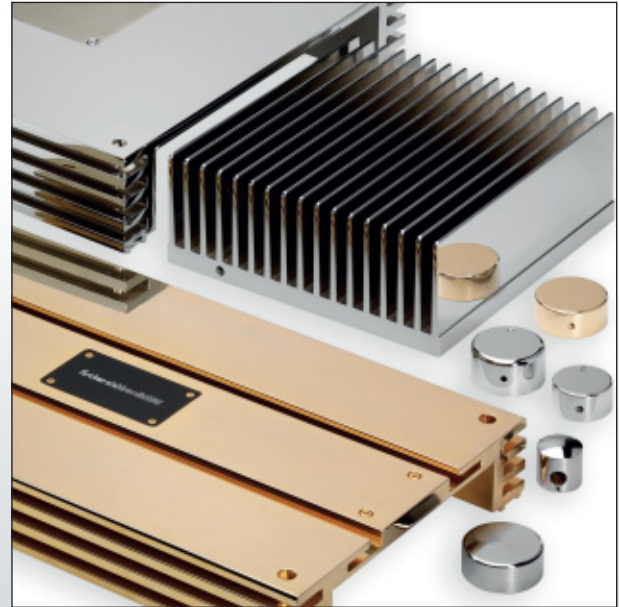
If, when milling heatsinks, cooling aggregates, etc., the milling tool diameter is smaller than the area being milled for production reasons, so called „milling grooves“ with steps or edges are produced (see sketch). Even if the roughness depth value for the surface is observed, it is a good idea to specify the area of the component in which no milling edges are allowed.





Decorative aluminium milled parts

- high quality, very precise milled, decorative aluminium parts
- exact radii and sharp-edged cutouts
- precision ground surfaces
- natural colour and black anodized



Chromium plating and gold plating

- chromium plating and gold plating of front panels, extruded profiles and construction parts
- qualitative constant and reproducible, high quality surfaces
- Various gloss levels by means of different polishing processes
- processing of brass, aluminium and steel



Surface refinements

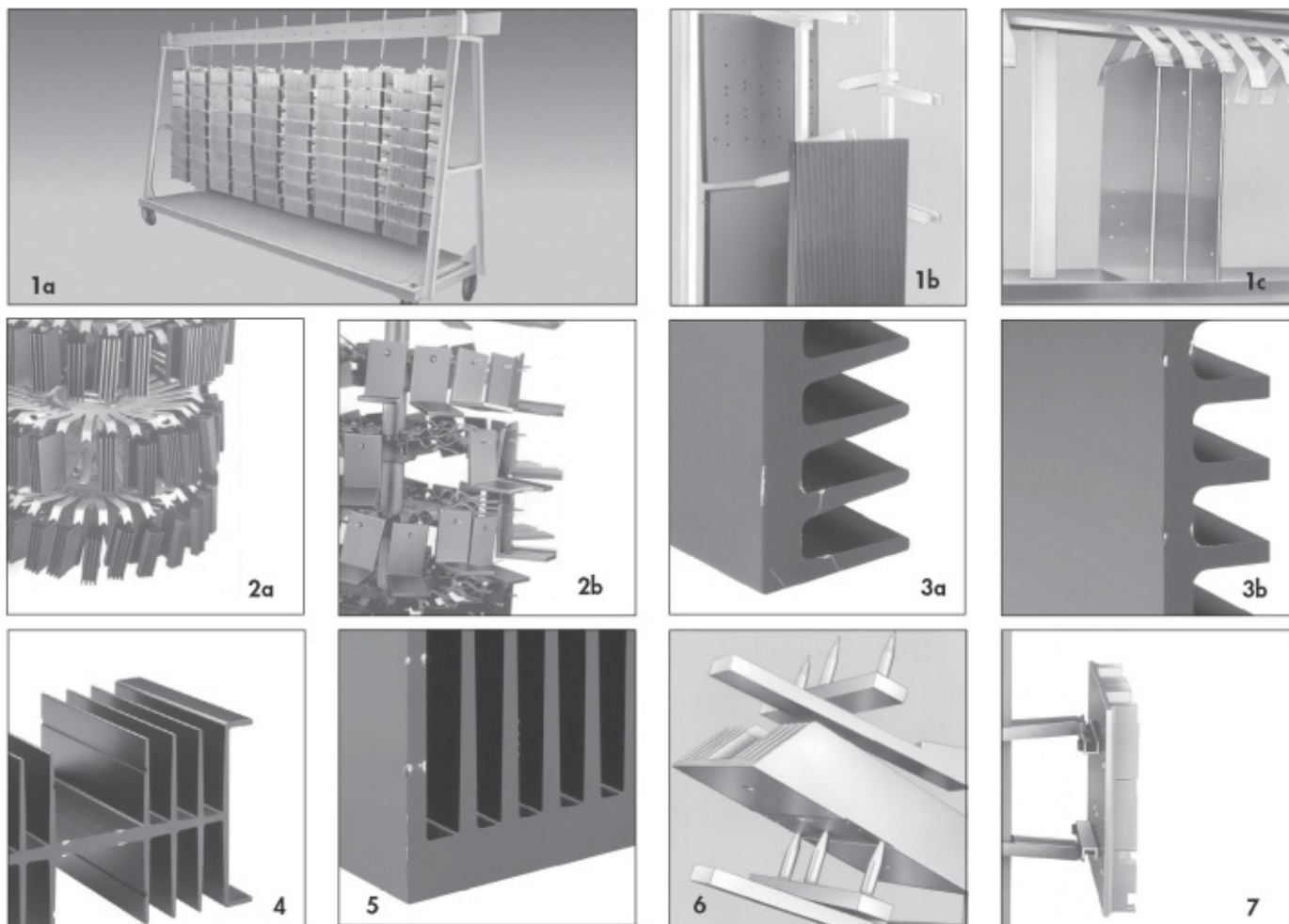
- corrosion resistant and decorative anodize layers
- lacquerings and durable powder coatings in all current RAL colours
- anti-glare surfaces, Nextel®-Suide Coating
- electrically conductive surfaces, chromate VI free
- Prevention of clamp marks by means of special contacting systems



Development and construction

- competent partner with experience of more than 40 year
- Innovative product development, product-specific support by means of application engineers
- design assistance, feasibility analyses and product optimizations
- construction support and preparation of drawings

Heatsinks for decorative purposes and as visual parts



B

C

D

E

F

G

H

I

K

L

M

Anodising (also known as ELOXAL: **E**lectrically **O**Xidised **A**luminium) is used in many cases for decorative surface protection of aluminium. In this process, the aluminium parts to be treated are connected to the positive pole of a direct-current source (anode) in a suitable electrolyte where aluminium, in so doing, forms the negative pole (cathode). The flowing direct current now causes a migration of oxygen-containing ions, with electrically negative charge, to the anode in order to deposit the oxygen. At this point, the aluminium reacts with this oxygen, forming aluminium oxide. A non-porous, electrically insulating, abrasion free, oxide barrier, or „eloxallayer“, then develops. The development and therefore thickness of this layer can be controlled by the amount of current flow.

For process handling, secure transportation and electrical connection, the parts to be anodised must be placed on „racks“ (figure 1). As excellent electrical contact is necessary and the parts being processed must be mounted on the carrying racks in a totally secure manner a high clamping force is required especially for those large and heavy heatsinks (figure 2). This will mean that „clamp marks“ are visible. These are mere bare points in the case of small and light weight heatsinks with black anodising (figure 3) but for heavy parts the clamping pressures and current can cause deformation of the surface (figure 4). Any such deformations on large heatsinks is unavoidable and varies with each part (figure 5).

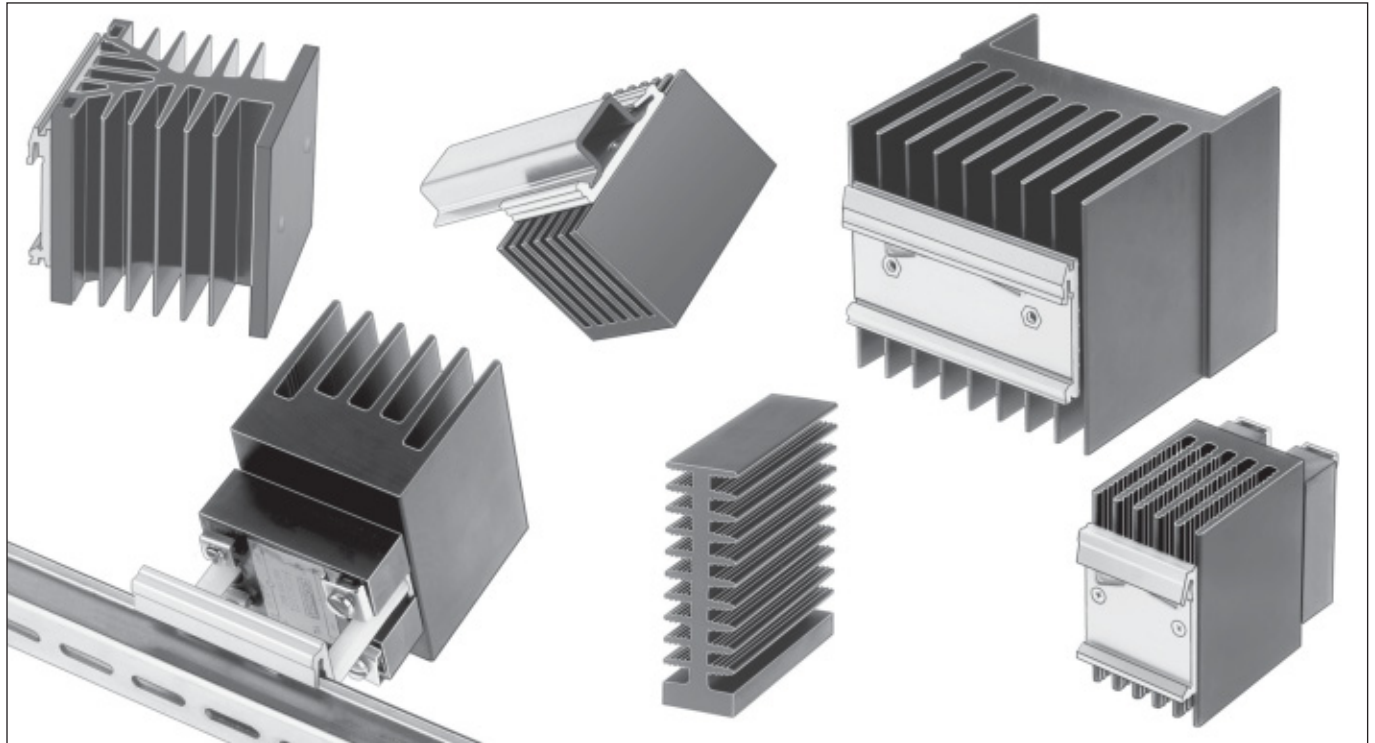
If heat sinks are used as visual parts, in other words parts whose surface must be blemish-free in appearance, it is suggested that the customer will define specific areas which should have no clamp marks. If, for technical production reasons, it is not possible to place clamps on the remaining points then consideration should be either given to the construction of separate specialpurpose frames which will allow processing (figure 6). Existing or additional threaded holes may possibly also be used for screwing on fixing angles, upon which the clamps may then be placed (figure 7). Furthermore, there is always the possibility to remove the clamp marks by hand finishing, although some slight indentation may still be visible. Alternatively, instead of using the anodising process there are various paint finishes available.

With visual parts and mouldings, both discussion of all technical details and determination of the desired design in cooperation with the manufacturer - even at the initial enquiry stage - are imperative for the smooth completion of orders to the satisfaction of the customer.

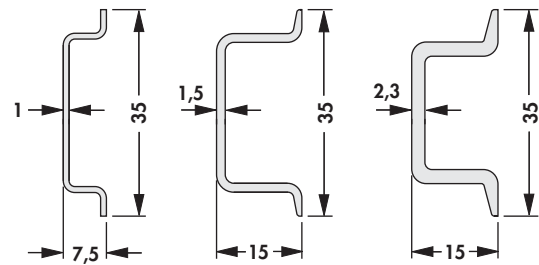
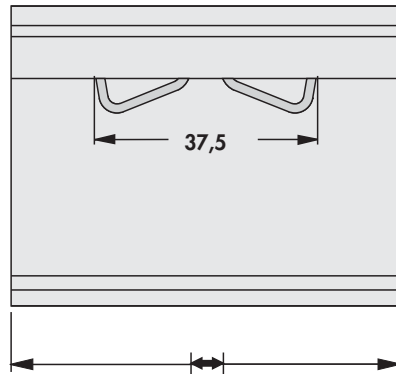
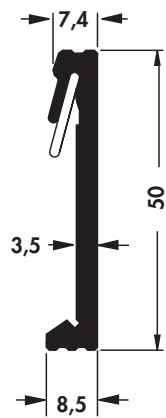
Our experts are at your disposal for all technical advice.

Standard aluminium profiles → A 133 - 134
 Technical introduction → A 2 - 7
 Extruded heatsinks → A 22 - 83
 Assignment table → A 18 - 20

Drilling pattern for SSR → A 12
 Die-cast heatsinks → A 123 - 126
 High capacity heatsinks → A 57 - 58
 Heatsinks for PCB → A 89 - 111



- universal clip fastening, suitable for all 35 mm mounting rails according to DIN EN 50 022, rail thickness from 1 to 2.3 mm → E 23
- fast and simple assembly of heatsinks by means of snapping them onto the mounting rail
- secure hold due to a stable extruded profile with integral stainless steel spring
- special lengths (≥ 40 mm) and drillings on request



Examples of mounting rail versions suitable for KL 35

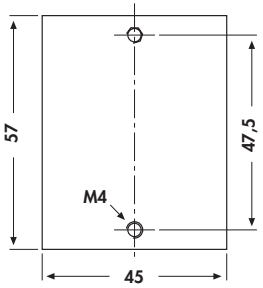
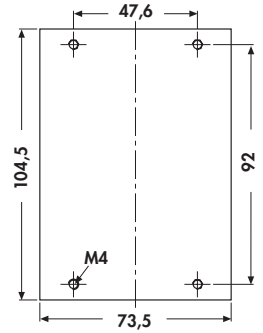
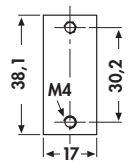
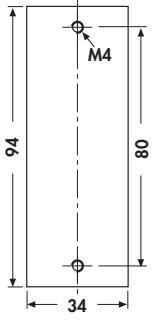
surface:

finish clear anodised

A11

 Distance sleeves → E 30 - 37
 Fastening for mounting rail → E 23
 Guide rails for PCBs → E 24 - 28
 Mounting material for semiconduct. → E 42 - 46

 Spacers → E 38
 Mica wafers → E 17
 Aluminium oxide wafers → E 15 - 16
 Technical introduction → A 2 - 7

perforations – drilling pattern rotated by 90° as well as further drilling patterns upon request	s KL 35 – fixing of the SSR by means of screws with the help of insert nuts in the heatsink	bez KL 35 – fixing of the SSR by means of screws with the help of tapped holes in the heatsink	Art. Nr.
SSR 1 	Art. Nr. SK 172 - 75 KL SSR 1	Art. Nr. SK 89 - 75 KL SSR 1 SK 89 - 100 KL SSR 1 SK 111 - 75 KL SSR 1 SK 434 - 75 KL SRR 1 SK 453 - 75 KL SRR 1 SK 467 - 75 KL SRR 1 SK 507 - 75 KL SSR 1	Art. Nr. SK 04 - 75 KL SSR 1 SK 33 - 75 KL SSR 1 SK 455 - 75 KL SSR 1 SK 467 - 75 KL SRR 1 SK 507 - 75 KL SRR 1
SSR 2 		SK 89 - 100 KL SSR 2 SK 89 - 150 KL SSR 2 SK 176 - 100 KL SSR 2 SK 176 - 150 KL SSR 2 SK 194 - 75 KL SSR 2 SK 507 - 100 KL SSR 2	SK 04 - 150 KL SSR 2 SK 507 - 100 KL SSR 2 SK 507 - 150 KL SSR 2
SSR 3 	SK 187 - 75 KL SSR 3	SK 111 - 75 KL SSR 3	SK 48 - 50 KL SSR 3
SSR 4 	SK 172 - 150 KL SSR 4	SK 455 - 100 KL SSR 4	SK 455 - 100 KL SSR 4 SK 467 - 100 KL SSR 4

Distance sleeves → E 30 - 37
 Fastening for mounting rail → E 23
 Guide rails for PCBs → E 24 - 28
 Mounting material for semiconductor → E 42 - 46

Spacers → E 38
 Mica wafers → E 17
 Aluminium oxide wafers → E 15 - 16
 Mounting parts for heatsinks → A 2 - 7

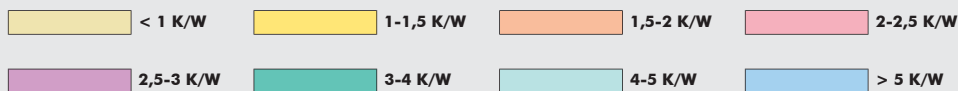
A
Heatsink-chart
B**C****D****E****F****G****H****I****K****L****M**

SK 440 D 30	SK 441 D 30	SK 458 D 30	SK 461 D 30	SK 497 D 30	SK 498 D 30
SK 47 A 49	SK 49 A 51	SK 56 A 53	SK 66 A 54	SK 90 A 47	SK 91 A 51
SK 93 A 55	SK 101 A 54	SK 102 A 50	SK 130 A 55	SK 139 A 52	
SK 149 A 52	SK 154 A 45	SK 155 A 45	SK 157 A 54	SK 158 A 58	SK 159 A 58
SK 160 A 58	SK 161 A 58	SK 162 A 58	SK 168 A 50		
SK 190 A 52	SK 191 A 55	SK 193 A 49	SK 198 A 53		
SK 199 A 51	SK 416 A 46	SK 418 A 58	SK 438 A 52	SK 439 A 55	
SK 446 A 53	SK 466 A 43	SK 479 A 55	SK 501 A 53	SK 502 A 49	SK 507 A 40
SK 510 A 46	SK 520 A 49	SK 523 A 54	SK 524 A 51	SK 530 A 57	SK 531 A 57
SK 533 A 57	SK 535 A 57	SK 536 A 57	SK 537 A 57		
SK 538 A 57	SK 539 A 57	SK 540 A 57			

Heatsink-chart classified in categories of thermal resistance at 75 mm length

N

SK 553 A 43	SK 555 A 51	SK 557 A 50	SK 568 A 53	SK 579 A 54	SK 580 A 50	SK 588 A 45
SK 591 A 49	SK 601 A 43	SK 57 A 64	SK 30 A 67	SK 53 A 74	SK 82 A 75	
SK 86 A 75	SK 15 A 77	SK 163 A 78	SK 556 A 77	SK 83 A 79	SK 108 A 80	SK 109 A 80
SK 110 A 80	SK 435 A 81	SK 144 A 82	SK 584 B 41	SK 590 B 42	SK 592 B 41	SK 33 A 42
SK 58 A 44	SK 85 A 46	SK 92 A 41	SK 94 A 48	SK 113 A 48	SK 42 A 48	
SK 118 A 50	SK 119 A 46	SK 120 A 45	SK 121 A 41	SK 132 A 44	SK 133 A 44	SK 135 A 39
SK 136 A 48	SK 411 A 42	SK 412 A 47	SK 413 A 43	SK 429 A 37	SK 463 A 43	
SK 467 A 33	SK 503 A 46	SK 504 A 44	SK 519 A 47	SK 583 A 52	SK 595 A 42	SK 71 A 64
SK 197 A 65	SK 404 A 65	SK 02 A 66	SK 34 A 67	SK 67 A 69	SK 148 A 68	SK 88 A 73
SK 147 A 74	SK 89 A 77	SK 140 A 77	SK 06 A 79	SK 23 A 79	SK 194 A 81	SK 40 A 82
SK 569 B 40	SK 570 B 40	SK 571 B 40	SK 572 B 40	SK 577 B 39	SK 578 B 39	SK 599 B 41
SK 602 B 39	SK 50 A 37					



A

Heatsink-chart

B

C

D

E

F

G

H

I

K

L

M

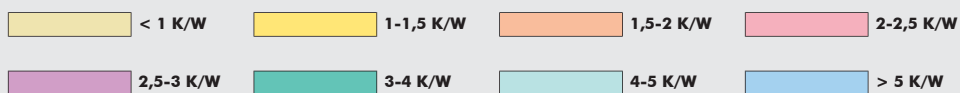
SK 100 A 38	SK 166 A 48	SK 408 A 40	SK 410 A 44	SK 417 A 45				
SK 421 A 47	SK 433 A 41	SK 442 A 42	SK 453 A 32	SK 455 A 33	SK 464 A 39	SK 527 A 35		
SK 04 A 64	SK 72 A 63	SK 401 A 63	SK 403 A 64	SK 14 A 67	SK 39 A 67	SK 20 A 68	SK 84 A 68	SK 184 A 68
SK 74 A 71	SK 124 A 71	SK 195 A 71	SK 500 A 72	SK 08 A 73	SK 60 A 74	SK 176 A 78		
SK 172 A 81	SK 432 A 82	SK 46 B 39	SK 598 B 39	SK 407 A 39	SK 436 A 37	SK 450 A 34	SK 505 A 41	SK 508 A 41
SK 73 A 64	SK 97 A 62	SK 03 A 66	SK 419 A 70	SK 16 A 72	SK 79 A 73	SK 187 A 76		
SK 11 A 79	SK 111 A 81	SK 44 A 90	SK 81 A 40	SK 189 A 31	SK 405 A 47	SK 406 A 38		
SK 434 A 35	SK 445 A 34	SK 05 A 62	SK 18 A 62	SK 25 A 61	SK 28 A 63	SK 63 A 62	SK 402 A 62	
SK 01 A 66	SK 64 A 70	SK 48 A 73	SK 52 A 74	SK 32 A 76	SK 544 A 76	SK 596 A 76	SK 175 A 83	SK 105 A 90
SK 484 A 109	SK 487 A 87	SK 499 A 87	SK 514 A 86	SK 593 A 87	SK 99 A 36	SK 106 A 31	SK 134 A 28	
SK 182 A 39	SK 424 A 33	SK 425 A 33	SK 426 A 36	SK 475 A 35	SK 545 A 38	SK 546 A 40		

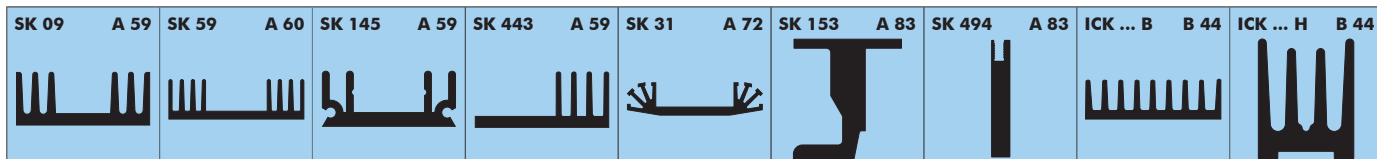
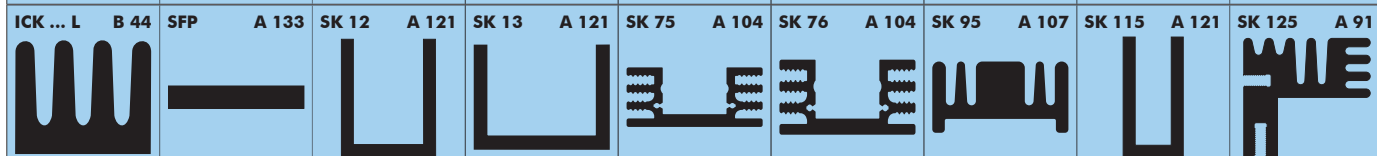
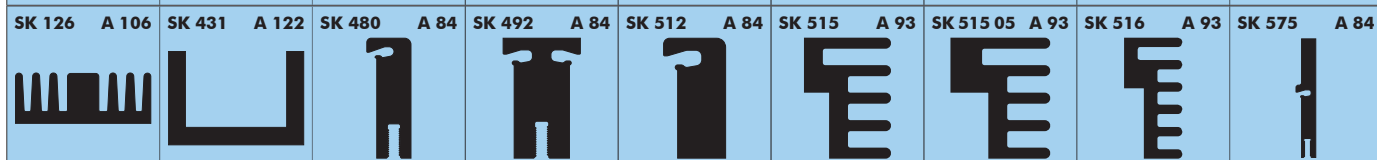
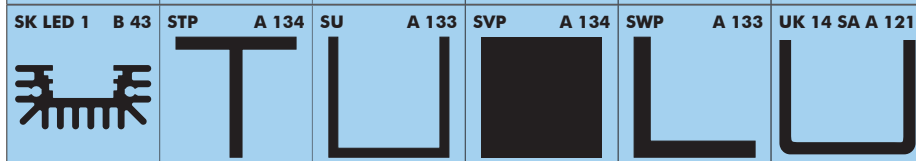
Heatsink-chart classified in categories of thermal resistance at 75 mm length

N






Heatsink-chart

SK 567 A 34	SK 594 A 38	SK 19 A 63	SK 45 A 63	SK 51 A 61	SK 165 A 61	SK 181 A 60	SK 36 A 66	SK 21 A 70
SK 65 A 70	SK 69 A 71	SK 07 A 72	SK 55 A 83	SK 68 A 89	SK 112 A 89	SK 128 A 91	SK 414 A 90	
SK 481 A 85	SK 482 A 86	SK 483 A 87	SK 489 A 85	SK 495 A 87	SK 517 A 92	SK 518 A 92	SK 585 B 39	SK 589 A 86
SK 156 A 36	SK 174 A 30	SK 179 A 30	SK 180 A 36	SK 422 A 32	SK 444 A 38	SK 468 A 36	SK 472 A 31	SK 485 A 37
SK 566 A 26	SK 78 A 61	SK 107 A 60	SK 122 A 60	SK 150 A 61	SK 173 A 59	SK 185 A 73	SK 96 A 91	SK 138 A 91
SK 451 A 91	SK 490 A 84	SK 573 A 85	SK 574 A 86	SK 576 A 85	SK LED 2 B 43	SK LED 3 B 43	SK 177 A 27	SK 178 A 28
SK 400 A 28	SK 420 A 30	SK 423 A 32	SK 427 A 35	SK 437 A 24	SK 447 A 26	SK 448 A 26	SK 452 A 27	SK 454 A 24
SK 456 A 30	SK 469 A 23	SK 470 A 22	SK 471 A 28	SK 473 A 25	SK 476 A 24	SK 477 A 24	SK 478 A 23	SK 486 A 25
SK 493 A 27	SK 496 A 22	SK 509 A 29	SK 511 A 32	SK 513 A 31	SK 521 A 23	SK 522 A 22	SK 547 A 31	SK 548 A 34
SK 549 A 29	SK 550 A 27	SK 551 A 25	SK 552 A 23	SK 554 A 25	SK 558 A 23	SK 559 A 25	SK 560 A 26	SK 561 A 26
SK 562 A 29	SK 563 A 29	SK 564 A 30	SK 565 A 22	SK 581 A 28	SK 582 A 24	SK 586 A 22	SK 587 A 29	SK 597 A 27















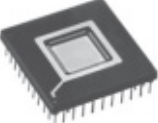
A
Heatsink-chart
B**C****D****E****F****G****H****I****K****L****M****N**

Heatsink-chart classified in categories of thermal resistance at 75 mm length

	TO 3 	TO 66 	SOT 9 	TO 220 	SOT 32 
extruded profiles	SK 01	SK 01	SK 01	SK 09	SK 01
	SK 02	SK 02	SK 02	SK 145	SK 02
	SK 03	SK 03	SK 03	SK 59	SK 03
	SK 04	SK 04	SK 04		SK 04
	SK 05	SK 05	SK 05		SK 05
	SK 07	SK 07	SK 07		SK 07
	SK 08	SK 08	SK 08		SK 08
	SK 14	SK 14	SK 14		SK 14
	SK 16	SK 16	SK 16		SK 16
	SK 18	SK 18	SK 18		SK 18
	SK 19	SK 19	SK 19		SK 19
	SK 20	SK 20	SK 20		SK 20
	SK 21	SK 21	SK 21		SK 21
	SK 28	SK 28	SK 28		SK 28
	SK 30	SK 30	SK 30		SK 30
	SK 31	SK 31	SK 31		SK 31
	SK 34	SK 34	SK 34		SK 34
	SK 36	SK 36	SK 36		SK 36
	SK 39	SK 39	SK 39		SK 39
	SK 45	SK 45	SK 45		SK 45
	SK 48	SK 48	SK 48		SK 48
	SK 52	SK 52	SK 52		SK 52
	SK 53	SK 53	SK 53		SK 53
	SK 55	SK 55	SK 55		SK 55
	SK 60	SK 60	SK 60		SK 60
	SK 63	SK 63	SK 63		SK 63
	SK 67	SK 69	SK 69		SK 69
	SK 69	SK 71	SK 71		SK 71
	SK 71	SK 72	SK 72		SK 72
	SK 72	SK 73	SK 73		SK 73
	SK 73	SK 74	SK 74		SK 74
	SK 74	SK 78	SK 78		SK 78
	SK 78	SK 79	SK 79		SK 79
	SK 79	SK 80	SK 80		SK 80
	SK 80	SK 122	SK 122		SK 122
	SK 84	SK 147	SK 147		SK 147
	SK 88	SK 148	SK 148		SK 148
	SK 97	SK 150	SK 150		SK 150
	SK 122	SK 165	SK 165		SK 165
	SK 124	SK 185	SK 185		SK 185
SK 147	SK 195	SK 195		SK 195	
SK 148	SK 197	SK 197		SK 197	
SK 150	SK 401	SK 401		SK 401	
SK 165	SK 402	SK 402		SK 402	
SK 185	SK 404	SK 404		SK 404	
SK 195					
SK 197					
SK 401					
SK 402					
SK 404					

Assignment table of transistor heatsinks

	TO 3	TO 66	SOT 9	TO 5	TO 247	TO 3 P
						
extruded heatsink with solder pins					SK 459 SK 484 SK 145 SK 126 SK 437	SK 129 SK 409 SK 104 SK 484 SK 448 SK 400 SK 456
extruded heatsinks	WP 4030				SK 126 SK 452	SK 452
set-up/clip-on heatsinks	AKK 127 AKK 191				FK 243 FK 245	
finger-shaped heatsinks	FK 201 FK 202 FK 236 FK 205 FK 206 FK 223	FK 201 FK 202 FK 205 FK 206 FK 207 FK 208 FK 217 FK 225 FK 234 FK 236	FK 201 FK 202 FK 205 FK 206 FK 207 FK 208 FK 217 FK 234 FK 236			
small heatsinks				KF KK 55 KK 562 SKK		

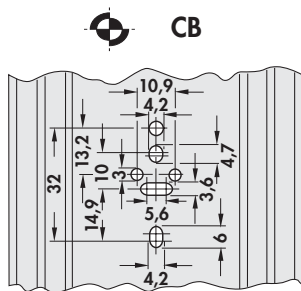
	TO 218 	TO 220 	SOT 32 	DIL 	PLCC 	P-SIP 	PGA/BGA 
U - Heatsinks		ICK 35 SK 13 SK 431 UK 14	SK 12				assignment table → B 2 - 9
extruded heatsink with solder pin	SK 145 SK 460 SK 437 SK 459	SK 104 SK 129 SK 145 SK 185 SK 409 SK 459 SK 460 SK 75	SK 129 SK 459 SK 104 SK 409 SK 469 SK 470			SK 460 SK 459	
extruded heatsinks	SK 126 SK 452	SK 95 SK 126 SK 454 SK 452 SK 517 SK 518	SK 95 SK 454	ICK...B ICK...H ICK...L	ICK PLCC ICK R		
set-up/clip-on heatsinks	FK 224 FK 241 SK 516	FK 220 FK 224 FK 237 SK 515				FK 224 FK 241	
finger-shaped heatsinks	FK 224 FK 243 FK 245	FK 205 FK 206 FK 207 FK 208 FK 210 FK 212 FK 214 FK 216 FK 217 FK 218 FK 219 FK 220 FK 222 FK 225 FK 227 FK 228 FK 229 FK 230 FK 231 FK 232 FK 233 FK 234 FK 235 FK 247	FK 201 FK 217 FK 205 FK 206 FK 207 FK 208 FK 209 FK 210 FK 211 FK 212 FK 213 FK 214 FK 215 FK 216 FK 218 FK 223 FK 234 FK 235 FK 236 FK 239 FK 219			FK 224	
small heatsinks			KK 32 KK 92				

Extruded heatsinks → A 22 - 83
 Heatsinks for printed circuit boards → A 89 - 111
 Thermal conductive material → E 2 - 22
 Mount. material for semiconductors → E 42 - 46

Die-cast heatsinks → A 123 - 126
 Reating springs for transistors → A 114 - 120
 Lock-in transistor fixing spring → A 84 - 88
 Technical introduction → A 2 - 7

Heatsinks

Hole pattern



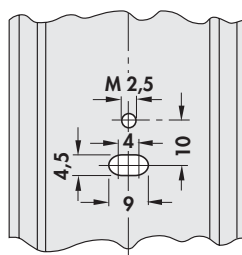
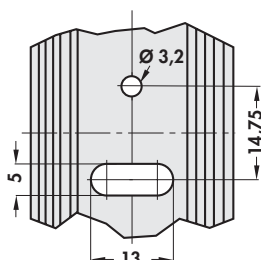
CB = TO 3 + SOT 9 + TO 66 + SOT 32
at \leftrightarrow 37.5 mm oblique drilling



TO 3 oblique drilling for \leftrightarrow 37.5 mm



TO 3 exceeding \leftrightarrow 50 mm



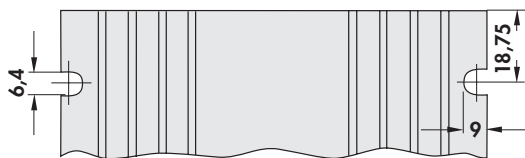
SOT 32 / TO 220 exceeding \leftrightarrow 37.5 mm

Standard hole pattern are processed as complete pin layouts, centered on the length of the heatsink.

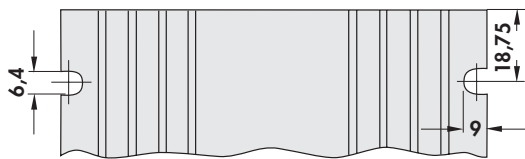
Other positions of the pin layout on the heatsink, multiple drillings or changes of the drillings are processed according to customer's requirements.

For heatsinks exceeding \leftrightarrow 75 mm standard hole pattern can be supplied in multiple design.

Fixing slots



\leftrightarrow [mm]	number of fixing slots
37,5	2
75	4



\leftrightarrow [mm]	number of fixing slots
50	2
100	4

Heatsinks with the following shape and a standard hole pattern have these fixing slots as part of the serial production

Order example

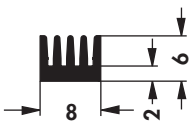
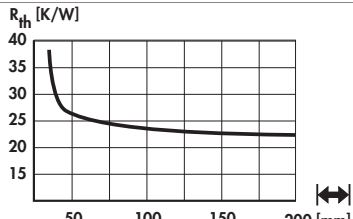
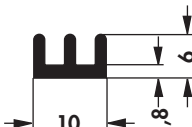
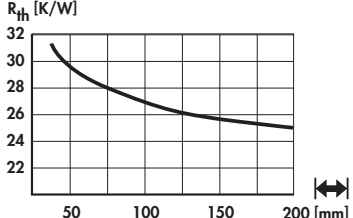
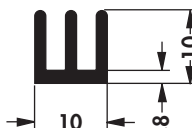
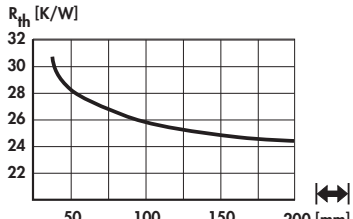

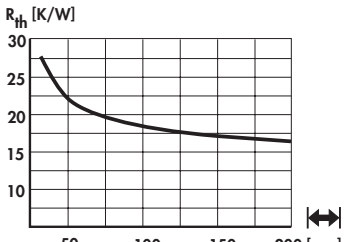
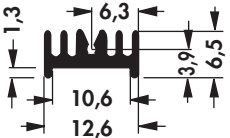
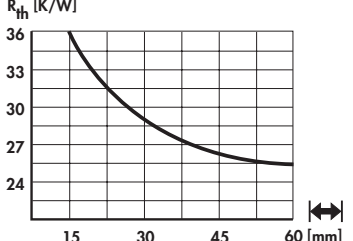
SK 01	50	SA	TO3
profile	length	surface	pin layout

Surface treatment for heatsinks with standard drilling: black anodised (SA).

Raw degreased aluminium (AL) and clear natural anodise (ME) on request.



Standard extruded heatsinks

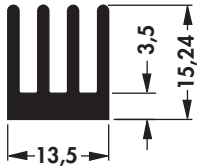
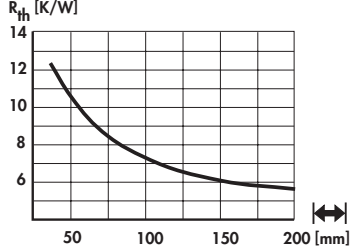
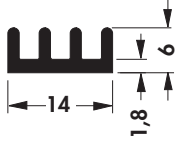
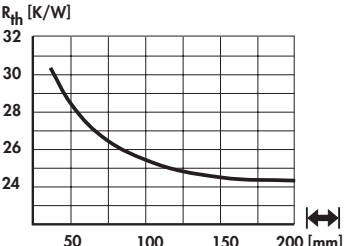
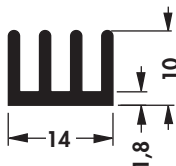
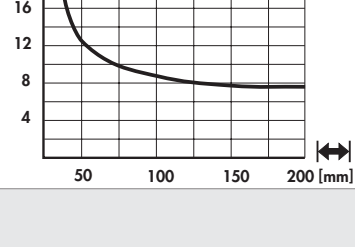
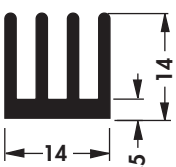
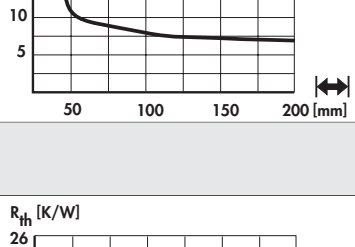
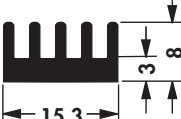
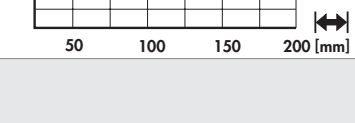
<p>art. no.</p> <p>SK 586 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 496 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 565 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 470 ...</p>		
<p>extruded heatsinks for PCB mounting → A 109</p>		
<p>please indicate: ... \longleftrightarrow 25 37.5 50 75 100 1000 mm ... \diamond (optional) SOT 32; TO 220</p>		
<p>art. no.</p> <p>SK 522 ...</p>		
<p>please indicate: ... \longleftrightarrow 15 25 37.5 50 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7



Standard extruded heatsinks

art. no.		
SK 469 ... extruded heatsinks for PCB mounting → A 109		
please indicate: ... 25 37.5 75 100 1000 mm ... (optional) SOT 32; TO 220		
art. no.		
SK 478 ...		
please indicate: ... 25 37.5 50 75 1000 mm		
art. no.		
SK 552 ...		
please indicate: ... 25 37.5 50 75 100 1000 mm		
art. no.		
SK 558 ...		
please indicate: ... 25 37.5 50 75 100 1000 mm		
art. no.		
SK 521 ...		
please indicate: ... 25 37.5 50 75 100 1000 mm		



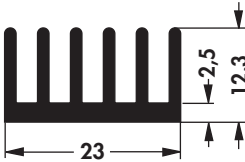
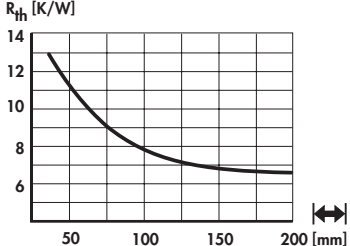

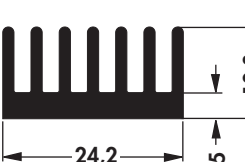
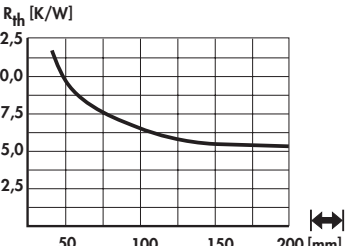

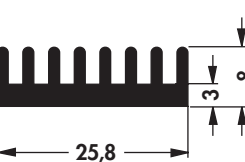
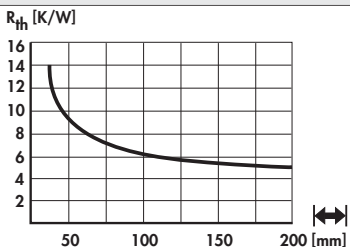

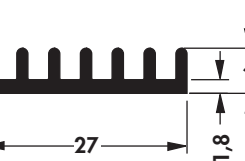
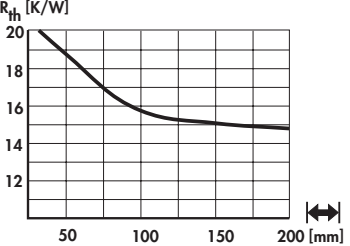

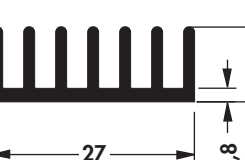
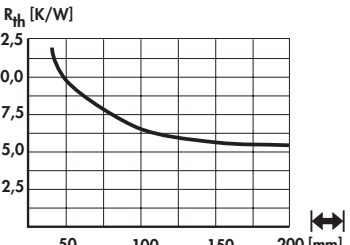

Standard extruded heatsinks

<p>art. no.</p> <p>SK 437 ...</p>		
<p>please indicate: ... \longleftrightarrow 100 1000 mm ... \diamond (optional) TO 218; TO 220; TO 247; TO 248</p> <p>extruded heatsinks for PCB mounting \rightarrow A 108</p>		
<p>art. no.</p> <p>SK 476 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 454 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 150 1000 mm ... \diamond (optional) SOT 32; TO 220</p> <p>extruded heatsinks for PCB mounting \rightarrow A 95</p>		
<p>art. no.</p> <p>SK 477 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 100 1000 mm</p>		
<p>art. no.</p> <p>SK 582 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		

High decorative surfaces \rightarrow A 9
 Order example \rightarrow A 21
 Heatsink as visual & decor-parts \rightarrow A 10
 Drilling pattern for Solid State Relays \rightarrow A 12

Heatsinks for Solid State Relay \rightarrow A 11 - 12
 Heatsink special design \rightarrow A 135 - 136
 Special profiles \rightarrow A 138
 Technical introduction \rightarrow A 2 - 7


Standard extruded heatsinks

art. no. SK 559 ...		
please indicate: ...  37.5 75 100 1000 mm		
art. no. SK 551 ...		
please indicate: ...  37.5 50 75 100 1000 mm		
art. no. SK 486 ...		
please indicate: ...  37.5 50 75 100 1000 mm		
art. no. SK 473 ...		
please indicate: ...  37.5 50 75 1000 mm		
art. no. SK 554 ...		
please indicate: ...  37.5 50 75 100 1000 mm		



Standard extruded heatsinks

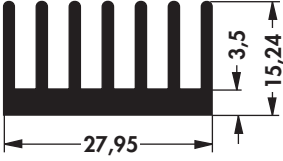
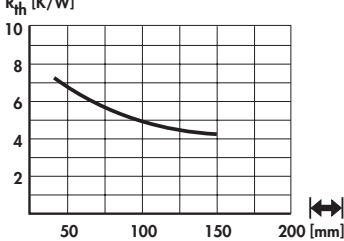

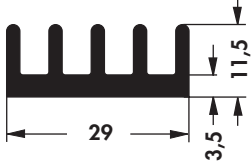
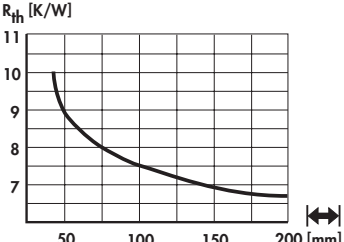

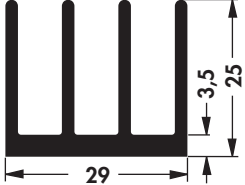
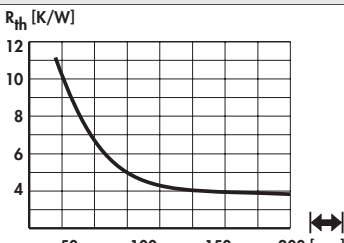



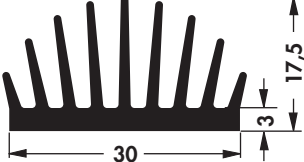
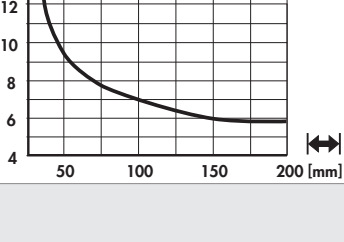

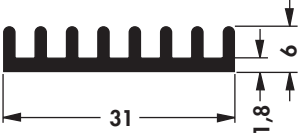
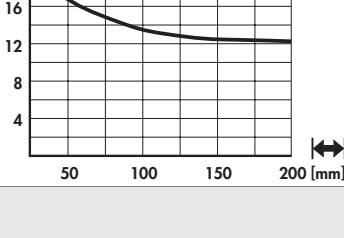

<p>art. no.</p> <p>SK 560 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 447 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 1000 mm</p>		
<p>art. no.</p> <p>SK 566 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 561 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 448 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 mm</p> <p>extruded heatsinks for PCB mounting → A 110</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7



Standard extruded heatsinks

art. no. SK 177 ...		
please indicate: ...  50 75 100 1000 mm		
art. no. SK 550 ...		
please indicate: ...  37.5 50 75 100 1000 mm		
art. no. SK 452 ...		
please indicate: ...  37.5 100 1000 mm		
please indicate: ...  37.5 100 1000 mm		
...  (optional) TO 218; TO 220; TO 247; TO 248; TO 3 P		
art. no. SK 597 ...		
please indicate: ...  37.5 50 75 100 1000 mm		
art. no. SK 493 ...		
please indicate: ...  37.5 50 75 100 1000 mm		



Standard extruded heatsinks

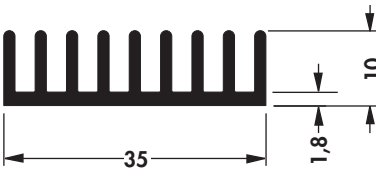
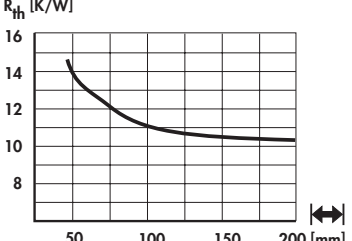

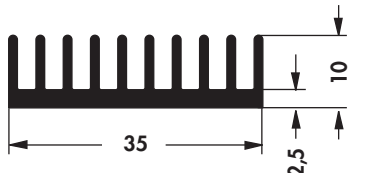
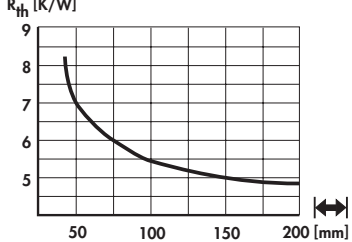

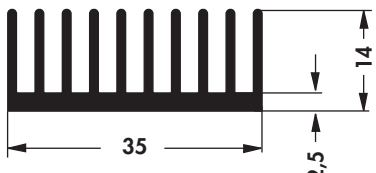
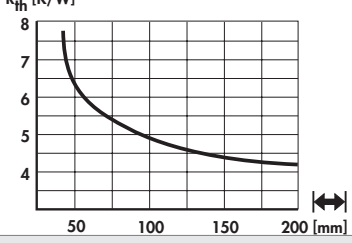

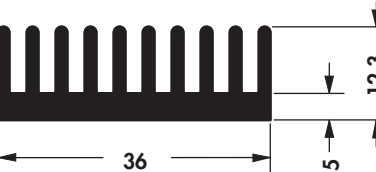
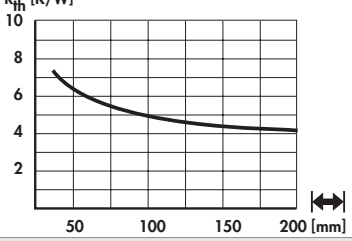

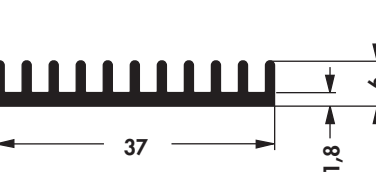
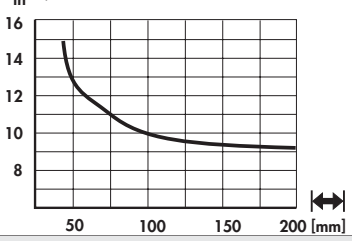

<p>art. no.</p> <p>SK 581 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 400 ...</p>		
<p>extruded heatsinks for PCB mounting → A 110</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 178 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 134 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 100 1000 mm</p>		
<p>art. no.</p> <p>SK 471 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7



Standard extruded heatsinks

art. no. SK 587 ...		
please indicate: ...  37.5 50 75 100 1000 mm		
art. no. SK 549 ...		
please indicate: ...  37.5 50 75 100 1000 mm		
art. no. SK 562 ...		
please indicate: ...  37.5 50 75 100 1000 mm		
art. no. SK 509 ...		
please indicate: ...  37.5 50 100 1000 mm		
art. no. SK 563 ...		
please indicate: ...  37.5 50 75 100 1000 mm		



Standard extruded heatsinks

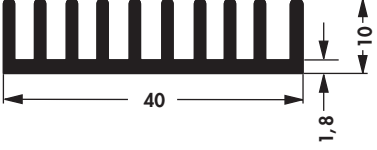
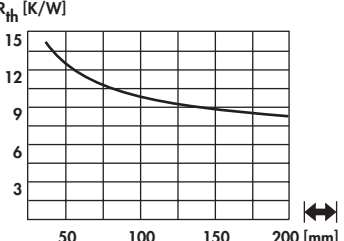

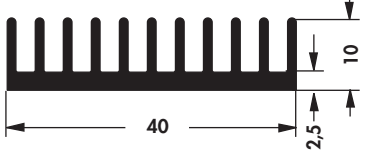
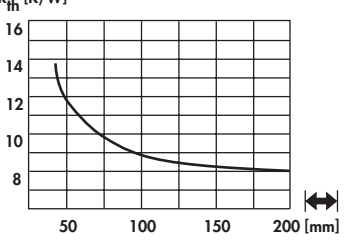

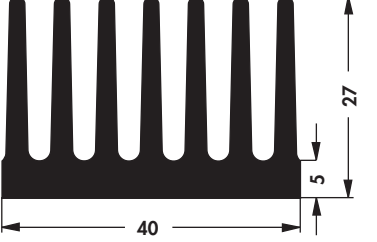
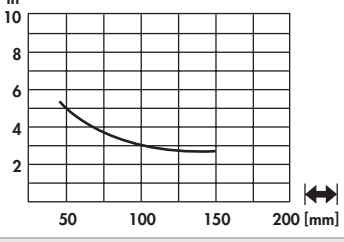

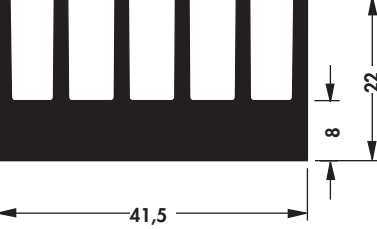
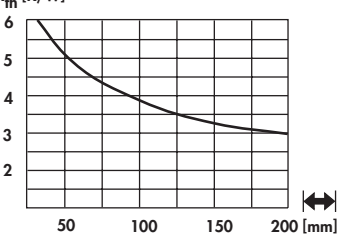

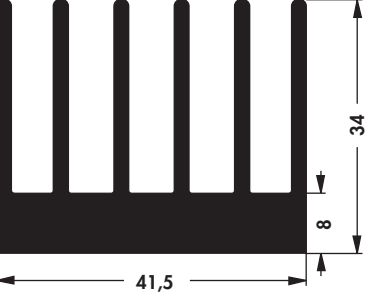
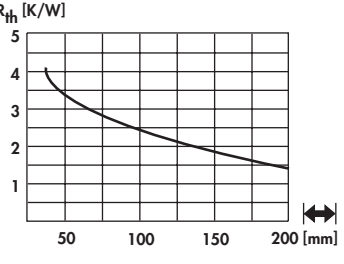

<p>art. no.</p> <p>SK 564 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 174 ...</p>		
<p>please indicate: ... \longleftrightarrow 75 1000 mm</p>		
<p>art. no.</p> <p>SK 179 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 100 1000 mm</p>		
<p>art. no.</p> <p>SK 456 ...</p>		
<p>extruded heatsinks for PCB mounting → A 110</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 420 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 75 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7



Standard extruded heatsinks

art. no. SK 513 ...		
please indicate: ...  37.5 50 75 100 1000 mm		
art. no. SK 547 ...		
please indicate: ...  37.5 50 75 100 1000 mm		
art. no. SK 106 ...		
please indicate: ...  50 75 1000 mm		
art. no. SK 472 ...		
please indicate: ...  37.5 50 75 100 1000 mm		
art. no. SK 189 ...		
please indicate: ...  37.5 50 75 100 1000 mm		



Standard extruded heatsinks

<p>art. no.</p> <p>SK 423 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 100 1000 mm</p>		
<p>art. no.</p> <p>SK 422 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 50 1000 mm</p>		
<p>art. no.</p> <p>SK 511 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 453 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 75 mm ... \varnothing (optional) SSR 1</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

A



Standard extruded heatsinks

B

C

D

art. no.

SK 455 ...

please indicate: ... $\left[\right]$ 75 mm ... ϕ (optional) SSR 4

E

F

G

H

art. no.

SK 467 ...

please indicate: ... $\left[\right]$ 37.5 50 75 100 1000 mm ... ϕ (optional) SSR 1; SSR 4

I

K

art. no.

SK 424 ...

please indicate: ... $\left[\right]$ 75 1000 mm

L

M

art. no.

SK 425 ...

please indicate: ... $\left[\right]$ 75 mm

N



Standard extruded heatsinks

<p>art. no.</p> <p>SK 445 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 100 1000 mm</p>		
<p>art. no.</p> <p>SK 450 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 75 1000 mm ... \diamond (optional) SSR 1</p>		
<p>art. no.</p> <p>SK 548 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 567 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

A


Standard extruded heatsinks

B

C

D

E

F

G

H

I

K

L

M

art. no. SK 434 ...		
please indicate: ... $\left[\begin{array}{c} \updownarrow \\ \text{50 75 100 1000 mm} \end{array} \right]$... $\left[\begin{array}{c} \diamond \\ \text{(optional)} \\ \text{SSR 1; SSR 4} \end{array} \right]$		
art. no. SK 475 ...		
please indicate: ... $\left[\begin{array}{c} \updownarrow \\ \text{37.5 50 100 1000 mm} \end{array} \right]$		
art. no. SK 527 ...		
please indicate: ... $\left[\begin{array}{c} \updownarrow \\ \text{50 75 100 1000 mm} \end{array} \right]$		
art. no. SK 427 ...		
please indicate: ... $\left[\begin{array}{c} \updownarrow \\ \text{50 75 1000 mm} \end{array} \right]$		

A 35

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

N



Standard extruded heatsinks

<p>art. no.</p> <p>SK 426 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 156 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 468 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 75 1000 mm</p>		
<p>art. no.</p> <p>SK 180 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 99 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 150 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7



Standard extruded heatsinks

art. no.

SK 429 ...

please indicate: ... [mm]
37.5 50 75 100 1000 mm

art. no.

SK 436 ...

please indicate: ... [mm]
75 1000 mm

art. no.

SK 50 ...

please indicate: ... [mm]
75 1000 mm

art. no.

SK 485 ...

please indicate: ... [mm]
50 75 100 1000 mm



Standard extruded heatsinks

<p>art. no.</p> <p>SK 444 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 406 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 100 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 594 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 545 ...</p>		
<p>please indicate: ... \longleftrightarrow 50 75 100 150 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

A


Standard extruded heatsinks

B

C

D

E

F

G

H

I

K

L

M

N

art. no. SK 135 ...		
please indicate: ... 50 100 1000 mm		
art. no. SK 407 ...		
please indicate: ... 37.5 50 75 100 1000 mm		
art. no. SK 464 ...		
please indicate: ... 50 75 100 150 1000 mm		
art. no. SK 182 ...		
please indicate: ... 37.5 50 75 100 150 200 1000 mm		

A 39

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7



Standard extruded heatsinks

<p>art. no.</p> <p>SK 507 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 75 100 1000 mm ... \diamond (optional) SSR 1; SSR 2</p>		
<p>art. no.</p> <p>SK 408 ...</p>		
<p>please indicate: ... \longleftrightarrow 50 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 546 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 81 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 1000 mm</p>		

High decorative surfaces \rightarrow A 9
 Order example \rightarrow A 21
 Heatsink as visual & decor-parts \rightarrow A 10
 Drilling pattern for Solid State Relais \rightarrow A 12

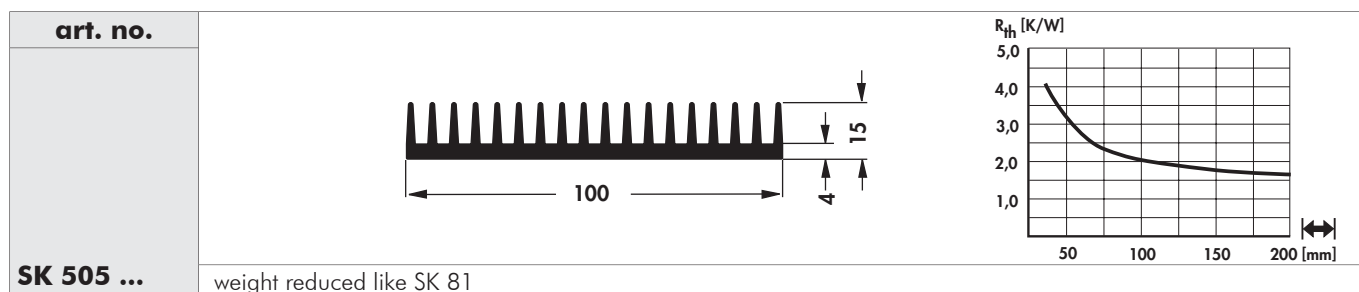
Heatsinks for Solid State Relay \rightarrow A 11 - 12
 Heatsink special design \rightarrow A 135 - 136
 Special profiles \rightarrow A 138
 Technical introduction \rightarrow A 2 - 7

A


Standard extruded heatsinks

B

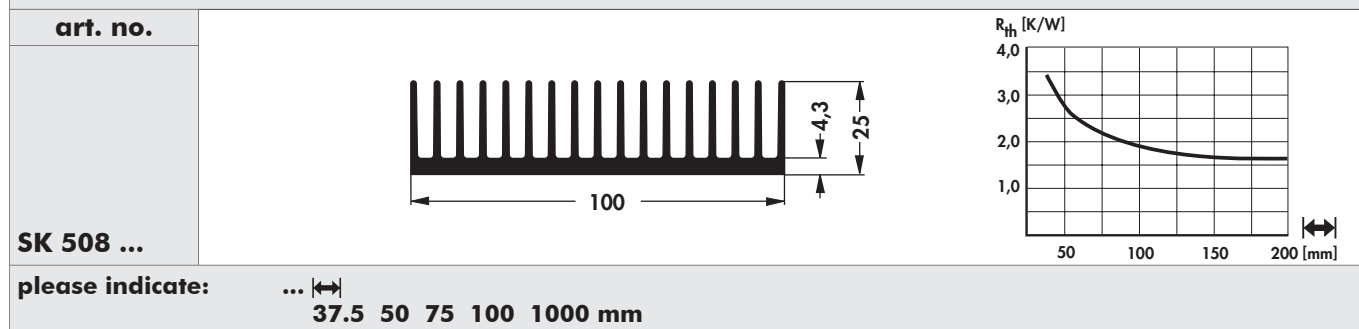
C



please indicate: ... **37.5 50 75 100 150 1000 mm**

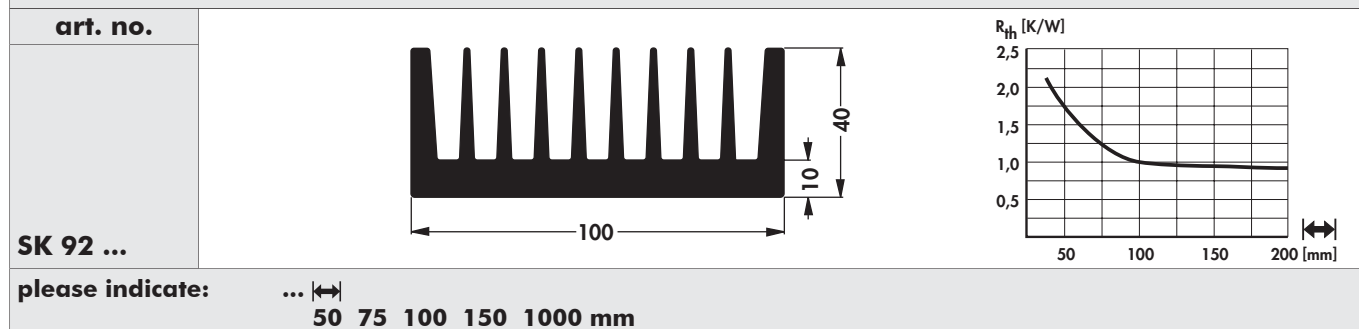
D

E



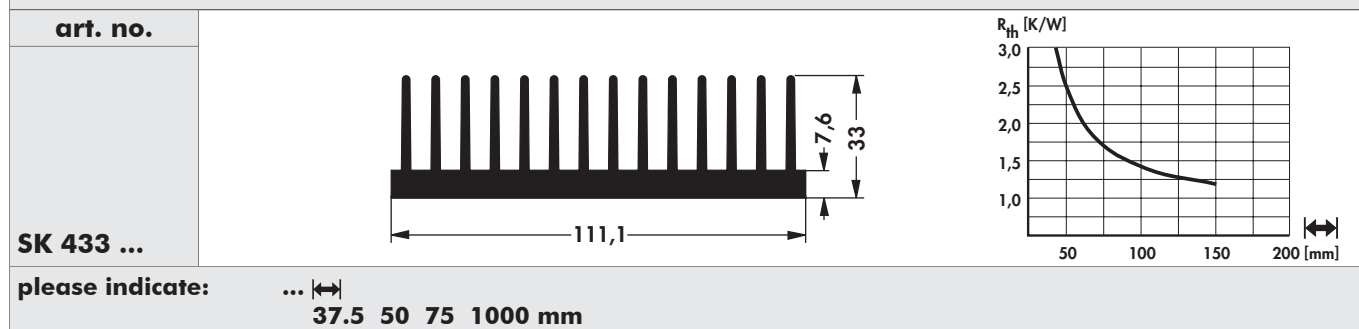
F

G



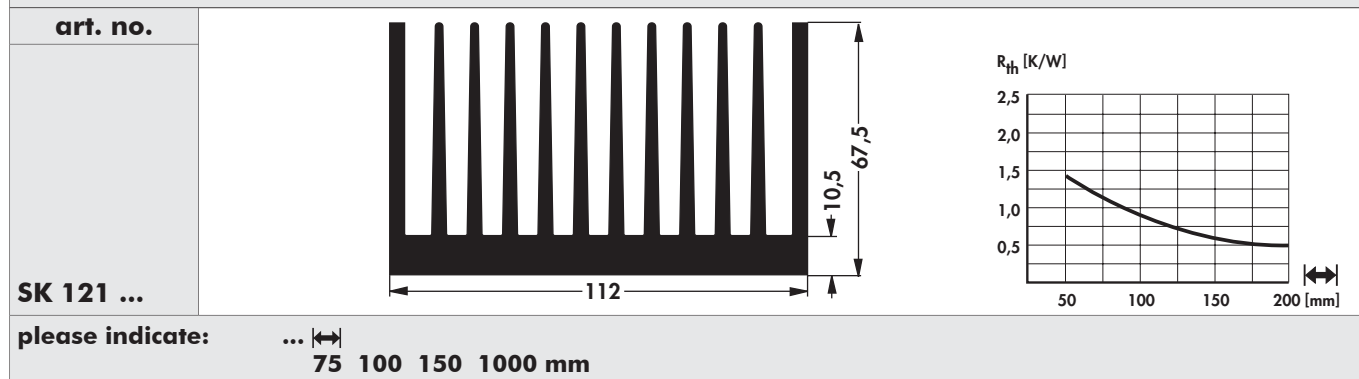
H

I



K

L



M

N

A 41

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7



Standard extruded heatsinks

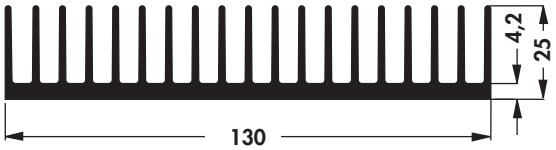
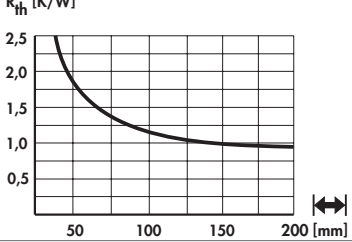

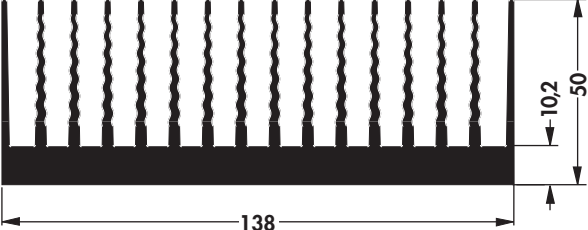
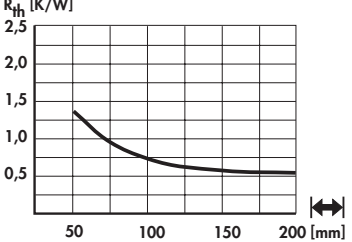

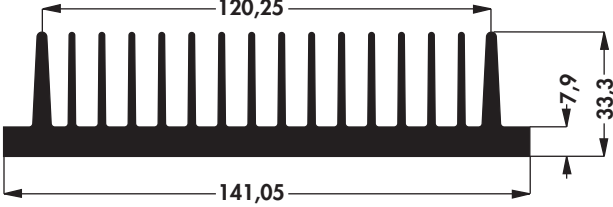
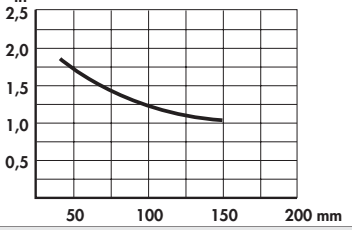

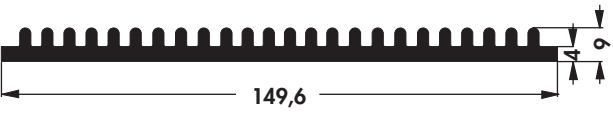
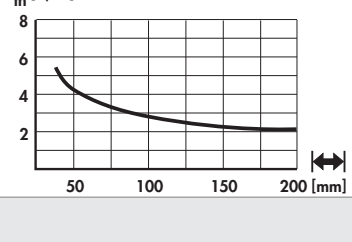

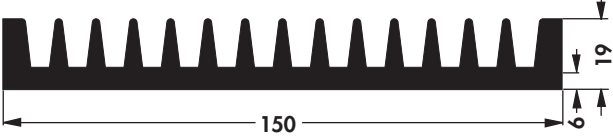
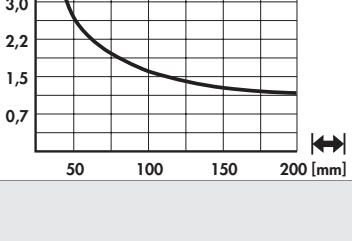

<p>art. no.</p> <p>SK 33 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \\ \text{---} \end{array} \right]$ 50 75 100 1000 mm ... \diamond (optional) SSR 1; SSR 2</p>		
<p>art. no.</p> <p>SK 411 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \\ \text{---} \end{array} \right]$ 50 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 442 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \\ \text{---} \end{array} \right]$ 50 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 595 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \\ \text{---} \end{array} \right]$ 50 75 100 150 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7



Standard extruded heatsinks

art. no. SK 463 ...		
please indicate: ...  50 75 100 150 1000 mm		
art. no. SK 466 ...		
please indicate: ...  50 75 100 150 1000 mm		
art. no. SK 413 ...		
please indicate: ...  100 1000 mm		
art. no. SK 601 ...		
please indicate: ...  50 75 100 150 1000 mm		
art. no. SK 553 ...		
please indicate: ...  37.5 50 75 100 150 1000 mm		



Standard extruded heatsinks

<p>art. no.</p> <p>SK 132 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 410 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 133 ...</p>		
<p>please indicate: ... \longleftrightarrow 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 58 ...</p>		
<p>please indicate: ... \longleftrightarrow 50 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 504 ...</p>		
<p>weight reduced like SK 58</p> <p>please indicate: ... \longleftrightarrow 37.5 50 75 100 150 1000 mm</p>		

A


Standard extruded heatsinks

art. no. SK 588 ...		
please indicate: ... 50 75 100 150 1000 mm		
art. no. SK 120 ...		
please indicate: ... 50 75 100 150 1000 mm		
art. no. SK 155 ...		
please indicate: ... 75 100 150 1000 mm		
art. no. SK 154 ...		
please indicate: ... 50 75 100 150 mm		
art. no. SK 417 ...		
please indicate: ... 75 100 150 1000 mm		

A 45

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

N



Standard extruded heatsinks

<p>art. no.</p> <p>SK 85 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 503 ...</p>		
<p>weight reduced like SK 85</p>		
<p>please indicate: ... \longleftrightarrow 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 510 ...</p>		
<p>please indicate: ... \longleftrightarrow 50 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 416 ...</p>		
<p>please indicate: ... \longleftrightarrow 50 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 119 ...</p>		
<p>please indicate: ... \longleftrightarrow 50 75 100 150 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

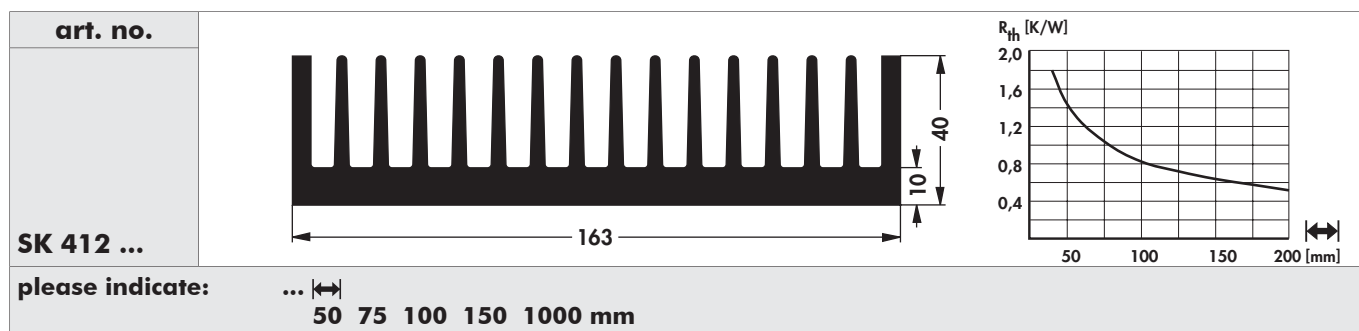
Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7

A


Standard extruded heatsinks

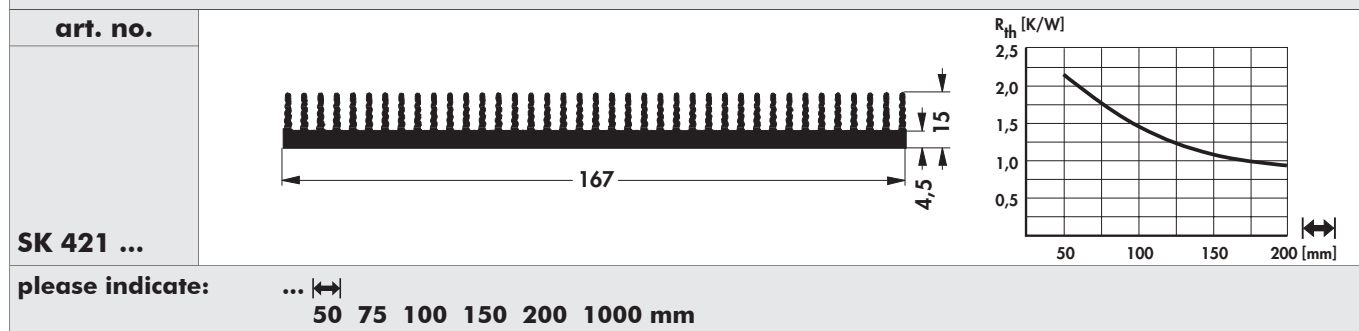
B

C



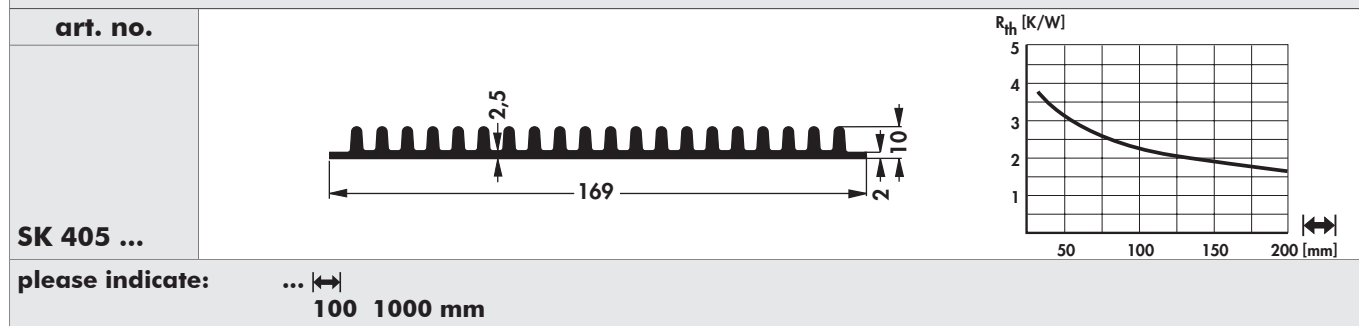
D

E



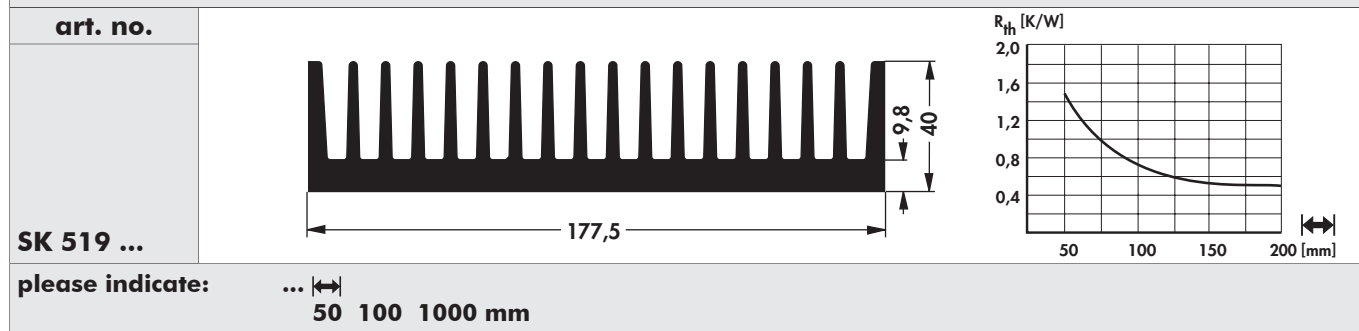
F

G



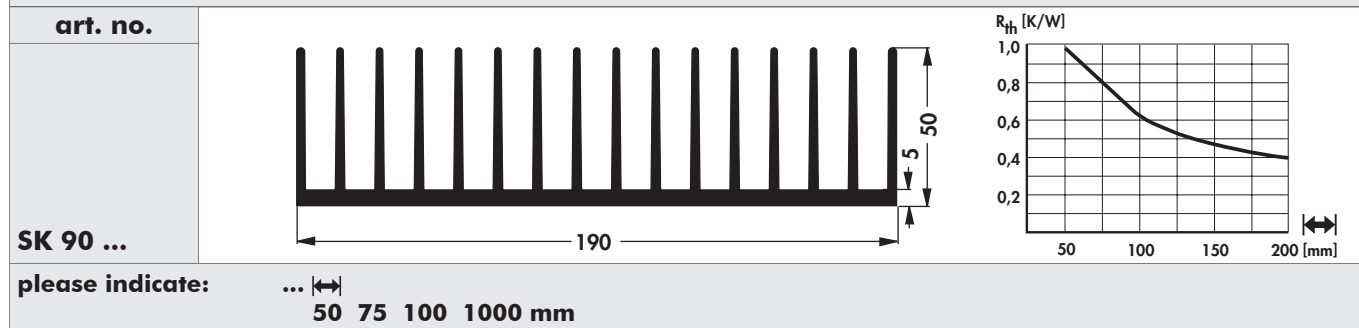
H

I



K

L



M

N

A 47

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7



Standard extruded heatsinks

<p>art. no.</p> <p>SK 136 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 166 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 1000 mm</p>		
<p>art. no.</p> <p>SK 113 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 50 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 42 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 50 75 100 150 200 1000 mm</p>		
<p>art. no.</p> <p>SK 94 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

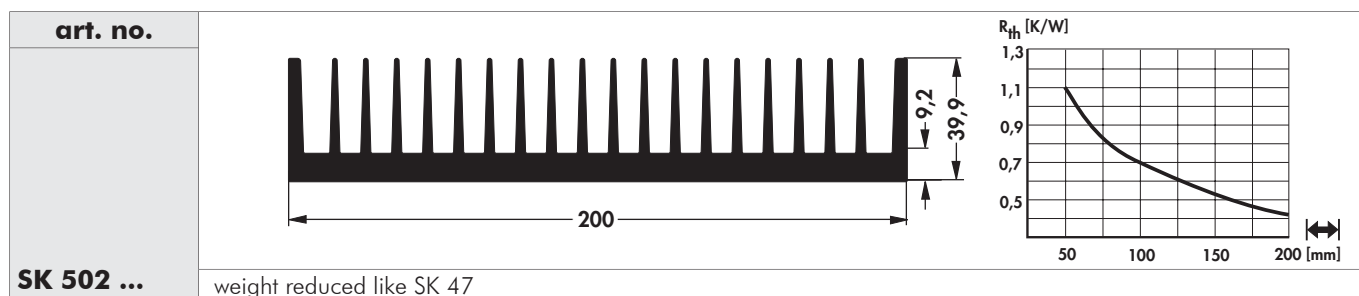
Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

A


Standard extruded heatsinks

B

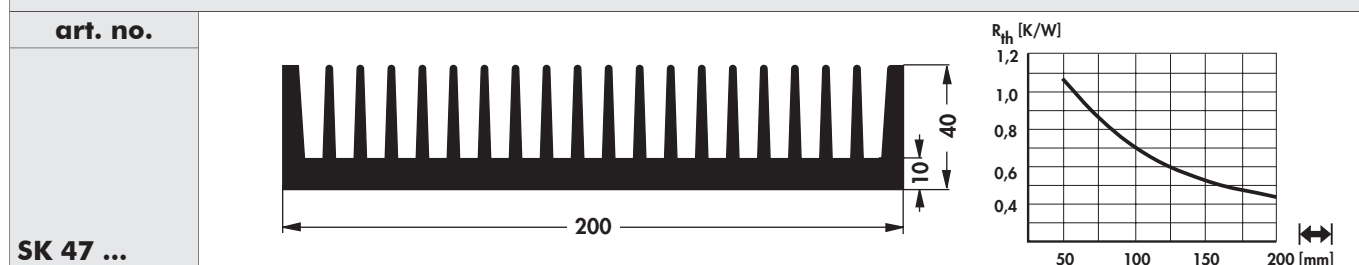
C



please indicate: ... **37.5 50 75 100 150 1000 mm**

D

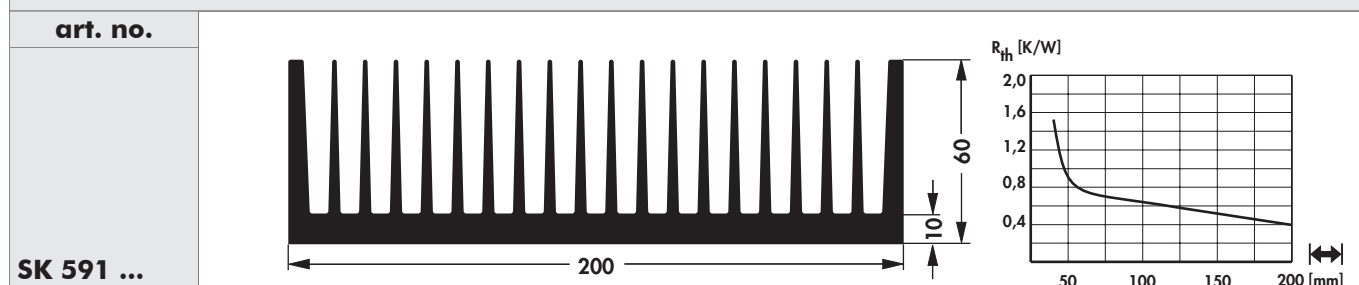
E



please indicate: ... **75 100 150 1000 mm**

F

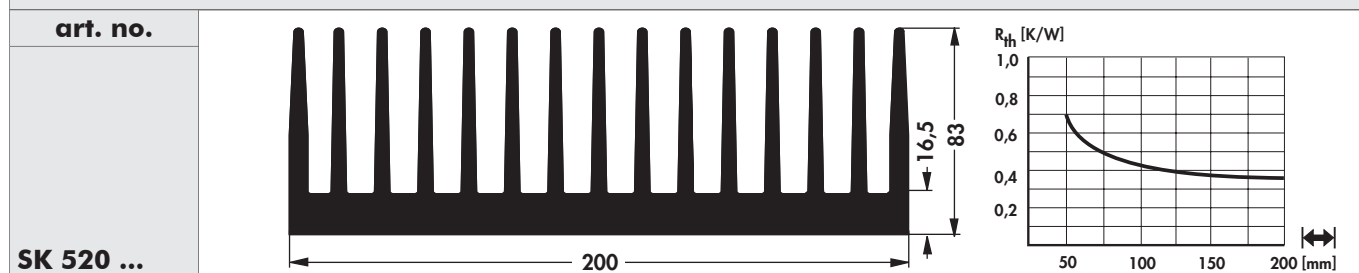
G



please indicate: ... **75 100 150 1000 mm**

H

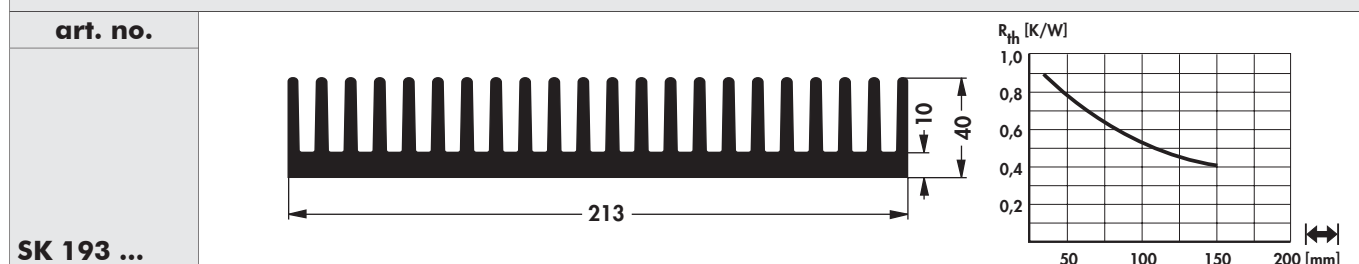
I



please indicate: ... **75 100 150 1000 mm**

K

L



please indicate: ... **100 150 1000 mm**

M

N

A 49

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7



Standard extruded heatsinks

<p>art. no.</p> <p>SK 557 ...</p>		
<p>please indicate: ... \longleftrightarrow 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 102 ...</p>		
<p>please indicate: ... \longleftrightarrow 75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 168 ...</p>		
<p>please indicate: ... \longleftrightarrow 1000 mm</p>		
<p>art. no.</p> <p>SK 580 ...</p>		
<p>please indicate: ... \longleftrightarrow 75 100 150 200 1000 mm</p>		
<p>art. no.</p> <p>SK 118 ...</p>		
<p>please indicate: ... \longleftrightarrow 75 100 150 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

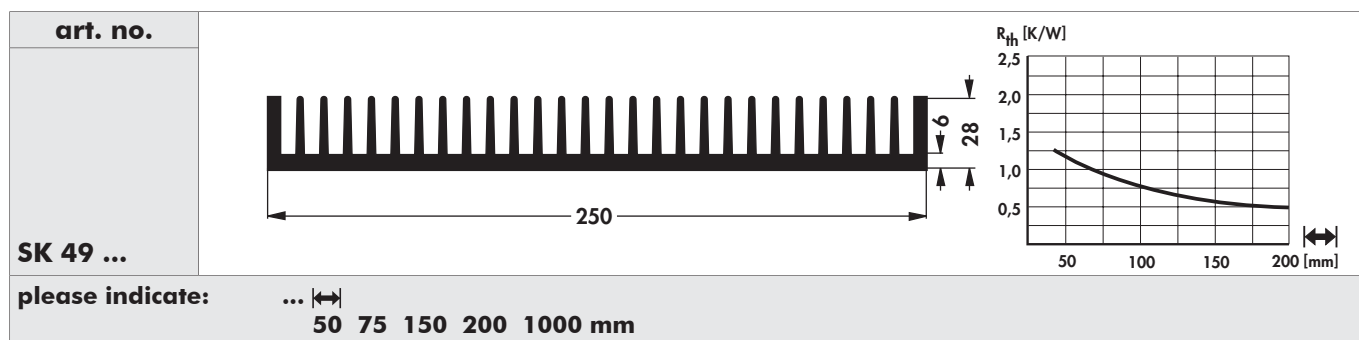
Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

A


Standard extruded heatsinks

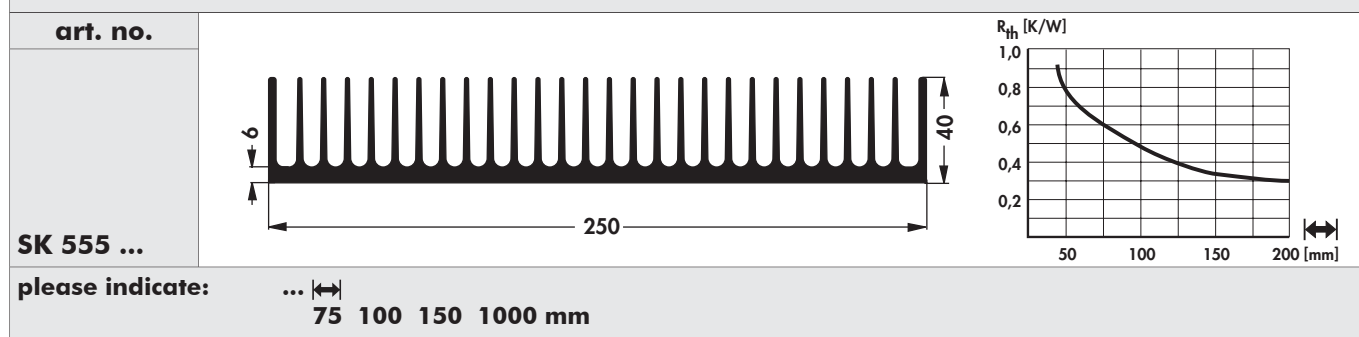
B

C



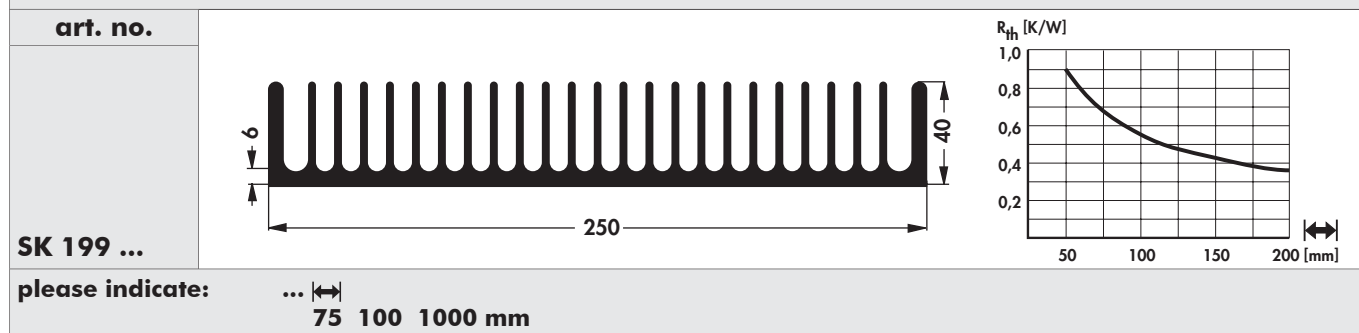
D

E



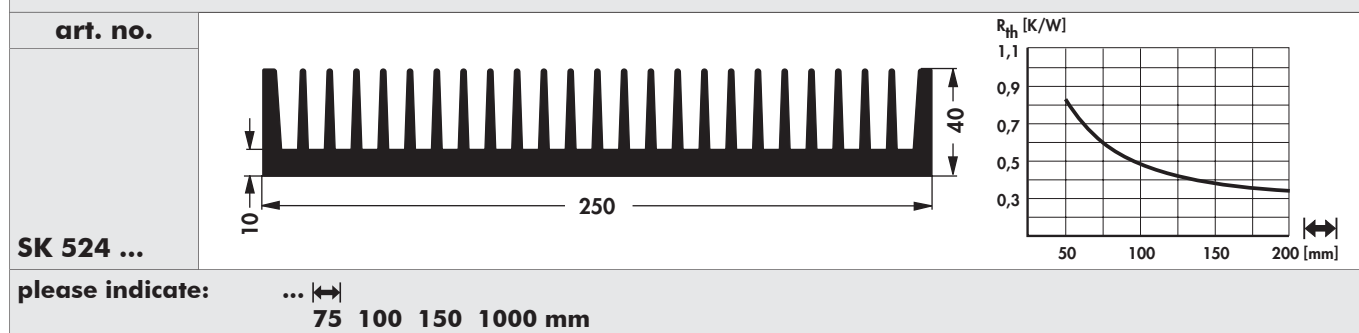
F

G



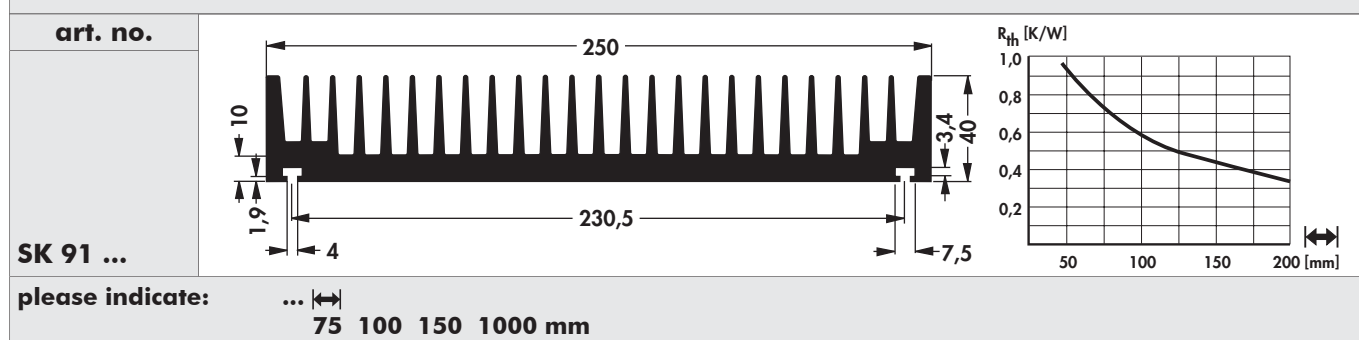
H

I



K

L



M

N

A 51

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7



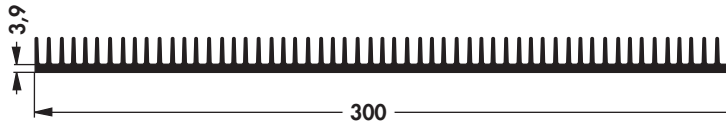
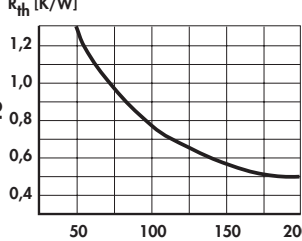

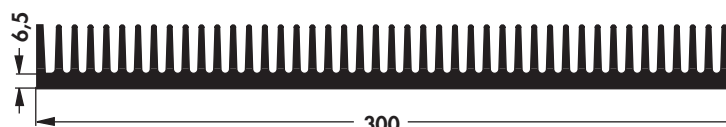
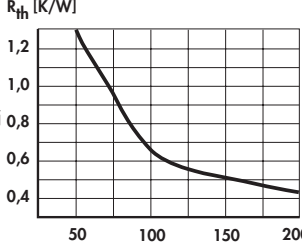


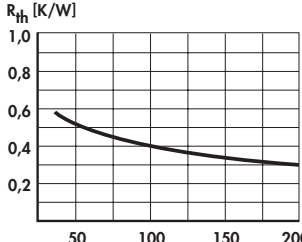

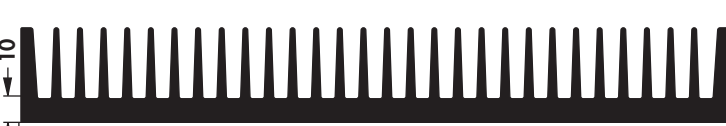
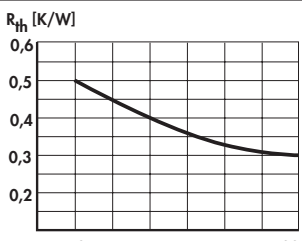


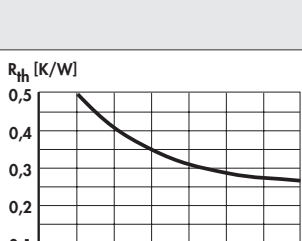

Standard extruded heatsinks

<p>art. no.</p> <p>SK 438 ...</p>		
<p>please indicate: ... $\leftarrow \rightarrow$</p> <p>75 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 190 ...</p>		
<p>please indicate: ... $\leftarrow \rightarrow$</p> <p>150 1000 mm</p>		
<p>art. no.</p> <p>SK 149 ...</p>		
<p>please indicate: ... $\leftarrow \rightarrow$</p> <p>200 1000 mm</p>		
<p>art. no.</p> <p>SK 139 ...</p>		
<p>please indicate: ... $\leftarrow \rightarrow$</p> <p>100 150 200 1000 mm</p>		
<p>art. no.</p> <p>SK 583 ...</p>		
<p>please indicate: ... $\leftarrow \rightarrow$</p> <p>100 150 200 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7


Standard extruded heatsinks

art. no. SK 198 ...		
please indicate: ...  100 150 1000 mm		
art. no. SK 446 ...		
please indicate: ...  75 100 150 1000 mm		
art. no. SK 56 ...		
please indicate: ...  75 100 150 200 1000 mm		
art. no. SK 501 ...		
SK 501 ... weight reduced like SK 56 please indicate: ...  37.5 50 75 100 150 200 1000 mm		
art. no. SK 568 ...		
please indicate: ...  75 100 150 200 1000 mm		



Standard extruded heatsinks

<p>art. no.</p> <p>SK 157 ...</p> <p>please indicate: ...</p> <p>100 150 200 1000 mm</p>		
<p>art. no.</p> <p>SK 101 ...</p> <p>please indicate: ...</p> <p>75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 579 ...</p> <p>please indicate: ...</p> <p>75 100 150 200 1000 mm</p>		
<p>art. no.</p> <p>SK 66 ...</p> <p>please indicate: ...</p> <p>75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 523 ...</p> <p>please indicate: ...</p> <p>100 150 200 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7


Standard extruded heatsinks

art. no. SK 439 ...		
please indicate: ... 100 150 1000 mm		
art. no. SK 479 ...		
please indicate: ... 75 100 150 1000 mm		
art. no. SK 93 ...		
please indicate: ... 75 100 150 1000 mm		
art. no. SK 130 ...		
please indicate: ... 200 1000 mm		
art. no. SK 191 ...		
please indicate: ... 75 100 150 200 1000 mm <small>suitable heatsink for rear panel in 19" cases</small>		

High decorative surfaces → A 9
Order example → A 21
Heatsink as visual & decor-parts → A 10
Drilling pattern for Solid State Relais → A 12

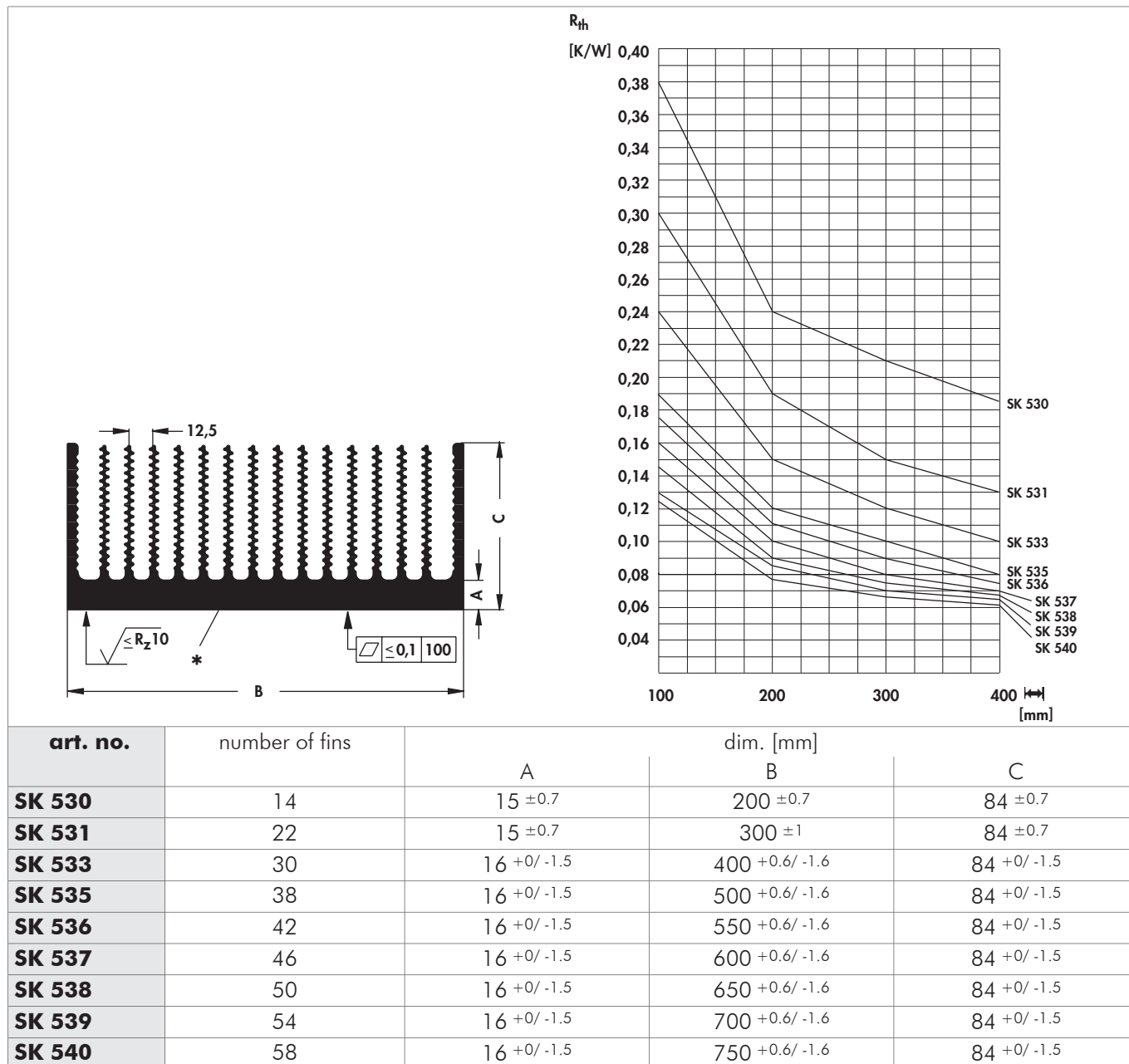
Heatsinks for Solid State Relay
Heatsink special design
Special profiles
Technical introduction

→ A 11 – 12
→ A 135 – 136
→ A 138
→ A 2 – 7



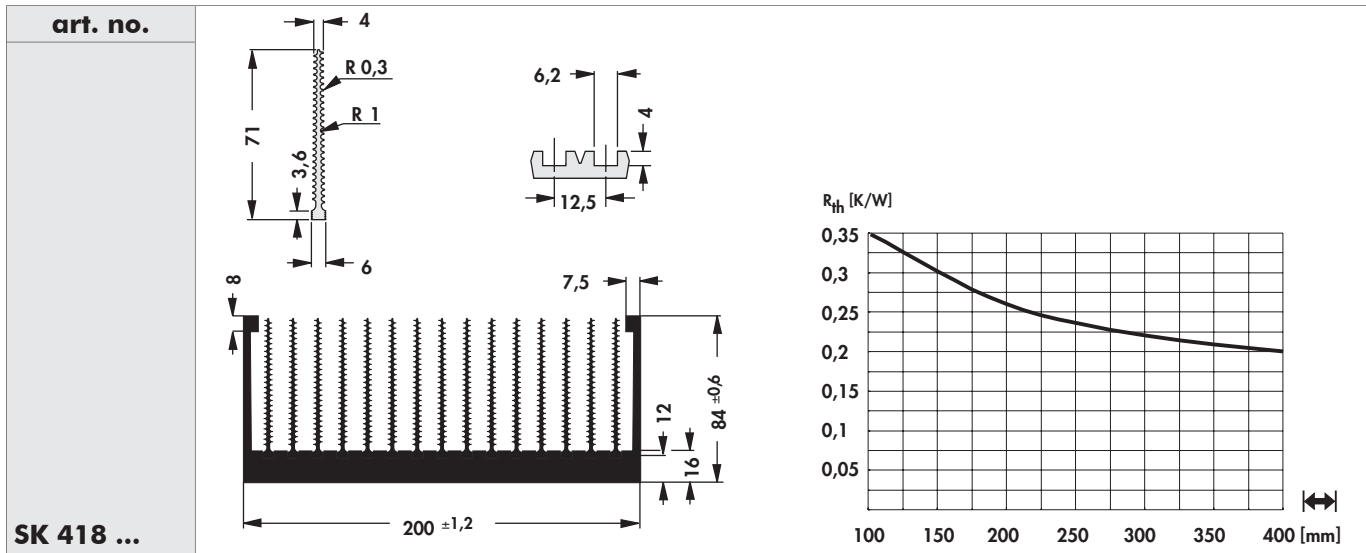
Welded high performance heatsinks

- optimum fin geometry and fin quantity for free convection
- well suited for forced convection
- flat milled base (not SK 530, SK 531)
- * = welded joint (not SK 530, SK 531)
- length according customer's details
- customer specific versions and machining on request



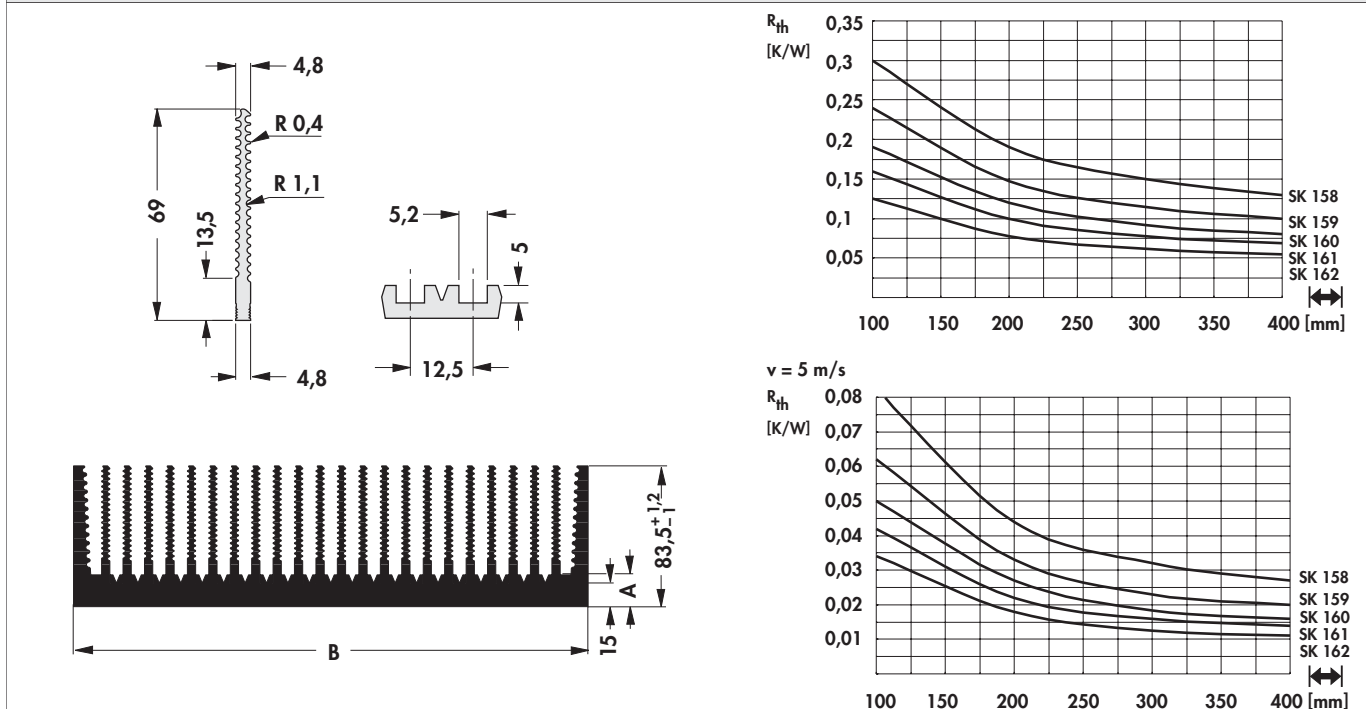
High performance heatsinks with press-in fins

- length according to customer's details
- customer specific versions and machining upon request



SK 418 ...

please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \\ \text{---} \end{array} \right]$
100 150 200 1000 mm



art. no.	number of fins	dim. [mm]	
		A	B
SK 158	22	20	300 ± 2
SK 159	30	20	400 ± 2
SK 160	38	20	500 ± 2,5
SK 161	46	20	600 ± 3
SK 162	58	20	750 ± 4

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

A 58



Standard extruded heatsinks

art. no.	SK 09 37,5 TO 220	SK 09 37,5 TO 220 1 SK 09 50,0 TO 220 1	SK 09 50 TO 220	SK 09 20 TO 220
SK 09 ...				

please indicate: ... $\left[\begin{array}{c} | \\ \hline | \end{array} \right]$ 20 25 37.5 50 1000 mm ... \diamond (optional) K; TO 220

art. no.	SK 145 20 TO 220	SK 145 37,5 TO 220	SK 145 50 TO 220	SK 145 25 TO 220
SK 145 ...				

please indicate: ... $\left[\begin{array}{c} | \\ \hline | \end{array} \right]$ 20 25 37.5 50 1000 mm ... \diamond (optional) K; TO 220

art. no.			
SK 443 ...			

please indicate: ... $\left[\begin{array}{c} | \\ \hline | \end{array} \right]$ 37.5 75 100 1000 mm

art. no.			
SK 173 ...			

please indicate: ... $\left[\begin{array}{c} | \\ \hline | \end{array} \right]$ 1000 mm

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7



Standard extruded heatsinks

<p>art. no.</p> <p>SK 59 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm ... \diamond (optional) TO 220</p>		
<p>art. no.</p> <p>SK 122 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 107 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 181 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 181 94 C 3 x TO 220</p>		
<p>retaining spring for transistor THF 409 TO 220 → A 114</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

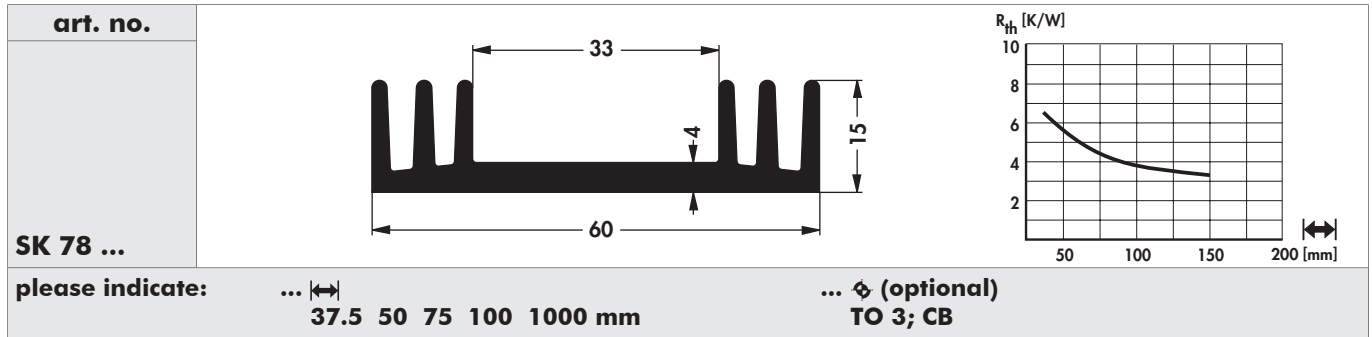
Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7

A


Standard extruded heatsinks

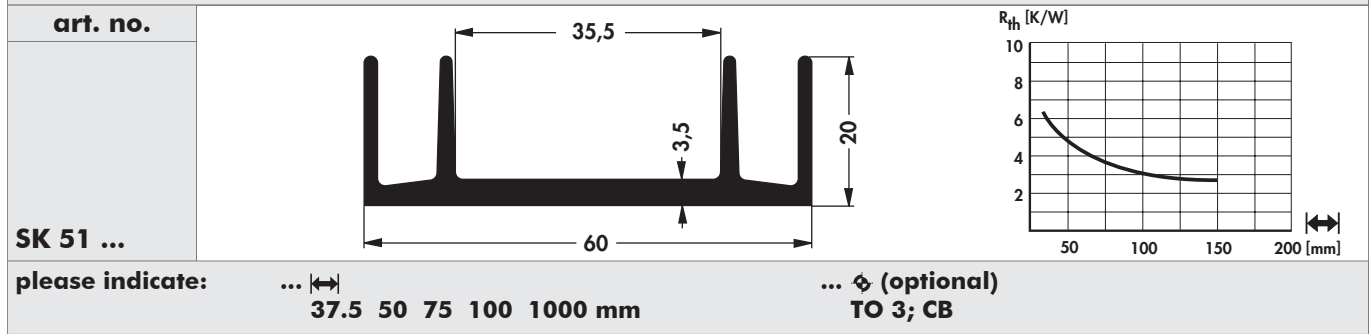
B

C



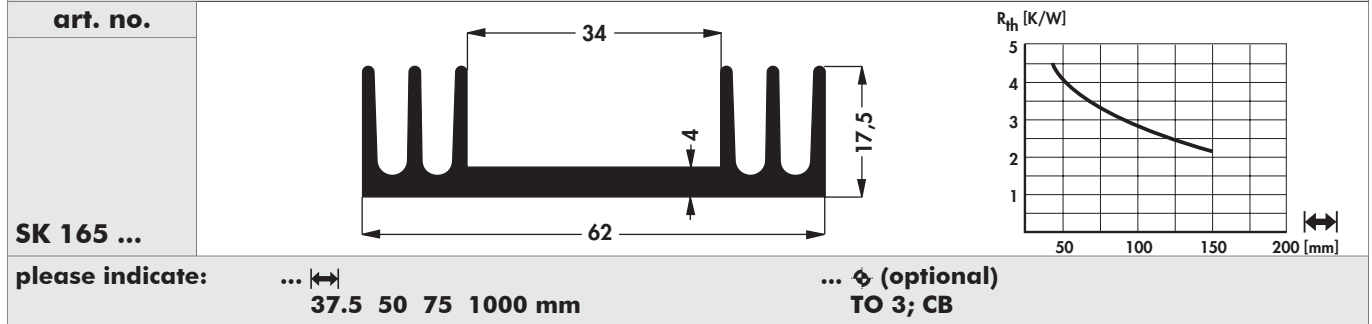
D

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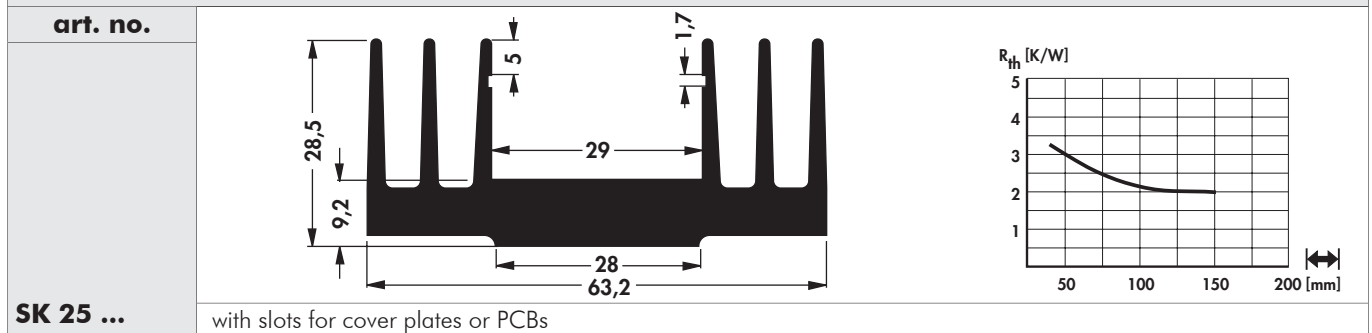
F

G



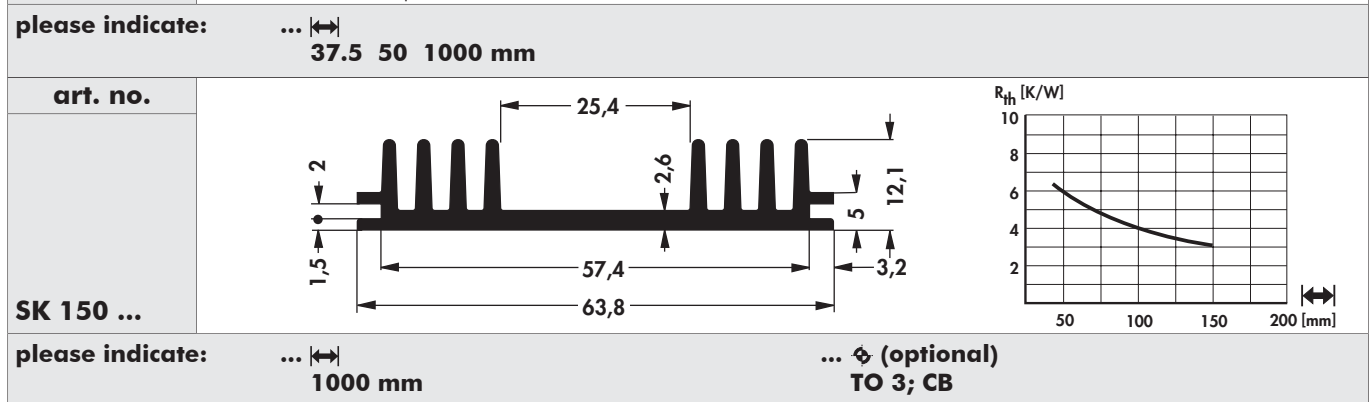
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A 61

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

Standard extruded heatsinks

<p>art. no.</p> <p>SK 18 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 63 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 05 ...</p>		
<p>with slots for cover plates or PCBs</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 50 75 100 1000 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 402 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 100 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 97 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm ... \diamond (optional) TO 3</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7

A


Standard extruded heatsinks

art. no. SK 45 ...		
please indicate: ... 37.5 50 75 100 1000 mm ... (optional) TO 3; CB		
art. no. SK 19 ...		
please indicate: ... 37.5 50 75 100 1000 mm ... (optional) TO 3; CB		
art. no. SK 28 ...		
please indicate: ... 37.5 50 75 1000 mm ... (optional) TO 3; CB		
art. no. SK 401 ...		
please indicate: ... 100 1000 mm ... (optional) TO 3; CB		
art. no. SK 72 ...		
please indicate: ... 37.5 50 75 100 1000 mm ... (optional) TO 3; CB		

A 63

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

N



Standard extruded heatsinks

<p>art. no.</p> <p>SK 04 ...</p>		
<p>with slots for cover plates or PCBs</p> <p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm ... \diamond (optional) SSR 1; SSR 2; TO 3; CB</p>		
<p>art. no.</p> <p>SK 403 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 1000 mm</p>		
<p>art. no.</p> <p>SK 73 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 50 75 1000 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 71 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm ... \diamond (optional) TO 3</p>		
<p>art. no.</p> <p>SK 57 ...</p>		
<p>with slots for cover plates or PCBs</p> <p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 75 100 1000 mm</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

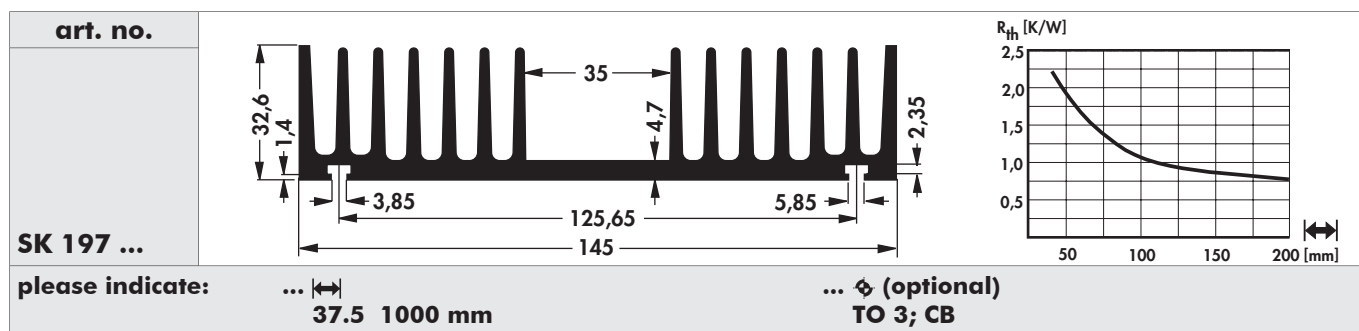
Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7

A


Standard extruded heatsinks

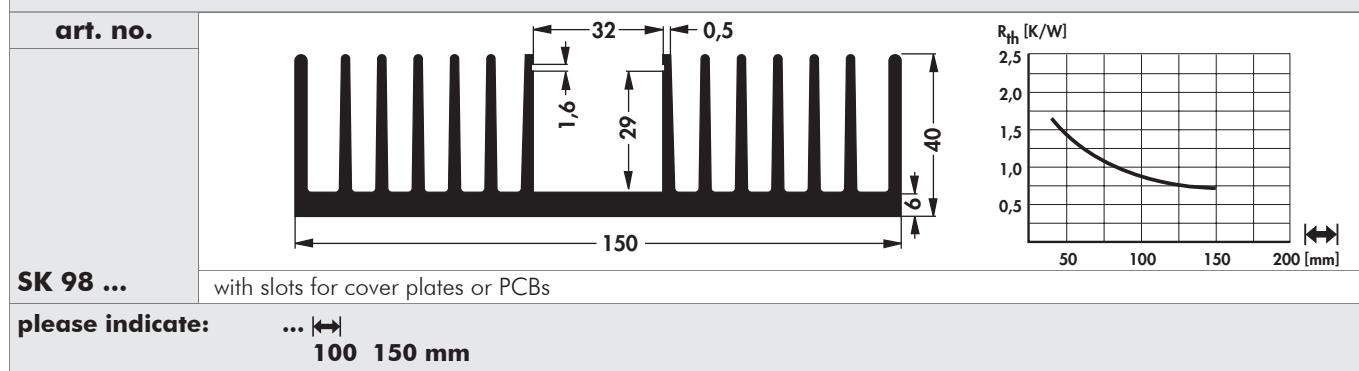
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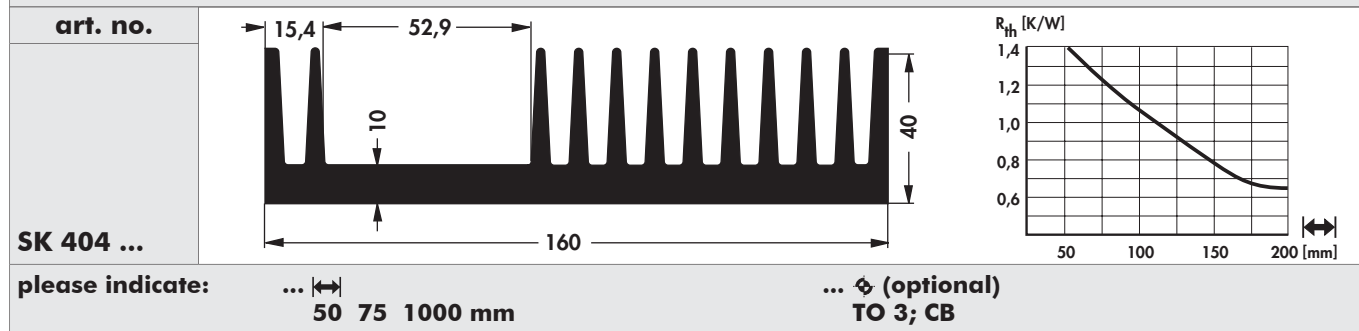
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A 65

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

Standard extruded heatsinks

<p>art. no.</p> <p>SK 36 ...</p>		
<p>mounting parts IS 1, IS 2, IS 3 → E 47</p> <p>please indicate: ... \leftrightarrow 50 75 1000 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 01 ...</p>		
<p>mounting parts IS 1, IS 2, IS 3 → E 47</p> <p>please indicate: ... \leftrightarrow 37.5 50 75 100 1000 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 02 ...</p>		
<p>with slots for cover plates or PCBs; mounting parts IS 1, IS 2, IS 3 → E 47</p> <p>please indicate: ... \leftrightarrow 37.5 50 75 100 1000 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 03 ...</p>		
<p>with slots for cover plates or PCBs; mounting parts IS 1, IS 2, IS 3 → E 47</p> <p>please indicate: ... \leftrightarrow 50 75 100 1000 mm ... \diamond (optional) TO 3; CB</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7

A

Standard extruded heatsinks

art. no. SK 39 ...		
with slots for cover plates or PCBs; mounting parts IS 1, IS 2, IS 3 → E 47		
please indicate: ... 75 100 1000 mm ... Φ (optional) TO 3; CB		
art. no. SK 30 ...		
with slots for cover plates or PCBs; mounting parts IS 1, IS 2, IS 3 → E 47		
please indicate: ... 75 100 1000 mm ... Φ (optional) TO 3; CB		
art. no. SK 34 ...		
with slots for cover plates or PCBs; mounting parts IS 1, IS 2, IS 3 → E 47		
please indicate: ... 50 75 100 1000 mm ... Φ (optional) TO 3; CB		
art. no. SK 14 ...		
with slots for cover plates or PCBs; mounting parts IS 1, IS 2, IS 3 → E 47		
please indicate: ... 50 75 100 mm ... Φ (optional) TO 3; CB		

A 67

High decorative surfaces → A 9
Order example → A 21
Heatsink as visual & decor-parts → A 10
Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 – 12
Heatsink special design → A 135 – 136
Special profiles → A 138
Technical introduction → A 2 – 7

N

Standard extruded heatsinks

<p>art. no.</p> <p>SK 20 ...</p>		
<p>with slots for cover plates or PCBs; mounting parts IS 5, IS 8 → E 47</p> <p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 75 100 1000 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 184 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 100 1000 mm</p>		
<p>art. no.</p> <p>SK 148 ...</p>		
<p>with slots for cover plates or PCBs</p> <p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 100 1000 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 84 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 50 150 1000 mm ... \diamond (optional) TO 3</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

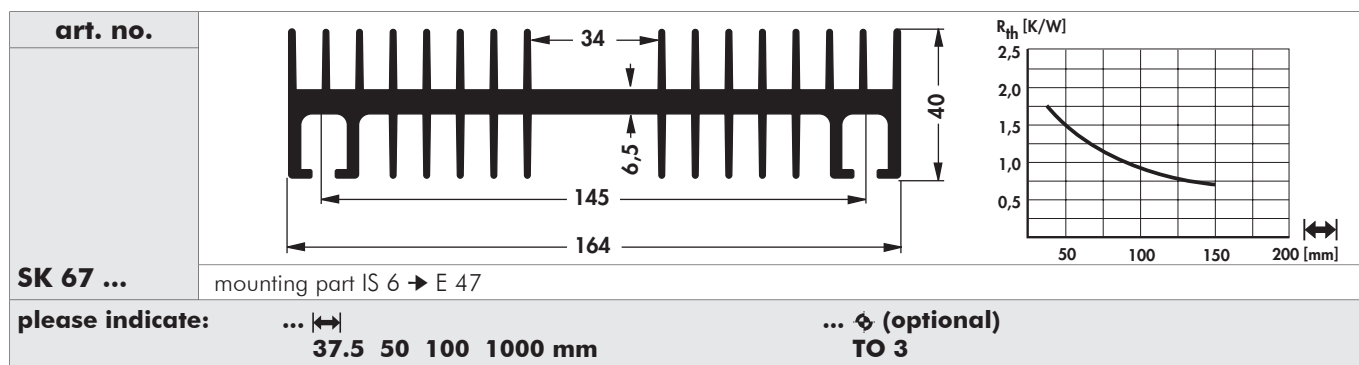
Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7

A

Standard extruded heatsinks

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A 69

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7



Standard extruded heatsinks

art. no.

$\text{37,5 mm } 5,5 \text{ K/W}$ $\text{75 mm } 3,6 \text{ K/W}$

SK 65 ... for cases SOT 32

please indicate: ... $\text{37,5 } 75 \text{ mm}$... \diamond (optional) $1 \times \text{M3}; 2 \times \text{M3}$

art. no.

$\text{37,5 mm } 4,1 \text{ K/W}$ $\text{75 mm } 2,7 \text{ K/W}$

SK 64 ... for cases TO 220, TOP 3

please indicate: ... $\text{37,5 } 75 \text{ mm}$... \diamond (optional) $1 \times \text{M3}; 2 \times \text{M3}$

art. no.

SK 419 ...

please indicate: ... 1000 mm

art. no.

SK 21 ... with slots for cover plates or PCBs; mounting parts IS 1, IS 2, IS 3 \rightarrow E 47

please indicate: ... $\text{37,5 } 1000 \text{ mm}$... \diamond (optional) $\text{TO 3}; \text{CB}$

- High decorative surfaces \rightarrow A 9
- Order example \rightarrow A 21
- Heatsink as visual & decor-parts \rightarrow A 10
- Drilling pattern for Solid State Relais \rightarrow A 12

- Heatsinks for Solid State Relay \rightarrow A 11 - 12
- Heatsink special design \rightarrow A 135 - 136
- Special profiles \rightarrow A 138
- Technical introduction \rightarrow A 2 - 7

A


Standard extruded heatsinks

art. no. SK 69 ...		
<p>mounting parts IS 1, IS 2, IS 3 → E 47</p> <p>please indicate: ... 50 75 100 1000 mm ... (optional) TO 3; CB</p>		
art. no. SK 74 ...		
<p>please indicate: ... 37.5 100 1000 mm ... (optional) TO 3; CB</p>		
art. no. SK 124 ...		
<p>please indicate: ... 50 100 150 1000 mm ... (optional) TO 3</p>		
art. no. SK 195 ...		
<p>please indicate: ... 75 100 mm ... (optional) TO 3; CB</p>		

N

A 71

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7



Standard extruded heatsinks

<p>art. no.</p> <p>SK 31 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 1000 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 07 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 1000 mm ... \diamond (optional) TO 3; CB</p>		
<p>art. no.</p> <p>SK 16 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 75 1000 mm ... \diamond (optional) TO 3; CB</p> <p>mountingpart IS 3 \rightarrow E 47</p>		
<p>art. no.</p> <p>SK 500 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm</p>		

High decorative surfaces \rightarrow A 9
 Order example \rightarrow A 21
 Heatsink as visual & decor-parts \rightarrow A 10
 Drilling pattern for Solid State Relays \rightarrow A 12

Heatsinks for Solid State Relay \rightarrow A 11 - 12
 Heatsink special design \rightarrow A 135 - 136
 Special profiles \rightarrow A 138
 Technical introduction \rightarrow A 2 - 7

A


Standard extruded heatsinks

art. no. SK 185 ...		
please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 100 1000 mm		
... Φ (optional) TO 3; CB		
art. no. SK 48 ...		
please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm		
... Φ (optional) SSR 1; SSR 3; TO 3; CB		
art. no. SK 79 ...		
with slots for cover plates or PCBs		
please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm		
... Φ (optional) TO 3; CB		
art. no. SK 08 ...		
with slots for cover plates or PCBs		
please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm		
... Φ (optional) TO 3; CB		
art. no. SK 88 ...		
with slots for cover plates or PCBs		
please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 100 1000 mm		
... Φ (optional) TO 3		

A 73

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7

N

Standard extruded heatsinks

<p>art. no.</p> <p>SK 52 ...</p>		
<p>please indicate: ... \pm 37,5 50 75 100 1000 mm ... \diamond (optional) 2 x TO 3; 2 x CB</p>		
<p>art. no.</p> <p>SK 60 ...</p>		
<p>please indicate: ... \pm 50 75 100 1000 mm ... \diamond (optional) 2 x TO 3; 2 x CB</p>		
<p>art. no.</p> <p>SK 147 ...</p>		
<p>please indicate: ... \pm 50 150 1000 mm ... \diamond (optional) 2 x TO 3; 2 x CB</p>		
<p>art. no.</p> <p>SK 80 ...</p>		
<p>please indicate: ... \pm 75 100 1000 mm ... \diamond (optional) 2 x TO 3; 2 x CB</p>		
<p>art. no.</p> <p>SK 53 ...</p>		
<p>please indicate: ... \pm 50 75 100 150 1000 mm ... \diamond (optional) 2 x TO 3; 2 x CB</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

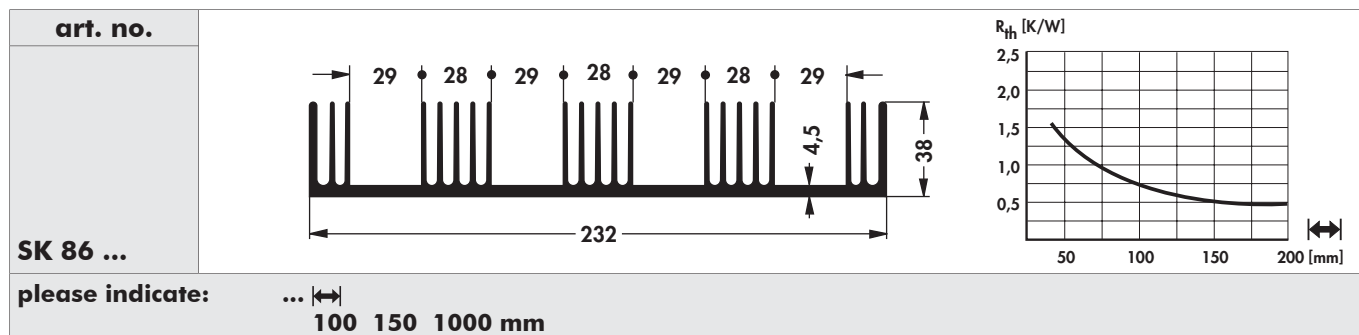
Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7

A


Standard extruded heatsinks

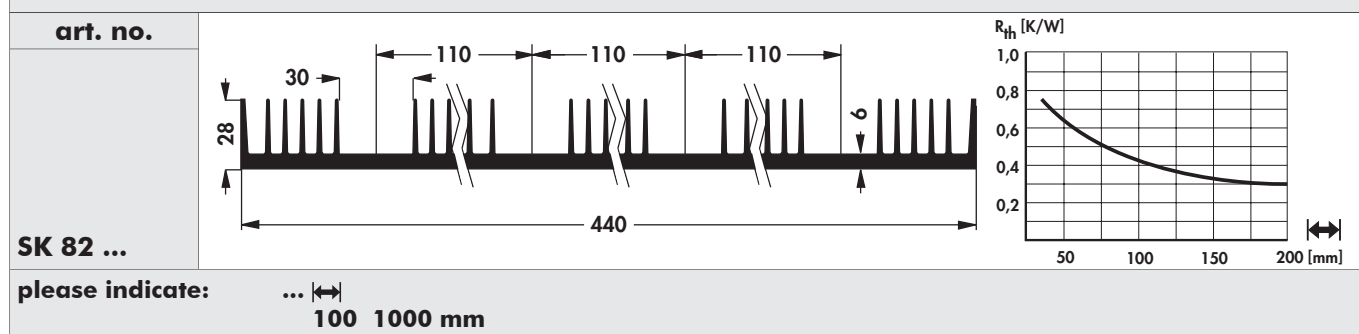
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A 75

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

Standard extruded heatsinks

<p>art. no.</p> <p>SK 596 ...</p>		
<p>please indicate: ... $\left[\text{mm} \right]$ 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 544 ...</p>		
<p>please indicate: ... $\left[\text{mm} \right]$ 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 32 ...</p>		
<p>please indicate: ... $\left[\text{mm} \right]$ 37.5 50 75 100 1000 mm</p>		
<p>art. no.</p> <p>SK 187 ...</p>		
<p>please indicate: ... $\left[\text{mm} \right]$ 75 1000 mm ... \varnothing (optional) SSR 3</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7

A


Standard extruded heatsinks

art. no. SK 140 ...		
please indicate: ... 1000 mm		
art. no. SK 556 ...		
please indicate: ... 75 100 150 1000 mm		
art. no. SK 15 ...		
please indicate: ... 75 1000 mm		
art. no. SK 89 ...		
please indicate: ... 100 150 1000 mm		
... \diamond (optional) SSR 1; SSR 2; SSR 4		

N

A 77

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

Standard extruded heatsinks

<p>art. no.</p> <p>SK 163 ...</p>		
<p>please indicate: ... \longleftrightarrow 100 150 1000 mm</p>		
<p>art. no.</p> <p>SK 176 ...</p>		
<p>please indicate: ... \longleftrightarrow 75 100 150 1000 mm ... ϕ (optional) SSR 2</p>		

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7

A



Standard extruded heatsinks

art. no. SK 11 ...		
threads, through holes and fixing according to your demand; mounting parts IS 1, IS 2, IS 3 → E 47		
please indicate: ... 1000 mm		
art. no. SK 83 ...		
please indicate: ... 100 1000 mm		
art. no. SK 06 ...		
mounting part IS 4 → E 47		
please indicate: ... 75 1000 mm		... (optional) TO 3
art. no. SK 23 ...		
with slots for cover plates or PCBs; equipped with fan and endplates = LA 4 → D 14		
please indicate: ... 75 mm		

A 79

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

N

Standard extruded heatsinks

art. no.

SK 110 ...

please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \\ \text{---} \end{array} \right]$
 150 200 1000 mm

art. no.

SK 109 ...

with slots for cover plates or PCBs

please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \\ \text{---} \end{array} \right]$
 100 150 200 1000 mm

art. no.

SK 108 ...

with slots for cover plates or PCBs

please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \\ \text{---} \end{array} \right]$
 100 1000 mm

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 – 12
 Heatsink special design → A 135 – 136
 Special profiles → A 138
 Technical introduction → A 2 – 7

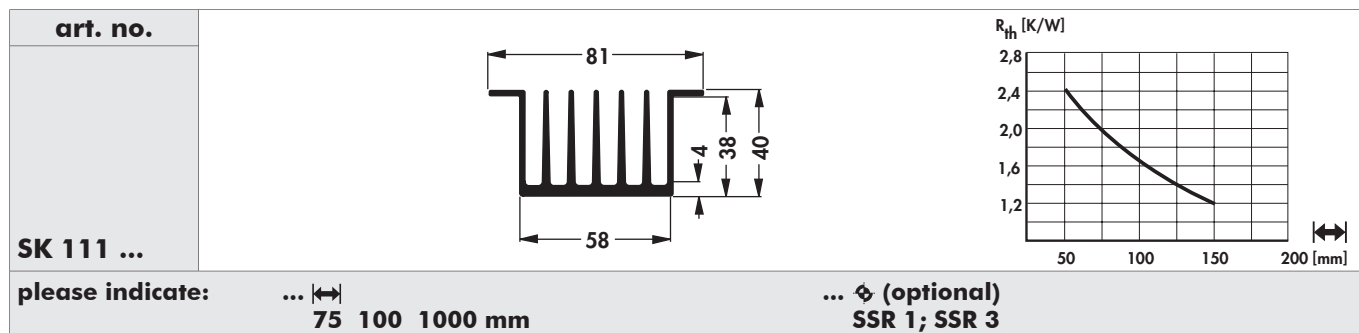
A 80

A


Standard extruded heatsinks

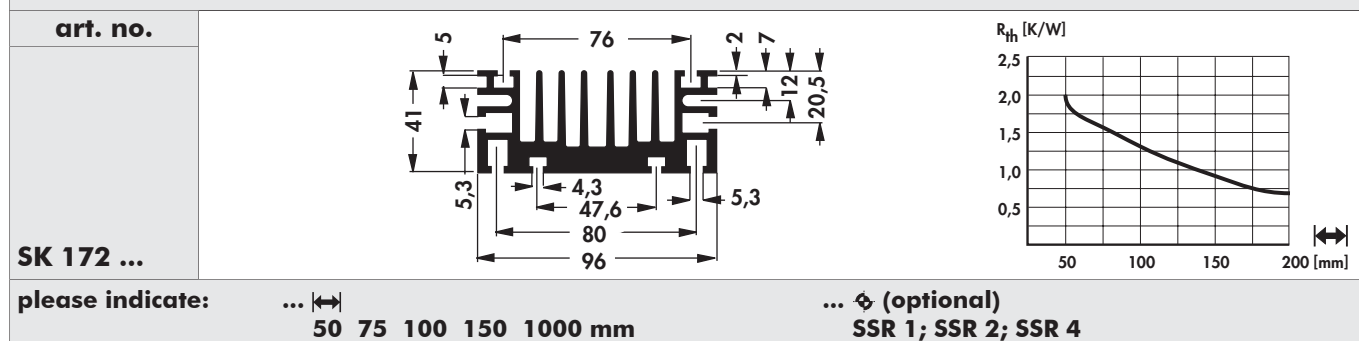
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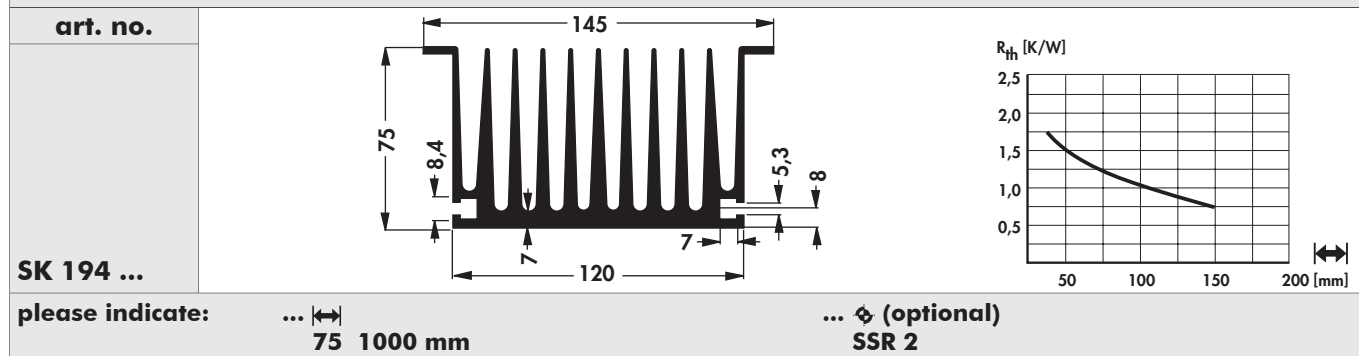
D

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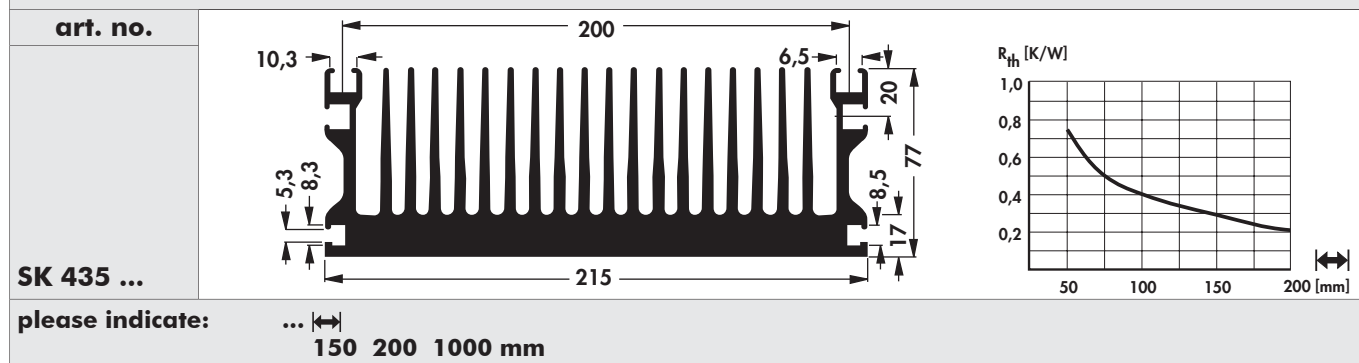
F

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A 81

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relays → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

Standard extruded heatsinks

art. no.

SK 432 ... with slots for cover plates or PCBs

please indicate: ... $\left[\text{mm} \right]$
100 1000 mm

art. no.

SK 40 ...

please indicate: ... $\left[\text{mm} \right]$
100 1000 mm

art. no.

SK 61 ... with slots for cover plates or PCBs; cooling case \rightarrow M 29

please indicate: ... $\left[\text{mm} \right]$
75 100 150 1000 mm

art. no.

SK 144 ...

please indicate: ... $\left[\text{mm} \right]$
1000 mm

High decorative surfaces \rightarrow A 9
Order example \rightarrow A 21
Heatsink as visual & decor-parts \rightarrow A 10
Drilling pattern for Solid State Relays \rightarrow A 12

Heatsinks for Solid State Relay \rightarrow A 11 - 12
Heatsink special design \rightarrow A 135 - 136
Special profiles \rightarrow A 138
Technical introduction \rightarrow A 2 - 7

A


Standard extruded heatsinks

B

C

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E

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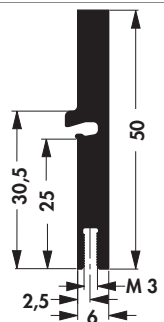
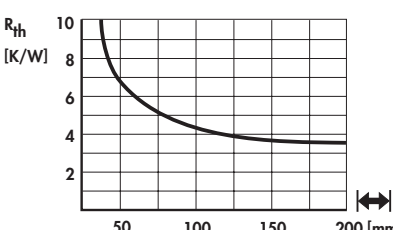

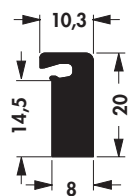
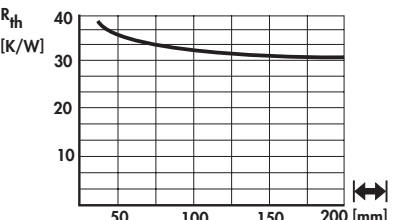

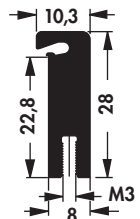
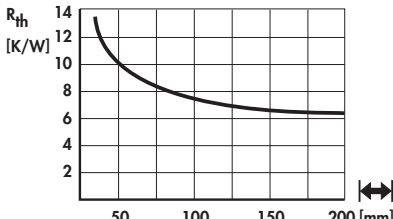

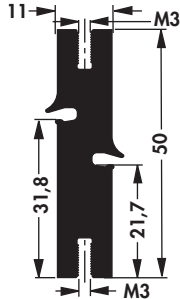
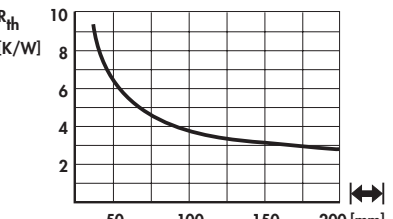

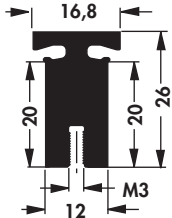
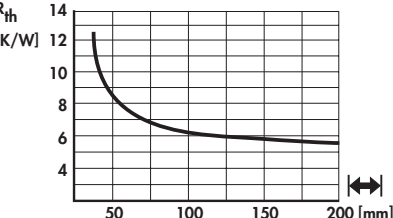
art. no. SK 494 ...		
please indicate: ... 25 37.5 50 75 100 1000 mm		
art. no. SK 153 ...		
please indicate: ... 50 mm		
art. no. SK 55 ...		
please indicate: ... 37.5 1000 mm ... (optional) TO 3; CB		
art. no. SK 175 ...		
please indicate: ... 50 1000 mm		

A 83

High decorative surfaces → A 9
 Order example → A 21
 Heatsink as visual & decor-parts → A 10
 Drilling pattern for Solid State Relais → A 12

Heatsinks for Solid State Relay → A 11 - 12
 Heatsink special design → A 135 - 136
 Special profiles → A 138
 Technical introduction → A 2 - 7

Extruded heatsinks for lock-in retaining spring

<p>art. no.</p> <p>SK 575 ...</p>			
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 25 37.5 50 75 84 100 1000 mm</p>			
<p>art. no.</p> <p>SK 512 ...</p>			
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 25 50 100 1000 mm</p>			
<p>art. no.</p> <p>SK 480 ...</p>			
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 25 37.5 50 75 84 100 1000 mm</p>			
<p>art. no.</p> <p>SK 490 ...</p>			
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 37.5 50 75 84 100 1000 mm</p>			
<p>art. no.</p> <p>SK 492 ...</p>			
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 25 37.5 50 75 84 100 1000 mm</p>			

please note: profile threads → A 4

Mounting parts for heatsinks
Insulating caps
Mounting pads
Lock-in transistor fixing spring

→ E 47 – 48
→ E 49
→ E 44
→ A 117 – 119

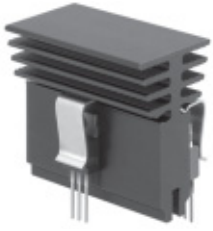
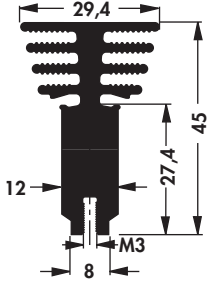
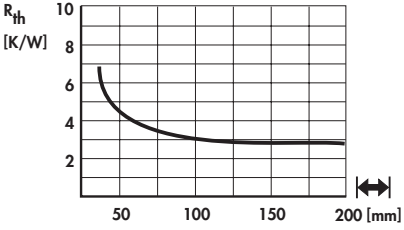

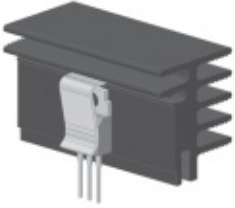
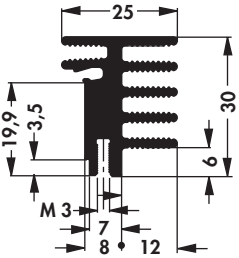
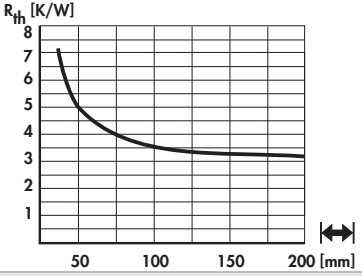

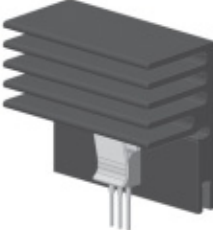
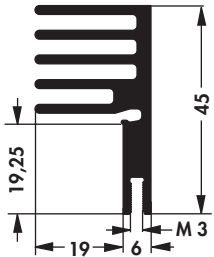
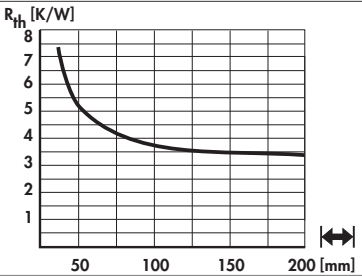

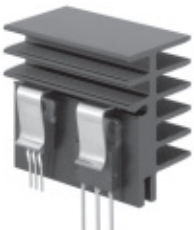
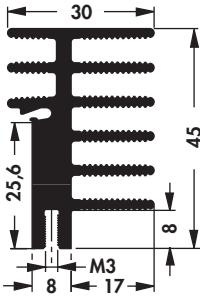
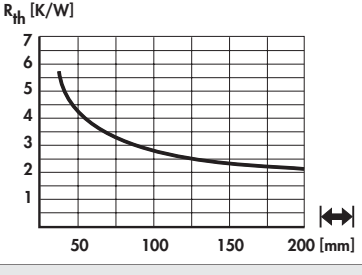

Heatsinks for PCB
Profiles for PCB components
Heatsinks with threaded rail
Technical introduction

→ A 89
→ A 91
→ A 92
→ A 2 – 7

A 84

A

Extruded heatsinks for lock-in retaining spring

art. no. SK 489 ...			
please indicate: ...  25 37.5 50 75 84 100 1000 mm			
art. no. SK 573 ...			
please indicate: ...  25 37.5 50 75 84 100 1000 mm			
art. no. SK 576 ...			
please indicate: ...  25 37.5 50 75 84 100 1000 mm			
art. no. SK 481 ...			
please indicate: ...  25 37.5 50 75 84 100 1000 mm			

please note: profile threads → A 4

A 85

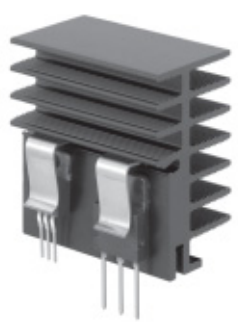
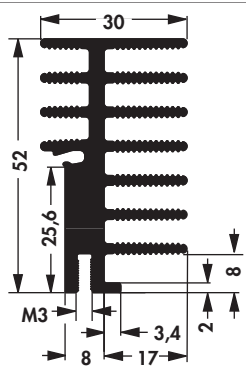
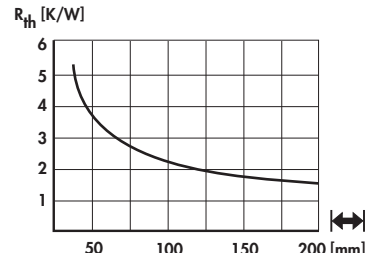

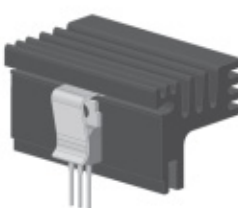
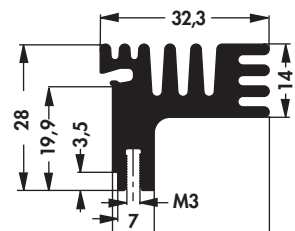
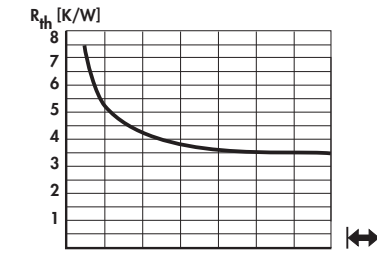

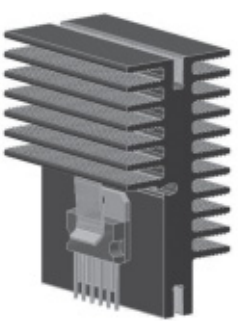
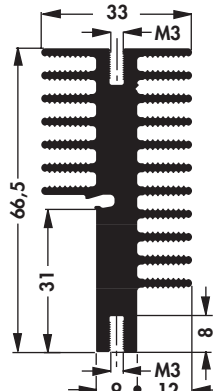
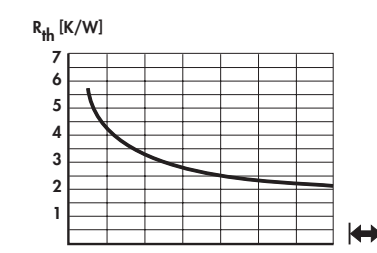


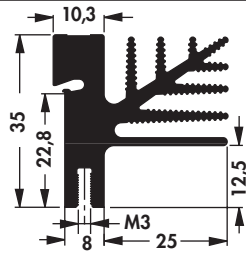
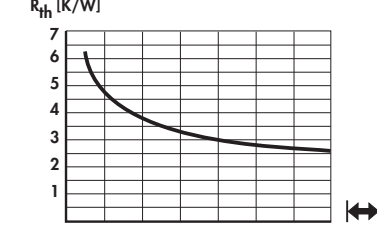

Mounting parts for heatsinks
Insulating caps
Mounting pads
Lock-in transistor fixing spring

→ E 47 – 48 Heatsinks for PCB
→ E 49 Profiles for PCB components
→ E 44 Heatsinks with threaded rail
→ A 117 – 119 Technical introduction

→ A 89
→ A 91
→ A 92
→ A 2 – 7

N

Extruded heatsinks for lock-in retaining spring

<p>art. no.</p> <p>SK 514 ...</p>			
<p>please indicate: ...  25 37.5 50 75 100 1000 mm</p>			
<p>art. no.</p> <p>SK 574 ...</p>			
<p>please indicate: ...  25 37.5 50 75 84 100 1000 mm</p>			
<p>art. no.</p> <p>SK 589 ...</p>			
<p>please indicate: ...  25 37.5 50 75 84 100 1000 mm</p>			
<p>art. no.</p> <p>SK 482 ...</p>			
<p>please indicate: ...  25 37.5 50 75 84 100 1000 mm</p>			

please note: profile threads → A 4

Mounting parts for heatsinks
 Insulating caps
 Mounting pads
 Lock-in transistor fixing spring

→ E 47 – 48 Heatsinks for PCB
 → E 49 Profiles for PCB components
 → E 44 Heatsinks with threaded rail
 → A 117 – 119 Technical introduction

→ A 89
 → A 91
 → A 92
 → A 2 – 7

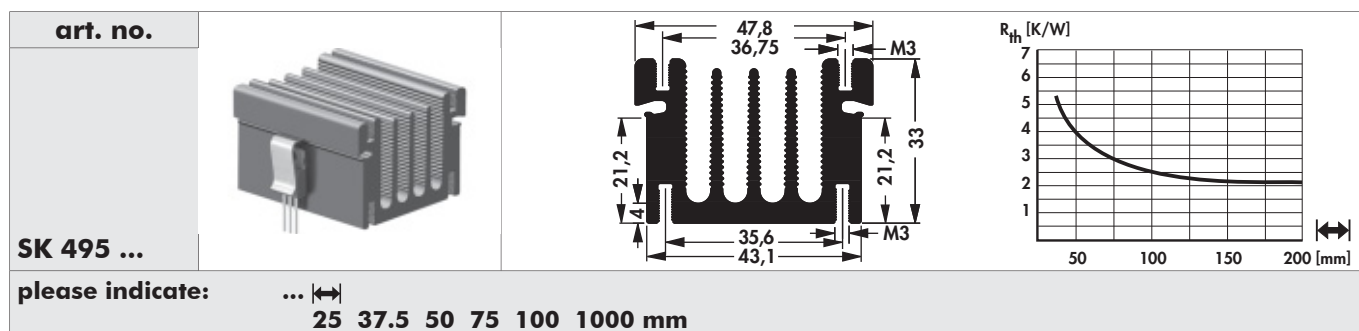
A 86

A

Extruded heatsinks for lock-in retaining spring

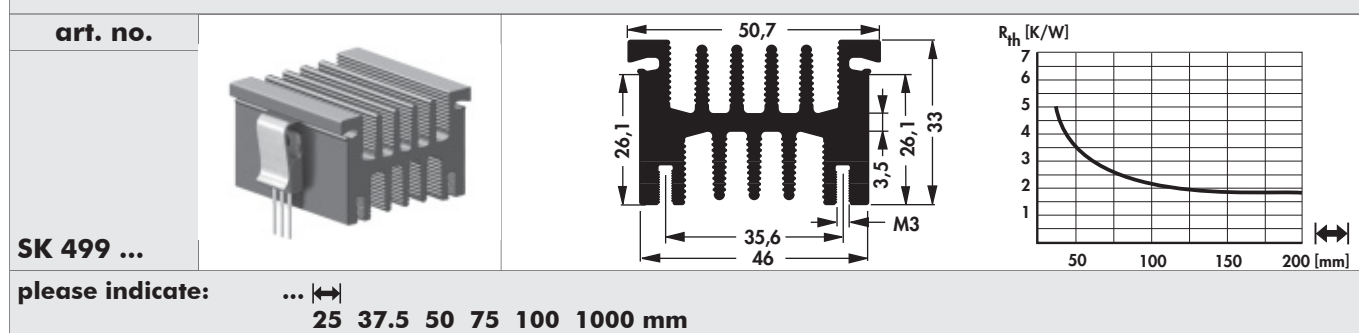
B

C



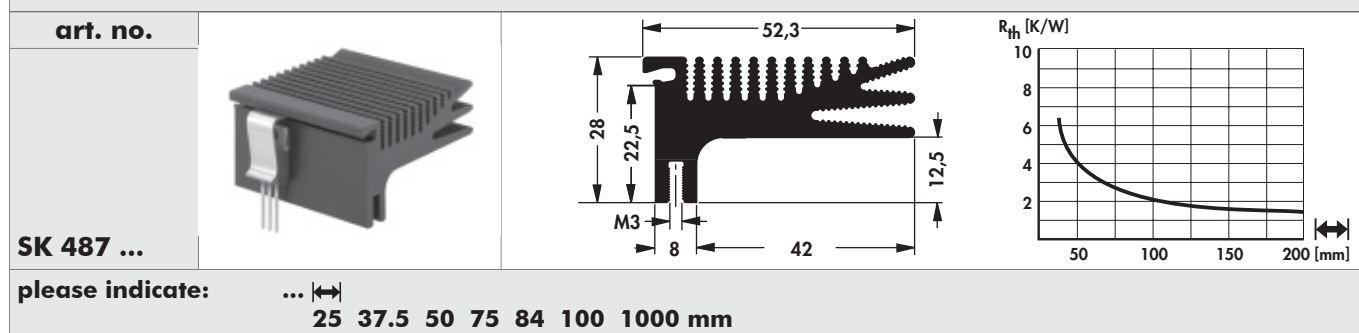
D

E



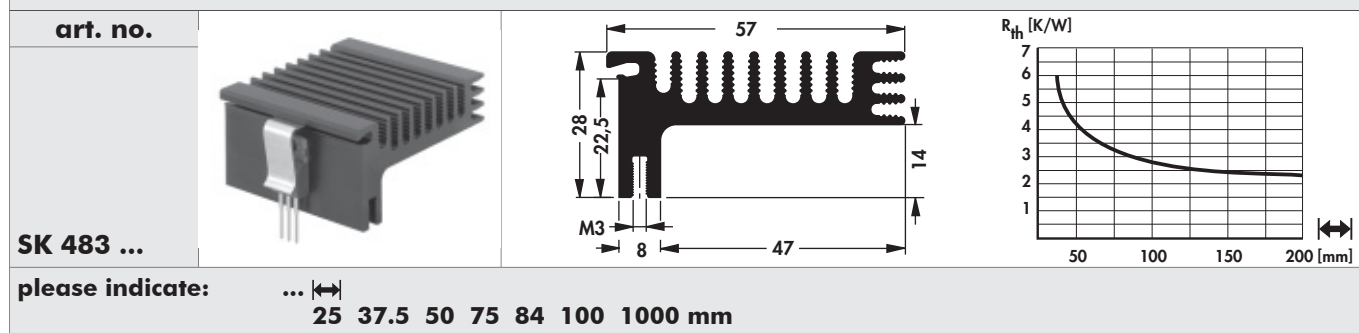
F

G



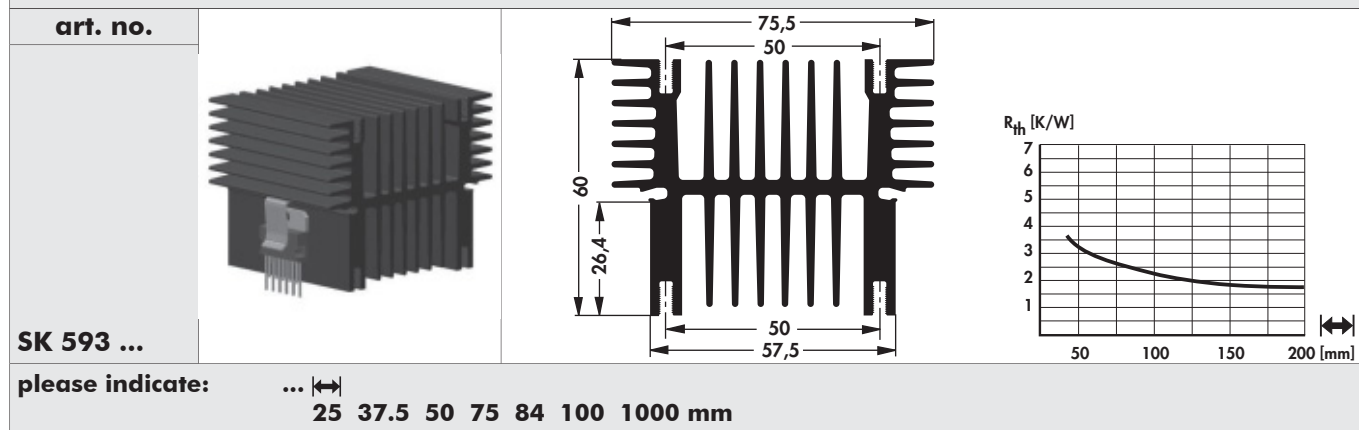
H

I



K

L



M

please note: profile threads → A 4

N

A 87

Mounting parts for heatsinks
Insulating caps
Mounting pads
Lock-in transistor fixing spring

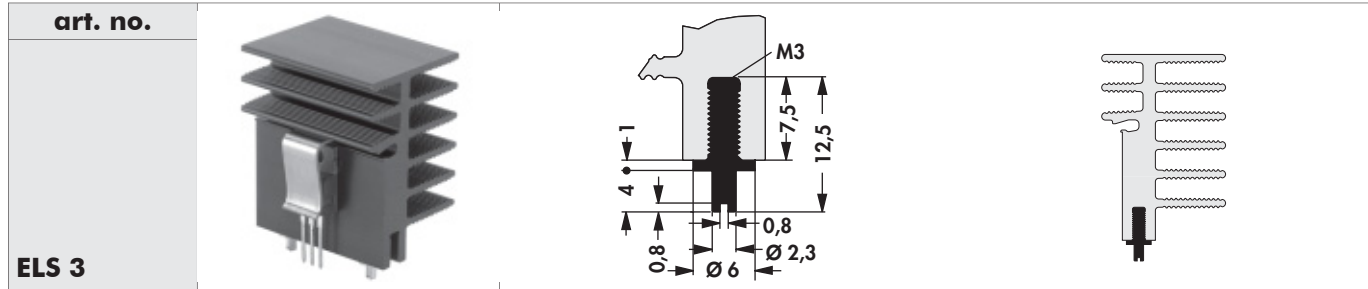
→ E 47 – 48 Heatsinks for PCB
→ E 49 Profiles for PCB components
→ E 44 Heatsinks with threaded rail
→ A 117 – 119 Technical introduction

→ A 89
→ A 91
→ A 92
→ A 2 – 7

Extruded heatsinks for lock-in retaining spring


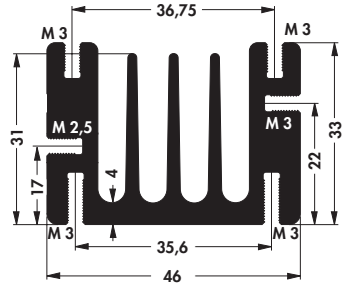
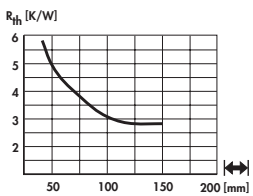

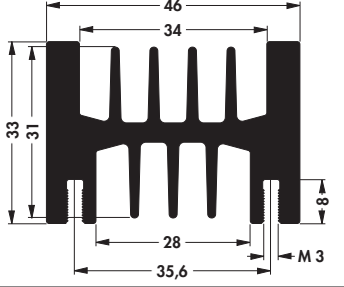
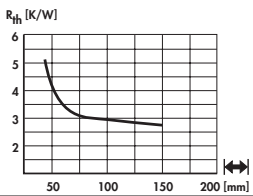

Screw-in solder pin ELS 3

- screw in solder pin made of brass
- easy mounting
- secure hold
- surface coating suitable for soldering
- suitable for all heatsinks with M3 profile thread
- position in the threaded channel as required
- specific designs upon customer's request



Extruded heatsinks for PCB mounting
Heatsinks for printed circuit boards

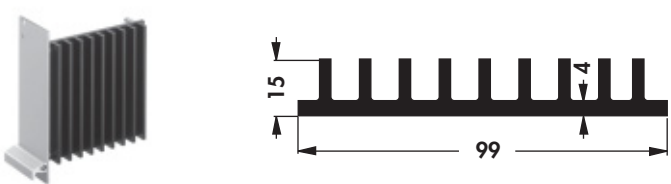
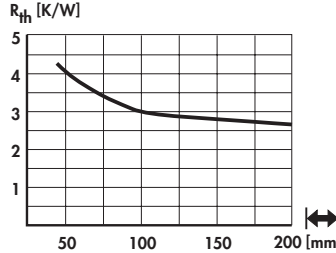
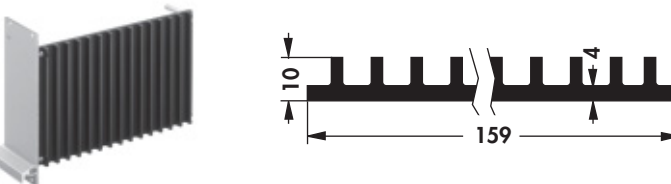
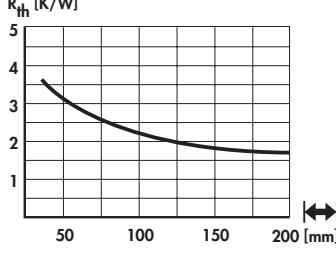
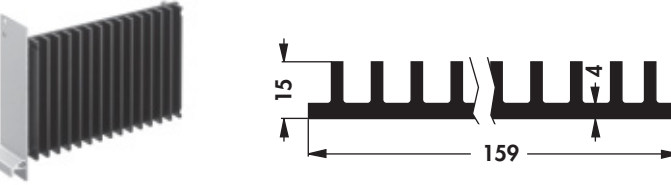
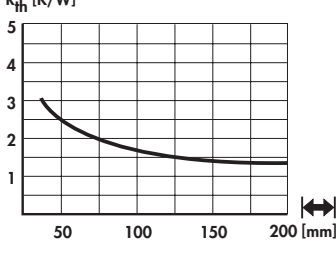
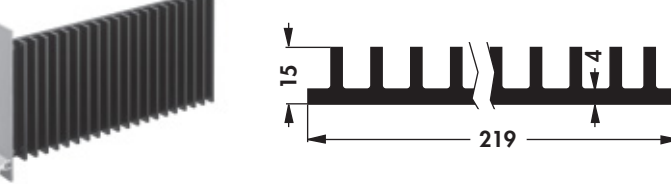
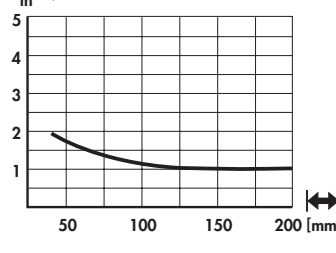
- matching cylindrical screws according to DIN 84 with zinc coated surface
- M 3 thread diameter: 2.90 ... 2.94 mm (**art. no.: SZ M 3 x 8**)
- screw-in solder pin M 3 (**art. no.: ELS 3**)

art. no. SK 68 ...			
art. no. SK 112 ...			
please indicate: ...  37.5 50 75 94 100 1000 mm			

please note: profile threads → A 4

Heatsinks for printed circuit boards

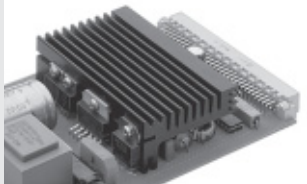
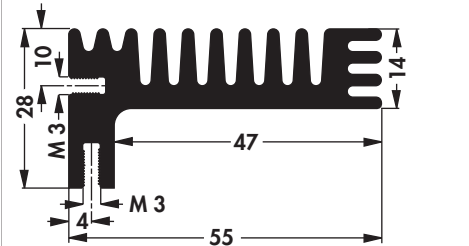
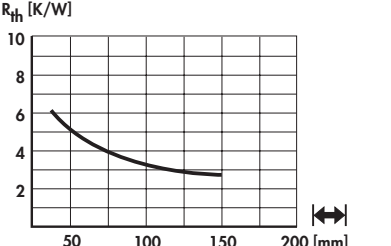
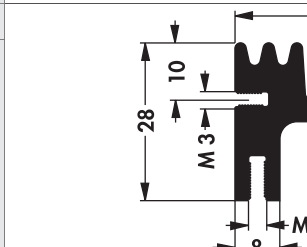
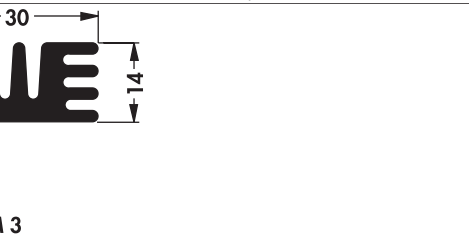
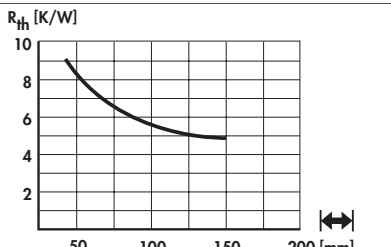

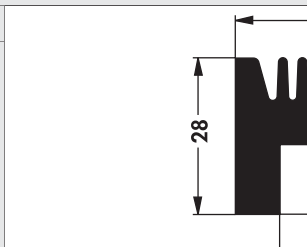
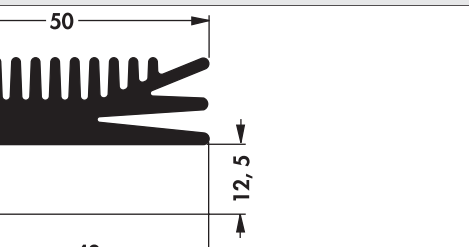
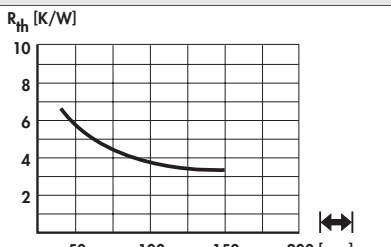
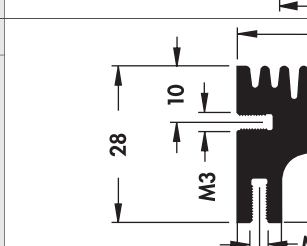
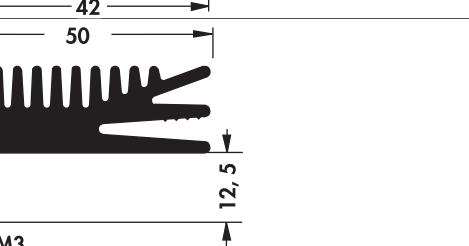
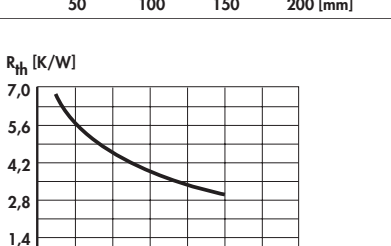
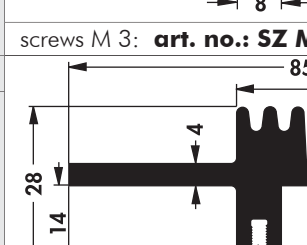
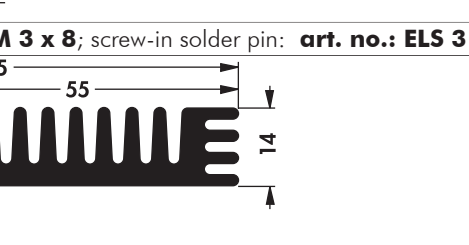
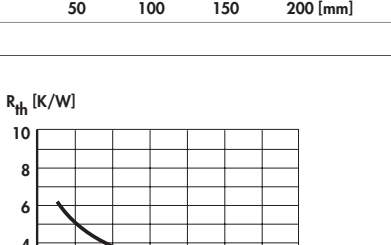

– the heatsinks SK 414, SK 105, SK 44 and SK 415 are especially suitable for printed circuit board heatsinks for 19" plug in units

<p>art. no.</p> <p>SK 414 ...</p>		
<p>please indicate: ... \longleftrightarrow 100 233.4 1000 mm</p>		
<p>art. no.</p> <p>SK 105 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 50 75 100 150 200 233.4 1000 mm</p>		
<p>art. no.</p> <p>SK 44 ...</p>		
<p>please indicate: ... \longleftrightarrow 50 75 100 150 200 233.4 1000 mm</p>		
<p>art. no.</p> <p>SK 415 ...</p>		
<p>please indicate: ... \longleftrightarrow 37.5 100 150 1000 mm</p>		

Extruded heatsinks for PCB mounting

Heatsinks for printed circuit boards

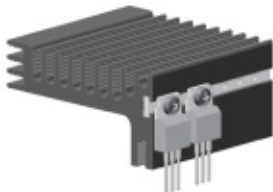
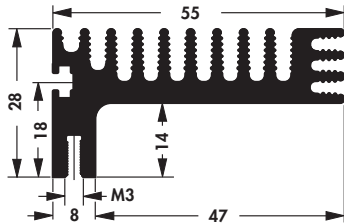
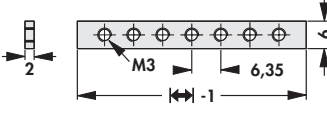
– for use on eurocards

art. no. SK 96 ...			
screws M 3: art. no.: SZ M 3 x 8 ; screw-in solder pin: art. no.: ELS 3			
art. no. SK 125 ...			
screws M 3: art. no.: SZ M 3 x 8 ; screw-in solder pin: art. no.: ELS 3			
please indicate: ...  50 84 94 1000 mm			
art. no. SK 138 ...			
art. no. SK 451 ...			
screws M 3: art. no.: SZ M 3 x 8 ; screw-in solder pin: art. no.: ELS 3			
art. no. SK 128 ...			
screws M 3: art. no.: SZ M 3 x 8 ; screw-in solder pin: art. no.: ELS 3			
please indicate: ...  84 94 1000 mm			

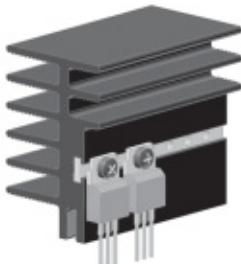
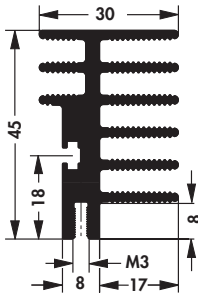
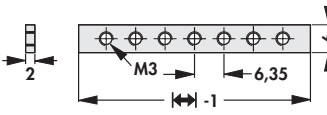
Extruded heatsinks for PCB mounting

Heatsink for PCB with threaded rail

- transistor mounting onto the heatsink using a slide-in rail with M 3 thread
- easy positioning using a grid 6.35mm
- other rail grids upon request
- suitable for TO 220, TO 218, TO 247 and similar
- suitable screws M 3 (art. no.: **SZ M 3 x 8**)
- screw-in solder pin M 3 (art. no.: **ELS 3**)
- specific versions upon customer's request

art. no.	l [mm]	R _{th} [K/W]	⌀	version
SK 517 50 GS	50	5.0	TO 220	with threaded rail
SK 517 75 GS	75	3.9	TO 220	with threaded rail
SK 517 84 GS	84	3.6	TO 220	with threaded rail
SK 517 50	50	5.0	—	without threaded rail
SK 517 75	75	3.9	—	without threaded rail
SK 517 84	84	3.6	—	without threaded rail

art. no.	l [mm]	R _{th} [K/W]	⌀	version
SK 518 50 GS	50	4.3	TO 220	with threaded rail
SK 518 75 GS	75	3.3	TO 220	with threaded rail
SK 518 84 GS	84	3.0	TO 220	with threaded rail
SK 518 50	50	4.3	—	without threaded rail
SK 518 75	75	3.3	—	without threaded rail
SK 518 84	84	3.0	—	without threaded rail

please note: profile threads → A 4

surface:	black anodised
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Extruded heatsinks for PCB mounting
Attachable heatsinks for transistors

- compact heatsink in transistor dimensions
- for horizontal and vertical transistors
- can be screwed or glued
- specific versions upon customer's request

art. no.	H [mm]	R _{th} [K/W]	ϕ	version
SK 515 10 S TO 220	10.0	30.0	TO 220	for screw fastening M2.5
SK 515 23,5 S 2 x TO 220	23.5	27.5	2 x TO 220	for screw fastening M2.5
SK 515 37 S 3 x TO 220	37.0	26.1	3 x TO 220	for screw fastening M2.5
SK 515 10 TO 220	10.0	30.0	—	without screw fastening
SK 515 23,5 TO 220	23.5	27.5	—	without screw fastening
SK 515 37 TO 220	37.0	26.1	—	without screw fastening

art. no.	H [mm]	R _{th} [K/W]	ϕ	version
SK 516 15 S TO 218	15	28.4	TO 218	for screw fastening M3
SK 516 33 S 2 x TO 218	33	26.9	2 x TO 218	for screw fastening M3
SK 516 15 TO 218	15	28.4	—	without screw fastening

surface: black anodised

Attachable heatsinks for transistors


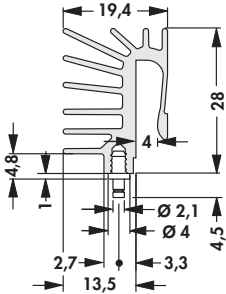
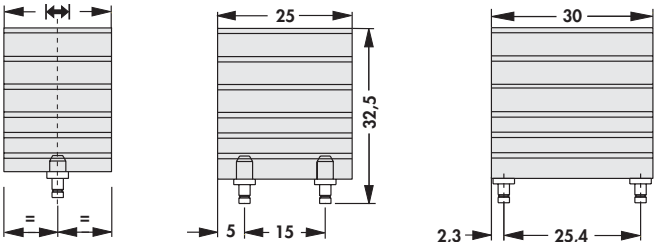
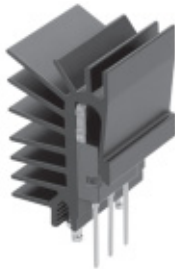
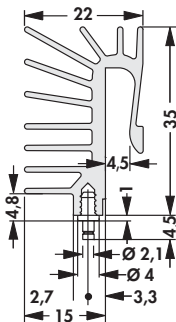
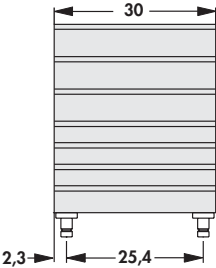
art. no.	H [mm]	R _{th} [K/W]	ϕ	version
SK 515 05 10 S	10.0	30.0	TO 220	for screw fastening M2.5
SK 515 05 23,5 S 2	23.5	27.5	2 x TO 220	for screw fastening M2.5
SK 515 05 37 S 3	37.0	26.1	3 x TO 220	for screw fastening M2.5
SK 515 05 10	10.0	30.0	—	without screw fastening
SK 515 05 23,5	23.5	27.5	—	without screw fastening
SK 515 05 37	37.0	26.1	—	without screw fastening

surface: black anodised

Extruded heatsinks for PCB mounting

Attachable heatsinks for transistors

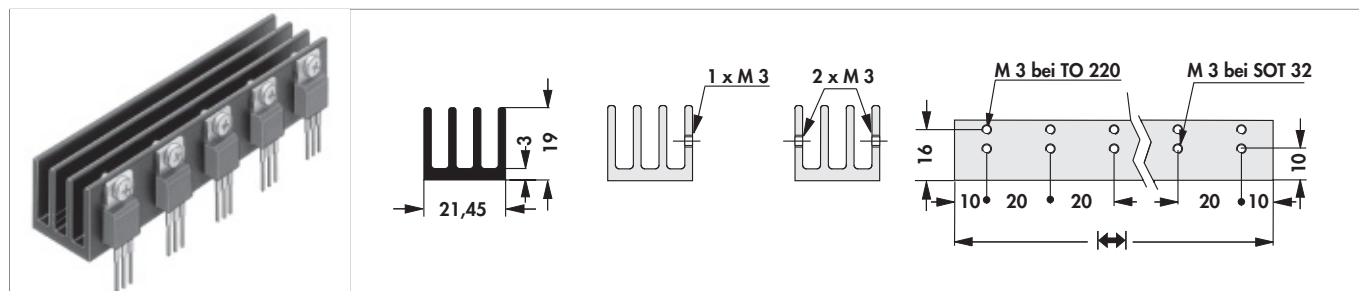
- extruded heatsink with intergrated spring locking function
- simple assembly by pushing the heatsink onto the transistor
- optimum heat transfer between component and heatsink
- solderable pin for PCB mounting
- specific versions upon customer's request

					
art. no.	for transistor	↳ [mm]	R _{th} [K/W]	spring force [N]	version
SK 525 15	TO 220	15	13.3	54	without solder pins
SK 525 30	TO 220	30	7.8	100	without solder pins
SK 525 15 ST	TO 220	15	13.3	54	with 1 solder pin
SK 525 20 ST	TO 220	20	10.7	70	with 1 solder pin
SK 525 25 ST	TO 220	25	9.0	85	with 2 solder pins
SK 525 30 ST	TO 220	30	7.8	100	with 2 solder pins
					
art. no.	for transistor	↳ [mm]	R _{th} [K/W]	spring force [N]	version
SK 526 30 ST	TO 247	30	6.3	100	with 2 solder pins
surface:	black anodised				

Extruded heatsinks for PCB mounting

Extruded heatsinks for transistors

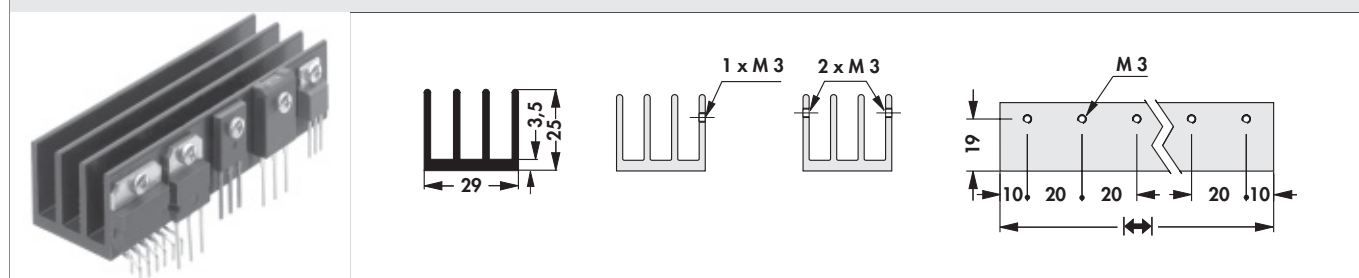
- compact PCB heatsink
- effective heat dissipation for single and double row transistor mounting
- profile **SK 454** → A 24
- profile **SK 452** → A 27
- specific versions upon customer's request



art. no.	l [mm]	R _{th} [K/W]	⊕
SK 454 20 1 x M3 ...	20	10.8	SOT 32/ TO 220
SK 454 60 3 x M3 ...	60	7.7	SOT 32/ TO 220
SK 454 20 2 x M3 ...	20	10.8	SOT 32/ TO 220
SK 454 40 4 x M3 ...	40	9.4	SOT 32/ TO 220
SK 454 60 6 x M3 ...	60	7.7	SOT 32/ TO 220
SK 454 40 2 x M3 TO 220	40	9.4	TO 220
SK 454 80 4 x M3 TO 220	80	6.5	TO 220
SK 454 100 5 x M3 TO220	100	5.9	TO 220
SK 454 80 8 x M3 TO 220	80	6.5	TO 220
SK 454 100 10xM3 TO220	100	5.9	TO 220

please indicate:

... ⊕
SOT 32; TO 220




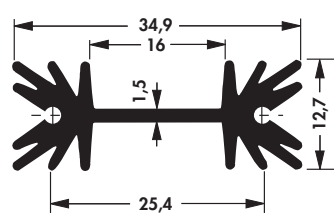
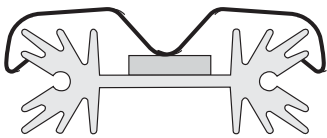
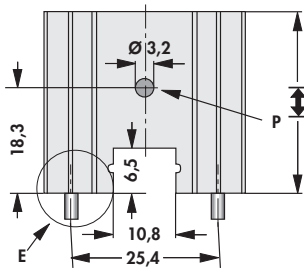
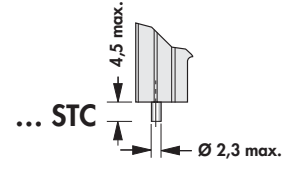
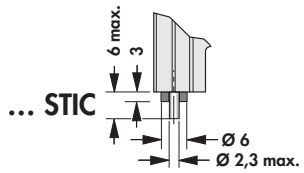
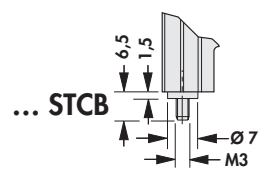
art. no.	l [mm]	R _{th} [K/W]	⊕
SK 452 20 1 x M3	20	11.1	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 452 40 2 x M3	40	7.5	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 452 60 3 x M3	60	5.9	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 452 80 4 x M3	80	4.9	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 452 100 5 x M3	100	4.3	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 452 20 2 x M3	20	11.1	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 452 40 4 x M3	40	7.5	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 452 60 6 x M3	60	5.9	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 452 80 8 x M3	80	4.9	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 452 100 10 x M3	100	4.3	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P

surface:

black anodised

Extruded heatsinks for PCB mounting

- for semiconductor clip-mounting
- special lengths and transistor drillings upon request
- **P** = raised retaining stud, **E** = mounting method

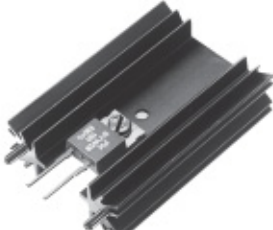
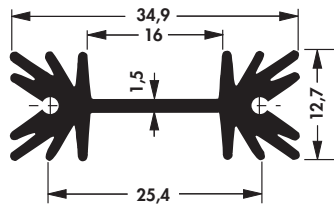
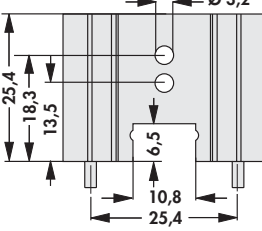
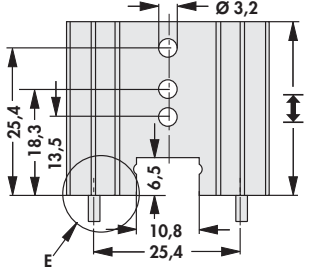
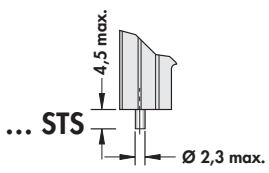
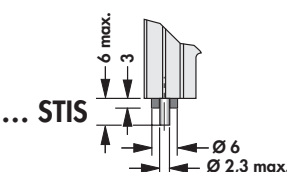
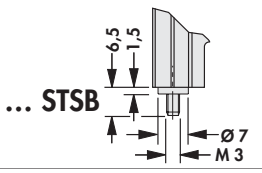








art. no.	l [mm]	R _{th} [K/W]	⌀
SK 104 25,4 ...	25.4	14	TO 220
SK 104 38,1 ...	38.1	11	TO 220
SK 104 50,8 ...	50.8	9	TO 220
SK 104 63,5 ...	63.5	8	TO 220

please indicate: ... mouting method
STC = with solder pin
STIC = with solder pin and insulating washer
STCB = with threaded bolt M3, brass

surface: black anodised

- for semiconductor screw-mounting
- special lengths and transistor drillings on request
- **E** = mounting method

art. no.	l [mm]	R _{th} [K/W]	⌀
SK 104 25,4 ...	25.4	14	SOT 32/ TO 220/ TO 3 P
SK 104 38,1 ...	38.1	11	SOT 32/ TO 220/ TO 3 P
SK 104 50,8 ...	50.8	9	SOT 32/ TO 220/ TO 3 P
SK 104 63,5 ...	63.5	8	SOT 32/ TO 220/ TO 3 P

please indicate: ... mouting method
STS = with solder pin
STIS = with solder pins and insulating washer
STSB = with threaded bolt M3, brass

surface: black anodised

Lock-in transistor fixing spring
 Profiles for PCB components
 Vibration dampers
 Heatsinks with threaded rail

→ A 117 – 119 Miniature distance sleeves
 → A 91 Thermal conductive glue
 → E 39 Thermal conductive paste
 → A 92 Technical introduction

→ E 32
 → E 21 – 22
 → E 19 – 20
 → A 2 – 7

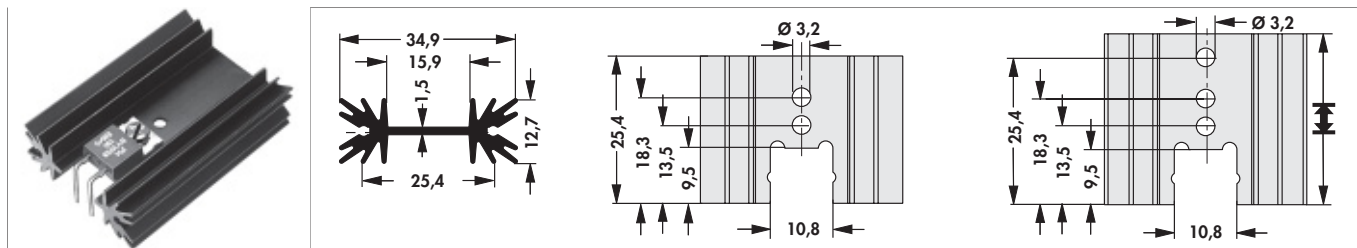
A

Extruded heatsinks for PCB mounting

- horizontal for semiconductor screw-mounting
- special lengths and transistor drillings on request

B

C



art. no.	l [mm]	R _{th} [K/W]	⌀
SK 104 25,4 LS	25.4	14	SOT 32/ TO 220/ TO 3 P
SK 104 38,1 LS	38.1	11	SOT 32/ TO 220/ TO 3 P
SK 104 50,8 LS	50.8	9	SOT 32/ TO 220/ TO 3 P
surface:		black anodised	

D

E

F

G

H

I

K

L

M

N

A 97

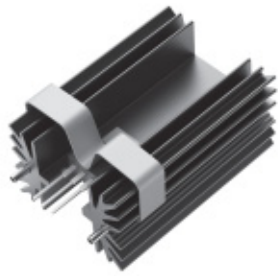
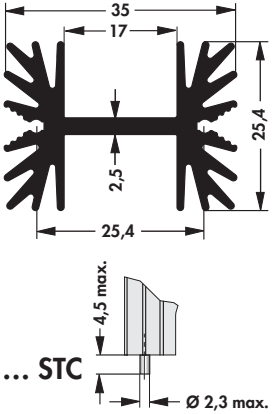
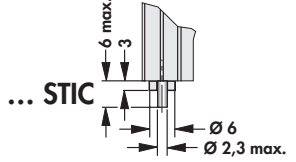
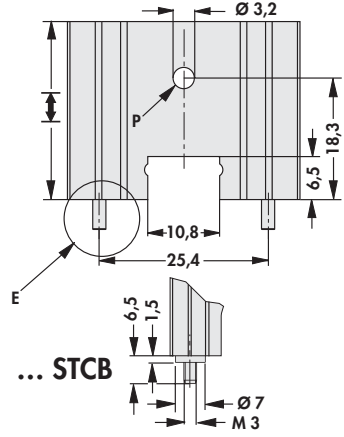
Lock-in transistor fixing spring
 Profiles for PCB components
 Vibration dampers
 Heatsinks with threaded rail

→ A 117 – 119 Miniature distance sleeves
 → A 91 Thermal conductive glue
 → E 39 Thermal conductive paste
 → A 92 Technical introduction

→ E 32
 → E 21 – 22
 → E 19 – 20
 → A 2 – 7

Extruded heatsinks for PCB mounting

- for semiconductor clip-mounting
- special lengths and transistor drillings on request
- **P** = raised retaining stud, **E** = mounting method

art. no.	l [mm]	R _{th} [K/W]	⚡
SK 600 25,4 ...	25.4	11.0	TO 218/ TO 220/ TO 247/ TO 3 P
SK 600 38,1 ...	38.1	9.0	TO 218/ TO 220/ TO 247/ TO 3 P
SK 600 50,8 ...	50.8	7.3	TO 218/ TO 220/ TO 247/ TO 3 P
SK 600 63,5 ...	63.5	6.5	TO 218/ TO 220/ TO 247/ TO 3 P

please indicate:

... mounting method

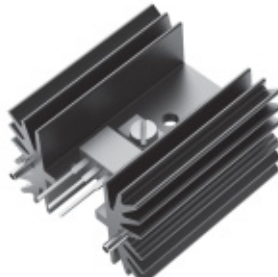
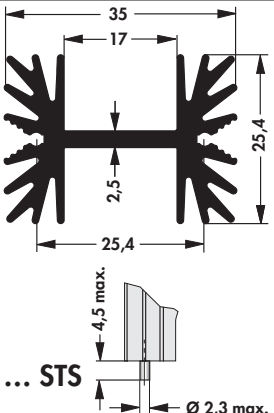
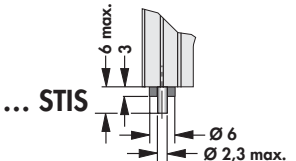
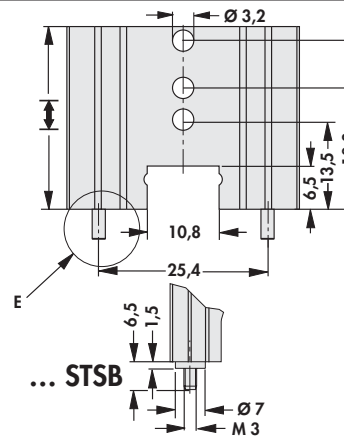
STC = with solder pin

STIC = with solder pin and insulating washer

STCB = with threaded bolt M3, brass

surface: black anodised

- for semiconductor screw-mounting
- special lengths and transistor drillings on request
- **E** = mounting method

art. no.	l [mm]	R _{th} [K/W]	⚡
SK 600 25,4 ...	25.4	11.0	TO 218/ TO 220/ TO 247/ TO 3 P
SK 600 38,1 ...	38.1	9.0	TO 218/ TO 220/ TO 247/ TO 3 P
SK 600 50,8 ...	50.8	7.3	TO 218/ TO 220/ TO 247/ TO 3 P
SK 600 63,5 ...	63.5	6.5	TO 218/ TO 220/ TO 247/ TO 3 P

please indicate:

... mounting method

STS = with solder pin

STIS = with solder pins and insulating washer

STSB = with threaded bolt M3, brass

surface: black anodised


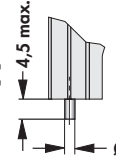
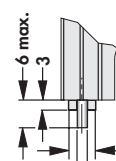
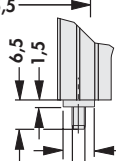
Lock-in transistor fixing spring
 Profiles for PCB components
 Vibration dampers
 Heatsinks with threaded rail

→ A 117 – 119 Miniature distance sleeves
 → A 91 Thermal conductive glue
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 → A 92 Technical introduction


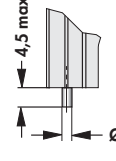
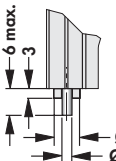
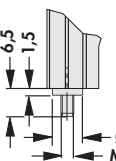
→ E 32
 → E 21 – 22
 → E 19 – 20
 → A 2 – 7

Extruded heatsinks for PCB mounting

- for semiconductor clip-mounting
- special lengths and transistor drillings on request
- **P** = raised retaining stud, **E** = mounting method

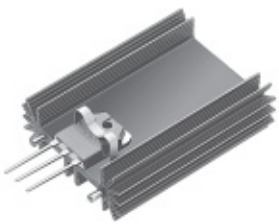
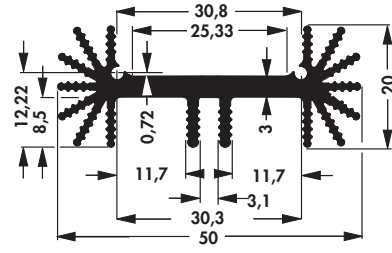
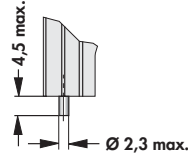
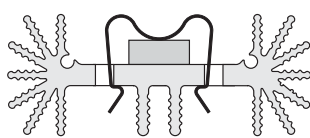
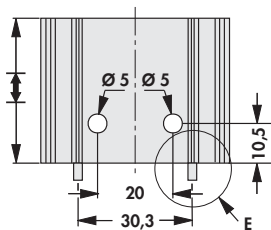
				
				
art. no.	↔ [mm]	R_{th} [K/W]	⊗	
SK 409 25,4 ...	25.4	8.2	TO 220/ TO 3 P	
SK 409 38,1 ...	38.1	7.0	TO 220/ TO 3 P	
SK 409 50,8 ...	50.8	6.2	TO 220/ TO 3 P	
SK 409 63,5 ...	63.5	5.6	TO 220/ TO 3 P	
please indicate:	... mounting method			
	STC = with solder pin			
	STIC = with solder pin and insulating washer			
	STCB = with threaded bolt M3, brass			
surface:	black anodised			

- for semiconductor screw-mounting
- special lengths and transistor drillings on request
- **E** = mounting method

				
				
art. no.	↔ [mm]	R_{th} [K/W]	⊗	
SK 409 25,4 ...	25.4	8.2	TO 220/ TO 3 P	
SK 409 38,1 ...	38.1	7.0	TO 220/ TO 3 P	
SK 409 50,8 ...	50.8	6.2	TO 220/ TO 3 P	
SK 409 63,5 ...	63.5	5.6	TO 220/ TO 3 P	
please indicate:	... mounting method			
	STS = with solder pin			
	STIS = with solder pins and insulating washer			
	STSB = with threaded bolt M3, brass			
surface:	black anodised			

Extruded heatsinks for PCB mounting

- for semiconductor clip-mounting
- special lengths and transistor drillings on request
- **E** = mounting method

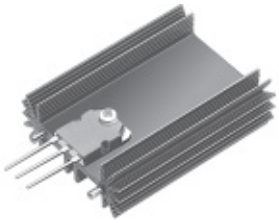
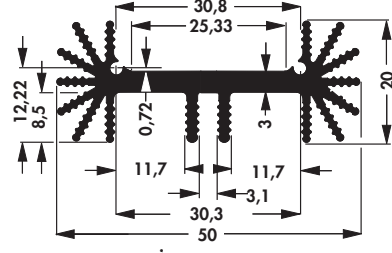
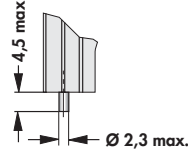

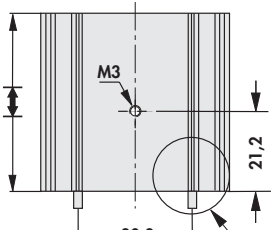
... STC ... STIC ... STCB

art. no.	l [mm]	R _{th} [K/W]	⌀
SK 459 25 ...	25.0	7.9	TO 218/ TO 220/ TO 247/ TO 248
SK 459 37,5 ...	37.5	6.3	TO 218/ TO 220/ TO 247/ TO 248
SK 459 50 ...	50.0	5.6	TO 218/ TO 220/ TO 247/ TO 248

please indicate: ... **mounting method**
STC = with solder pin
STIC = with solder pin and insulating washer
STCB = with threaded bolt M3, brass

surface: black anodised

- for semiconductor screw-mounting
- special lengths and transistor drillings on request
- **E** = mounting method

... STS ... STIS ... STSB

art. no.	l [mm]	R _{th} [K/W]	⌀
SK 459 25 ...	25.0	7.9	TO 218/ TO 220/ TO 247/ TO 248
SK 459 37,5 ...	37.5	6.3	TO 218/ TO 220/ TO 247/ TO 248
SK 459 50 ...	50.0	5.6	TO 218/ TO 220/ TO 247/ TO 248

please indicate: ... **mounting method**
STS = with solder pin
STIS = with solder pins and insulating washer
STSB = with threaded bolt M3, brass

surface: black anodised

Lock-in transistor fixing spring
 Profiles for PCB components
 Vibration dampers
 Heatsinks with threaded rail

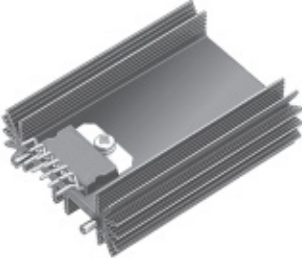
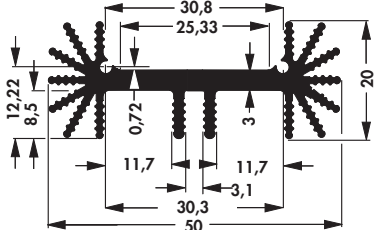
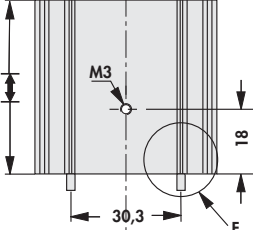
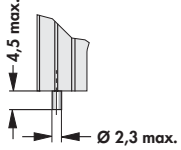
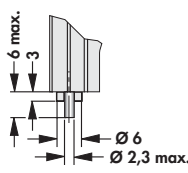
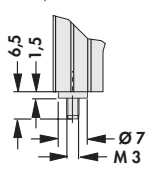

→ A 117 - 119 Miniature distance sleeves
 → A 91 Thermal conductive glue
 → E 39 Thermal conductive paste
 → A 92 Technical introduction

→ E 32
 → E 21 - 22
 → E 19 - 20
 → A 2 - 7


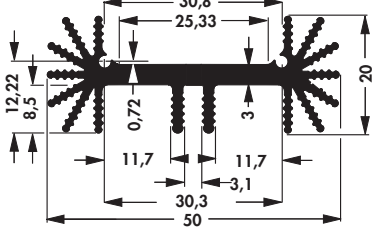
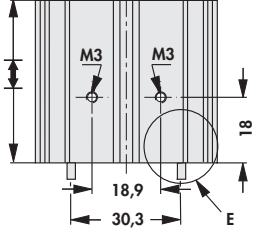
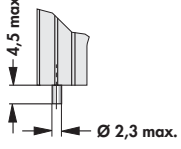
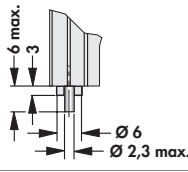
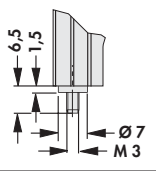

A

Extruded heatsinks for PCB mounting

- for semiconductor screw-mounting
- special lengths and transistor drillings on request
- **E** = mounting method

					
	 <p>... STS</p>	 <p>... STIS</p>	 <p>... STSB</p>		
art. no.	l [mm]	R _{th} [K/W]			
SK 459 25 M ...	25.0	7.9	SIP Multiwatt		
SK 459 37,5 M ...	37.5	6.3	SIP Multiwatt		
SK 459 50 M ...	50.0	5.6	SIP Multiwatt		
please indicate: ... mounting method STS = with solder pin STIS = with solder pins and insulating washer STSB = with threaded bolt M3, brass					
surface:		black anodised			

- for semiconductor screw-mounting
- with **combination-hole pattern** for mounting of 2 x TO 220 or 2 x SOT 32
- special lengths and transistor drillings on request
- **E** = mounting method

					
	 <p>... STS</p>	 <p>... STIS</p>	 <p>... STSB</p>		
art. no.	l [mm]	R _{th} [K/W]			
SK 459 25 2 x TO 220 ...	25.0	7.9	2 x SOT 32/ 2 x TO 220		
SK 459 37,5 2 x TO 220...	37.5	6.3	2 x SOT 32/ 2 x TO 220		
SK 459 50 2 x TO 220 ...	50.0	5.6	2 x SOT 32/ 2 x TO 220		
please indicate: ... mounting method STS = with solder pin STIS = with solder pins and insulating washer STSB = with threaded bolt M3, brass					
surface:		black anodised			

N

A 101

Lock-in transistor fixing spring
 Profiles for PCB components
 Vibration dampers
 Heatsinks with threaded rail

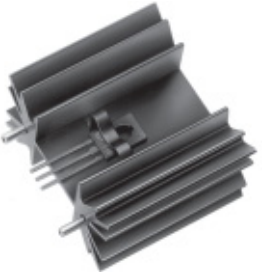
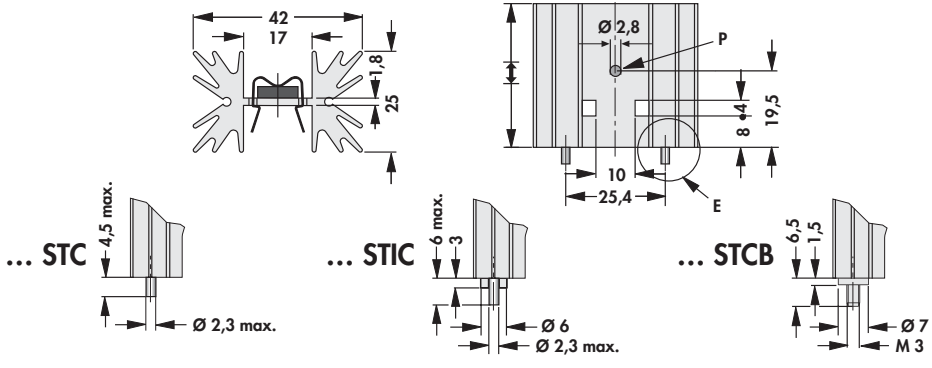
→ A 117 – 119
 → A 91
 → E 39
 → A 92

Miniature distance sleeves
 Thermal conductive glue
 Thermal conductive paste
 Technical introduction

→ E 32
 → E 21 – 22
 → E 19 – 20
 → A 2 – 7

Extruded heatsinks for PCB mounting

- for semiconductor clip-mounting
- special lengths and transistor drillings on request
- **P** = raised retaining stud, **E** = mounting method


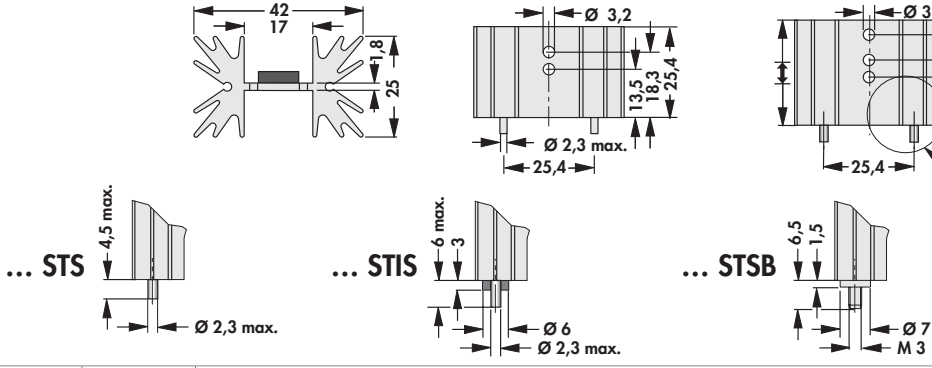



art. no.	l [mm]	R _{th} [K/W]	⌀
SK 129 25,4 ...	25.4	7.8	TO 220
SK 129 38,1 ...	38.1	6.5	TO 220
SK 129 50,8 ...	50.8	5.3	TO 220
SK 129 63,5 ...	63.5	4.5	TO 220

please indicate: ... mounting method
STC = with solder pin
STIC = with solder pin and insulating washer
STCB = with threaded bolt M3, brass

surface: black anodised

- for semiconductor screw-mounting
- special lengths and transistor drillings on request
- **E** = mounting method

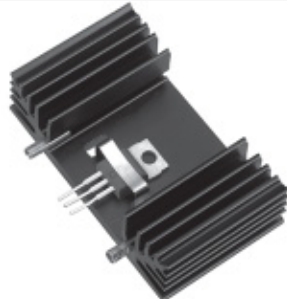
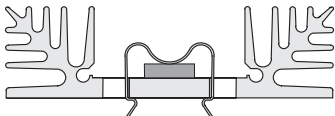
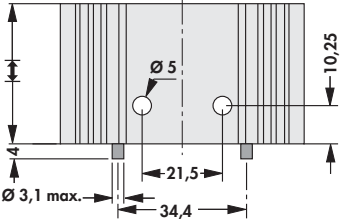
art. no.	l [mm]	R _{th} [K/W]	⌀
SK 129 25,4 ...	25.4	7.8	SOT 32/ TO 220/ TO 3 P
SK 129 38,1 ...	38.1	6.5	SOT 32/ TO 220/ TO 3 P
SK 129 50,8 ...	50.8	5.3	SOT 32/ TO 220/ TO 3 P
SK 129 63,5 ...	63.5	4.5	SOT 32/ TO 220/ TO 3 P

please indicate: ... mounting method
STS = with solder pin
STIS = with solder pins and insulating washer
STSB = with threaded bolt M3, brass

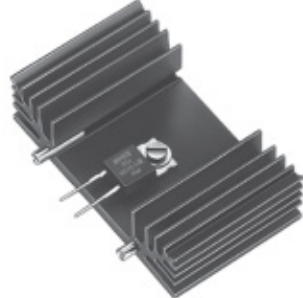
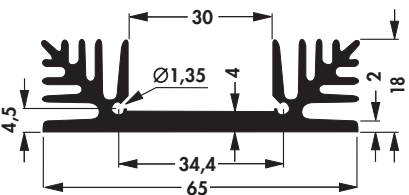
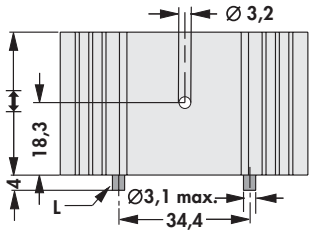
surface: black anodised

Extruded heatsinks for PCB mounting

- for semiconductor clip-mounting
- profile **SK 185** → A 73
- special lengths and drillings on request
- **L** = solderable pins

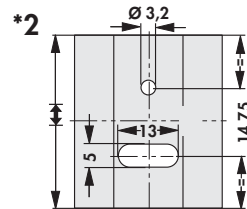
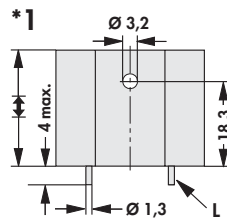
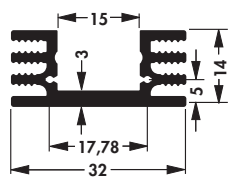
				
art. no.	↔ [mm]	R _{th} [K/W]	⌀	version
SK 185 25 STC TO 220	25.0	7.9	TO 220	with solder pins
SK 185 37,5 STC TO 220	37.5	6.4	TO 220	with solder pins
SK 185 50 STC TO 220	50.0	4.9	TO 220	with solder pins
SK 185 37,5 C TO 220	37.5	6.4	TO 220	without solder pins
SK 185 50 C TO 220	50.0	4.9	TO 220	without solder pins
surface:		black anodised		

- for semiconductor screw-mounting
- profile **SK 185** → A 73
- special lengths and drillings on request
- **L** = solderable pins

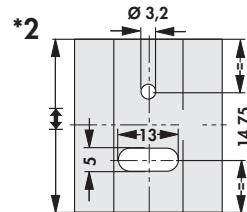
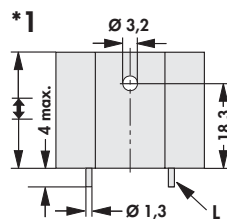
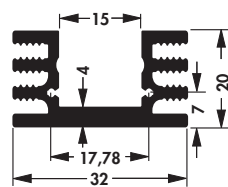
				
art. no.	↔ [mm]	R _{th} [K/W]	⌀	version
SK 185 25 STS TO 220	25.0	7.9	TO 220	with solder pins
SK 185 37,5 STS TO 220	37.5	6.4	TO 220	with solder pins
SK 185 50 STS TO 220	50.0	4.9	TO 220	with solder pins
SK 185 25 TO 220	25.0	7.9	TO 220	without solder pins
SK 185 37,5 TO 220	37.5	6.4	TO 220	without solder pins
SK 185 50 TO 220	50.0	4.9	TO 220	without solder pins
surface:		black anodised		

Extruded heatsinks for PCB mounting

- for semiconductor screw-mounting
- hole pattern is centered to the total length of the heatsink
- special lengths and drillings on request
- *1 = versions with solder pins; *2 = versions without solder pins
- L = solderable pins



art. no.	l [mm]	R _{th} [K/W]	ϕ	version
SK 75 25 STS TO 220	25.0	12.5	TO 220 / *1	with solder pins
SK 75 37,5 STS TO 220	37.5	10.0	TO 220 / *1	with solder pins
SK 75 50 STS TO 220	50.0	8.5	TO 220 / *1	with solder pins
SK 75 25	25.0	12.5	—	without solder pins
SK 75 25 TO 220	25.0	12.5	TO 220 / *2	without solder pins
SK 75 37,5	37.5	10.0	—	without solder pins
SK 75 37,5 TO 220	37.5	10.0	TO 220 / *2	without solder pins
SK 75 50	50.0	8.5	—	without solder pins
SK 75 50 TO 220	50.0	8.5	TO 220 / *2	without solder pins
SK 75 75	75.0	7.0	—	without solder pins
SK 75 1000	1000.0	—	—	without solder pins

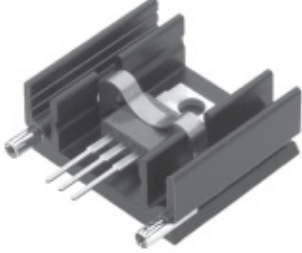

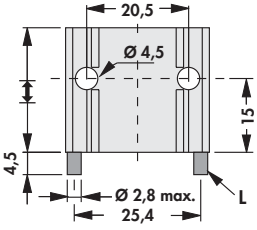


art. no.	l [mm]	R _{th} [K/W]	ϕ	version
SK 76 25 STS TO 220	25.0	10.0	TO 220 / *1	with solder pins
SK 76 37,5 STS TO 220	37.5	8.0	TO 220 / *1	with solder pins
SK 76 50 STS TO 220	50.0	7.0	TO 220 / *1	with solder pins
SK 76 25	25.0	10.0	—	without solder pins
SK 76 25 TO 220	25.0	10.0	TO 220 / *2	without solder pins
SK 76 37,5	37.5	8.0	—	without solder pins
SK 76 37,5 TO 220	37.5	8.0	TO 220 / *2	without solder pins
SK 76 50	50.0	7.0	—	without solder pins
SK 76 50 TO 220	50.0	7.0	TO 220 / *2	without solder pins
SK 76 75	75.0	5.9	—	without solder pins
SK 76 1000	1000.0	—	—	without solder pins
surface:	black anodised			


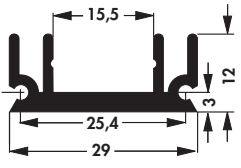
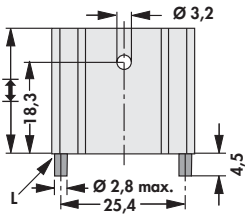
A

Extruded heatsinks for PCB mounting

- for semiconductor clip-mounting
- profile **SK 145** → A 73
- special lengths and drillings on request
- **L** = solderable pins

				
art. no.	l [mm]	R _{th} [K/W]	⌀	version
SK 145 25 STC	25	13.5	TO 218/ TO 220/ TO 247/ TO 248	with solder pins
SK 145 30 STC	30	12.4	TO 218/ TO 220/ TO 247/ TO 248	with solder pins
SK 145 50 STC	50	10.0	TO 218/ TO 220/ TO 247/ TO 248	with solder pins
surface:		black anodised		

- for semiconductor screw-mounting
- profile **SK 145** → A 73
- special lengths and drillings on request
- **L** = solderable pins

				
art. no.	l [mm]	R _{th} [K/W]	⌀	version
SK 145 25 STS TO 220	25.0	13.5	TO 218/ TO 220/ TO 247/ TO 248	with solder pins
SK 145 37,5 STS TO 220	37.5	12.0	TO 218/ TO 220/ TO 247/ TO 248	with solder pins
SK 145 50 STS TO 220	50.0	10.0	TO 218/ TO 220/ TO 247/ TO 248	with solder pins
surface:		black anodised		

B

C

D

E

F

G

H

I

K

L

M

N

A 105

Lock-in transistor fixing spring
 Profiles for PCB components
 Vibration dampers
 Heatsinks with threaded rail

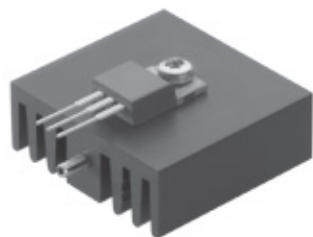
→ A 117 – 119 Miniature distance sleeves
 → A 91 Thermal conductive glue
 → E 39 Thermal conductive paste
 → A 92 Technical introduction

→ E 32
 → E 21 – 22
 → E 19 – 20
 → A 2 – 7

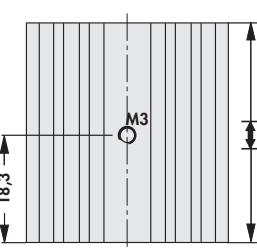
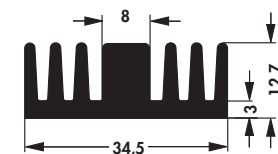
Extruded heatsinks for PCB mounting

- special lengths and drillings on request
- **L** = solderable pins

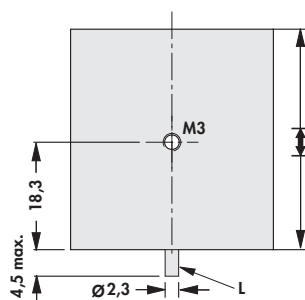
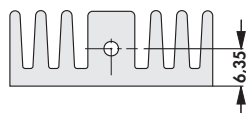
art. no.	L [mm]	R _{th} [K/W]	Ø	version
SK 126 25 STS TO 220	25.0	8.0	TO 218/ TO 220/ TO 247/ TO 248	with solder pin and thread M3
SK 126 37,5 STS TO 220	37.5	6.5	TO 218/ TO 220/ TO 247/ TO 248	with solder pin and thread M3
SK 126 25 TO 220	25.0	8.0	TO 218/ TO 220/ TO 247/ TO 248	without solder pin with thread M3
SK 126 25 2 x M3	25.0	8.0	TO 218/ TO 220/ TO 247/ TO 248	without solder pin with thread M3
SK 126 37,5 TO 220	37.5	6.5	TO 218/ TO 220/ TO 247/ TO 248	without solder pin with thread M3
SK 126 37,5 2 x M3	37.5	6.5	TO 218/ TO 220/ TO 247/ TO 248	without solder pin with thread M3
SK 126 25	25.0	8.0	—	—
SK 126 37,5	37.5	6.5	—	—
SK 126 1000	1000.0	—	—	—
surface:		black anodised		



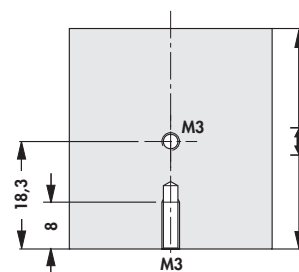
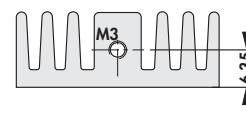
SK 126 25 TO 220
SK 126 37,5 TO 220



SK 126 25 STS TO 220
SK 126 37,5 STS TO 220


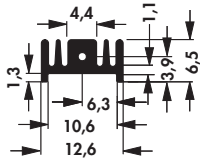
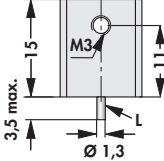
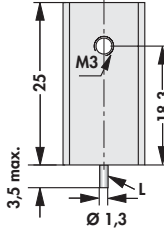
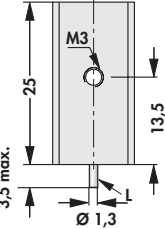
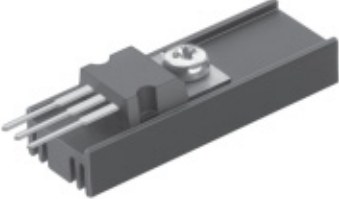
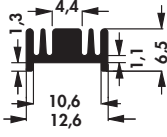
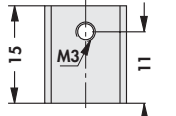
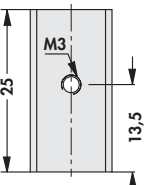
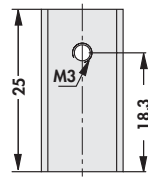
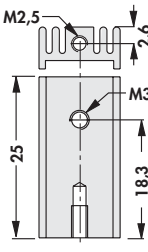
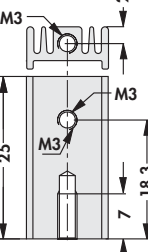


SK 126 25 2 x M3
SK 126 37,5 2 x M3



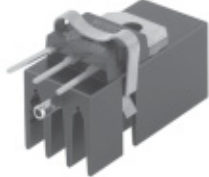
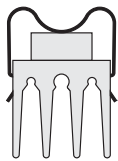
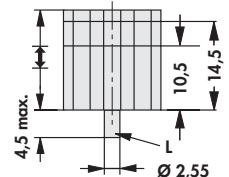

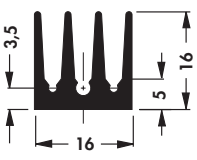
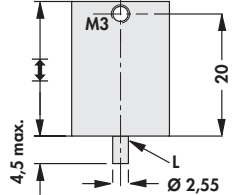
Extruded heatsinks for PCB mounting

- special lengths and drillings on request
- **L** = solderable pins


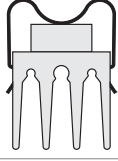
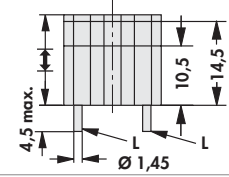
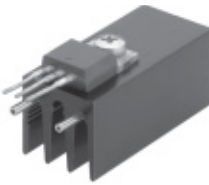
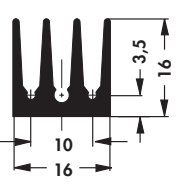
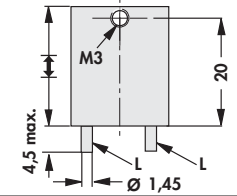
												
			SK 95 15 STS SOT 32 S		SK 95 25 STS TO 220		SK 95 25 STS SOT 32					
	art. no.	↳ [mm]	R_{th} [K/W]	⚡								
	SK 95 15 STS SOT 32 S	15	38.5	SOT 32								
SK 95 25 STS SOT 32	25	36.0	SOT 32									
SK 95 25 STS TO 220	25	36.0	TO 220									
												
			SK 95 15 SOT 32 S		SK 95 25 SOT 32		SK 95 25 TO 220		SK 95 25 1 x M2,5 1 x M3			
	art. no.	↳ [mm]	R_{th} [K/W]	⚡								
	SK 95 15	15	38.5	—								
SK 95 15 SOT 32 S	15	38.5	SOT 32									
SK 95 25	25	36.0	—									
SK 95 25 TO 220	25	36.0	TO 220									
SK 95 25 SOT 32	25	36.0	SOT 32									
SK 95 25 2 x M3	25	36.0	2 x M3 (TO 220)									
SK 95 25 1x M2,5 1x M3	25	36.0	1 x M2,5/ 1 x M3 (TO 220)									
SK 95 1000	1000	—	—									
surface:			black anodised									
type of thread:			not anodised									

Extruded heatsinks for PCB mounting

- single solder pin
- profile **SK 437** → A 24
- special lengths and drillings on request
- **L** = solderable pin

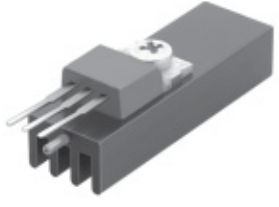
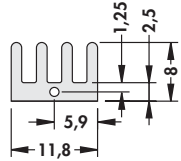
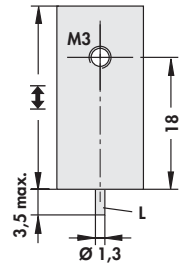
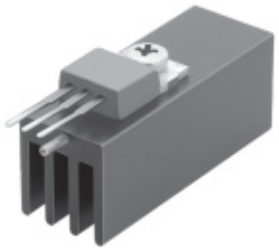
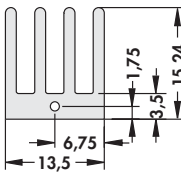
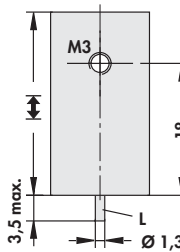
			
art. no.	l [mm]	R _{th} [K/W]	Ø
SK 437 25 STC	25	24	TO 218/ TO 220/ TO 247/ TO 248
SK 437 30 STC	30	22	TO 218/ TO 220/ TO 247/ TO 248
SK 437 35 STC	35	18	TO 218/ TO 220/ TO 247/ TO 248
SK 437 50 STC	50	14	TO 218/ TO 220/ TO 247/ TO 248
			
art. no.	l [mm]	R _{th} [K/W]	Ø
SK 437 25 STS	25	24	TO 218/ TO 220/ TO 247/ TO 248
SK 437 30 STS	30	22	TO 218/ TO 220/ TO 247/ TO 248
SK 437 35 STS	35	18	TO 218/ TO 220/ TO 247/ TO 248
SK 437 50 STS	50	14	TO 218/ TO 220/ TO 247/ TO 248
surface:	black anodised		

- double solder pin
- profile **SK 437** → A 24
- special lengths and drillings on request
- **L** = solderable pin


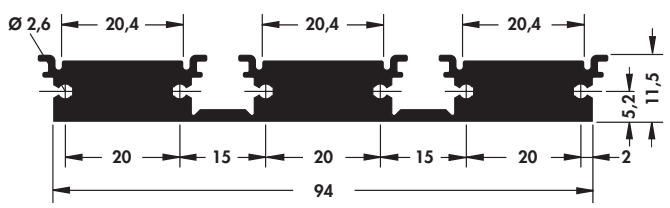
			
art. no.	l [mm]	R _{th} [K/W]	Ø
SK 437 25 STC 2	25	24	TO 218/ TO 220/ TO 247/ TO 248
SK 437 30 STC 2	30	22	TO 218/ TO 220/ TO 247/ TO 248
SK 437 35 STC 2	35	18	TO 218/ TO 220/ TO 247/ TO 248
			
art. no.	l [mm]	R _{th} [K/W]	Ø
SK 437 25 STS 2	25	24	TO 218/ TO 220/ TO 247/ TO 248
SK 437 30 STS 2	30	22	TO 218/ TO 220/ TO 247/ TO 248
SK 437 35 STS 2	35	18	TO 218/ TO 220/ TO 247/ TO 248
surface:	black anodised		

Extruded heatsinks for PCB mounting

- special versions on customer's request
- L = solderable pin

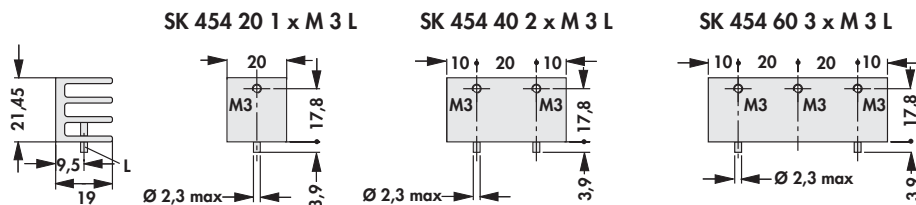
			
art. no.	↔ [mm]	R _{th} [K/W]	⚡
SK 470 25 STS	25	29.0	SOT 32/ TO 220
SK 470 30 STS	30	27.2	SOT 32/ TO 220
SK 470 35 STS	35	25.6	SOT 32/ TO 220
SK 470 50 STS	50	23.2	SOT 32/ TO 220
			
art. no.	↔ [mm]	R _{th} [K/W]	⚡
SK 469 25 STS	25	15.3	SOT 32/ TO 220
SK 469 30 STS	30	14.3	SOT 32/ TO 220
SK 469 35 STS	35	13.0	SOT 32/ TO 220
SK 469 50 STS	50	10.6	SOT 32/ TO 220
surface:	black anodised		

- as mounting- and connecting piece
- for clamp mounting of the transistors
- triple unit can be separated
- solder pin mounting possible
- special versions on customer's request

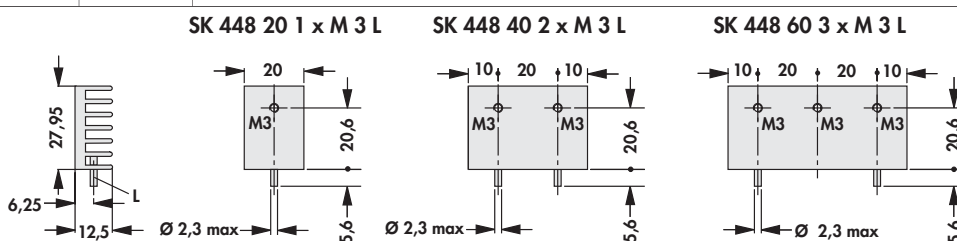
			
art. no.	↔ [mm]	R _{th} [K/W]	⚡
SK 484 25	25.0	6.0	TO 218/ TO 220/ TO 247/ TO 264/ TO 3 P
SK 484 37,5	37.5	4.5	TO 218/ TO 220/ TO 247/ TO 264/ TO 3 P
SK 484 50	50.0	3.7	TO 218/ TO 220/ TO 247/ TO 264/ TO 3 P
SK 484 75	75.0	2.8	TO 218/ TO 220/ TO 247/ TO 264/ TO 3 P

Extruded heatsinks for PCB mounting

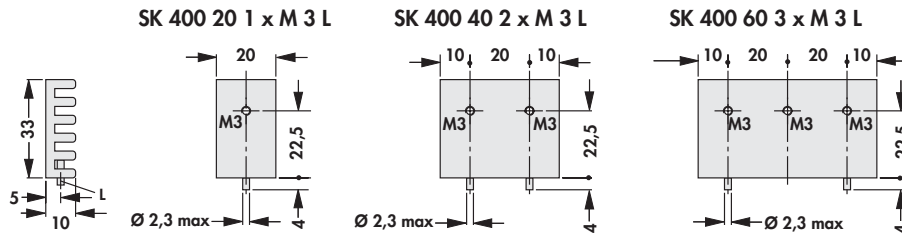
- compact PCB heatsinks
- especially suitable for vertical PCB mounting in housings, racks etc.
- easy solder fixing
- special versions on customer's request
- L = solderable pin



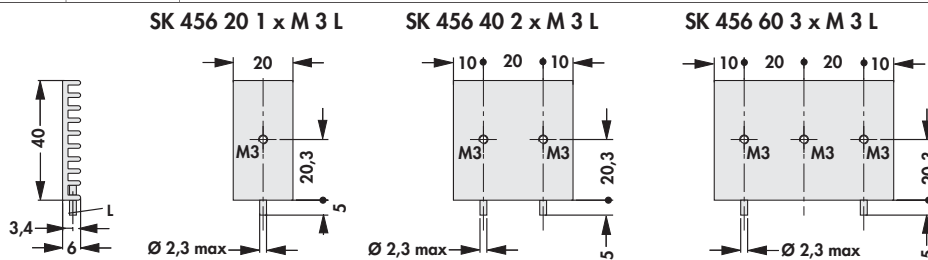
art. no.	width [mm]	R _{th} [K/W]	mounting
SK 454 20 1 x M3 L	20	10.1	SOT 32/ TO 220
SK 454 40 2 x M3 L	40	8.8	SOT 32/ TO 220
SK 454 60 3 x M3 L	60	7.5	SOT 32/ TO 220



art. no.	width [mm]	R _{th} [K/W]	mounting
SK 448 20 1 x M3 L	20	11.8	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 448 40 2 x M3 L	40	9.8	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 448 60 3 x M3 L	60	7.1	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P



art. no.	width [mm]	R _{th} [K/W]	mounting
SK 400 20 1 x M3 L	20	11.6	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 400 40 2 x M3 L	40	8.2	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 400 60 3 x M3 L	60	7.2	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P



art. no.	width [mm]	R _{th} [K/W]	mounting
SK 456 20 1 x M3 L	20	13.0	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 456 40 2 x M3 L	40	10.5	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P
SK 456 60 3 x M3 L	60	8.5	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P

Lock-in transistor fixing spring
Profiles for PCB components
Vibration dampers
Heatsinks with threaded rail


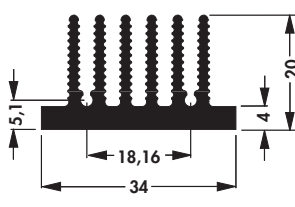
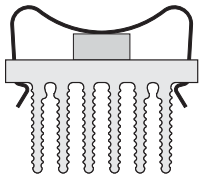
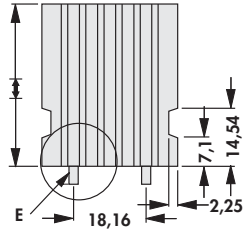
→ A 117 - 119 Miniature distance sleeves
→ A 91 Thermal conductive glue
→ E 39 Thermal conductive paste
→ A 92 Technical introduction

→ E 32
→ E 21 - 22
→ E 19 - 20
→ A 2 - 7


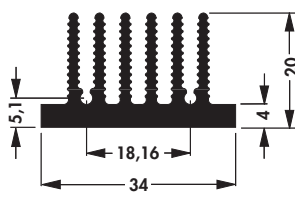
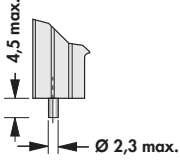
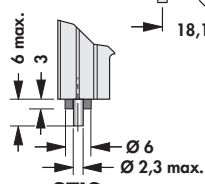
A 110

Extruded heatsinks for PCB mounting

- for semiconductor clip-mounting
- special lengths and transistor drillings on request
- **E** = mounting method

			
art. no.	↔ [mm]	R_{th} [K/W]	⊕
SK 460 25 ...	25.0	9.0	SIP Multiwatt/ TO 218/ TO 220/ TO 247/ TO 248
SK 460 37,5 ...	37.5	7.9	SIP Multiwatt/ TO 218/ TO 220/ TO 247/ TO 248
SK 460 50 ...	50.0	7.0	SIP Multiwatt/ TO 218/ TO 220/ TO 247/ TO 248
please indicate:	... mounting method		
	STC = with solder pin		
	STIC = with solder pin and insulating washer		
	STCB = with threaded bolt M3, brass		
surface:	black anodised		

- for semiconductor screw-mounting
- special lengths and transistor drillings on request
- **E** = mounting method

			
art. no.	↔ [mm]	R_{th} [K/W]	⊕
SK 460 25 STS	25.0	9.0	SIP Multiwatt/ TO 218/ TO 220/ TO 247/ TO 248
SK 460 37,5 STS	37.5	7.9	SIP Multiwatt/ TO 218/ TO 220/ TO 247/ TO 248
SK 460 50 STIS	50.0	7.0	SIP Multiwatt/ TO 218/ TO 220/ TO 247/ TO 248
surface:	black anodised		

– special versions on customer's request

<p>art. no.</p> <p>SK DC 10 60 SA</p>		
<p>art. no.</p> <p>SK DC 8 60 SA</p>		
<p>art. no.</p> <p>SK DC 8 1 60 SA</p>		
<p>art. no.</p> <p>SK DC 4 1 117 SA</p>		
<p>art. no.</p> <p>SK DC 6 1 60 SA</p>		
<p>surface:</p>		<p>black anodised</p>

A

Extruded heatsinks for DC/DC converter

– special versions on customer's request

B

C

D

E

F

G

H

I

K

L

M


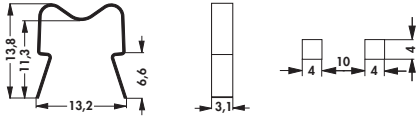
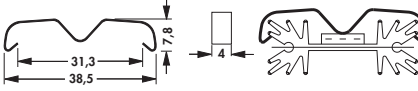
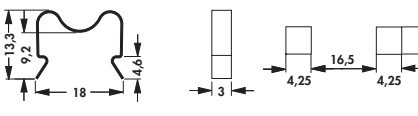
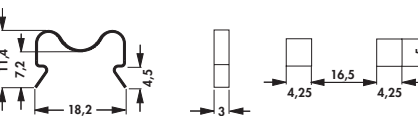
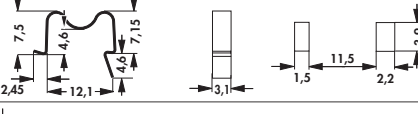
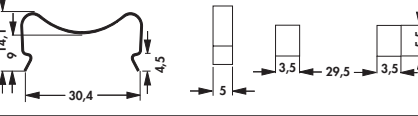
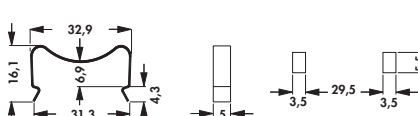
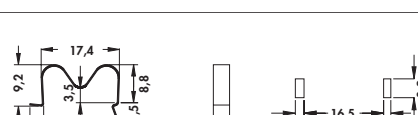
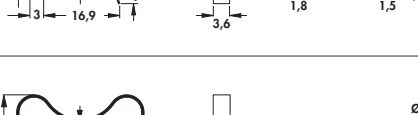
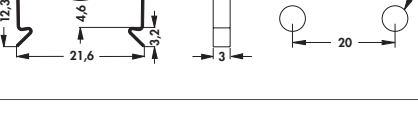
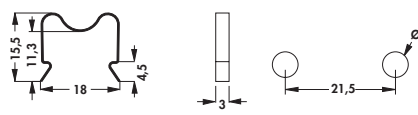
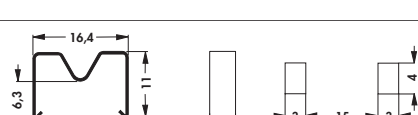
N

<p>art. no.</p> <p>SK DC 7 117 SA</p>		
<p>art. no.</p> <p>SK DC 7 1 117 SA</p>		
<p>art. no.</p> <p>SK DC 2 1 76 SA</p>		
<p>art. no.</p> <p>SK DC 5 59 SA</p>		
<p>art. no.</p> <p>SK DC 5 1 59 SA</p>		
<p>surface:</p>		<p>black anodised</p>

A 113

Heatsink profile-overview → A 13 – 17
 Drilling pattern for Solid State Relays → A 12
 Heatsinks for Solid State Relays → A 11 – 12
 Special profiles → A 138

Standard aluminium profiles → A 133 – 134
 Extruded heatsinks → A 22 – 83
 Profiles for PCB mounting → A 89 – 111
 Technical introduction → A 2 – 7

art. no.	for transistor-housing	suitable for heatsinks	plate thickness [mm]	material	
THF 129 TO 220	TO 220	FK 219/ FK 222/ SK 129	1-2	spring steel, corrosion protected	
THF 104	TO 220/ TO 247/ TO 248/ TO 3 P	SK 104	1-2	stainless steel	
THF 409 TO 220	TO 220/ TO 247/ TO 248/ TO 3 P	SK 409	1.5-3.0	stainless steel	
THF 409 SOT 32	TO 126/ SOT 32/ SOT 82	SK 409	2-3	stainless steel	
THF 220	TO 220	FK 219/ FK 222	1-2	spring steel, corrosion protected	
THF 247	TO 220/ TO 247/ TO 248/ TO 3 P	SK 484	2	stainless steel	
THF 247 4	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P	SK 460	4	stainless steel	
THF 220 17	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P	UK 35	1.0-1.5	stainless steel	
THF 409 220 1	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P	SK 409/ SK 459	2-3	stainless steel	
THF 409 220 2	TO 218/ TO 220/ TO 247/ TO 248/ TO 3 P	SK 145/ SK 185/ SK 437	4	stainless steel	
THF 249	TO 220	FK 249	1.0-1.5	spring steel, corrosion protected	
THF 600	TO 218/ TO 220/ TO 247/ TO 3 P	SK 600	2.5	spring steel, corrosion protected	

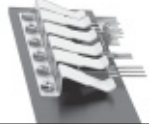
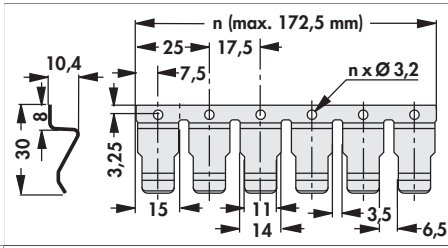

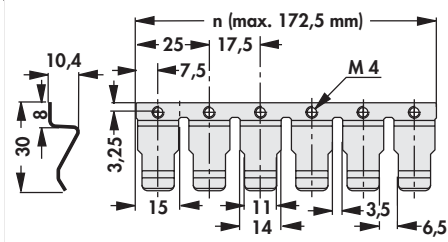
Mica wafers → E 17
Kapton insulator washers → E 14
Mounting parts for heatsinks → E 47 – 48
Mounting material for semiconduct. → E 42 – 46


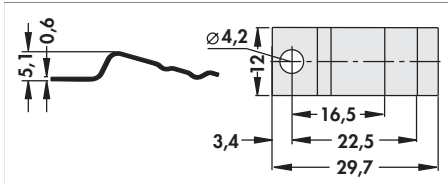

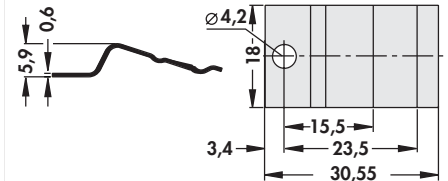
Thermal conductive material → E 2 – 5
Insulating caps → E 49
Thermal conductive paste → E 19
Technical introduction → A 2 – 7

A

Retaining springs for transistors

- universal **retaining spring** for transistor housings types TO 218, TO 220, TO 247, TO 264, SOT 32 and various SIP Multiwatt etc.
- utility patent 200 14 739.0
- fast and easy mounting of the transistors
- number of retaining spring elements can be chosen (**n = max. 10**)
- **THFMG** with thread M 4
- specific versions and modifications on customer's request

art. no.	for transistor-housing	spring force [N]	material	
THFM ...	TO 218/ TO 220/ TO 247/ TO 264/ SOT 32/ SIP Multiwatt	60 ±5	stainless steel	 
THFMG ...	TO 218/ TO 220/ TO 247/ TO 264/ SOT 32/ SIP Multiwatt	60 ±5	stainless steel	 
<p>please indicate: ... number of retaining-spring elements 1 - 10</p>				

art. no.	for transistor-housing	spring force [N]	material	
THFK 220	TO 220	79	stainless steel	 
THFK 247	TO 218/ TO 247	119	stainless steel	 

A 115

Mica wafers → E 17
Kapton insulator washers → E 14
Mounting parts for heatsinks → E 47 - 48
Mounting material for semiconduct. → E 42 - 46

Thermal conductive material → E 2 - 5
Insulating caps → E 49
Thermal conductive paste → E 19
Technical introduction → A 2 - 7

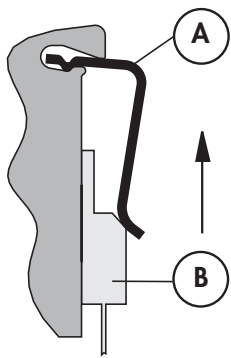
N

Lock-in retaining spring for transistors

- universal lock-in retaining spring for types TO 218, TO 220, TO 247, TO 264 and various SIP-Multiwatt etc. transistor housings
- clip fastening also for power transistors without holes, MAX types etc.
- easy assembly and secure hold when using a special groove geometry in heatsinks, housing parts etc.
- optimal heat transfer between component and cooling element
- various spring clip shapes available for fastening the components (see sketch)
- the range of suitable heat sinks is continuously extended
- versions specifically designed to meet customers requirements on request

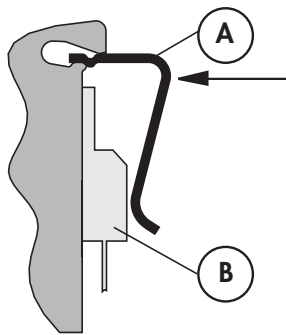
Installation

THFU 1

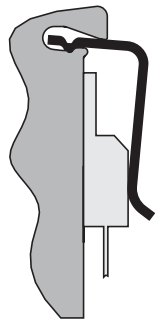


- insert the lock-in retaining spring for transistors THFU 1 (A) into the groove of the profile
- push transistor (B) below the spring

THFU 2, THFU 3, THFU 4, THFU 5, THFU 6



- place transistor (B) onto the mounting area
- press the lock-in retaining spring for transistors THFU 2 - 6 (A) into the groove of the profile (a suitable installation aid will facilitate pressing in)


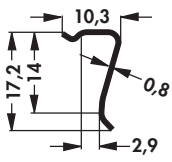
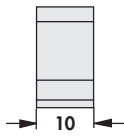

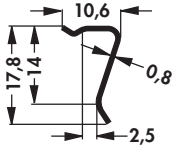
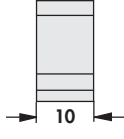


- Once in place, the spring will keep its position and fix the transistor with a high contact pressure on the installation surface (the spring remains in its position and it can neither be moved in a lengthwise direction nor fall it can out of the groove in a cross direction).


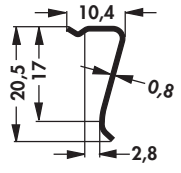
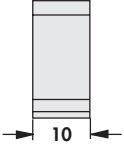

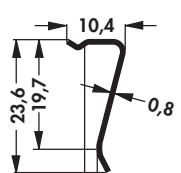
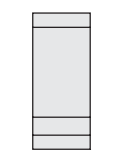

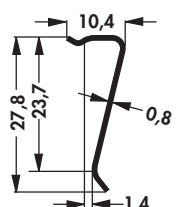
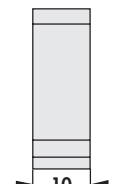
material:	stainless steel
material thickness:	0.8 mm

Mica wafers	→ E 17	Thermal conductive material	→ E 2 - 5
Kapton insulator washers	→ E 14	Insulating caps	→ E 49
Mounting parts for heatsinks	→ E 47 - 48	Thermal conductive paste	→ E 19
Mounting material for semiconduct.	→ E 42 - 46	Technical introduction	→ A 2 - 7

Lock-in retaining spring for transistors


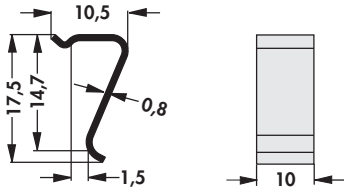
art. no.	for transistor-housing	suitable for heatsinks	spring force [N]	material		
THFU 1	TO 218/ TO 220/ TO 247/ TO 262/ SOT 199/ SOT 429/ TO 3 P	SK 480/	60 ±5	stain- less steel		 
		SK 481/				
		SK 482/				
		SK 483/				
		SK 487/				
		SK 489/				
		SK 490/				
		SK 492/				
		SK 495/				
		SK 499/				
		SK 512/				
		SK 514/				
		SK 573/				
		SK 574/				
		SK 575/				
		SK 576/				
		SK 589/				
SK 593/						
LAM 3 K/						
LAM 4 K/						
LAM 5 K						
THFU 2	TO 218/ TO 220/ TO 247/ TO 262/ SOT 199/ SOT 429/ TO 3 P	SK 480/	60 ±5	stain- less steel		 
		SK 481/				
		SK 482/				
		SK 483/				
		SK 487/				
		SK 489/				
		SK 490/				
		SK 492/				
		SK 495/				
		SK 499/				
		SK 512/				
		SK 514/				
		SK 573/				
		SK 574/				
		SK 575/				
		SK 576/				
		SK 589/				
SK 593/						
LAM 3 K/						
LAM 4 K/						
LAM 5 K						

Lock-in retaining spring for transistors

art. no.	for transistor-housing	suitable for heatsinks	spring force [N]	material		
THFU 3	TO 218/ TO 220/ TO 247/ TO 262/ SOT 199/ SOT 429/ TO 3 P	SK 480/ SK 481/ SK 482/ SK 483/ SK 487/ SK 489/ SK 490/ SK 492/ SK 495/ SK 499/ SK 514/ SK 573/ SK 574/ SK 575/ SK 576/ SK 589/ SK 593/ LAM 3 K/ LAM 4 K/ LAM 5 K	50 ±5	stainless steel		 
THFU 4	TO 218/ TO 202/ TO 220/ TO 248/ TO 262/ TO 264/ SOT 199/ TO 3 P	SK 480/ SK 481/ SK 482/ SK 483/ SK 487/ SK 489/ SK 490/ SK 495/ SK 499/ SK 514/ SK 575/ SK 589/ SK 593/ LAM 5 K	32 ±5	stainless steel		 
THFU 5	TO 218/ TO 202/ TO 220/ TO 247/ TO 248/ TO 262/ TO 264/ SOT 199/ SOT 429/ TO 3 P	SK 490/ SK 589/ LAM 5 K	25 ±5	stainless steel		 


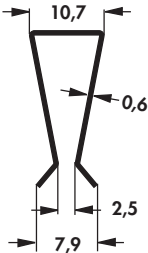
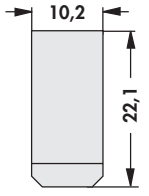

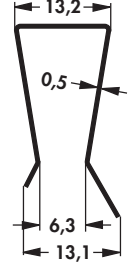
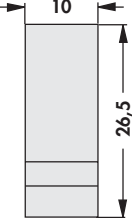

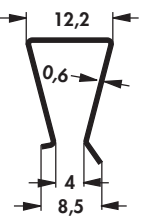
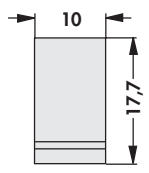

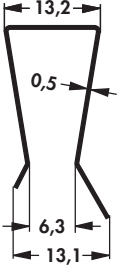
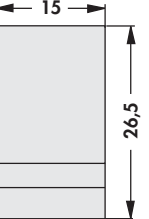
Lock-in retaining spring for transistors

– THFU 6 for transistors with low component height

art. no.	for transistor-housing	suitable for heatsinks	spring force [N]	material	 
THFU 6	TO 126/ TO 218/ TO 220/ TO 225/ TO 247/ TO 248/ TO 251/ SOT 32/ TO 3 P	SK 480/ SK 481/ SK 482/ SK 483/ SK 487/ SK 489/ SK 490/ SK 492/ SK 495/ SK 499/ SK 512/ SK 514/ SK 573/ SK 574/ SK 575/ SK 576/ SK 589/ SK 593/ LAM 3 K/ LAM 4 K/ LAM 5 K	65 ±5	stainless steel	

Transistor clamps

- able to slide on the transistor and mounting plate
- easy mounting
- high pressure force and firm grip
- specific versions upon customer's request

art. no.	for transistor-housing	plate thickness [mm]	holding force [N]	material			
THFA 1	TO 220	2	20	stainless steel			
THFA 2	TO 220	6.5	20	spring steel, corrosion protected			
THFA 3	TO 220	5.5	33	spring steel, corrosion protected			
THFA 4	TO 218/ TO 247	6.5	59	spring steel, corrosion protected			

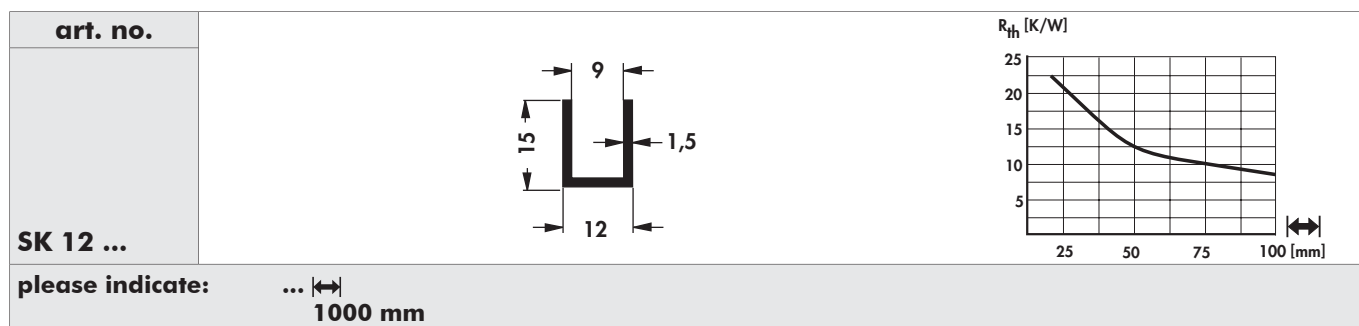
- | | | | |
|------------------------------------|-------------|-----------------------------|-----------|
| Mica wafers | → E 17 | Thermal conductive material | → E 2 - 5 |
| Kapton insulator washers | → E 14 | Insulating caps | → E 49 |
| Mounting parts for heatsinks | → E 47 - 48 | Thermal conductive paste | → E 19 |
| Mounting material for semiconduct. | → E 42 - 46 | Technical introduction | → A 2 - 7 |

A

U-Extruded heatsinks

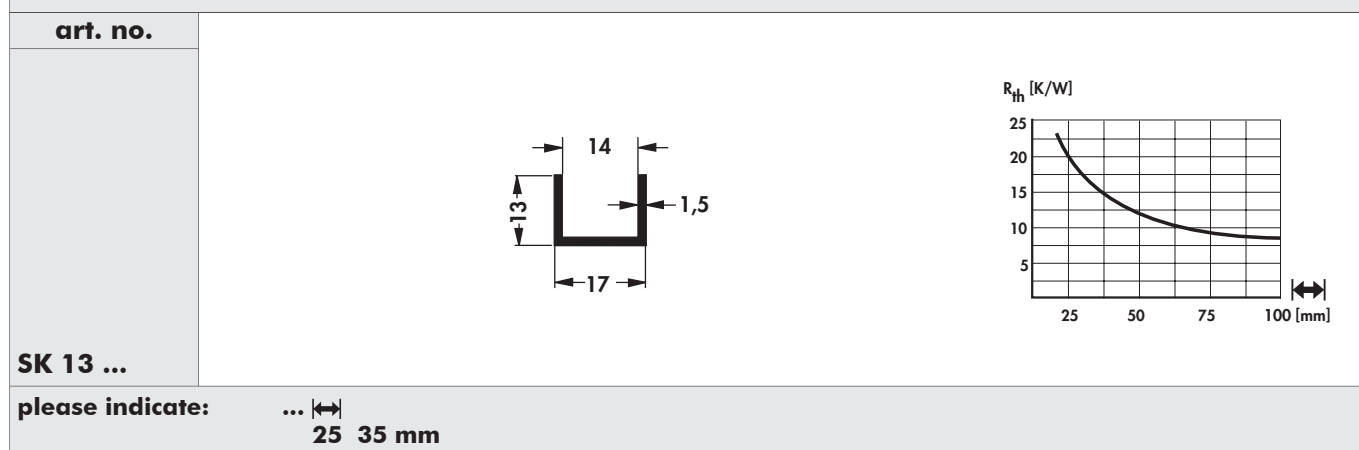
B

C



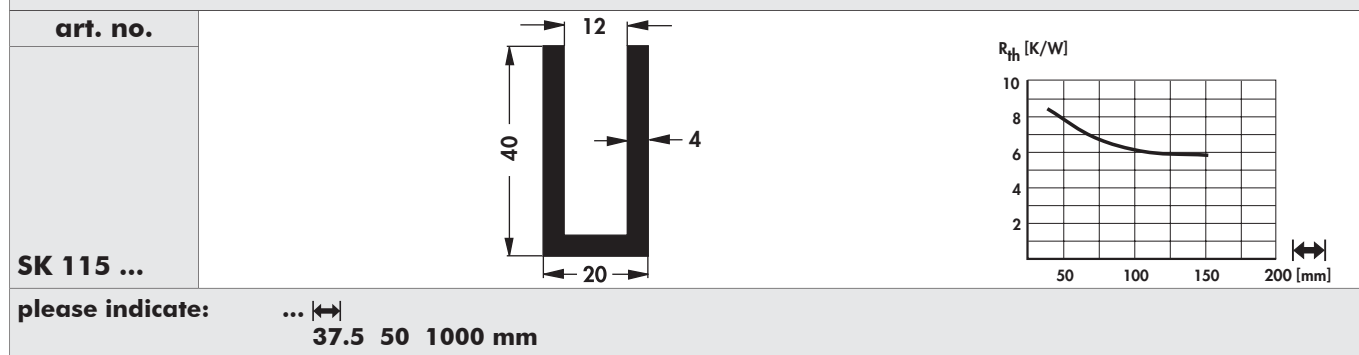
D

E



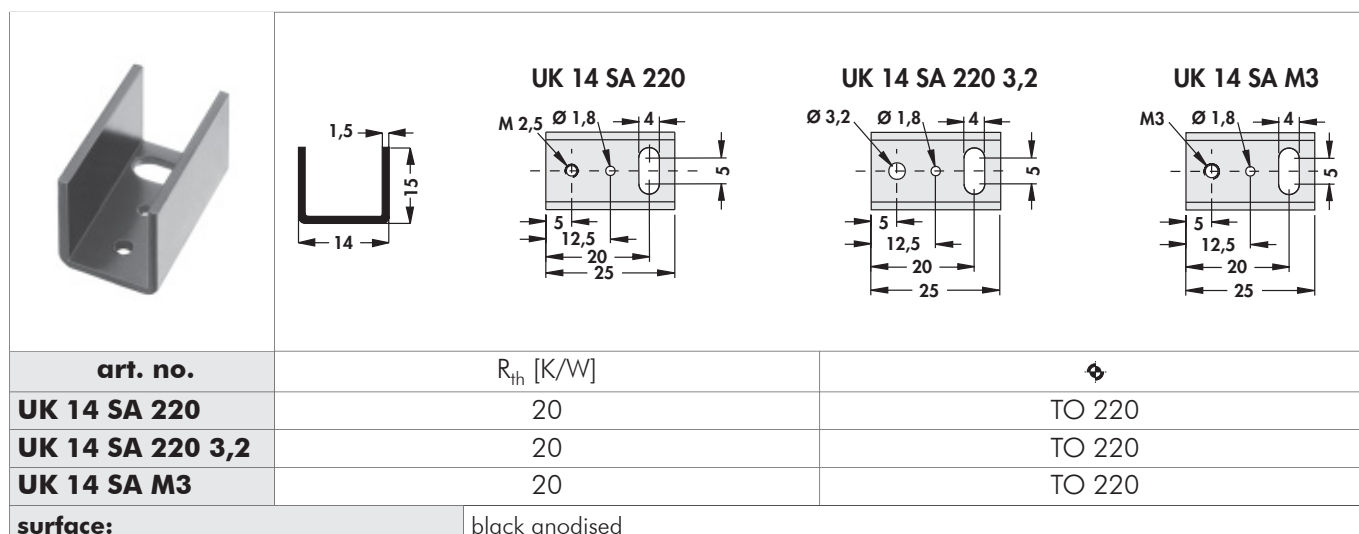
F

G



H

I



K

L

M

N

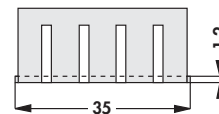
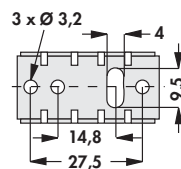
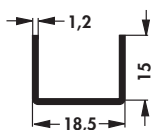
A 121

Profiles for PCB components
Heatsink profile-overview
Heatsinks for PCB
Hole pattern

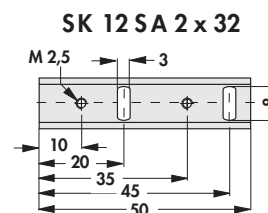
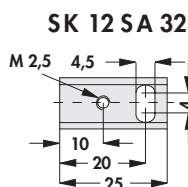
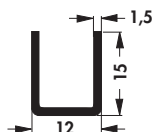
→ A 91
→ A 13 – 17
→ A 89 – 91
→ A 21

Profiles for PCB mounting
Extruded heatsinks
Retaining springs for transistors
Technical introduction

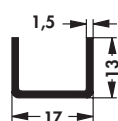
→ A 89 – 111
→ A 22 – 83
→ A 114 – 120
→ A 2 – 7



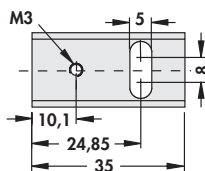
art. no.	R_{th} [K/W]	⊗
ICK 35 SA	15	TO 220



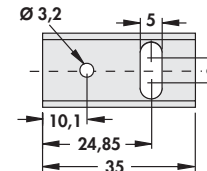
art. no.	R_{th} [K/W]	⊗
SK 12 SA 32	30	1 x SOT 32
SK 12 SA 2 x 32	15	2 x SOT 32



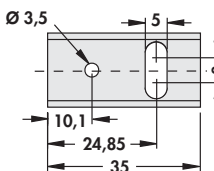
SK 13 35 SA 220



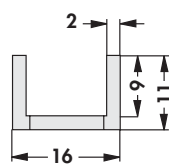
SK 13 35 SA 220 3,2



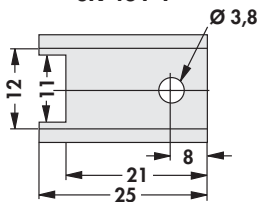
SK 13 35 SA 220 3,5



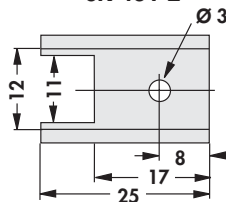
art. no.	R_{th} [K/W]	⊗
SK 13 35 SA 220	17	TO 220
SK 13 35 SA 220 3,2	17	TO 220
SK 13 35 SA 220 3,5	17	TO 220



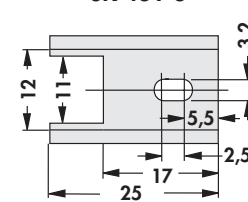
SK 431 1



SK 431 2




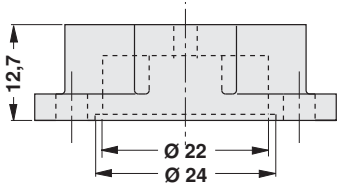
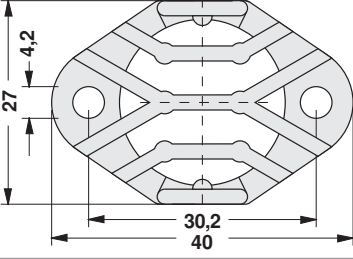
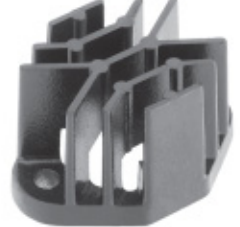
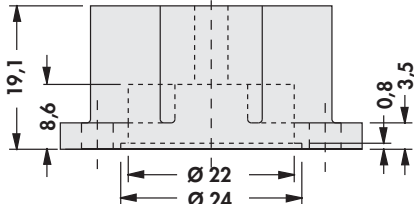
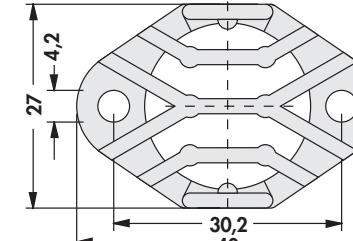

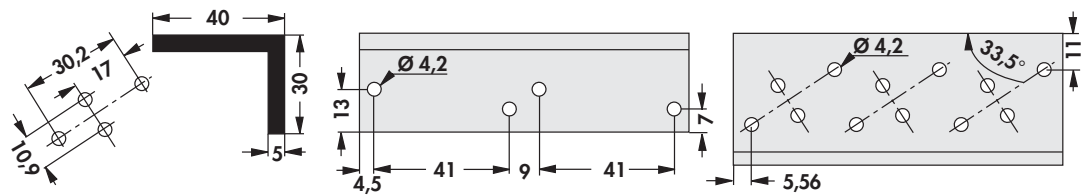
SK 431 3



art. no.	R_{th} [K/W]	⊗
SK 431 1	18	TO 220
SK 431 2	18	TO 220
SK 431 3	18	TO 220

surface: black anodised

Die-cast heatsinks
Setup heatsinks and angle for TO 3


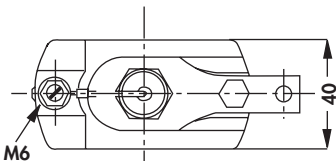
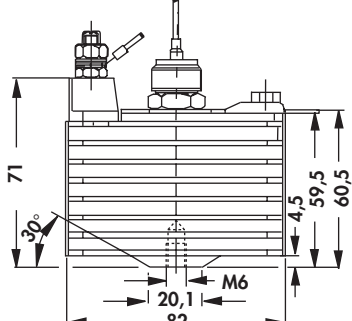

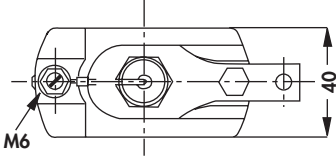
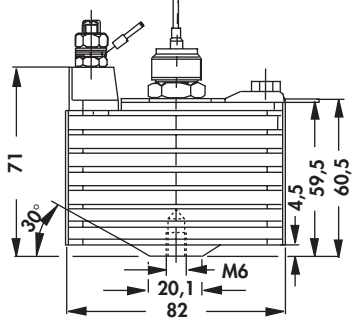

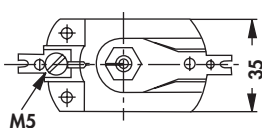
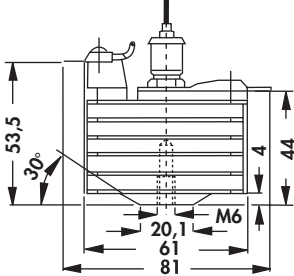

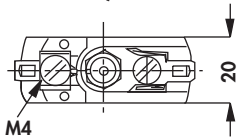
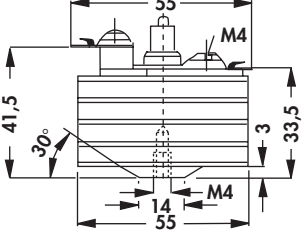
			
art. no.	< > [mm]	R_{th} [K/W]	
AKK 127	27	14	
			
art. no.	< > [mm]	R_{th} [K/W]	
AKK 191	27	12	
surface:	black lacquered		
material:	die-casting aluminium		
			
art. no.	< > [mm]	R_{th} [K/W]	◆
WP 4030 100 ...	100	3.7	—
WP 4030 100 3 ...	100	3.7	TO 3
please indicate:	... surface SA = black anodised AL = raw degreased aluminium		

 socket: **TF 3 2** → E 48

Die-cast heatsinks

Die-cast acc. to german standard DIN 41882

– other lengths and drillings on request

<p>art. no.</p>		<p>2,8 K/W</p> 	
<p>K 3 ... for mounting use insulator: art. no.: IS 53</p>			
<p>please indicate: ... semiconductor retaining thread M 6, M 8, M 10, M 12, 1/4"-28 UNF</p>			
<p>art. no.</p>		<p>2,8 K/W</p> 	
<p>K 3 T ... Cathode lug insulator with an additional insulated connection (M 3). for mounting use insulator: art. no.: IS 53</p>			
<p>please indicate: ... semiconductor retaining thread M 6, M 8</p>			
<p>art. no.</p>		<p>5 K/W</p> 	
<p>K 5 ... for mounting use insulator: art. no.: IS 53</p>			
<p>please indicate: ... semiconductor retaining thread M 5, M 6, M 8, 1/4"-28 UNF</p>			
<p>art. no.</p>		<p>9 K/W</p> 	
<p>K 9 ... please indicate: ... semiconductor retaining thread M 4, M 5</p>			
<p>surface:</p>		<p>black lacquered</p>	

Mounting for TO 3 angle
Order example
Standard aluminium profiles
Heatsinks for PCB

→ A 123 Heatsinks for DC/DC converter
→ A 21 Profiles for lock-in fixing spring
→ A 133 – 134 Heatsink profile-overview
→ A 89 – 111 Technical introduction

→ A 112 – 113
→ A 84 – 88
→ A 13 – 17
→ A 2 – 7

A 124


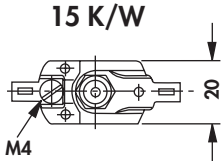
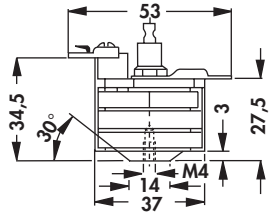
A
B
C
D
E
F
G
H
I
K
L
M
N

A

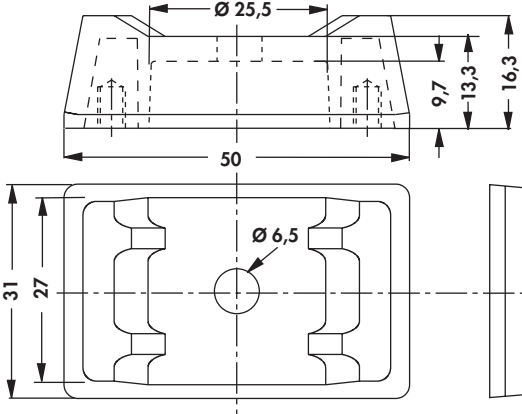
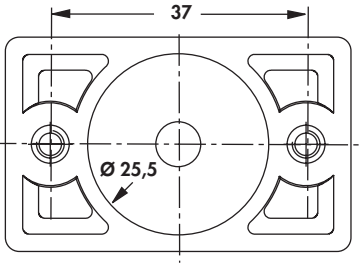
Die-cast heatsinks

Die-cast acc. to german standard DIN 41882

– other lengths and drillings on request

art. no.			
K 15 ...			
please indicate:	... semiconductor retaining thread M 4, M 5		
surface:	black lacquered		

Mounting parts for heatsinks

art. no.			
IS 53			

E

F

G

H

I

K

L

M

N

A 125

Mounting for TO 3 angle
Order example
Standard aluminium profiles
Heatsinks for PCB

→ A 123 Heatsinks for DC/DC converter
→ A 21 Profiles for lock-in fixing spring
→ A 133 – 134 Heatsink profile-overview
→ A 89 – 111 Technical introduction

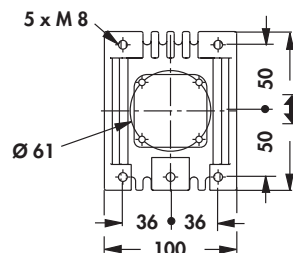
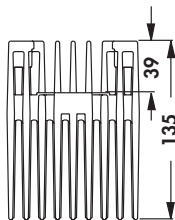
→ A 112 – 113
→ A 84 – 88
→ A 13 – 17
→ A 2 – 7

Die-cast heatsinks

- completely milled mounting surface for semiconductors with square bottom plates
- the mounting surface can be equipped with threads for fastening semiconductors with screwed glands (semiconductor thread tapping)
- threads from M 4 to M 32 x 1.5 or 4 x threads for semiconductors with clamping plate mounting are available
- strap fastening thread M 8
- delivery without anode strap
- other lengths and drillings on request



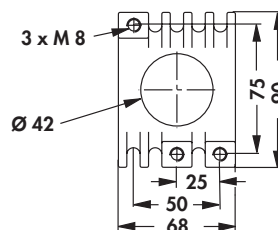
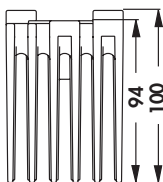
0,55 K/W



art. no.	↔ [mm]	R_{th} [K/W]
K 0,55 ...	120	0.55
please indicate:	... semiconductor retaining thread M 8, M 12, M 16 x 1,5, M 24 x 1,5	



1,1 K/W



art. no.	↔ [mm]	R_{th} [K/W]
K 1,1 ...	90	1.1
please indicate:	... semiconductor retaining thread M 8, M 12, M 16 x 1,5, M 24 x 1,5	
surface:	black lacquered	

Accessories

- anode end strap made of tin-plated cathode copper

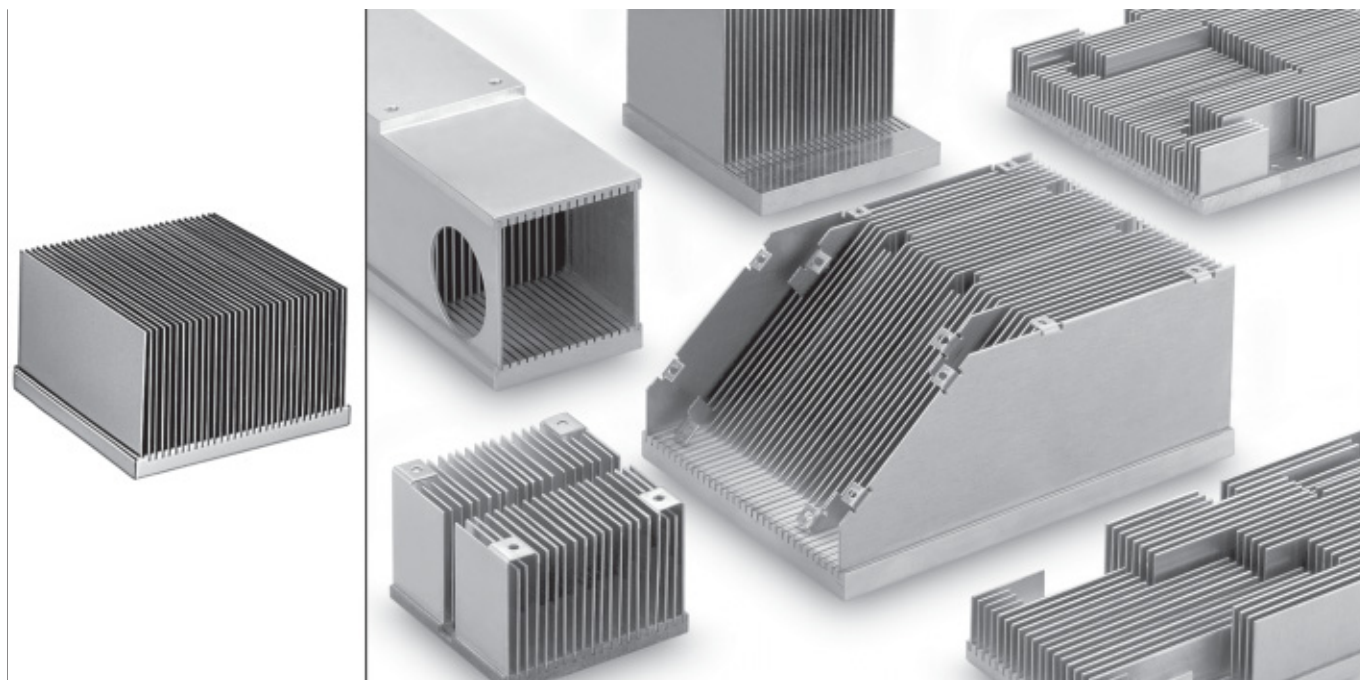
<p>WL 0,55</p>		<p>WL 1,1</p>	
art. no.		art. no.	
WL 0,55		WL 1,1	
<p>FL 0,55</p>		<p>FL 1,1</p>	
art. no.		art. no.	
FL 0,55		FL 1,1	

Mounting for TO 3 angle
Order example
Standard aluminium profiles
Heatsinks for PCB

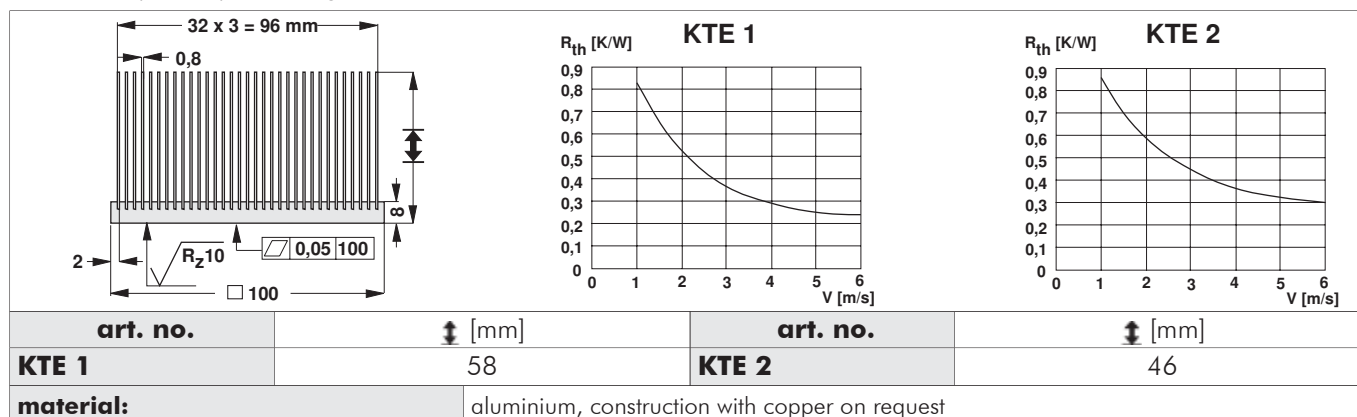
→ A 123 Heatsinks for DC/DC converter
→ A 21 Profiles for lock-in fixing spring
→ A 133 - 134 Heatsink profile-overview
→ A 89 - 111 Technical introduction

→ A 112 - 113
→ A 84 - 88
→ A 13 - 17
→ A 2 - 7

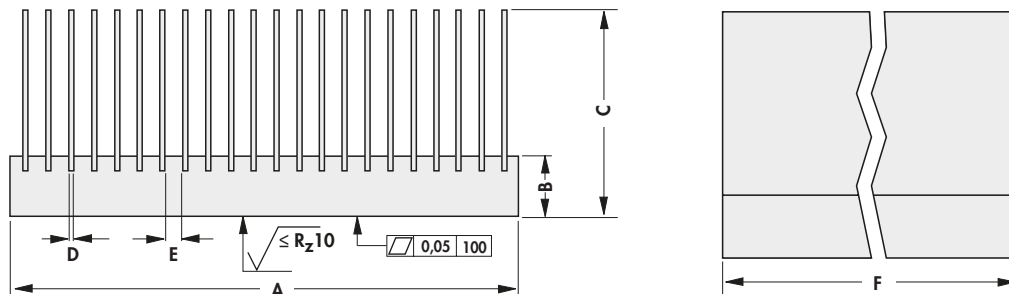
A 126

Standard fin coolers for thermoelectrical elements


- fin coolers in special design
- especially suitable for thermoelectric elements (Peltier-elements) and similar power modules
- compact design with reduced volume
- large surface, therefore more efficient than extruded profiles
- particularly low heat resistance with forced air cooling
- ideally fitted fins from a heat engineer's point of view
- accurately flat milled surfaces
- very low roughness
- machining for module mounting according to drawing
- heat bridges (spacing bridges) on request
- lapped surface on request
- customer specific special design



KTE



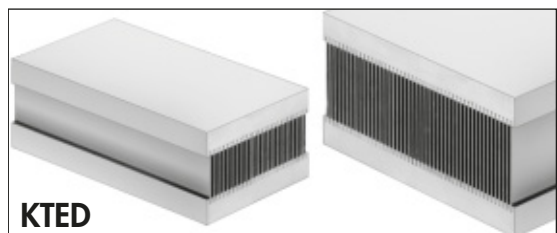
possible dimensions:

dimensions [mm]					
A	B	C	D	E	F
max. 400	max. 30	max. 150	0.8 / 1 / 1.5 / 2	min. 2	max. 400

please indicate with your order:

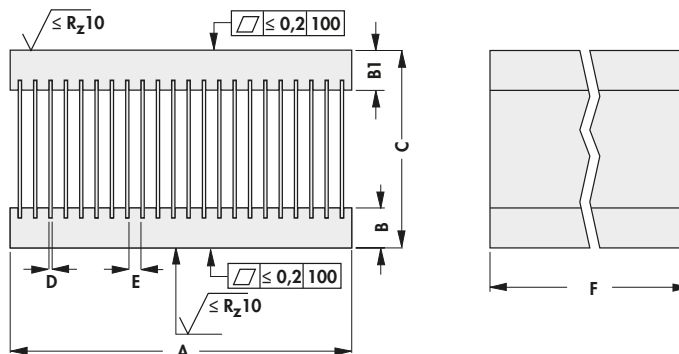
dimensions [mm]					
A	B	C	D	E	F

material: aluminium, construction with copper upon request



KTED

- fin coolers in special design
- for forced convection, thus particularly low thermal resistance
- two opposite bottom plates as mounting surfaces for power modules and similar
- mounting surfaces precisely flat milled
- compact design with reduced volume
- ideally fitted fins from a heat engineering point of view
- lapped finish on request
- additional machining according to customer's requirements
- fan versions on request
- special constructions to customer's indications



possible dimensions:

dimensions [mm]						
A	B	B 1	C	D	E	F
max. 400	max. 30	max. 30	max. 150	0.8 / 1 / 1.5 / 2	min. 2	max. 400

please indicate with your order:

dimensions [mm]						
A	B	B 1	C	D	E	F
max. 400	max. 30	max. 30	max. 150	0.8 / 1 / 1.5 / 2	min. 2	max. 400

material: aluminium, construction with copper upon request

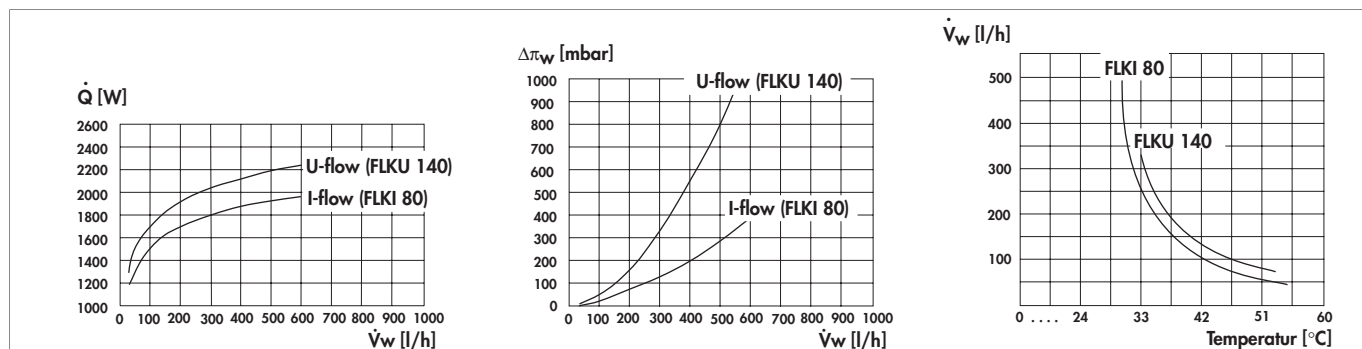
Fluid coolers

Standard aluminium profiles
High capacity cooling aggregat.
Heatsink profile-overview

- A 129 – 131 Drilling pattern for Solid State
- A 133 – 134 Heatsink special design
- D 26 – 29 Special profiles
- A 13 – 17 Technical introduction

- A 12
- A 135 – 136
- A 138
- A 2 – 7

Fluid coolers for power modules



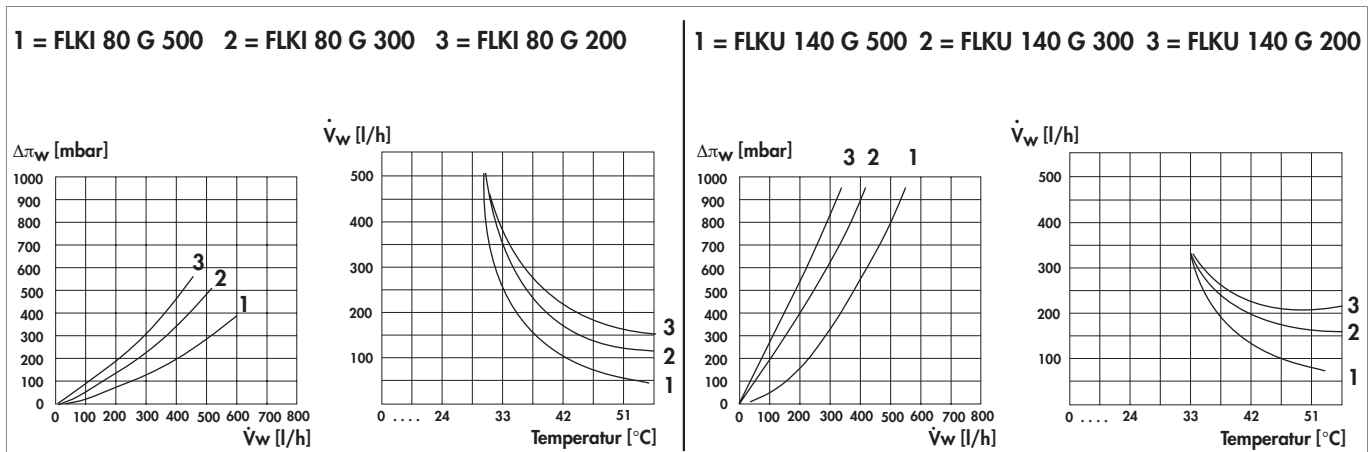
– water-glycol mixture (60/40); inlet temperature approx. 26 °C

Fluid cooler for dissipating large quantities of heat with low space requirement; **effective system to cool power modules**; suitable for water pH 6,5-8,5 with anticorrosives, as well as other fluids (eg. oil, alcohols, etc.); **compact design with internal fin structure for particularly good heat transfer to the fluid**; minimised flow pressure losses (see diagram); **operating pressure up to 2 bar possible**; thick base plate for optimum heat distribution and to secure the heat-emitting elements; **mounting flange for the cooler according to customer's instructions**; precisely face milled surface of component mounting area with very good flatness and low roughness depth; **dimensionally accurate adjustment to given mounting conditions**; connections using hole ports 12 mm in diameter with reinforcing seam to DIN 71550 or installation flange to customer's instructions; **I- or U-throughflow or multiple throughflow versions**; max. drilling depth in the base plate: 7 mm

To avoid corrosion in the water cooler the cooling fluid has to flow in a closed circuit and it has to contain 40-60% (preferred is 50%) anti-corrosive fluids for aluminium, if necessary with anti-freeze. For the choice and approval of the cooling fluid as well as for the possible consequences in the cooling circuit the user is the only liable person. Therefore we exclude any liability for damages caused by the choice or approval of the cooling fluids.

– dimensions and designs using customer's instructions

art. no. FLKI 80		
art. no. FLKU 140		
material:		EN AW 6060 (Al Mg Si 0.5)

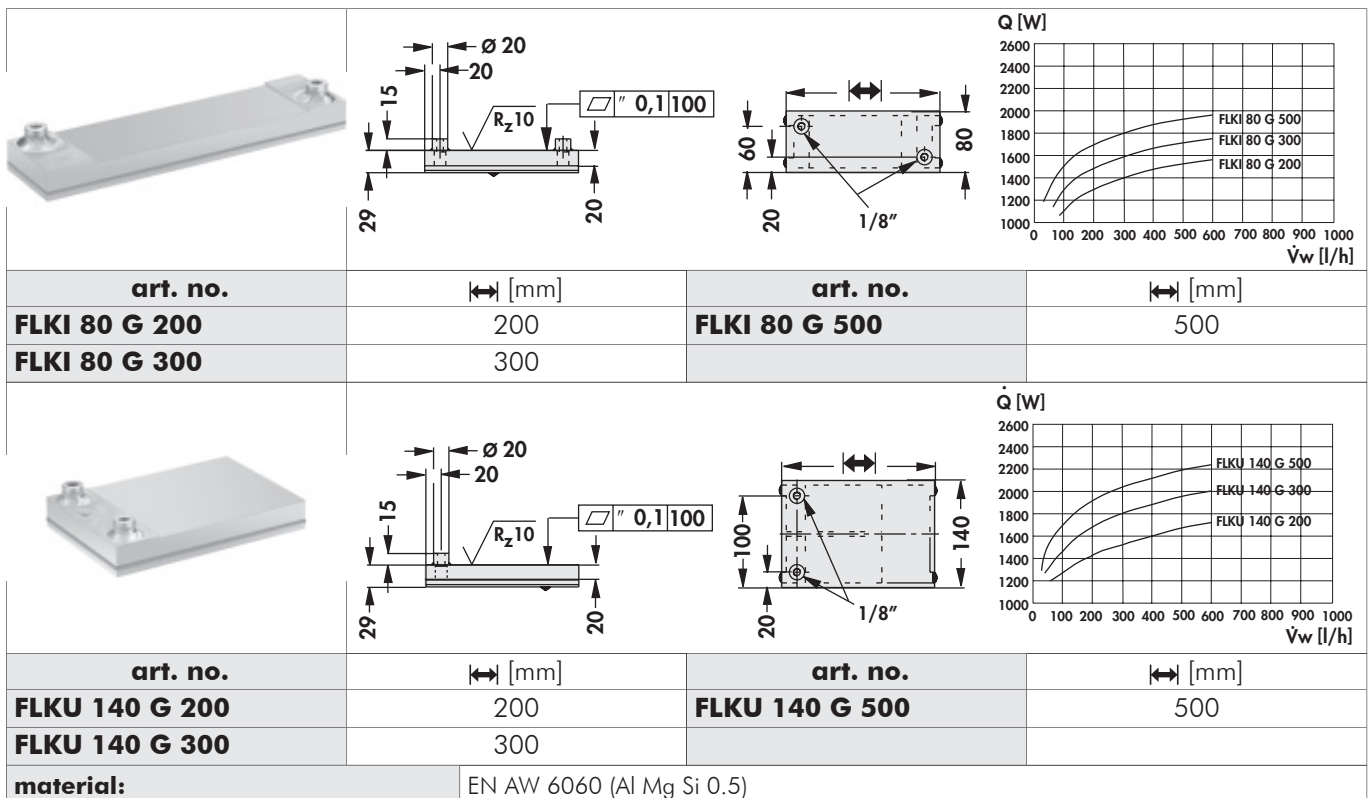


– water-glycol mixture (60/40); inlet temperature approx. 26 °C

Fluid cooler for dissipating large quantities of heat with low space requirement; **effective system to cool power modules**; suitable for water pH 6,5-8,5 with anticorrosive, as well as other fluids (eg. oil, alcohols, etc.); **compact design with internal fin structure for particularly good heat transfer to the fluid**; minimised flow pressure losses; **operating pressure up to 2 bar possible**; thick base plate for optimum heat distribution and to secure the heat-emitting elements; **mounting flange for the cooler according to customer's instructions**; precisely face milled surface of component mounting area with very good evenness and low roughness depth; **for power modules like IGBT-module, Thyristor-module, SCR diode module, bridge amplifiers and others**; **dimensionally accurate adjustment to given mounting conditions**; connections with thread muffle 1/8" or mounting flange according to customer's instructions; **I- or U-throughflow or multiple throughflow versions**; max. drilling depth in the base plate: 17 mm

To avoid corrosion in the water cooler the cooling fluid has to flow in a closed circuit and it has to contain 40-60% (preferred is 50%) anti-corrosive fluids for aluminium, if necessary with anti-freeze. For the choice and approval of the cooling fluid as well as for the possible consequences in the cooling circuit the user is the only liable person. Therefore we exclude any liability for damages caused by the choice or approval of the cooling fluids.


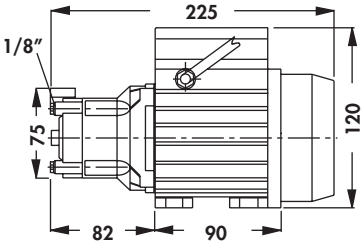
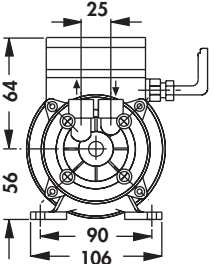
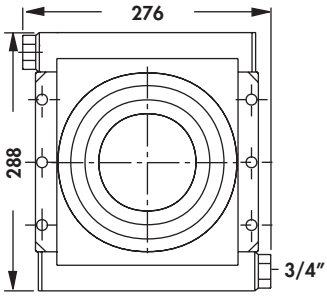
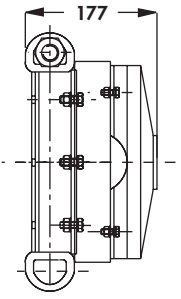
– dimensions and designs using customer's instructions



Recooling systems for liquid coolers

- recooling system for all types of liquid coolers
- cools up to 2.600 watts thermal power loss
- consists of pump and recool
- pump as normally aspirating, single-stage centrifugal pump with spiral housing in block construction
- recool with liquid-conducting tube system with air lamella and electrically driven fan motor
- further information free of charge under: **FLK R1-Info**
- notes: anticorrosive agents are required when water is used as coolant (eg. water/glykol - 60/40)
- the hose systems used (NOT in scope of delivery) must be resistant to anticorrosive agents (eg. material EPDM according to DIN 73411, ISO 4081)

To avoid corrosion in the water cooler the cooling fluid has to flow in a closed circuit and it has to contain 40-60% (preferred is 50%) anti-corrosive fluids for aluminium, if necessary with anti-freeze. For the choice and approval of the cooling fluid as well as for the possible consequences in the cooling circuit the user is the only liable person. Therefore we exclude any liability for damages caused by the choice or approval of the cooling fluids.

art. no.			
			
FLKR 1			
thermal cooling capacity:		max. 2,600 W	
pump:		single-phase 230 V AC, 120 W	
recooler:		single-phase 230 V AC, 120 W/ three-phase 400 V AC, 90 W	
type of delivery:		pump and recool	

lamella heatsinks
Fluid coolers
High capacity cooling aggregat.
Heatsink profile-overview

→ **A 127**
→ **A 129 – 131**
→ **D 26 – 29**
→ **A 13 – 17**

Heatsink special design
Special profiles
Drilling pattern for Solid State Relais
Technical introduction

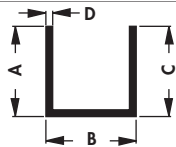
→ **A 135 – 136**
→ **A 138**
→ **A 21**
→ **A 2 – 7**

A 132

Standard aluminium profiles

- length, drilling and surface finishes to customer's instructions
- other standard profiles on request

U-profiles



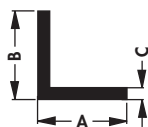
art. no.	A [mm]	B [mm]	C [mm]	D [mm]	art. no.	A [mm]	B [mm]	C [mm]	D [mm]
SU 02	20	40	20	2.5	SU 16	30	30	30	2.0
SU 03	20	40	20	2.0	SU 27	40	40	40	2.5
SU 05	30	20	30	2.0	SU 29	40	40	40	4.0
SU 09	20	20	20	1.5	SU 32	30	30	30	3.0
tolerances:				EN 755					
material:				EN AW 6060 (Al Mg Si 0.5)					

flat profiles



art. no.	A [mm]	B [mm]	art. no.	A [mm]	B [mm]
SFP 005	40	15	SFP 058	40	8
SFP 006	30	8	SFP 060	80	8
SFP 007	40	5	SFP 067	30	15
SFP 016	70	15	SFP 074	70	10
SFP 028	40	10	SFP 076	60	30
SFP 029	30	10	SFP 079	90	100
SFP 037	55	10	SFP 090	120	15
SFP 046	25	5	SFP 100	100	15
SFP 054	50	10	SFP 106	40	20
SFP 057	115	100	SFP 112	100	25
tolerances:				EN 755	
material:				EN AW 6060 (Al Mg Si 0.5)	

angled profile



art. no.	A [mm]	B [mm]	C [mm]	art. no.	A [mm]	B [mm]	C [mm]
SWP 02	80	80	8	SWP 29	15	10	2
SWP 06	80	40	6	SWP 36	75	50	5
SWP 10	30	20	2	SWP 40	40	30	5
SWP 15	40	20	4	SWP 55	40	40	5
SWP 23	20	15	2	SWP 57	60	30	5
SWP 25	50	30	5				
tolerances:				EN 755			
material:				EN AW 6060 (Al Mg Si 0.5)			

A 133

Hole pattern
Extruded heatsinks
Mounting for TO 3 angle
High capacity heatsinks

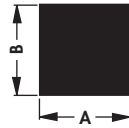
→ **A 21**
 → **A 22 – 83**
 → **A 123 – 124**
 → **A 57 – 58**

Construction parts made of aluminium → **A 137**
Heatsink as visual & decor-parts → **A 10**
Special profiles → **A 138**
Technical introduction → **A 2 – 7**

Standard aluminium profiles

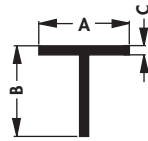
- length, drilling and surface finishes to customer's instructions
- other standard profiles on request

quadrangular profile



art. no.	A [mm]	B [mm]	art. no.	A [mm]	B [mm]
SVP 01	8	8	SVP 12	50	50
SVP 04	25	25	SVP 13	55	55
SVP 10	10	10			
tolerances:		EN 755			
material:		EN AW 6060 (Al Mg Si 0.5)			

T-profile



art. no.	A [mm]	B [mm]	C [mm]	art. no.	A [mm]	B [mm]	C [mm]
STP 4	60	60	6	STP 5	20	20	2
tolerances:			EN 755				
material:			EN AW 6060 (Al Mg Si 0.5)				

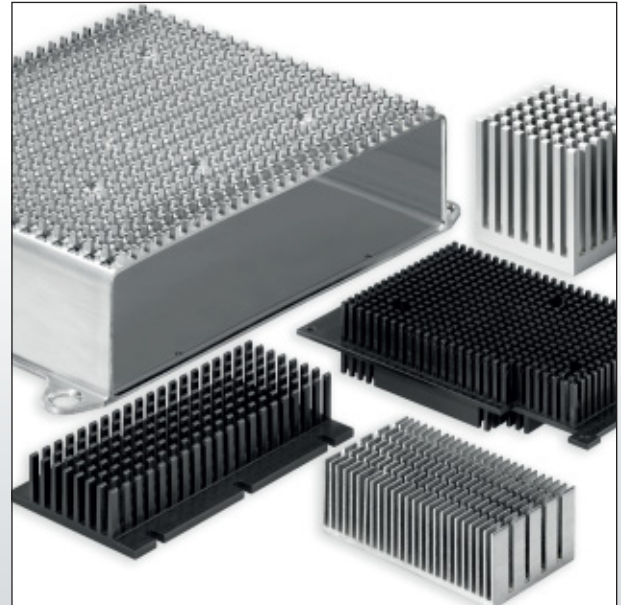
Hole pattern
 Extruded heatsinks
 Mounting for TO 3 angle
 High capacity heatsinks

→ A 21 Construction parts made of aluminium → A 137
 → A 22 - 83 Heatsink as visual & decor-parts → A 10
 → A 123 - 124 Special profiles → A 138
 → A 57 - 58 Technical introduction → A 2 - 7

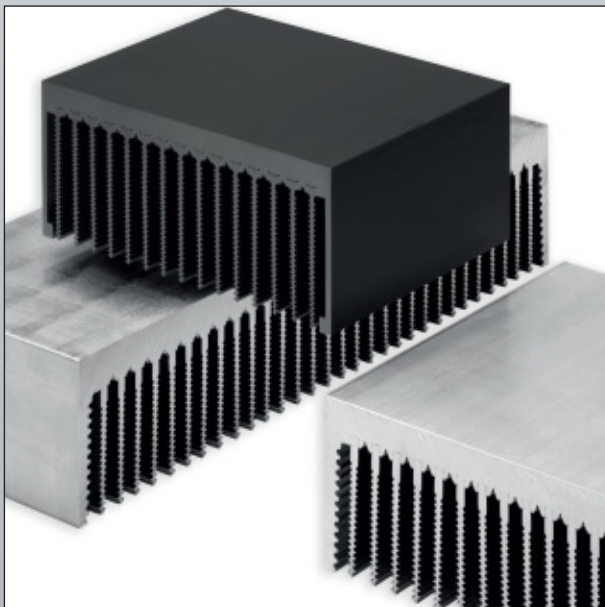
A 134



- Customer specified CNC treatments of cooling profiles**
- latest CNC machining centres for highest quality demands
 - profile treatments for seizes up to 1600 mm
 - future orientated stockkeeping of the aluminium profiles in fully automated honeycomb warehouses
 - batch size optimized production flow
 - special profiles, modifications and surfaces according to your special demand



- Streamlined omnidirectional fin geometrie**
- free-standing cooling fingers for forced cooling
 - incident flow of the heatsinks by means of fans from all sides (omnidirectional)
 - no direction-oriented installation position
 - fin spacings according to your demand
 - special designs, treatments and versions according to customer's request



- Extruded heatsinks with pressed-in fins**
- for highest thermal dissipation losses
 - channelled fin geometrie for increasing the surface
 - thermotechnical optimized connection between fin and bottom plate
 - deliverable in widths of 200 up to 750 mm
 - customer specific versions and treatments

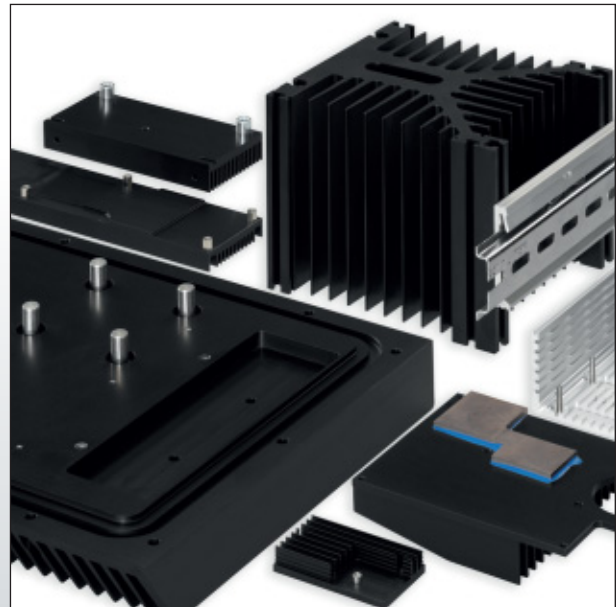


- Precise milled flat surfaces**
- very small depth of roughness and unevenness
 - individually milled flat semi-conductor mounting surfaces for minimizing the heat-transmission resistances
 - millings on the already anodized heatsinks
 - protective foil avoid scratching of the high-quality mounting surface
 - special designs according to customer's drawing



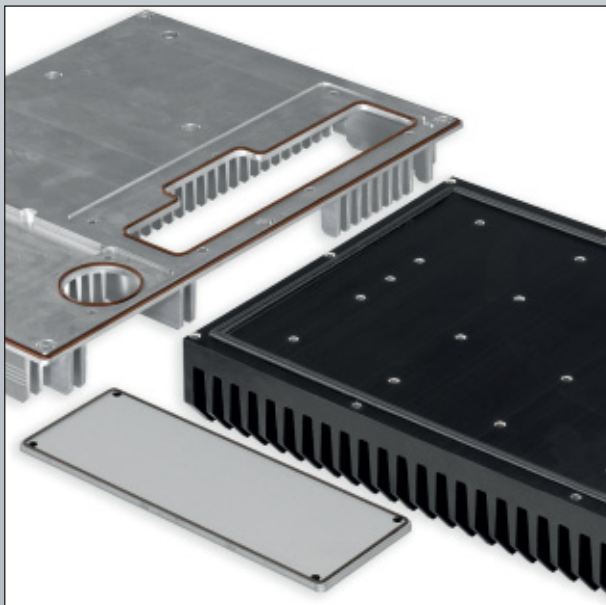
Surface labelling

- durable and high quality labeling by means of YAG-laser, silk screen-, pad- and digital printing
- print layout preparation by means of in-house repro department
- precise in contrast, precise engraved fonts and contours by means of CNC-controlled treatment systems
- labeling of aluminium, Plexiglas and plastics



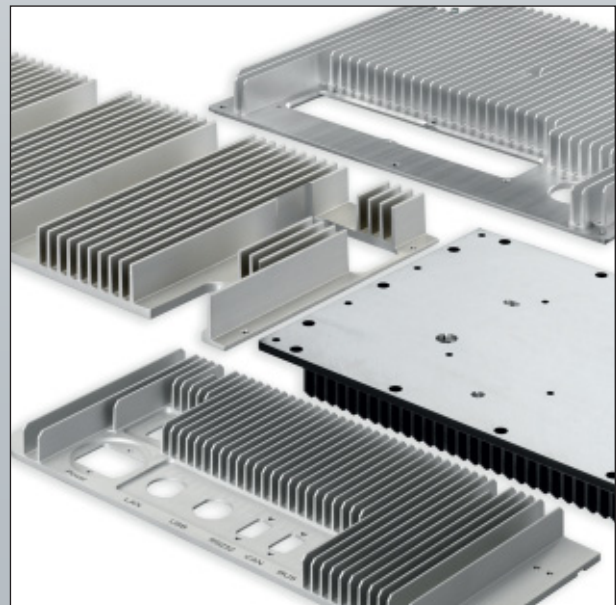
Additional equipments

- fractional semi-conductor mounting surfaces made of copper for heat dissipation
- pressed-in or screwed distance sleeves made of metal and plastics
- threaded bolts with internal and external thread
- support rail mountings made of metal or plastics according to DIN EN 50022



Heatsinks with integrated sealing

- foamed sealing applied on the profile as a permanent element of the heatsink
- also usable for front plates or milled parts
- groove filled or stacked
- permanently elastic and CFC-free
- adaption of the sealing properties to the specific application



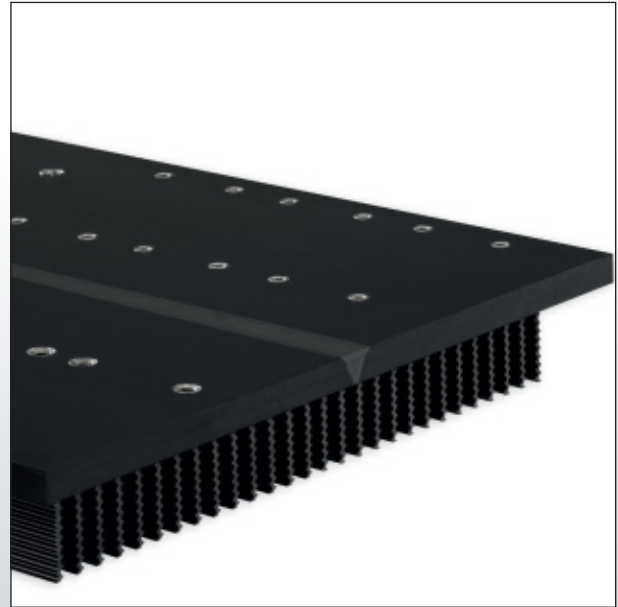
19" compliant CNC-treatment

- milled heatsink side or back panels for 19" cases, 19" plug in boxes, subracks and insert modules
- pressing in or welding of threaded bolts
- customer specified modifications, designs
- surfaces and printing upon request



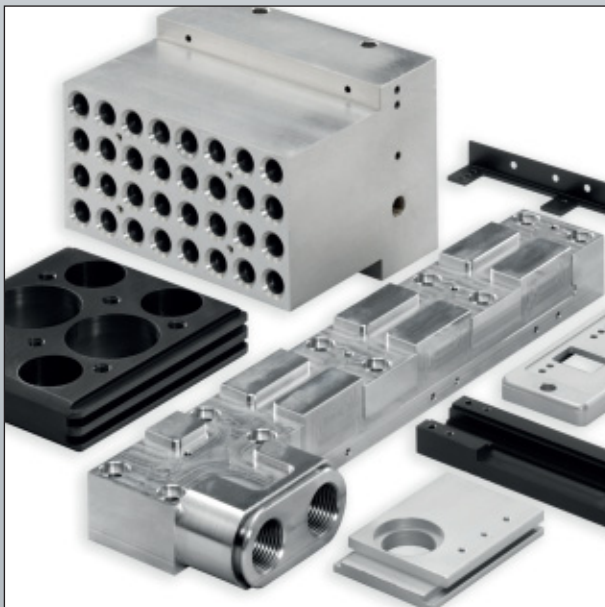
Welded high capacity heatsinks

- optimal fin geometry with channelled structure for free convection
- production of heatsink widths outside of the press-technical production possibilities
- removing of the welding line by means of precise milled flat surfaces
- individual surface design



Welded heatsinks

- homogeneous connection of the materials by means of special welding methods
- welding on additional mounting levels which are situated diagonally to the pressing direction of the profiles
- production of prototypes
- application-based special designs and treatments according to your demand



Construction- and milled parts made of aluminium according to customer specifications

- precise milled contours and surfaces
- inserting of holes and cut-outs, cutting or milling of threads
- turning in of wire thread inserts for high- and wear-resistant threads
- simple data exchange by means of up to date CAD- / CAM-systems



Cases and contour milled parts made of aluminium

- customer specific cases and construction parts
- precise mechanical treatments for highest quality demands
- all requested surface designs
- modifications and versions, special requirements, treatments and designs according to your drawing specification



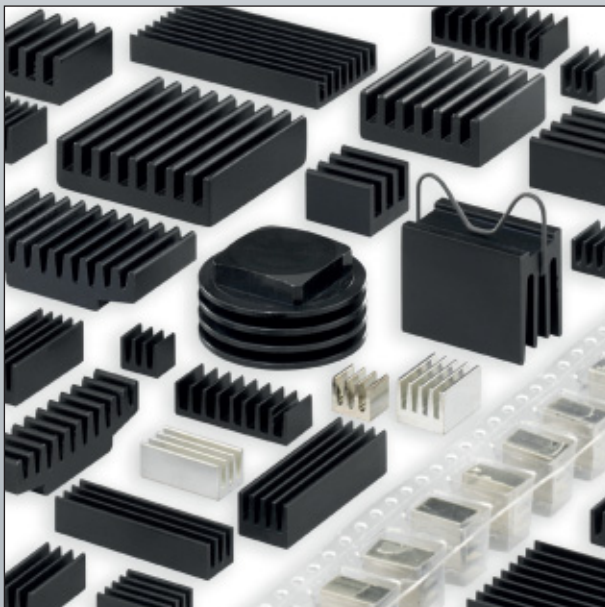
Round and pin heatsinks

- streamlined omnidirectional fin geometrie
- excellent thermal conductivity due to special aluminium alloys
- suitable for free and forced convection
- no direction bounded installation position
- flat semiconductor mounting surfaces
- contour also as milled parts according to your demands



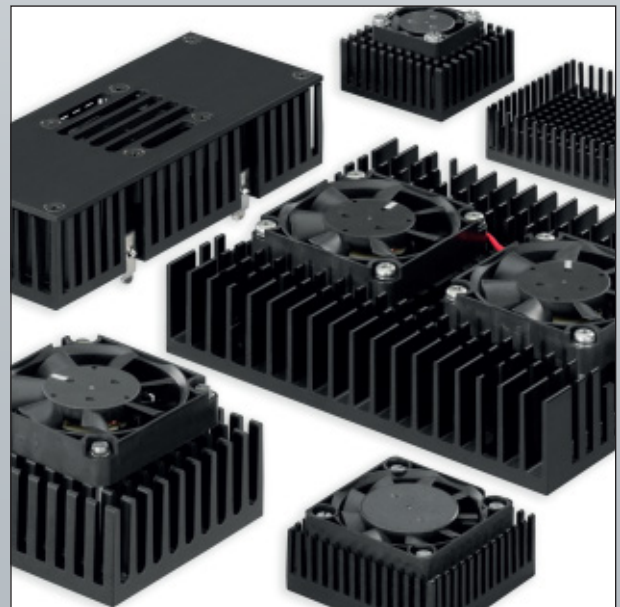
Heatsinks for LEDs

- various heatsink geometries adjusted to all current LED-types and light-engines
- star shaped heatsinks for the use as a LED-lamp housing
- LED mounting by means of screws, thermal conductive adhesive foil or thermal conductive glue
- customer specified versions with application based „thermal management“



Heatsinks for all current PL CC, DIL-IC and SMD transistor types

- effective heat dissipation at a low profile and low weight
- direct mounting of the component by means of a double-sided adhesive thermal foil or glue
- solderable versions of the surface
- special packaging such as tape & reel, magazine or tray upon request



Heatsinks and coolers for processors

- passive and active product solutions
- effective heat dissipation due to optimal conception of fan and heatsink
- long lifetime and high operating safety due to high quality fans
- versions for screw, glue and clip mounting
- customer specific solutions and fans

Heatsinks for IC processor

art. no.	page	R_{th} [K/W]	dissipation loss [W]	way of fixation	socket	suitable for processor type
ICK PGA 6 x 6 x 14	B 11	20	6.4	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 8 x 8 x 12	B 11	14.8	8.1	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 9 x 9	B 11	14	3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 11 x 11 x 8	B 11	16	7.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 11 x 11	B 11	10.9	4.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 11 x 11 x 12	B 12	12.3	3.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 14 x 14	B 12	10	4.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 14 x 14 x 10	B 12	10.5	11.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 14 x 14 x 14	B 12	9.6	12.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 14 x 14 x 12	B 12	9.8	5.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 15 x 15	B 12	9.4	5.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 16 x 16 x 8	B 13	14	4.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 16 x 16 x 10	B 13	10.5	12.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 16 x 16 x 12	B 13	9.3	6.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 17 x 17	B 13	8.6	6.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 17 x 17 x 8	B 13	13.2	5.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 17 x 17 x 12	B 13	9	6.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 18 x 18	B 14	8.4	7.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 19 x 19	B 14	8.6	7.6	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 19 x 19 x 12	B 14	9	6.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 20 x 20 x 10	B 14	8.5	15.1	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 20 x 20	B 14	7.6	8.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 20 x 20 K	B 15	7.6	8.3	fixing clamp	socket 7/ socket 370	IDT W2A/ AMD® K6-III/ AMD® K6-2/ MMX/ IDT C6/ Intel® Pentium®
ICK PGA 20 x 20 x 8	B 15	12	6.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 20 x 20 x 12	B 15	8	8.1	therm. conductive foil/ therm. cond. adhesive	universal	universal

- very good thermal efficiency
- aerodynamic imnidirectional fin geometry
- simple mounting by means fo fixing clamp, thermal conductive adhesive film or thermal conductive glue
- customer specified designs, surfaces and modifications upon request

Heatsinks for IC processor

art. no.	page	R_{th} [K/W]	dissipation loss [W]	way of fixation	socket	suitable for processor type
ICK PGA 21 x 21	B 15	7	8.6	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 22 x 22	B 15	6.2	8.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PGA 25 x 25	B 16	5	11.1	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 10 x 10	B 17	30	1.8	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 10 x 10 x 10	B 17	28.5	1.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 14 x 14	B 17	30	2.1	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 14 x 14 x 10	B 17	27.4	2.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 21 x 21	B 18	24.3	2.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 23 x 23	B 18	22.5	2.8	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 23 x 23 x 10	B 18	21.5	2.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 27 x 27	B 18	20	3.1	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 27 x 27 x 10	B 18	18.5	3.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 27 x 27 x 14	B 18	13.5	9.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 27 x 27 x 22	B 19	10.5	9.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 31 x 31	B 19	18.6	3.4	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 31 x 31 x 10	B 19	17	3.7	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 35 x 35	B 19	16.5	3.7	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 35 x 35 x 10	B 19	15.7	3.8	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 37 x 37 x 6	B 19	15.7	9.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 37 x 37 x 10	B 20	14	10.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 40 x 40	B 20	14.6	4.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 40 x 40 x 10	B 20	13.8	4.4	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK BGA 42,5 x 45	B 20	13.6	4.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 10 x 10 x 6,5	B 21	29.9	2.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 10 x 10 x 12,5	B 21	26.3	2.8	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 14 x 14 x 6,5	B 21	10	5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 14 x 14 x 10	B 22	9.8	5.1	therm. conductive foil/ therm. cond. adhesive	universal	universal

- very good thermal efficiency
- aerodynamic imnidirectional fin geometry
- simple mounting by means fo fixing clamp, thermal conductive adhesive film or thermal conductive glue
- customer specified designs, surfaces and modifications upon request

art. no.	page	R_{th} [K/W]	dissipation loss [W]	way of fixation	socket	suitable for processor type
ICK S 17 x 17 x 15	B 22	8.36	5.95	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 17 x 17 x 20	B 22	7.89	6.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 18 x 18 x 6,5	B 22	7	7.1	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 18 x 18 x 10	B 22	6.8	7.35	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 25 x 25 x 6,5	B 22	5.8	12.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 25 x 25 x 12,5	B 23	5.3	14.1	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 25 x 25 x 18,5	B 23	5.2	14.4	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 29 x 29 x 10	B 23	5.7	13.1	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 29 x 29 x 20	B 23	3.7	20.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 32 x 32 x 10	B 23	5.4	13.8	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 32 x 32 x 20	B 23	3.7	20.4	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 36 x 36 x 10	B 24	4.7	16	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 36 x 36 x 15	B 24	3.9	19.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 36 x 36 x 20	B 24	3.2	23.4	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 40 x 40 x 10	B 24	4.6	16.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 40 x 40 x 20	B 24	3.5	21.4	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 40 x 40 x 25	B 24	3.1	23.7	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 45 x 45 x 10	B 25	4.7	16	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 45 x 45 x 20	B 25	4.4	17	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 50 x 50 x 20	B 25	2.7	27.7	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 50 x 50 x 25	B 25	2.4	31.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 50 x 50 x 40	B 25	6.05	13.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 50 x 50 x 50	B 25	4.05	14.32	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S 98 x 98 x 45	B 26	3.5	42	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S D 12 x 12 x 7,5	B 27	10.85	4.6	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S D 18 x 12 x 7,5	B 27	9	5.4	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S D 24 x 18 x 7,5	B 27	8.5	5.85	therm. conductive foil/ therm. cond. adhesive	universal	universal

- very good thermal efficiency
- aerodynamic imnidirectional fin geometry
- simple mounting by means fo fixing clamp, thermal conductive adhesive film or thermal conductive glue
- customer specified designs, surfaces and modifications upon request

Heatsinks for IC processor

art. no.	page	R_{th} [K/W]	dissipation loss [W]	way of fixation	socket	suitable for processor type
ICK S D 98 x 98 x 10	B 27	4.88	10.25	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 28,5 x 6,5	B 28	5.82	15.6	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 28,5 x 10	B 28	5.65	16	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 28,5 x 12,5	B 28	5.53	16.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 28,5 x 18,5	B 28	4.25	20.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 32,5 x 10	B 28	5.54	9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 32,5 x 20	B 28	5.6	8.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 36,5 x 20	B 29	6.41	18	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 40 x 10	B 29	11.04	8.4	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 40 x 20	B 29	10.32	8.8	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R A 40 x 20	B 29	11.62	8.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 40 x 30	B 29	9.77	9.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 45 x 30	B 29	8	9.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 45 x 45	B 29	6	9.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 50 x 10	B 30	5.28	9.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 50 x 20	B 30	8.55	9.8	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 50 x 30	B 30	8.26	10	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 50 x 45	B 30	6.32	12.7	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 54 x 20	B 30	8.11	10.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 54 x 30	B 30	6.95	11.57	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK S R 54 x 45	B 31	5.37	15.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 23,5 x 14	B 32	18.58	6.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 23,5 x 14 G	B 32	19.16	6.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 27 x 10	B 32	17.69	6.7	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 27 x 10 G	B 32	18.24	6.6	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 28 x 15	B 32	15.24	7.8	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 28 x 15 G	B 33	15.72	7.6	therm. conductive foil/ therm. cond. adhesive	universal	universal

- very good thermal efficiency
- aerodynamic imnidirectional fin geometry
- simple mounting by means fo fixing clamp, thermal conductive adhesive film or thermal conductive glue
- customer specified designs, surfaces and modifications upon request

Heatsinks for IC processor

art. no.	page	R_{th} [K/W]	dissipation loss [W]	way of fixation	socket	suitable for processor type
ICK LED R 29 x 11,5	B 33	17.26	8.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 29 x 11,5 G	B 33	17.8	8	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 32 x 14	B 33	15.23	7.8	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 32 x 14 G	B 33	15.23	7.6	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 33 x 10	B 33	17.6	6.8	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 33 x 10 G	B 33	18.15	6.6	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 33 x 16,5	B 34	13.87	8.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 33 x 16,5 G	B 34	14.3	8.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 35 x 10	B 34	16.9	9.35	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 35 x 10 G	B 34	17.5	9.2	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 36 x 12	B 34	12.88	10	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 36 x 12 G	B 34	13.28	8.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 40 x 10	B 34	12.28	9.45	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 40 x 10 G	B 35	12.66	9.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 40 x 27	B 35	9.41	12.1	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 40 x 27 G	B 35	9.71	11.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 45,7 x 16,5	B 35	10.46	11.05	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 45,7 x 16,5 G	B 35	10.49	10.8	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 50 x 10	B 35	10.57	10.5	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 50 x 10 G	B 36	10.9	10.3	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 50,8 x 16,5	B 36	10.17	11.1	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 50,8 x 16,5 G	B 36	10.49	10.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 54 x 20	B 36	9.48	12.1	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 54 x 20 G	B 36	9.78	11.9	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 66 x 40	B 36	3.2	21	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 75 x 10	B 37	5.2	12.1	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 84 x 40	B 37	2.5	14.5	therm. conductive foil/ therm. cond. adhesive	universal	universal

- very good thermal efficiency
- aerodynamic imnidirectional fin geometry
- simple mounting by means fo fixing clamp, thermal conductive adhesive film or thermal conductive glue
- customer specified designs, surfaces and modifications upon request

Heatsinks for IC processor

art. no.	page	R_{th} [K/W]	dissipation loss [W]	way of fixation	socket	suitable for processor type
ICK LED R 100 x 40	B 37	2	27	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 160 x 40	B 37	1.4	42	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK LED R 200 x 40	B 38	1	51	therm. conductive foil/ therm. cond. adhesive	universal	universal
ICK PPC 51	B 48	8.1	14	screw fastening		Power PC
ICK PEN 3 XE	B 48	2	31.3	screw fastening	Slot 2	Intel® Pentium® III-Xeon™ Slot II Format
ICK PEN 3 XE 1	B 48	1.8	33.6	screw fastening	Slot 2	Intel® Pentium® III-Xeon™ Slot II Format
ICK EM 25	B 48	3.9	20.4	screw fastening		Q7 Board
ICK PEN 38 F	B 49	4	15.1	therm. conductive foil	socket 7/ socket 370	AMD® K6-III/ IDT W2A/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2
ICK PEN 38 W	B 49	4	15.1	therm. cond. adhesive	socket 7/ socket 370	AMD® K6-III/ IDT W2A/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2
ICK PEN 45 W	B 49	3.5	21	therm. cond. adhesive	socket 7/ socket 370	AMD® K6-III/ IDT W2A/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2
ICK PRO 40 W	B 49	2.7	22	therm. cond. adhesive	socket 8	Intel® Pentium® PRO
ICK PEN 3 FC	B 49	3.5	22	fixing clamp	socket 7/ socket 370	Intel® Pentium® III FC PGA (Mendocino, Coppermine)

B 7

- very good thermal efficiency
- aerodynamic imnidirectional fin geometry
- simple mounting by means fo fixing clamp, thermal conductive adhesive film or thermal conductive glue
- customer specified designs, surfaces and modifications upon request

art. no.	page	R_{th} [K/W]	dissipation loss [W]	way of fixation	socket	suitable for processor type
LA ICK 15 x 15 F 05	B 50	2.3	22.2	therm. conductive foil	universal	universal
LA ICK 15 x 15 F 12	B 50	2.3	22.2	therm. conductive foil	universal	universal
LA ICK 17 x 17 F 12	B 50	1.6	35.8	therm. conductive foil	universal	universal
LA ICK 17 x 17 F 12 A	B 50	1.6	35.8	therm. conductive foil	universal	universal
LA ICK 17 x 17 W 05	B 50	1.6	35.8	therm. cond. adhesive	universal	universal
LA ICK 17 x 17 W 12	B 50	1.6	35.8	therm. cond. adhesive	universal	universal
LA ICK 18 x 18 F 12	B 50	1.5	41.7	therm. conductive foil	universal	universal
LA ICK 18 x 18 W 12	B 50	1.5	41.7	therm. cond. adhesive	universal	universal
LA ICK 21 x 21 F 05	B 50	1.4	46.3	therm. conductive foil	universal	universal
LA ICK 21 x 21 F 12	B 50	1.4	46.3	therm. conductive foil	universal	universal
LA ICK 21 x 21 W 05	B 50	1.4	46.3	therm. cond. adhesive	universal	universal
LA ICK 21 x 21 W 12	B 50	1.4	46.3	therm. cond. adhesive	universal	universal
LA ICK PEN 8 F 05	B 51	2.5	23.4	therm. conductive foil	socket 7/ socket 370	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2
LA ICK PEN 8 F 12	B 51	2.5	23.4	therm. conductive foil	socket 7/ socket 370	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2
LA ICK PEN 8 W 05	B 51	2.5	23.4	therm. cond. adhesive	socket 7/ socket 370	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2
LA ICK PEN 8 W 12	B 51	2.5	23.4	therm. cond. adhesive	socket 7/ socket 370	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2
LA ICK PEN 16 K 12	B 51	1.2	51.1	fixing clamp	socket 7/ socket 370	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2
LA ICK PEN 16 W 12	B 51	1.2	51.1	therm. cond. adhesive	socket 7/ socket 370	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2

- high-quality industrial design
- compact design with high mechanical stability
- fan with doubled ball bearing axis
- optimal thermotechnical design of fan and heatsink

Fan coolers for IC processor

art. no.	page	R_{th} [K/W]	dissipation loss [W]	way of fixation	socket	suitable for processor type
LA ICK PEN 16 W 12 A	B 51	1.2	51.1	therm. cond. adhesive	socket 7/ socket 370	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2
LA ICK PEN 18 W 12	B 51	1.6	38.6	therm. cond. adhesive	socket 7/ socket 370	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2
LA ICK PEN 38 W 12	B 51	1.1	53.6	therm. cond. adhesive	socket 7/ socket 370	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2
LA ICK PRO 25 F 12	B 51	0.97	60	therm. conductive foil	socket 8	Intel® Pentium® PRO
LA ICK PEN 2 K 12	B 52	1.2	58	fixing clamp	Slot A/ Slot 1	Intel® Pentium® II/ AMD® Athlon®
LA ICK PEN 3 XE	B 52	0.8	61.8	screw fastening	Slot 2	Intel® Pentium® III-Xeon™
LA ICK PEN 4 1 K	B 52	0.6	85	fixing clamp	socket 463/ socket 423	Intel® Pentium® IV

Fan coolers for IC processor

Heatsinks

- excellent thermal efficiency achieved by flow-favourable omnidirectional fin geometry and black anodised surface
- easy mounting using fixing clamp, thermally conductive adhesive foil or thermally conductive glue

B

Fan coolers

- special high-grade industrial type
- compact design with high mechanical stability
- fan motor axle with double ball bearings ensures high reliability and long product life
- low current consumption and thus low self-heating
- effective heat dissipation achieved by optimum design of fan motor and heatsink
- fan motors with other operating voltages on request
- fan motors also available with pulse output and alarm device circuit

C

Technical introduction

- the thermal resistances and the power dissipation were determined with an ambient temperature of 25 °C and an IC case-temperature of 85 °C
- with higher IC case-temperature, the power to be dissipated increases proportionally

D

Fixing methods

K = fixing clamp

F = double sided thermally conductive adhesive foil

W = thermally conductive glue

SB = screw fixing

E

F

Technical data for fans with pulse output → B 54

- pulse output for control of the alarm device circuit
- puls form is like rectangle with the triple frequency of rotation speed
- with blocked rotor the output signal can be L (0.8 V) or H (V_{cc}-1V)
- the pulse output must not be connected with GND or V_{cc} without a multiplier (>10K)
- to prevent short circuits, do not isolate the used puls output

G

H

I

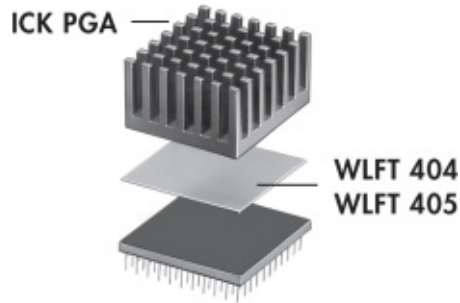
K

L

M

- **high-quality industrial design**
- **compact design with high mechanical stability**
- **fan with doubled ball bearing axis**
- **optimal thermotechnical design of fan and heatsink**

Heatsinks for PGA



- double-sided adhesive thermal conductive foil **WLF ...** → E 7
- **surface:** black anodised

<p>art. no.</p> <p>ICK PGA 6 x 6 x 14 WLF ... 14 x 14</p>		
<p>art. no.</p> <p>ICK PGA 8 x 8 x 12 WLF ... 23 x 23</p>		
<p>art. no.</p> <p>ICK PGA 9 x 9 WLF ... 24 x 24</p>		
<p>art. no.</p> <p>ICK PGA 11 x 11 x 8 WLF ... 24 x 27</p>		
<p>art. no.</p> <p>ICK PGA 11 x 11 WLF ... 24 x 27</p>		

<p>art. no.</p> <p>ICK PGA 11 x 11 x 12 WLF ... 24 x 27</p>		
<p>art. no.</p> <p>ICK PGA 14 x 14 WLF ... 31 x 34</p>		
<p>art. no.</p> <p>ICK PGA 14 x 14 x 10 WLF ... 35 x 35</p>		
<p>art. no.</p> <p>ICK PGA 14 x 14 x 14 WLF ... 35 x 35</p>		
<p>art. no.</p> <p>ICK PGA 14 x 14 x 12 WLF ... 36 x 36</p>		
<p>art. no.</p> <p>ICK PGA 15 x 15 WLF ... 37 x 37</p>		

Mounts
Heatsinks for PLCC
Thermal conductive paste
Thermal conductive glue

→ E 42 – 46
→ B 44
→ E 19 – 22
→ E 21 – 22

Pin heatsinks for IC
SMD-heatsinks
Heatsinks for PGA
Technical introduction

→ B 21 – 25
→ B 45 – 46
→ B 11 – 16
→ A 2 – 7

A

Heatsinks for PGA

B

C

D

E

F

G

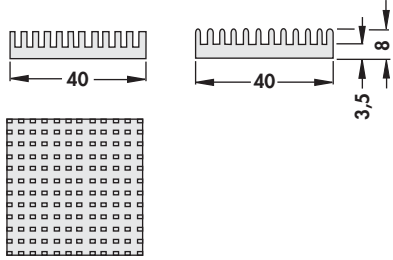
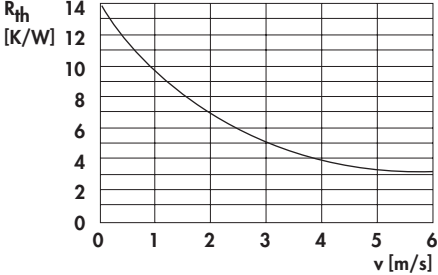
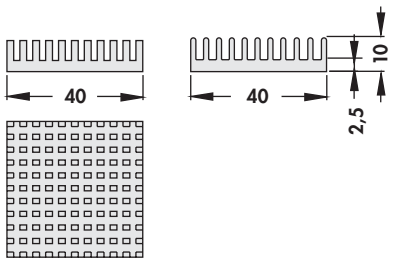
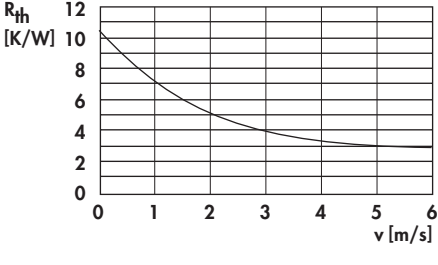
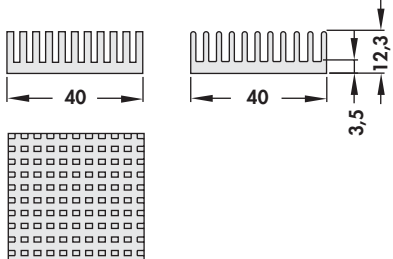
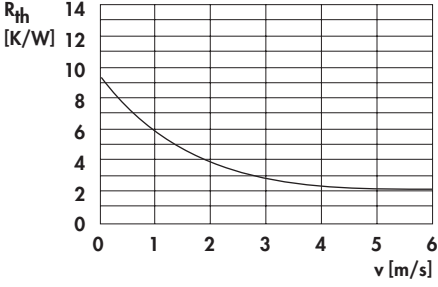
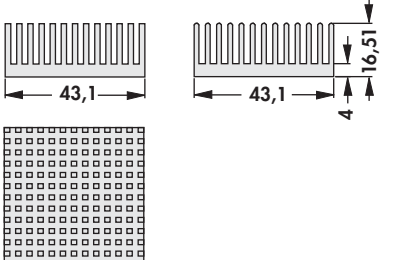
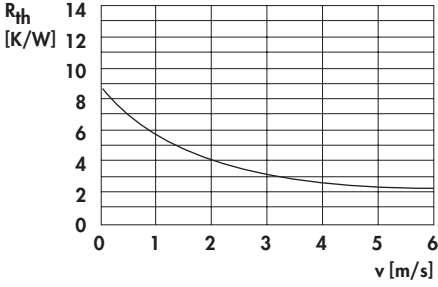
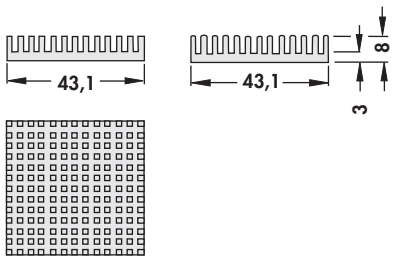
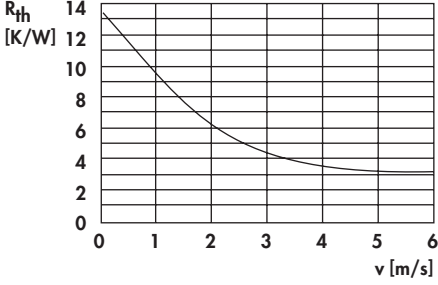
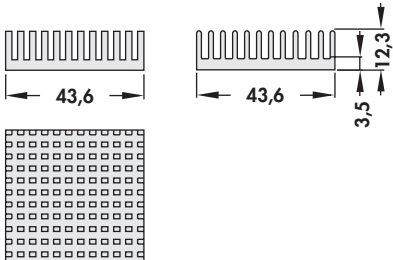
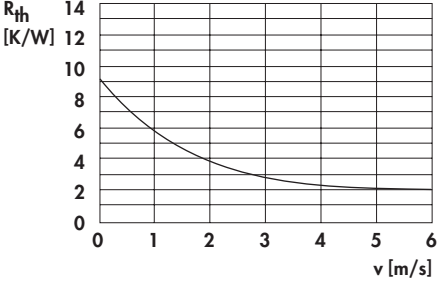
H

I

K

L

M

<p>art. no.</p> <p>ICK PGA 16 x 16 x 8 WLF ... 40 x 40</p>		
<p>art. no.</p> <p>ICK PGA 16 x 16 x 10 WLF ... 40 x 40</p>		
<p>art. no.</p> <p>ICK PGA 16 x 16 x 12 WLF ... 40 x 40</p>		
<p>art. no.</p> <p>ICK PGA 17 x 17 WLF ... 43 x 43</p>		
<p>art. no.</p> <p>ICK PGA 17 x 17 x 8 WLF ... 43 x 43</p>		
<p>art. no.</p> <p>ICK PGA 17 x 17 x 12 WLF ... 43 x 43</p>		

B 13

Mounts
Heatsinks for PLCC
Thermal conductive paste
Thermal conductive glue

→ E 42 - 46
→ B 44
→ E 19 - 22
→ E 21 - 22

Pin heatsinks for IC
SMD-heatsinks
Heatsinks for PGA
Technical introduction

→ B 21 - 25
→ B 45 - 46
→ B 11 - 16
→ A 2 - 7

N

Heatsinks for PGA

<p>art. no.</p> <p>ICK PGA 18 x 18 WLF ... 45 x 45</p>		
<p>art. no.</p> <p>ICK PGA 19 x 19 WLF ... 48 x 48</p>		
<p>art. no.</p> <p>ICK PGA 19 x 19 x 12 WLF ... 47 x 47</p>		
<p>art. no.</p> <p>ICK PGA 20 x 20 x 10 WLF ... 48 x 48</p>		
<p>art. no.</p> <p>ICK PGA 20 x 20 WLF ... 50 x 50</p>		

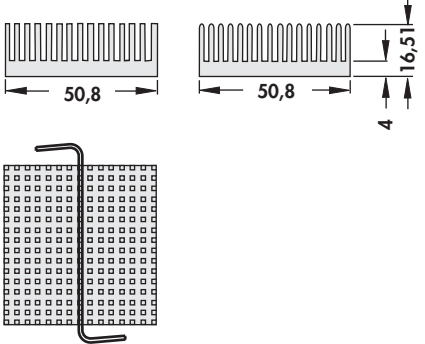
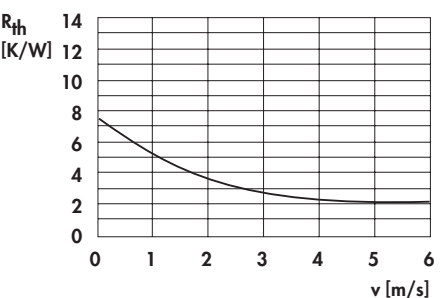
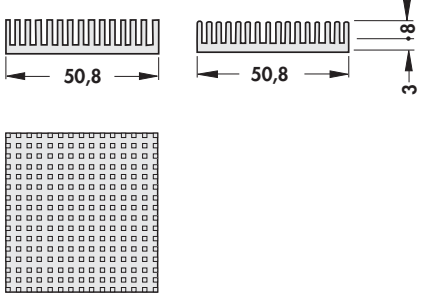
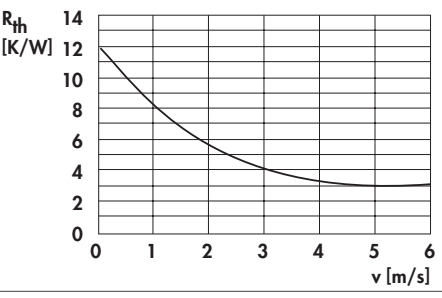
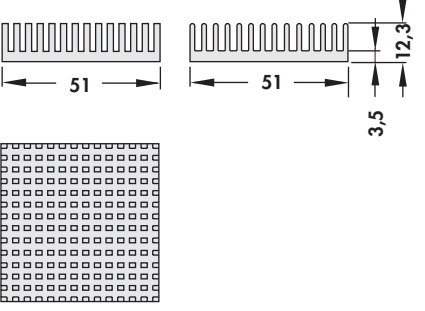
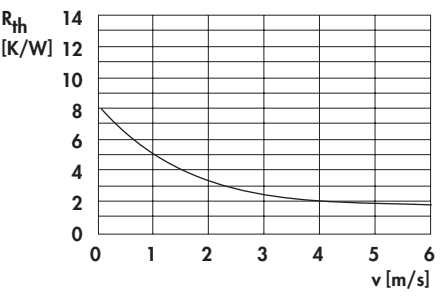
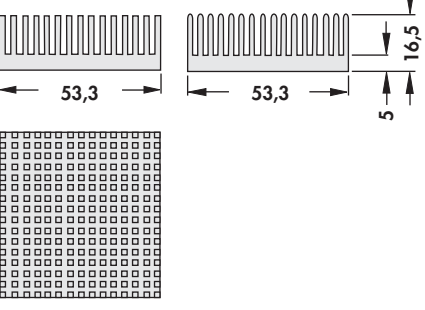
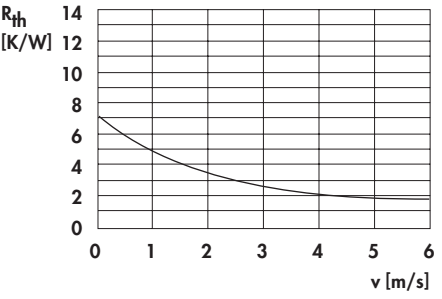
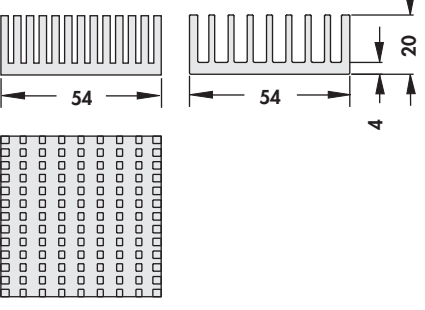
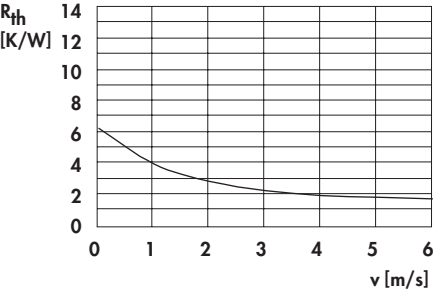
Mounts
Heatsinks for PLCC
Thermal conductive paste
Thermal conductive glue

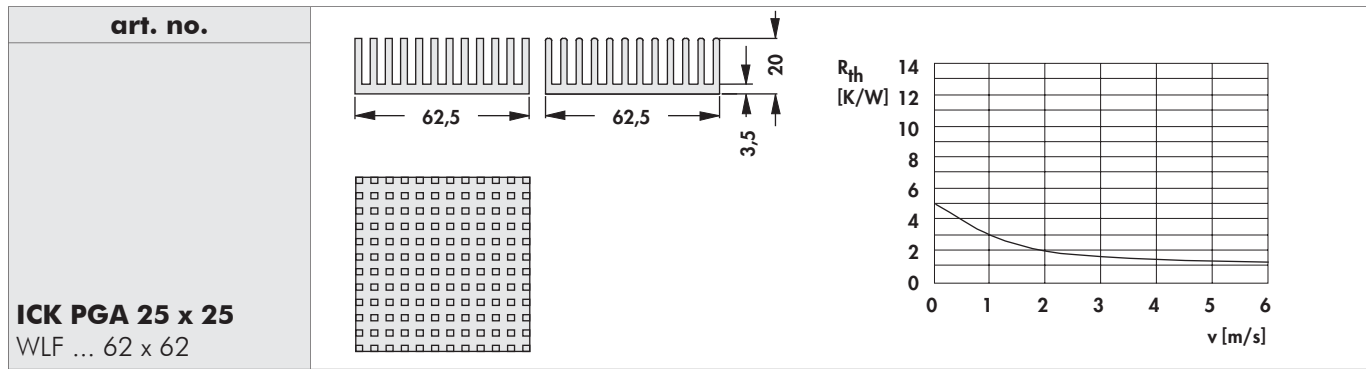
→ E 42 – 46
→ B 44
→ E 19 – 22
→ E 21 – 22

Pin heatsinks for IC
SMD-heatsinks
Heatsinks for PGA
Technical introduction

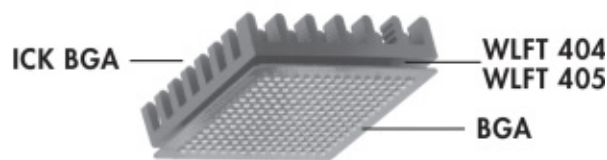
→ B 21 – 25
→ B 45 – 46
→ B 11 – 16
→ A 2 – 7

Heatsinks for PGA

<p>art. no.</p> <p>ICK PGA 20 x 20 K WLF ... 50 x 50</p>	 <p>with fixing clamp for socket 7 and socket 370</p>	
<p>art. no.</p> <p>ICK PGA 20 x 20 x 8 WLF ... 50 x 50</p>		
<p>art. no.</p> <p>ICK PGA 20 x 20 x 12 WLF ... 50 x 50</p>		
<p>art. no.</p> <p>ICK PGA 21 x 21 WLF ... 53 x 53</p>		
<p>art. no.</p> <p>ICK PGA 22 x 22 WLF ... 54 x 54</p>		



Heatsinks for BGAs



- particularly suited for **Ball Grid Arrays**
- heatsink dimensions match the respective BGA-type
- can be glued directly on the BGA component
- double-sided adhesive thermal conductive foil **WLF ...** → E 7
- **surface:** black anodised

<p>art. no.</p> <p>ICK BGA 10 x 10 WLF ... 10 x 10</p>		
<p>art. no.</p> <p>ICK BGA 10 x 10 x 10 WLF ... 10 x 10</p>		
<p>art. no.</p> <p>ICK BGA 14 x 14 WLF ... 14 x 14</p>		
<p>art. no.</p> <p>ICK BGA 14 x 14 x 10 WLF ... 14 x 14</p>		

<p>art. no.</p> <p>ICK BGA 21 x 21 WLF ... 21 x 21</p>		
<p>art. no.</p> <p>ICK BGA 23 x 23 WLF ... 23 x 23</p>		
<p>art. no.</p> <p>ICK BGA 23 x 23 x 10 WLF ... 23 x 23</p>		
<p>art. no.</p> <p>ICK BGA 27 x 27 WLF ... 27 x 27</p>		
<p>art. no.</p> <p>ICK BGA 27 x 27 x 10 WLF ... 27 x 27</p>		
<p>art. no.</p> <p>ICK BGA 27 x 27 x 14 WLF ... 27 x 27</p>		

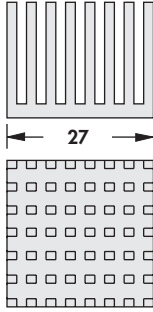
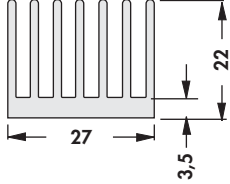
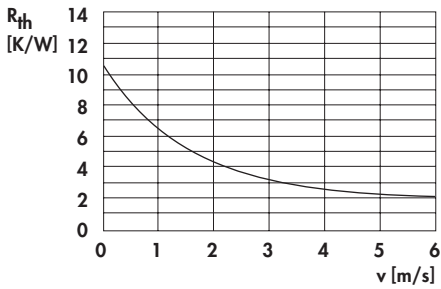
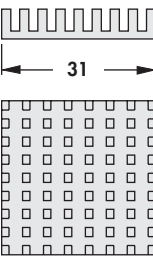
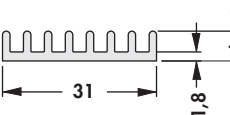
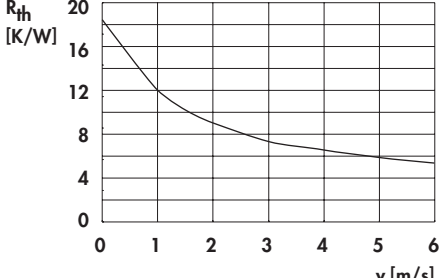
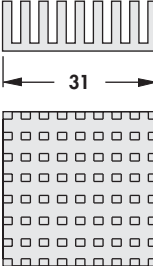
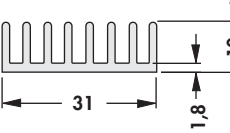
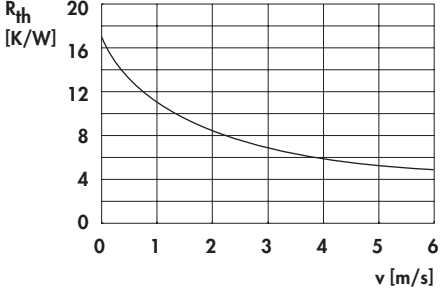
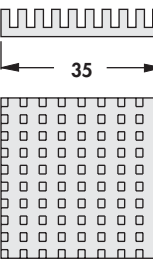
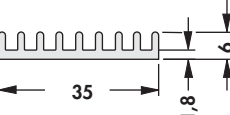
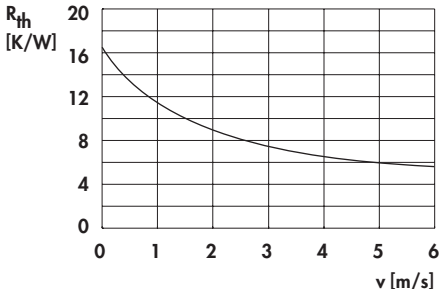
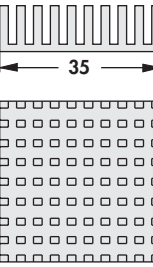
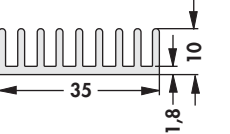
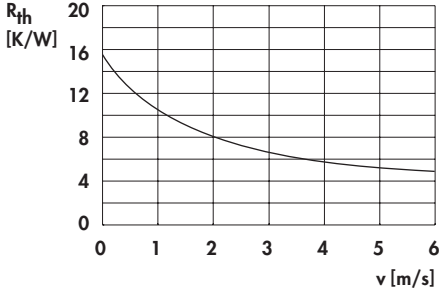
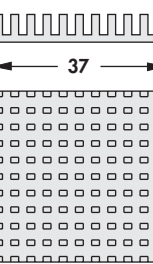
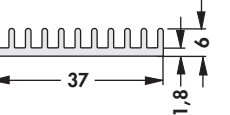
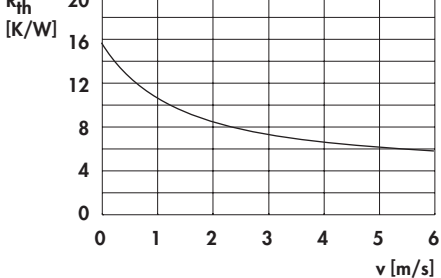
Mounts
SMD-heatsinks
Thermally conductive foil
Thermal conductive paste

→ E 42 – 46
→ B 45 – 47
→ E 5 – 13
→ E 19 – 20

Thermal conductive glue
Drilling pattern for Solid State Relais
Processor overview
Technical introduction

→ E 21 – 22
→ A 21
→ B 2 – 10
→ A 2 – 7

Heatsinks for BGAs

art. no. ICK BGA 27 x 27 x 22 WLF ... 27 x 27			
art. no. ICK BGA 31 x 31 WLF ... 31 x 31			
art. no. ICK BGA 31 x 31 x 10 WLF ... 31 x 31			
art. no. ICK BGA 35 x 35 WLF ... 35 x 35			
art. no. ICK BGA 35 x 35 x 10 WLF ... 35 x 35			
art. no. ICK BGA 37 x 37 x 6 WLF ... 37 x 37			

Heatsinks for BGAs

<p>art. no.</p> <p>ICK BGA 37 x 37 x 10 WLF ... 37 x 37</p>		
<p>art. no.</p> <p>ICK BGA 40 x 40 WLF ... 40 x 40</p>		
<p>art. no.</p> <p>ICK BGA 40 x 40 x 10 WLF ... 40 x 40</p>		
<p>art. no.</p> <p>ICK BGA 42,5 x 45 WLF ... 42,5 x 45</p>		

Mounts
SMD-heatsinks
Thermally conductive foil
Thermal conductive paste

→ E 42 – 46
→ B 45 – 47
→ E 5 – 13
→ E 19 – 20

Thermal conductive glue
Drilling pattern for Solid State Relais
Processor overview
Technical introduction

→ E 21 – 22
→ A 21
→ B 2 – 10
→ A 2 – 7

B 20

A

B

C

D

E

F

G

H

I

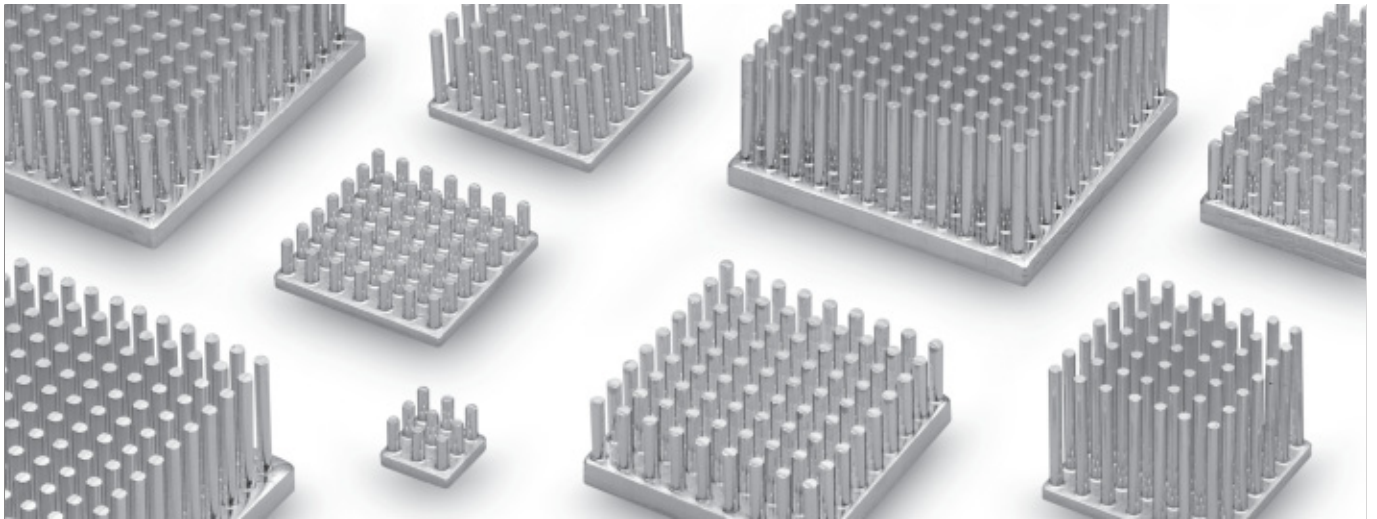
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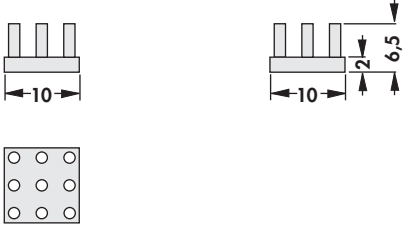
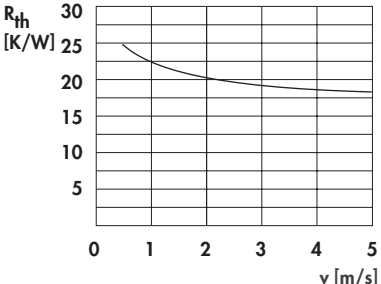
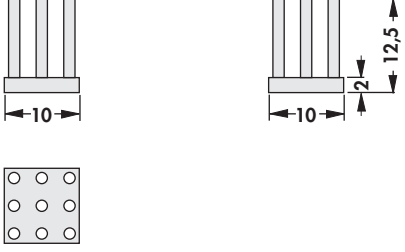
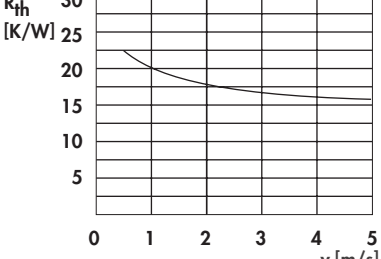
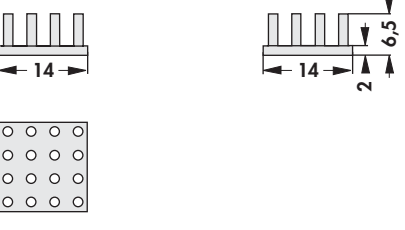
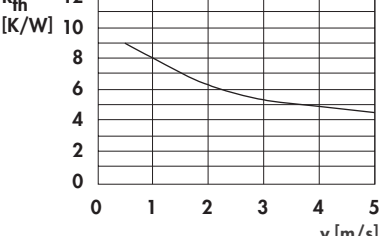
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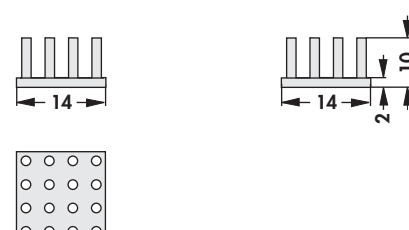
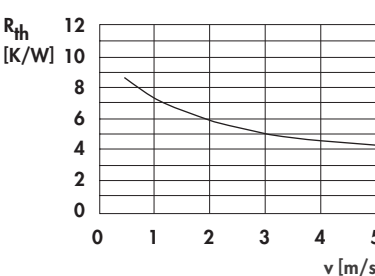
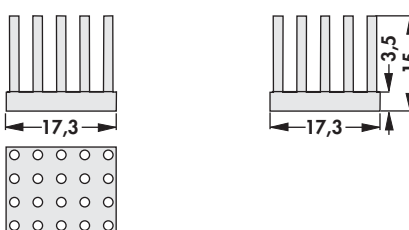
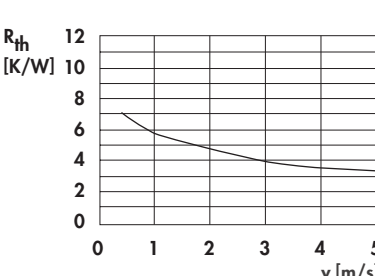
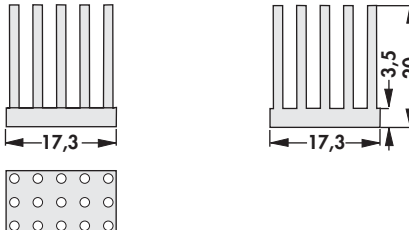
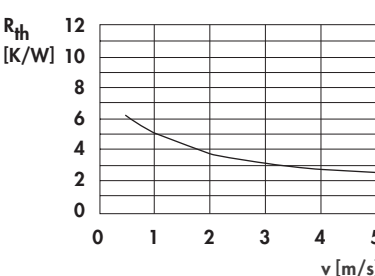
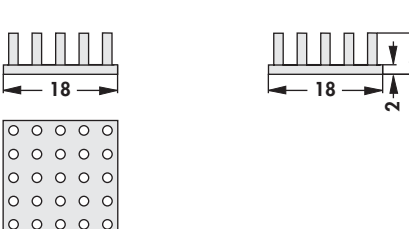
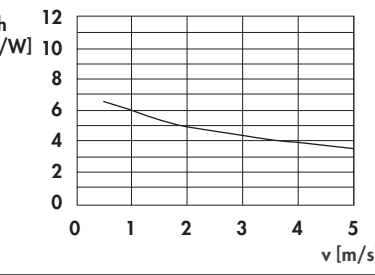
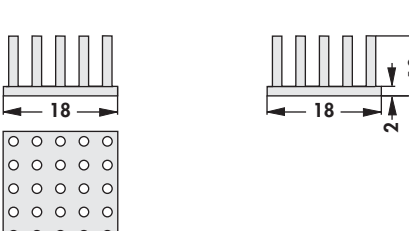
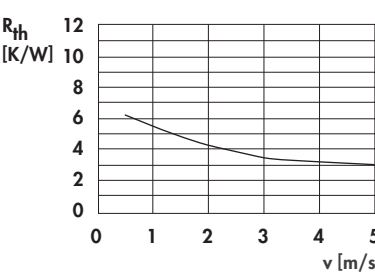
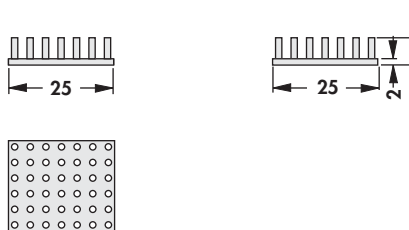
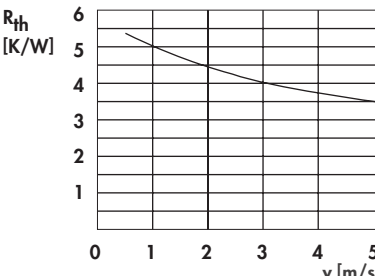
Pin heatsinks



- arrangement and number of pins for optimum air flow
- suitable for forced and free convection
- excellent thermal conductivity by the alloy material (Al99,5; 220 W/mK) and homogeneous arrangement of materials
- constant heat dissipation in the base and the pins in the direction of heat flow
- low weight achieved by optimised geometry
- components fastened using glue, adhesive foil or clamps
- customer-specific modifications and special designs
- other pin-lengths and surfaces on request
- **surface:** Al-natural

<p>art. no.</p> <p>ICK S 10 x 10 x 6,5 WLF ... 10 x 10 weight: 1g</p>		
<p>art. no.</p> <p>ICK S 10 x 10 x 12,5 WLF ... 10 x 10 weight: 1.3g</p>		
<p>art. no.</p> <p>ICK S 14 x 14 x 6,5 WLF ... 14 x 14 weight: 1.5g</p>		

Pin heatsinks

<p>art. no.</p> <p>ICK S 14 x 14 x 10 WLF ... 14 x 14 weight: 1.9g</p>		
<p>art. no.</p> <p>ICK S 17 x 17 x 15 WLF ... 17 x 17 weight: 4.7g</p>		
<p>art. no.</p> <p>ICK S 17 x 17 x 20 WLF ... 17 x 17 weight: 5.6g</p>		
<p>art. no.</p> <p>ICK S 18 x 18 x 6,5 WLF ... 18 x 18 weight: 2.5g</p>		
<p>art. no.</p> <p>ICK S 18 x 18 x 10 WLF ... 18 x 18 weight: 3.1g</p>		
<p>art. no.</p> <p>ICK S 25 x 25 x 6,5 WLF ... 25 x 25 weight: 4g</p>		

Processor overview
Mounts
SMD-heatsinks
Thermally conductive foil

→ B 2 – 10
→ E 42 – 46
→ B 45 – 47
→ E 5 – 13

Thermal conductive paste
Thermal conductive glue
Heatsinks for LEDs
Technical introduction

→ E 19 – 20
→ E 21 – 22
→ B 32 – 43
→ A 2 – 7

B 22

A

B

C

D

E

F

G

H

I

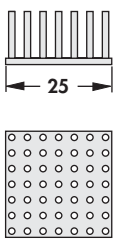
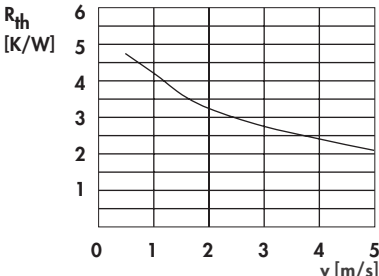
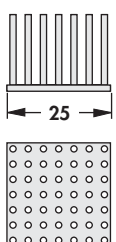
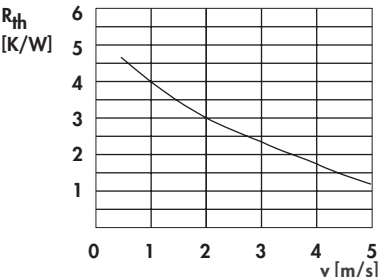
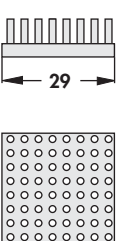
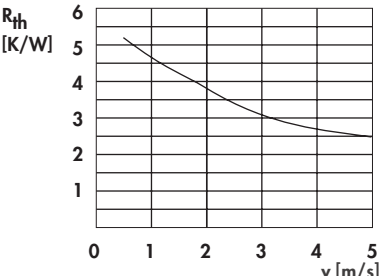
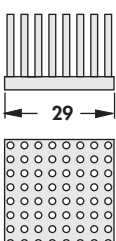
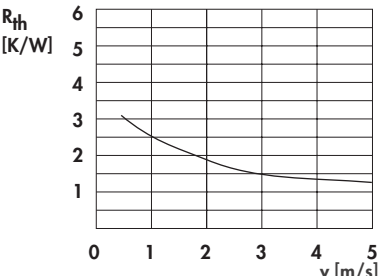
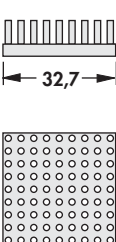
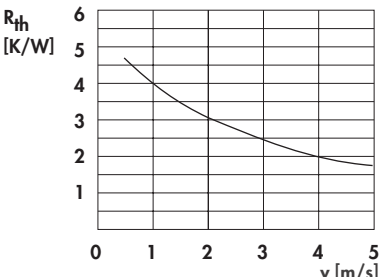
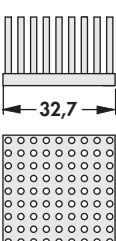
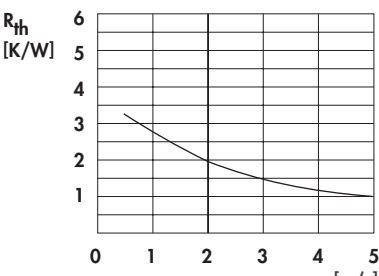
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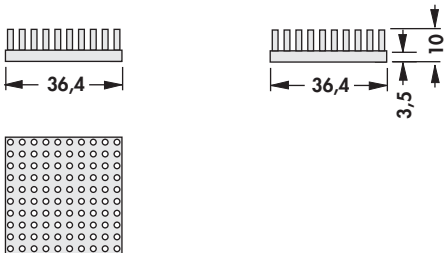
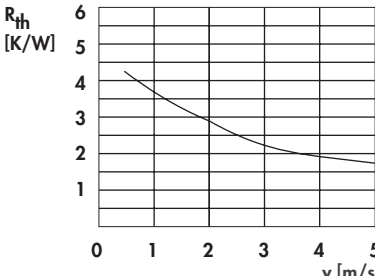
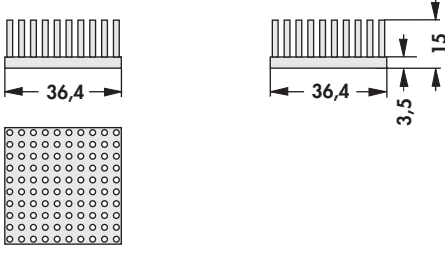
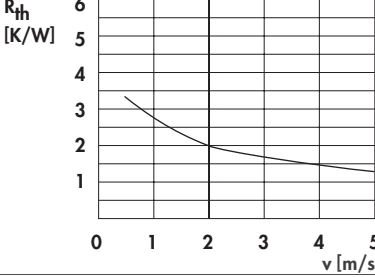
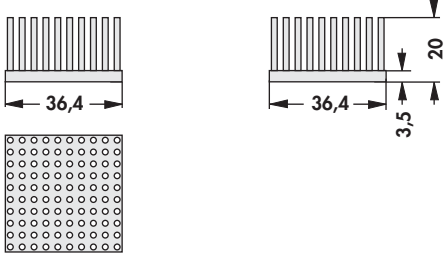
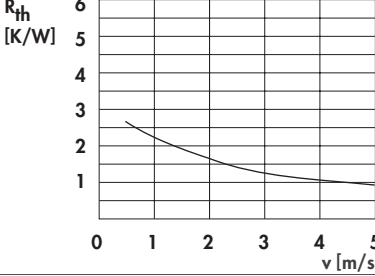
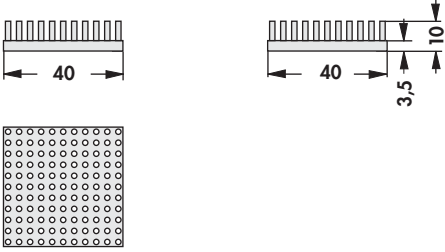
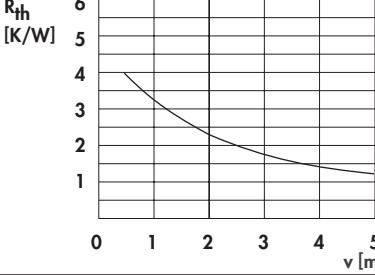
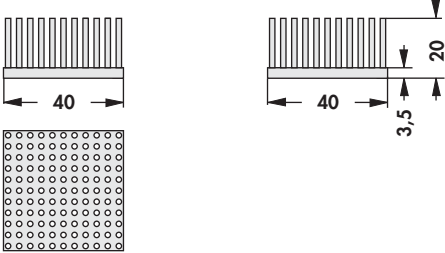
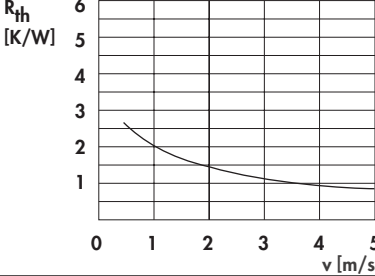
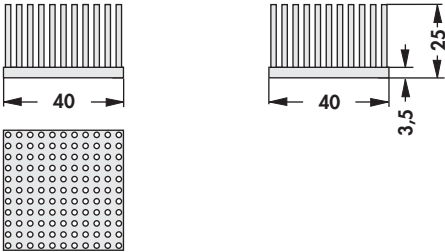
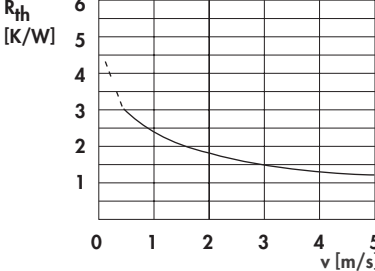
M

N

Pin heatsinks

<p>art. no.</p> <p>ICK S 25 x 25 x 12,5 WLF ... 25 x 25 weight: 6g</p>		
<p>art. no.</p> <p>ICK S 25 x 25 x 18,5 WLF ... 25 x 25 weight: 7g</p>		
<p>art. no.</p> <p>ICK S 29 x 29 x 10 WLF ... 29 x 29 weight: 11g</p>		
<p>art. no.</p> <p>ICK S 29 x 29 x 20 WLF ... 29 x 29 weight: 15g</p>		
<p>art. no.</p> <p>ICK S 32 x 32 x 10 WLF ... 32 x 32 weight: 14g</p>		
<p>art. no.</p> <p>ICK S 32 x 32 x 20 WLF ... 32 x 32 weight: 19g</p>		

Pin heatsinks

<p>art. no.</p> <p>ICK S 36 x 36 x 10 WLF ... 36 x 36 weight: 17g</p>		
<p>art. no.</p> <p>ICK S 36 x 36 x 15 WLF ... 36 x 36 weight: 20g</p>		
<p>art. no.</p> <p>ICK S 36 x 36 x 20 WLF ... 36 x 36 weight: 24g</p>		
<p>art. no.</p> <p>ICK S 40 x 40 x 10 WLF ... 40 x 40 weight: 21g</p>		
<p>art. no.</p> <p>ICK S 40 x 40 x 20 WLF ... 40 x 40 weight: 29g</p>		
<p>art. no.</p> <p>ICK S 40 x 40 x 25 WLF ... 40 x 40 weight: 37g</p>		

Processor overview
Mounts
SMD-heatsinks
Thermally conductive foil

→ B 2 – 10
→ E 42 – 46
→ B 45 – 47
→ E 5 – 13

Thermal conductive paste
Thermal conductive glue
Heatsinks for LEDs
Technical introduction

→ E 19 – 20
→ E 21 – 22
→ B 32 – 43
→ A 2 – 7

B 24

A

B

C

D

E

F

G

H

I

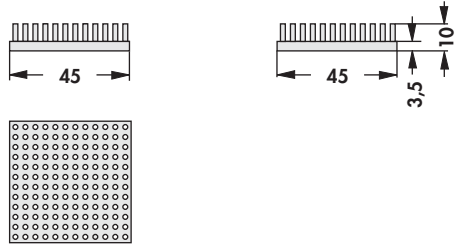
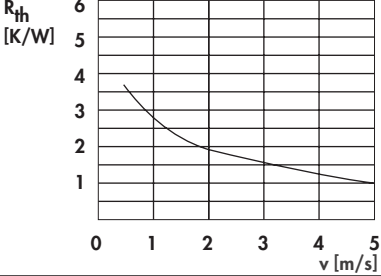
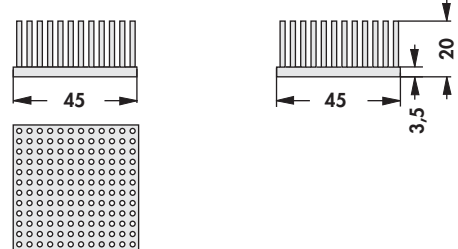
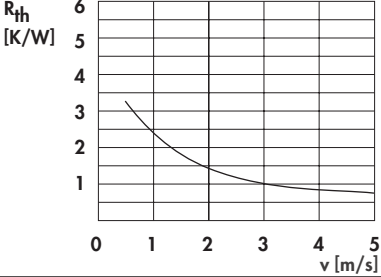
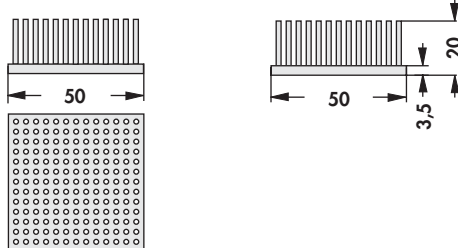
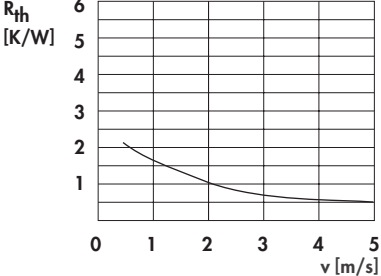
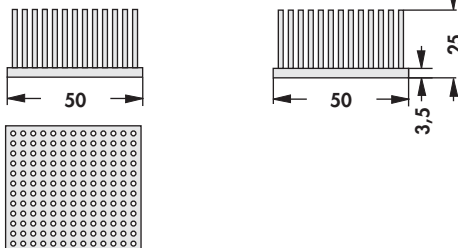
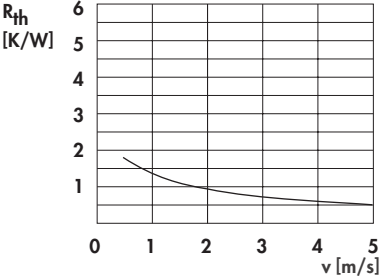
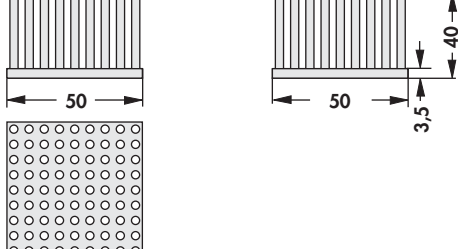
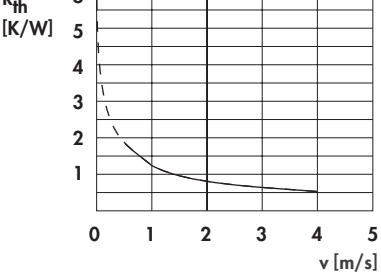
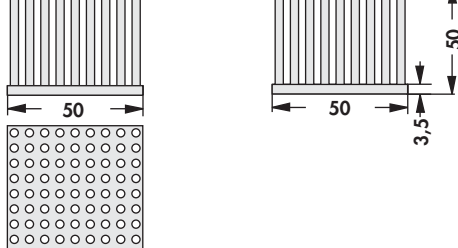
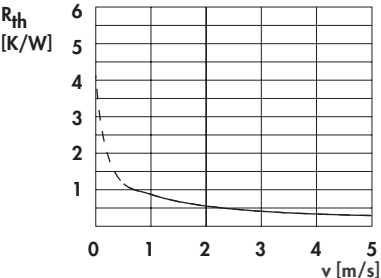
K

L

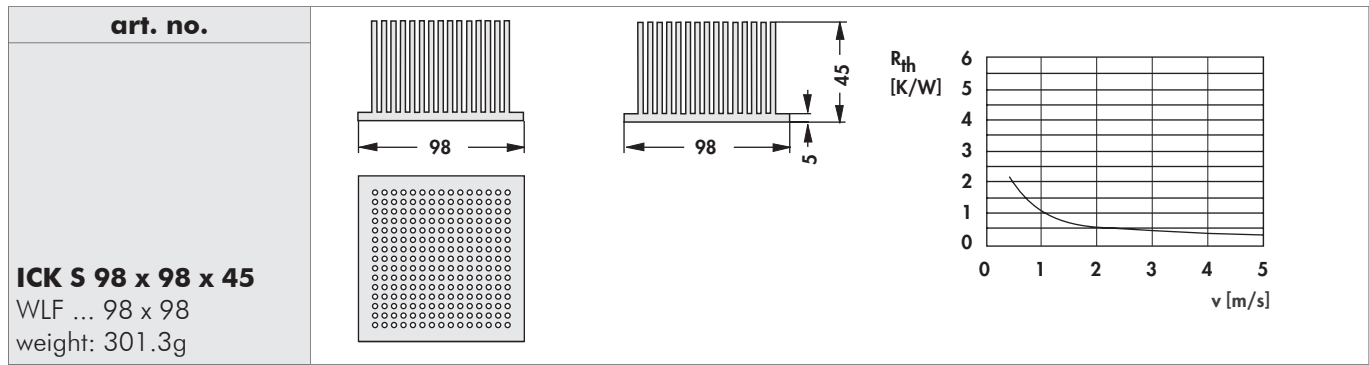
M

N

Pin heatsinks

art. no. ICK S 45 x 45 x 10 WLF ... 45 x 45 weight: 26g		
art. no. ICK S 45 x 45 x 20 WLF ... 45 x 45 weight: 36g		
art. no. ICK S 50 x 50 x 20 WLF ... 50 x 50 weight: 43g		
art. no. ICK S 50 x 50 x 25 WLF ... 50 x 50 weight: 49g		
art. no. ICK S 50 x 50 x 40 WLF ... 50 x 50 weight: 80.05g		
art. no. ICK S 50 x 50 x 50 WLF ... 50 x 50 weight: 95.51g		

Pin heatsinks



A

B

C

D

E

F

G

H

I

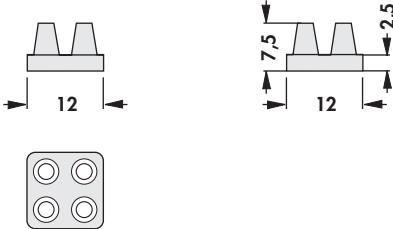
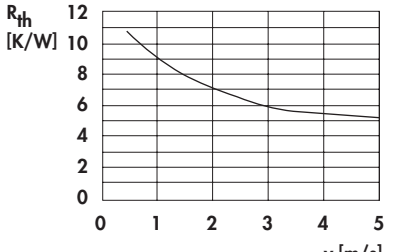
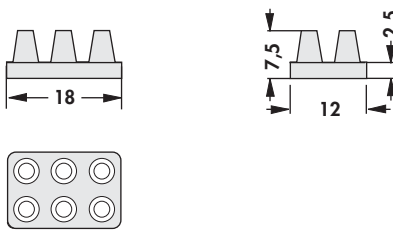
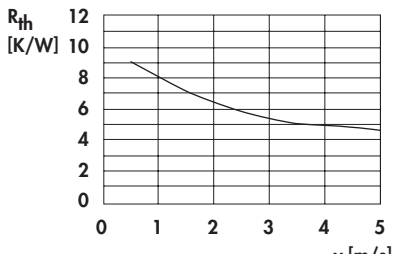
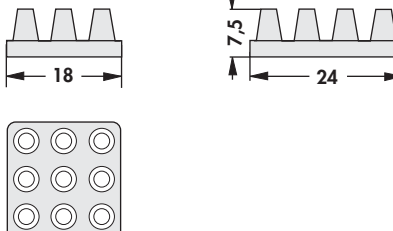

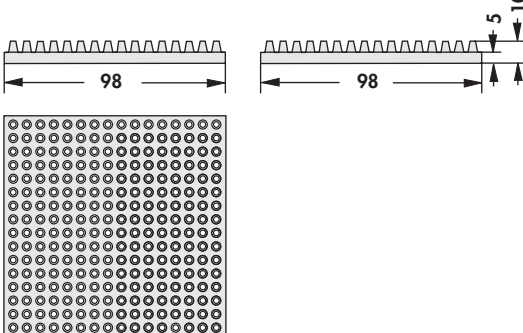
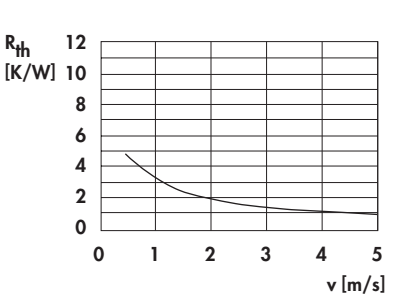
K

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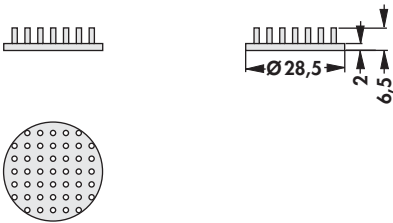
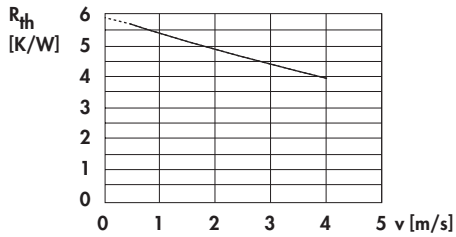
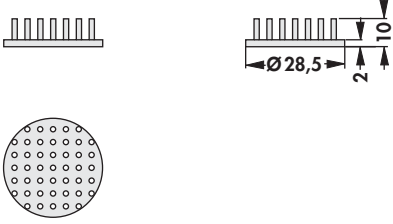
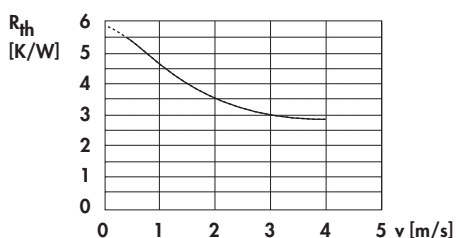
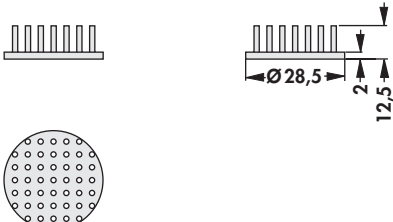
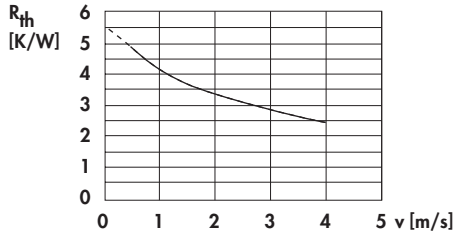
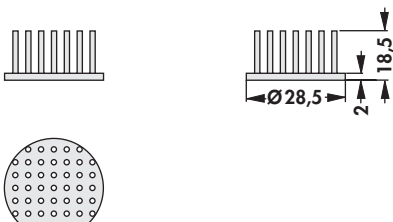
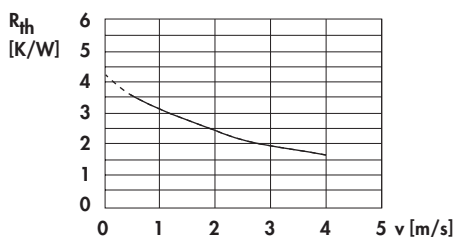
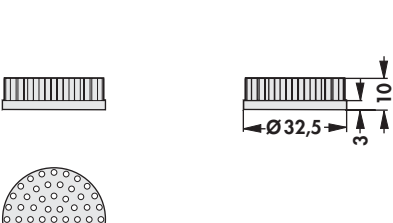

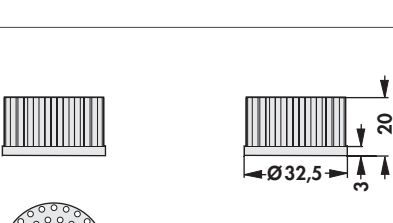
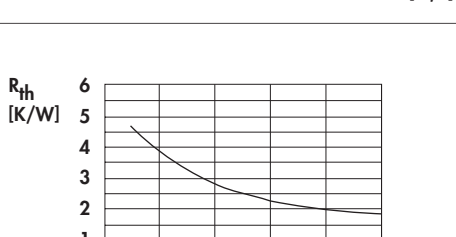
N

Pin heatsinks
Dome

art. no. ICK S D 12 x 12 x 7,5 WLF ... 12 x 12 weight: 1.8g		
art. no. ICK S D 18 x 12 x 7,5 WLF ... 12 x 18 weight: 2.7g		
art. no. ICK S D 24 x 18 x 7,5 WLF ... 18 x 24 weight: 4.4g		
art. no. ICK S D 98 x 98 x 10 WLF ... 98 x 98 weight: 154g		

Pin heatsinks

Round

<p>art. no.</p> <p>ICK S R 28,5 x 6,5 WLF ... D 28,5 weight: 4.41g</p>		
<p>art. no.</p> <p>ICK S R 28,5 x 10 WLF ... D 28,5 weight: 5.16g</p>		
<p>art. no.</p> <p>ICK S R 28,5 x 12,5 WLF ... D 28,5 weight: 5.7g</p>		
<p>art. no.</p> <p>ICK S R 28,5 x 18,5 WLF ... D 28,5 weight: 6.98g</p>		
<p>art. no.</p> <p>ICK S R 32,5 x 10 WLF ... D 32 weight: 9.7g</p>		
<p>art. no.</p> <p>ICK S R 32,5 x 20 WLF ... D 32 weight: 13.8g</p>		

Processor overview
Mounts
SMD-heatsinks
Thermally conductive foil

→ B 2 – 10
→ E 42 – 46
→ B 45 – 47
→ E 5 – 13

Thermal conductive paste
Thermal conductive glue
Heatsinks for LEDs
Technical introduction

→ E 19 – 20
→ E 21 – 22
→ B 32 – 43
→ A 2 – 7

B 28

A

B

C

D

E

F

G

H

I

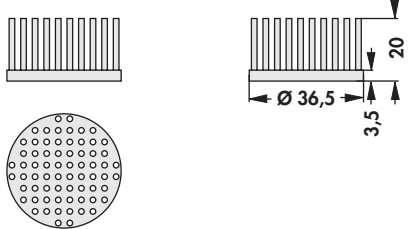
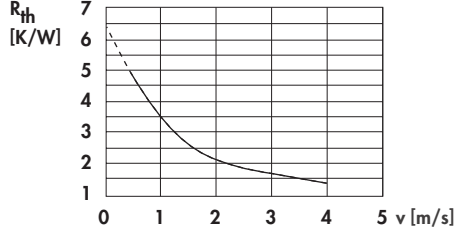
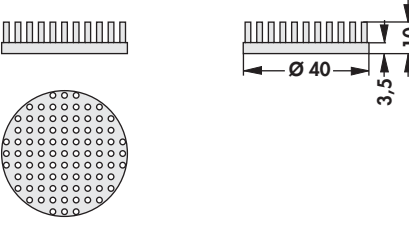
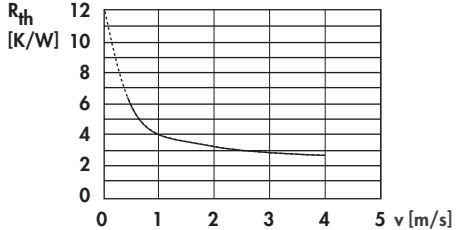
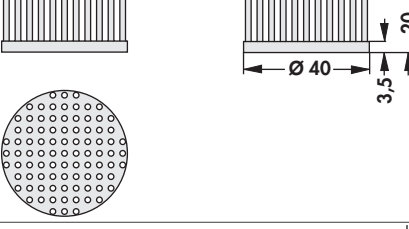
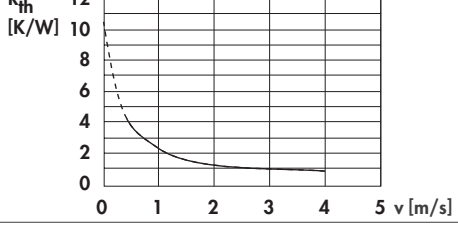
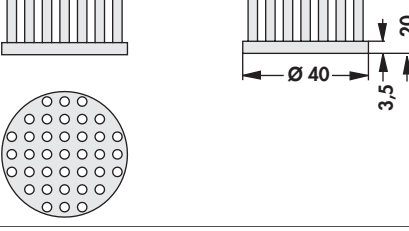
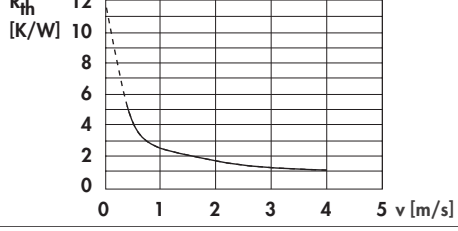
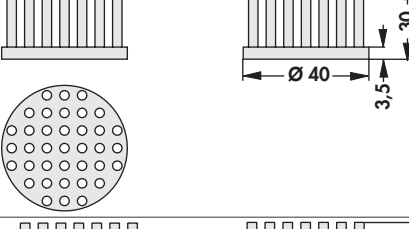
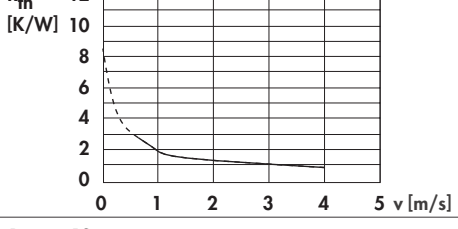
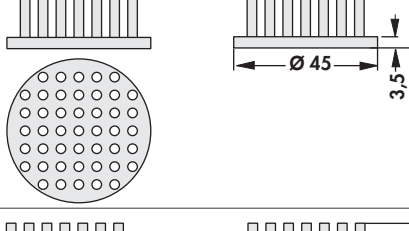
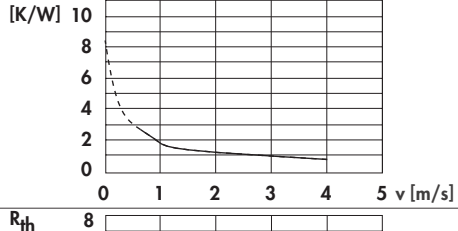
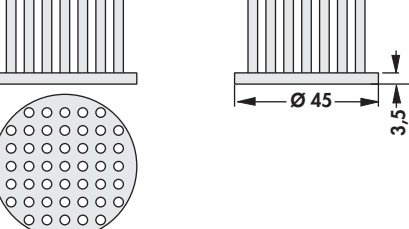
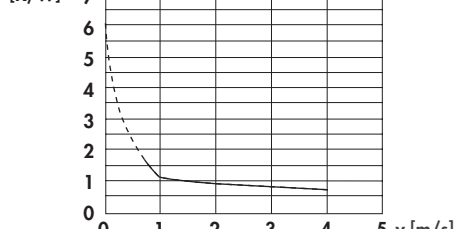
K

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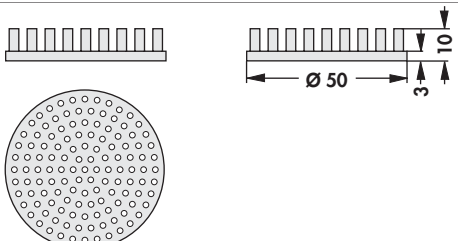
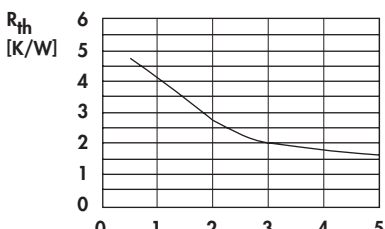
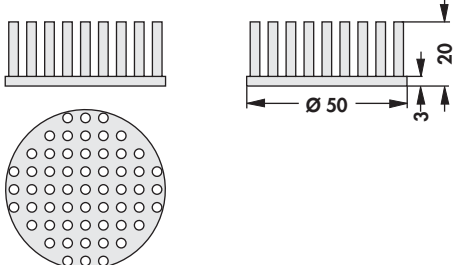
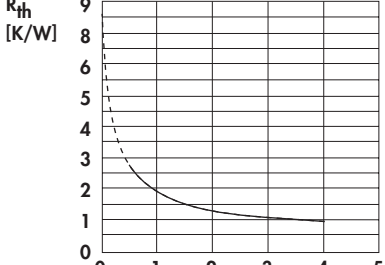
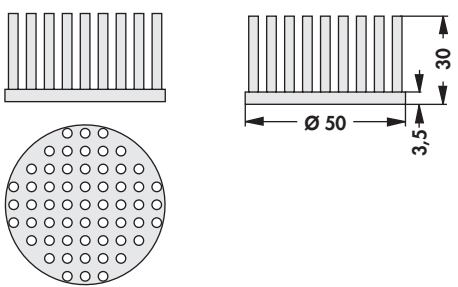
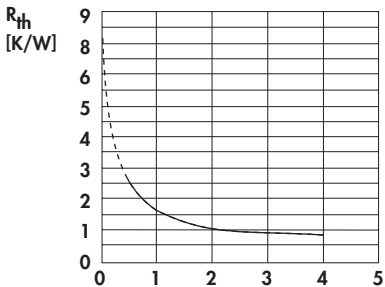
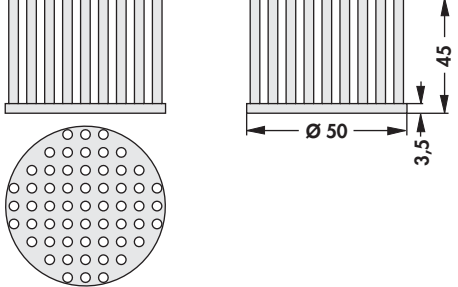
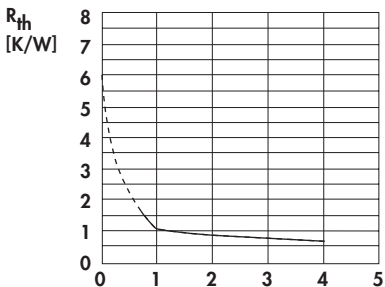
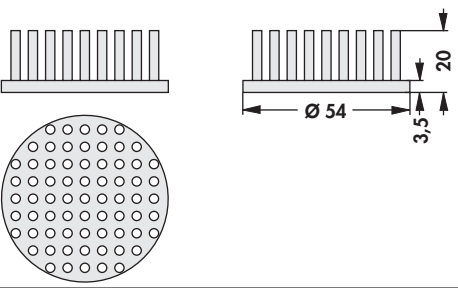
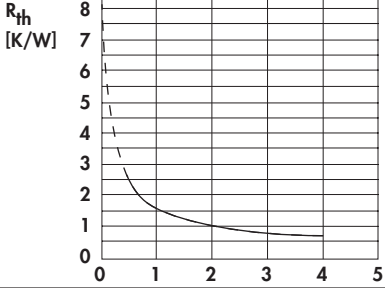
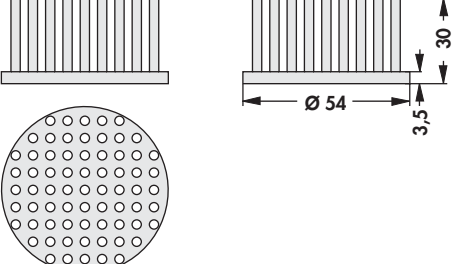
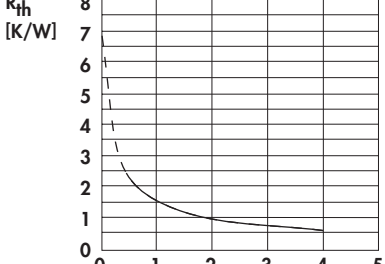
M

N

Pin heatsinks

<p>art. no.</p> <p>ICK S R 36,5 x 20 WLF ... D 36,5 weight: 17.59g</p>		
<p>art. no.</p> <p>ICK S R 40 x 10 WLF ... D 40 weight: 15.85g</p>		
<p>art. no.</p> <p>ICK S R 40 x 20 WLF ... D 40 weight: 21.96g</p>		
<p>art. no.</p> <p>ICK S R A 40 x 20 WLF ... D 40 weight: 22.18g</p>		
<p>art. no.</p> <p>ICK S R 40 x 30 WLF ... D 40 weight: 29.24g</p>		
<p>art. no.</p> <p>ICK S R 45 x 30 WLF ... D 45 weight: 37.78g</p>		
<p>art. no.</p> <p>ICK S R 45 x 45 WLF ... D 45 weight: 50.67g</p>		

Pin heatsinks

<p>art. no.</p> <p>ICK S R 50 x 10 WLF ... D 50 weight: 22g</p>		
<p>art. no.</p> <p>ICK S R 50 x 20 WLF ... D 50 weight: 34.39g</p>		
<p>art. no.</p> <p>ICK S R 50 x 30 WLF ... D 50 weight: 45.28g</p>		
<p>art. no.</p> <p>ICK S R 50 x 45 WLF ... D 50 weight: 61.59g</p>		
<p>art. no.</p> <p>ICK S R 54 x 20 WLF ... D 54 weight: 40.94g</p>		
<p>art. no.</p> <p>ICK S R 54 x 30 WLF ... D 54 weight: 54.11g</p>		

Pin heatsinks

A

B

C

D

E

F

G

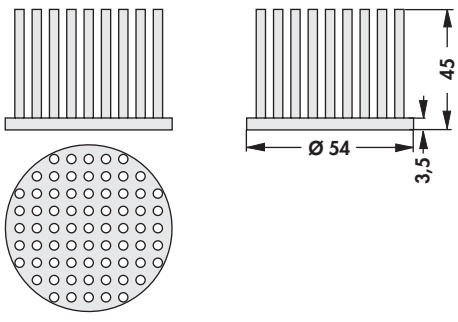
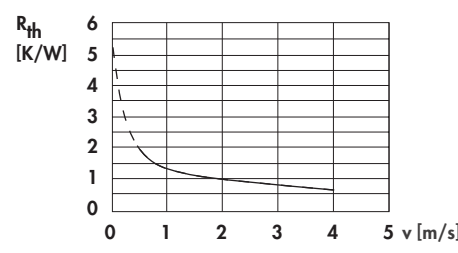
H

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<p>art. no.</p> ICK S R 54 x 45 WLF ... D 54 weight: 73.86g		 <table border="1"><caption>Approximate data from the graph</caption><thead><tr><th>air velocity v [m/s]</th><th>thermal resistance R_{th} [K/W]</th></tr></thead><tbody><tr><td>0</td><td>4.5</td></tr><tr><td>0.5</td><td>2.5</td></tr><tr><td>1</td><td>1.5</td></tr><tr><td>2</td><td>1.2</td></tr><tr><td>3</td><td>1.0</td></tr><tr><td>4</td><td>0.9</td></tr><tr><td>5</td><td>0.8</td></tr></tbody></table>	air velocity v [m/s]	thermal resistance R _{th} [K/W]	0	4.5	0.5	2.5	1	1.5	2	1.2	3	1.0	4	0.9	5	0.8
air velocity v [m/s]	thermal resistance R _{th} [K/W]																	
0	4.5																	
0.5	2.5																	
1	1.5																	
2	1.2																	
3	1.0																	
4	0.9																	
5	0.8																	

N

B 31

Processor overview
Mounts
SMD-heatsinks
Thermally conductive foil

→ B 2 – 10
→ E 42 – 46
→ B 45 – 47
→ E 5 – 13

Thermal conductive paste
Thermal conductive glue
Heatsinks for LEDs
Technical introduction

→ E 19 – 20
→ E 21 – 22
→ B 32 – 43
→ A 2 – 7



- suitable for free or forced convection
- heat sink dimensions are fitted to the respective LED typ
- simple mounting by using thermally conductive adhesive foil, glue or screw mounting
- specific versions on customer's request
- double-sided adhesive thermal conductive foil **WLF ...** → E 7
- special design, surfaces and modification to customer specification on request
- **surface:** black anodised

<p>art. no.</p> <p>ICK LED R 23,5 x 14 WLF ... D 23</p>		<p>$R_{th} = 18,58 \text{ K/W}$</p>
<p>art. no.</p> <p>ICK LED R 23,5 x 14 G WLF ... D 23</p>		
<p>art. no.</p> <p>ICK LED R 27 x 10 WLF ... D 27</p>		<p>$R_{th} = 17,69 \text{ K/W}$</p>
<p>art. no.</p> <p>ICK LED R 27 x 10 G WLF ... D 27</p>		
<p>art. no.</p> <p>ICK LED R 28 x 15 WLF ... D 28</p>		<p>$R_{th} = 15,24 \text{ K/W}$</p>

Pin heatsinks Ø
Mounts
Thermally conductive foil
Thermal conductive paste

→ B 28 – 31
→ E 42 – 46
→ E 5 – 13
→ E 19 – 20

Thermal conductive glue
Drilling pattern for Solid State Relais
Heatsink profile-overview
Technical introduction

→ E 21 – 22
→ A 21
→ A 13 – 17
→ A 2 – 7

B 32

A

B

C

D

E

F

G

H

I

K

L

M

N

A

Heatsinks for LEDs

B

C

D

E

F

G

H

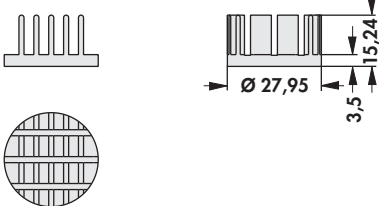
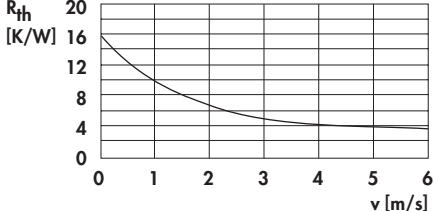
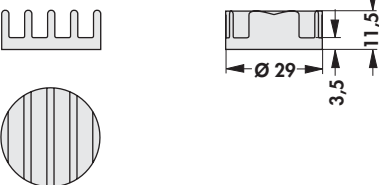
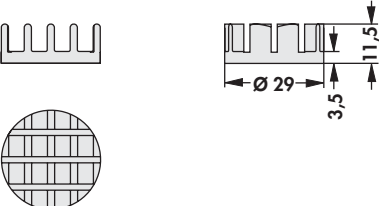
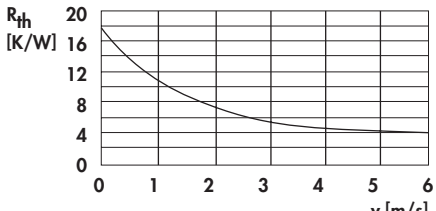
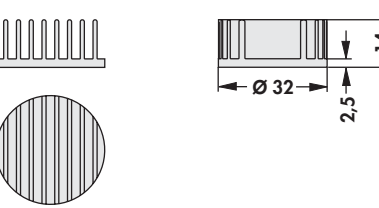
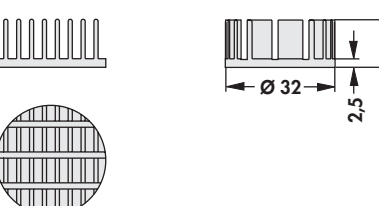
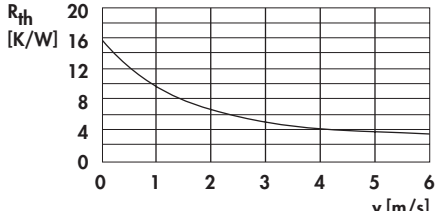
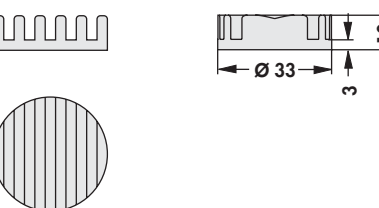
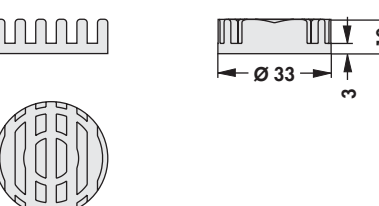
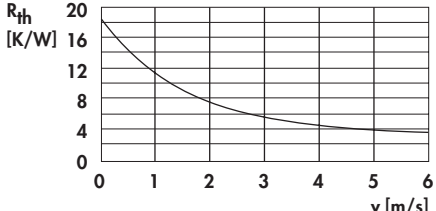
I

K

L

M

N

art. no. ICK LED R 28 x 15 G WLF ... D 28		
art. no. ICK LED R 29 x 11,5 WLF ... D 29		$R_{th} = 17,26 \text{ K/W}$
art. no. ICK LED R 29 x 11,5 G WLF ... D 29		
art. no. ICK LED R 32 x 14 WLF ... D 32		$R_{th} = 15,23 \text{ K/W}$
art. no. ICK LED R 32 x 14 G WLF ... D 32		
art. no. ICK LED R 33 x 10 WLF ... D 33		$R_{th} = 17,6 \text{ K/W}$
art. no. ICK LED R 33 x 10 G WLF ... D 33		

B 33

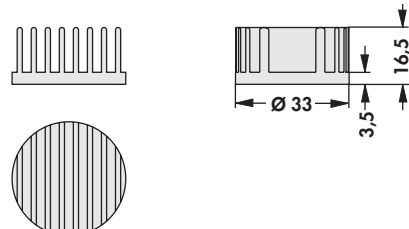
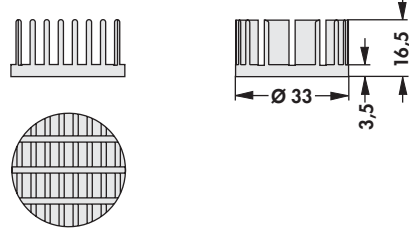
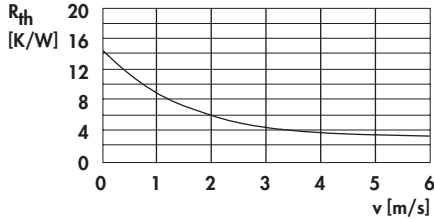
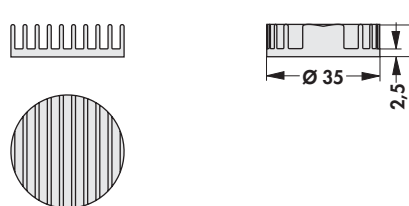
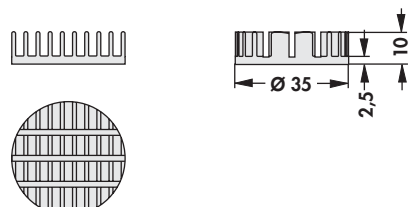
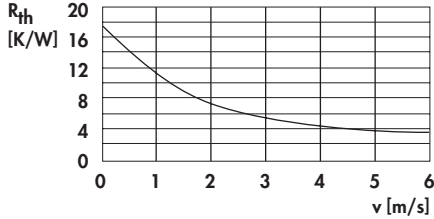
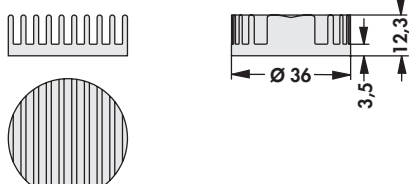
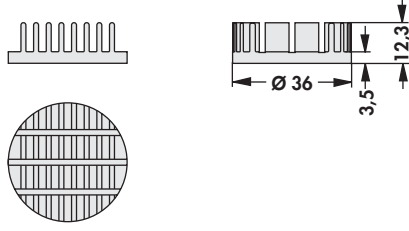
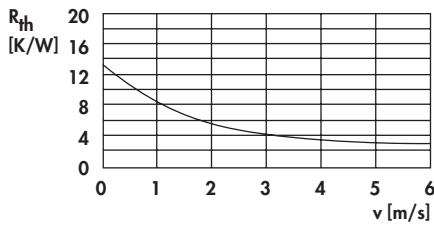
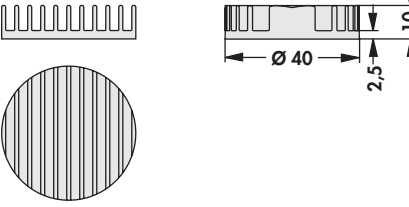
Pin heatsinks Ø
Mounts
Thermally conductive foil
Thermal conductive paste

→ B 28 – 31
→ E 42 – 46
→ E 5 – 13
→ E 19 – 20

Thermal conductive glue
Drilling pattern for Solid State Relais
Heatsink profile-overview
Technical introduction

→ E 21 – 22
→ A 21
→ A 13 – 17
→ A 2 – 7

Heatsinks for LEDs

<p>art. no.</p> <p>ICK LED R 33 x 16,5 WLF ... D 33</p>		<p>$R_{th} = 13,87 \text{ K/W}$</p>
<p>art. no.</p> <p>ICK LED R 33 x 16,5 G WLF ... D 33</p>		
<p>art. no.</p> <p>ICK LED R 35 x 10 WLF ... D 35</p>		<p>$R_{th} = 16,9 \text{ K/W}$</p>
<p>art. no.</p> <p>ICK LED R 35 x 10 G WLF ... D 35</p>		
<p>art. no.</p> <p>ICK LED R 36 x 12 WLF ... D 36</p>		<p>$R_{th} = 12,88 \text{ K/W}$</p>
<p>art. no.</p> <p>ICK LED R 36 x 12 G WLF ... D 36</p>		
<p>art. no.</p> <p>ICK LED R 40 x 10 WLF ... D 40</p>		<p>$R_{th} = 12,28 \text{ K/W}$</p>

Pin heatsinks Ø
Mounts
Thermally conductive foil
Thermal conductive paste

→ B 28 – 31
→ E 42 – 46
→ E 5 – 13
→ E 19 – 20

Thermal conductive glue
Drilling pattern for Solid State Relais
Heatsink profile-overview
Technical introduction

→ E 21 – 22
→ A 21
→ A 13 – 17
→ A 2 – 7

B 34

A

B

C

D

E

F

G

H

I

K

L

M

N

A

Heatsinks for LEDs

B

C

D

E

F

G

H

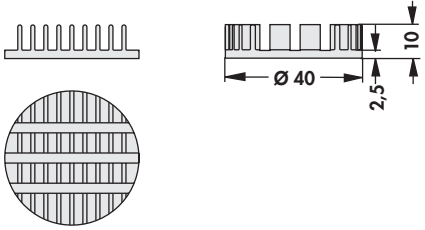
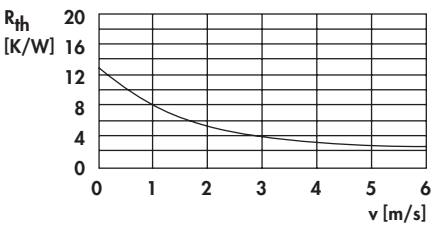
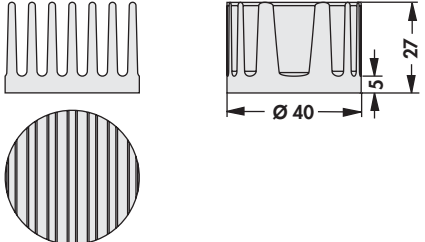
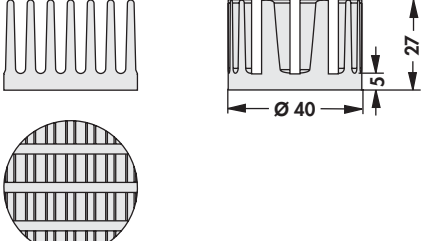
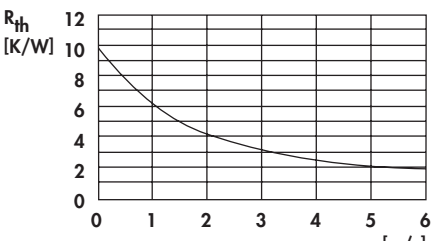
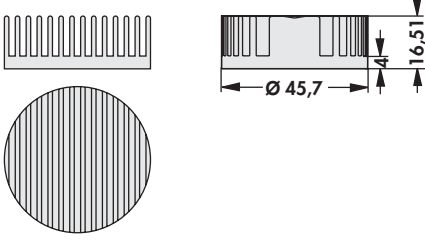
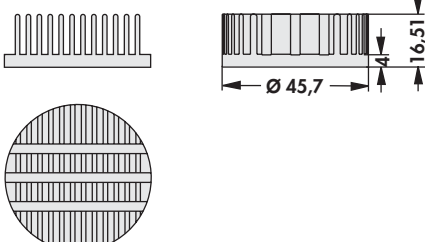

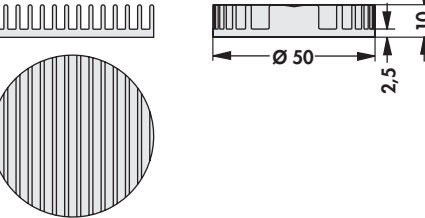
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art. no. ICK LED R 40 x 10 G WLF ... D 40		
art. no. ICK LED R 40 x 27 WLF ... D 40		<p>R_{th} = 9,41 K/W</p>
art. no. ICK LED R 40 x 27 G WLF ... D 40		
art. no. ICK LED R 45,7 x 16,5 WLF ... D 45		<p>R_{th} = 10,46 K/W</p>
art. no. ICK LED R 45,7 x 16,5 G WLF ... D 45		
art. no. ICK LED R 50 x 10 WLF ... D 50		<p>R_{th} = 10,57 K/W</p>

B 35

Pin heatsinks Ø
Mounts
Thermally conductive foil
Thermal conductive paste

→ B 28 – 31
→ E 42 – 46
→ E 5 – 13
→ E 19 – 20

Thermal conductive glue
Drilling pattern for Solid State Relais
Heatsink profile-overview
Technical introduction

→ E 21 – 22
→ A 21
→ A 13 – 17
→ A 2 – 7

<p>art. no.</p> <p>ICK LED R 50 x 10 G WLF ... D 50</p>		
<p>art. no.</p> <p>ICK LED R 50,8 x 16,5 WLF ... D 50</p>		<p>$R_{th} = 10,17 \text{ K/W}$</p>
<p>art. no.</p> <p>ICK LED R 50,8 x 16,5 G WLF ... D 50</p>		
<p>art. no.</p> <p>ICK LED R 54 x 20 WLF ... D 54</p>		<p>$R_{th} = 9,48 \text{ K/W}$</p>
<p>art. no.</p> <p>ICK LED R 54 x 20 G WLF ... D 54</p>		
<p>art. no.</p> <p>ICK LED R 66 x 40 WLF ... D 66</p>		<p>$R_{th} = 3,2 \text{ K/W}$</p>

A

Heatsinks for LEDs

B

C

D

E

F

G

H

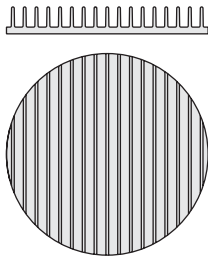
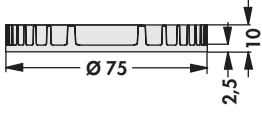
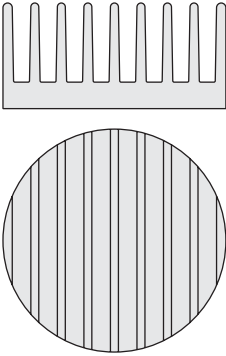
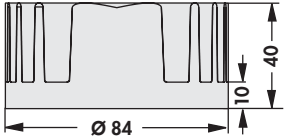
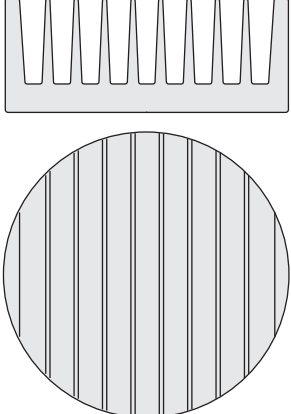
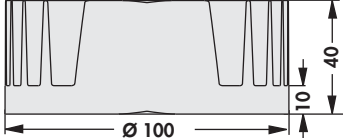
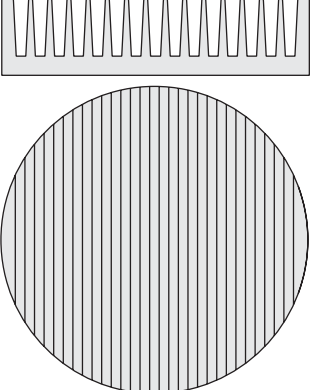

I

K

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<p>art. no.</p> <p>ICK LED R 75 x 10 WLF ... D 75</p>		 <p>$R_{th} = 5,2 \text{ K/W}$</p>
<p>art. no.</p> <p>ICK LED R 84 x 40 WLF ... D 84</p>		 <p>$R_{th} = 2,5 \text{ K/W}$</p>
<p>art. no.</p> <p>ICK LED R 100 x 40 WLF ... D 100</p>		 <p>$R_{th} = 2 \text{ K/W}$</p>
<p>art. no.</p> <p>ICK LED R 160 x 40 WLF ... D 160</p>		 <p>$R_{th} = 1,4 \text{ K/W}$</p>

B 37

Pin heatsinks Ø
Mounts
Thermally conductive foil
Thermal conductive paste

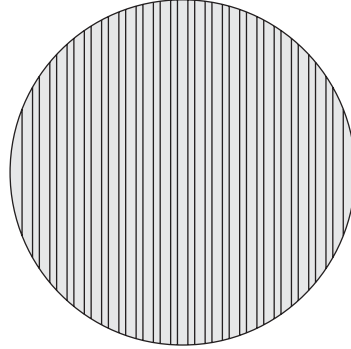
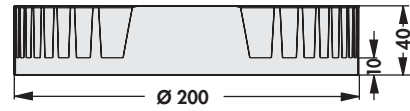
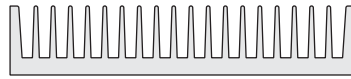
→ B 28 – 31
→ E 42 – 46
→ E 5 – 13
→ E 19 – 20

Thermal conductive glue
Drilling pattern for Solid State Relais
Heatsink profile-overview
Technical introduction

→ E 21 – 22
→ A 21
→ A 13 – 17
→ A 2 – 7

art. no.

ICK LED R 200 x 40
WLF ... D 200



$R_{th} = 1 \text{ K/W}$

A

Heatsinks for LEDs

– special design, surfaces and modification to customer specification on request

B

C

D

E

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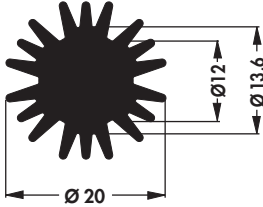
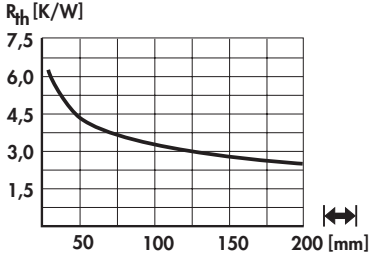
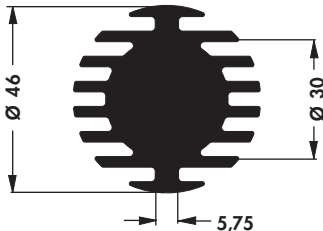
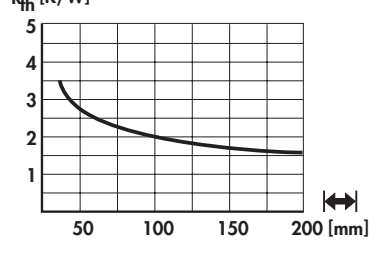
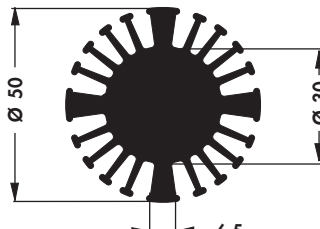
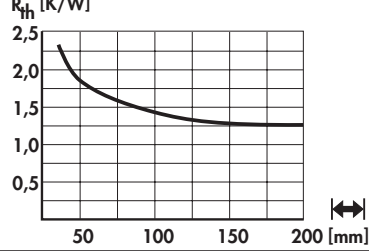
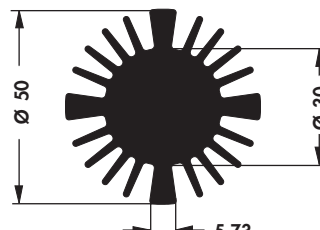
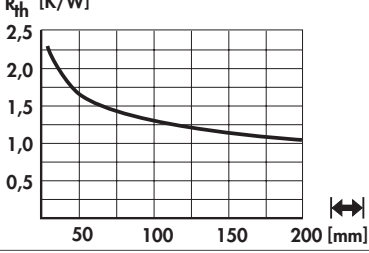
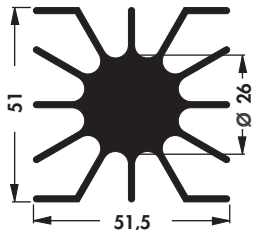
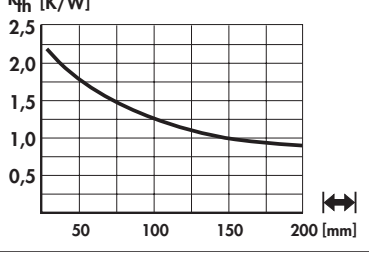
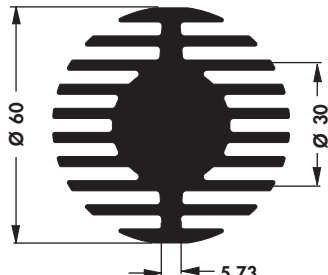
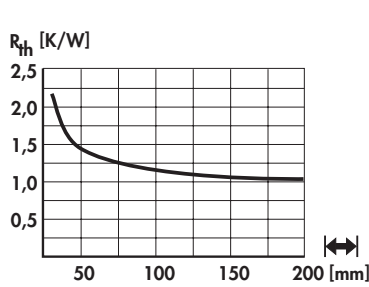

H

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art. no. SK 585 ...		
art. no. SK 598 ...		
art. no. SK 602 ...		
art. no. SK 577 ...		
art. no. SK 46 ...		
art. no. SK 578 ...		
please indicate: ...  10 15 20 25 37.5 50 1000 mm		
surface: black anodised		

N

B 39

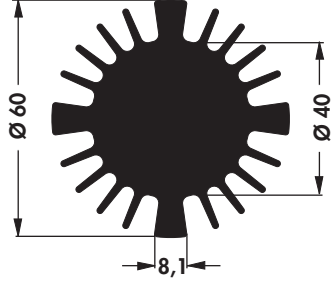
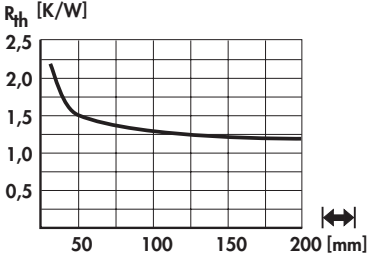
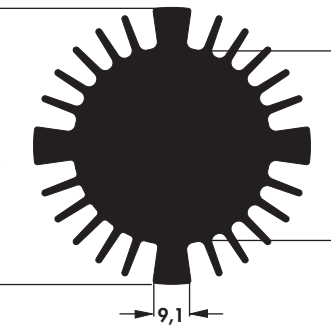
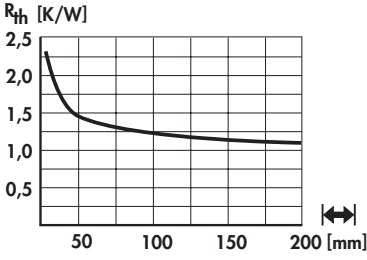
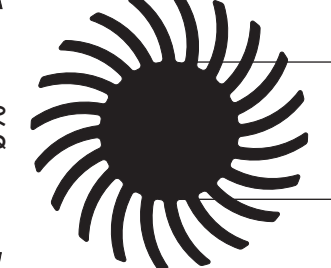
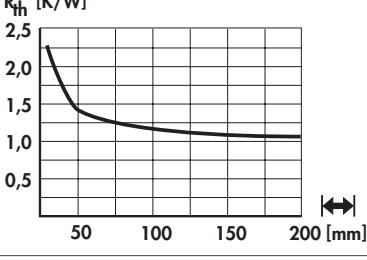

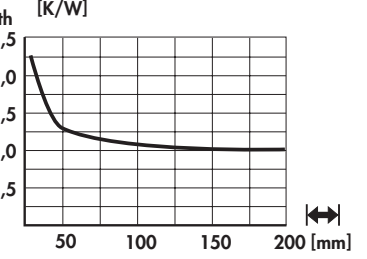
Pin heatsinks Ø
Mounts
Thermally conductive foil
Thermal conductive paste

→ B 28 – 31
→ E 42 – 46
→ E 5 – 13
→ E 19 – 20

Thermal conductive glue
Drilling pattern for Solid State Relais
Heatsink profile-overview
Technical introduction

→ E 21 – 22
→ A 21
→ A 13 – 17
→ A 2 – 7

Heatsinks for LEDs

<p>art. no.</p> <p>SK 569 ...</p>		
<p>art. no.</p> <p>SK 570 ...</p>		
<p>art. no.</p> <p>SK 571 ...</p>		
<p>art. no.</p> <p>SK 572 ...</p>		
<p>please indicate: ... $\left[\begin{array}{c} \text{---} \\ \text{---} \\ \text{---} \end{array} \right]$ 10 15 20 25 37.5 50 1000 mm</p>		
<p>surface: <input type="text" value="black anodised"/></p>		

A

Heatsinks for LEDs

B

C

D

E

F

G

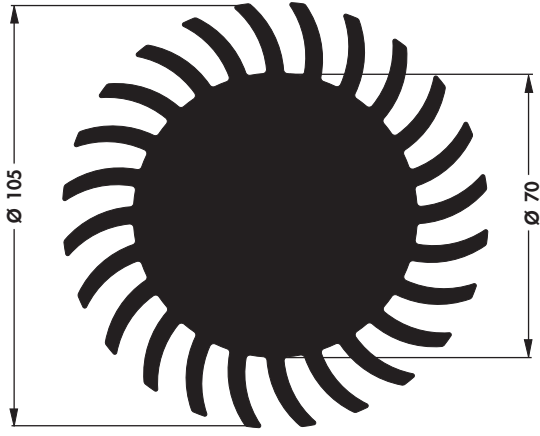
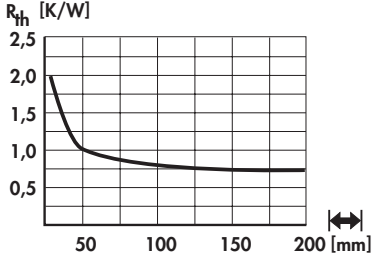


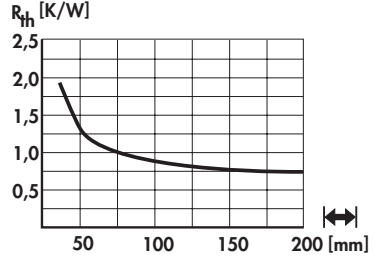
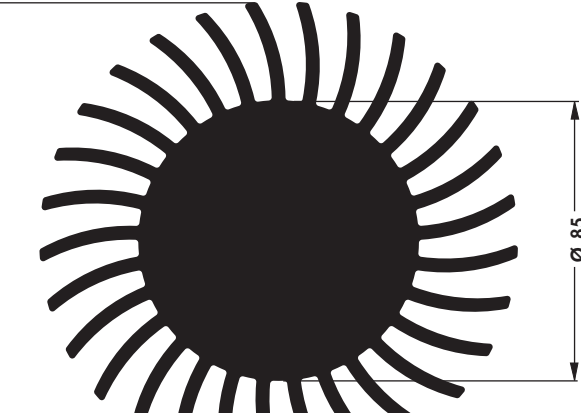
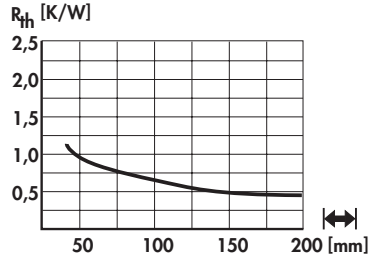

H

I

K

L

M

art. no. SK 584 ...		
please indicate: ...  10 15 20 25 37.5 50 1000 mm		
art. no. SK 599 ...		
art. no. SK 592 ...		
please indicate: ...  10 15 20 25 37.5 50 75 100 150 1000 mm		
surface: black anodised		

N

B 41

Pin heatsinks Ø
 Mounts
 Thermally conductive foil
 Thermal conductive paste

→ B 28 – 31
 → E 42 – 46
 → E 5 – 13
 → E 19 – 20

Thermal conductive glue
 Drilling pattern for Solid State Relais
 Heatsink profile-overview
 Technical introduction

→ E 21 – 22
 → A 21
 → A 13 – 17
 → A 2 – 7

Heatsinks for LEDs

art. no.		
SK 590 ...		
please indicate:	... 10 15 20 25 37.5 50 75 100 150 1000 mm	
surface:	black anodised	

A
B
C
D
E
F
G
H
I
K
L
M
N

Pin heatsinks Ø
Mounts
Thermally conductive foil
Thermal conductive paste

→ B 28 – 31
→ E 42 – 46
→ E 5 – 13
→ E 19 – 20

Thermal conductive glue
Drilling pattern for Solid State Relais
Heatsink profile-overview
Technical introduction

→ E 21 – 22
→ A 21
→ A 13 – 17
→ A 2 – 7

Heatsinks for LEDs


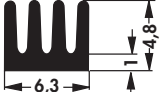
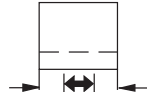
- heatsink specially made for flexible and fixed LED Line Modules
- insertion possibility of metal sheets and sheets of Plexiglas
- customer specified designs, lengths and treatments upon request

<p>art. no.</p> <p>SK LED 1</p>		
<p>art. no.</p> <p>SK LED 2</p>		
<p>art. no.</p> <p>SK LED 3</p>		
<p>please indicate: ... [mm]</p> <p>50 75 100 150 1000 mm</p>		<p>... surface</p> <p>SA = black anodised</p> <p>ME = natural colour anodised</p>


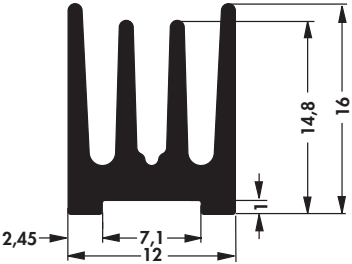
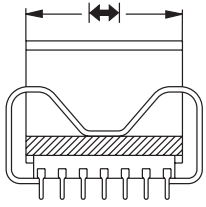
Heatsinks for DIL-IC and PLCC

Heatsinks for DIL-IC


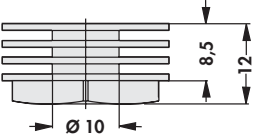
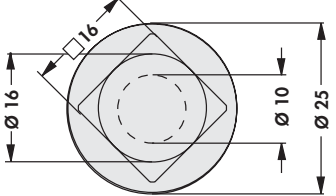
– other length on request

							
art. no.	cases	↔ [mm]	R_{th} [K/W]	art. no.	cases	↔ [mm]	R_{th} [K/W]
ICK 6 8 L	6/8 contacts	8.5	83	ICK 20 L	20 contacts	25.0	34
ICK 14 16 L	14/16 contacts	19.0	46				
ICK 14 16 B	14/16 contacts	6.3	54.0	ICK 36 B	36 contacts	47.0	16.5
ICK 24 B	24 contacts	33.0	19.4	ICK 40 B	40 contacts	51.0	15.8
ICK 28 B	28 contacts	37.0	18.5	ICK 1000 B	—	1000.0	—
surface:		black anodised					

– with clip
– other length on request

							
art. no.	cases	↔ [mm]	R_{th} [K/W]	art. no.	cases	↔ [mm]	R_{th} [K/W]
ICK 14 H	14 contacts	18.0	20	ICK 18 H	18 contacts	23.0	16
ICK 16 H	16 contacts	20.5	18	ICK 1000 H	—	1000.0	—
surface:		black anodised					

Heatsinks for PLCC

		
art. no.	↔ [mm]	R_{th} [K/W]
ICK R	25	19
ICK PLCC 28	11.8	25
surface:		black anodised

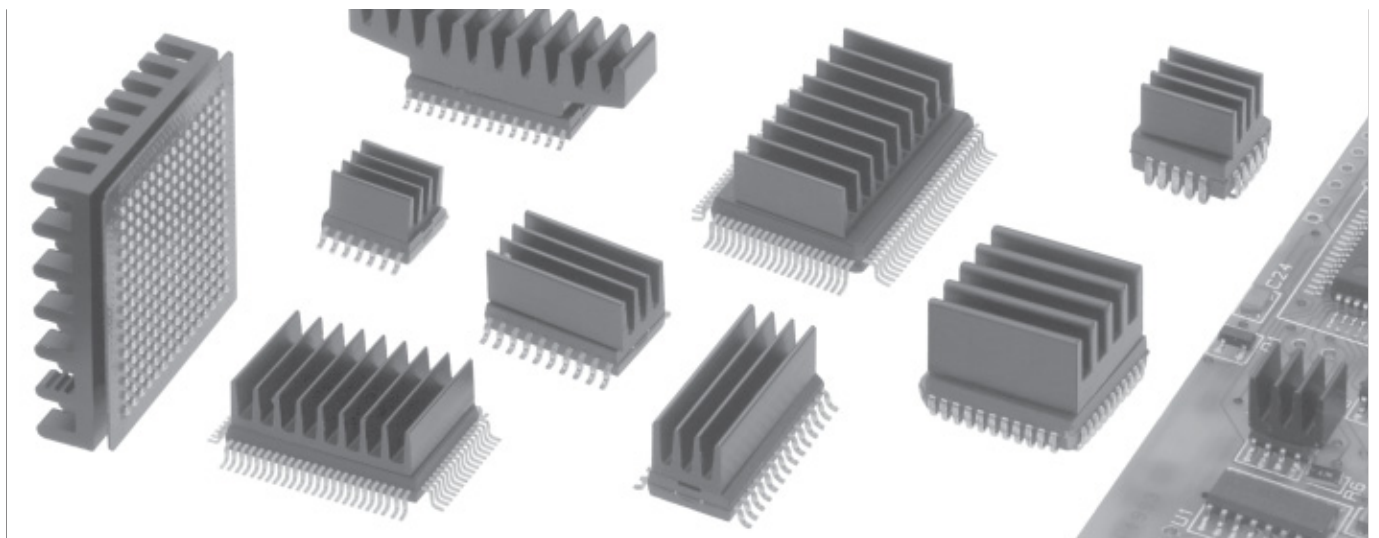
Extruded heatsinks
Pin heatsinks for IC
Insulating clamping parts
Thermal conductive glue

→ A 22 – 83
→ B 21 – 27
→ E 43
→ E 21 – 22

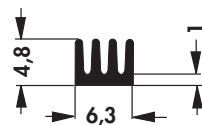
Thermally conductive foil
Thermal conductive paste
Hole pattern
Technical introduction

→ E 5 – 13
→ E 19 – 20
→ A 21
→ A 2 – 7

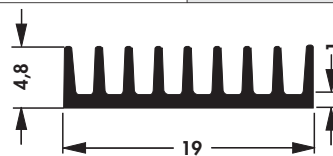
Heatsinks for SMD



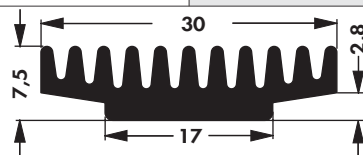
- particularly suitable for SMD components
- low profile
- reduced weight
- effective heat dissipation
- can be glued directly onto the component
- solderable versions
- customer specific versions on request
- special packaging like tape and reel, bar magazine, tray etc. on request



art. no.	width [mm]	R_{th} [K/W]	art. no.	width [mm]	R_{th} [K/W]
ICK SMD A 5 ...	5	123	ICK SMD A 13 ...	13	63
ICK SMD A 8 ...	8	87	ICK SMD A 17 ...	17	51
ICK SMD A 10 ...	10	75	ICK SMD A 22 ...	22	34



art. no.	width [mm]	R_{th} [K/W]	art. no.	width [mm]	R_{th} [K/W]
ICK SMD B 5 ...	5	56	ICK SMD B 13 SA	13	29
ICK SMD B 7 SA	7	47	ICK SMD B 19 ...	19	22
ICK SMD B 10 SA	10	35			



art. no.	width [mm]	R_{th} [K/W]	art. no.	width [mm]	R_{th} [K/W]
ICK SMD C 7 SA	7	33	ICK SMD C 17 ...	17	17
ICK SMD C 10 SA	10	26			

please indicate: ... surface
SA = black anodised
MI = solderable surface

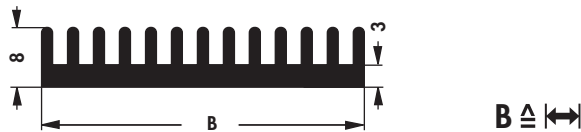
B 45

Extruded heatsinks
 Pin heatsinks for IC
 Insulating clamping parts
 Thermal conductive glue

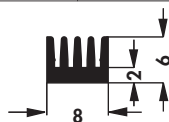
→ A 22 - 83
 → B 21 - 27
 → E 43
 → E 21 - 22

Thermally conductive foil
 Thermal conductive paste
 Hole pattern
 Technical introduction

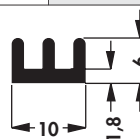
→ E 5 - 13
 → E 19 - 20
 → A 21
 → A 2 - 7



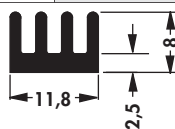
art. no.	↔ [mm]	R_{th} [K/W]	art. no.	↔ [mm]	R_{th} [K/W]
ICK SMD E 15 SA	15.3	27	ICK SMD E 29 SA	29.0	18
ICK SMD E 22 SA	22.3	21			



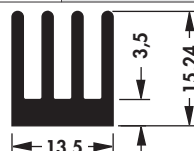
art. no.	↔ [mm]	R_{th} [K/W]	art. no.	↔ [mm]	R_{th} [K/W]
ICK SMD F 8 ...	8	74	ICK SMD F 19 ...	19	37
ICK SMD F 10 ...	10	71	ICK SMD F 21 ...	21	33
ICK SMD F 17 SA	17	42	ICK SMD F 26 ...	26	26



art. no.	↔ [mm]	R_{th} [K/W]	art. no.	↔ [mm]	R_{th} [K/W]
ICK SMD G 8 MI	8	73	ICK SMD G 17 SA	17	41
ICK SMD G 10 ...	10	70	ICK SMD G 19 SA	19	36
ICK SMD G 13 SA	13	61	ICK SMD G 21 ...	21	32



art. no.	↔ [mm]	R_{th} [K/W]	art. no.	↔ [mm]	R_{th} [K/W]
ICK SMD H 8 ...	8	33.0	ICK SMD H 19 SA	19	23.0
ICK SMD H 10 ...	10	29.0	ICK SMD H 25 ...	25	20.0
ICK SMD H 17 ...	17	24.5			



art. no.	↔ [mm]	R_{th} [K/W]	art. no.	↔ [mm]	R_{th} [K/W]
ICK SMD K 8 ...	8	25.6	ICK SMD K 17 ...	17	19.4
ICK SMD K 10 SA	10	23.4	ICK SMD K 19 ...	19	18.0
ICK SMD K 13 ...	13	21.5	ICK SMD K 21 ...	21	16.5



art. no.	↔ [mm]	R_{th} [K/W]	art. no.	↔ [mm]	R_{th} [K/W]
ICK SMD M 8 SA	8	72	ICK SMD M 19 SA	19	35
ICK SMD M 10 SA	10	66	ICK SMD M 21 SA	21	31
ICK SMD M 17 MI	17	40			

please indicate: ... surface
SA = black anodised
MI = solderable surface

A

Sample box SMD heatsinks

B

– contains an assortment of SMD heatsinks with anodised and solderable surface as well as thermally conductive glue (**WLK**) and double-sided adhesive thermal foil (**WLF**)



art. no.

ICK SMD BOX 1

C

D

E

F

G

H

I

K

L

M

N


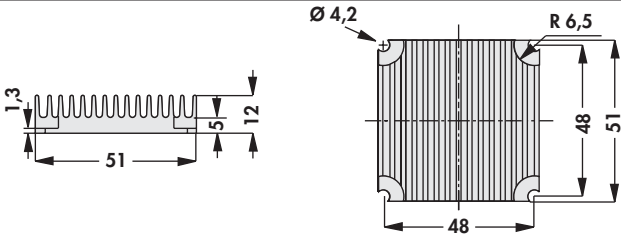
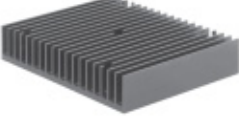
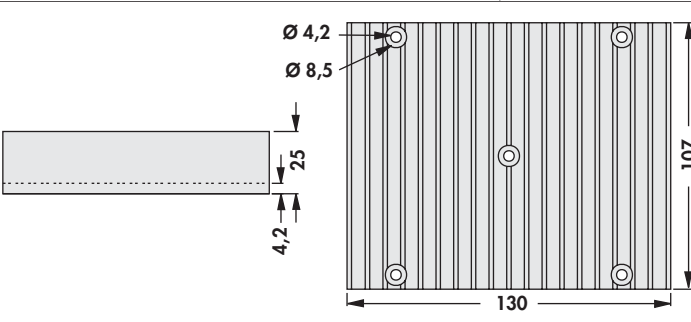
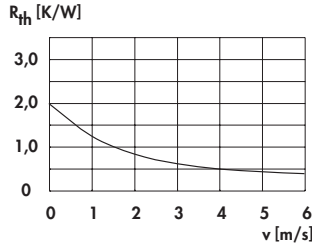
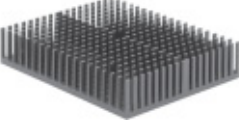
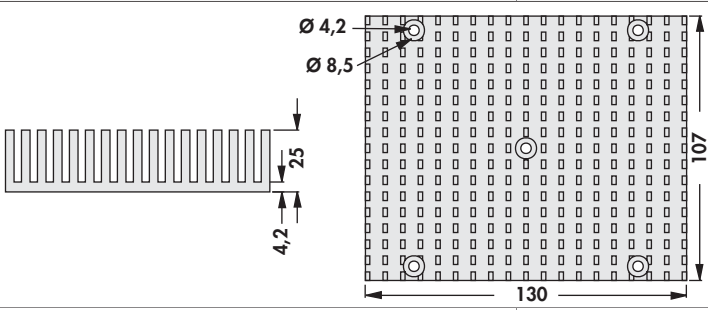
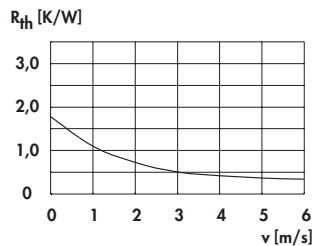
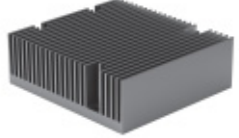
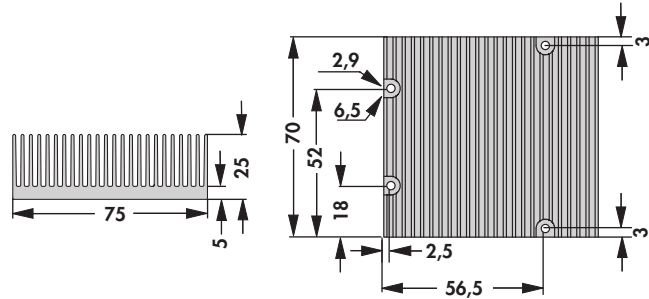
B 47

Extruded heatsinks
Pin heatsinks for IC
Insulating clamping parts
Thermal conductive glue

→ A 22 – 83
→ B 21 – 27
→ E 43
→ E 21 – 22


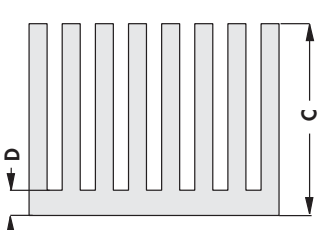
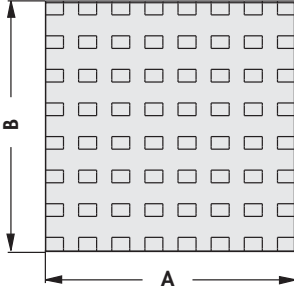
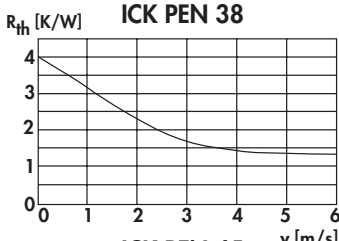
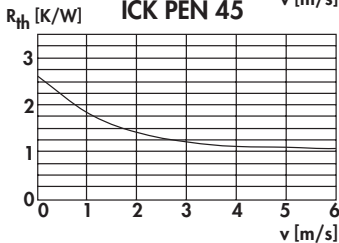

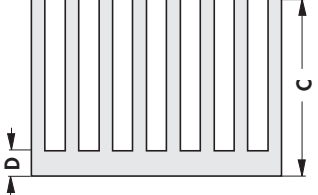
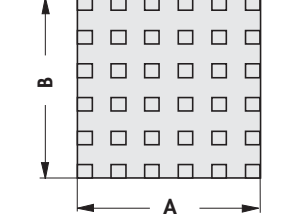
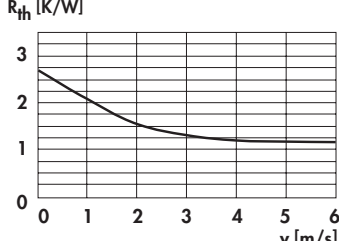
Thermally conductive foil
Thermal conductive paste
Hole pattern
Technical introduction

→ E 5 – 13
→ E 19 – 20
→ A 21
→ A 2 – 7

		
art. no. ICK PPC 51	R_{th} [K/W] 8.1	suitable for processor type Power PC
		
art. no. ICK PEN 3 XE	R_{th} [K/W] 2	suitable for processor type Intel® Pentium® III-Xeon™ Slot II Format
		
art. no. ICK PEN 3 XE 1	R_{th} [K/W] 1.8	suitable for processor type Intel® Pentium® III-Xeon™ Slot II Format
Heatsinks specially for Q7 "Embedded-Boards"		
		
art. no. ICK EM 25	R_{th} [K/W] 3.9	suitable for processor type Q7 Board


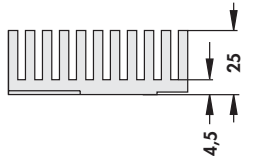
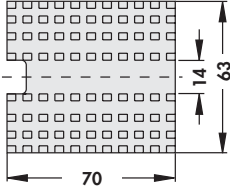
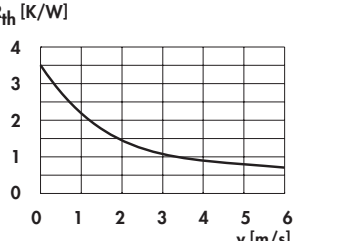
Passive heatsinks for processors

– customer specific versions and modifications on request

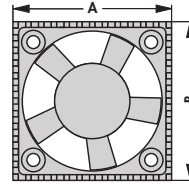
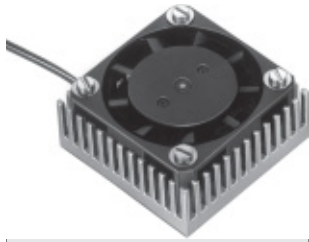
			 			
art. no.	R_{th} [K/W]	suitable for processor type	dim. [mm]			
ICK PEN 38 F	4.0	AMD® K6-III/ IDT W2A/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2	A	B	C	D
ICK PEN 38 W	4.0	AMD® K6-III/ IDT W2A/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2	49.5	49.5	38	5.0
ICK PEN 45 W	3.5	AMD® K6-III/ IDT W2A/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2	50.0	50.0	45	3.5
						
art. no.	R_{th} [K/W]	suitable for processor type	dim. [mm]			
ICK PRO 40 W	2.7	Intel® Pentium® PRO	65	67.5	40	4.5

F = with double-sided thermally conductive adhesive foil; **W** = for thermally conductive adhesive (please order separately)

WLK ... → E 21

						
art. no.	R_{th} [K/W]	suitable for processor type				
ICK PEN 3 FC	3.5	Intel® Pentium® III FC PGA (Mendocino, Coppermine)				

fixing method: K = with fixing clamp (incl. one-sided adherent thermal foil)



art. no.	R _{th} [K/W]	suitable for processor type	dim. [mm]		
			A	B	C
LA ICK 15 x 15 F 05	2.3	universal	37.92	38.10	20
LA ICK 15 x 15 F 12	2.3	universal	37.92	38.10	20
LA ICK 17 x 17 F 12	1.6	universal	43.10	43.10	20
LA ICK 17 x 17 F 12 A	1.6	universal	43.10	43.10	20
LA ICK 17 x 17 W 05	1.6	universal	43.10	43.10	20
LA ICK 17 x 17 W 12	1.6	universal	43.10	43.10	20
LA ICK 18 x 18 F 12	1.5	universal	45.70	45.70	20
LA ICK 18 x 18 W 12	1.5	universal	45.70	45.70	20
LA ICK 21 x 21 F 05	1.4	universal	53.34	53.34	20
LA ICK 21 x 21 F 12	1.4	universal	53.34	53.34	20
LA ICK 21 x 21 W 05	1.4	universal	53.34	53.34	20
LA ICK 21 x 21 W 12	1.4	universal	53.34	53.34	20

used fans:

5 Volt = **Sepa MFB 25 A 05 H / MFB 40 H 05 / MFB 40 H 05 A**;

12 Volt = **Sepa MFB 25 F 12 / MFB 40 H 12 / MFB 40 H 12 A**

F = with double-sided thermally conductive adhesive foil; **A** = alarm exit;

W = for thermally conductive adhesive (please order separately) **WLK ...** → E 21

Heatsinks for BGA → B 17 – 20
 Heatsinks for Q7 "Embedded-Boards" → B 48
 Fan cooler, universal → B 50
 Heatsinks for Pentium PRO → B 49

Heatsinks for P II-Mobile Module → B 48
 Fan cooler for Pentium IV → B 52
 Thermal conductive material → E 2 – 22
 Technical introduction → A 2 – 7

B 50

A

B

C

D

E

F

G

H

I

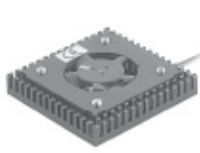
K

L

M

N

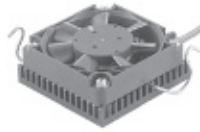
Active heatsinks for processors



LA ICK PEN 8



LA ICK PEN 16



LA ICK PEN 18

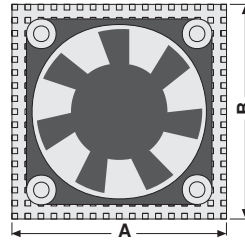
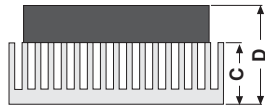


LA ICK PEN 38



LA ICK PRO 25

– easy assembly on ZIF socket by fixing clamp




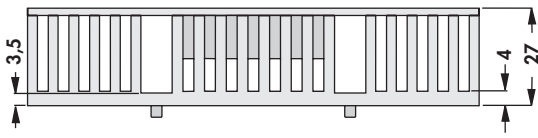
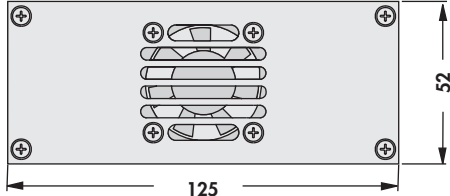
art. no.	R _{th} [K/W]	suitable for processor type	dim. [mm]			
			A	B	C	D
LA ICK PEN 8 F 05	2.50	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2	50.8	50.8	8.00	9.00
LA ICK PEN 8 F 12	2.50	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2	50.8	50.8	8.00	9.00
LA ICK PEN 8 W 05	2.50	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2	50.8	50.8	8.00	9.00
LA ICK PEN 8 W 12	2.50	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2	50.8	50.8	8.00	9.00
LA ICK PEN 16 K 12	1.20	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2	50.8	50.8	16.51	26.51
LA ICK PEN 16 W 12	1.20	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2	50.8	50.8	16.51	26.51
LA ICK PEN 16 W 12 A	1.20	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2	50.8	50.8	16.51	26.51
LA ICK PEN 18 W 12	1.60	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2	50.8	50.8	8.00	18.00
LA ICK PEN 38 W 12	1.10	AMD® K6-III/ IDT W2A/ Cyrix M II and similar/ MMX/ IDT C6/ Intel® Pentium®/ AMD® K6-2	49.5	49.5	38.00	48.00
LA ICK PRO 25 F 12	0.97	Intel® Pentium® PRO	63.5	67.5	25.00	35.00

used fans: 5 Volt = **Sepa MFB 50 E 05**; 12 Volt = **Sepa MFB 50 E 12/ Sepa MFB 50 E 12 A**;

LA ICK PEN 8: 5 Volt = **Sepa HFB 44 X 05 A**; 12 Volt = **Sepa HFB 44 B 12 A**


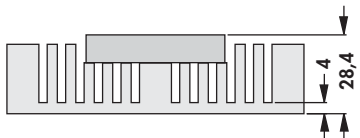
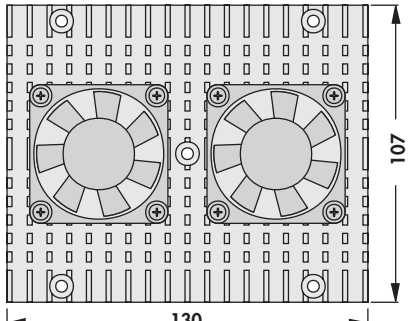
K = with fixing clamp (incl. one-sided adherent conductive foil); **F** = with double-sided thermally conductive adhesive foil

W = for thermally conductive adhesive (please order separately); **A** = alarm exit; **WLK ...** → E 21

		
art. no.	R_{th} [K/W]	suitable for processor type
LA ICK PEN 2 K 12 ...	1.2	Intel® Pentium® II/ AMD® Athlon®
please indicate:	... accessory (optional) SM = molex connection plug	

fixing method: K= with fixing clamp (incl. one-sided adherent thermal foil)


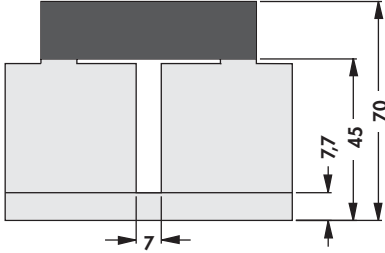
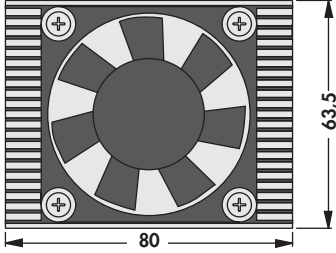
utilized fans: 12 Volt = **Sepa MFB 40 H 12**

		
art. no.	R_{th} [K/W]	suitable for processor type
LA ICK PEN 3 XE	0.8	Intel® Pentium® III-Xeon™
please indicate:	... accessory (optional) A = alarm exit SM = molex connection plug	

fixing method: SB= screw fixing

utilized fans: 12 Volt = **Sepa MFB 50 E 12**

- with copper base plate
- customer specific designs and modifications on request

		
art. no.	R_{th} [K/W]	suitable for processor type
LA ICK PEN 4 1 K	0.6	Intel® Pentium® IV
please indicate:	... accessory (optional) SM = molex connection plug	

fixing method: K = with fixing clamp

operating voltage of the fan motor: 12 Volt (Papst 612 NHH)

Heatsinks for BGA → B 17 – 20
Heatsinks for Q7 "Embedded-Boards" → B 48
Fan cooler, universal → B 50
Heatsinks for Pentium PRO → B 49

Heatsinks for P II-Mobile Module → B 48
Fan cooler for Pentium IV → B 52
Thermal conductive material → E 2 – 22
Technical introduction → A 2 – 7

A

B

C

D

E

F

G

H

I

K

L

M

N



molex crimp case series: 6471; molex crimp terminals: 2759; - Sepa-fan 24 h BURN-IN tested

5 volt fan

	Sepa MFB 25 A 05 H	Sepa MFB 40 H 05	Sepa MFB 40 H 05 A	Sepa MFB 50 E 05	Sepa HFB 44 X 05 A	ebmpapst 405 F
circuit voltage	4.5 - 5.5 V DC	4.5 - 5.5 V DC	4.5 - 5.5 V DC	4.5 - 5.5 V DC	4.5 - 5.5 V DC	4.5 - 5.5 V DC
bearing type	double ball bearing	double ball bearing	double ball bearing	double ball bearing	ball bearing	double slide bearing
fan dimensions	25 x 25 x 10 mm	40 x 40 x 10 mm	40 x 40 x 10 mm	50 x 50 x 10 mm	44 x 44 x 6.2 mm	40 x 40 x 10 mm
cur. consumpt.	85 mA	120 mA	90 mA	50 mA	110 mA	140 mA
max. iuitial current	220 mA	250 mA	250 mA	120 mA	160 mA	
max. volume flow	32 l/min 1.92 m ³ /h	110 l/min 6.6 m ³ /h	184 l/min 11 m ³ /h	169 l/min 10.1 m ³ /h	50 l/min 3.0 m ³ /h	132 l/min 8 m ³ /h
max. static pressure	2.3 mm H ₂ O 22.6 Pa	3.0 mm H ₂ O 29.4 Pa	3.1 mm H ₂ O 30.5 Pa	1.6 mm H ₂ O 15.6 Pa	2.6 mm H ₂ O 25.5 Pa	3.06 mm H ₂ O 30 Pa
noise level	17 dB(A), 1 m lateral	21 dB(A), 1 m lateral	24 dB(A), 1 m lateral	16 dB(A), 1 m lateral	28 dB(A), 1 m lateral	22.1 dB(A), 1 m lateral
temperature range	-40 °C ... +80 °C	-40 °C ... +80 °C	-40 °C ... +80 °C	-40 °C ... +80 °C	-40 °C ... +80 °C	-20 °C ... +70 °C
failure rate (L₁₀)	95,000 h	95,000 h	95,000 h	95,000 h	75,000 h	45,000 h (20 °C)
MTBF	280,000 h (20°C) 80,000 h (70°C)	280,000 h (20°C) 80,000 h (70°C)	280,000 h (20°C) 80,000 h (70°C)	280,000 h (20°C)	210,000 h (60°C)	
weight	8 g	13 g	13 g	19 g	7 g	17 g
cases	plastic PBT (UL E54695)	plastic PBT (UL E54695)	plastic PBT (UL E54695)	plastic PBT (UL E54695)	plastic PBT (UL E54695)	plastic PBT (UL E38324)

12 volt fan

	Sepa MFB 25 F 12	Sepa MFB 50 H 12 A	Sepa MFB 40 H 12 A	Sepa MFB 50 E 12	Sepa HFB 44 B 12 A	ebmpapst 412 F
circuit voltage	10.2 - 13.8 V DC	10.2 - 13.8 V DC	10.2 - 13.8 V DC	10.2 - 13.8 V DC	10.2 - 13.8 V DC	10 - 14 V DC
bearing type	double ball bearing	double ball bearing	double ball bearing	ball bearing	ball bearing	double slide bearing
fan dimensions	25 x 25 x 10 mm	40 x 40 x 10 mm	40 x 40 x 10 mm	50 x 50 x 10 mm	44 x 44 x 6.2 mm	40 x 40 x 10 mm
cur. consumpt.	70 mA	40 mA	40 mA	40 mA	40 mA	60 mA
max. iuitial current	150 mA	90 mA	90 mA	100 mA	70 mA	
max. volume flow	68 l/min 4 m ³ /h	185 l/min 11 m ³ /h	185 l/min 11 m ³ /h	238 l/min 14.3 m ³ /h	50 l/min 3.0 m ³ /h	132 l/min 8 m ³ /h
max. static pressure	2.24 mm H ₂ O 41.5 Pa	2.9 mm H ₂ O 28 Pa	2.9 mm H ₂ O 28 Pa	2.7 mm H ₂ O 26.9 Pa	2.6 mm H ₂ O 25.5 Pa	3.06 mm H ₂ O 30 Pa
noise level	23 dB(A), 1 m lateral	24 dB(A), 1 m lateral	24 dB(A), 1 m lateral	25 dB(A), 1 m lateral	28 dB(A), 1 m lateral	22.1 dB(A), 1 m lateral
temperature range	-40 °C ... +70 °C	-40 °C ... +80 °C	-40 °C ... +80 °C	-40 °C ... +80 °C	-40 °C ... +80 °C	-20 °C ... +70 °C
failure rate (L₁₀)	95,000 h (20 °C)	95,000h (20 °C)	95,000h (20 °C)	95,000h (20 °C)	75,000 h	45,000 h (20 °C)
MTBF	280,000 h (20°C) 55,000 h (70°C)	280,000 h (20°C) 80,000 h (70°C)	280,000 h (20°C) 80,000 h (70°C)	280,000 h (20°C) 80,000 h (70°C)	210,000 h (60°C)	
weight	8 g	13 g	13 g	19 g	7 g	17 g
cases	plastic PBT (UL E54695)	plastic PBT (UL E54695)	plastic PBT (UL E54695)	plastic PBT (UL E54695)	plastic PBT (UL E54695)	plastic PBT (UL E38324)

Fans with pulse output - Technical data of fans with pulse output:

- pulse output for activation of the alarm control
- pulse similar to a square pulse with three times the frequency of the rotor speed
- when the rotor is blocked, the output signal may be L ($\leq 0,8$ V) or H ($V_{cc}-1$ V)
- the pulse output must not be connected to GND or V_{cc} withoutb protective resistor (>10 K)
- in order to avoid short circuits, the pulse output not being used must be insulated



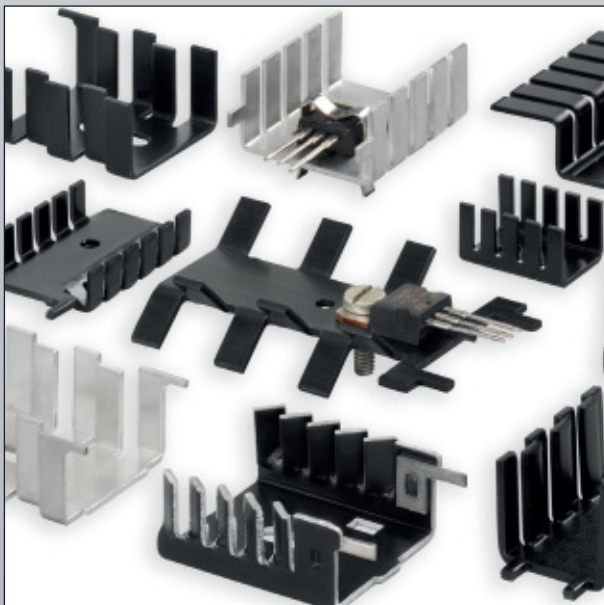
Finger shaped heatsinks for power semiconductors

- specially compatible for power semiconductors in a TO-case
- made as a bent sheet metal part or die cast heatsink made of aluminium
- aligned heatsink contours for the best heat dissipation
- direct screwing of the component to the heatsink on the PCB



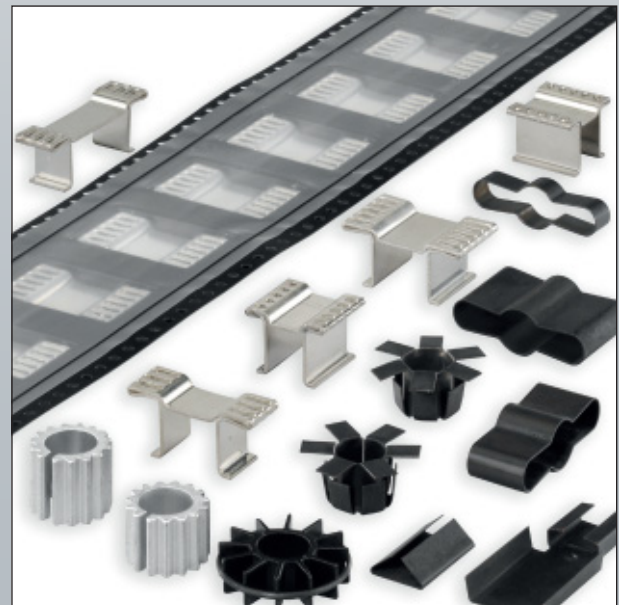
Attachable heatsinks

- made of aluminium or copper material
- solderable surface coating
- integrated spring clip for easy and fast mounting of the transistor
- secure hold of the component due to optimized spring force and geometry
- customer specific version upon request



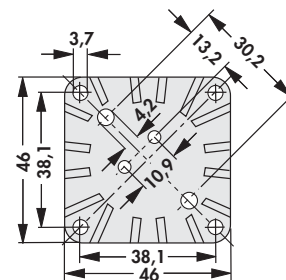
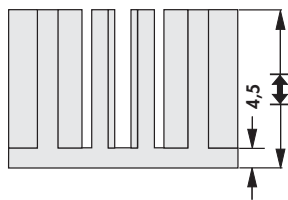
Finger shaped heatsinks for transistors

- effective heat dissipation of transistors
- efficient radiation of heat at a horizontal or vertical mounting position
- component fastening by means of screws or special transistor retaining springs
- solder mounting by means of integrated solder pins and solderable surfaces

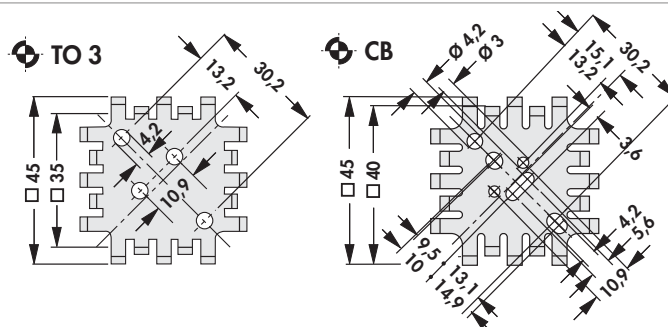
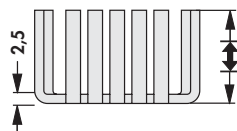


Miniature heatsinks

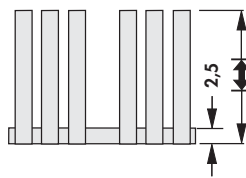
- for TO 5, SOT 82, D PAK and similar semiconductors
- made of aluminium, phosphorus bronze or copper
- simple mounting by direct plugging or soldering of the heatsink
- special types of packaging such as tape & reel, magazine or tray upon request
- versions and designs for your application



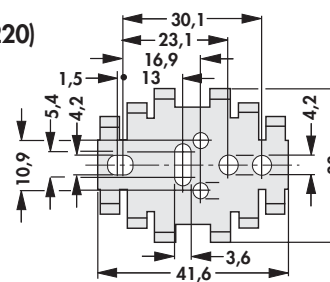
art. no.	↑ [mm]	R_{th} [K/W]	⊗
FK 254 SA 3	25.4	5.8	TO 3
FK 318 SA	31.8	4.8	without
FK 318 SA 3	31.8	4.8	TO 3
material:	die-casting aluminium		
surface:	black lacquered		



art. no.	↑ [mm]	R_{th} [K/W]	⊗
FK 201 SA	25.4	6	without
FK 201 SA 3	25.4	6	TO 3
FK 201 SA CB	25.4	6	CB
FK 202 SA	12.7	8	without
FK 202 SA 3	12.7	8	TO 3
FK 202 SA CB	12.7	8	CB



⊗ L (TO 3 – SOT 9 + TO 66 – SOT 32 – TO220)



art. no.	↑ [mm]	R_{th} [K/W]	⊗
FK 205 SA L	31.8	9.0	L
FK 206 SA L	25.4	10.5	L
FK 207 SA L	19.1	12.0	L
FK 208 SA L	12.7	14.0	L
material:	aluminium		
surface:	black anodised		


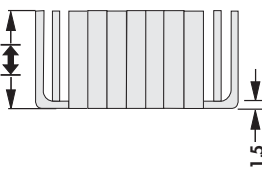
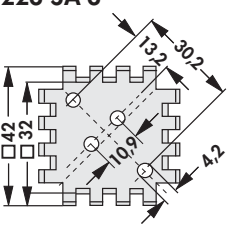
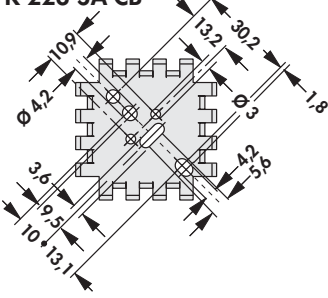

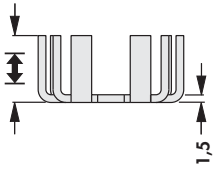
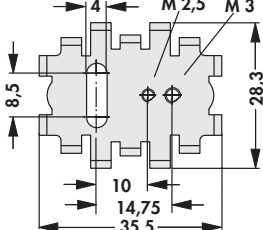
Attachable heatsinks
Heatsinks for TO 5 and TO 18
Heatsinks for D PAK
Aluminium oxide wafers

→ C 10 – 14
→ C 17 – 19
→ C 21 – 120
→ E 15 – 16

Mounts
Insulating caps
Thermal conductive material
Technical introduction


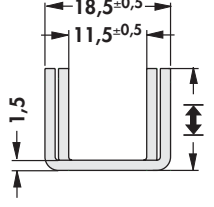
→ E 42 – 46
→ E 49
→ E 2 – 22
→ A 2 – 7

Finger shaped heatsinks for power semiconductors

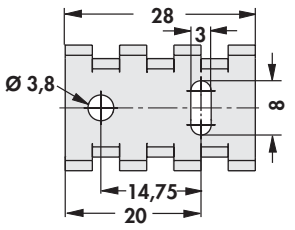
			
art. no.	\updownarrow [mm]	R_{th} [K/W]	\diamond
FK 223 SA	17	6.8	without
FK 223 SA 3	17	6.8	TO 3
FK 223 SA CB	17	6.8	CB
			
art. no.	\updownarrow [mm]	R_{th} [K/W]	\diamond
FK 217 SA CB 2	13	16	CB 2 (SOT 32; TO 220)
material:	aluminium		
surface:	black anodised		

Heatsinks for transistors in plastic case

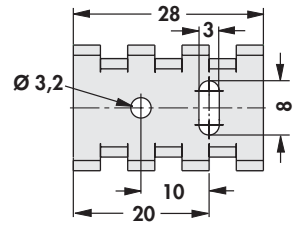
– for semiconductor screw-assembly, horizontal

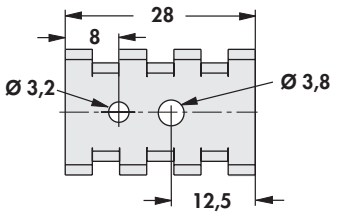
FK 234 SA L 1



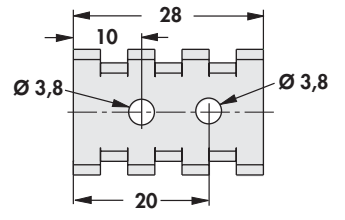
FK 234 SA L 2



FK 234 SA L 3



FK 234 SA L 4


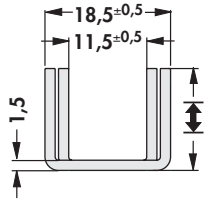


art. no.	↓ [mm]	R _{th} [K/W]	⊗
FK 234 SA L 1	15	17	TO 220
FK 234 SA L 2	15	17	SOT 32
FK 234 SA L 3	15	17	CB
FK 234 SA L 4	15	17	CB

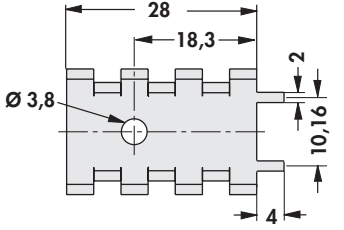
material: aluminium

surface: black anodised

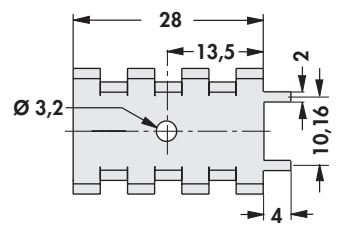
– for semiconductor screw-assembly, vertical

FK 235 ... L 1



FK 235 ... L 2


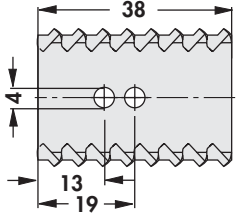
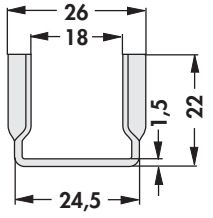

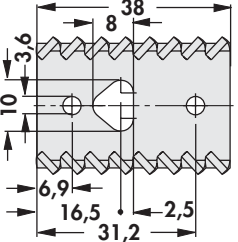
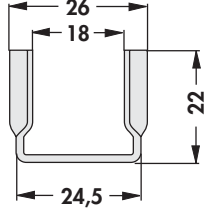

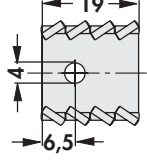
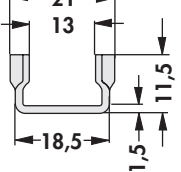

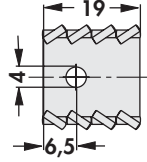
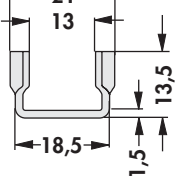

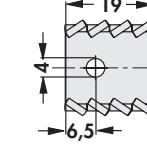
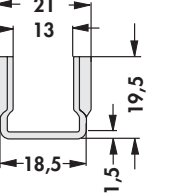


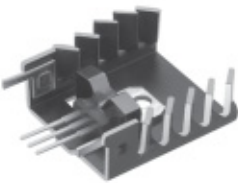
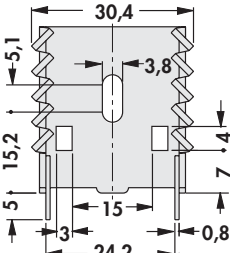
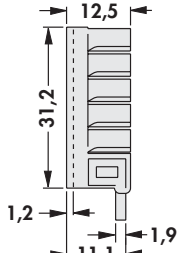
art. no.	↓ [mm]	R _{th} [K/W]	⊗
FK 235 MI L 1	15	16	TO 220
FK 235 MI L 2	15	16	SOT 32
FK 235 SA L 1	15	16	TO 220
FK 235 SA L 2	15	16	SOT 32

material: aluminium


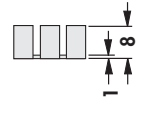

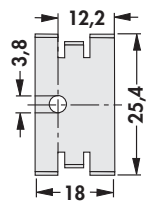

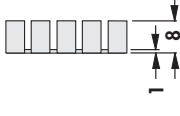

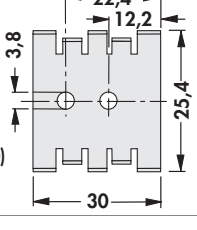

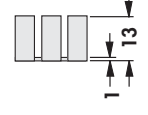

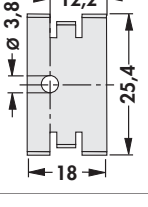

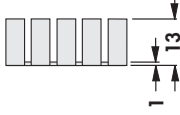

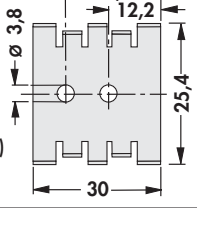

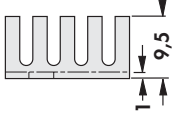

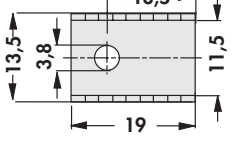

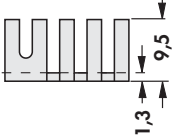

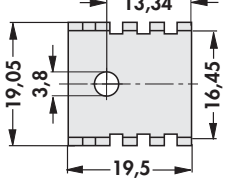
surface: solderable surface/ black anodised

Heatsinks for transistors in plastic case


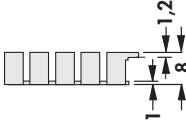
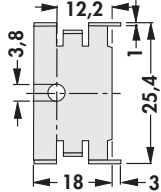

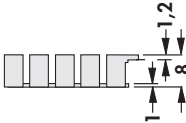
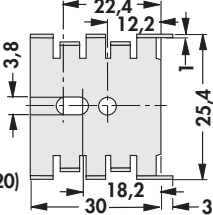

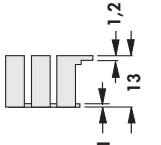
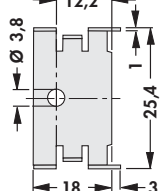

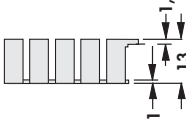
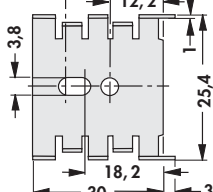

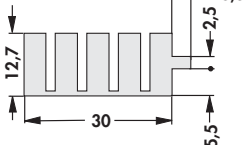
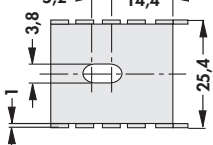

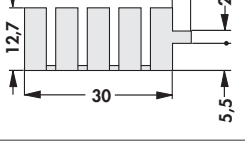
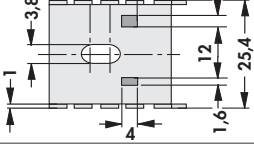

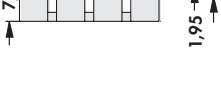
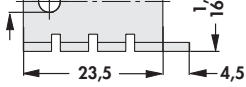
art. no. FK 225 SA L 1			9,9 K/W TO 220	
art. no. FK 225 SA L 2			9,9 K/W TO 220	
art. no. FK 228 SA L 1			30 K/W TO 220	
art. no. FK 229 SA L 1			27 K/W TO 220	
art. no. FK 230 SA L 1			21 K/W TO 220	
material:		aluminium		
surface:		black anodised		

art. no. FK 249 SA 220			17 K/W TO 220	
material:		aluminium		
surface:		black passivated, solder pins tin plated		


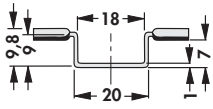


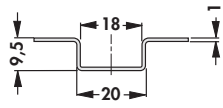


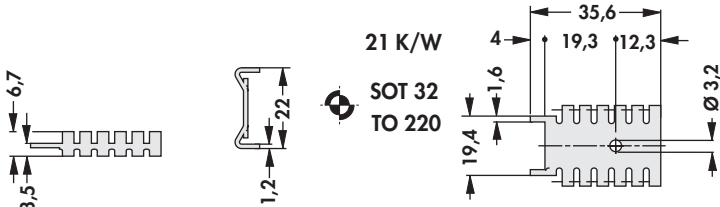



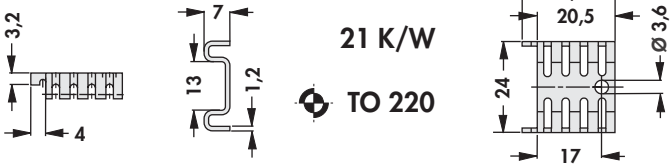


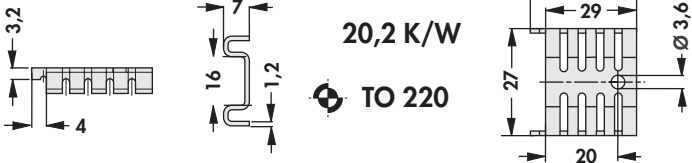

Heatsinks for transistors in plastic case

<p>art. no.</p> <p>FK 209 SA 32</p>		 <p>25 K/W  SOT 32</p> 
<p>available without hole pattern as well</p>		
<p>art. no.</p> <p>FK 210 SA CB</p>		 <p>18 K/W  CB (SOT 32 + TO 220)</p> 
<p>available without hole pattern as well</p>		
<p>art. no.</p> <p>FK 213 SA 32</p>		 <p>21 K/W  SOT 32</p> 
<p>available without hole pattern as well</p>		
<p>art. no.</p> <p>FK 214 SA CB</p>		 <p>15 K/W  CB (SOT 32 + TO 220)</p> 
<p>available without hole pattern as well</p>		
<p>art. no.</p> <p>FK 231 SA 220</p>		 <p>24 K/W  TO 220</p> 
<p>art. no.</p> <p>FK 239 SA 32</p>		 <p>24 K/W  SOT 32</p> 
<p>material:</p> <p>surface:</p>	<p>aluminium</p> <p>black anodised</p>	


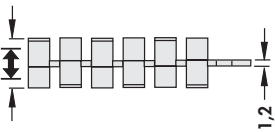
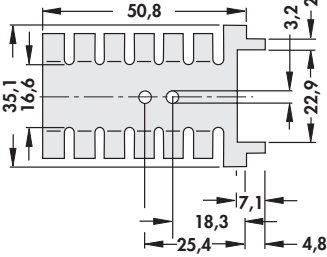
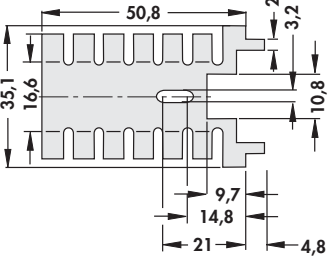

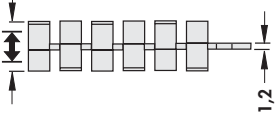
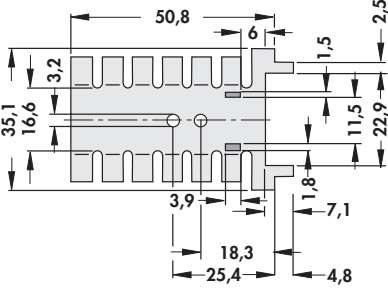

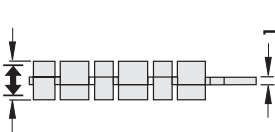
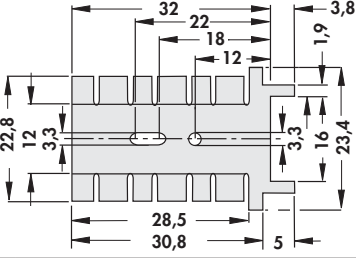
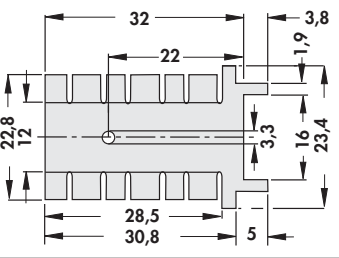
Heatsinks for transistors in plastic case

art. no. FK 211 32 ...			25 K/W SOT 32	
available without hole pattern as well				
art. no. FK 212 CB ...			18 K/W CB (SOT 32 + TO 220)	
available without hole pattern as well				
art. no. FK 215 32 ...			21 K/W SOT 32	
available without hole pattern as well				
art. no. FK 216 CB			15 K/W CB (SOT 32 + TO 220)	
available without hole pattern as well				
art. no. FK 222 ...			20 K/W TO 220	
available without hole pattern as well				
art. no. FK 222 THF ...			20 K/W TO 220	
art. no. FK 247 220 ...			22 K/W TO 220	
please indicate: ... surface SA = black anodised MI = solderable surface				
material:	aluminium			


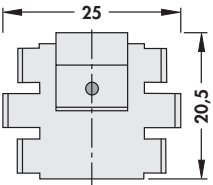
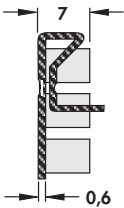
Heatsinks for transistors in plastic case

art. no. FK 227 SA L 1		 <p>22 K/W  TO 220</p>	
art. no. FK 238 SA L 1		 <p>12 K/W  TO 220</p>	
material: surface:		aluminium black anodised	
art. no. FK 218 32 ...		 <p>21 K/W  SOT 32  TO 220</p>	
art. no. FK 232 220 ...		 <p>21 K/W  TO 220</p>	
art. no. FK 233 220 ...		 <p>20,2 K/W  TO 220</p>	
please indicate: ... surface SA = black anodised MI = solderable surface			
material:		aluminium	


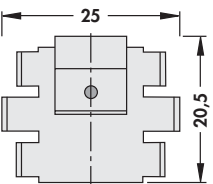
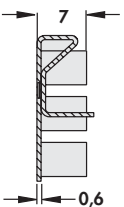
Heatsinks for transistors in plastic case


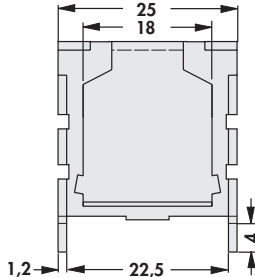
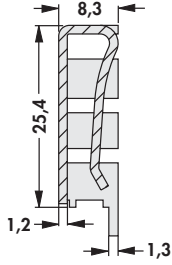
		<p>FK 219 CB 1 ...</p> 	<p>FK 219 CB 2 ...</p> 
<p>art. no.</p>	<p>± [mm]</p>	<p>R_{th} [K/W]</p>	<p>☒</p>
<p>FK 219 CB 1 ...</p>	<p>12.6</p>	<p>14</p>	<p>CB 1 (TO 220)</p>
<p>FK 219 CB 2 ...</p>	<p>12.6</p>	<p>14</p>	<p>CB 2 (TO 220)</p>
			
<p>art. no.</p>	<p>± [mm]</p>	<p>R_{th} [K/W]</p>	<p>☒</p>
<p>FK 219 CB 3 ...</p>	<p>12.6</p>	<p>14</p>	<p>CB 3 (TO 220)</p>
		<p>FK 236 CB ...</p> 	<p>FK 236 220 ...</p> 
<p>art. no.</p>	<p>± [mm]</p>	<p>R_{th} [K/W]</p>	<p>☒</p>
<p>FK 236 220 ...</p>	<p>5</p>	<p>18</p>	<p>TO 220</p>
<p>FK 236 CB ...</p>	<p>5</p>	<p>18</p>	<p>CB</p>
<p>please indicate: ... surface SA = black anodised MI = solderable surface</p>			
<p>material:</p>	<p>aluminium</p>		

Attachable heatsinks


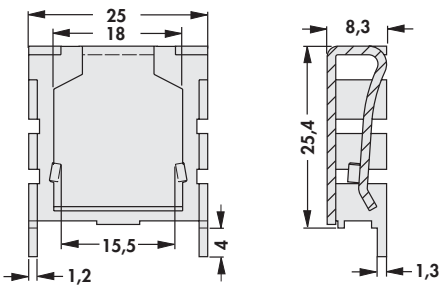
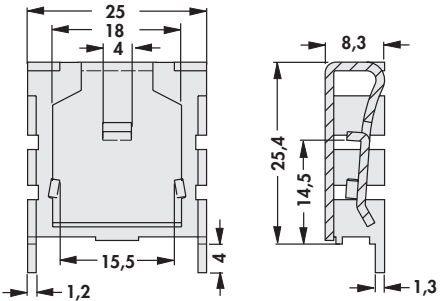
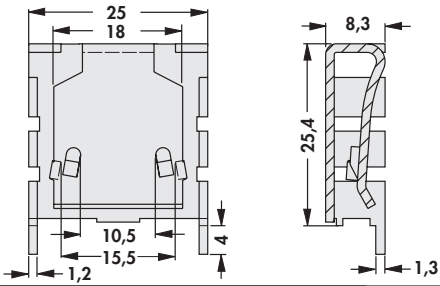
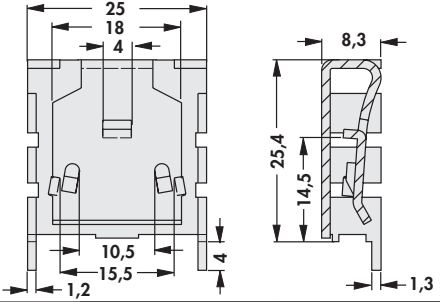

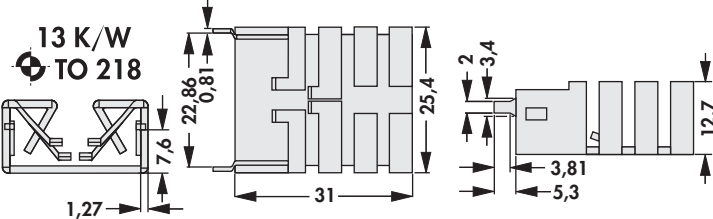
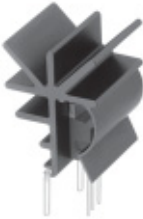
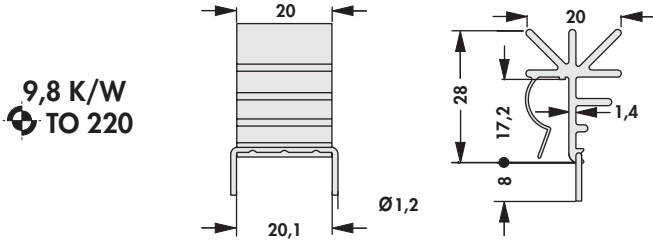
		
art. no.	R_{th} [K/W]	⊗
FK 220 SA 220	25	TO 220
material:	aluminium	
surface:	black anodised	

– for transistors with thin bottom thickness (0.5 mm)

		
art. no.	R_{th} [K/W]	⊗
FK 258 SA 220	25	TO 220
material:	aluminium	
surface:	black anodised	

		
art. no.	R_{th} [K/W]	⊗
FK 224 ... P SIP	18	P SIP
please indicate:	... surface SA = black anodised MI = solderable surface	
material:	aluminium	

Attachable heatsinks

	FK 224 ... 218 1		FK 224 ... 218 2		
					
	FK 224 ... 220 1		FK 224 ... 220 2		
					
	art. no.	R_{th} [K/W]	\varnothing	art. no.	R_{th} [K/W]
FK 224 ... 218 1	18	TO 218	FK 224 ... 220 1	18	TO 220
FK 224 ... 218 2	18	TO 218	FK 224 ... 220 2	18	TO 220
please indicate:					
... surface					
SA = black anodised					
MI = solderable surface					
material:		aluminium			
art. no.					
FK 241 SA 218 V					
with tin-plated soldering lug for direct soldering onto circuit board, for vertical installation					
art. no.					
FK 248 SA 220					
material:		aluminium			
surface:		black anodised, solder pins tin plated			

Attachable heatsinks

- universal clip on heatsinks for type TO 218, TO 229, TO 247, TO 248, SIP-Muliwatt and similar
- easy assembly by pushing the heatsink onto the component
- for vertical and horizontal fastening by soldering
- fin height variations on request
- special design accord. to customized specification

art. no.		20,2 K/W			
FK 245 MI 247 O	without soldering lug				
art. no.		20,5 K/W			
FK 245 MI 247 H	with soldering lug for horizontal mounting				
art. no.		19,7 K/W			
FK 245 MI 247 V	with soldering lug for vertical mounting				
art. no.		18,4 K/W			
FK 243 MI 247 O	without soldering lug				
art. no.		19 K/W			
FK 243 MI 247 H	with soldering lug for horizontal mounting				
art. no.		18,4 K/W			
FK 243 MI 247 V	with soldering lug for vertical mounting				
material:	copper (Cu)				
surface:	solderable surface				
material thickness:	0.6 mm				

Heatsinks for D PAK
Heatsinks for transistors
Kapton insulator washers
Vibration dampers

→ C 21
→ C 4 – 9
→ E 14
→ E 39

Vibration dampers
U-shaped heatsink
Aluminium oxide wafers
Technical introduction

→ E 39
→ A 121 – 122
→ E 15 – 16
→ A 2 – 7

C 12

A

B

C

D

E

F

G

H

I

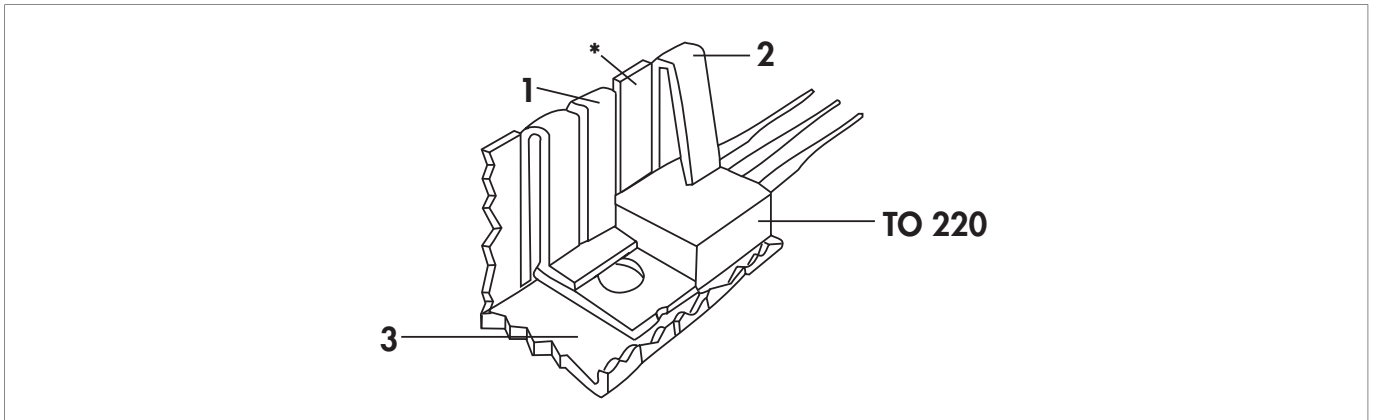
K

L

M


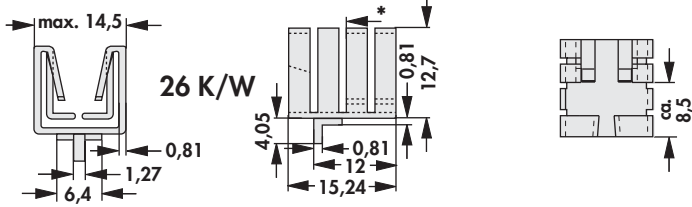

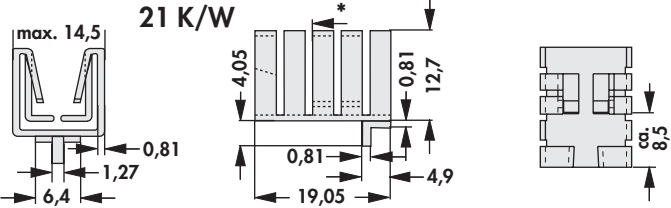

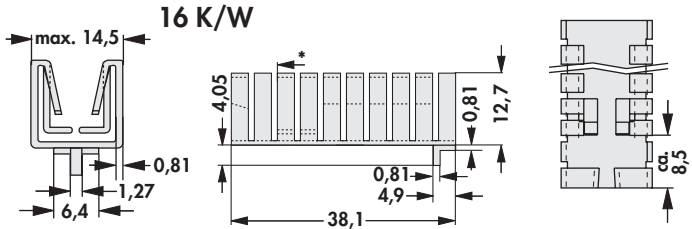
N

Attachable heatsinks


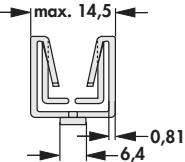
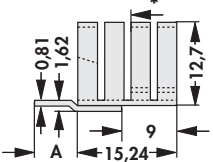
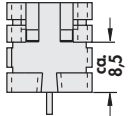

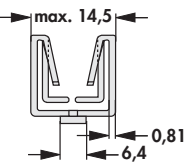
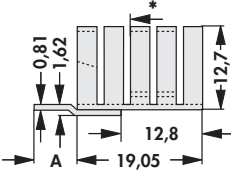
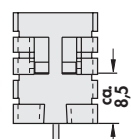

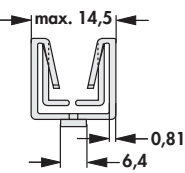
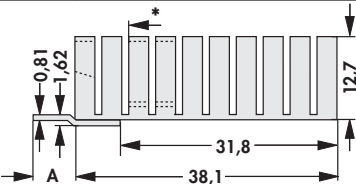
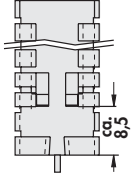


- narrow version with better thermal resistance
- max. 14.5 mm wide
- 3 different lengths for varied dissipation power
- takes less space than any other attachable heatsink
- simple assembly by pushing the heatsink onto the TO 220 housing
- the cooling fingers form spring clamps **(1+2)**, which pushes the TO 220 and its mounting flange onto the heatsink **(3)**
- optimum heat transfer due to the constant pressure on the entire contact surface of the TO 220 cases
- effective heat emission with horizontal and vertical mounting
- * = touch in edge of transistor

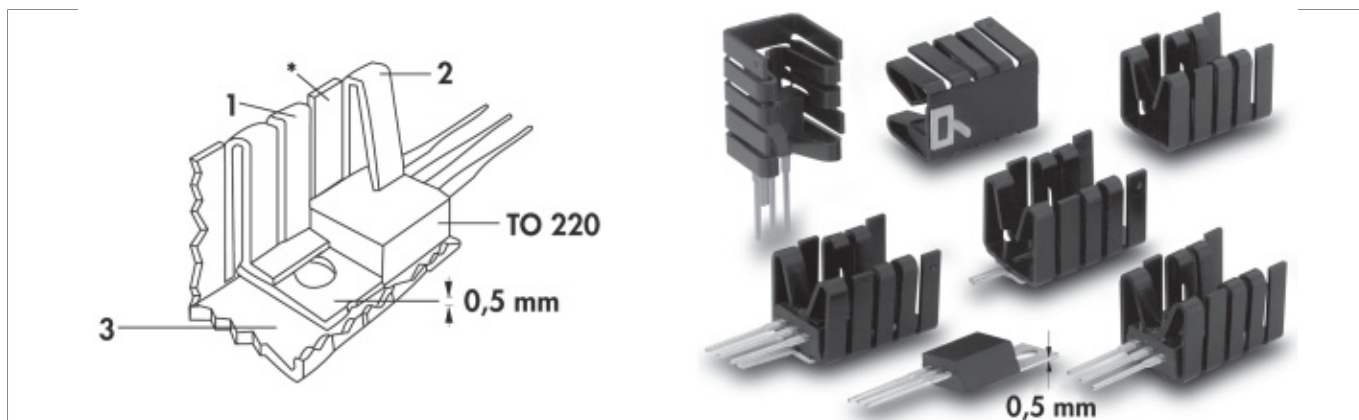
art. no.					
			26 K/W		
FK 242 SA 220 O	without soldering lug				
art. no.					
			21 K/W		
FK 237 SA 220 O	without soldering lug				
art. no.					
			16 K/W		
FK 240 SA 220 O	without soldering lug				
material:	aluminium				
surface:	black anodised, solder pins tin plated				

art. no.			26 K/W
FK 242 SA 220 H	with tinned soldering lug for direct soldering onto circuit board, for horizontal installation		
art. no.			21 K/W
FK 237 SA 220 H	with tinned soldering lug for direct soldering onto circuit board, for horizontal installation		
art. no.			16 K/W
FK 240 SA 220 H	with tinned soldering lug for direct soldering onto circuit board, for horizontal installation		
material:	aluminium		
surface:	black anodised, solder pins tin plated		


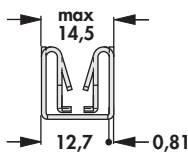
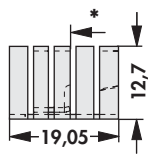
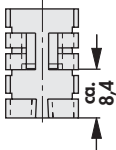

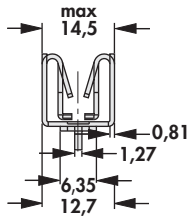
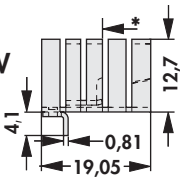
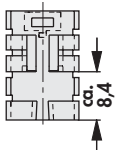
– with tinned soldering lug for direct soldering onto circuit board, for vertical installation

					
art. no.	A [mm]	R _{th} [K/W]	art. no.	A [mm]	R _{th} [K/W]
FK 242 SA 220 V	6.35	26	FK 242 SA 220 VL	9.53	26
					
art. no.	A [mm]	R _{th} [K/W]	art. no.	A [mm]	R _{th} [K/W]
FK 237 SA 220 V	6.35	21	FK 237 SA 220 VL	9.53	21
					
art. no.	A [mm]	R _{th} [K/W]	art. no.	A [mm]	R _{th} [K/W]
FK 240 SA 220 V	6.35	16	FK 240 SA 220 VL	9.53	16
material:	aluminium				
surface:	black anodised, solder pins tin plated				

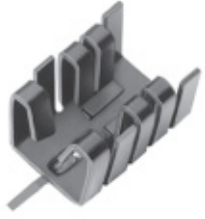
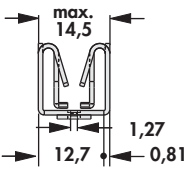
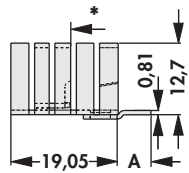
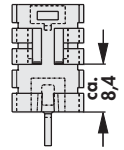
Attachable heatsinks for TO 220 with a bottom plate thickness of 0.5 mm



- narrow version with better thermal resistance
- max. 14.5 mm wide
- takes less space than any other attachable heatsink
- simple assembly by pushing the heatsink onto the TO 220 housing
- the cooling fingers form spring clamps **(1+2)**, which pushes the TO 220 and its mounting flange onto the heatsink **(3)**
- optimum heat transfer due to the constant pressure on the entire contact surface of the TO 220 cases
- effective heat emission with horizontal and vertical mounting
- * = touch in edge of transistor

art. no.			21 K/W		
FK 252 SA 220 O	without soldering lug				
art. no.			21 K/W		
FK 252 SA 220 H	with tinned soldering lug for direct soldering onto circuit board, for horizontal installation				
material:	aluminium				
surface:	black anodised				

- with tinned soldering lug for direct soldering onto circuit board, for vertical installation

					
art. no.	A [mm]	R _{th} [K/W]	art. no.	A [mm]	R _{th} [K/W]
FK 252 SA 220 V	6.35	21	FK 252 SA 220 VL	9.53	21
material:	aluminium				
surface:	black anodised				

Attachable heatsinks

A

B

C

D

E

F

G

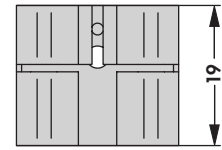
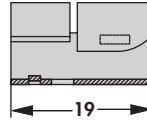
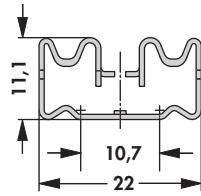
H

I

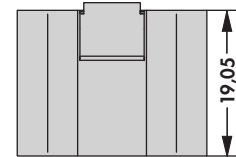
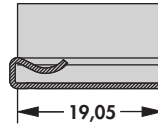
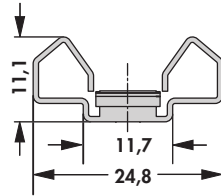
K

L

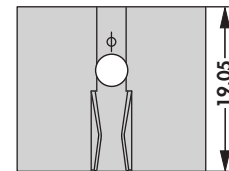
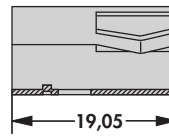
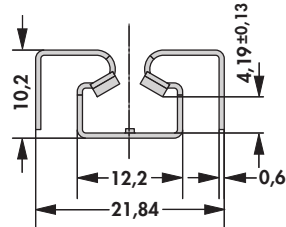
M



art. no.	R_{th} [K/W]	⌀
FK 253	23.7	TO 220



art. no.	R_{th} [K/W]	⌀
FK 255	16.8	TO 220



art. no.	R_{th} [K/W]	⌀
FK 257	21.2	TO 220

material:	aluminium
surface:	black anodised

N

A

Small heatsinks

B

C

D

E

F

G

H


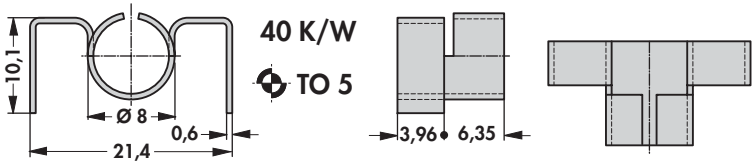

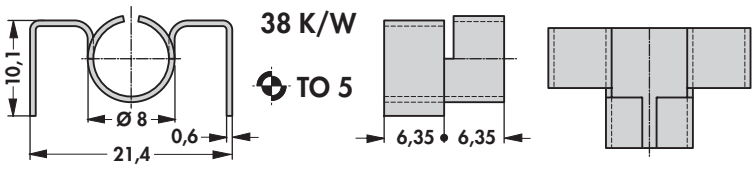
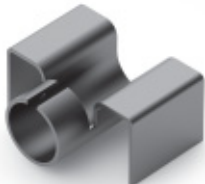
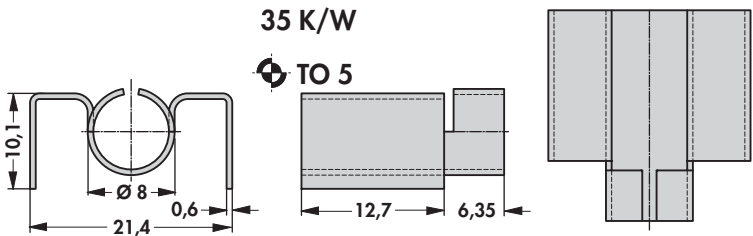
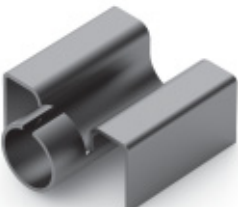
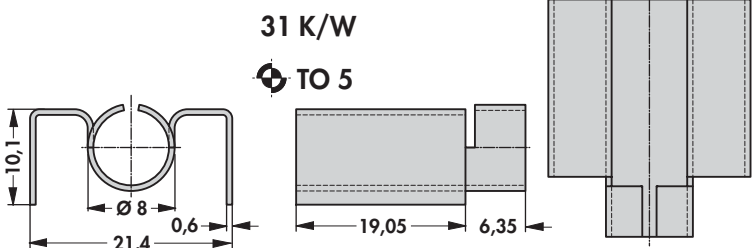
I

K

L

M

N

art. no. KK 1 3,96			
art. no. KK 1 6,35			
art. no. KK 1 12,7			
art. no. KK 1 19,05			
material: surface:		aluminium black anodised	


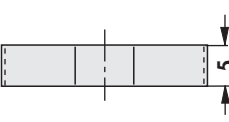
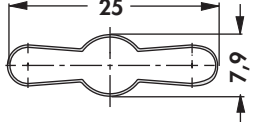
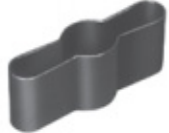
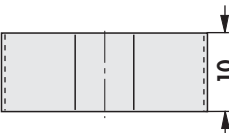
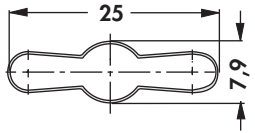
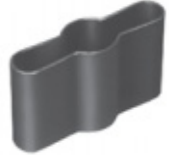
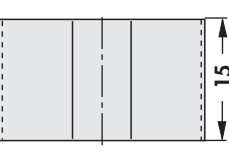
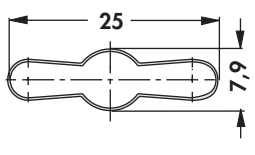

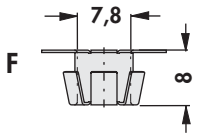
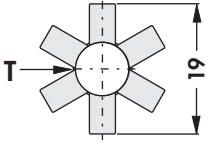
C 17
Finger-shaped heatsinks
Heatsinks for transistors
Attachable heatsinks
Heatsinks for D PAK

→ C 2 – 3
→ C 4 – 9
→ C 10 – 16
→ C 21 – 22


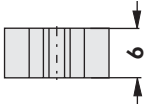

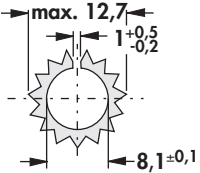

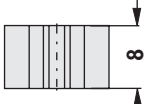

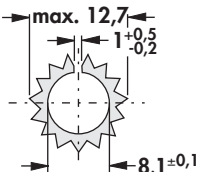

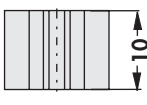

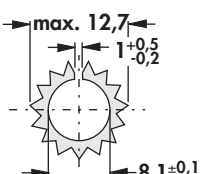

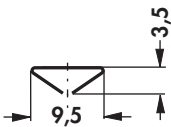



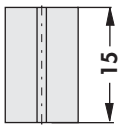

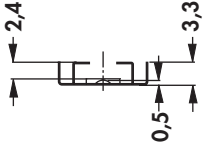



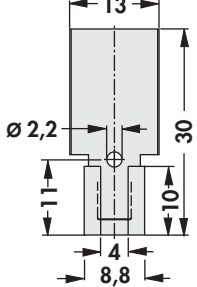
Thermal conductive material
Mounting material for semiconductors
Extruded heatsinks
Technical introduction

→ E 2 – 22
→ E 44 – 46
→ A 22 – 83
→ A 2 – 7

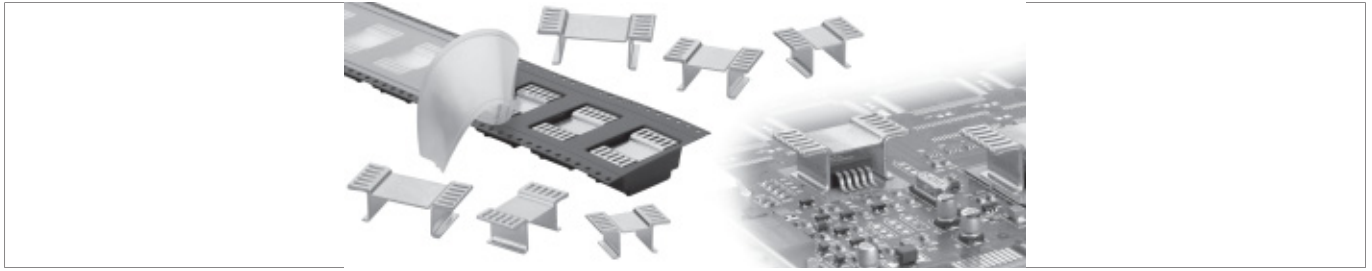
Small heatsinks

art. no.			57 K/W TO 5	
KF 5/5				
art. no.			46 K/W TO 5	
KF 5/10				
art. no.			40 K/W TO 5	
KF 5/15				
material:	brass			
surface:	blackened			
art. no.			60 K/W TO 5	
KK 562 GS	T = gap; F = spring loaded			
material:	special bronze Cu Zn 15			
material thickness:	0.3 mm			
surface:	blackened			

Small heatsinks

art. no. SKK 56			63 K/W  TO 5	
art. no. SKK 58			55 K/W  TO 5	
art. no. SKK 510			44 K/W  TO 5	
material:		aluminium		
surface:		etched (other surfaces on request)		
art. no. KK 92			80 K/W  TO 126  SOT 32  SOT 82	
art. no. KK 32			60 K/W  TO 126  SOT 32  SOT 82	
material:		special bronze Cu Zn 6		
surface:		blackened		

Heatsinks for D PAK and others



- copper heatsinks with excellent heat conductivity
- direct mounting on printed circuit through solderable surface
- especially suitable for SMD components of type D PAK (TO 252), D² PAK (TO 263), D³ PAK (TO 268), SOT 669 LF PAK, SO IC-8 FL MP, Power SO-8, Power SO-10, Power SO-20, Power SO-36, SO-14, SO-16, SOT 223 etc
- available standard packing: bulk parts or reel
- special packing like magazine, tray etc. on request; - special versions according to customers specifications
- **tape width:** 44 mm, **reel diameter:** 330 mm, **quantity:** FK 244 08 = 450, FK 244 13 = 200

art. no.			31,5 K/W
FK 244 08 D PAK ... weight: 2g			
art. no.			25 K/W
FK 244 13 D PAK ... weight: 3.3g			
art. no.			29,3 K/W
FK 244 08 D2 PAK ... weight: 2.2g			
art. no.			22,8 K/W
FK 244 13 D2 PAK ... weight: 3.6g			
art. no.			26 K/W
FK 244 08 D3 PAK ... weight: 2.5g			
art. no.			19,5 K/W
FK 244 13 D3 PAK ... weight: 3.9g			
please indicate:	... packing (optional) TR = tape and reel		
surface:	solderable surface		
material:	copper (Cu)		
material thickness:	0.6 mm		

Heatsinks for D PAK and others

- **tape width:** 24 mm, **reel diameter:** 330 mm, **quantity:** FK 250 06 = 450, FK 250 08 = 450, FK 250 10 = 350
- **tape width:** 24 mm, **reel diameter:** 330 mm, **quantity:** FK 251 06 = 450, FK 251 08 = 350, FK 251 10 = 250

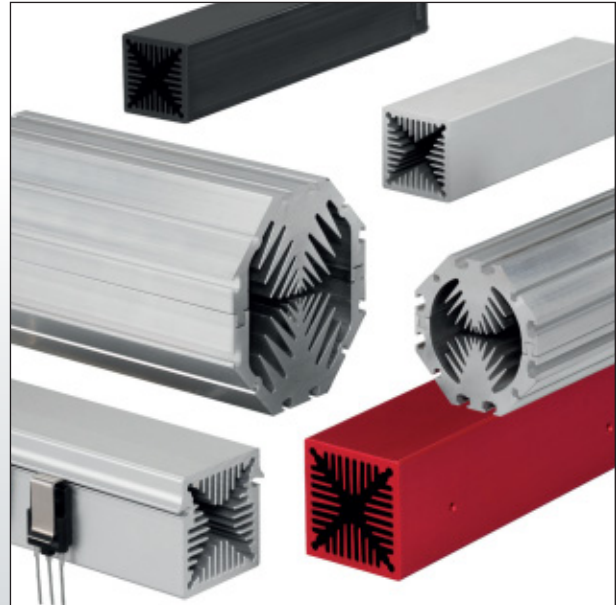
art. no.			37 K/W	
FK 250 06 LF PAK ... weight: 1g				
art. no.			34,8 K/W	
FK 250 08 LF PAK ... weight: 1.1g				
art. no.			28,8 K/W	
FK 250 10 LF PAK ... weight: 1.2g				
art. no.			32 K/W	
FK 251 06 LF PAK ... weight: 1.3g				
art. no.			29,8 K/W	
FK 251 08 LF PAK ... weight: 1.4g				
art. no.			24 K/W	
FK 251 10 LF PAK ... weight: 1.5g				
please indicate:	... packing (optional) TR = tape and reel			
surface:	solderable surface			
material:	copper (Cu)			
material thickness:	0.6 mm			

art. no.			11 K/W	
FK 256				
surface:	solderable surface			
material:	aluminium			
material thickness:	0.6 mm			



Segment cooling aggregates

- modular assembly consisting of different circle- and length segments
- electrical and thermal insulation of the single cooling segment sections
- standard drilling patterns TO 3 and pressfit
- segment profile also sold by the meter
- other fan types and fan voltages upon request



Miniature cooling aggregates

- compact construction for dissipating high power losses on smallest installation space
- heatsink geometries and fixed length optimal adjusted to the fan being used
- homogeneous heat dissipation
- mounting of the semi-conductor by means of sliding nut channels or specific snap-to-retaining springs for transistors



Hollow fin cooling aggregates

- flow-optimized hollow fin geometry
- precise milled flat semi-conductor mounting surface, single- and double-sided
- laminar airflow and noise reduction by means of harmonized chamber systems
- additional treatments, modifications and designs according to customers specifications

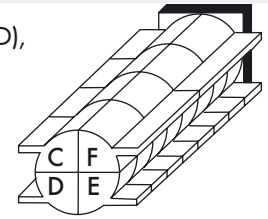


High performance heatsinks

- exclusive for forced convection
- for radial- and tangential fans
- flow-optimized design, best heat dissipation by means of especially thick bottom plates
- precise milled flat semi-conductor mounting surfaces
- mechanical treatments, special designs and surface coating for your application

Order example (see drawing on the right)

Semiconductor cooling package, consisting of 4 heatsinks LA 1 - 2 A (segment C), 1 heatsink LA 1 - 8 A (segment D), 8 heatsinks LA 1 - 1 A (segment E) and 2 heatsinks LA 1 - 4 A (segment F).
Total dissipation 1280 W..



How to tick off?

1. Tick on the left hand side the circles corresponding to an eight element long package, and also at the end of each row of the segments C, D, E and F to define the length.
2. For segment C: 4 marks for four double length elements, insulated from each other. This indicates 4 units LA 1 - 2.
3. For segment D: 1 mark for one single length of heatsink, 290,5 mm long. This indicates 1 unit LA 1 - 8.
4. For segment E: 8 marks for 8 elements of the standard length (35 mm) each insulated from the other. This indicates 8 units LA 1 - 1.
5. For segment F: 2 marks for each two heatsinks of 144,5 mm length, each insulated from the other. This indicates 2 units LA 1 - 4.
6. For each segment the profile types, either A or B, must be indicated for aggregate LA 1.
7. In the rectangle corresponding to the heatsink elements, the pin layouts for the transistor should also be indicated.
8. In the order form please indicate whether the cooling-aggregate is to be supplied with a fan and whether this is equipped with a protection-grid, or if it is to be supplied without a fan.

Upon request, it is possible to supply fans for special voltages and higher temperatures.

LA 1 **LA 2**

date: _____

pieces p. order: _____

company: _____

name/dept.: _____

town: _____

street: _____

signature: _____

with fan 230 Volt Volt
 protection grid voltage: ~ =
 without fan ~ =

Length Units: mm	segment: C	segment: D	segment: E	segment: F
35,0 <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole
71,5 <input type="checkbox"/>	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole
108,0 <input type="checkbox"/>	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 Fassung <input type="checkbox"/> TO 3 Lochung <input type="checkbox"/> Präbit-Bohrung	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole
144,5 <input type="checkbox"/>	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole
181,0 <input type="checkbox"/>	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole
217,5 <input type="checkbox"/>	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole
254,0 <input type="checkbox"/>	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole
290,5 <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input checked="" type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input checked="" type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input checked="" type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole
327,0 <input type="checkbox"/>	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole
363,5 <input type="checkbox"/>	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole	<input type="checkbox"/> Typ. A <input type="checkbox"/> B <input type="checkbox"/> TO 3 holder <input type="checkbox"/> TO 3 hole <input type="checkbox"/> pressfit hole

C D E F

cable connection

The segment-line C-D-E-F is shown against air-escape orifice, thus on the other side of the axial fan.
From this view also tick off cable terminal with axial fan.

Please check off here total length of the cooling aggregate.

A

B

date: _____

pieces p. order: _____

company: _____

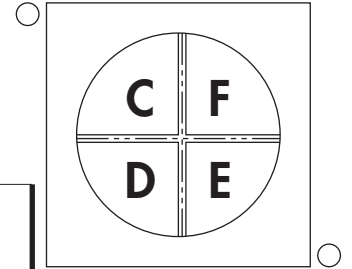
name/dept.: _____

town: _____

street: _____

signature: _____

- with fan 230 Volt Volt
 protection grid voltage:
 without fan ~ =



cable connection

Length Units:
mm

segment:	segment:	segment:	segment:
<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
35,0 1			
<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
71,5 2			
<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 Fassung <input type="radio"/> TO 3 Lochung <input type="radio"/> Preßfit-Bohrg.	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
108,0 3			
<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
144,5 4			
<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
181,0 5			
<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
217,5 6			
<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
254,0 7			
<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
290,5 8			
<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
327,0 9			
<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
363,5 10			
C	D	E	F

The segment-line C-D-E-F is shown against air-escape orifice, thus on the other side of the axial fan. From this view also tick off cable terminal with axial fan.

Please check off here total length of the cooling aggregate.

M

N

D 3

POB 1590
Nottebohmstraße 28
Tel.: +49 (0) 23 51 / 4 35-0

D - 58465 Lüdenscheid
D - 58511 Lüdenscheid
Fax: +49 (0) 23 51 / 4 57 54

info@fischerelektronik.de
www.fischerelektronik.de
www.facebook/fischerelektronik

LA 1

LA 2

date: _____

pieces p. order: _____

company: _____

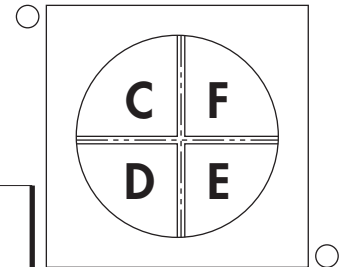
name/dept.: _____

town: _____

street: _____

signature: _____

<input type="radio"/> with fan	<input type="radio"/> 230 Volt	<input type="radio"/> Volt
<input type="radio"/> protection grid	voltage:	
<input type="radio"/> without fan	<input type="radio"/> ~ <input type="radio"/> =	



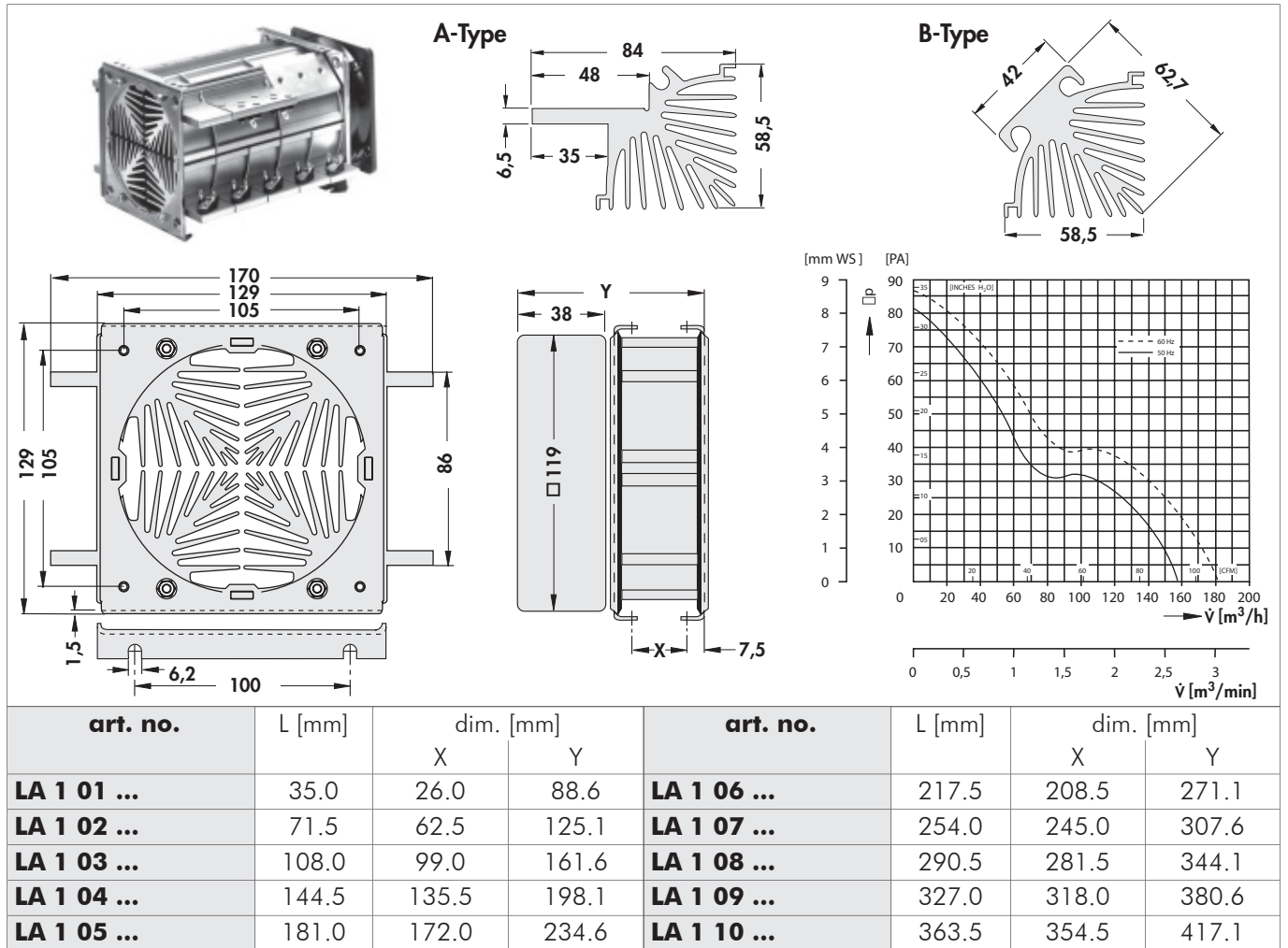
cable connection

Length Units: mm	segment: C	segment: D	segment: E	segment: F
35,0 <input type="radio"/>	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
71,5 <input type="radio"/>	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
108,0 <input type="radio"/>	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 Fassung <input type="radio"/> TO 3 Lochung <input type="radio"/> Preßfit-Bohrg.	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
144,5 <input type="radio"/>	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
181,0 <input type="radio"/>	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
217,5 <input type="radio"/>	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
254,0 <input type="radio"/>	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
290,5 <input type="radio"/>	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
327,0 <input type="radio"/>	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole
363,5 <input type="radio"/>	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole	<input type="radio"/> Typ. A <input type="radio"/> B <input type="radio"/> TO 3 holder <input type="radio"/> TO 3 hole <input type="radio"/> pressfit hole

The segment-line C-D-E-F is shown against air-escape orifice, thus on the other side of the axial fan.
From this view also tick off cable terminal with axial fan.

Please check off here total length of the cooling aggregate.

Segment cooling aggregates



... for A-types: please add an "A", for B-types: please add a "B".

L: unit lengths of the segments incl. insulation; **X:** mounting distance; **Y:** length of the cooling aggregate incl. fan

24 V DC fan on request

In case of order please use order form.

segments also available in meter length:

art. no. for A-type: LA 1 1000 A; art. no. for B-type: LA 1 1000 B

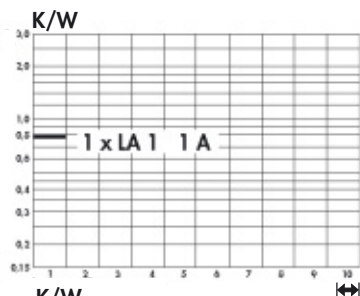
Other fan types and fan voltages on request.

Technical data of the fans

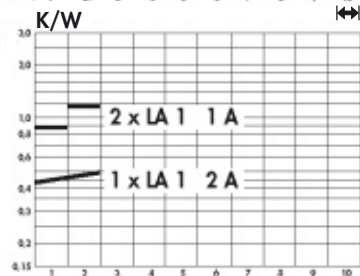
	... 230
type	ebmpapst, ball bearing
dimensions	119 x 119 x 38 mm
tension	230 V AC
power inout	19 W
max. air volume	160 m ³ /h
temperature range	-40 °C ... +85 °C
speed	2,650 min ⁻¹
noise level	47 dB(A)
weight	550 g
failure rate (L₁₀)	L ₁₀ > 37,500 h (40 °C)

Thermal resistance LA 1

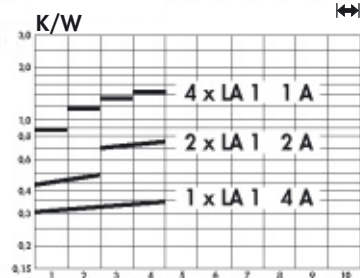
The thermal resistance in the following diagrams is given on the base of a total dissipation of 40 Watt per heatsink of the „A“-type. When using „B“-types this value increases by 3 %.



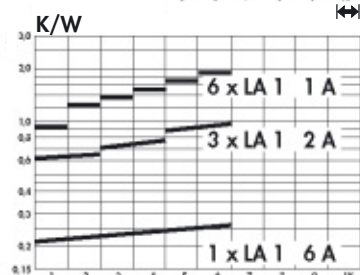
1. Cooling aggregate consisting of 4 heatsinks LA 1 - 1 A.
Total dissipation 160 W.



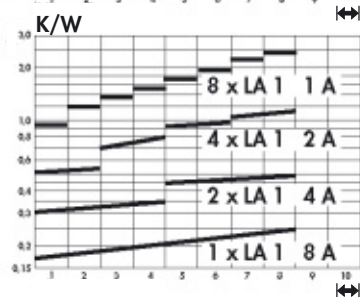
2. Cooling aggregate consisting of 4 heatsinks LA 1 - 1 A and 2 x 1 heatsink LA 1 - 2 A.
Total dissipation 320 W.



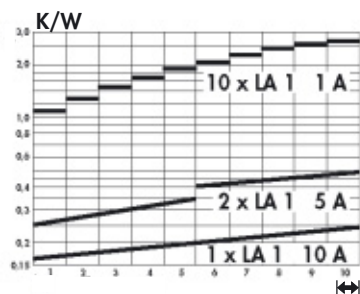
3. Cooling aggregate consisting of 4 heatsinks LA 1 - 1 A, 2 heatsinks LA 1 - 2 A and 2 x 1 heatsink LA 1 - 4 A. Total dissipation 640 W.



4. Cooling aggregate consisting of 6 heatsinks LA 1 - 1 A, 3 heatsinks LA 1 - 2 A and 2 x 1 heatsink LA 1 - 6 A. Total dissipation 960 W.

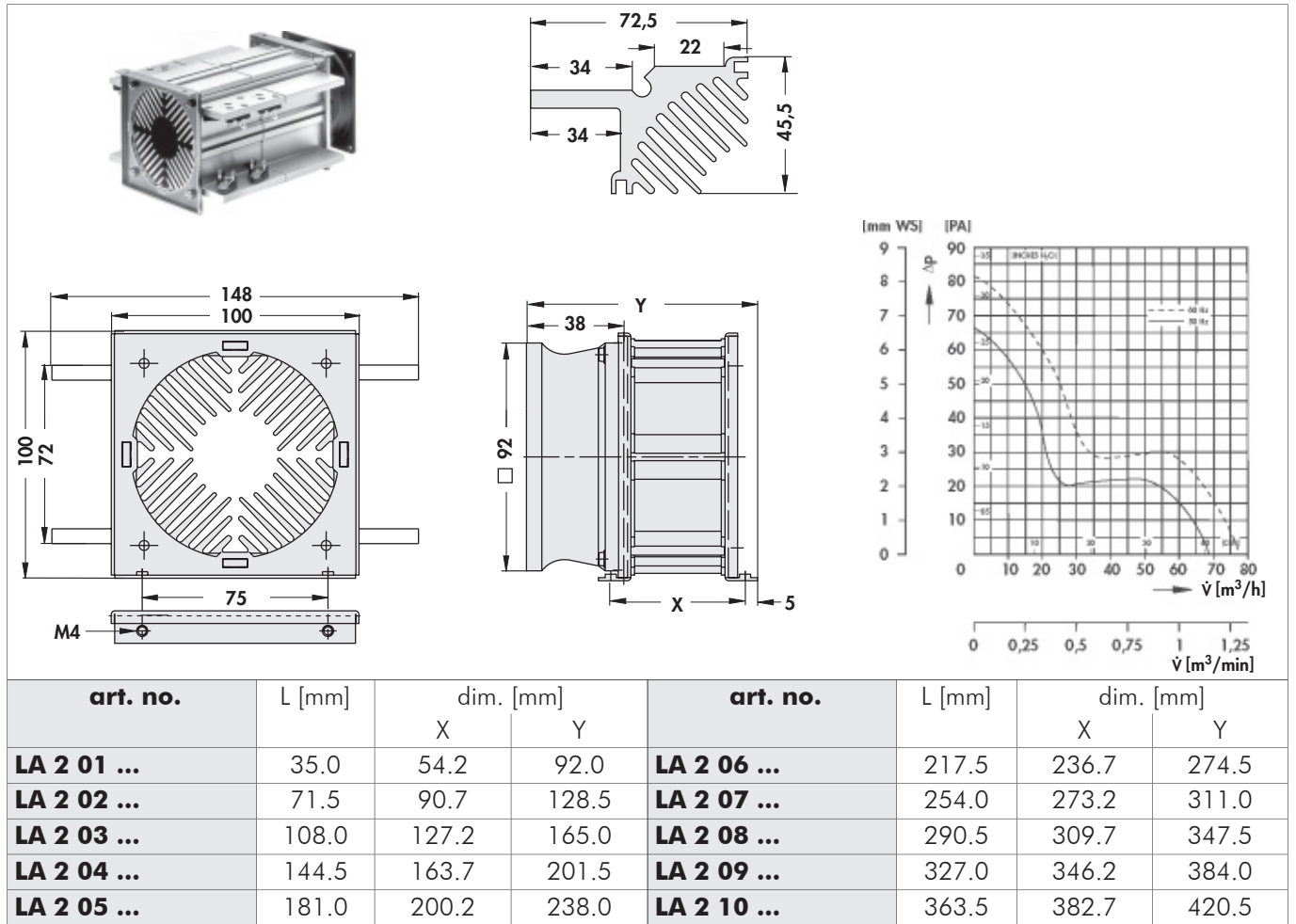


5. Cooling aggregate consisting of 8 heatsinks LA 1 - 1 A, 4 heatsinks LA 1 - 2 A, 2 heatsinks LA 1 - 4 A and 1 heatsink LA 1 - 8 A. Total dissipation 1280 W.



6. Cooling aggregate consisting of 10 heatsinks LA 1 - 1 A, 2 heatsinks LA 1 - 5 A, and 2 x 1 heatsink LA 1 - 10 A. Total dissipation 1600 W.

Segment cooling aggregates



L: unit lengths of the segments incl. insulation; **X:** mounting distance; **Y:** length of the cooling aggregate incl. fan

24 V DC fan on request

In case of order please use order form.

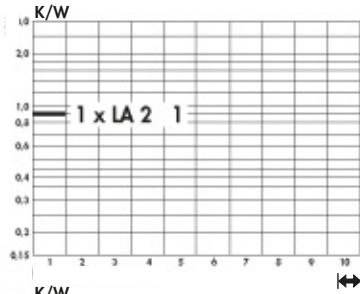
segments also available in meter length: **art. no. for A-type: LA 1 1000 A; art. no. for B-type: LA 2 1000 B**

Other fan types and fan voltages on request.

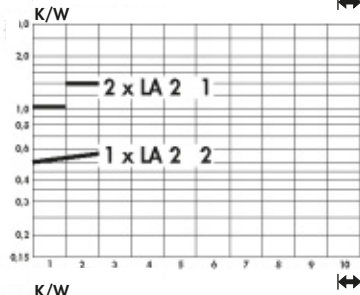
Technical data of the fans

	... 230
type	ebmpapst, ball bearing
dimensions	92 x 92 x 38 mm
tension	230 V AC
power inout	12 W
max. air volume	75 m ³ /h
temperature range	-40 °C ... +75 °C
speed	2,700 min ⁻¹
noise level	37 dB(A)
weight	420 g
failure rate (L₁₀)	L ₁₀ > 52,500 h (40 °C)

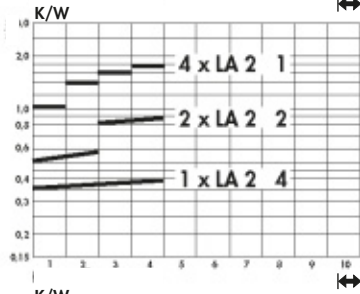
The thermal resistance in the following diagrams is given on the base of a total dissipation of 40 Watt per heatsink of the „A“-type.



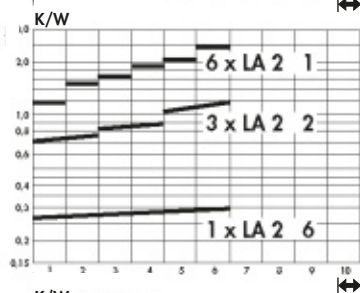
1. Cooling aggregate consisting of 4 heatsinks LA 2 - 1. Total dissipation 160 W maximal.



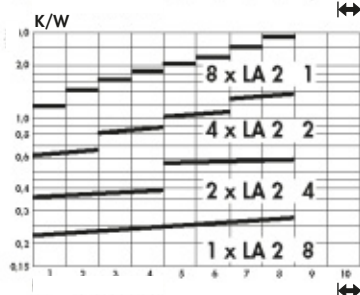
2. Cooling aggregate consisting of 4 heatsinks LA 2 - 1 and 2 x 1 heatsink LA 2 - 2. Total dissipation 320 W.



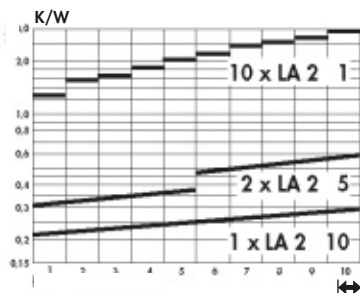
3. Cooling aggregate consisting of 4 heatsinks LA 2 - 1, 2 heatsinks LA 2 - 2 and 2 x 1 heatsink LA 2 - 4. Total dissipation 640 W.



4. Cooling aggregate consisting of 6 heatsinks LA 2 - 1, 3 heatsinks LA 2 - 2 and 2 x 1 heatsink LA 2 - 6. Total dissipation 960 W.




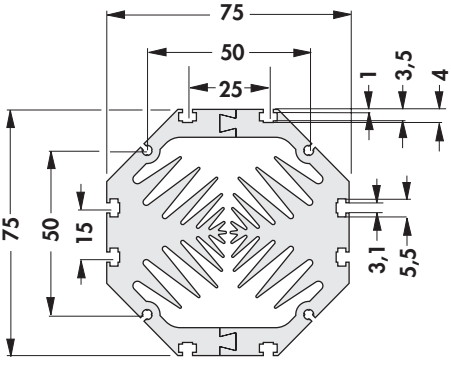

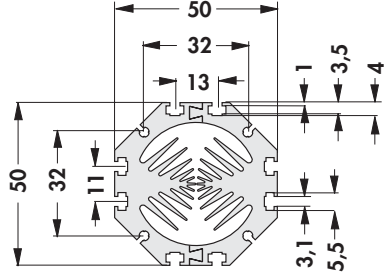
5. Cooling aggregate consisting of 8 heatsinks LA 2 - 1, 4 heatsinks LA 2 - 2, 2 heatsinks LA 2 - 4 and 1 heatsink LA 2 - 8. Total dissipation 1280 W.



6. Cooling aggregate consisting of 10 heatsinks LA 2 - 1, 2 heatsinks LA 2 - 5, and 2 x 1 heatsink LA 2 - 10. Total dissipation 1600 W.

Miniature cooling aggregates

- made for dissipation of high power within a very small space
- approximate length is optimised to the fan motor
- slide-nut channels for M3 nuts for mounting the transistors and circuit boards
- other fan types and fan voltages on request


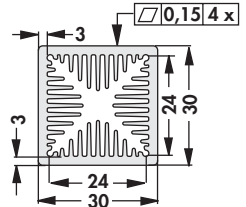
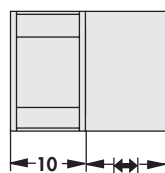
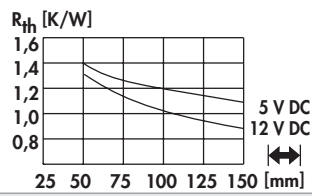
art. no.		$\text{L} \approx 140 \text{ mm}$ $0,3 \text{ K/W}$	
LAM 1			
art. no.		$\text{L} \approx 100 \text{ mm}$ $0,73 \text{ K/W}$	
LAM 2			
surface:		natural colour anodised	

Technical data of the fans

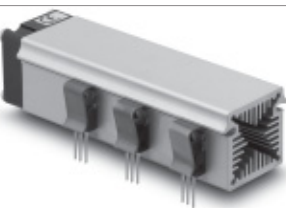
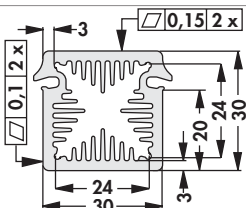
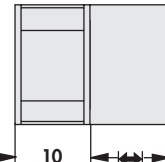
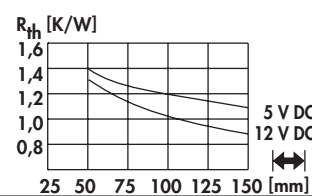
	LAM 1	LAM 2
type	ebmpapst 612 NHH-118	ebmpapst 412 F
dimensions	60 x 60 x 25 mm	40 x 40 x 10 mm
tension	12 V DC	12 V DC
power inout	2.9 W	0.7 W
max. air volume	56 m ³ /h	8 m ³ /h
temperature range	-20 °C ... +70 °C	-20 °C ... +70 °C
speed	6,800 min ⁻¹	5,400 min ⁻¹
noise level	41 dB(A)	22.1 dB(A)
weight	66 g	17 g
failure rate (L₁₀)	L ₁₀ > 60,000 h (40 °C)	L ₁₀ > 45,000 h (20 °C)

Miniature cooling aggregates

- compact design
- homogeneous heat dissipation
- mounting possible on any side
- powerful axial-fan motor
- other lengths, special designs and processing according to customer's requirements
- other surfaces treatment, fan types and fan voltages on request

art. no.				
LAM 3 ...				
please indicate:	... \longleftrightarrow 50 75 100 125 150 mm		... fan type 5 = 5 V DC 12 = 12 V DC	
surface:	natural colour anodised			

- with grooves for transistor retaining springs THFU → A 117
- compact design
- homogeneous heat dissipation
- mounting possible on any side
- powerful axial-fan motor
- other lengths, special designs and processing according to customers requirements
- other surfaces treatment, fan types and fan voltages on request

art. no.				
LAM 3 K ...				
please indicate:	... \longleftrightarrow 50 75 100 125 150 mm		... fan type 5 = 5 V DC 12 = 12 V DC	
surface:	natural colour anodised			

Technical data of the fans

	... 5	... 12
type	Sepa, ball bearing	Sepa, ball bearing
dimensions	30 x 30 x 10 mm	30 x 30 x 10 mm
tension	5 V DC	12 V DC
max. air volume	6.8 m ³ /h	7.7 m ³ /h
cur. consumpt.	130 mA	70 mA
temperature range	-10 °C ... +70 °C	-10 °C ... +70 °C
noise level	21 dB(A)	23 dB(A)
speed	8,500 min ⁻¹	9,100 min ⁻¹
weight	8 g	8 g
failure rate (L₁₀)	L ₁₀ > 95,000 h (20 °C) MTBF > 280,000 h (20 °C)	L ₁₀ > 95,000 h (20 °C) MTBF > 280,000 h (20 °C)


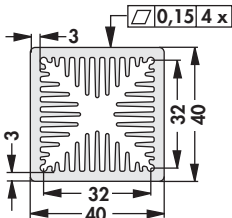
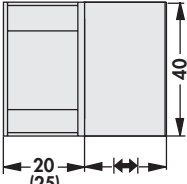
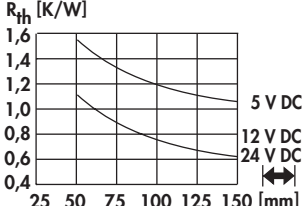

Retaining springs for transistors
Special heatsink design
Hollow-fin cooling aggregates
High capacity cooling aggregat.

→ A 114 – 120 Fluid coolers
→ A 135 – 136 Protection grid for axial fans
→ D 15 – 25 Thermally conductive foil
→ D 26 – 35 Technical introduction


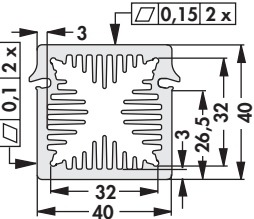
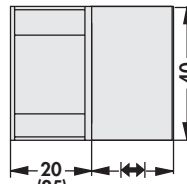
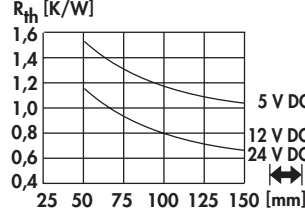

→ A 129 – 131
→ D 36
→ E 5 – 13
→ A 2 – 7

Miniature cooling aggregates

- compact design
- homogeneous heat dissipation
- mounting possible on any side
- powerful axial-fan motor
- other lengths, special designs and processing according to customer's requirements
- other surfaces treatment, fan types and fan voltages on request

art. no.				
LAM 4 ...				
please indicate:	...  50 75 100 125 150 mm		... fan type 5 = 5 V DC 12 = 12 V DC 24 = 24 V DC	
surface:	natural colour anodised			

- with grooves for transistor retaining springs THFU → A 117
- compact design
- homogeneous heat dissipation
- mounting possible on any side
- powerful axial-fan motor
- other lengths, special designs and processing according to customer's requirements
- other surfaces treatment, fan types and fan voltages on request


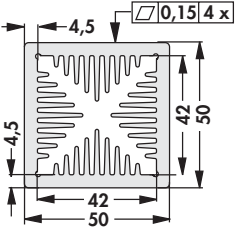
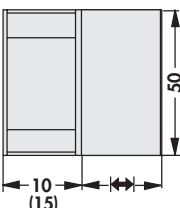
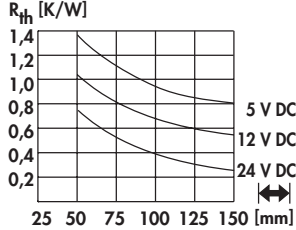
art. no.				
LAM 4 K ...				
please indicate:	...  50 75 100 125 150 mm		... fan type 5 = 5 V DC 12 = 12 V DC 24 = 24 V DC	
surface:	natural colour anodised			

Technical data of the fans


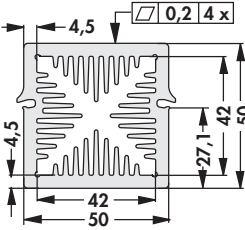
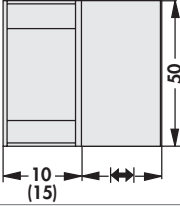
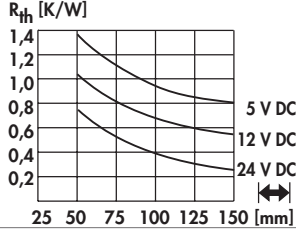
	... 5	... 12	... 24
type	ebmpapst 405	ebmpapst 412 JHH	ebmpapst 414 JHH
dimensions	40 x 40 x 20 mm	40 x 40 x 25 mm	40 x 40 x 25 mm
tension	5 V DC	12 V DC	24 V DC
power inout	0.9 W	3.3 W	3.6 W
max. air volume	10 m ³ /h	24 m ³ /h	24 m ³ /h
temperature range	-20 °C ... +70 °C	-20 °C ... +60 °C	-20 °C ... +60 °C
speed	6,000 min ⁻¹	13,000 min ⁻¹	13,000 min ⁻¹
noise level	18 dB(A)	46 dB(A)	46 dB(A)
weight	27 g	50 g	50 g
failure rate (L₁₀)	L ₁₀ > 50,000 h (40 °C) L ₁₀ > 20,000 h (tmax)	L ₁₀ > 57,500 h (40 °C) L ₁₀ > 35.000 h (tmax)	L ₁₀ > 57,500 h (40 °C) L ₁₀ > 35.000 h (tmax)

Miniature cooling aggregates

- compact design
- homogeneous heat dissipation
- mounting possible on any side
- powerful axial-fan motor
- other lengths, special designs and processing according to customer's requirements
- other surfaces treatment, fan types and fan voltages on request

art. no.				
LAM 5 ...				
please indicate:	... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 50 75 100 125 150 mm		... fan type 5 = 5 V DC 12 = 12 V DC 24 = 24 V DC	
surface:	natural colour anodised			

- with grooves for transistor retaining springs THFU → A 117
- compact design
- homogeneous heat dissipation
- mounting possible on any side
- powerful axial-fan motor
- other lengths, special designs and processing according to customer's requirements
- other surfaces treatment, fan types and fan voltages on request

art. no.				
LAM 5 K ...				
please indicate:	... $\left[\begin{array}{c} \text{---} \\ \text{---} \end{array} \right]$ 50 75 100 125 150 mm		... fan type 5 = 5 V DC 12 = 12 V DC 24 = 24 V DC	
surface:	natural colour anodised			

Technical data of the fans

	... 5	... 12	... 24
type	Sepa, ball bearing	Sepa, ball bearing	ebmpapst
dimensions	50 x 50 x 10 mm	50 x 50 x 10 mm	50 x 50 x 15 mm
tension	5 V DC	12 V DC	24 V DC
max. air volume	10.1 m ³ /h	14.3 m ³ /h	20 m ³ /h
cur. consumpt.	50 mA	40 mA	42 mA
temperature range	-40 °C ... +80 °C	-40 °C ... +80 °C	-20 °C ... +70 °C
speed	3,500 min ⁻¹	4,800 min ⁻¹	5,000 min ⁻¹
noise level	16 dB(A)	25 dB(A)	30 dB(A)
weight	19 g	19 g	25 g
failure rate (L₁₀)	L ₁₀ > 95,000 h (20 °C) MTBF > 280,000 h (20 °C)	L ₁₀ > 95,000 h (20 °C) MTBF > 280,000 h (20 °C)	L ₁₀ 50,000 h (20 °C)
alarm output	with	with	

Retaining springs for transistors
Special heatsink design
Hollow-fin cooling aggregates
High capacity cooling aggregat.

→ A 114 – 120 Fluid coolers
→ A 135 – 136 Protection grid for axial fans
→ D 15 – 25 Thermally conductive foil
→ D 26 – 35 Technical introduction

→ A 129 – 131
→ D 36
→ E 5 – 13
→ A 2 – 7

A

B

C

D

E

F

G

H

I

K

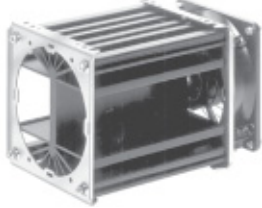
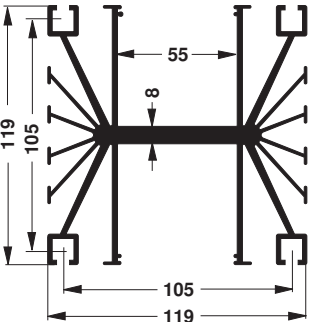

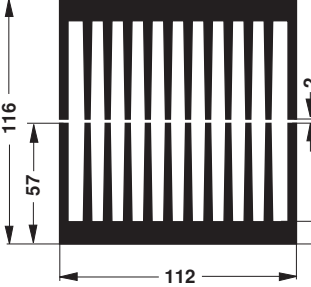

L

M

N

Heatsink-cooling aggregates

- especially suitable for IGBT, SSR, semiconductor modules, high performance transistors etc.
- effective construction with axial fans
- good thermal performance
- additional machining according to customer's instructions
- cooling aggregates also available without fans
- other fan types and fan voltages on request

art. no. LA 4 ...			
art. no. LA 5 ...			
please indicate: ...  75 100 150 mm		... fan type 24 = 24 V DC 230 = 230 V AC	

* for one segment

Technical data of the fans

	... 24	... 230
type	ebmpapst, ball bearing	ebmpapst, ball bearing
dimensions	119 x 119 x 38 mm	119 x 119 x 38 mm
tension	24 V DC	230 V AC
power inout	11 W	19 W
max. air volume	237 m ³ /h	160 m ³ /h
temperature range	-30 °C ... +55 °C	-40 °C ... +85 °C
speed	4,400 min ⁻¹	2,650 min ⁻¹
noise level	59 dB(A)	47 dB(A)
weight	390 g	550 g
failure rate (L₁₀)	L ₁₀ > 70,000 h (40 °C)	L ₁₀ > 37,500 h (40 °C)


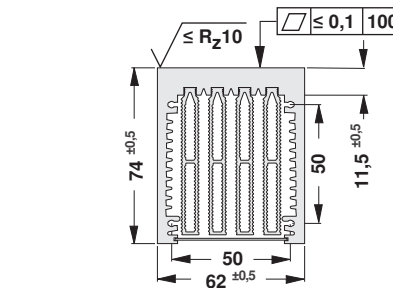
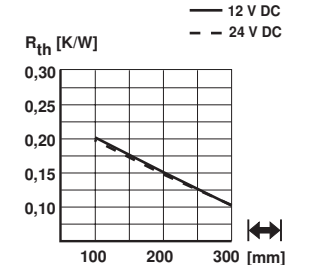
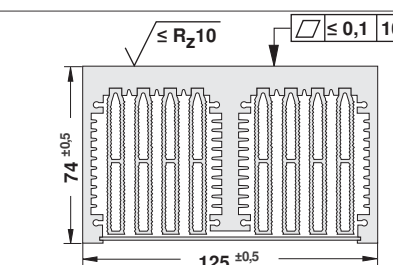
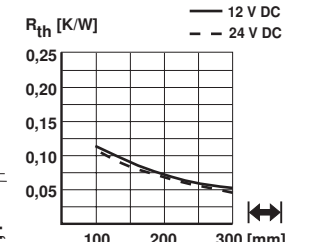

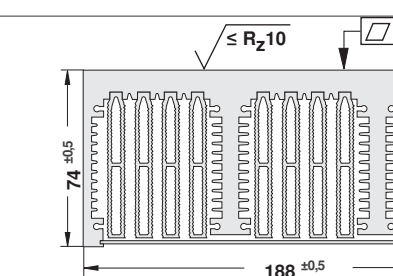
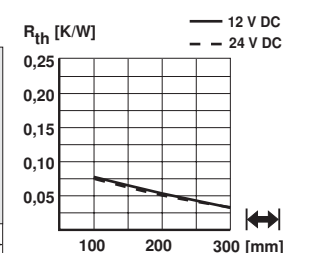

Cooling aggreg. in segment mount. → D 5 – 7
 Miniature cooling aggregates → D 9 – 11
 Protection grid for axial fans → D 36
 Thermal conductive material → E 2 – 29

Extruded heatsinks → A 22 – 83
 Cooling aggregates with radial fan → D 33 – 35
 Heatsinks with hollow fin profile → D 30
 Technical introduction → A 2 – 7

Cooling aggregates with axial fan

Hollow-fin cooling aggregates

- geometry of hollow fin optimising the air flow
- particularly effective heat dissipation
- compact construction
- milled flat semiconductor mounting surface
- other fan types and fan voltages on request


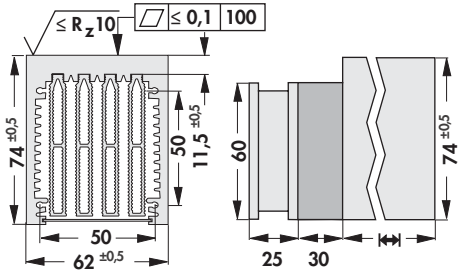
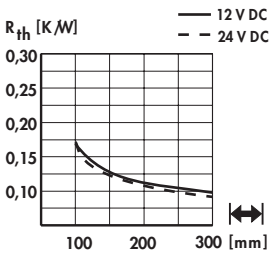

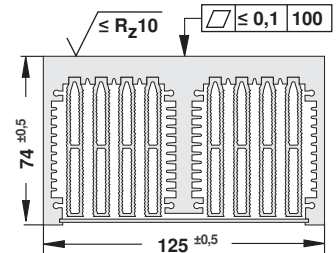
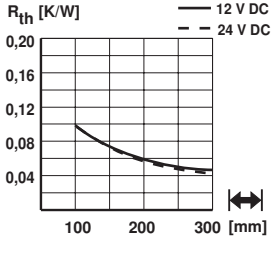

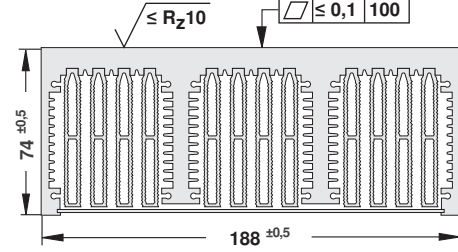
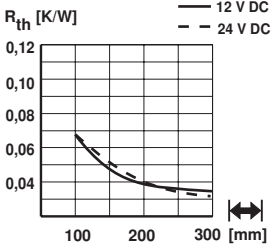

art. no. LA 6 ...			
without air flow chamber			
art. no. LA 7 ...			
art. no. LA 8 ...		without air flow chamber	
please indicate: ... $\left[\right]$ 100 150 200 250 300 mm		... fan type 12 = 12 V DC 24 = 24 V DC	

Technical data of the fans

	... 12	... 24
type	ebmpapst, ball bearing	ebmpapst, ball bearing
dimensions	60 x 60 x 25 mm	60 x 60 x 25 mm
tension	12 V DC	24 V DC
power inout	2.9 W	3 W
max. air volume	56 m ³ /h	56 m ³ /h
temperature range	-20 °C ... +70 °C	-20 °C ... +70 °C
speed	6,800 min ⁻¹	6,850 min ⁻¹
noise level	41 dB(A)	41 dB(A)
weight	66 g	66 g
failure rate (L₁₀)	L ₁₀ > 60,000 h (40 °C)	L ₁₀ > 60,000 h (40 °C)

Hollow-fin cooling aggregates

- geometry of hollow fin optimising the air flow
- particularly effective heat dissipation
- compact construction
- milled flat semiconductor mounting surface
- other fan types and fan voltages on request

art. no.			
LA V 6 ...	with air flow chamber		
art. no.			
LA V 7 ...	with air flow chamber		
art. no.			
LA V 8 ...	with air flow chamber		
please indicate:	...  100 150 200 250 300 mm	... fan type 12 = 12 V DC 24 = 24 V DC	

Technical data of the fans

	... 12	... 24
type	ebmpapst, ball bearing	ebmpapst, ball bearing
dimensions	60 x 60 x 25 mm	60 x 60 x 25 mm
tension	12 V DC	24 V DC
power inout	2.9 W	3 W
max. air volume	56 m ³ /h	56 m ³ /h
temperature range	-20 °C ... +70 °C	-20 °C ... +70 °C
speed	6,800 min ⁻¹	6,850 min ⁻¹
noise level	41 dB(A)	41 dB(A)
weight	66 g	66 g
failure rate (L₁₀)	L ₁₀ > 60,000 h (40 °C)	L ₁₀ > 60,000 h (40 °C)

Cooling aggreg. in segment mount. → D 5 – 7
 Miniature cooling aggregates → D 9 – 11
 Protection grid for axial fans → D 36
 Thermal conductive material → E 2 – 29

Extruded heatsinks → A 22 – 83
 Cooling aggregates with radial fan → D 33 – 35
 Heatsinks with hollow fin profile → D 30
 Technical introduction → A 2 – 7

A

Cooling aggregates with axial fan


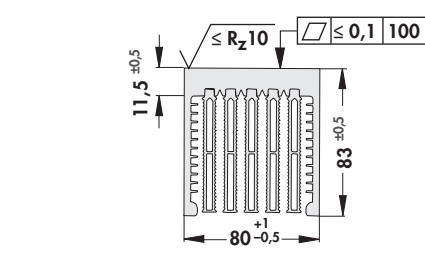
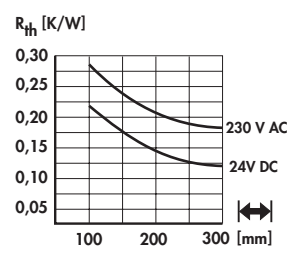
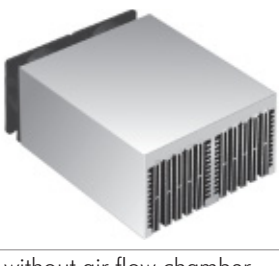
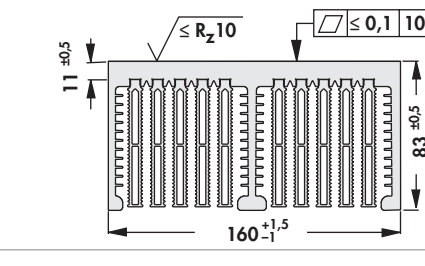
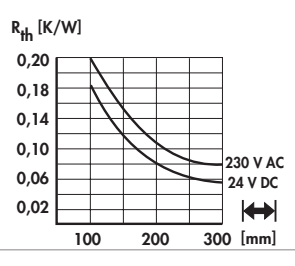

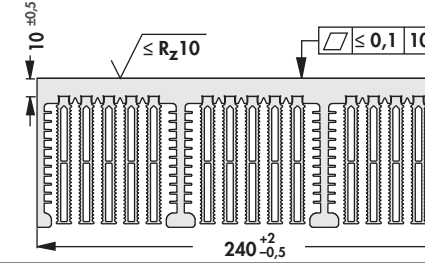
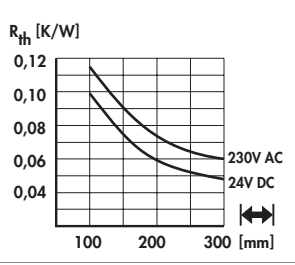
B

Hollow-fin cooling aggregates

- geometry of hollow fin optimising the air flow
- particularly effective heat dissipation
- compact construction
- milled flat semiconductor mounting surface
- other fan types and fan voltages on request

C

D

art. no. LA 9 ...			
art. no. LA 10 ...			
art. no. LA 11 ...			
please indicate: ... $\left[\right]$ 100 150 200 250 300 mm		... fan type 24 = 24 V DC 230 = 230 V AC	

E

F

G

H

Technical data of the fans

	... 24	... 230
type	ebmpapst, ball bearing	ebmpapst, ball bearing
dimensions	80 x 80 x 32 mm	80 x 80 x 38 mm
tension	24 V DC	230 V AC
power inout	6 W	12 W
max. air volume	80 m ³ /h	50 m ³ /h
temperature range	-20 °C ... +75 °C	-40 °C ... +90 °C
speed	5,000 min ⁻¹	2,800 min ⁻¹
noise level	48 dB(A)	31 dB(A)
weight	170 g	480 g
failure rate (L₁₀)	L ₁₀ > 55,000 h (40 °C)	L ₁₀ > 52,500 h (40 °C)

L

M

N


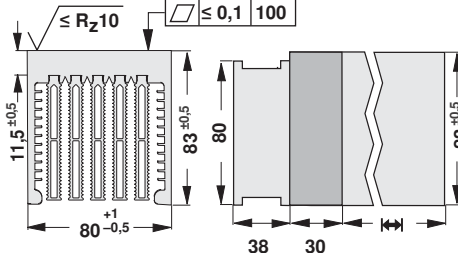
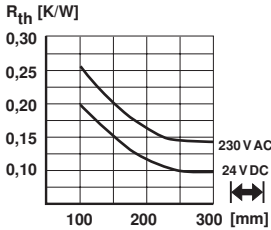
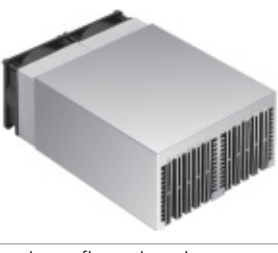
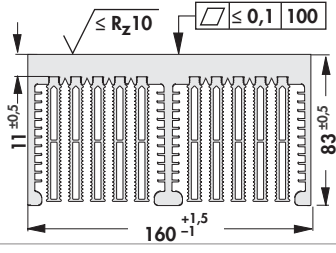
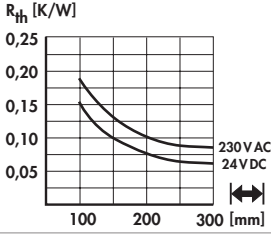

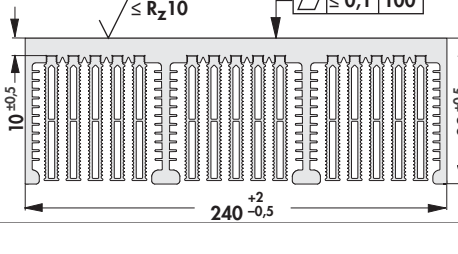
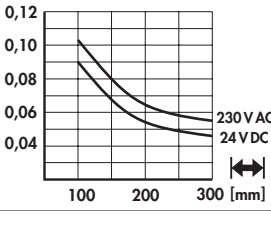

D 17

Cooling aggreg. in segment mount. → D 5 – 7
 Miniature cooling aggregates → D 9 – 11
 Protection grid for axial fans → D 36
 Thermal conductive material → E 2 – 29

Extruded heatsinks → A 22 – 83
 Cooling aggregates with radial fan → D 33 – 35
 Heatsinks with hollow fin profile → D 30
 Technical introduction → A 2 – 7

Hollow-fin cooling aggregates

- geometry of hollow fin optimising the air flow
- particularly effective heat dissipation
- compact construction
- milled flat semiconductor mounting surface
- other fan types and fan voltages on request

art. no.			
LA V 9 ...	with air flow chamber		
art. no.			
LA V 10 ...	with air flow chamber		
art. no.			
LA V 11 ...	with air flow chamber		
please indicate:	...  100 150 200 250 300 mm	... fan type	24 = 24 V DC 230 = 230 V AC

Technical data of the fans

	... 24	... 230
type	ebmpapst, ball bearing	ebmpapst, ball bearing
dimensions	80 x 80 x 32 mm	80 x 80 x 38 mm
tension	24 V DC	230 V AC
power inout	6 W	12 W
max. air volume	80 m ³ /h	50 m ³ /h
temperature range	-20 °C ... +75 °C	-40 °C ... +90 °C
speed	5,000 min ⁻¹	2,800 min ⁻¹
noise level	48 dB(A)	31 dB(A)
weight	170 g	480 g
failure rate (L₁₀)	L ₁₀ > 55,000 h (40 °C)	L ₁₀ > 52,500 h (40 °C)


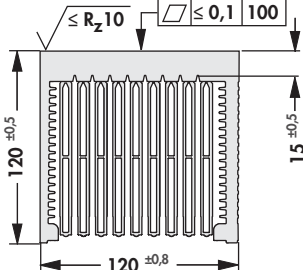
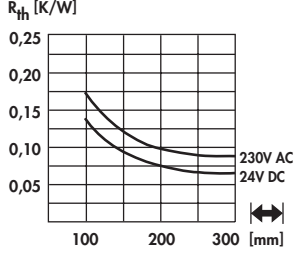

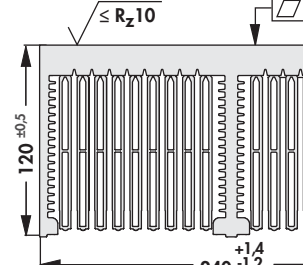
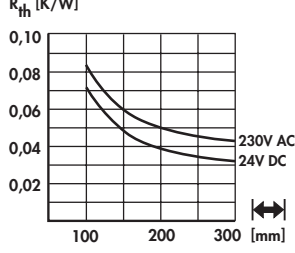

Cooling aggreg. in segment mount. → D 5 – 7
 Miniature cooling aggregates → D 9 – 11
 Protection grid for axial fans → D 36
 Thermal conductive material → E 2 – 29

Extruded heatsinks → A 22 – 83
 Cooling aggregates with radial fan → D 33 – 35
 Heatsinks with hollow fin profile → D 30
 Technical introduction → A 2 – 7

Cooling aggregates with axial fan

Hollow-fin cooling aggregates

- extremely low losses due to optimised hollow fin geometry
- particularly effective heat dissipation
- compact design with axial fan
- milled flat semiconductor mounting surface
- additional design to customer's instructions
- other fan types and fan voltages on request


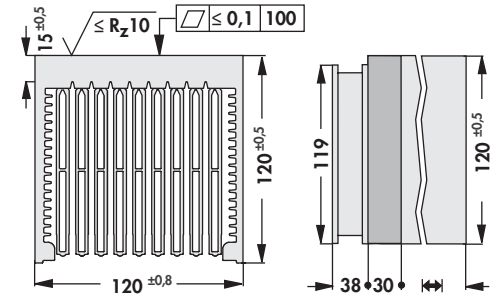
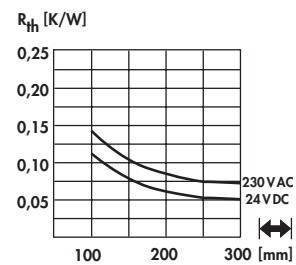

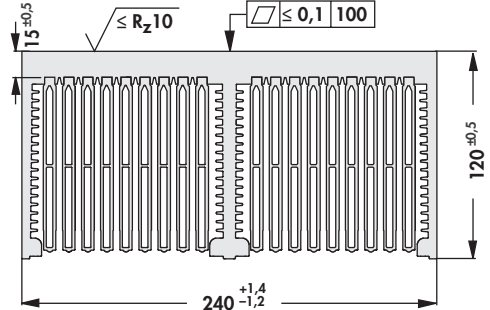
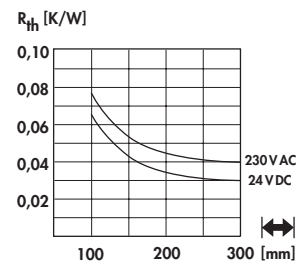

art. no.			
LA 14 ...	without air flow chamber		
art. no.			
LA 15 ...	without air flow chamber		
please indicate: ... 		... fan type	
100 150 200 250 300 400 mm		24 = 24 V DC 230 = 230 V AC	

Technical data of the fans

	... 24	... 230
type	ebmpapst, ball bearing	ebmpapst, ball bearing
dimensions	119 x 119 x 38 mm	119 x 119 x 38 mm
tension	24 V DC	230 V AC
power inout	11 W	19 W
max. air volume	237 m ³ /h	160 m ³ /h
temperature range	-30 °C ... +55 °C	-40 °C ... +85 °C
speed	4,400 min ⁻¹	2,650 min ⁻¹
noise level	59 dB(A)	47 dB(A)
weight	390 g	550 g
failure rate (L₁₀)	L ₁₀ > 70,000 h (40 °C)	L ₁₀ > 37,500 h (40 °C)

Hollow-fin cooling aggregates

- extremely low losses due to optimised hollow fin geometry
- particularly effective heat dissipation
- compact design with axial fan
- milled flat semiconductor mounting surface
- additional design to customer's instructions on request
- other fan types and fan voltages on request

art. no.			
LA V 14 ...	with air flow chamber		
art. no.			
LA V 15 ...	with air flow chamber		
please indicate:	...  100 150 200 250 300 400 mm	... fan type	24 = 24 V DC 230 = 230 V AC

Technical data of the fans

	... 24	... 230
type	ebmpapst, ball bearing	ebmpapst, ball bearing
dimensions	119 x 119 x 38 mm	119 x 119 x 38 mm
tension	24 V DC	230 V AC
power inout	11 W	19 W
max. air volume	237 m ³ /h	160 m ³ /h
temperature range	-30 °C ... +55 °C	-40 °C ... +85 °C
speed	4,400 min ⁻¹	2,650 min ⁻¹
noise level	59 dB(A)	47 dB(A)
weight	390 g	550 g
failure rate (L₁₀)	L ₁₀ > 70,000 h (40 °C)	L ₁₀ > 37,500 h (40 °C)

Cooling aggreg. in segment mount. → D 5 - 7
 Miniature cooling aggregates → D 9 - 11
 Protection grid for axial fans → D 36
 Thermal conductive material → E 2 - 29

Extruded heatsinks → A 22 - 83
 Cooling aggregates with radial fan → D 33 - 35
 Heatsinks with hollow fin profile → D 30
 Technical introduction → A 2 - 7

A

Cooling aggregates with axial fan


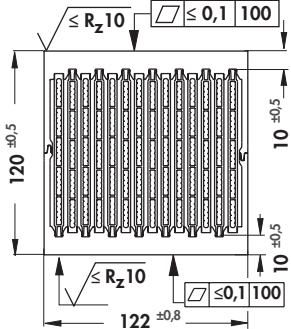
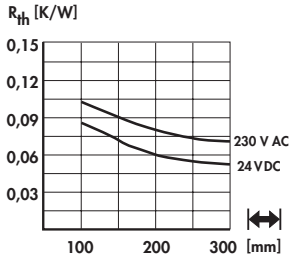

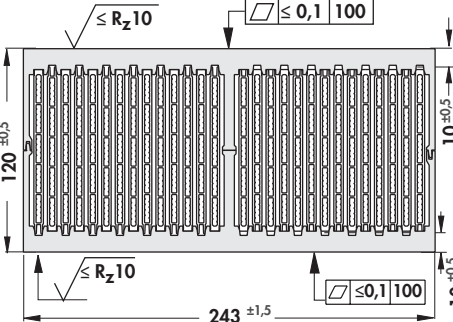
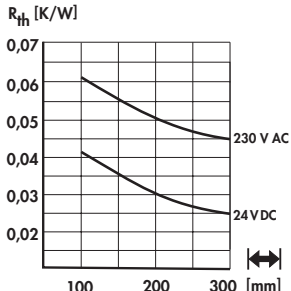

B

Hollow-fin cooling aggregates

- extremely low losses due to optimised hollow fin geometry
- effective heat dissipation
- compact construction with axial fans
- two opposite mounting surfaces are milled flat
- additional treatment upon customer's request
- other fan types and fan voltages on request

C

D

art. no. LA 17 ...			
without air flow chamber			
art. no. LA 18 ...			
without air flow chamber			
please indicate: ...  100 150 200 250 300 400 mm		... fan type 24 = 24 V DC 230 = 230 V AC	

E

F

G

H

Technical data of the fans

	... 24	... 230
type	ebmpapst, ball bearing	ebmpapst, ball bearing
dimensions	119 x 119 x 38 mm	119 x 119 x 38 mm
tension	24 V DC	230 V AC
power inout	11 W	19 W
max. air volume	237 m ³ /h	160 m ³ /h
temperature range	-30 °C ... +55 °C	-40 °C ... +85 °C
speed	4,400 min ⁻¹	2,650 min ⁻¹
noise level	59 dB(A)	47 dB(A)
weight	390 g	550 g
failure rate (L₁₀)	L ₁₀ > 70,000 h (40 °C)	L ₁₀ > 37,500 h (40 °C)

L

M

N


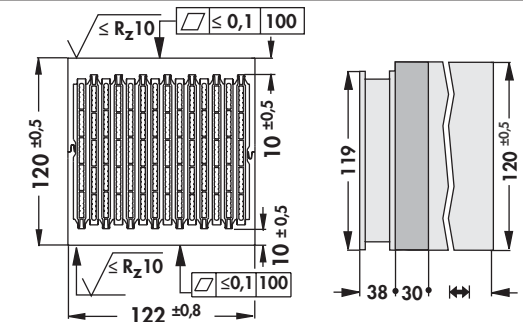
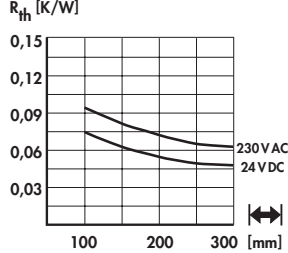

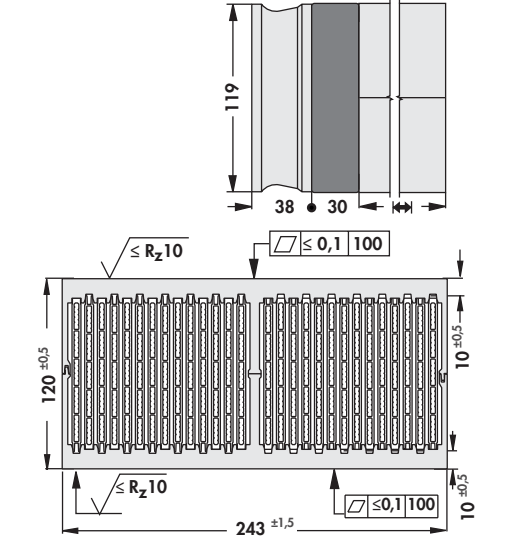
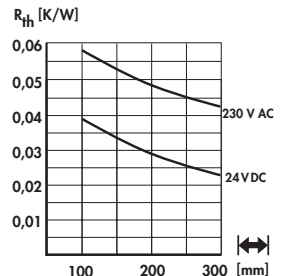
D 21

Cooling aggreg. in segment mount. → D 5 – 7
 Miniature cooling aggregates → D 9 – 11
 Protection grid for axial fans → D 36
 Thermal conductive material → E 2 – 29

Extruded heatsinks → A 22 – 83
 Cooling aggregates with radial fan → D 33 – 35
 Heatsinks with hollow fin profile → D 30
 Technical introduction → A 2 – 7

Hollow-fin cooling aggregates

- extremely low losses due to optimised hollow fin geometry
- effective heat dissipation
- compact construction with axial fans
- two opposite mounting surfaces are milled flat
- additional treatment upon customer's request
- other fan types and fan voltages on request

art. no. 			
LA V 17 ... with air flow chamber			
art. no. 			
LA V 18 ... with air flow chamber			
please indicate: ... \longleftrightarrow 100 150 200 250 300 400 mm		... fan type 24 = 24 V DC 230 = 230 V AC	

Technical data of the fans

	... 24	... 230
type	ebmpapst, ball bearing	ebmpapst, ball bearing
dimensions	119 x 119 x 38 mm	119 x 119 x 38 mm
tension	24 V DC	230 V AC
power inout	11 W	19 W
max. air volume	237 m ³ /h	160 m ³ /h
temperature range	-30 °C ... +55 °C	-40 °C ... +85 °C
speed	4,400 min ⁻¹	2,650 min ⁻¹
noise level	59 dB(A)	47 dB(A)
weight	390 g	550 g
failure rate (L₁₀)	L ₁₀ > 70,000 h (40 °C)	L ₁₀ > 37,500 h (40 °C)

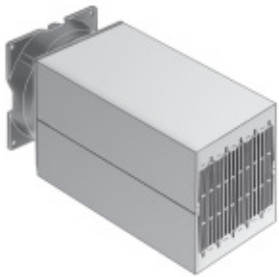
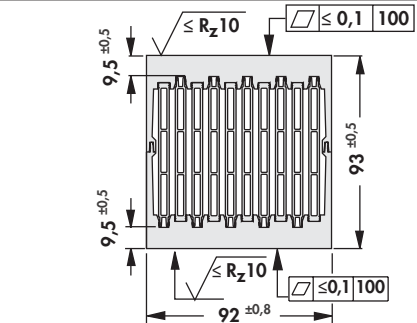
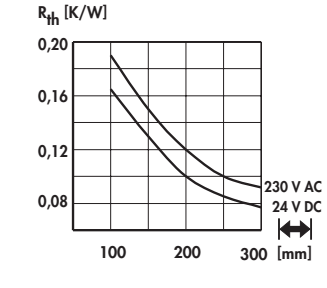

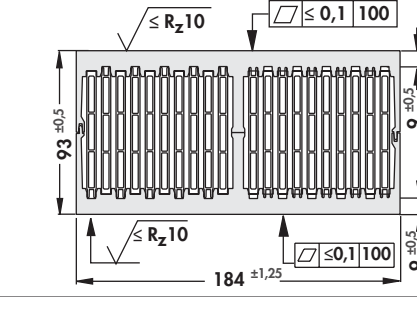
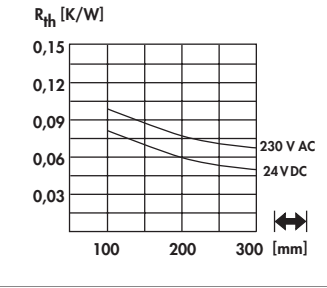
Cooling aggreg. in segment mount. → D 5 – 7
 Miniature cooling aggregates → D 9 – 11
 Protection grid for axial fans → D 36
 Thermal conductive material → E 2 – 29

Extruded heatsinks → A 22 – 83
 Cooling aggregates with radial fan → D 33 – 35
 Heatsinks with hollow fin profile → D 30
 Technical introduction → A 2 – 7

Cooling aggregates with axial fan

Hollow-fin cooling aggregates

- extremely low losses due to optimised hollow fin geometry
- effective heat dissipation
- compact construction with axial fans
- two opposite mounting surfaces are milled flat
- additional treatment upon customer's request
- other fan types and fan voltages on request

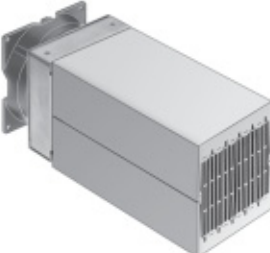
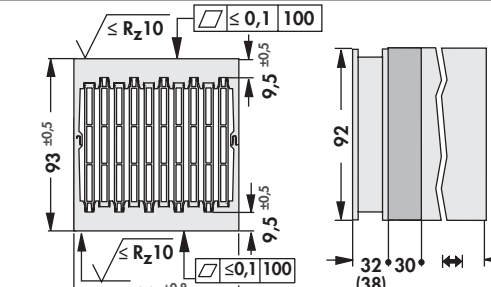
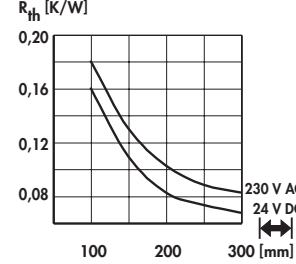

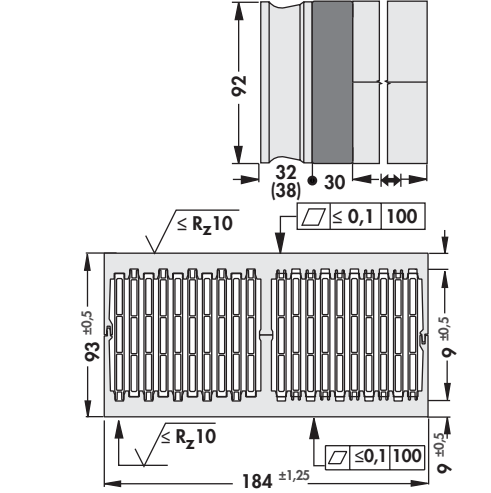
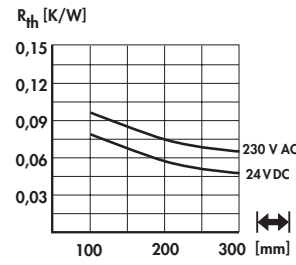

art. no. LA 21 ...					
without air flow chamber		art. no. LA 22 ...			
please indicate: ... < > 100 150 200 250 300 400 mm		... fan type 24 = 24 V DC 230 = 230 V AC			

Technical data of the fans

	... 24	... 230
type	ebmpapst, ball bearing	ebmpapst, ball bearing
dimensions	92 x 92 x 32 mm	92 x 92 x 38 mm
tension	24 V DC	230 V AC
power inout	5.3 W	12 W
max. air volume	107 m ³ /h	75 m ³ /h
temperature range	-20 °C ... +75 °C	-40 °C ... +75 °C
speed	4,000 min ⁻¹	2,700 min ⁻¹
noise level	47 dB(A)	37 dB(A)
weight	190 g	420 g
failure rate (L₁₀)	L ₁₀ > 57,500 h (40 °C)	L ₁₀ > 52,500 h (40 °C)

Hollow-fin cooling aggregates

- extremely low losses due to optimised hollow fin geometry
- effective heat dissipation
- compact construction with axial fans
- two opposite mounting surfaces are milled flat
- additional treatment upon customer's request
- other fan types and fan voltages on request

art. no. LA V 21 ...			
with air flow chamber			
art. no. LA V 22 ...			
with air flow chamber			
please indicate:	...  100 150 200 250 300 400 mm	... fan type 24 = 24 V DC 230 = 230 V AC	

Technical data of the fans

	... 24	... 230
type	ebmpapst, ball bearing	ebmpapst, ball bearing
dimensions	92 x 92 x 32 mm	92 x 92 x 38 mm
tension	24 V DC	230 V AC
power inout	5.3 W	12 W
max. air volume	107 m ³ /h	75 m ³ /h
temperature range	-20 °C ... +75 °C	-40 °C ... +75 °C
speed	4,000 min ⁻¹	2,700 min ⁻¹
noise level	47 dB(A)	37 dB(A)
weight	190 g	420 g
failure rate (L₁₀)	L ₁₀ > 57,500 h (40 °C)	L ₁₀ > 52,500 h (40 °C)

Cooling aggreg. in segment mount. → D 5 - 7
 Miniature cooling aggregates → D 9 - 11
 Protection grid for axial fans → D 36
 Thermal conductive material → E 2 - 29

Extruded heatsinks → A 22 - 83
 Cooling aggregates with radial fan → D 33 - 35
 Heatsinks with hollow fin profile → D 30
 Technical introduction → A 2 - 7

D 24

A

B

C

D

E

F

G

H

I

K

L


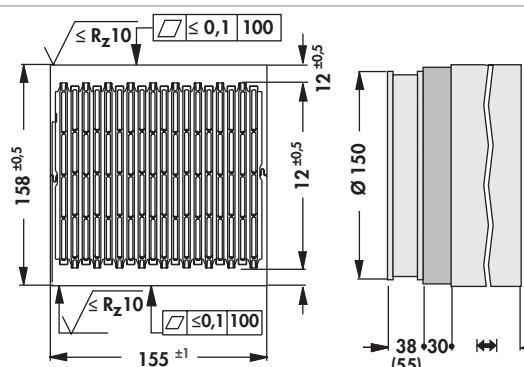
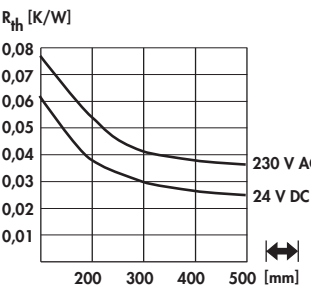
M

N

Cooling aggregates with axial fan

Hollow-fin cooling aggregates

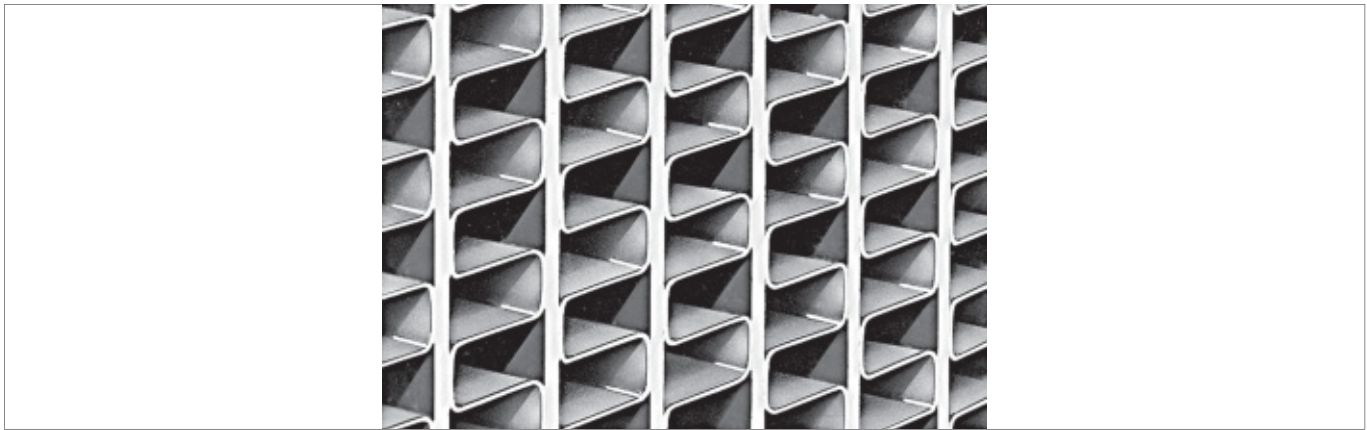
- extremely low losses due optimised hollow fin geometry
- especially effective heat dissipation
- compact construction with axial fans
- two opposite mounting surfaces are milled flat
- additional treatment upon customer's request
- other fan types and fan voltages on request

art. no.			
LA V 24 ...	with air flow chamber		
please indicate:	... $\left[\begin{array}{c} \leftarrow \rightarrow \\ \text{200 300 400 mm} \end{array} \right]$... fan type	24 = 24 V DC 230 = 230 V AC

Technical data of the fans

	... 24	... 230
type	ebmpapst, ball bearing, with grid	ebmpapst, ball bearing, with grid
dimensions	ø 150 x 38 mm	ø 150 x 55 mm
tension	24 V DC	230 V AC
power inout	19 W	47 W
max. air volume	420 m ³ /h	380 m ³ /h
temperature range	-25 °C ... +72 °C	-30 °C ... +60 °C
speed	3,350 min ⁻¹	2,700 min ⁻¹
noise level	59 dB(A)	60 dB(A)
weight	620 g	1,100 g
failure rate (L₁₀)	L ₁₀ > 75,000 h (40 °C)	L ₁₀ > 40,000 h (40 °C)

High performance cooling aggregate



- extremely low losses of air flow as compared to cooling aggregates with extruded aluminium
- compact dimensions, that means high performance density due to large heat-conducting surfaces
- maximum heat flow due to brazing or thermal adhesion
- high performance cooling aggregates are only effective with forced ventilation by means of the fan, but not with free convection
- other fan types and fan voltages on request

material: solder-plated aluminium sheet, thus minimal weight due to the thickness of the material

An optimised unit for any application can be produced from the wide range of existing components upon request. The specific capacity will be determined by a test run upon customer's request.

Technical data of the fans

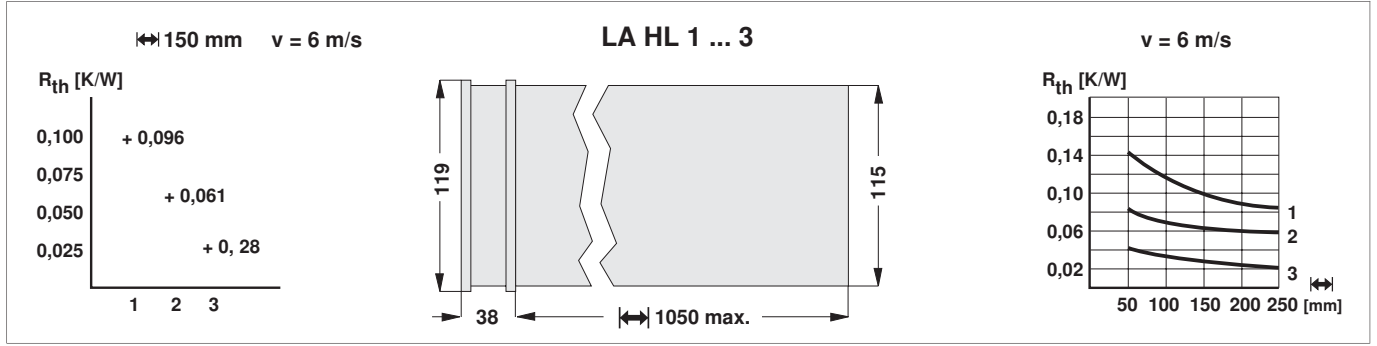
	... 230
type	ebmpapst, ball bearing
dimensions	119 x 119 x 38 mm
tension	230 V AC
power inout	19 W
max. air volume	160 m ³ /h
temperature range	-40 °C ... +85 °C
speed	2,650 min ⁻¹
noise level	47 dB(A)
weight	550 g
failure rate (L₁₀)	L ₁₀ > 37,500 h (40 °C)

A

Cooling aggregates with axial fan

B

High performance cooling aggregate



D

<p>art. no.</p>			
<p>LA HL 1 ...</p>	<p>without air flow chamber</p>		
<p>art. no.</p>			
<p>LA HL 2 ...</p>	<p>without air flow chamber</p>		
<p>art. no.</p>			
<p>LA HL 3 ...</p>	<p>without air flow chamber</p>		
<p>please indicate: ... $\left[\right]$ 100 150 200 250 300 400 mm</p>			

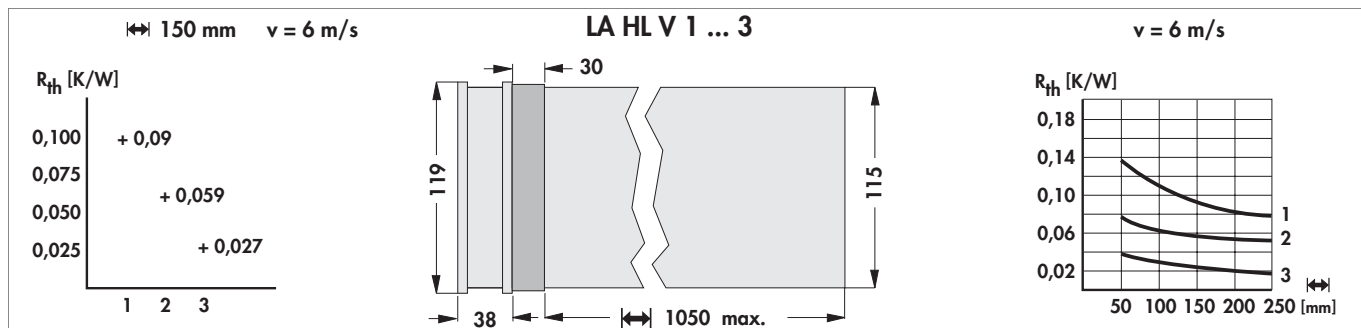
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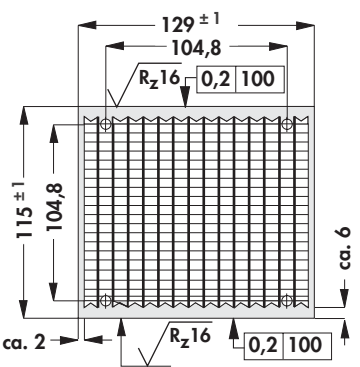
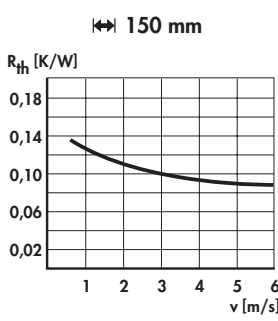

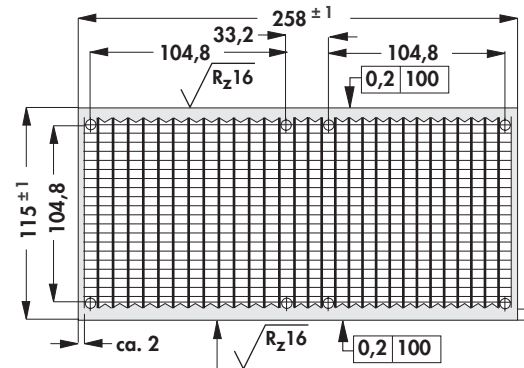

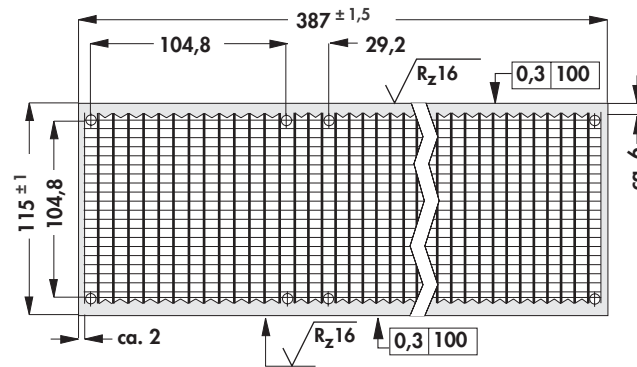
N

D 27

- | | |
|---------------------------------------------|------------------------------------------------|
| Cooling aggreg. in segment mount. → D 5 - 7 | Extruded heatsinks → A 22 - 83 |
| Miniature cooling aggregates → D 9 - 11 | Cooling aggregates with radial fan → D 33 - 35 |
| Protection grid for axial fans → D 36 | Heatsinks with hollow fin profile → D 30 |
| Thermal conductive material → E 2 - 29 | Technical introduction → A 2 - 7 |

High performance cooling aggregate



<p>art. no.</p> 	 
<p>LA HLV 1 ...</p>	<p>with air flow chamber</p>
<p>art. no.</p> 	
<p>LA HLV 2 ...</p>	<p>with air flow chamber</p>
<p>art. no.</p> 	
<p>LA HLV 3 ...</p>	<p>with air flow chamber</p>
<p>please indicate: ... v 100 150 200 250 300 400 mm</p>	

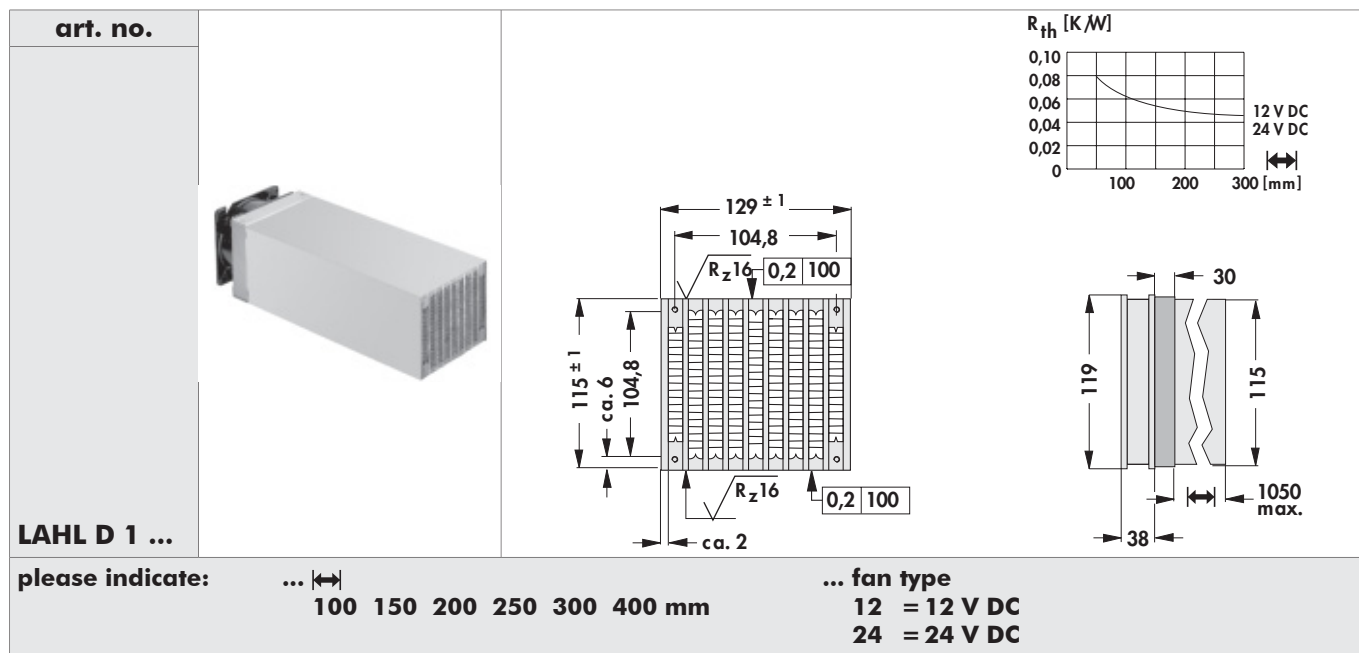
Cooling aggreg. in segment mount. → D 5 - 7
 Miniature cooling aggregates → D 9 - 11
 Protection grid for axial fans → D 36
 Thermal conductive material → E 2 - 29

Extruded heatsinks → A 22 - 83
 Cooling aggregates with radial fan → D 33 - 35
 Heatsinks with hollow fin profile → D 30
 Technical introduction → A 2 - 7

Cooling aggregates with axial fan

High performance cooling aggregate

- innovative, efficient heatsink design
- thick multiwall sheets for maximum heat dissipation
- specially formed laminated structures ensure optimum heat exchange with the air flow
- powerful mixed axial fan for highly efficient heat dissipation
- reduced noise output achieved by an optimised adaption of fan and heatsink
- additional treatment and modifications upon customer's request
- double and triple versions upon request



Technical data of the fans

	... 12	... 24
type	ebmpapst, ball bearing, with grid	ebmpapst, ball bearing, with grid
dimensions	119 x 119 x 38 mm	119 x 119 x 38 mm
tension	12 V DC	24 V DC
power inout	21 W	21 W
max. air volume	275 m ³ /h	275 m ³ /h
temperature range	-20 °C ... +65 °C	-20 °C ... +65 °C
speed	6,000 min ⁻¹	6,000 min ⁻¹
noise level	60 dB(A)	60 dB(A)
weight	455 g	455 g
failure rate (L₁₀)	L ₁₀ > 70,000 h (20 °C) L ₁₀ > 40,000 h (60 °C)	L ₁₀ > 70,000 h (20 °C) L ₁₀ > 40,000 h (60 °C)

High-performance heatsinks

High performance heatsinks with hollow-fin profile

- high performance heatsinks for fan operation
- exclusively for forced convection
- preferably for radial or tangential fans
- hollow fin geometry optimises the air flow
- particularly effective heat dissipation
- milled flat base (except length 1000 mm)

art. no.		<p>$R_{th} [K/W] \quad v = 5 \text{ m/s}$</p>
SK 497 ...		
art. no.		<p>$R_{th} [K/W] \quad v = 5 \text{ m/s}$</p>
SK 498 ...		
please indicate:	... 150 200 250 300 1000 mm	... surface SA = black anodised AL = raw degreased aluminium

	<p>$v = 5 \text{ m/s}$</p> <p>$R_{th} [K/W]$</p>			
art. no.	number of fins	dim. [mm]		
		A	B	C
SK 440 ...	15	84 ± 1	200 ± 1.2	16
SK 458 ...	19	84 ± 1	250 ± 1.4	16
SK 441 ...	23	84 ± 1	300 ± 1.6	16
SK 461 ...	31	88 ± 1	400 ± 2	20
please indicate:	... 150 200 300 1000 mm	... surface SA = black anodised AL = raw degreased aluminium		

High capacity cooling aggregat. → D 26 – 29
 Cooling aggregates with radial fan → D 33 – 35
 Heatsinks with hollow fin profile → D 30 – 31
 Hollow-fin cooling aggregates → D 15 – 25

Extruded heatsink-cooling aggregat. → D 14
 Cooling aggreg. in segment mount. → D 5
 Miniature cooling aggregates → D 9 – 11
 Technical introduction → A 2 – 7

D 30

A

B

C

D

E

F

G

H

I

K

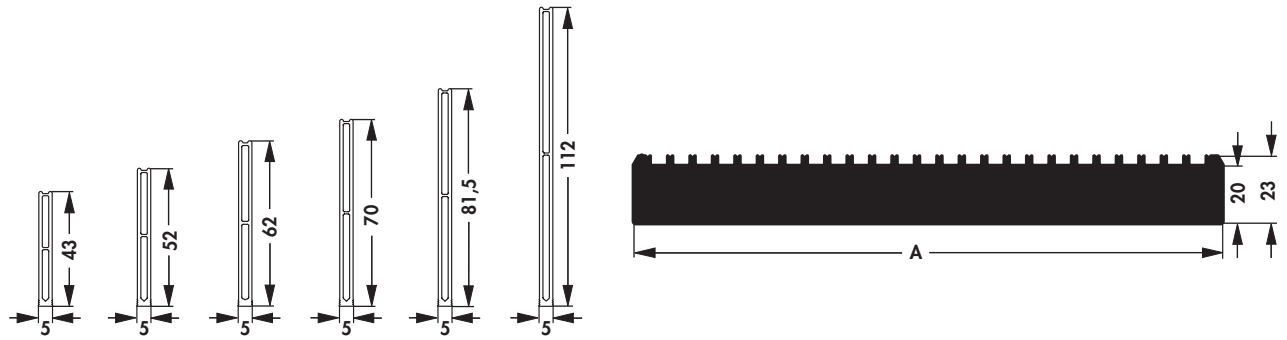
L

M

N

High performance heatsinks with hollow-fin profile

- high capacity heatsinks for fan operation preferably for radial- or tangential fan motors
- universal modular design
- exclusively for forced convection
- flow-optimized hollow fin geometry



art. no.	number of fins	dim. [mm] A
SK 603 ...	25	200
SK 604 ...	32	250
SK 605 ...	39	300
SK 606 ...	45	350
SK 607 ...	52	400
SK 608 ...	65	500

please indicate: ...

430 = 430 mm
520 = 520 mm
620 = 620 mm
700 = 700 mm
815 = 815 mm
1120 = 1120 mm

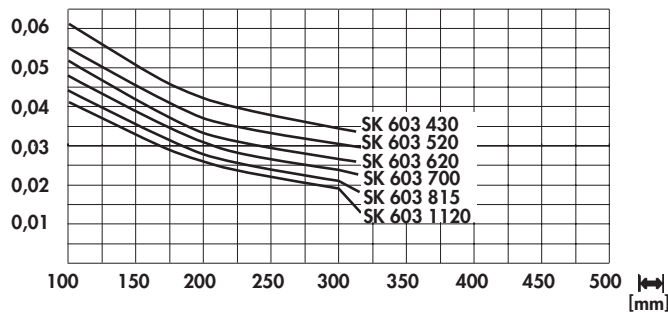
... \longleftrightarrow 200 300 400 500 mm

... surface

SA = black anodised
ME = natural colour anodised

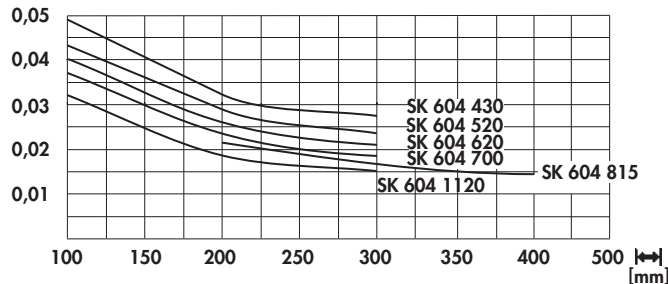
SK 603

R_{th} [K/W] $v = 11$ m/s



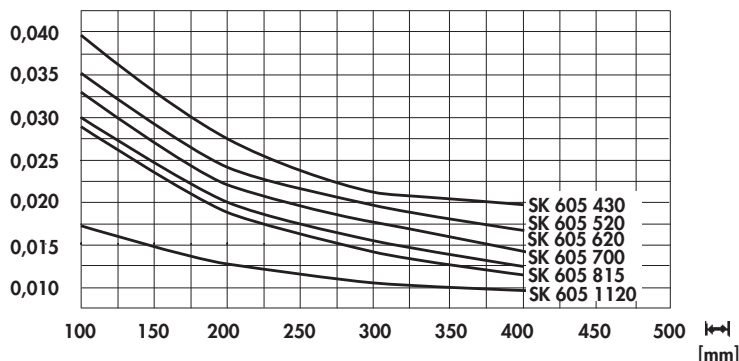
SK 604

R_{th} [K/W] $v = 11$ m/s



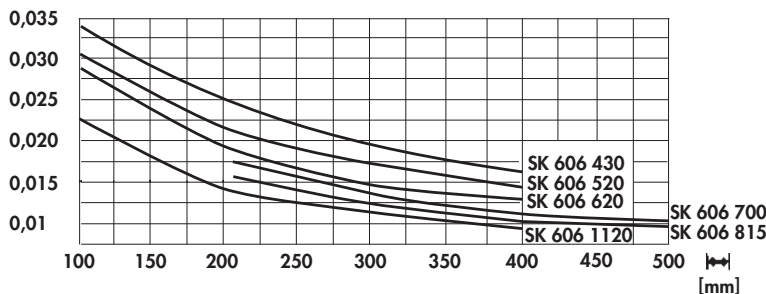
SK 605

R_{th} [K/W] $v = 11$ m/s



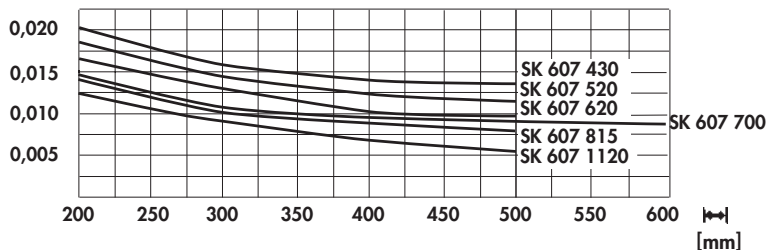
SK 606

R_{th} [K/W] $v = 11$ m/s



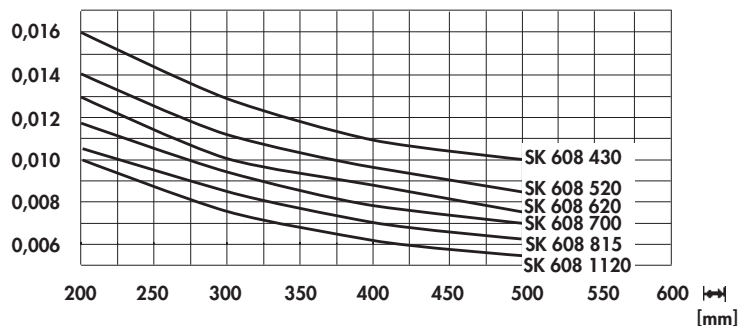
SK 607

R_{th} [K/W] $v = 11$ m/s



SK 608


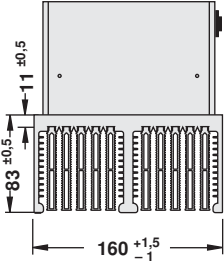
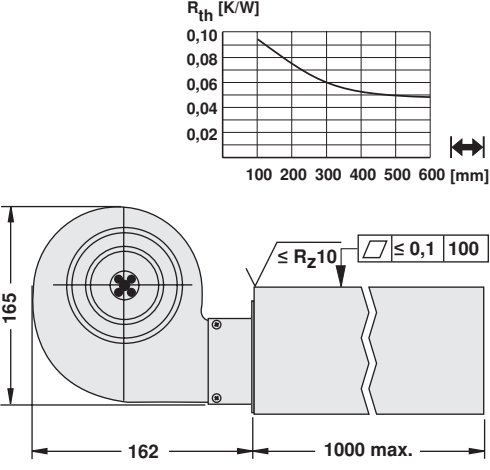

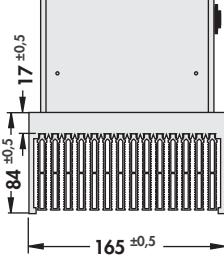
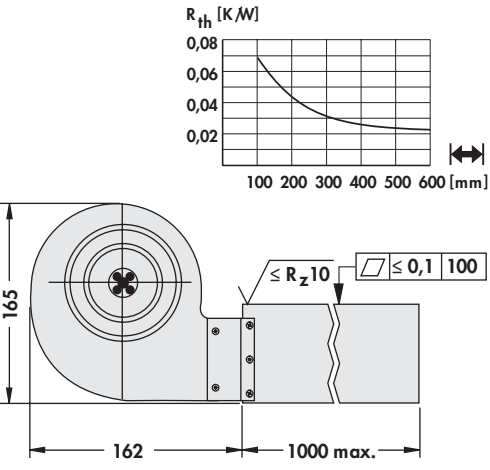
R_{th} [K/W] $v = 11$ m/s



Cooling aggregates with radial fan

High performance cooling aggregate

- optimised air flow due to hollow fin geometrie
- very good thermal performance
- optimized high performance construction with radial fan
- milled flat mounting surface for semiconductor
- cover plate for fin side upon request
- additional customized treatment upon request
- fan condenser: **art. no. LAHLR K 2**

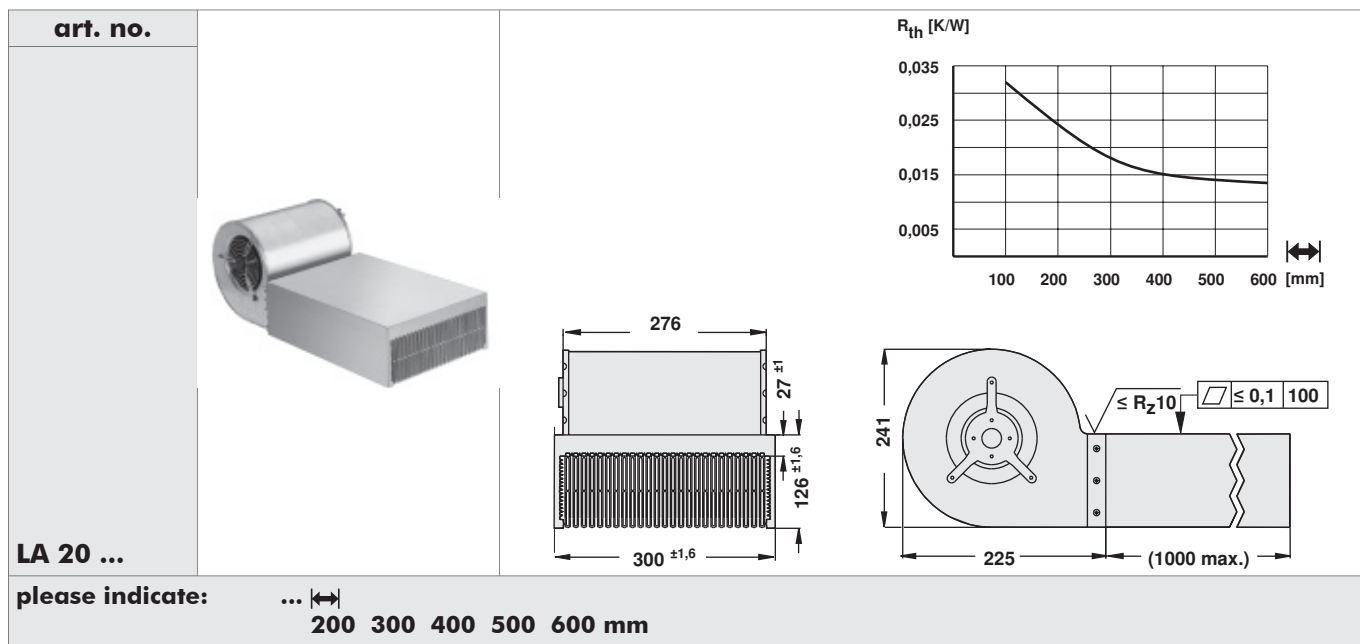
<p>art. no.</p> <p>LA 25 ...</p>			 <p>R_{th} [K/W]</p> <p>100 200 300 400 500 600 [mm]</p> <p>$\leq R_z 10$ $\square \leq 0,1$ 100</p>
<p>art. no.</p> <p>LA 26 ...</p>			 <p>R_{th} [K/W]</p> <p>100 200 300 400 500 600 [mm]</p> <p>$\leq R_z 10$ $\square \leq 0,1$ 100</p>
<p>please indicate: ... $\leftarrow \rightarrow$ 200 300 400 500 600 mm</p>			

Technical data of the fans

	... 230
type	ebmpapst, radial blower with grid, double sided absorbtion
bearing type	ball bearing
discharge air flow	435 m ³ /h
rotation speed	1,950 min ⁻¹
power inout	87 W
current consumption	0.39 A
temperature range	-25 °C ... +40 °C
circuit voltage	230 V AC
motor condenser	2 μ F / 400 V
noise level	58 dB(A)
weight	1,500 g

High performance cooling aggregate

- optimised air flow due to hollow fin geometrie
- very good thermal performance
- optimized high performance construction with radial fan
- milled flat mounting surface for semiconductor
- cover plate for fin side upon request
- additional customized treatment upon request
- fan condenser: **art. no. LA 20 K 6**



Technical data of the fans

	... 230
type	ebmpapst, radial blower with grid, double sided absorbtion
bearing type	ball bearing
discharge air flow	1,310 m ³ /h
rotation speed	1,350 min ⁻¹
power inout	185 W
current consumption	0.81 A
temperature range	-25 °C ... +70 °C
circuit voltage	230 V AC
motor condenser	6 μF
noise level	64 dB(A)
weight	5,900 g

A

Cooling aggregates with radial fan


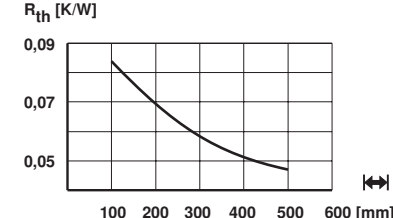
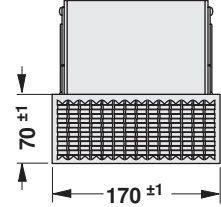
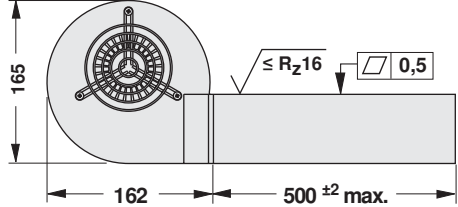
B

High performance cooling aggregate

- other lengths upon request
- fan condenser: **art. no. LAHLR K 2**

C

D

art. no.			
LAHLR 1 500			
construction:	solid frame construction with inner animation and carrier plates, thermally connected by soldering		
weight:	6,300 g		
material:	aluminium alloy		
surface:	blanc, milled flat		

E

F

Technical data of the fans

	... 230
type	ebmpapst, radial blower with grid, double sided absorption
bearing type	ball bearing
discharge air flow	435 m ³ /h
rotation speed	1,950 min ⁻¹
power inout	87 W
current consumption	0.39 A
temperature range	-25 °C ... +40 °C
circuit voltage	230 V AC
motor condenser	2 μF / 400 V
noise level	58 dB(A)
weight	1,500 g

G

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D 35

Heatsinks for Solid State Relay
 Mounting for TO 3 angle
 High capacity heatsinks
 Cooling aggreg. in segment mount.

→ A 12
 → A 123 – 126
 → A 57 – 58
 → D 5 – 7

Miniature cooling aggregates
 Special heatsink design
 Hole pattern
 Technical introduction

→ D 9 – 12
 → 135 – 136
 → A 21
 → A 2 – 7

Protection grid for fans

- protection against contact as per EN 294
- aerodynamic construction
- minimized noise modification
- only low modification of the air flow

art. no.	suitable for cooling aggregate
LAGI 40	LAM 2/ LAM 4/ LAM 4 K
art. no.	suitable for cooling aggregate
LAGI 60	LAM 1/ LA (M) 6/ LA (M) 7/ LA (M) 8
art. no.	suitable for cooling aggregate
LAGI 80	LA (M) 9/ LA (M) 10/ LA (M) 11
art. no.	suitable for cooling aggregate
LAGI 92	LA 2/ LA (M) 21/ LA (M) 22
art. no.	suitable for cooling aggregate
LAGI 119	LA 1/ LA 4/ LA 5/ LA (M) 14/ LA (M) 15/ LA (M) 17/ LA (M) 18/ LA HL (M) 1/ LA HL (M) 2/ LA HL (M) 3 / LA HL D1
material:	steel wire, nickel-plated

High capacity cooling aggregat.
Cooling aggregates with radial fan
Heatsinks with hollow fin profile
Hollow-fin cooling aggregates

→ D 26 – 29
→ D 33 – 35
→ D 30
→ D 15 – 25

Extruded heatsink-cooling aggregat. → D 14
Cooling aggreg. in segment mount. → D 5
Miniature cooling aggregates → D 9 – 11
Technical introduction → A 2 – 7

D 36

A

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Thermal conductive material

- large standard programme for thermal conductive pastes and glues, silicone-, GEL-, and foam foils (Gap Filler), cuts, tapes, tubes and caps
- thermal conductive electrically insulating foils
- customer specific productions made in our in-house punching shop



Guide rails for PCBs

- for horizontal and vertical assembly
- suitable for sheet thicknesses of 0.5 - 1.85 mm
- with and without lock mechanism
- slim and wide designs
- screwable and snapable versions, extractors with locking pin fixing
- special designs upon request



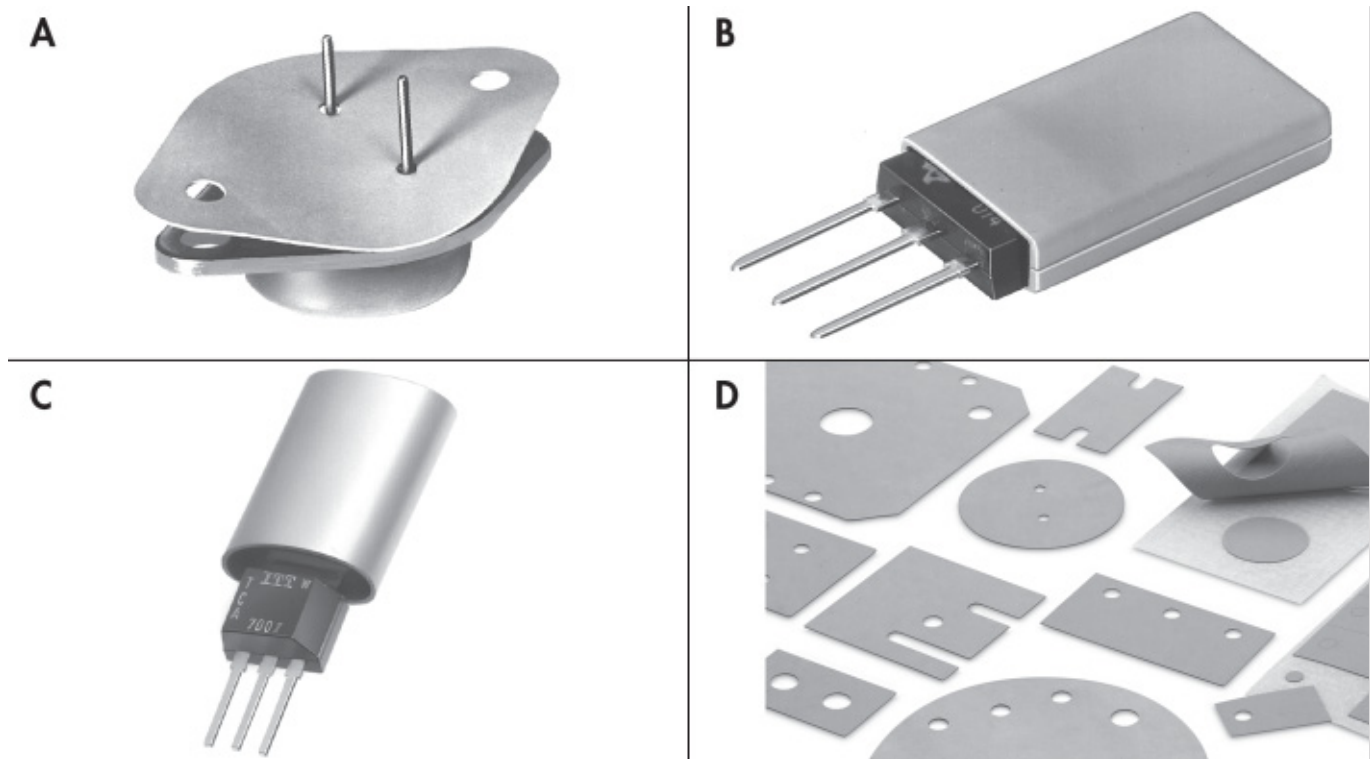
Mounting material for semiconductors

- mounting disc for discrete devices such as transistors, capacitors and LEDs
- electrically insulating mounting of the transistors
- simple and fast assembly
- insulating clamping pins for various semiconductors for increasing the dielectric strength
- cover and insulating cap for transistors



Mounting material for mechanical components

- distance bolts made of metal and plastics with inner or outer thread
- clamp mounting made of aluminium and plastics for mounting the heatsinks and cases on the mounting rail acc. to DIN EN 50022
- anti-vibration device for minimizing the noise and resonance



- A:** washer
- B:** insulating cap
- C:** insulating tube
- D:** cuts

Our thermal conduction wafers effect following advantages:

- good surface contact as material is flexible
- reduced production costs as a matter of mounting without thermal conducting paste (clean and fast)
- spring-back of the elastic material protects the transistor against damage
- free of any toxic substances

Customer specific versions:

- punching and cuts of our thermal conductive foil according to drawing
- sold per sheet or by the meter
- other foils, plastics, papers, etc. upon request

The thermal details refer to an area of 1 inch² (6.45 cm²).

– other cuttings on request

<p>TO 3</p>	<p>TO 3 M</p>	<p>TO 3/4</p>	
<p>TOP 3</p>	<p>TOP 3/1</p>	<p>TOP 3 PF</p>	<p>TO 218 Multiwatt</p>
<p>TO 220</p>	<p>TO 247</p>	<p>TO 247/1</p>	<p>TO 3158</p>
<p>4 x TO220</p>	<p>TO 126</p>	<p>SOT 32</p>	<p>TO 3159</p>

Thermally conductive foil made of siliconelastomer

foil type	foil WS	foil WG	foil WK	foil WB
material	silicone foil, standard	silicone foil, GF reinforced	silicone foil, GF reinforced, one-sided self-adhesive	silicone foil, GF reinforced

Washer

TO-3	WS 3	WG 3	WK 3	WB 3
TO-3 M	WS 3 M			
TO-3/4	WS 3/4		WK 3/4	
TO-3 PF	WS 3 P	WG 3 P	WK 3 P	WB 3 P
3158	WS 3158		WK 3158	WB 3158
TOP 3	WS TOP 3			
TOP 3/1	WS TOP 3/1		WK TOP 3/1	
TO 218 (Multiwatt)		WG 218		
TO 247	WS 247		WK 247	
TO 220	WS 220	WG 220	WK 220	WB 220
4 X TO 220	WS 4 220			
3159	WS 3159		WK 3159	WB 3159
TO 126			WK 126	
SOT 32			WK 32	
TO 247/1	WS 247/1			

Insulating tube

TO-220 Ø 11 mm, length 25 mm	WSC-220			
TO-3 PF Ø 13.5 mm, length 25 mm	WSC-3 P			
TO-247 Ø 14.5 mm, length 30 mm	WSC-247			

Insulating tube as meterpiece

TO-220 Ø 11 mm	WSM-220			
TO-3 PF Ø 13.5 mm	WSM-3 P			

Tape material (width)

24 mm			WKT 24	
30 mm	WST 30			WBT 30
36 mm	WST 36			
85 mm	WST 85			
300 mm		WGT 300	WKT 300	WBT 300

	Foil WS	Foil WG	Foil WK	Foil WB
material thickness	0.3 mm	0.2 mm		0.15 mm
material hardness	75 Shore A	87 Shore A		90 Shore A
dielectric strength	10 kV	6.5 kV		3 kV
thermal resistance	0.4 K/W	0.42 K/W	0.45 K/W	0.34 K/W
thermal conductivity	1.22 W/m·K	1.13 W/m·K	0.92 W/m·K	1.43 W/m·K
insulation resistance	2.9·10 ¹⁵ Ω cm	5.7·10 ¹⁵ Ω cm		1.6·10 ¹⁵ Ω cm
extensibility	100 %	2 %		4 %
temperature range	-60 °C ... +180 °C			
class of flammability	UL 94 V-0			

Thermal conductive foil
GEL thermal conductive foils
Thermal conductive paste
Thermal conductive glue

→ E 7 – 10
 → E 11 – 13
 → E 19 – 20
 → E 21 – 22

Heatsinks for PCB
Heatsinks for BGA
Extruded heatsinks
Technical introduction

→ A 89 – 111
 → B 17 – 20
 → A 22 – 83
 → A 2 – 7

E 4

A

Insulating cap

B

C

D

E

F

G

H

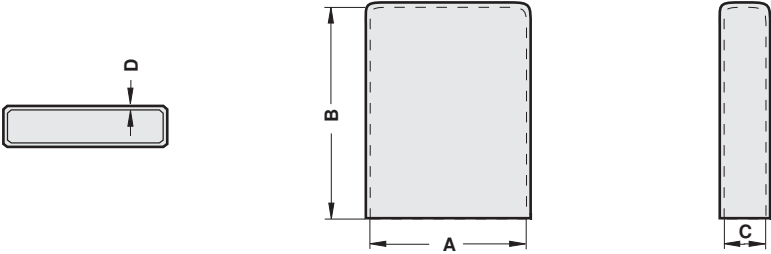
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art. no.	type	dim. [mm]			
		A	B	C	D
WSI 220 210	TO 220	11	21.0	5.0	0.9
WSI 220 225	TO 220	11	22.5	5.0	0.3
WSI TOP 3 235	TOP 3	18	23.5	5.0	0.9
WSI TOP 3 280	TO 3 PL/ TO 247	16	28.0	5.0	0.3
WSI TO 3 PL	TO 3 PL / TO 247	22	34.0	5.5	0.9

	Foil WSI
material thickness	0.9 mm
material hardness	75 Shore A
dielectric strength	15 kV
thermal resistance	0.96 K/W
thermal conductivity	1.22 W/m·K
insulation resistance	$2.9 \cdot 10^{15} \Omega \text{ cm}$
extensibility	100 %
temperature range	-60 °C ... +180 °C
class of flammibility	UL 94 V-0

E 5

Thermal conductive foil
GEL thermal conductive foils
Thermal conductive paste
Thermal conductive glue

→ E 7 – 10
 → E 11 – 13
 → E 19 – 20
 → E 21 – 22

Heatsinks for PCB
Heatsinks for BGA
Extruded heatsinks
Technical introduction

→ A 89 – 111
 → B 17 – 20
 → A 22 – 83
 → A 2 – 7

A

B

C

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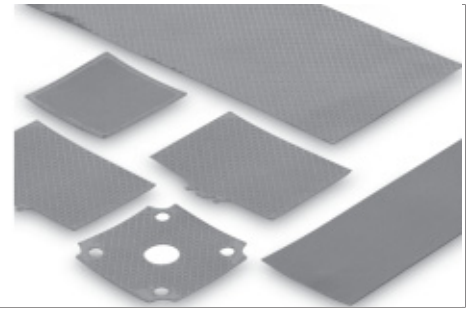
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Thermally conductive foil both sides adhesive

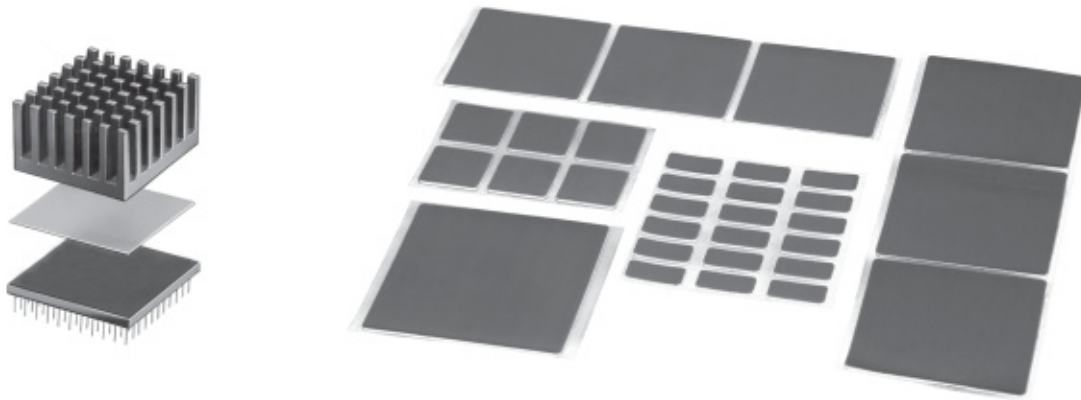


- good thermal characteristics
- double-sided adhesive layers
- replaces mechanical fastenings
- cuttings and cut-outs upon request

art. no.	width [mm]	type of delivery	art. no.	width [mm]	type of delivery
WLFT 404 R25	25	sold by the meter	WLFT 414 R100	100	sold by the meter
WLFT 404 R50	50	sold by the meter	WLFT 414 R200	200	sold by the meter
WLFT 404 R100	100	sold by the meter	WLFT 405 R25	25	sold by the meter
WLFT 404 R200	200	sold by the meter	WLFT 405 R50	50	sold by the meter
WLFT 414 R25	25	sold by the meter	WLFT 405 R100	100	sold by the meter
WLFT 414 R50	50	sold by the meter	WLFT 405 R200	200	sold by the meter

art. no.	dimensions [mm]	type of delivery	art. no.	dimensions [mm]	type of delivery
WLFT 404 100x100	100 x 100	plate	WLFT 414 200x200	200 x 200	plate
WLFT 404 100x200	100 x 200	plate	WLFT 405 100x100	100 x 100	plate
WLFT 404 200x200	200 x 200	plate	WLFT 405 100x200	100 x 200	plate
WLFT 414 100x100	100 x 100	plate	WLFT 405 200x200	200 x 200	plate
WLFT 414 100x200	100 x 200	plate			

	WLFT 404	WLFT 414	WLFT 405
description	insulating, double sided adhesive		non insulating, double-sided adhesive
overall thickness	0.127 mm ±0.03		0.15 mm ±0.03
truss material	polyimide (Kapton MT) 0.025 mm		aluminium foil 0.05 mm
glue layer	acrylate (pressure sensitive) double-sided		
thermal conductivity	0.37 W/m·K		0.5 W/m·K
specific thermal resistance	3.7°C cm ² /W		3.4°C cm ² /W
temperature range	-30 °C ... +125 °C		
holding force (overlapping)	0.86 MPa		0.93 MPa
holding force (shear rate)	Al₂O₃ 150 °C 0.34 [MPa]/ Al 150 °C 0.345 [MPa]/ Cu 25 °C 0.828 [MPa]/ Al₂O₃ 25 °C 1.17 [MPa]/ Al 25 °C 0.897 [MPa]/ Cu 150 °C 0.31 [MPa]	Al 150 °C 0.345 [MPa]/ Al 25 °C 0.897 [MPa]	Al 150 °C 0.38 [MPa]/ Al₂O₃ 150 °C 0.41 [MPa]/ Cu 25 °C 1.1 [MPa]/ Al₂O₃ 25 °C 1.0 [MPa]/ Al 25 °C 0.86 [MPa]/ Cu 150 °C 0.48 [MPa]
dielectric strength	5 kV (AC)		
class of flammability	UL 94 V-0		

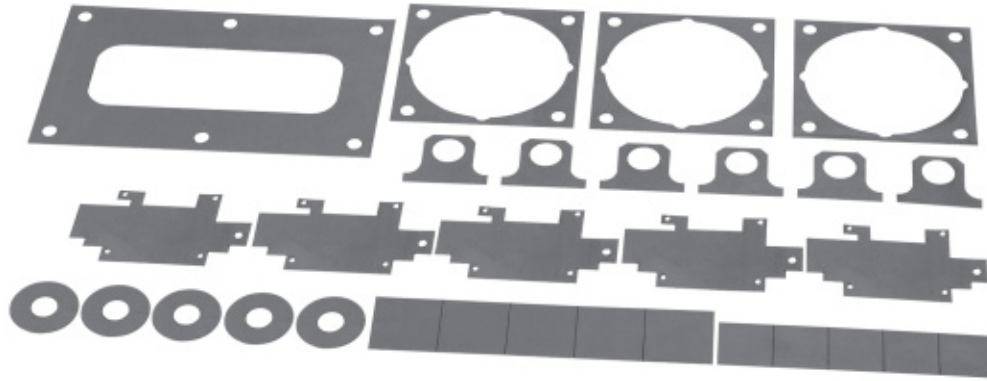


- double sided adhesive layer
- optimal adhesion of different substrates
- very good thermal conductivity, electrical insulating
- easy handling due to double sided protection foil
- optimized surface moistening and excellent impact strength
- cutouts and different punchings according to customer drawing

art. no.	type of delivery
WLFT 8805	plates, usable area 300 x 200 mm
WLFT 8810	plates, usable area 300 x 200 mm
WLFT 8815	plates, usable area 300 x 200 mm
WLFT 8820	plates, usable area 300 x 200 mm
WLFT 8940	plates, usable area 300 x 200 mm

	WLFT 8805	WLFT 8810	WLFT 8815	WLFT 8820	WLFT 8940
description	double sided adhesive, filled acrylic polymer				
overall thickness	0.13 mm	0.25 mm	0.38 mm	0.5 mm	0.19 mm
filling material	ceramic				
protection cover	silicone treated polyester, 37.5 - 50 µm				
thermal impedance	3.1 °C cm ² /W	5.7 °C cm ² /W	7.6 °C cm ² /W	9.7 °C cm ² /W	
thermal conductivity	0.6 W/m·K				0.9 W/m·K
temperature range	permanent up to 100 °C				permanent up to 150 °C
volume resistivity	5.2 x 10 ¹¹ Ωcm	3.9 x 10 ¹¹ Ωcm	3.8 x 10 ¹¹ Ωcm		2.5 x 10 ¹³ Ωcm
dielectric strength	37 kV/mm				55 kV/mm
peel strength at ambient temperature and 72h	5.8 N/cm	8.3 N/cm	9.8 N/cm	11.9 N/cm	6 N/cm
class of flammability	UL 746 C				UL 94 V-0

High thermoconducting graphite foils

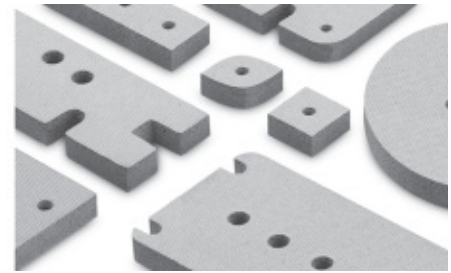


- high-compressed anisotropic natural graphite
- very good thermal characteristics
- optimal for heat spreading
- high operating temperature range
- different material thicknesses and coatings upon request
- customer specified cuttings and stampings acc. to drawing

art. no.	width [mm]	type of delivery	art. no.	width [mm]	type of delivery
WLFG 9010 R 25	25	sold by the meter	WLFG 9020 R 25	25	sold by the meter
WLFG 9010 R 50	50	sold by the meter	WLFG 9020 R 50	50	sold by the meter
WLFG 9010 R 100	100	sold by the meter	WLFG 9020 R 100	100	sold by the meter
WLFG 9015 R 25	25	sold by the meter	WLFG S 900 K R 25	25	sold by the meter
WLFG 9015 R 50	50	sold by the meter	WLFG S 900 K R 50	50	sold by the meter
WLFG 9015 R 100	100	sold by the meter	WLFG S 900 K R 100	100	sold by the meter

	WLFG 9010	WLFG 9015	WLFG 9020	WLFG S 900 K
description	base film made of graphite, electrically conductive	graphite foil, electrically conductive		
version	single sided adhesive coating			
overall thickness	0.15 mm	0.2 mm	0.25 mm	0.175 mm
thermal resistance	0.09 K/W	0.07 K/W	0.23 K/W	0.08 K/W
thermal impedance	36 °C mm ² /W	28.8 °C mm ² /W	72 °C mm ² /W	34 °C mm ² /W
thermal conductivity z (x/y)	5,5 (55) W/m·K	6 (55) W/m·K	4 (55) W/m·K	7,5 (>450) W/m·K
temperature range	-40 °C ... +500 °C			
hardness range	30 Shore D			
tensile strength	5.5 N/mm ²	6 N/mm ²	5.5 N/mm ²	10 N/mm ²
elongation at break	10 %			5 %
tightness	1 g/cm ³			>1.6 g/cm ³
class of flammability	UL 94 V-0			

Heat conductive silicon foam foil



- elastomer foam with closed cell structure
- good heat conductor e.g. between components, heatsinks and casing parts
- electrical insulating
- can be compressed even with a low contact pressure
- absorbs shocks and vibrations

art. no.	material thickness [mm]
WSF 16	1.60 ±0.4
WSF 32	3.20 ±0.8
WSF 635	6.35 ±1.2
WSFS 635	6.35 ±1.2

Thermal resistance at 3.2 mm material thickness:

compression %	contact	10	25	50
contact pressure PSI	> 1	5	12	34
R _{th} K/W (1 in ² x 3.2 mm)	6	4.5	2.5	1
heat conductivity W/mK	0.3	0.4	0.45	0.65

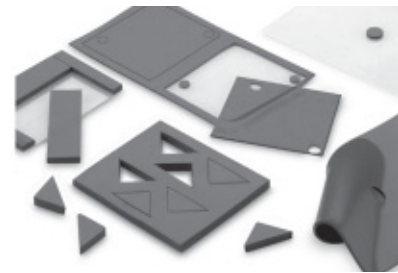
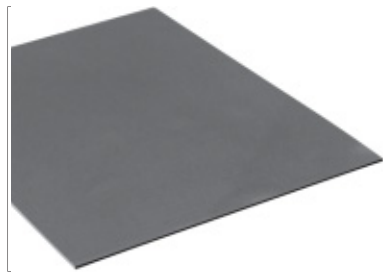
- **WSFS 635** double sided adhesive and **WSF** adhesive upon request
- according to NASA gas emission requirements

	WSF	WSFS 635
version	no adhesive	one-sided self-adhesive
thermal conductivity	0.108 W/m·K (substrate)	
hardness range	13 Shore A	
compression, 25%	18 PSI	
temperature range	-62 °C ... +205 °C	
extensibility	150 %	
tensile strength	120 PSI	
dielectric strength	4 kV/mm	
tightness	1.118 g/cm ³	
class of flammability	UL 94 V-1 (at thickness ≥3.2 mm)	
type of delivery	plates 914 x 914 mm/ cuttings on customer's requirements	

A

Gel thermal conducting foil

B



C

- highly heat-conductive silocon foil
- smooth, elastic and compressible
- equals uneven surfaces very well (Gap-Filler)

D

art. no.	material thickness [mm]	R_{th} [°C in ² /W]	art. no.	material thickness [mm]	R_{th} [°C in ² /W]
GEL 05	0.5 ±0.1	0.57	GEL G 05	0.5 ±0.1	0.67
GEL 10	1.0 ±0.2	1.02	GEL G 1	1.0 ±0.2	1.11
GEL 15	1.5 ±0.2	1.45	GEL G 15	1.5 ±0.2	1.66
GEL 20	2.0 ±0.3	1.71	GEL G 2	2.0 ±0.3	1.92
GEL 25	2.5 ±0.3	2.11	GEL G 25	2.5 ±0.3	2.40
GEL 30	3.0 ±0.3	2.34	GEL G 3	3.0 ±0.3	2.68
GEL 35	3.5 ±0.3	2.59	GEL G 35	3.5 ±0.3	2.75
GEL 40	4.0 ±0.4	2.79	GEL G 4	4.0 ±0.4	2.92
GEL 45	4.5 ±0.4	3.03	GEL G 45	4.5 ±0.4	3.19
GEL 50	5.0 ±0.5	3.30	GEL G 5	5.0 ±0.5	3.37

E

F

G

H

I

K

L

M

N

	GEL	GEL G 05 - 25	GEL G 3 - 5
version	standard	polyamide film mash reinforced, single sided adhesive coating	
thermal conductivity	1.5 W/m·K		
volume resistivity	>1·10 ⁶ MΩ/m		
hardness range	< 49 Shore 00		
temperature range	-60 °C ... +200 °C		
extensibility	100 %	60 %	
dielectric constant	5.8 [50 Hz]/ 5.6 [1 KHz]/ 5.5 [1 MHz]		
dielectric loss factor	0.048 [50 Hz]/ 0.015 [1 KHz]/ 0.003 [1 MHz]		
dielectric strength	14 kV/mm (AC)	8 kV/mm (AC)	
tightness	2.6 g/cm ³		
class of flammability	UL 94 V-0	UL 94 V-1	UL 94 V-0
type of delivery	on both sides covered with protective foil/ plates, usable area 300 x 200 mm/ cuttings on customer's requirements		

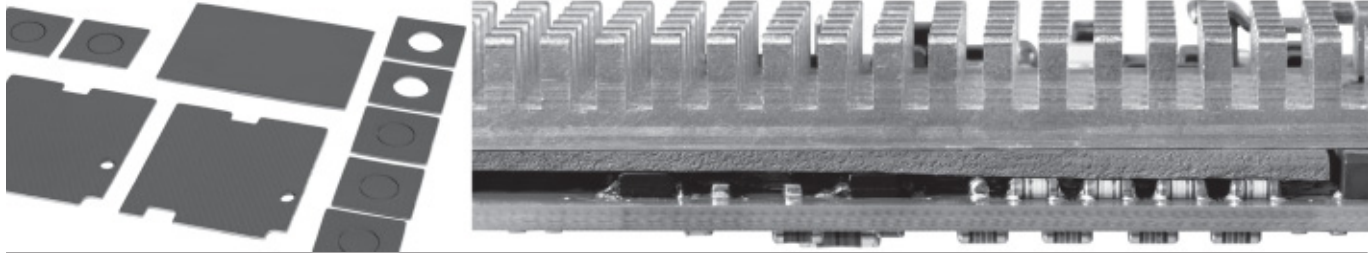
E 11
Thermal conductive material
GEL thermal conductive foils
Thermal conductive paste
Thermal conductive glue

 → E 2 – 5
 → E 11 – 13
 → E 19 – 20
 → E 21 – 22

Kapton insulator washers
Heatsinks for PGA
Heatsinks for BGA
Technical introduction

 → E 14
 → B 11 – 16
 → B 17 – 20
 → A 2 – 7

Gel thermal conducting foil



- GEL thermal conductive foils with very good thermal characteristics
- for balancing non-planarities and differences in components (GAP Filler)
- soft, elastic and compressible
- customer specific cuts and punchings according to drawing

art. no.	material thickness [mm]	R _{th} [°C in ² /W]	R _{th} [°C cm ² /W]	art. no.	material thickness [mm]	R _{th} [°C in ² /W]	R _{th} [°C cm ² /W]
GEL 28 05	0.5 ±0.1	0.27	1.77	GEL 28 G 05	0.5 ±0.1	0.32	2.05
GEL 28 10	1.0 ±0.2	0.44	2.87	GEL 28 G 10	1.0 ±0.2	0.55	3.56
GEL 28 15	1.5 ±0.2	0.68	4.40	GEL 28 G 15	1.5 ±0.2	0.76	4.89
GEL 28 20	2.0 ±0.3	0.86	5.57	GEL 28 G 20	2.0 ±0.3	1.02	6.56
GEL 28 25	2.5 ±0.3	1.12	7.24	GEL 28 G 25	2.5 ±0.3	1.21	7.83
GEL 28 30	3.0 ±0.3	1.26	8.10	GEL 28 G 30	3.0 ±0.3	1.35	8.74
GEL 28 35	3.5 ±0.3	1.41	9.12	GEL 28 G 35	3.5 ±0.3	1.48	9.56
GEL 28 40	4.0 ±0.3	1.56	10.06	GEL 28 G 40	4.0 ±0.3	1.79	11.57
GEL 28 50	5.0 ±0.3	1.80	11.61	GEL 28 G 50	5.0 ±0.3	1.99	12.85

	GEL 28	GEL 28 G
version	standard	polyamide film mesh reinforced
thermal conductivity	2.8 W/m·K	
volume resistivity	3·10 ⁴ MΩ/m	2·10 ⁴ MΩ/m
hardness range	45 Shore 00	52 Shore 00
temperature range	-60 °C ... +200 °C	
extensibility	64 %	32 %
dielectric constant	6.2 [50 Hz] / 6 [1 kHz] / 6 [1 MHz]	
dielectric loss factor	0.038 [50 Hz] / 0.007 [1 kHz] / 0.001 [1 MHz]	
dielectric strength	7 kV/mm	10 kV/mm
tightness	2.7 g/cm ³	
class of flammability	UL 94 V-0	
type of delivery	on both sides covered with protective foil/ plates, usable area 300 x 200 mm/ other dimensions upon request	

Thermal conductive material
GEL thermal conductive foils
 Thermal conductive paste
 Thermal conductive glue

→ E 2 – 5
 → E 11 – 13
 → E 19 – 20
 → E 21 – 22

Kapton insulator washers
Heatsinks for PGA
Heatsinks for BGA
 Technical introduction

→ E 14
 → B 11 – 16
 → B 17 – 20
 → A 2 – 7

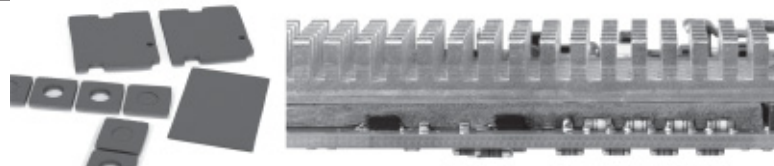
E 12

Gel thermal conducting foil

- GEL silicone foils with especially high thermal conductivity
- balances non-planarities and differences in components (GAP Filler)
- soft, elastic and compressible
- cuts, punchings and special designs according to customer specifications

art. no.	material thickness [mm]	R _{th} [°C in ² /W]	R _{th} [°C cm ² /W]	art. no.	material thickness [mm]	R _{th} [°C in ² /W]	R _{th} [°C cm ² /W]
GEL 60 05	0.5 ±0.1	0.20	1.30	GEL 60 G 05	0.5 ±0.1	0.21	1.37
GEL 60 10	1.0 ±0.2	0.33	2.11	GEL 60 G 10	1.0 ±0.2	0.31	1.99
GEL 60 15	1.5 ±0.2	0.53	3.45	GEL 60 G 15	1.5 ±0.2	0.48	3.08
GEL 60 20	2.0 ±0.3	0.61	3.91	GEL 60 G 20	2.0 ±0.3	0.62	4.00
GEL 60 25	2.5 ±0.3	0.72	4.67	GEL 60 G 25	2.5 ±0.3	0.77	4.96
GEL 60 30	3.0 ±0.3	0.81	5.24	GEL 60 G 30	3.0 ±0.3	0.87	5.61

	GEL 60	GEL 60 G
version	standard	polyamide film mesh reinforced
thermal conductivity	6 W/m·K	
volume resistivity	1·10 ⁶ MΩ/m	
hardness range	52 Shore 00	
temperature range	-60 °C ... +200 °C	
extensibility	80 %	
dielectric constant	6.4 [50 Hz] / 6.4 [1 kHz] / 6.4 [1 MHz]	
dielectric loss factor	0.035 [50 Hz] / 0.005 [1 kHz] / 0.001 [1 MHz]	
dielectric strength	13 kV/mm	
tightness	3.2 g/cm ³	
class of flammability	UL 94 V-0	
type of delivery	on both sides covered with protective foil/ plates, usable area 300 x 200 mm/ other dimensions upon request	



- especially soft design
- levels smallest air gaps and unevennesses
- cuts and contours with cutouts according to customer specification

art. no.	material thickness [mm]	R _{th} [°C in ² /W]	R _{th} [°C cm ² /W]	art. no.	material thickness [mm]	R _{th} [°C in ² /W]	R _{th} [°C cm ² /W]
GEL 27 S 25	2.5	0.94	6.05	GEL 27 S 50	5.0	1.69	10.91
version:	standard						
thermal conductivity:	2.7 W/m·K						
volume resistivity:	2·10 ⁷ MΩ/m						
hardness range:	45 Shore 00						
temperature range:	-60 °C ... +200 °C						
extensibility:	45 %						
dielectric strength:	15 kV/mm						
tightness:	g/cm ³						
class of flammability:	UL 94 V-0						
type of delivery:	on both sides covered with protective foil/ plates, usable area 300 x 200 mm/ other dimensions upon request						

E 13

Thermal conductive material
GEL thermal conductive foils
Thermal conductive paste
Thermal conductive glue

→ **E 2 - 5**
 → **E 11 - 13**
 → **E 19 - 20**
 → **E 21 - 22**

Kapton insulator washers
Heatsinks for PGA
Heatsinks for BGA
Technical introduction

→ **E 14**
 → **B 11 - 16**
 → **B 17 - 20**
 → **A 2 - 7**

Kapton insulator washers

- very low thermal resistance
- optimised heat conductivity
- best mechanical characteristics
- polyimide-carrier foil with silicone-free phase changing thermal conductive layer completely coated on both sides
- clean processing, no abrasion of the coating
- stacked foils do not stick together
- good resistance against cleaning agents
- no cold flow
- low pressure force necessary, thus particularly applicable for spring-fixing of semiconductors
- cuttings and special versions according to customer's requirements
- the thermal details refer to an area of 1 inch² (6.45 cm²)

art. no. KAP 1 P suitable for pre-cut parts (plate)	art. no. KAP 247 O TO 248/ TO 218/ TO 247	art. no. KAP 218 O TO 218	art. no. KAP 220 O TO 220	art. no. KAP 218 TO 248/ TO 218/ TO 247
art. no. KAP 220 G TO 220	art. no. KAP 220 K TO 220	art. no. KAP 3 G TO 3	art. no. KAP 3 K TO 3	

KAP	
material	polyimide-carrier foil with silicone-free phase changing thermal conductive layer completely coated on both sides
material thickness	0.077 mm (substrate 0.05 mm)
thermal conductivity	0.45 W/m·K (substrate)
insulation resistance	10 ¹⁴ Ω
thermal resistance	0.15 K/W [at 1 inch ² ; = 6.45 cm ² ; = TO 3 (KAP 3)]
temperature range	-40 °C ... +150 °C
phase change temperature	52 °C
extensibility	30 %
dielectric strength	7.8 kV
class of flammability	UL 94 V-0

Profiles for PCB components
Heatsinks for PCB
Profiles for PCB mounting
Heatsinks for transistors

→ A 91
→ A 89 - 92
→ A 89 - 111
→ C 4 - 9

Finger-shaped heatsinks
Distance sleeves for PCB's in HP grid
Spacers
Technical introduction

→ C 2 - 3
→ E 37
→ E 38
→ A 2 - 7

Aluminium oxide wafers

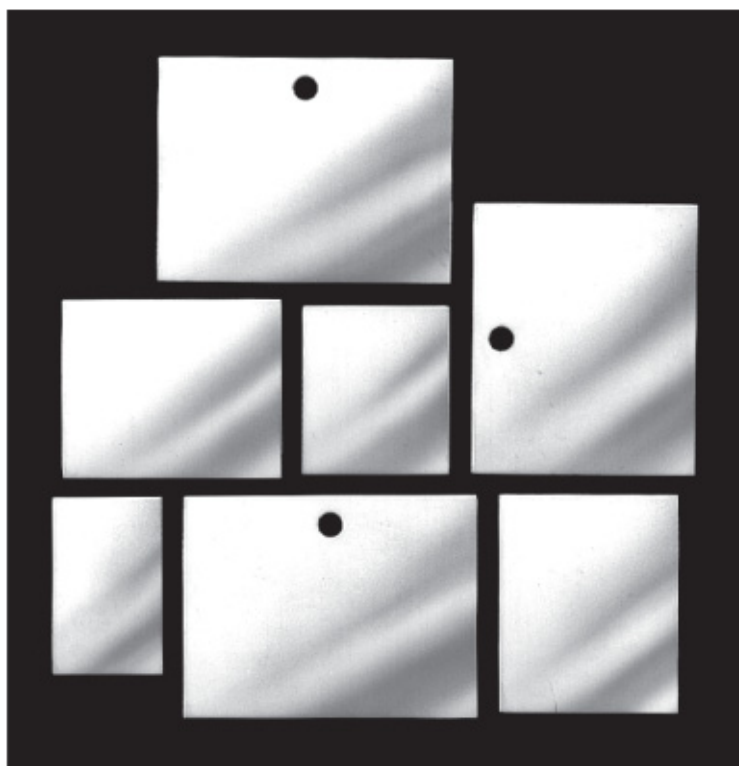
– other thicknesses and versions on request; $\frac{\pm}{\text{mm}}$ = thickness; \square = flatness

art. no. AOS 247 $\frac{\pm}{\text{mm}}$ 1 mm \square 0.02 mm	art. no. AOS 218 247 $\frac{\pm}{\text{mm}}$ 3 mm \square 0.15 mm	art. no. AOS 218 247 1 $\frac{\pm}{\text{mm}}$ 1.5 mm \square 0.02 mm	art. no. AOS 3 P 2 $\frac{\pm}{\text{mm}}$ 1 mm \square 0.15 mm	art. no. AOS 3 P SL $\frac{\pm}{\text{mm}}$ 1.5 mm \square 0.15 mm
art. no. AOS 220 3 $\frac{\pm}{\text{mm}}$ 1.6 mm \square 0.11 mm	art. no. AOS 220 SL $\frac{\pm}{\text{mm}}$ 4.5 mm \square 0.054 mm	art. no. AOS 220 4 $\frac{\pm}{\text{mm}}$ 1.5 mm \square 0.054 mm	art. no. AOS 220 $\frac{\pm}{\text{mm}}$ 1.5 mm \square 0.054 mm	art. no. AOS 32 $\frac{\pm}{\text{mm}}$ 1.5 mm \square 0.033 mm
art. no. AOS 127 $\frac{\pm}{\text{mm}}$ 3 mm \square 0.076 mm	art. no. AOS 3 P $\frac{\pm}{\text{mm}}$ 1.5 mm \square 0.061 mm	art. no. AOS 5 $\frac{\pm}{\text{mm}}$ 1.5 mm \square 0.032 mm	art. no. AOS 93 $\frac{\pm}{\text{mm}}$ 2.3 mm \square 0.03 mm	art. no. AOS 18 $\frac{\pm}{\text{mm}}$ 1.5 mm \square 0.023 mm
art. no. AOS 3 $\frac{\pm}{\text{mm}}$ 2.9 mm \square 0.123 mm	art. no. AOS 66 $\frac{\pm}{\text{mm}}$ 2.5 mm \square 0.10 mm			

AOS	
material	Al ₂ O ₃ - ceramics
thermal resistance	0.3 K/W [at 1 inch ² ; = 6.45 cm ² ; = TO 3 (AOS 3 G)]
specific electrical resistance	>10 ¹⁴ Ω/cm
thermal conductivity	25 W/m·K
dielectric constant	9
linear expansion coefficient	~8·10 ⁻⁶ /K
snap through stability	10 kV/mm

Aluminium oxide wafers according to customer's instructions

- laser-cut versions with outer dimensions and cutouts according to customer's requirements
- other plate dimensions on request



material thickness [mm]	outer dimensions [mm]
2.000	114 x 114
2.540	114 x 114
1.500	114 x 114
1.270	114 x 114
1.000	114 x 114/ 165 x 115/ 160 x 113
0.800	114 x 114/ 165 x 115/ 160 x 113
0.635	106.5 x 106.5/ 114 x 114/ 165 x 115/ 160 x 113
0.500	106.5 x 106.5/ 114 x 114
0.400	106.5 x 106.5/ 114 x 114
0.300	106.5 x 106.5/ 114 x 114
0.250	106.5 x 106.5/ 114 x 114

Mica wafers

art. no. GS 220 C TO 220	art. no. GS 218 TO 218	art. no. GS 3 P SL TOP 3	art. no. GS 66 P TO 66	art. no. GS 220 4 TO 220
art. no. GS 220 P TO 220	art. no. GS 32 P SOT 32	art. no. GS 3 P TOP 3	art. no. GS 3 TO-3	

	GS
material	muskovit
material thickness	0.05 mm
insulation resistance	$3 \cdot 10^{17} \Omega/\text{cm}$
thermal resistance (GS 3)	0.4 K/W
snap through stability	5 kV



- self-supporting differential phase changing thermal interface material, contains no substrate (Free Standing Film)
- materials with phase change temperature at 52 °C;
- best thermal conductivity, exceeding phase change temperature point, material flows into all gaps between components and heatsink
- thixotropic, does not migrate from the interface area
- no lowering of thermal conductivity though thermal cycling
- application with very low contact pressure, due to non elastomeric material, particularly suitable for clamp mounting of components
- electrically non-conductive, but not an insulator
- self adhering characteristics, also suitable for large areas
- no toxic ingredients
- custom required shapes on request
- all with protection foil on both sides

art. no.	basin	dimensions [mm]
FSF 52 P	plate, protection foil on both sides	330 x 343 x 0.127 ±0.025

	FSF 52 P
phase change temperature	52 °C
colour	white
tightness	2 g/cm ³
thermal resistance (1 in², TO 3) at contact pressure of	0.03 K/W 0.031 N/mm ²
thermal conductivity	0.9 W/m·K
temperature range	max. +200 °C
adhesive holding force	0.35 N/mm ²
class of flammability	UL 94 V-0
dielectric constant	3.8 [1 kHz] 3.4 [1 MHz]

Thermal transfer compounds

Silicon thermal transfer compound

– thermal transfer compound used to reduce the thermal transmission resistance between semiconductor and heatsink



art. no.	basin	delivery quantity [g]
WLP 004	box	4
WLP 035	box	35
WLP 500	box	500
WLP 300 S	cartridge (310 ml)	300
WLP 500 S	cartridge (310 ml)	500

Silicone-free thermal transfer compound

– thermal transfer compound used to reduce the thermal transmission resistance between semiconductor and heatsink



art. no.	basin	delivery quantity [ml]	delivery quantity [g]
WLPF 05	syringe	2	—
WLPF 10	syringe	5	—
WLPF 20	syringe	10	—
WLPF 50	syringe	20	—
WLPF 300 S	cartridge (310 ml)	—	300

	WLP	WLPF
composition	silicone oil, inorganic filling material	silicone free synthetic liquid. Metal oxide filling.
consistance	pastey	
colour	white	white-grey
tightness	1.1 g/cm ³	ca. 2 g/cm ³
thermal conductivity	0.61 W/m·K	>0.7 W/m·K
specific electrical resistance	>10 ¹² Ω/cm	
flashpoint	none (DIN 53213)	of the basic oil >280 °C (ISO 2592)
drop point	>260 °C	
thermal resistance	no bleeding at (4 h / 200°C)	<1 % (96 h / 200 °C)
temperature range	-70 °C ... +250 °C	-40 °C ... +150 °C
acid number	< 0.01 mg KOH/g	
solubility in water	insoluble	

Thermal transfer compounds

Ceramic filled, silicone-free thermal conductive paste with high thermal conductivity

- suitable especially for silicone-sensitive applications
- no drying out, hardening or melting of the thermal conductive paste
- high long-term stability
- further package sizes, container types such as cans, cartridge, etc. upon request



art. no.	basin	delivery quantity [ml]
WLPK 3	syringe	3
WLPK 5	syringe	5
WLPK 10	syringe	10

	WLPK
composition	silicone-free, synthetic fluid ceramic filled
consistance	paste
colour	silver
tightness	1.4 g/cm ³
thermal conductivity	10 W/m·K
dielectric strength	not applicable, because conducting
temperature range	-60 °C ... +150 °C
solubility in water	insoluble

Mica wafers
 Thermal conductive foil
 Thermal conductive paste
 Thermal conductive glue

→ E 17
 → E 7 - 10
 → E 19 - 20
 → E 21 - 22

Thermal conductive material
 Insulating caps
 Aluminium oxide wafers
 Technical introduction

→ E 2 - 5
 → E 49
 → E 15 - 16
 → A 2 - 7

Thermally conductive adhesive

- thermally conductive, electrically non-conductive adhesive
- two part epoxy resin adhesive, metaloxide filled
- fully replaces mechanical fastenings
- excellent function and application characteristics
- to be stored at a cool and dark place

WLK 5		WLK 10	
art. no.	composition	art. no.	composition
WLK 5	5 g resin / 0.5 g hardener	WLK 10	10 g resin / 1 g hardener
WLK 30		WLK 120	
art. no.	composition	art. no.	composition
WLK 30	30 g resin / 3 g hardener	WLK 120	120 g resin / 12 g hardener
		WLK	
thermal conductivity	0.836 W/m·K		
pass resistance	$10^{16} \Omega/\text{cm}$		
specific thermal resistance	1.2 m·K/W		
temperature range	-56 °C ... +149 °C		
hardening time	20 °C approx. 16 - 24 h/ 190 °C approx. 20 min/ 38 °C approx. 6 h		
glue layer	Epoxid		
mixture proportion	10:1		

Thermally conductive adhesive

- solvent-free and thermal conductive two part adhesive
- epoxy based filled with aluminium oxide
- composition of hardener and resin (1:1) with statical mixing tube
- lockability of the container via Luer-Lock System
- good usage and working properties

WLK DK 4	WLK DK 10	WLK DK 50
		
art. no.	basin	contents of delivery
WLK DK 4	syringe	1x 4 ml syringe / 3x mixer WLK M 4
WLK DK 10	syringe	1x 10 ml syringe / 3x mixer WLK M 4
WLK DK 50	cartridge	1x 50 ml cartridge / 3x mixer WLK M 50

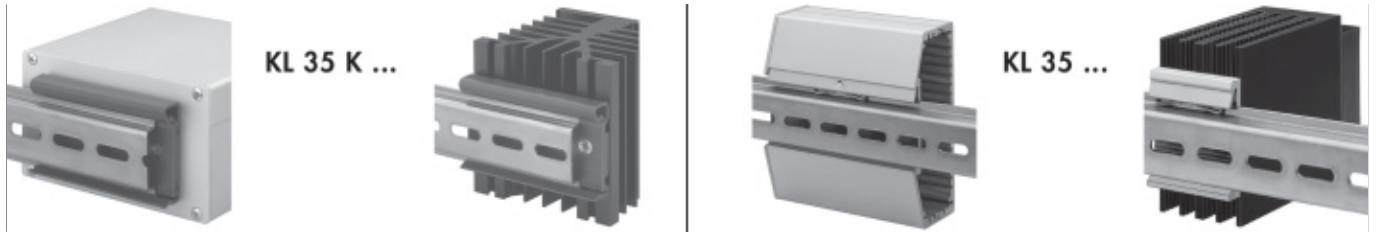
	WLK DK
thermal conductivity	1.0 W/m·K
pass resistance	8x10 ¹¹ Ω/cm
specific thermal resistance	118°C cm/W
temperature range	-50 °C ... +145 °C
working life at room temperature	approx. 30 min
hardening time	25 °C ca. 4 h / 50 °C ca. 1 h / 85 °C ca. 10 min / 125 °C ca. 2 min
glue layer	Epoxid
mixture proportion	1:1

Accessories

- more package sizes and container types upon request
- store cool and dry

art. no.	contents of delivery
WLK M 4	10x mixer für 4 & 10 ml syringe (packing unit 10 pieces)
WLK M 50	10x mixer für 50 ml cartridge (packing unit 10 pieces)
WLK P	1x applicator gun for 50 ml cartridge

Fastening for mounting rail



- universal, solid plastic clip fastening for all 35 mm mounting rails
- suitable for rail material thicknesses from 1 to 2.3 mm according to DIN EN 50 022
- registered design DE 200 07 435.0
- fast and easy mounting of heatsinks, casings etc. due to direct snap up on the mounting rail

- safe hold due to a stable extruded plastic profile with integrated spring back
- electroconductive material or surface on request
- special lengths and treatments on customer's request
- * = examples of mounting rail versions suitable for **KL 35 K**

art. no.	dim. [mm]	art. no.	dim. [mm]	
KL 35 K 40	40	KL 35 K 75	75	
KL 35 K 50	50	KL 35 K 100	100	
material:	rigid PVC			
heat distortion:	-30 °C ... +80 °C			
colour:	anthracite grey			
class of flammibility:	UL 94 V-0			

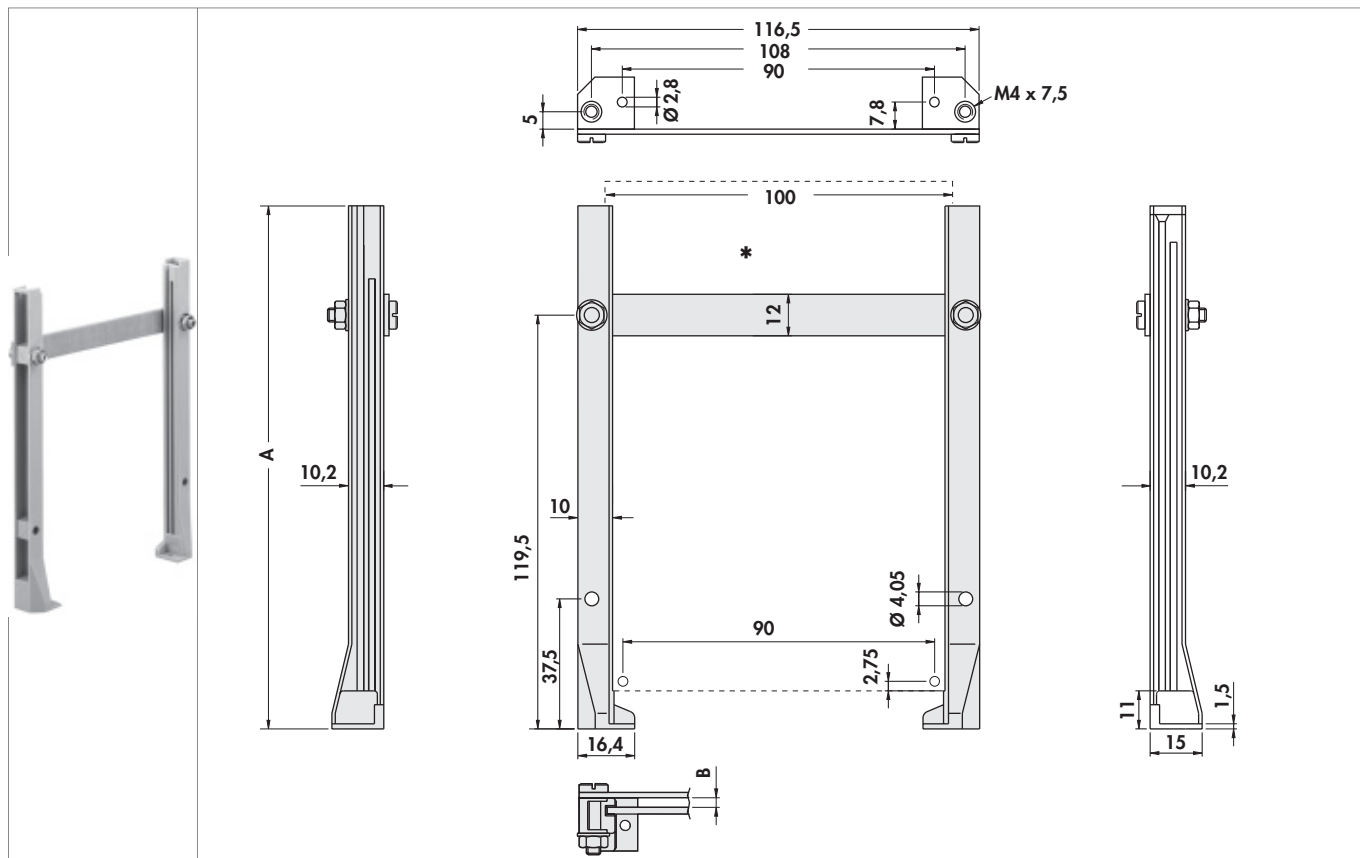
- safe hold due to a stable extruded profile with integrated stainless steel spring
- special lengths (≥ 40 mm), treatments and surfaces on request
- * = examples of mounting rail versions suitable for KL 35

art. no.	dim. [mm]	art. no.	dim. [mm]	art. no.	dim. [mm]
KL 35 50	50	KL 35 75	75	KL 35 100	100
material:	aluminium				
surface:	natural colour anodised				

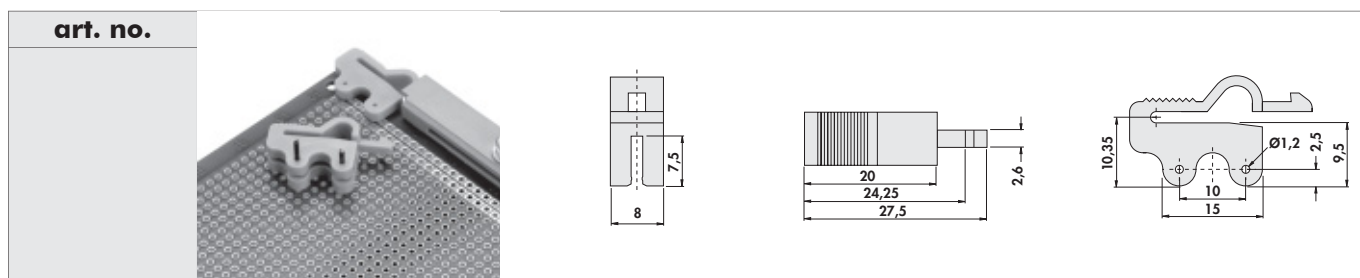
Guide rails

Screw-on type

- for eurocards
- connectors according to DIN 41612 or VG 95324 mountable
- high stability through inner reinforcements
- stable foot mounting trough inserted brass- thread inserts
- groove depth: 2.2 mm, groove width 1.9 mm
- suitable for PCB thicknesses from 0.5 to 1.85 mm
- * = printed circuit board



art. no.	dim. [mm]	
	A	B
FS 151 P	151	2.5



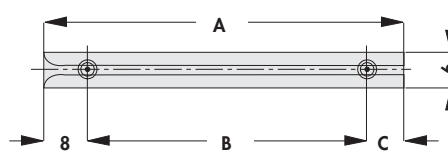
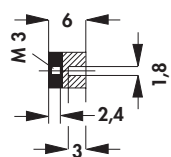
CLIP 151 only for **FS 151 P**

material:	polycarbonate, GF reinforced
temperature range:	-40 °C ... +125 °C
class of flammability:	UL 94 V-0

- | | | | |
|----------------------------|-------------|---------------------------------------|-----------|
| Solder pins | → E 41 | Distance sleeves for PCB's in HP grid | → E 37 |
| Snap-in guide rails | → E 27 - 28 | Mounting pads for transistors | → E 45 |
| Extractors for guide rails | → E 28 | Vibration dampers | → E 39 |
| Insulating clamping parts | → E 43 | Technical introduction | → A 2 - 7 |

Guide rails

Screw-on type



art. no.	dim. [mm]		
	A	B	C
FS 6 065	65	50	7
FS 6 070	70	50	12
FS 6 080	80	67	5
FS 6 090	90	67	15
FS 6 100	100	84	8
FS 6 110	110	84	18
FS 6 120	120	84	28
FS 6 130	130	84	38

material:	polycarbonate, GF reinforced
temperature range:	-20 °C ... +130 °C
thread nut:	brass nickel-plated
class of flammability:	UL 94 V-0

art. no.			
FS 109			
art. no.			
FS 100			
art. no.			
MSVL 100		* = position of snap-in slot	
material:	polyamide, GF reinforced		
temperature range:	-40 °C ... +205 °C		
class of flammability:	UL 94 V-0		

Guide rails

Lockable mounting rails

- lockable by pushing the plastic pin or the metal button
- no conductive connection to the PCB
- the PCB requires a snap-in slot in accordance to the drawing
- other position with locking device on request
- * = position of snap-in slot

art. no.	version	dim. [mm]		art. no.	version	dim. [mm]	
		L	A			L	A
FS 85 50	without bolting device	50	42	FS 85 70	without bolting device	70	62
FS 85 60	without bolting device	60	52	FS 85	without bolting device	85	76
art. no.	version	dim. [mm]		art. no.	version	dim. [mm]	
		L	A			L	A
MSVL 50	with bolting device	50	42	MSVL 70	with bolting device	70	62
MSVL 60	with bolting device	60	52	MSVL 85	with bolting device	85	76
material:		polyamide, GF reinforced					
temperature range:		-40 °C ... +205 °C					
class of flammability:		UL 94 V-0					

- the guide bars have got mounting holes for vertical and horizontal assembly of printed circuits
- they can also be stacked together horizontally or vertically using pins and treatments

art. no.							
MSHV 90							
material:		polyamide, GF reinforced					
class of flammability:		UL 94 V-0					

Solder pins
Snap-in guide rails
Extractors for guide rails
Insulating clamping parts

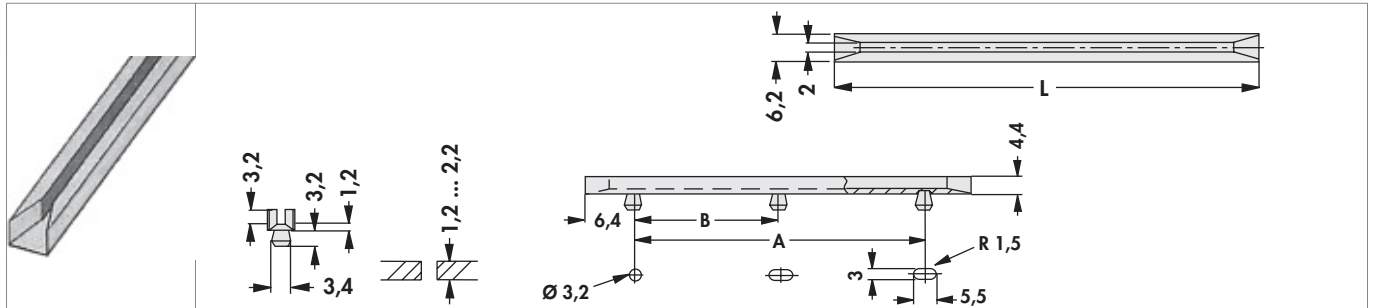
→ E 41
→ E 27 - 28
→ E 28
→ E 43

Distance sleeves for PCB's in HP grid → E 37
Mounting pads for transistors → E 45
Vibration dampers → E 39
Technical introduction → A 2 - 7

Guide rails

Snap-in

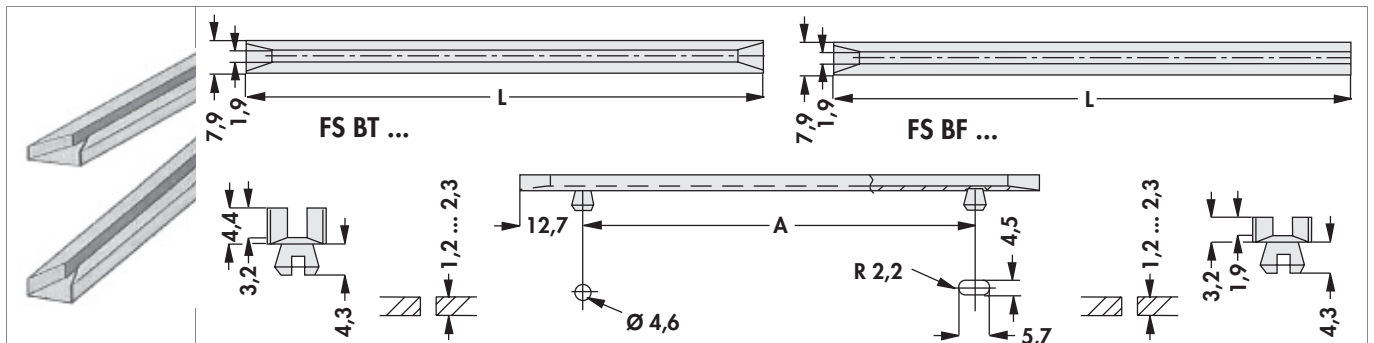
– narrow version



art. no.	dim. [mm]		art. no.	dim. [mm]		
	L	A		L	A	B
FS S 06 2	63.5	50.8	FS S 15 2	152.4	139.7	—
FS S 07 2	76.2	63.5	FS S 16 2	165.1	152.4	—
FS S 08 2	88.9	76.2	FS S 19 3	190.5	177.8	88.9
FS S 10 2	101.6	88.9	FS S 20 3	203.2	190.5	95.2
FS S 11 2	114.3	101.6	FS S 21 2	215.9	203.2	—
FS S 12 2	127.0	114.3	FS S 21 3	215.9	203.2	101.6
FS S 13 2	139.7	127.0				

material: nylon, natural coloured
temperature range: -40 °C ... +120 °C
class of flammability: UL 94 V-2

– wide version



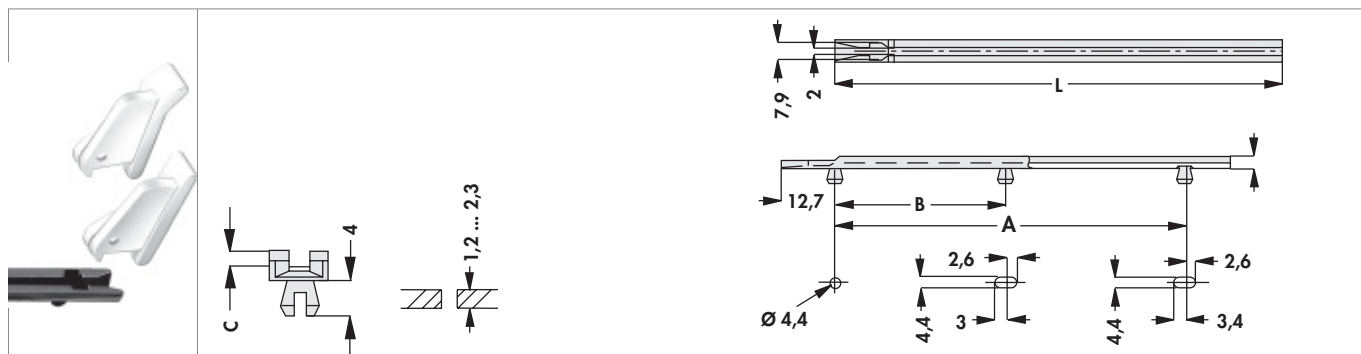
art. no.	version	dim. [mm]		art. no.	version	dim. [mm]	
		L	A			L	A
FS BT 06	deep groove	63.5	38.1	FS BF 06	shallow groove	63.5	38.1
FS BT 08	deep groove	88.9	63.5	FS BF 07	shallow groove	76.2	50.8
FS BT 10	deep groove	101.6	76.2	FS BF 10	shallow groove	101.6	76.2
FS BT 11	deep groove	114.3	88.9	FS BF 11	shallow groove	114.3	88.9
FS BT 13	deep groove	139.7	114.3	FS BF 13	shallow groove	139.7	114.3
FS BT 15	deep groove	152.4	127.0	FS BF 15	shallow groove	152.4	127.0
FS BT 16	deep groove	165.1	139.7	FS BF 19	shallow groove	190.5	165.1
FS BT 19	deep groove	190.5	165.1	FS BF 20	shallow groove	203.2	177.8
FS BT 20	deep groove	203.2	177.8				

material: nylon, natural coloured
temperature range: -40 °C ... +120 °C
class of flammability: UL 94 V-2

Guide rails

Ejectors

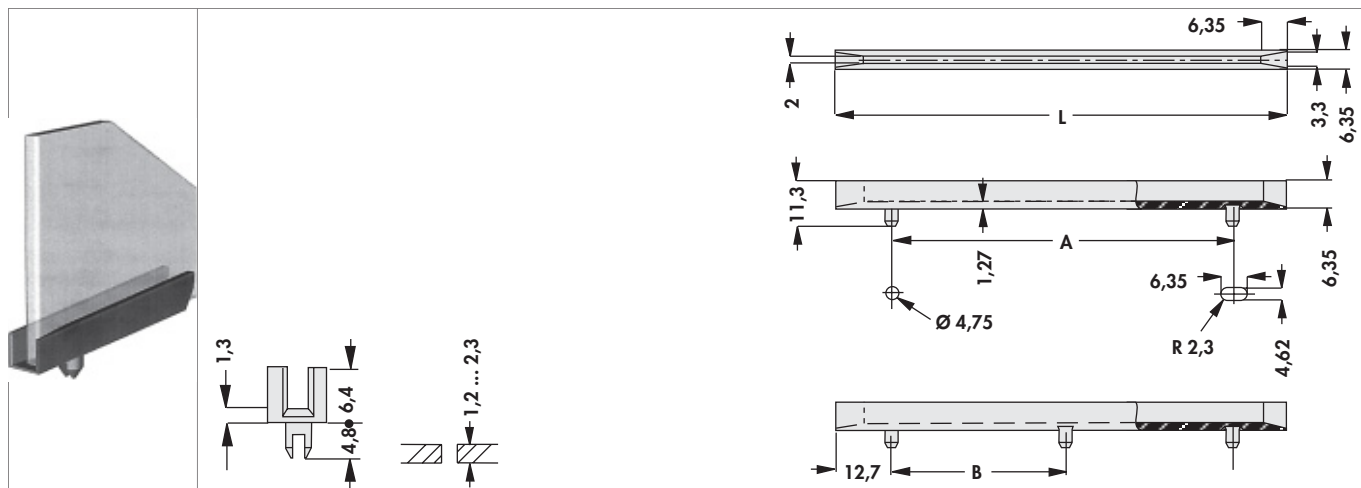
- low profile
- suitable for ejectors **art. no. AHG V 14** und **AHG V 17**



art. no.	dim. [mm]				art. no.	dim. [mm]				
	L	A	C	D		L	A	B	C	D
FS LP 05	50.8	25.8	2.0	3.2	FS LP 15	152.4	127.4	—	2.0	3.2
FS LP 07	76.2	38.5	2.0	3.2	FS LP 16	165.1	127.4	—	2.0	3.2
FS LP 08	88.9	38.5	2.0	3.2	FS LP 17	177.8	153.2	—	2.0	3.2
FS LP 10	101.6	76.6	2.0	3.2	FS LP 22	228.6	191.3	95.7	2.0	3.6
FS LP 11	114.3	76.6	2.0	3.2	FS LP 30	304.8	267.9	134.0	2.4	4.0
FS LP 13	139.7	76.6	2.0	3.2						

material: polyamide, GF reinforced
temperature range: -40 °C ... +120 °C
class of flammability: UL 94 V-0

- deep guideway
- bevelled entrance zone



art. no.	dim. [mm]		
	L	A	B
FS U 06	63.5	38.1	—
FS U 11	114.3	88.9	—
FS U 20	203.2	177.8	88.9

material: polyamide, GF reinforced
temperature range: -40 °C ... +120 °C
class of flammability: UL 94 V-0

Solder pins
 Snap-in guide rails
 Extractors for guide rails
 Insulating clamping parts

→ E 41
 → E 27 – 28
 → E 28
 → E 43

Distance sleeves for PCB's in HP grid → E 37
 Mounting pads for transistors → E 45
 Vibration dampers → E 39
 Technical introduction → A 2 – 7

E 28

A

B

C

D

E

F

G

H

I

K

L

M

N

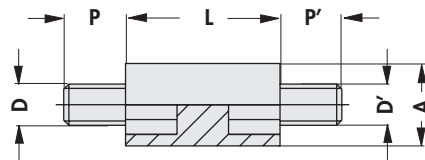
Ejectors

art. no. AHG V 14	<p>* = mounting dimensions; locking in FS LP</p>
art. no. AHG V 17	<p>* = mounting dimensions; locking in FS LP</p>
art. no. AHG K 27	
art. no. AHG K 28	
art. no. AHG L 7	<p>dim. [mm] A 7.4</p>
material: temperature range: class of flammability: type of delivery:	nylon -40 °C ... +120 °C UL 94 V-2 all ejectors with matching spring pin



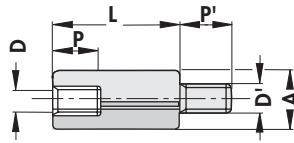
field of applications:

- insulated assembly of stacked PCB
- insulated assembly of stacked heatsinks with varying capacities
- insulated assembly of chassis plates in cases
- insulated supports in the wiring
- mechanically very stable as threads are made of brass
- other lengths on request
- dimensions = nominal size; deviation ± 0.5 mm
- ... please indicate length "L"



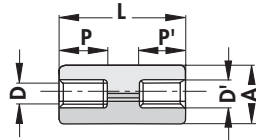
art. no.	dim. [mm]			
	A	D/D'	L	P/P'
ISAB 25 A ...	6.5	M2.5/M2.5	10/ 15/ 20/ 25	6.0
ISAB 3 A ...	8.0	M3/M3	10/ 20	6.0
ISAB 4 A ...	8.0	M4/M4	15/ 20	6.0
ISAB 6 A ...	12.7	M6/M6	25	12.7
dielectric strength:	approx. 40 kV/mm			
creeping current resistance:	3c, level KA			
thread inserts:	brass			
temperature range:	-30 °C ... +85 °C (short term +200 °C)			
surface:	raw			
plastic body:	polyamide 66			
colour:	natural (opaque)			

Insulating spacers with internal and external thread



art. no.	dim. [mm]			
	A	D/D'	L	P/P'
ISAB 25 B ...	6.5	M2.5/M2.5	10/ 13/ 15/ 18/ 20/ 25/ 30	6.0
ISAB 3 B ...	8.0	M3/M3	10/ 13/ 15/ 18/ 20/ 25/ 30/ 35/ 40	6.0
ISAB 4 B ...	8.0	M4/M4	15/ 20/ 25/ 30/ 40	6.0
ISAB 5 B ...	9.5	M5/M5	20/ 30/ 40	10.0
ISAB 6 B ...	12.7	M6/M6	25/ 30/ 35/ 40/ 50	12.7

– dimensions = nominal size: deviation ± 0.5 mm; at **ISAB 3 C ...** L=10 \Rightarrow P/P'=3.5



art. no.	dim. [mm]			
	A	D/D'	L	P/P'
ISAB 25 C ...	6.5	M2.5/M2.5	10/ 13/ 15/ 18/ 20/ 25/ 30	6.0
ISAB 3 C ...	8.0	M3/M3	10/ 13/ 15/ 18/ 20	6.0
ISAB 4 C ...	8.0	M4/M4	15/ 35	6.0
ISAB 5 C ...	9.5	M5/M5	20	10.0
ISAB 6 C ...	12.7	M6/M6	25	12.0
ISAB 6 C ...	12.7	M6/M6	30	12.7

dielectric strength:	approx. 40 kV/mm
creeping current resistance:	3c, level KA
thread inserts:	brass
temperature range:	-30 °C ... +85 °C (short term +200 °C)
surface:	raw
plastic body:	polyamide 66
colour:	natural (opaque)



- allows compact, insulated constructions
- reduced volume in case of stack assembly
- insulated mounting of heatsinks, PCB, housing parts etc.
- very good mechanical stability due to brass inserts
- dimensions = nominal size: deviation ± 0.5 mm
- ... please indicate length "L"

art. no.	S	type of thread	dim. [mm] L	max. diameter of the bushing
ISAM 2 A ...	6	M 2.5	4/ 5/ 7/ 9/ 11/ 12	6
ISAM 3 A ...	7	M 3	4/ 5/ 7/ 8/ 9/ 10	7
art. no.	S	type of thread	dim. [mm] L	max. diameter of the bushing
ISAM 2 B ...	6	M 2.5	8/ 9/ 10/ 11	6
ISAM 3 B ...	7	M 3	7/ 8/ 9/ 10/ 11/ 12	7
art. no.	S	type of thread	dim. [mm] L	max. diameter of the bushing
ISAM 2 C ...	6	M 2.5	9	6
ISAM 3 C ...	7	M 3	9/ 10/ 12	7
dielectric strength:		30 kV/mm		
creeping current resistance:		3c, level KA		
thread inserts:		brass		
temperature range:		-30 °C ... +85 °C (short term +200 °C)		
surface:		raw		
plastic body:		polyamide 66		
colour:		natural (opaque)		

Spacers
Screw mounted guide rails
Ejectors
Vibration dampers

→ E 38
→ E 24 - 28
→ E 29
→ E 39

Mounting material for semiconduct. → E 42 - 46
Mounting parts for heatsinks → E 47 - 48
Thermal conductive material → E 2 - 22
Technical introduction → A 2 - 7

E 32

A

B

C

D

E

F

G

H

I

K

L

M

N

A

Distance hexagonal bolts insulating

B

C

D



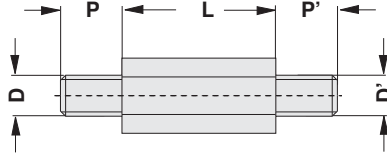
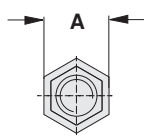
E

field of applications:

- insulated assembly of stacked PCBs
- insulated assembly of stacked heatsinks with varying capacities
- insulated assembly of chassis plates in cases
- insulated supports in the wiring
- mechanically very stable, as threads are made of brass
- other lengths on request
- dimensions = nominal size: deviation ± 0.5 mm
- ... **please indicate length "L"**

F

G



H

I

art. no.	dim. [mm]			
	A	D/D'	L	P/P'
ISAS 25 A ...	6.35	M2.5/M2.5	15/ 20/ 25/ 30/ 35/ 40	6.0
ISAS 30 A ...	6.35	M3/M3	15/ 20/ 25/ 30/ 35/ 40/ 45/ 50	6.0
ISAS 40 A ...	8.00	M4/M4	15/ 20/ 25/ 30/ 35/ 40/ 45/ 50	6.0
ISAS 50 A ...	9.50	M5/M5	20/ 25/ 30/ 35/ 40/ 45/ 50	10.0
ISAS 60 A ...	12.70	M6/M6	25/ 30/ 35/ 40/ 45/ 50/ 60	12.7
dielectric strength:	approx. 40 kV/mm			
creeping current resistance:	3c, level KA			
thread inserts:	brass			
temperature range:	-30 °C ... +85 °C (short term +200 °C)			
surface:	raw			
plastic body:	polyamide 66			
colour:	natural (opaque)			

L

M

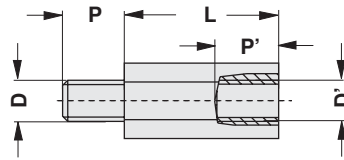
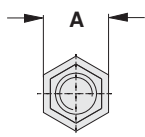
N

E 33

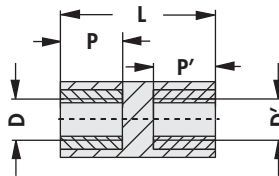
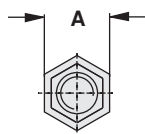
Spacers
Screw mounted guide rails
Ejectors
Vibration dampers

→ E 38
→ E 24 - 28
→ E 29
→ E 39

Mounting material for semiconduct. → E 42 - 46
Mounting parts for heatsinks → E 47 - 48
Thermal conductive material → E 2 - 22
Technical introduction → A 2 - 7

Distance hexagonal bolts insulating


art. no.	dim. [mm]			
	A	D/D'	L	P/P'
ISAS 25 B ...	6.35	M2.5/M2.5	15/ 20/ 25/ 30/ 35/ 40	6.0
ISAS 30 B ...	6.35	M3/M3	15/ 20/ 25/ 30/ 35/ 40/ 45/ 50	6.0
ISAS 40 B ...	8.00	M4/M4	15/ 20/ 25/ 30/ 35/ 40/ 45/ 50	6.0
ISAS 50 B ...	9.50	M5/M5	20/ 25/ 30/ 35/ 40/ 45/ 50	10.0
ISAS 60 B ...	12.70	M6/M6	25/ 30/ 35/ 40/ 45/ 50/ 60	12.7

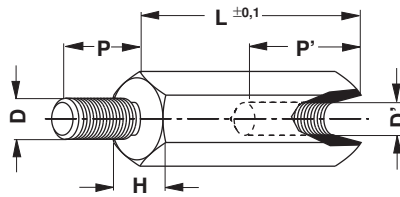


art. no.	dim. [mm]			
	A	D/D'	L	P/P'
ISAS 25 C ...	6.35	M2.5/M2.5	15/ 20/ 25/ 30/ 35/ 40	6.0
ISAS 30 C ...	6.35	M3/M3	15/ 20/ 25/ 30/ 35/ 40/ 45/ 50	6.0
ISAS 40 C ...	8.00	M4/M4	15/ 20/ 25/ 30/ 35/ 40/ 45/ 50	6.0
ISAS 50 C ...	9.50	M5/M5	20/ 25/ 30/ 35/ 40/ 45/ 50	10.0
ISAS 60 C ...	12.70	M6/M6	25/ 30/ 35/ 40/ 45/ 50/ 60	12.7

dielectric strength:	approx. 40 kV/mm
creeping current resistance:	3c, level KA
thread inserts:	brass
temperature range:	-30 °C ... +85 °C (short term +200 °C)
surface:	raw
plastic body:	polyamide 66
colour:	natural (opaque)

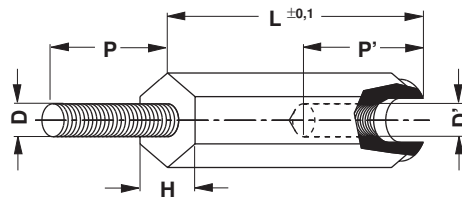
Spacers with internal and external thread

- other lengths and threads on request
- ... please indicate length "L"



art. no.	dim. [mm]				
	H	D/D'	L	P	P'
GBM 2550 ...	5	M2.5	5	6	2.5
GBM 2550 ...	5	M2.5	10	6	5.0
GBM 2550 ...	5	M2.5	15/ 20	6	8.0
GBM 2550 ...	5	M2.5	25/ 30/ 35	8	10.0
GBM 3050 ...	5	M3	5	8	2.5
GBM 3050 ...	5	M3	10/ 12/ 14	8	5.0
GBM 3050 ...	5	M3	15/ 18/ 20	8	10.0
GBM 3050 ...	5	M3	25/ 30/ 35/ 40/ 45/ 50	10	10.0
GBM 4070 ...	7	M 4	5	8	2.5
GBM 4070 ...	7	M 4	10	8	5.0
GBM 4070 ...	7	M 4	15	8	8.0
GBM 4070 ...	7	M 4	20	8	10.0
GBM 4070 ...	7	M 4	25/ 30/ 35/ 40/ 45/ 50	10	10.0
GBM 5080 ...	8	M 5	10	8	5.0
GBM 5080 ...	8	M 5	15/ 20	8	6.0
GBM 5080 ...	8	M 5	25/ 30/ 35/ 40/ 45/ 50	10	10.0
material:	brass				
surface:	6 µm nickel-plated, solderable				

- other lengths and threads on request
- ... please indicate length "L"



art. no.	dim. [mm]				
	H	D/D'	L	P	P'
GBP 3060 ...	6	M3	10	8	7
GBP 3060 ...	6	M3	12	8	8
GBP 3060 ...	6	M3	15/ 18/ 20/ 25/ 30	8	10
GBP 4080 ...	8	M 4	10	8	7
GBP 4080 ...	8	M 4	12	8	9
GBP 4080 ...	8	M 4	15/ 18/ 20/ 25/ 30/ 35/ 40/ 45	8	10
material:	polyamide, GF reinforced				
temperature range:	-30 °C ... +110 °C				
colour:	black				

E 35

Spacers
Screw mounted guide rails
Ejectors
Vibration dampers

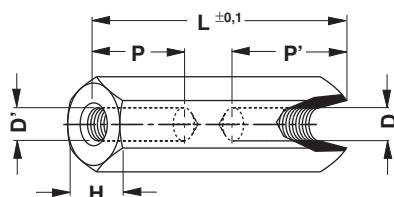
→ E 38
→ E 24 - 28
→ E 29
→ E 39

Mounting material for semiconduct.
Mounting parts for heatsinks
Thermal conductive material
Technical introduction

→ E 42 - 46
→ E 47 - 48
→ E 2 - 22
→ A 2 - 7

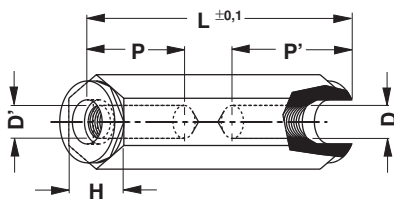
Distance sleeves with internal thread

- other lengths and threads on request
- ... please indicate length "L"



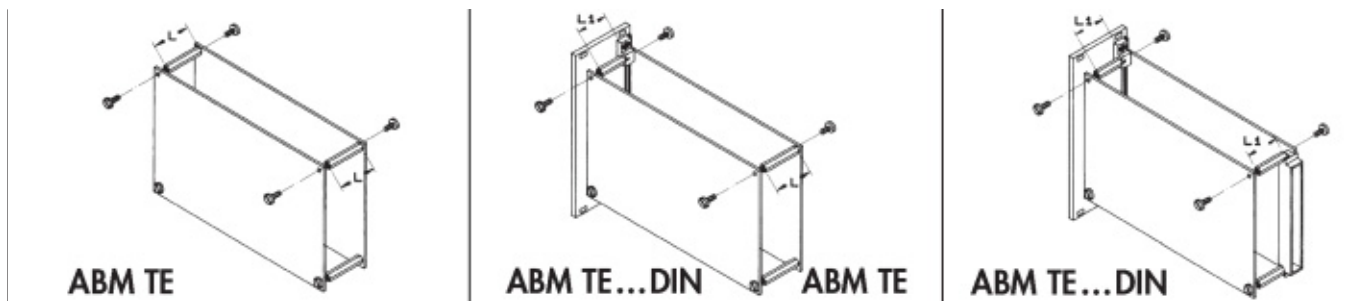
art. no.	dim. [mm]				
	H	D/D'	L	P	P'
ABM 2550 ...	5	M2.5	5/ 8/ 10/ 12/ 15	=L	—
ABM 2550 ...	5	M2.5	18	8	8
ABM 2550 ...	5	M2.5	20/ 25/ 30/ 35/ 40/ 45/ 50	10	10
ABM 3050 ...	5	M3	5/ 8/ 9/ 10/ 12/ 13/ 15	=L	—
ABM 3050 ...	5	M3	16/ 18/ 19	8	8
ABM 3050 ...	5	M3	20/ 25/ 29/ 30/ 35/ 40/ 45/ 50	10	10
ABM 4070 ...	7	M 4	5/ 8/ 10/ 12/ 15	=L	—
ABM 4070 ...	7	M 4	18	9	9
ABM 4070 ...	7	M 4	20/ 25/ 30/ 35/ 40/ 45/ 50	10	10
material:	brass				
surface:	6 µm nickel-plated, solderable				

- other lengths and threads on request
- ... please indicate length "L"

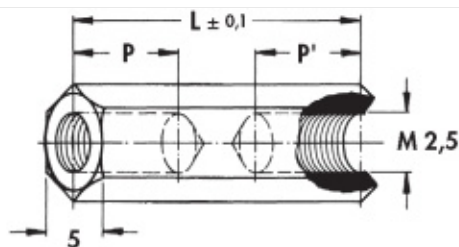


art. no.	dim. [mm]				
	H	D/D'	L	P	P'
ABP 2550 ...	5	M2.5	10	=L	—
ABP 2550 ...	5	M2.5	15/ 20/ 25/ 30	6	6
ABP 3060 ...	6	M3	10/ 12/ 15	=L	—
ABP 3060 ...	6	M3	20	8	8
ABP 3060 ...	6	M3	25/ 30	10	10
ABP 4080 ...	8	M 4	10/ 15/ 20	=L	—
ABP 4080 ...	8	M 4	30/ 40	10	10
material:	polyamide, GF reinforced				
temperature range:	-30 °C ... +110 °C				
colour:	black				

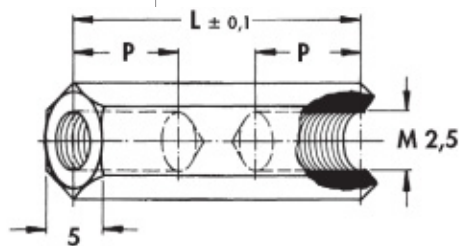
Distance sleeves for PCB in HP grid



- these internally threaded distance sleeves mount PCBs to the correct pitch for insertion into subracks
- **ABM TE**: spacer between two PC boards
- **ABM TE ... DIN**: spacer between two PC boards, one of them equipped with DIN-connector resp. A front panel/PCB Interconnection device VS 1
- spacers with internal and external thread to HP grid on request



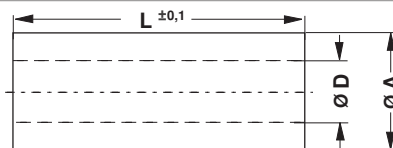
art. no.	suitable for TE	dim. [mm]	
		L	P/P'
ABM TE 04	4	18.72	8
ABM TE 06	6	28.88	8
ABM TE 08	8	39.04	8



art. no.	suitable for TE	dim. [mm]	
		L	P
ABM TE 04 DIN	4	12.72	=L
ABM TE 06 DIN	6	22.88	8
ABM TE 08 DIN	8	33.04	8

material:	brass
surface:	8 μm nickel-plated, solderable

- ... please indicate length "L"

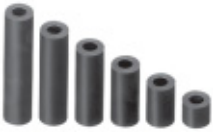

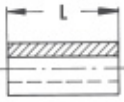

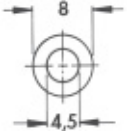


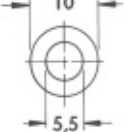



art. no.	dim. [mm]		L
	A	D	
AHM 3260...	6	3.2	1/ 2/ 3/ 4/ 5/ 6/ 7/ 8/ 9/ 10/ 12/ 15/ 18/ 25/ 30
AHM 4380...	8	4.3	2/ 3/ 4/ 5/ 6/ 7/ 8/ 9/ 10/ 12/ 15/ 18/ 20

material:	brass
surface:	8 μm nickel-plated, solderable

Distance spacers

– special lengths on request

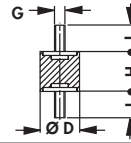
					
art. no.	length [mm]	art. no.	length [mm]	art. no.	length [mm]
DR 071 V0	1	DR 079 V0	9	DR 725 V0	25
DR 072 V0	2	DR 710 V0	10	DR 730 V0	30
DR 073 V0	3	DR 711 V0	11	DR 735 V0	35
DR 074 V0	4	DR 712 V0	12	DR 740 V0	40
DR 075 V0	5	DR 713 V0	13	DR 745 V0	45
DR 076 V0	6	DR 714 V0	14	DR 750 V0	50
DR 077 V0	7	DR 715 V0	15	DR 760 V0	60
DR 078 V0	8	DR 720 V0	20		
					
art. no.	length [mm]	art. no.	length [mm]	art. no.	length [mm]
DR 081 V0	1	DR 089 V0	9	DR 825 V0	25
DR 082 V0	2	DR 810 V0	10	DR 830 V0	30
DR 083 V0	3	DR 811 V0	11	DR 835 V0	35
DR 084 V0	4	DR 812 V0	12	DR 840 V0	40
DR 085 V0	5	DR 813 V0	13	DR 845 V0	45
DR 086 V0	6	DR 814 V0	14	DR 850 V0	50
DR 087 V0	7	DR 815 V0	15	DR 860 V0	60
DR 088 V0	8	DR 820 V0	20		
					
art. no.	length [mm]	art. no.	length [mm]	art. no.	length [mm]
DR 105 V0	5	DR 125 V0	25	DR 140 V0	40
DR 110 V0	10	DR 130 V0	30	DR 145 V0	45
DR 115 V0	15	DR 135 V0	35	DR 150 V0	50
DR 120 V0	20				
material:	polyamide				
heat distortion:	180 °C				
temperature range:	+180 °C				
colour:	black				
class of flammability:	UL 94 V-0				

Construational elements to vibration damping and insulation

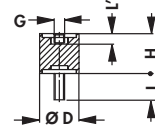
- universal applicable round metal, antivibration buffers for solving vibration problems
- other lengths and hardness range on request
- ... please indicate height "H"

Field of applications:

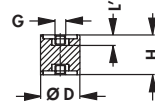
- reduction of dynamic component stress
- vibration insulation for disc drives and motors
- impact reducing on sensitive instruments
- reduction of the noise level
- prevention of vibration resonance phenomena (amplified effect)
- compensation of mechanical imbalances



art. no.	dim. [mm]			
	H	type of thread	Ø D	L
SMP 410 A ...	10	4	10	10
SMP 415 A ...	15	4	15	10
SMP 515 A ...	15	M 5	15	12


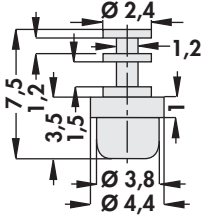

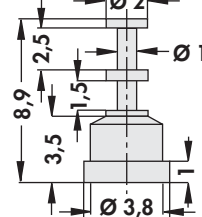

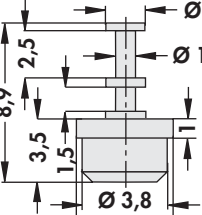

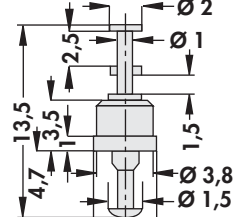

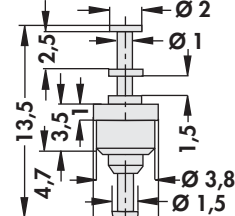


art. no.	dim. [mm]				
	H	type of thread	Ø D	L'	L
SMP 410 B ...	10	4	10	4	10
SMP 415 B ...	15	4	15	4	10
SMP 515 B ...	15	M 5	15	5	12



art. no.	dim. [mm]			
	H	type of thread	Ø D	L'
SMP 410 C ...	15/ 20	4	10	4
SMP 415 C ...	15/ 20	4	15	4
SMP 515 C ...	20	M 5	15	5

material:	rubber-metal connection
rubber:	natural rubber (NR according to ISO)
hardness range:	approx. 50 Shore A
extensibility and tebsile strength:	very good
colour:	black
metall parts:	steel tin-plated
temperature range:	-40 °C ... +80 °C (short term +90 °C)

<p>art. no.</p> <p>LSD 07520</p>		
<p>art. no.</p> <p>LSD 08910</p>		
<p>art. no.</p> <p>LSD 08920</p>		
<p>art. no.</p> <p>LSD 13510</p>		
<p>art. no.</p> <p>LSD 13520</p>		
<p>material:</p>		<p>insulating body: PTFE (teflon)</p>
<p>contact pin:</p>		<p>brass, 2 µm Ni, 4 µm Ag</p>
<p>temperature range:</p>		<p>-200 °C ... +260 °C</p>

Solder pins

art. no. LS 101 ±0.6 mm	art. no. LS 102 ±0.6 mm	art. no. LS 103 ±0.6 mm	art. no. LS 104 ±0.6 mm	art. no. LS 105 ±0.5 mm
art. no. LS 106 ±0.8 mm	art. no. LS 107 ±0.5 mm			

= thickness

	LS
material	brass, 6 μm Sn

E 41

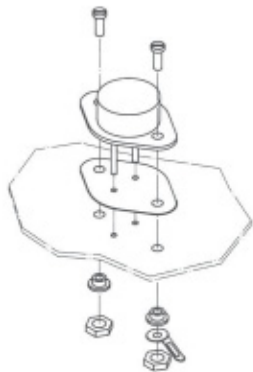
Screw mounted guide rails
Ejectors
Insulating distance sleeves
Spacers

→ E 24 – 26
→ E 29
→ E 30 – 37
→ E 38

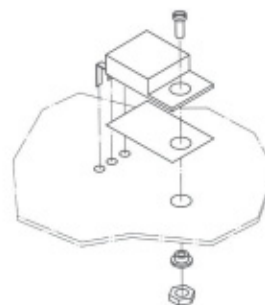
Insulating clamping parts
Mounting parts for heatsinks
Mounting material for semiconduct.
Technical introduction

→ E 43
→ E 47 – 48
→ E 42
→ A 2 – 7

MST 3
MSTS 3



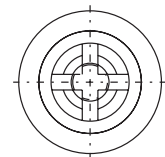
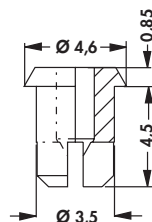
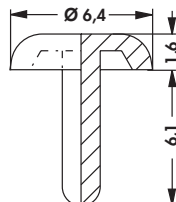
MST 220
MSTS 220



art. no.	for transistor	version	contents of delivery
MST 3	TO 3	with mica wafer GS 3	1 mica wafer, 2 insulator sleeves, 1 tin-plated solder lug, 2 cheese head screws, nickel-plated, 2 screw nuts M3 nickel-plated
MSTS 3	TO 3	with silicone wafer WS 3	1 silicone wafer, 2 insulator sleeves, 1 tin-plated solder lug, 2 cheese head screws, nickel-plated, 2 screw nuts M3 nickel-plated
MST 220	TO 220	with mica wafer GS 220	1 mica wafer, 1 tin-plated solder lug, 1 cheese head screw, nickel-plated, 1 screw nut M3 nickel-plated
MSTS 220	TO 220	with silicone wafer WS 220	1 silicone wafer, 1 insulator sleeve, 1 tin-plated solder lug, 1 cheese head screw, nickel-plated, 1 screw nut M3 nickel-plated

Snap rivet for quick fastening of TO 220

- detachable plastic snap rivet for quick fastening of transistors onto heatsinks and cooling plates (e.g. FK 212-CB, FK 216-CB, FK 222-220, FK 232, FK 233, FK 235-L 1)
- suitable for material thickness: 1 – 1.5 mm
- suitable for hole diameter: 3.5 – 4 mm
- * = bottom view, pin not inserted

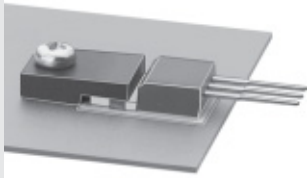
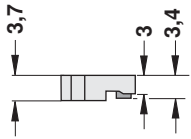
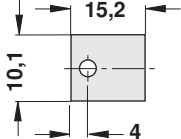
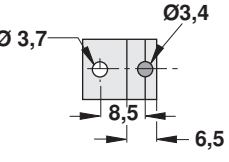
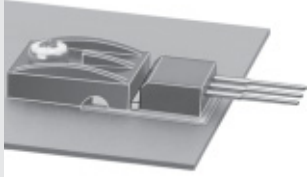
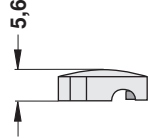
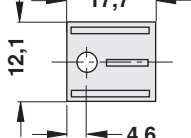
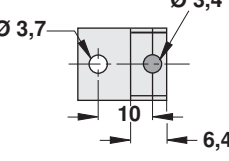
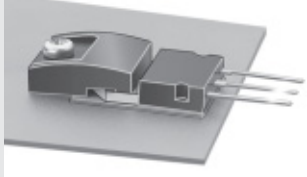
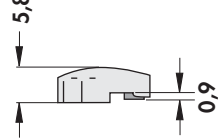
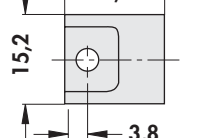
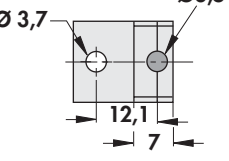
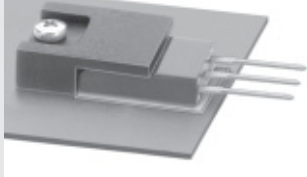
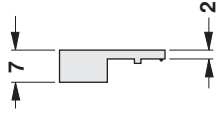
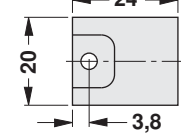
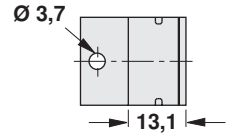


art. no.	for transistor
EPN 1	TO 220
material:	polysulphone, GF reinforced
temperature range:	-70 °C ... +180 ° (5 sec. +260 °C)
class of flammability:	UL 94 V-0

Insulating clamping parts for power transistors

Plastic insulating clamping parts for mounting transistors in cases TO 220, TO 218 and TO 247 for enhanced dielectric strengths

- electrically insulating assembly of the transistor by means of a plastic clamping part
- pin reaching into the hole of the transistor plate
- fastening of clamping part onto the mounting plate by screws, no electroinsulating connection to the transistor
- dielectric strength only determined by the insulating washer between transistor and mounting surface
- no insulating bush necessary, thus no dielectric breakdown

art. no. 			
ISP 220 art. no. 			
art. no. 			
ISP 218 art. no. 			
ISP 247 material: dielectric strength: heat distortion: dielectric constant: dielectric loss factor: specific volume resistance: colour: class of flammibility:	polyamide 6, GF reinforced >27 kV/mm 205(1,8 MPa) 135(8 MPa) 8 [100 Hz] / 4.5 [1 MHz] 1300 [100 Hz] 450 [1 MHz] >10 ¹³ Ω/cm black UL 94 V-0		

art. no. MS 53 3 TO 5	art. no. MS 53 7 TO 5	art. no. MS 53 25 TO 5	art. no. MS 54 25 TO 5	art. no. MS 58 5 TO 5-8 p.
art. no. MS 58 7 TO 5-8 p.	art. no. MS 56 15 TO 5-6 p.	art. no. MS 58 15 TO 5-8 p.	art. no. MS 510 15 TO 5-10 p.	art. no. MS 3518 25 TO 5/ TO 18
art. no. MS 3518 35 TO 5/ TO 18	art. no. MS 34 518 TO 5 / TO 18	art. no. MS 183 25 TO 18	art. no. MS 184 25 TO 18	art. no. MS 183 35 TO 18
art. no. MS 184 35 TO 18	art. no. MS 183 7 TO 18	art. no. MS 184 7 TO 18	art. no. MS 84 4 TO 8	art. no. MS 923 25 TO 92
art. no. MS 4016 max. 16 contacts	art. no. US 58 4 TO 5	art. no. US 512 4 TO 5		

* = **mounting pads**: the US-pads convert the TO 5 pin circle to a pitch of .1".

material:	polyamide 6, GF reinforced
temperature range:	-40 °C ... +205 °C
class of flammability:	UL 94 V-0 (at thickness ≥ 3 mm), UL 94 V-1

Mounting parts for heatsinks
Heatsinks for PCB
Profiles for PCB mounting
Thermal conductive material

→ E 47 - 48
→ A 89 - 92
→ A 89 - 111
→ E 2 - 22

Insulating distance sleeves
Finger-shaped heatsinks
Retaining springs for transistors
Technical introduction

→ E 30 - 32
→ C 2 - 3
→ A 114 - 120
→ A 2 - 7

E 44

A

B

C

D

E

F

G

H

I

K

L

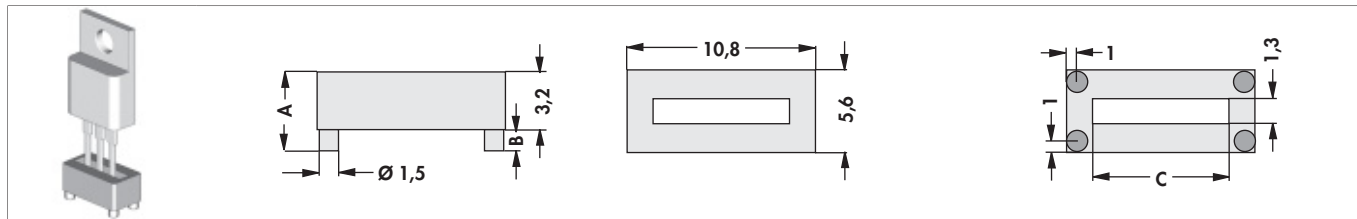
M

N

Mounts

Mounts for power transistors

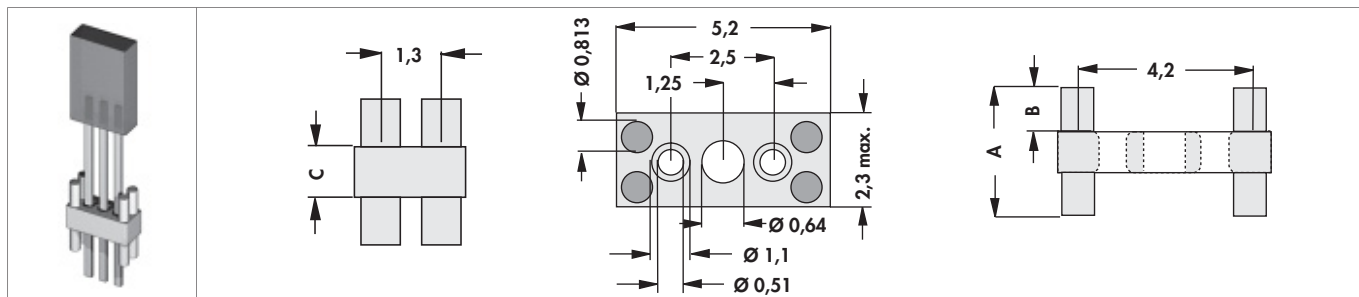
- for TO 220, TO 219, TO 202 and similar
- for vertical and horizontal mounting
- also suitable as mounting bracket for angled connections



art. no.	colour	dim. [mm]		
		A	B	C
MLW 32	white	3.2	—	7.1
MLW 44	white	4.4	1.3	7.1
MLW 51	white	5.1	1.9	7.1
material:	polyamide 6 (nylon)			
temperature range:	-40 °C ... +120 °C			
class of flammability:	UL 94 V-2			

Mounts for rectangular LEDs

- for LED 2x4 mm oder 2x5 mm
- symmetric version for easy assembly
- self-adhesive



art. no.	colour	dim. [mm]		
		A	B	C
MRL 20	white	2	0.5	1
material:	polyamide 6 (nylon)			
temperature range:	-40 °C ... +120 °C			
class of flammability:	UL 94 V-2			

E 45

Mounting parts for heatsinks
Heatsinks for PCB
Profiles for PCB mounting
Thermal conductive material


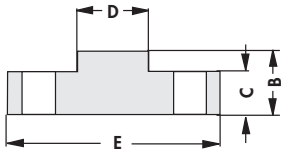
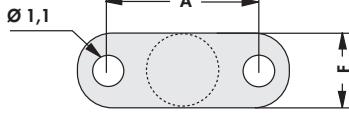

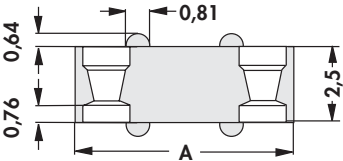
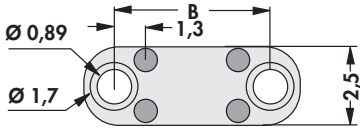

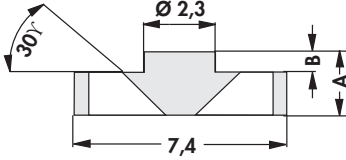
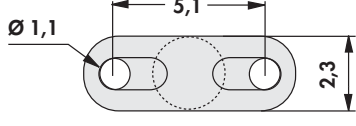
→ E 47 – 48
→ A 89 – 92
→ A 89 – 111
→ E 2 – 22

Insulating distance sleeves
Finger-shaped heatsinks
Retaining springs for transistors
Technical introduction

→ E 30 – 32
→ C 2 – 3
→ A 114 – 120
→ A 2 – 7

Mounts for discrete components

– suitable for various components e.g. resistors, capacitors etc.

			
art. no.	dim. [mm]	art. no.	dim. [mm]
	A B C D E F		A B C D E F
MD A 04	2.5 1.1 0.55 1.3 4.6 2.3	MD A 09	7.6 1.1 0.66 3.6 9.9 2.3
MD A 06	3.8 1.1 0.55 2.3 6.9 3.2	MD A 12	10.2 1.1 0.76 4.8 12.4 2.3
MD A 07	5.1 1.1 0.55 2.3 7.4 2.3		
			
art. no.	dim. [mm]	art. no.	dim. [mm]
	A B		A B
MD B 07	7.6 5.1	MD B 12	12.7 10.2
MD B 10	10.2 7.6	MD B 15	15.2 12.7
MD B 11	11.4 8.9		
			
art. no.	dim. [mm]	art. no.	dim. [mm]
	A		A B
MD C 13	1.3	MD C 22	2.2 0.89
material:	polyamide 6 (nylon)		
temperature range:	-30 °C ... +110 °C		
class of flammability:	UL 94 V-2		

A

Mounting parts for heatsinks

B

C

D

E

F

G


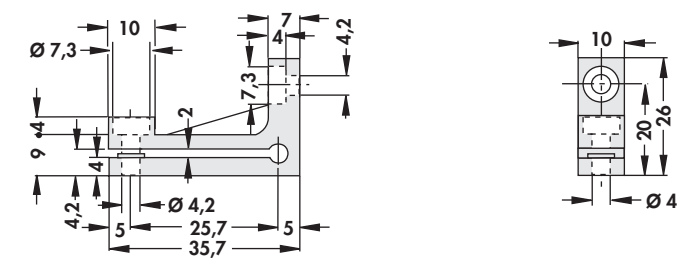

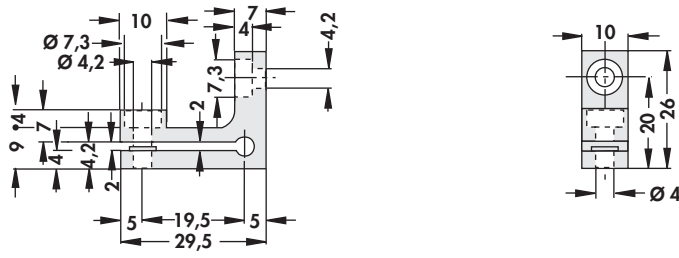

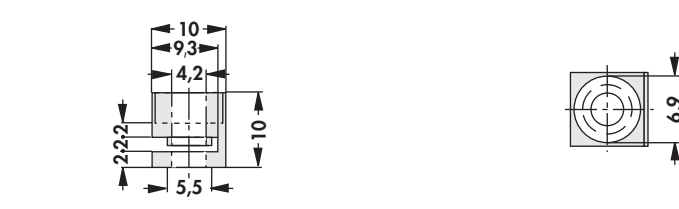

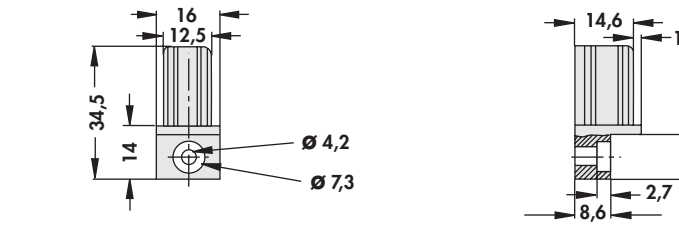
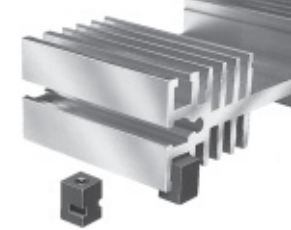
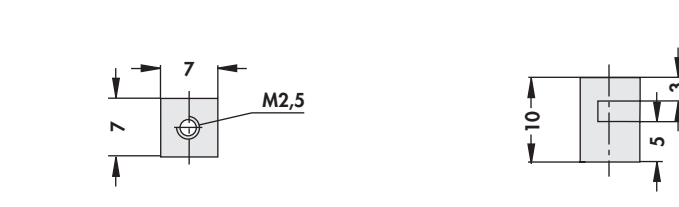
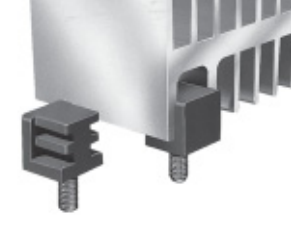
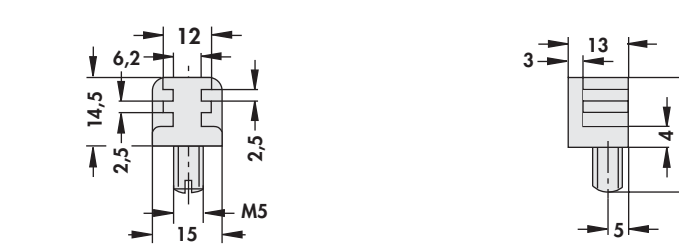
H

I

K

L

M

art. no. IS 1		
for SK 01, 02, 03, 11, 14, 21, 30, 34, 36, 39, 46, 69; heatsink length: 50 mm		
art. no. IS 2		
for SK 01, 02, 03, 11, 14, 21, 30, 34, 36, 39, 46, 69; heatsink length: 37,5 75 100 mm		
art. no. IS 3		
for SK 01, 02, 03, 11, 14, 21, 30, 34, 36, 39, 46, 69		
art. no. IS 4		
for SK 06		
art. no. IS 5		
for SK 20		
art. no. IS 6		
for SK 67		
material: class of flammability:	polyamide 6, GF reinforced UL 94 V-0	

E 47
Heatsink profile-overview
Profiles for PCB mounting
Heatsinks for PCB
Insulating distance sleeves


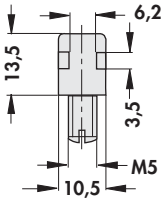
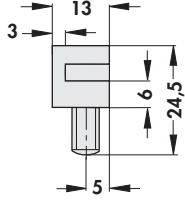
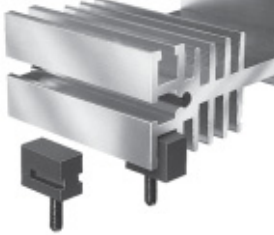
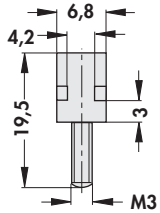
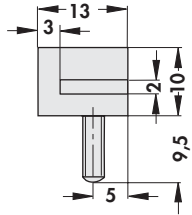
 → A 13 - 17
 → A 89 - 111
 → E 30 - 32

Insulating clamping parts
Mounting pads for transistors
Mounting pads for single components
Technical introduction


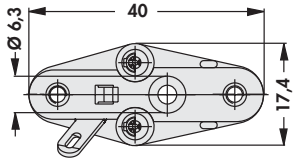
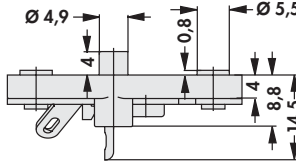
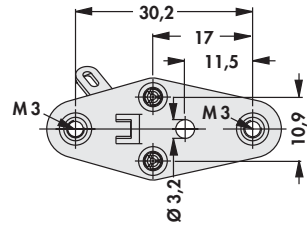
 → E 43
 → E 45
 → E 46
 → A 2 - 7

N

Mounting parts for heatsinks

art. no.			
IS 7	for SK 70		
art. no.			
IS 8	for SK 20		
material:	polyamide 6, GF reinforced		
class of flammability:	UL 94 V-0		

Sockets for power transistors TO 3

			
art. no.	no. of contacts		
TF 3 2	3		
insulator:	PCT, glassfibre filled		
contact:	beryllium copper; 4 ... 6 μm Sn		
current rating:	15 A max.		
contact resistance:	<10 mΩ		
temperature range:	-65 °C ... +290 °C		
insulation resistance:	>10 ¹⁰ Ω/cm		
capacity:	1 pF		
test voltage:	1650 V		
class of flammability:	UL 94 V-0		

A

Insulating caps


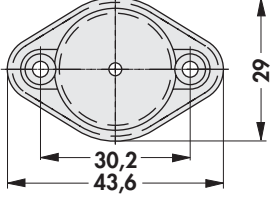
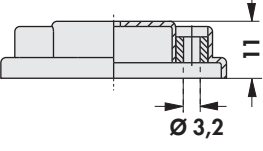

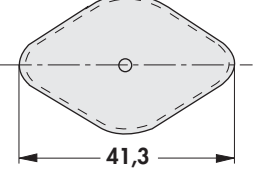
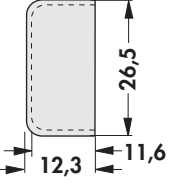
– different transistor flange levels will be by the sleeves

B

C

D

E

art. no. IK 341 3			
art. no. IK 3			
material:	polyamide, GF reinforced		
pressed-in sleeves:	brass, nickel-plated		
class of flammability:	UL 94 V-0		

F

G

H

I

K

L

M

N

E 49

Mica wafers
Thermal conductive material
Mounting for TO 3 angle
Die-cast heatsinks

→ E 17 Aluminium oxide wafers
→ E 2 – 5 Thermal conductive paste
→ A 123 Thermal conductive glue
→ A 123 – 126 Technical introduction

→ E 15 – 16
→ E 19 – 20
→ E 21 – 22
→ A 2 – 7

Insulating bush

art. no. IB 1 / IBT 1	art. no. IB 2 / IBT 2	art. no. IB 3 / IBT 3	art. no. IB 4 / IBT 4	art. no. IB 5
art. no. IB 6 / IBT 6	art. no. IB 7 / IBT 7	art. no. IB 8 / IBT 8	art. no. IB 9 / IBT 9	art. no. IB 10 / IBT 10
art. no. IB 11 / IBT 11	art. no. IB 12 / IBT 12	art. no. IB 13	art. no. IB 14 / IBT 14	art. no. IB 15 / IBT 15
art. no. IB 16	art. no. IB 17	art. no. IB 18 / IBT 18		

	IB 1 - IB 7 / 18	IBT 1 - IBT 15 / 18	IB 8 - IB 17
material	polyamide 4.6, GF reinforced	PTFE (teflon)	thermoplastic resin
form stability	-40 °C ... +250 °C (1,8 MPa)	-260 °C ... +250 °C	-40 °C ... +200 °C
dielectric strength	>30 kV/mm	>40 kV/mm	>38 kV/mm
class of flammability		UL 94 V-0	

Mica wafers
Thermal conductive material
Mounting for TO 3 angle
Die-cast heatsinks

→ E 17
→ E 2 - 5
→ A 123
→ A 123 - 126

Aluminium oxide wafers
Thermal conductive paste
Thermal conductive glue
Technical introduction

→ E 15 - 16
→ E 19 - 20
→ E 21 - 22
→ A 2 - 7

E 50

A

B

C

D

E

F

G

H

I

K

L

M

N

High quality surface treatment for electronic components



Gold-plating

properties: high resistance to wear, good corrosion resistance, temperature stability and solderability

process: drum technology

materials: non-ferrous metals

coating system: copper/nickel/gold



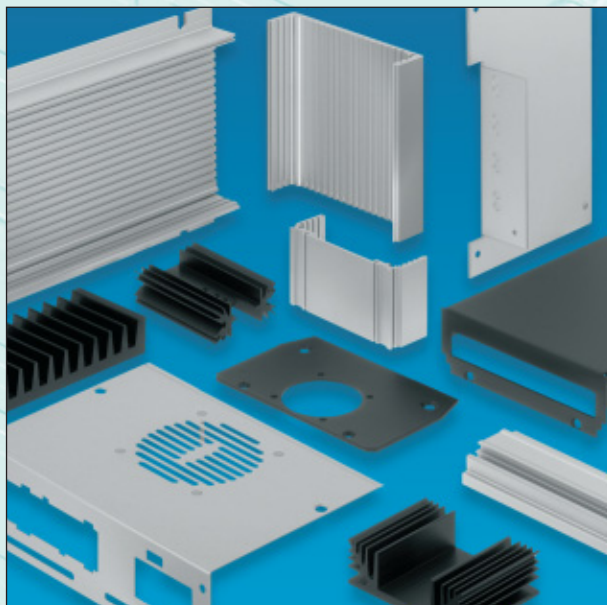
Tin-plating

properties: solderable layers with improved to tarnishing and corrosion resistance

process: drum technology

materials: non-ferrous metals

coating system: copper/nickel/tin



Anodising

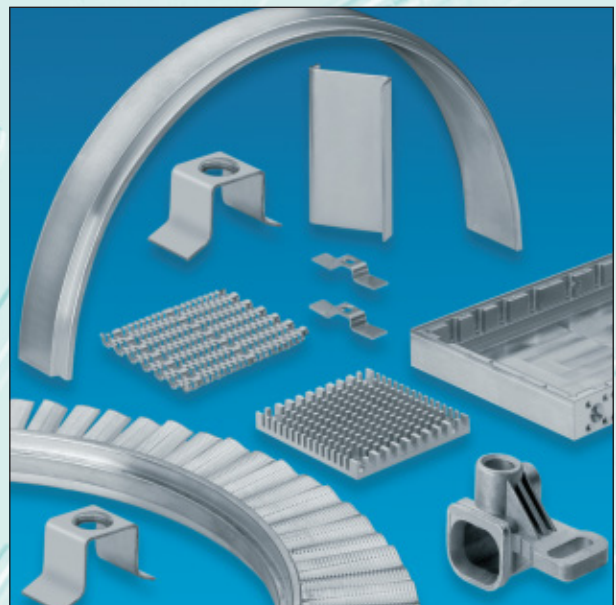
performance: fabrication of corrosion resistant, decorative oxide films

process: anodic oxidation in fully automated equipment

materials: aluminium and aluminium alloys

max. component size: 1500 x 2000 x 450 mm

colour: natural aluminium or black



Degreasing

performance: degreasing of oily or greasy metallic surfaces

process: steam degreasing using chlorinated hydrocarbons in hermetically sealed equipment

material: aluminium and aluminium alloys

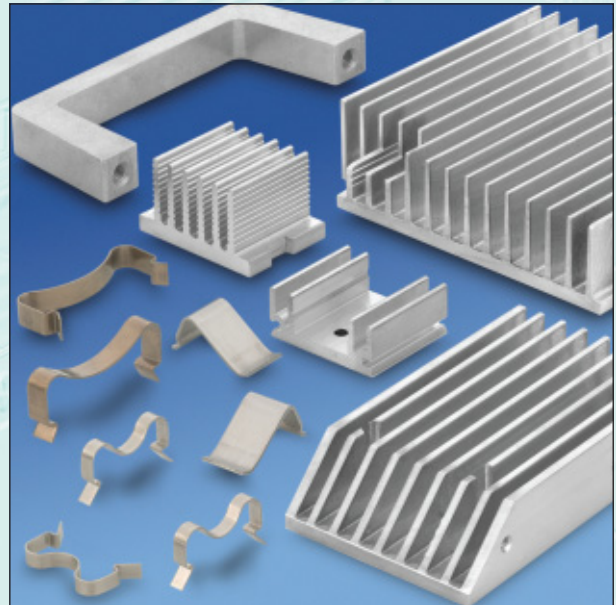
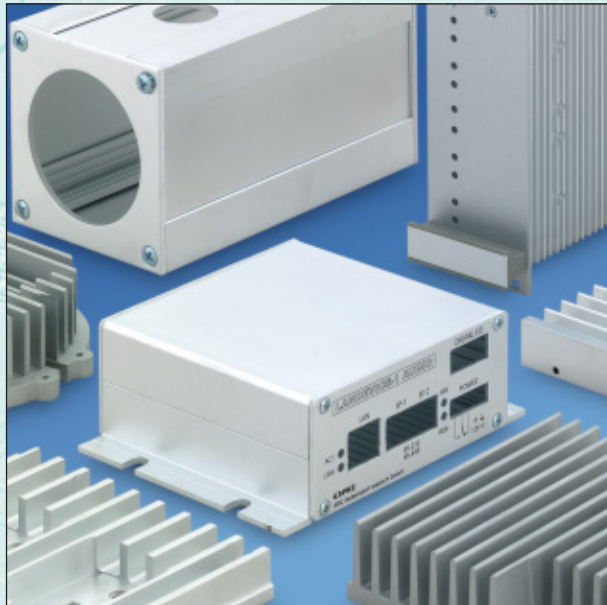
min. component size: 30 x 30 x 30 mm

max. component size: 600 x 400 x 380 mm

max. component weight: 80 kg



High quality surface treatment for electronic components



Transparent passivating (surface free from chromium VI)

characteristics: environmental compatibility due to chrome free passivation of the aluminium surfaces
 fabrication of conversion coatings by immersion process

process: fabrication of conversion coatings by immersion process

materials: aluminium und aluminium alloys

max. component size: 1500 x 2000 x 450 mm

colour: natural aluminium or black

Vibratory grinding (tumbling in a barrel)

characteristics: deburring, removing of sharp edges, rough and fine grinding

process: treatment using vibration technique and grinding tools (trowalization)

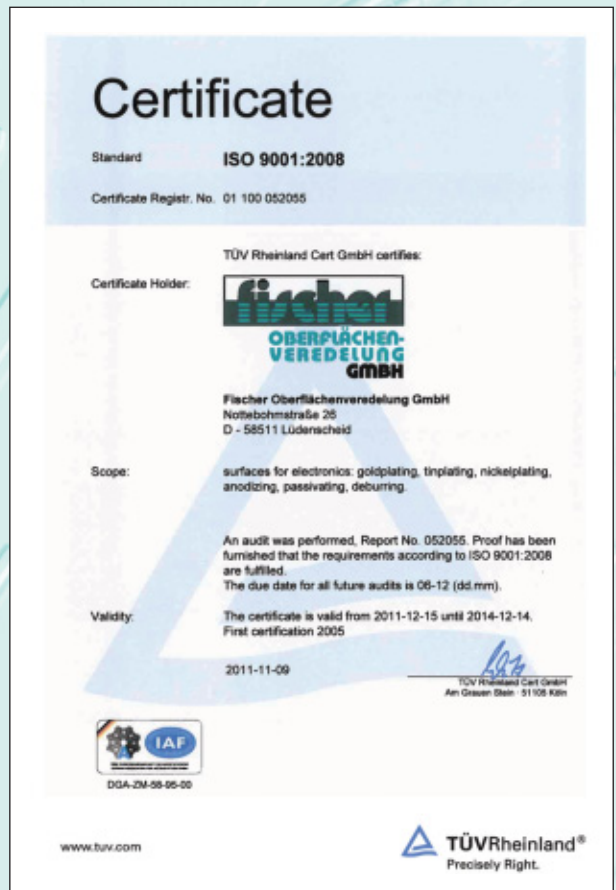
materials: metallic, aluminium favoured

max. component size: 230 x 200 mm



Anodisation facility

- economization of water by using spray-rinsing, automatized ion exchange installation, cascade water guided system and recirculation of splash water
- reduction of electrical energy by means of current density regulation
- reduction of chemicals by recirculation of the dragged-off chemicals using a compensation of the evaporation losses
- recycling of the sulphuric acid out of the anodizing baths



Certificate

Standard **ISO 9001:2008**

Certificate Registr. No. 01 100 052055

TÜV Rheinland Cert GmbH certifies:

Certificate Holder:



Fischer Oberflächenveredelung GmbH
Nottebohmstraße 25
D - 58511 Lüdenscheid

Scope:

surfaces for electronics: goldplating, tinplating, nickelplating, anodizing, passivating, deburring.

An audit was performed, Report No. 052055. Proof has been furnished that the requirements according to ISO 9001:2008 are fulfilled.
The due date for all future audits is 06-12 (dd.mm).

Validity:

The certificate is valid from 2011-12-15 until 2014-12-14.
First certification 2005

2011-11-09

TÜV Rheinland Cert GmbH
Am Grossen Stein 51108 Köln



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