



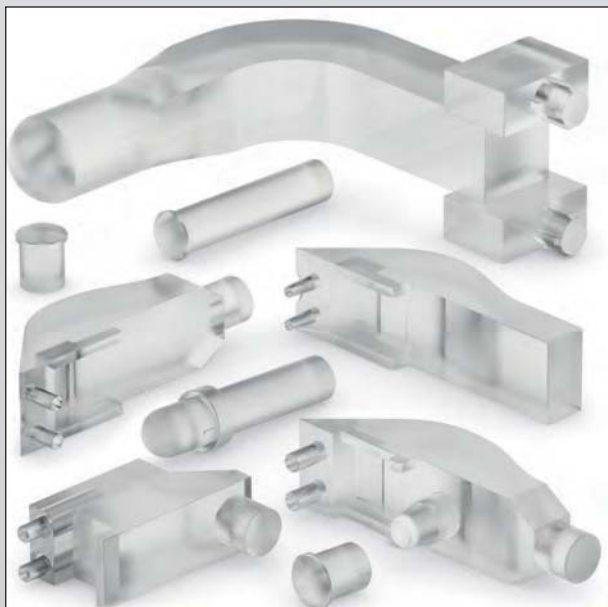
Mounting material

- spacers for standard LEDs
- class of flammability acc. to UL 94 VO



LED fastener for horizontal PCB mounting

- single and double fasteners for a standard diameter of 3 and 5 mm
- equipped multi-fastener
- single fasteners and fasteners connectable in series



Fibre-optics for SMD-LED components

- horizontal, fixed fibre-optics with round or rectangular lense made of transparent plastics – also for gauge displays
- vertical, fixed fibre-optics with round or rectangular lense made of transparent plastics


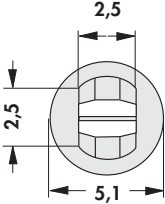
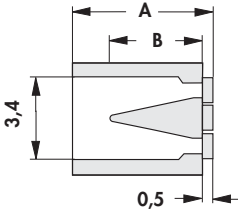



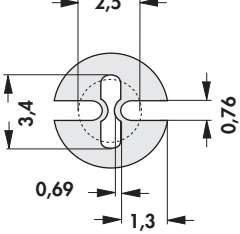
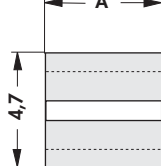
LED fastener for front panel mounting

- clipable fastener for 5 mm LEDs
- fastener for 3 and 5 mm LED with clamping ring

Spacers for LED

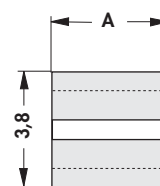
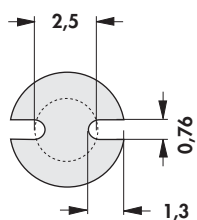
– universal mount for LED Ø 3 mm and 5 mm, self retaining

  					
art. no.	B [mm]	dim. [mm] A	art. no.	B [mm]	dim. [mm] A
MAH 31	1.5	3.1	MAH 71	4.7	7.1
MAH 41	1.5	4.1	MAH 81	4.7	8.1
MAH 51	1.5	5.1	MAH 89	4.7	8.9
MAH 61	1.5	6.1	MAH 99	7.9	9.9
insulating body material:		MPPS, black			
temperature range:		-40°C... +240°C/ (260°C/5 s)			
class of flammability:		UL 94 V-0			

  			
art. no.	dim. [mm] A	art. no.	dim. [mm] A
MAH 401	1	MAH 406	6
MAH 402	2	MAH 407	7
MAH 403	3	MAH 408	8
MAH 404	4	MAH 409	9
MAH 405	5	MAH 410	10
insulating body material:		PVC Blend, black	
temperature range:		-40°C... +85°C	
class of flammability:		UL 94 V-0	

Spacers for LED

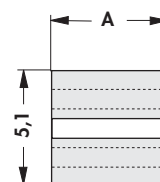
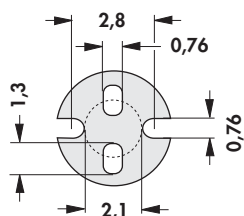
– for LED Ø 3 mm, thin mount



art. no.	dim. [mm] A	art. no.	dim. [mm] A	art. no.	dim. [mm] A
MAH 301	1	MAH 305	5	MAH 308	8
MAH 302	2	MAH 306	6	MAH 309	9
MAH 303	3	MAH 307	7	MAH 310	10
MAH 304	4				

insulating body material:	PVC Blend, black
temperature range:	-40°C... +85°C
class of flammability:	UL 94 V-0

– for LED Ø 5 mm, self-retaining


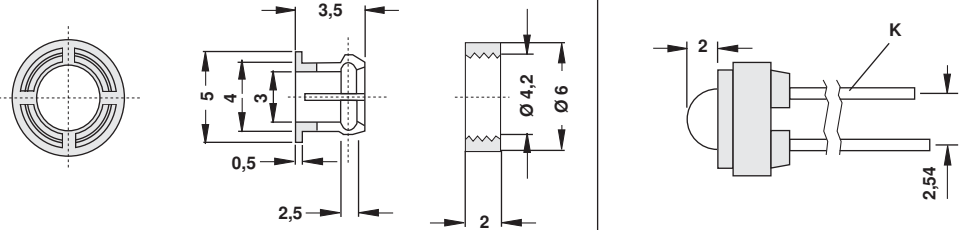


art. no.	dim. [mm] A	art. no.	dim. [mm] A	art. no.	dim. [mm] A
MAH 501	1	MAH 504	4	MAH 508	8
MAH 502	2	MAH 505	5	MAH 509	9
MAH 503	3	MAH 506	6	MAH 510	10


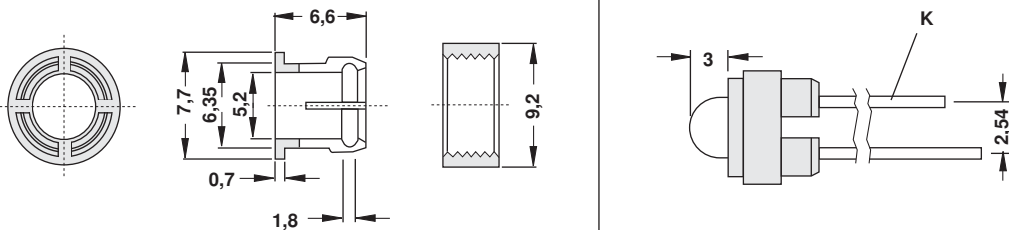
insulating body material:	PVC Blend, black
temperature range:	-40°C... +85°C
class of flammability:	UL 94 V-0

LED-holders


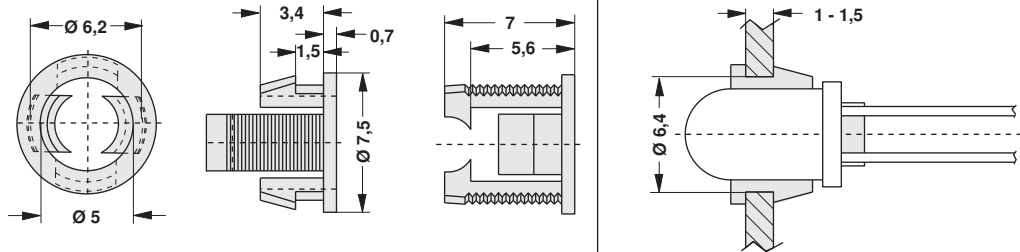
- suitable for 3 mm diodes with a collar height of 0.6 mm
- **K** = cathode

			
art. no.		type	
DH 3 V		for LED Ø3mm	
insulating body material:		PA, GF	

- suitable for 5 mm diodes with a collar height of 0.6 mm/1 mm
- **K** = cathode

			
art. no.		type	
DH 5 VC		for LED Ø5mm	
insulating body material:		PA, GF	


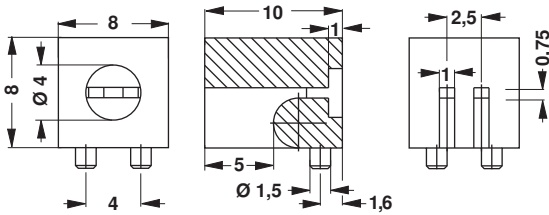
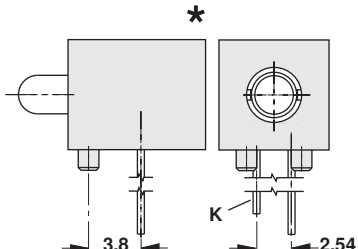

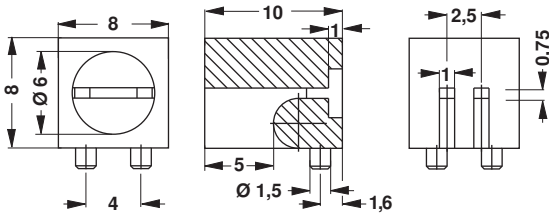
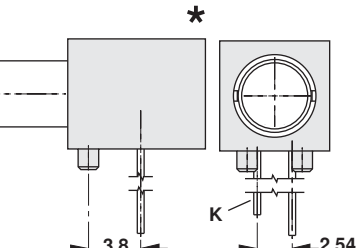

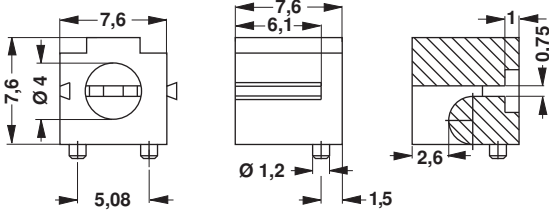
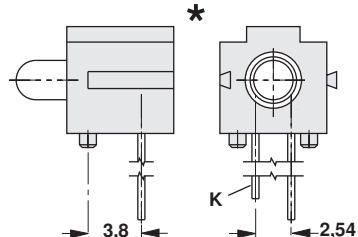

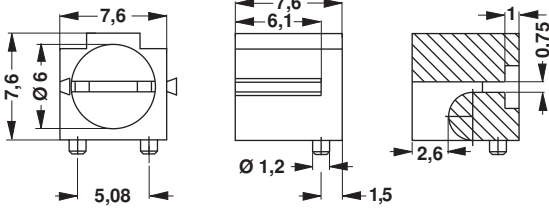
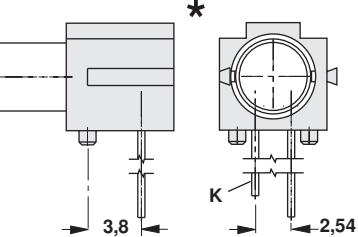
- suitable for 5 mm diodes with a collar height of 0.6 mm/1 mm
- **K** = cathode

			
art. no.		type	
DH 5 SRC		for LED Ø5mm	
insulating body material:		PA, GF	

LED-holders

LED-holder for LED Ø 3 mm and 5 mm

– K = cathode / * = presentation with diode


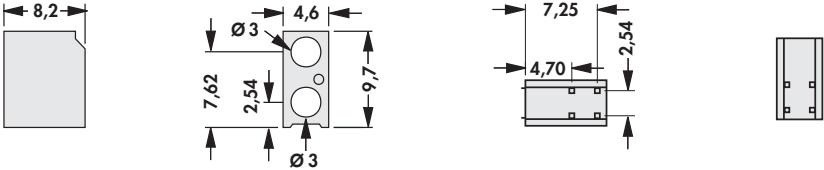
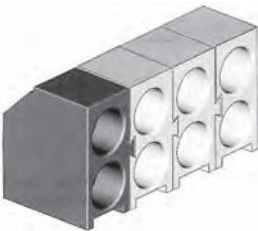
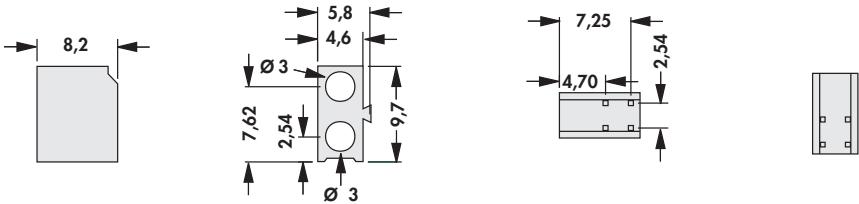
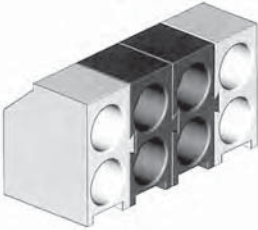
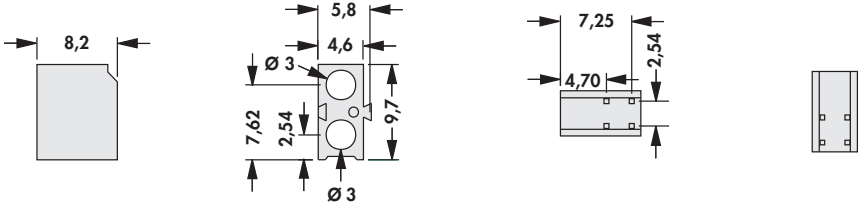
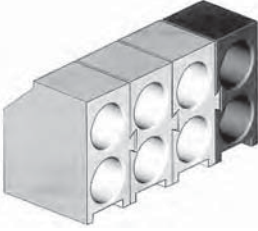
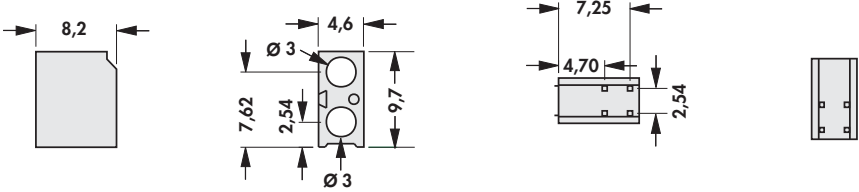
		
art. no. DH 3 W	type for LED Ø3mm	
		
art. no. DH 5 W	type for LED Ø5mm	
		
art. no. DH 3 R	type for LED Ø3mm	
		
art. no. DH 5 R	type for LED Ø5mm	

insulating body material:	PA 4.6. GF
temperature range:	-40°C... +163°C/ (260°C/10 s)
class of flammability:	UL 94 V-0

LED-holders

LED-holder for LED Ø 3 mm


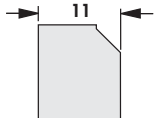
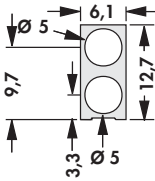
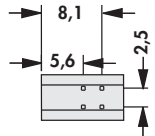

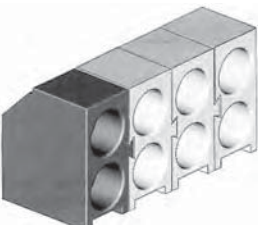
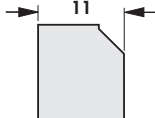
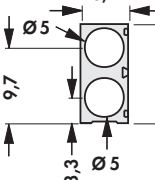
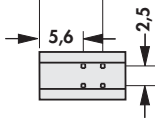

– stackable LED-holders: single holder/can be strung, left/can be strung, middle/can be strung, right

	
art. no.	type
DDH 3 E	for LED Ø3mm
	
art. no.	type
DDH 3 L	for LED Ø3mm, can be strung left
	
art. no.	type
DDH 3 M	for LED Ø3mm, can be strung middle
	
art. no.	type
DDH 3 R	for LED Ø3mm, can be strung right
insulating body material:	PA 6/6, GF
temperature range:	-20°C... +85°C
class of flammability:	UL 94 V-0

LED-holders

LED-holder for LED Ø 5 mm


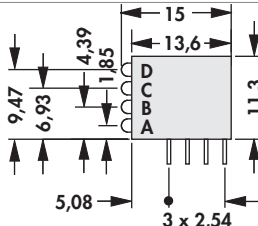
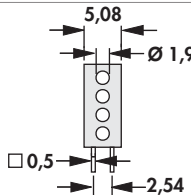
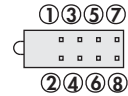

– stackable LED-holders: single holder/can be strung, left/can be strung, middle/can be strung, right

    		
art. no.	type	
DDH 5 E	for LED Ø5mm, single holder	
    		
art. no.	type	
DDH 5 L	for LED Ø5mm, can be strung left	
insulating body material:	PA 6/6, GF	
temperature range:	-20°C... +85°C	
class of flammability:	UL 94 V-0	

Fourfold-LED-holders


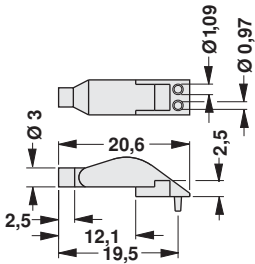
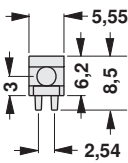
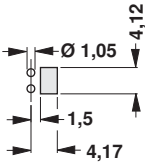

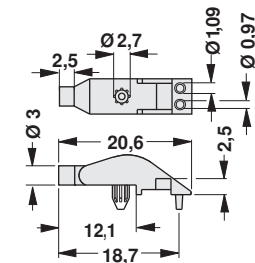
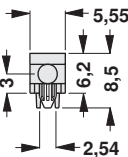
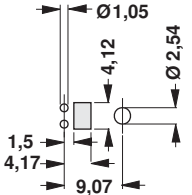

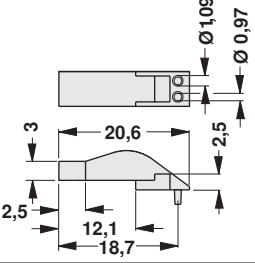
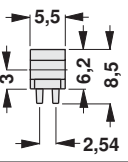
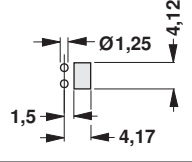

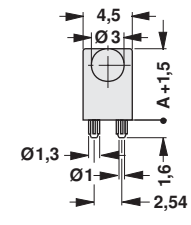
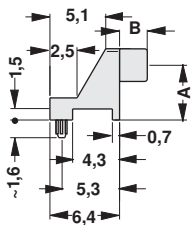
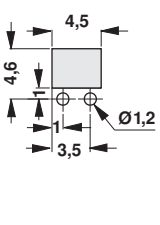
– standard case, standard colours, diffuse lens, space-saving design, round lens, rectangular lens

– typical data at $T_{amb}=25^{\circ}\text{C}$ und $I_F=I_{Ftyp}$, 100% DC

				
art. no.	type	emission colour	Spannungen $U_{f_{typ}}$ / $U_{r_{max}}$ [V]	wavelength λ_{max} [nm]
DLH 21 ASEH	with LED Ø2mm, fourfold	super red	2.0 / 2.6	635
DLH 21 AYEh	with LED Ø2mm, fourfold	yellow	2.1 / 2.6	585
DLH 21 AGEH	with LED Ø2mm, fourfold	green	2.2 / 2.6	565
insulating body material:		Nylon, black		
temperature range:		-20°C... +85°C		
class of flammability:		UL 94 V-0		
beam angle 2 ϕ:		80 °		
design:		2mm round		
for cases:		in terms of colour diffuse		
derating:		from $T_{amb} < 20^{\circ}\text{C}$, operating current reduced by 0.4 mA/K .		
light intensity I:		12 mcd		
flows $I_{F_{typ}}$ / $I_{F_{max}}$:		20/30 mA		


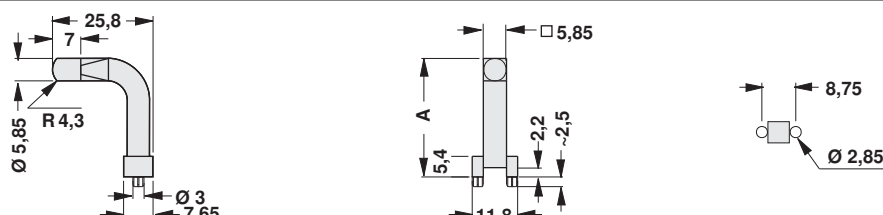
Light pipes for SMDs

- suitable for current SMD types
- 3 mm light pipes
- horizontal
- ESD-protection from panel to PCB


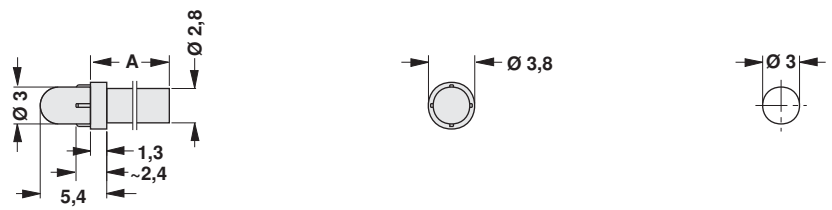
							
art. no.	diameter of lens	way of fixation					
LL 30 HRS	Ø3mm	by alignment pins					
							
art. no.	diameter of lens	way of fixation					
LL 30 HRP	Ø3mm	by press-in pins					
							
art. no.	diameter of lens	way of fixation					
LL 35 HVS	rectangle 5.5x3mm	by alignment pins					
							
art. no.	diameter of lens	way of fixation		dim. [mm]			
LL 30 WRFP 038	Ø3mm	by press-in pins		A		B	
LL 30 WRFP 050	Ø3mm	by press-in pins		3.8		2.5	
LL 30 WRFP 076	Ø3mm	by press-in pins		5.0		2.5	
LL 30 WRFP 102	Ø3mm	by press-in pins		7.6		2.5	
insulating body material:		Polycarbonate, clear					
temperature range:		-30°C... +100°C					
class of flammability:		UL 94 V-0					


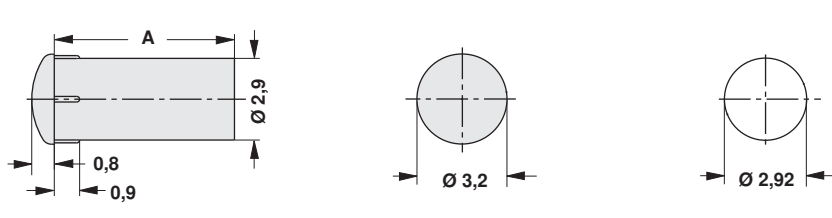
Light pipes for SMDs

– panel light pipe, 6 mm lens, suitable for common SMD LEDs, white lens, large angle of radiation


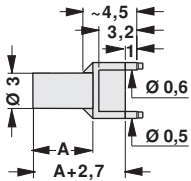
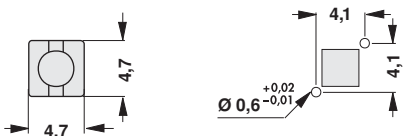
			
art. no.	diameter of lense	way of fixation	dim. [mm] A
LL 60 WRB 254	Ø6mm	by press-in pins	25.4

– panel light pipe 3 mm, ESD protection from panel to PCB

					
art. no.	diameter of lense	dim. [mm] A	art. no.	diameter of lense	dim. [mm] A
LL 30 PRB 032	Ø3mm	3.2	LL 30 PRB 089	Ø3mm	8.9
LL 30 PRB 064	Ø3mm	6.4			

					
art. no.	diameter of lense	dim. [mm] A	art. no.	diameter of lense	dim. [mm] A
LL 30 PRL 032	Ø3mm	3.2	LL 30 PRL 127	Ø3mm	12.7
LL 30 PRL 064	Ø3mm	6.4	LL 30 PRL 159	Ø3mm	15.9
LL 30 PRL 089	Ø3mm	8.9			

– suitable for current SMD LEDs, vertical, rigid light pipe Ø 3 mm, ESD protection from panel to PCB

					
art. no.	diameter of lense	way of fixation	dim. [mm] A		
LL 30 VRFS 024	Ø3mm	by alignment pins	2.4		
LL 30 VRFS 050	Ø3mm	by alignment pins	5.0		
LL 30 VRFS 075	Ø3mm	by alignment pins	7.5		
insulating body material:		Polycarbonate, clear			
temperature range:		-30°C... +100°C			
class of flammability:		UL 94 V-0			