Si-Fotodetektoren, Optische Sensoren und IR-Lumineszenzdioden

Silicon Photodetectors, Optical Sensors and Infrared Emitters

SI-FOTODETEKTOREN, OPTISCHE SENSOREN UND IR-LUMINESZENZDIODEN

SILICON PHOTODETECTORS, OPTICAL SENSORS AND INFRARED EMITTERS

SI-FOTODETEKTOREN

SILICON PHOTODETECTORS

OPTISCHE SENSOREN

OPTICAL SENSORS

IR-LUMINESZENZDIODEN

INFRARED EMITTERS

TYPENÜBERSICHT

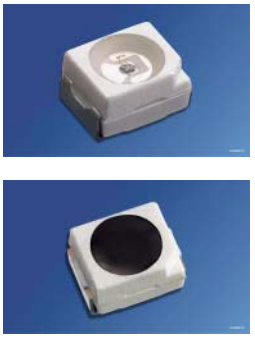
SUMMARY OF TYPES

1. Fototransistoren

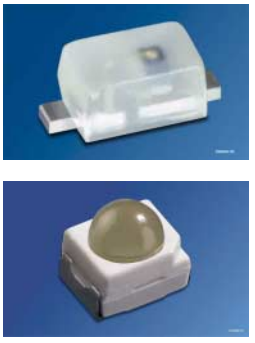
1.1. SMT Transistoren

1. Phototransistors

1.1. SMT Transistors



TOPLED®
SFH 320
SFH 320 FA



SmartLED®
SFH 3010
TOPLED® with Lens
SFH 3219

TOPLED® RG
SFH 3211
SFH 3211 FA

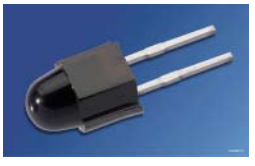
SIDELED®
SFH 325
SFH 325 FA

Multi TOPLED®
SFH 331 / SFH 7221 /
SFH 7225 / SFH 7226

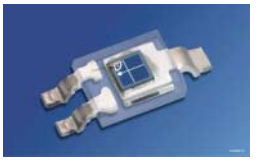
MIDLED
SFH 3600 / SFH 3605

Micro SIDELED®
SFH 3204

SMR
SFH 3500
SFH 3505



SMR
SFH 3500 FA
SFH 3505 FA



SMART DIL
SFH 3400 / SFH 3401

SFH 3201

TYPENÜBERSICHT

SUMMARY OF TYPES

1.2. Fototransistoren im Plastikgehäuse

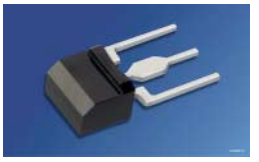
1.2. Phototransistors in plastic package

SFH 309 / SFH 310
SFH 309 FA / SFH 310 FA

SFH 309 P
SFH 309 PFA

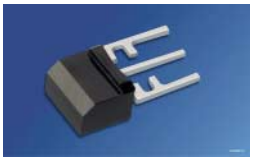
SFH 300 / SFH 313 / SFH 314
SFH 300 FA / SFH 313 FA /
SFH 314 FA

SFH 303
SFH 303 FA



LPT 80 A

SFH 3100 F



SFH 3160 F

SFH 3162 F
SFH 3163 F

SFH 305

BPX 81

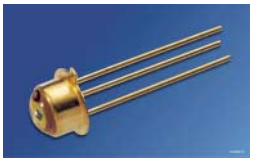
BPX 83

1.3. Fototransistoren im Metallgehäuse

1.3. Phototransistors in metal package

BPY 62 / BPX 43

BPX 38



BP 103

TYPENÜBERSICHT

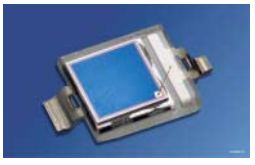
SUMMARY OF TYPES

2. Fotodioden

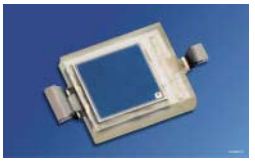
2.1. SMT-Fotodioden

2. Photodiodes

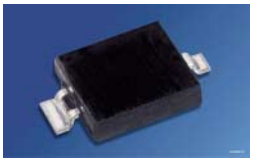
2.1. SMT Photodiodes



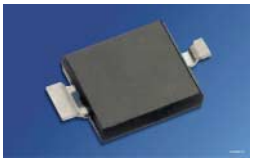
BP 104 S / BPW 34 S /
BPW 34 BS



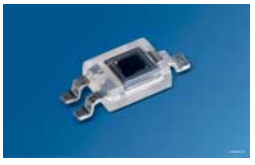
BPW 34 S R18R

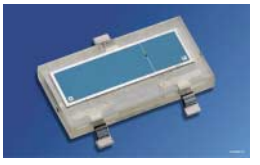


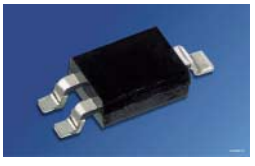
BP 104 FS / BP 104 FAS /
BPW 34 FS / BPW 34 FAS



BPW 34 FS R18R /
BPW 34 FAS R18R

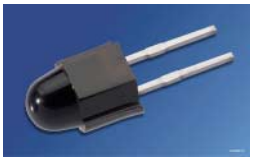




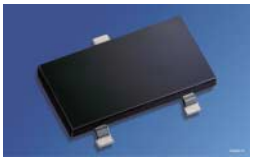


SMART DIL
SFH 2400
SFH 2400 FA

SMR
SFH 2500
SFH 2500 FA



SMR
SFH 2505
SFH 2505 FA



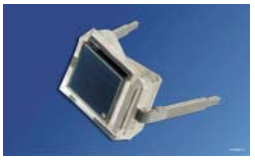
KOM 2125
KOM 2125 FA

TYPENÜBERSICHT

SUMMARY OF TYPES

2.2.PIN Fotodioden im Plastikgehäuse

2.2.PIN Photodiodes in plastic package



BPW 34
BPW 34 F / BPW 34 FA / BP 104 F

SFH 206 K

SFH 229
SFH 229 FA

SFH 203 / SFH 213 / SFH 214
SFH 203 FA / SFH 213 FA /
SFH 214 FA

SFH 203 P
SFH 203 PFA

SFH 225 FA / SFH 235 FA

SFH 205 F / SFH 205 FA

SFH 204 F / SFH 204 FA

2.3.PIN Fotodiode im Metallgehäuse

2.3.PIN Photodiode in metal package

BPX 65

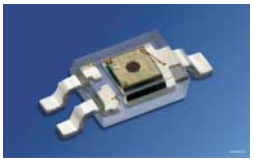
TYPENÜBERSICHT

SUMMARY OF TYPES

3. Foto ICs

3. Photo ICs

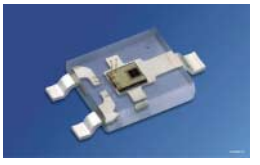
3.1. Schmitt Trigger



SMART DIL
SFH 5440
SFH 5441

SFH 5140 F
SFH 5141 F

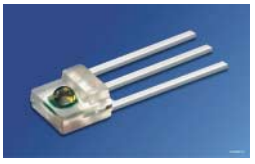
SFH 5840
SFH 5841



SFH 5400

3.2. Linear Verstärker mit Spannungsausgang

3.2. Linear amplifier with voltage output

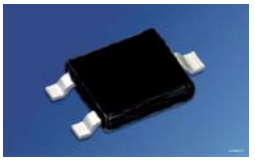


SFH 5130
SFH 5133

3.3. Foto IC für Fernsteuerung

3.3. Photo IC for remote control

SFH 5110



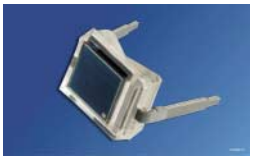
SFH 5410

TYPENÜBERSICHT

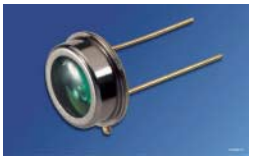
SUMMARY OF TYPES

4. Fotodetektoren für spezielle Anwendungen

4. Photodetectors for special applications

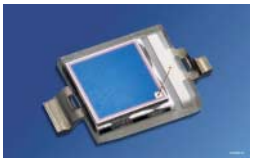


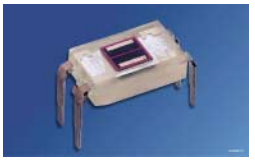
BPW 34 B



BPW 21 / BPX 61

Ambient Light Sensor
SFH 3410





Ambient Light Sensor
SFH 2430

BPW 34 BS
SFH 221

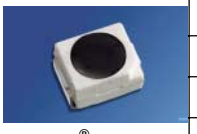
BPX 48
BPX 48 F

1. Fototransistoren

T_A = 25 °C

1. Phototransistors

T_A = 25 °C

Package	Type	φ deg.	Radiant sensitive area mm²	I_{PCE} (E_e = 0.1 mW/cm², λ = 950 nm, V_{CE} = 5 V) µA	V_{CE} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ) µs	Ordering code	Fig. No.
1.1 SMT Transistoren					**1.1 SMT Transistors**				
 SmartLED®	**SFH 3010**	± 80	0.04	>25 (0.5 mW/cm²)	30	420 ... 1100	7	Q65110A2652	69
 TOPLED®	**SFH 320**	± 60	0.045	≥16	35	420 ... 1100	–	Q65110A2471	2
	SFH 320-3			25 ... 50			7	Q65110A2469	
	SFH 320-3/4			25 ... 80			7/8	Q65110A1781	
	SFH 320-4			40 ... 80			8	Q65110A2510	
 TOPLED®	**SFH 320 FA**			≥ 16		740 ... 1100	–	Q65110A2472	
	SFH 320 FA-3			25 ... 50			7	Q65110A2470	
	SFH 320 FA-3/4			25 ... 80			7/8	Q65110A2475	
	SFH 320 FA-4			40 ... 80			8	Q65110A1836	
 TOPLED® with Lens	**SFH 3219**	± 25		≥ 63		430...1150	7	Q65110A2529	67
 TOPLED® RG	**SFH 3211**	± 60		≥ 16		420 ... 1100	8	Q65110A2525	3
	SFH 3211-3/4			25 ... 80				Q65110A2527	
 TOPLED® RG	**SFH 3211 FA**			≥ 16		740 ... 1100	–	Q65110A2526	
	SFH 3211 FA-3/4			25 ... 80			7/8	Q65110A2528	
 SIDELED®	**SFH 325**			≥ 16		420 ... 1100	–	Q65110A2486	4
	SFH 325-3			25 ... 50			7	Q65110A2488	
	SFH 325-3/4			25 ... 80			7/8	Q65110A2491	
	SFH 325-4			40 ... 80			8	Q65110A2484	
 SIDELED®	**SFH 325 FA**			≥ 16		740 ... 1100	–	Q65110A2487	
	SFH 325 FA-3			25 ... 50			7	Q65110A2482	
	SFH 325 FA-3/4			25 ... 80			7/8	Q65110A2490	
	SFH 325 FA-4			40 ... 80			8	Q65110A2485	
 Micro SIDELED®	**SFH 3204**	± 60	0.04	> 32	30	450...1120	7	Q65110A2506	108

For information about RoHS compliance of our products, please visit **http://www.osram-os.com/RoHS**

Package	Type	φ deg.	Radiant sensitive area mm²	I_{PCE} (λ = 950 nm, V_{CE} = 5 V) mA	V_{CE} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ) µs	Ordering code	Fig. No.
1.1 SMT Transistoren (Forts.)					**1.1 SMT Transistors** (cont'd)				
 **T1 3/4 SMR**	**SFH 3500**	± 13	0.55	2.5 ... 20.0	35	450 ... 1060	–	Q65110A2636	7
 **T1 3/4 SMR**	**SFH 3505**			2.5 ... 20.0			–	Q65110A2639	8
	SFH 3505-3/4			2.5 ... 8.0			14/17	Q65110A2646	
	SFH 3505-5/6			6.3 ... 20.0			20/24	Q65110A2647	
 **T1 3/4 SMR**	**SFH 3500 FA**			2.5 ... 20.0		740 ... 1070	–	Q65110A2637	7
	SFH 3500 FA-5/6			6.3 ... 20.0			20/24	Q65110A2645	
 **T1 3/4 SMR**	**SFH 3505 FA**			2.5 ... 20.0			–	Q65110A2640	8
	SFH 3505 FA-5/6			6.3 ... 20.0			20/24	Q65110A2780	
 **SmartDIL**	**SFH 3400**	± 60		0.063 ... 0.32	20	460 ... 1080	–	Q65110A2629	9
	SFH 3400-2/3			0.1 ... 0.32			24/34	Q65110A2634	
	SFH 3401 (mit Basisanschluß/ with base connection)			0.063 ... 0.32			–	Q65110A2635	10
	SFH 3401-2/3			0.1 ... 0.32			24/34	Q65110A2644	
	**SFH 3201**			0.063 ...0.32			–	Q65110A1207	11
	SFH 3201-2/3			0.1 ... 0.32			24/34	Q65110A2479	
1.1.1 SMT Transistoren in flachem, engwinkligem MIDLED Gehäuse					**1.1.1 SMT Transistors in low profile, narrow angle MIDLED package**				
 **MIDLED**	**SFH 3600**	± 20	0.04	>63	35	500 ... 1100	45 (I_C = 0.1 mA, V_{CC} = 5 V, R_L = 10 kΩ)	Q65110A1573	91
	SFH 3600-2/3			100 ... 320				Q65110A2665	
	SFH 3600-3/4			160 ... 500				Q65110A2666	
 **MIDLED**	**SFH 3605**			>63				Q65110A2663	
	SFH 3605-2/3			100 ... 320				Q65110A2664	
	SFH 3605-3/4			160 ... 500				Q65110A1574	

1.1.2 Empfänger/Sender im Multi TOPLED Gehäuse

1.1.2 Detector/Emitter in Multi TOPLED package

Package	Type		λ_{peak} nm	φ deg.	I_V mcd	V_F (I_F = 20 mA) V		Ordering code	Fig. No.
 Multi TOPLED®	SFH 331-JK	Emitter	635	± 60	4...12.5	2.0		Q65110A1206	5
		Detector	Radiant sensitive area mm²	I_{PCE} (E_e = 0.1 mW/cm², λ = 950 nm, V_{CE} = 5 V) µA	V_{CEO} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ) µs		
			0.045	≥16	35	380... 1150	7		

Package	Type		λ_{peak} nm	φ deg.	I_e (I_F = 100 mA) mW/sr	V_F (I_F = 100 mA) V		Ordering code	Fig. No.
 Multi TOPLED®	SFH 7221	Emitter	880	± 60	4	1.5		Q65110A2741	6
		Detector	Radiant sensitive area mm²	I_{PCE} (E_e = 0.1 mW/cm², λ = 950 nm, V_{CE} = 5 V) µA	V_{CE} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ) µs		
			0.045	≥16	35	380... 1150	7		

Package	Type		λ_{peak} nm	φ deg.	I_V (I_F = 20 mA) mcd	V_F (I_F = 20 mA) V	Ordering code	Fig. No.
 Multi TOPLED®	SFH 7225	Emitter	591	± 60	63...200	2.0	Q65110A2743	5
		Detector	Radiant sensitive area mm²	I_{PCE} (E_v = 1000 lx Standard light A V_{CE} = 5 V) µA	V_{CE} V	Crosstalk I_{PCE} (I_F = 20 mA, V_{CE} = 5 V) µA		
			0.045	650 typ.	35	> 0.5		

Package	Type		λ_{peak} nm	φ deg.	I_V (I_F = 20 mA) mcd	V_F (I_F = 20 mA) V	Ordering code	Fig. No.
 Multi TOPLED®	SFH 7226	Emitter	645	± 60	40...125	2.0	Q65110A2744	5
		Detector	Radiant sensitive area mm²	I_{PCE} (E_v = 1000 lx Standard light A V_{CE} = 5 V) µA	V_{CE} V	Crosstalk I_{PCE} (I_F = 20 mA, V_{CE} = 5 V) µA		
			0.045	650 typ.	35	> 2		

Package	Type	φ deg.	Radiant sensitive area mm²	I_{PCE} (λ = 950 nm, V_{CE} = 5 V) mA	V_{CE} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ) µs	Ordering code	Fig. No.

1.1.3 SMT Transistor mit V_λ - Kurve

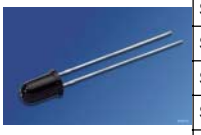
1.1.3 SMT Transistor with V_λ - Curve

 SmartDIL	SFH 3410	± 60	0.29	>0.0032	E_V = 20 lx, standard light A	5.5	350 ... 970	–	Q65110A1211	12
	SFH 3410-1/2			0.0032-0.010					Q65110A2653	
	SFH 3410-2/3			0.005 -0.016					Q65110A2654	
	SFH 3410-3/4			0.008 -0.025					Q65110A2655	

Package	Type	φ deg.	Radiant sensitive area mm²	I_{PCE} (E_e=0,5 mW/cm², λ = 950 nm, V_{CE} = 5 V) mA	V_{CE} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ) µs	Ordering code	Fig. No.
1.2 Fototransistoren im Plastikgehäuse									
1.2 Phototransistors in plastic package									
1.2.1 Klares Plastikgehäuse									
 T 1	**SFH 309**	± 12	0.045	≥ 0.4	35	380 ... 1080	–	Q62702P0859	23
	SFH 309-3/4			0.63 ... 2.0			6/7	Q62702P3592	
	SFH 309-4			1.0 ... 2.0			7	Q62702P0998	
	SFH 309-4/5			1.0 ... 3.2			7/8	Q62702P3593	
	SFH 309-5			1.6 ... 3.2			8	Q62702P0999	
	SFH 309-5/6			≥ 1.6			8/9	Q62702P3594	
	SFH 310	± 25	0.19	≥ 0.4	70		–	Q62702P0874	24
	SFH 310-2/3			0.63 ... 2.0			7/8	Q62702P3595	
 T 1	**SFH 309 P**	± 75	0.045	≥ 0.063	35		8	Q62702P0245	25
 T 1¾	**SFH 313**	± 10	0.55	≥ 2.5	50	450 ... 1100	–	Q62702P1667	26
	SFH 313-2/3			4.0 ... 12.5			10/12	Q62702P3598	
	SFH 314	± 40		≥ 0.63			–	Q62702P1668	27
	SFH 314-2/3			1.0 ... 3.2			10/12	Q62702P3600	
	SFH 300	± 25	0.12	≥ 0.63	35	420 ... 1130	–	Q62702P1189	28
	SFH 300-3/4			≥ 1.0			10	Q62702P3586	
 T 1¾	**SFH 303**	± 20	0.2	≥ 1.0	50	450 ... 1100	–	Q62702P0957	29
	SFH 303-3/4			≥ 1.6			13/15	Q62702P3588	
	**LPT 80 A**	± 35	0.3	≥ 0.25	30	400 ... 1100	10	Q68000A7852[1)]	30

[1)] conversion to RoHS compliance 03/2005

1.2.2 Plastikgehäuse mit Tageslichtfilter für 880/950 nm IRED									
1.2.2 Plastic package with daylight-filter for 880/950 nm IRED									
 T 1	**SFH 309 FA**	± 12	0.045	≥ 0.4	35	730 ... 1100	–	Q62702P0941	23
	SFH 309 FA-3/4			0.63 ... 2.0			6/7	Q62702P3590	
	SFH 309 FA-4			1.0 ... 2.0			7	Q62702P0178	
	SFH 309 FA-4/5			1.0 ... 3.2			7/8	Q62702P3591	
	SFH 309 FA-5			1.6 ... 3.2			8	Q62702P0180	
	SFH 309 FA-5/6			1.6 ... 5.0			8/9	Q62702P5199	
	SFH 310 FA	± 25	0.19	≥ 0.4	70		–	Q62702P1673	24
	SFH 310 FA-2/3			0.63 ... 2.0			7/8	Q62702P3596	

Package	Type	φ deg.	Radiant sensitive area mm²	I_{PCE} (E_e=0,5 mW/cm², λ = 950 nm, V_{CE} = 5 V) mA	V_{CE} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ) µs	Ordering code	Fig. No.
1.2.2 Plastikgehäuse mit Tageslichtfilter für 880/950 nm IRED									
 T 1	**SFH 309 PFA**	± 75	0.045	≥ 0.063	35	730 ... 1100	–	Q62702P0246	25
 T 1¾	**SFH 313 FA**	± 10	0.55	≥ 2.5	50		–	Q62702P1674	26
	SFH 313 FA-2/3			4.0 ... 12.5			10/12	Q62702P3597	
	SFH 313 FA-3/4			≥ 6.3			12/14	Q62702P5196	
	SFH 314 FA	± 40		≥ 0.63			–	Q62702P1675	27
	SFH 314 FA-2/3			1.0 ... 3.2			10/12	Q62702P3599	
	SFH 300 FA	± 25	0.12	≥ 0.63	35		–	Q62702P1193	28
	SFH 300 FA-3/4			≥ 1.0			10	Q62702P3585	
 T 1¾	**SFH 303 FA**	± 20	0.2	≥ 1.0	50		–	Q62702P0958	29
	SFH 303 FA-3/4			≥ 1.6			13/15	Q62702P3587	
	**SFH 3100 F**	± 14	0.11	> 0.4	30	840 ... 1080	7/9	Q62702P5073[1)]	31

[1)] conversion to RoHS compliance 03/2005

Package	Type	φ deg.	Radiant sensitive area mm²	$I_{CE(ON)}$ (E_e=0,34 mW/cm², λ = 950 nm, V_{CE} = 3,5 V) mA	V_{CE} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ) µs	Ordering code	Fig. No.
1.2.3 Doppel Fototransistor									
	**SFH 3160 F**	± 75	2x0.068	90 ... 290	30	780 ... 1100	7/9	Q62702P5296	100
	**SFH 3162 F**		2x0.15	185 ... 585			11/11	Q62702P5297	101
	**SFH 3163 F**		2x0.15	186 ... 585			11/11	Q65110A0353	102

1.2.2 Plastic Package with daylight-filter for 880/950 nm IRED

1.2.3 Dual Phototransistor

Package	Type	φ deg.	Radiant sensitive area mm²	I_{PCE} (E_e=0,5 mW/cm², λ = 950 nm, V_{CE} = 5 V) mA	V_{CE} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ) µs	Ordering code	Fig. No.
1.2.4 Zeilen im Plastikgehäuse									
	**SFH 305**	± 16		≥ 0.25			–	Q62702P0836 [1]	35
	SFH 305-2/3			0.25 ... 0.8			5.5/6	Q62702P3589 [1]	
	**BPX 81**		0.17	≥ 0.25			–	Q62702P0020 [1]	
	BPX 81-2/3			0.2 ... 0.8			5.5/6	Q62702P3583 [1]	
	BPX 81-3			0.4 ... 0.8			6	Q62702P0043S003 [1]	36
	BPX 81-3/4			≥ 0.4			6/8	Q62702P3584 [1]	
	BPX 81-4			≥ 0.63			8	Q62702P0043S004 [1]	
 Array	**BPX 82**	± 18	2 × 0.17	≥ 0.25	32	440 ... 1070	6	Q62702P0021 [1]	37
	BPX 83		3 × 0.17					Q62702P0025 [1]	
	BPX 84		4 × 0.17					Q62702P0030 [1]	
	BPX 85		5 × 0.17					Q62702P0031 [1]	
	BPX 86		6 × 0.17					Q62702P0022 [1]	
	BPX 87		7 × 0.17					Q62702P0032 [1]	
	BPX 88		8 × 0.17					Q62702P0033 [1]	
	BPX 89		9 × 0.17					Q62702P0026 [1]	
	BPX 80		10 × 0.17					Q62702P0028 [1]	

[1] conversion to RoHS compliance 03/2005

Package	Type	φ deg.	Radiant sensitive area mm²	I_{PCE} (E_e = 0.5 mW/cm², λ = 950 nm, V_{CE} = 5 V) µA	V_{CE} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ) µs	Ordering code	Fig. No.
1.3 Fototransistoren im Metallgehäuse									
 TO-18	**BPY 62**	± 8	0.12	0.5 ... 2.5	50	420 ... 1130	–	Q60215Y0062	32
	BPY 62-3			0.8 ... 1.6			7	Q60215Y1112	
	BPY 62-3/4			0.8 ... 2.5			7/9	Q62702P5198	
	BPY 62-4			1.25 ... 2.5			9	Q60215Y1113	
	BPX 43	± 15	0.675	≥ 0.8		450 ... 1100	–	Q62702P0016	32
	BPX 43-3/4			1.25 ... 4.0			12/14	Q62702P3581	
	BPX 43-4			2.0 ... 4.0			15	Q62702P0016S004	
	BPX 43-4/5			≥ 2.0			15/18	Q62702P3582	
	BPX 43-5			≥ 3.2			18	Q62702P0016S005	
 TO-18	**BPX 38**	± 40		≥ 0.2		450 ... 1120	–	Q62702P0015	33
	BPX 38-2/3			0.2 ... 0.63			9/12	Q62702P3578	
	BPX 38-3			0.32 ... 0.63			12	Q62702P0015S003	
	BPX 38-4			0.5 ... 1.0			15	Q62702P0015S004	
 TO-18	**BP 103**	± 55	0.12	≥ 0.08		420 ... 1130	–	Q62702P0075	34
	BP 103-3/4			0.125 ... 0.4			7/9	Q62702P3577	

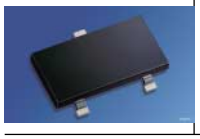
2. Fotodioden

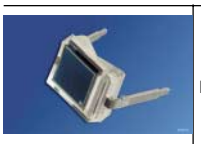
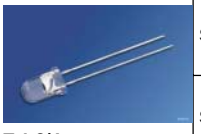
2. Photodiodes

Package	Type	φ deg.	Radiant sensitive area mm²	I_P (E_v = 1000 lx, standard light A, V_R = 5 V) µA	I_R (V_R = 10 V) nA	$\lambda_{10\%}$ nm	t_r,t_f (V_R = 20 V, R_L = 50 Ω) ns	Ordering code	Fig. No.
2.1 SMT Fotodioden					**2.1 SMT Photodiodes**				
2.1.1 SMT PIN Fotodioden in klarem Gehäuse					**2.1.1 SMT PIN Photodiodes in clear package**				
 SMT DIL	**BP 104 S**	± 60	2.2 × 2.2	55 (≥ 40)	2 (≤ 30)	400 ... 1100	5	Q65110A2626	13
	BPW 34 S		2.65 × 2.65	80 (≥ 50)				Q65110A1209	14
 SMT DIL	**BPW 34 S R18R**							Q65110A2701	15
 SMT DIL	**BPW 34 BS**			14.8 (>10.8) (E_e = 1 mW/cm², λ=400 nm, V_R = 5 V)		30% (400 nm)	25	Q65110A2625	14
 Smart DIL	**SFH 2400**	± 60	1 × 1	10 (> 5.5)	1 (≤ 5) (V_R = 20 V)	400 ... 1100	5	Q65110A2628	16
 T 1 3/4 SMR	**SFH 2500**	± 15		70 (> 50) (λ=870 nm, E_e = 1 mW/cm²)				Q65110A1201	7
 T 1 3/4 SMR	**SFH 2505**							Q65110A1203	8

Package	Type	φ deg.	Radiant sensitive area mm²	I_P (E_v = 1000 lx, standard light A, V_R = 5 V) µA	I_R (V_R = 5 V) nA	$\lambda_{10\%}$ nm	t_r,t_f (V_R = 5 V, R_L = 50 kΩ) µs	Ordering code	Fig. No.
2.1.2 SMT PIN Fotodioden mit V_λ-Kurve					**2.1.2 SMT PIN Photodiodes with V_λ-Curve**				
 SMT DIL	**SFH 2430**	± 60	2.65 × 2.65	5.8 (>4)	0.1(≤ 5)	400 ... 900	200	Q65110A2673	14

Package	Type	φ deg.	Radiant sensitive area mm²	I_P (E_e = 1 mW/cm², V_R = 5 V) µA	I_R (V_R = 10 V) nA	$\lambda_{10\%}$ nm	t_r,t_f (V_R = 20 V, R_L = 50 Ω) ns	Ordering code	Fig. No.
2.1.3 SMT PIN Fotodioden mit Tageslichtfilter								**2.1.3 SMT PIN Photodiodes with daylight-filter**	
 SMT DIL	**BP 104 FS**	± 60	2.2 × 2.2	34 (≥ 25)	950	800 ... 1100	10	Q65110A2627	13
	BP 104 FAS				870	740 ... 1100		Q65110A2672	
	BPW 34 FS		2.65 × 2.65	50 (≥ 40)	950	800 ... 1100		Q65110A2700	14
	BPW 34 FAS				870	740 ... 1100		Q65110A1210	
 SMT DIL	**BPW 34 FS R18R**				2 (≤ 30) 950	800 ... 1100		Q65110A2740	15
	BPW 34 FAS R18R					740 ... 1100		Q65110A2699	
 Smart DIL	**SFH 2400 FA**		1 × 1	6.2 (≥ 3.6)	λ = 870 nm	1 (≤ 5) (V_R = 20 V)	5	Q65110A2638	16
 T 1 3/4 SMR	**SFH 2500 FA**	± 15		70 (> 50)		750 ... 1100		Q65110A1202	7
 T 1 3/4 SMR	**SFH 2505 FA**							Q65110A1204	8

Package	Type	φ deg.	Radiant sensitive area mm²	I_P (E_V = 1000 lx, V_R = 5 V) µA	I_R (V_R = 10 V) nA	$\lambda_{10\%}$ nm	t_r,t_f (V_R = 10 V, R_L = 50 Ω) ns	Ordering code	Fig. No.
2.1.4 SMT Doppelfotodiode								**2.1.4 SMT Dual photodiodes**	
	**KOM 2125**	± 60	4 (diode A) 10 (diode B)	40 (≥ 30) diode A 100 (≥ 75) diode B	5 (≤ 30) diode A 10 (≤ 30) diode B	400 ... 1100	13 diode A 20 diode B	Q65110A2703	17
	**KOM 2125 FA**			26 (≥ 20) diode A, 70 (≥ 50) diode B; λ = 870 nm, E_e = 1 mW/cm²		750 ... 1100		Q65110A2702	

Package	Type	φ deg.	Radiant sensitive area mm²	I_P (E_v = 1000 lx, standard light A, V_R = 5 V) µA	I_R (V_R = 10 V) nA	$\lambda_{10\%}$ nm	t_r,t_f (V_R = 20 V, R_L = 50 Ω) ns	Ordering code	Fig. No.
2.2 PIN Fotodioden im Plastikgehäuse									
2.2 PIN photodiodes in plastic package									
2.2.1 Klares Plastikgehäuse									
 **DIL**	**BPW 34**	± 60	2.65 × 2.65	80 (≥ 50)	2 (≤ 30)	400 ... 1100	10	Q62702P0073[1)]	39
 **TO-92**	**SFH 206 K**	± 60						Q62702P0129	41
 **T 1**	**SFH 229**	± 17	0.56 × 0.56	28 (≥ 18)	0.05 (≤ 5)	380 ... 1100	5	Q62702P0215	23
 **T 1 3/4**	**SFH 203**	± 20	1 × 1	80 (≥ 50)	1 (≤ 10) (V_R = 20 V)	400 ... 1100		Q62702P0955	42
	SFH 213	± 10		135 (≥ 100)				Q62702P0930	26
 **T 1 3/4**	**SFH 203 P**	± 75		9.5 (≥ 5)				Q62702P0942	43

[1)] conversion to RoHS compliance 03/2005

Package	Type	φ deg.	Radiant sensitive area mm²	I_P (E_e = 1 mW/cm², λ = 870 nm, V_R = 5 V) µA	I_R (V_R = 10 V) nA	$\lambda_{10\%}$ nm	t_r,t_f (V_R = 20 V, R_L = 50 Ω) ns	Ordering code	Fig. No.
2.2.2 Gehäuse mit Tageslichtfilter für 880 nm IRED									
 **TO 92**	**SFH 225 FA**	± 60	2.2 × 2.2	34 (≥ 25)	2 (≤ 30)	740 ... 1100	10	Q62702P1051	44
	SFH 235 FA	± 65	2.65 × 2.65	50 (≥ 40)				Q62702P0273	44
 **TO 92**	**SFH 205 FA**	± 60		60 (≥ 45)				Q62702P1677	45
 **DIL**	**BPW 34 FA**			50 (≥ 40)				Q62702P1129[1]	39
 **T 1**	**SFH 229 FA**	± 17	0.56 × 0.56	40 (≥ 22)	0.5 (≤ 5)		5	Q62702P0216	23
 **T 1 3/4**	**SFH 203 FA**	± 20	1 × 1	100 (≥ 60)	1 (≤ 10) (V_R = 20 V)			Q62702P0956	42
	SFH 213 FA	± 10		90 (≥ 65)		750 ... 1100		Q62702P1671	26
 **T 1 3/4**	**SFH 203 PFA**	± 75		6.2 (≥ 3.6)		740 ... 1100		Q62702P0947	43
 **TO 92**	**SFH 204 FA**	± 60	2.2 × 2.2	52 (≥ 43)	2 (≤ 30)		10	Q62702P1793	46

[1] conversion to RoHS compliance 03/2005

Package	Type	φ deg.	Radiant sensitive area mm²	I_P (E_e = 1 mW/cm², λ = 870 nm, V_R = 5 V) µA	I_R (V_R = 10 V) nA	$\lambda_{10\%}$ nm	t_r,t_f (V_R = 20 V, R_L = 50 Ω) ns	Ordering code	Fig. No.
2.2.3 Gehäuse mit Tageslichtfilter für 950 nm IRED					**2.2.3 Package with daylight filter matched for 950 nm IRED**				
 DIL	**BP 104 F**	± 60	2.2 × 2.2	34 (≥ 25)	2 (≤ 30)	800 ... 1100	10	Q62702P0084[1)]	47
	BPW 34 F		2.65 × 2.65	50 (≥ 40)				Q62702P0929[1)]	39
 TO 92	**SFH 205 F**			60 (≥ 45)				Q62702P0102	45
 TO 92	**SFH 204 F**		2.2 × 2.2	52 (≥ 43)		780 ... 1120		Q62702P5052	46

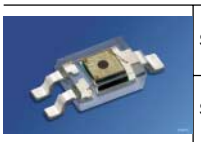
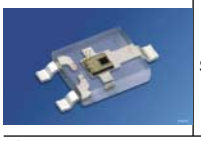
[1)] conversion to RoHS compliance 03/2005

Package	Type	φ deg.	Radiant sensitive area mm²	I_P (V_R = 5 V, E_v = 1000 lx, standard light A) µA	I_R (V_R = 10 V) nA	$\lambda_{10\%}$ nm	t_r,t_f (V_R = 20 V, R_L = 50 Ω) ns	Ordering code	Fig. No.
2.3 PIN Fotodioden im Metallgehäuse					**2.3 PIN photodiodes in metal package**				
 TO 18	**BPX 65**	± 40	1 × 1	10 (≥ 5.5)	1 (≤ 5)	350 ... 1100	5	Q62702P0027	49

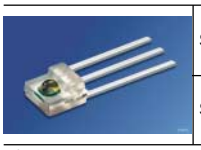
[1)] conversion to RoHS compliance 03/2005

3. Foto ICs

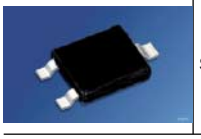
3. Photo ICs

Package	Type	φ deg.	V_{CC} V	Switching threshold E_e (V_{CC} = 5 V) mW/cm²		$\lambda_{10\%}$ nm	I_O mA	t_{PHL}/ t_{PLH} µs	Ordering code	Fig. No.
3.1 Schmitt Trigger IC										
	**SFH 5440**	± 60	4 ... 18	0.170 (< 0.320)	λ = 950 nm	400 ... 1100	< 16	5 (< 15)	Q65110A1212	18
	SFH 5441								Q65110A2641	
	**SFH 5140 F**	± 14		0.015 (< 0.05)	λ = 950 nm	840 ... 1080			Q62702P5112[1]	19
	SFH 5141 F								Q62702P5113[1]	
	**SFH 5840**	± 10		0.01 (< 0.032)	λ = 950 nm	400 ... 1100			Q62702P5116	20
	SFH 5841								Q62702P5117	
	**SFH 5400**	± 60	4.5 ... 15	1.3 (<3.2)	λ = 660 nm	500 ... 900	- 25 ... 25	0.2	Q65110A2704	21

[1] conversion to RoHS compliance 03/2005

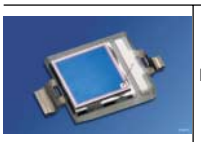
Package	Type	φ deg.	V_{CC} V	Irradiance Responsivity N_e (V_{CC} = 5 V) mV/µW/cm²		$\lambda_{10\%}$ nm	I_{CC} mA	Ordering code	Fig. No.
3.2 Linearer Verstärker mit Spannungsausgang									
	**SFH 5130**	± 40	4.5 ... 5.5	1180	λ = 430 nm	350 ... 1100	1.5	Q62702P5406[1]	103
	SFH 5133	horizontal: ± 35 vertikal: ± 55		570		350 ... 950		Q62702P5547[1]	104

[1] conversion to RoHS compliance 03/2005

Package	Type	Frequenz kHz	φ deg.	min threshold irradiance $E_{e\,min}$ mW/cm²	Ordering code	Fig. No.
3.3 Foto IC für Fernsteuerung						
	**SFH 5110-30**	30	horizontal: ± 50 vertikal: ± 30	0.35 typ.	Q62702P5088[1]	1
	SFH 5110-33	33			Q62702P5089[1]	
	SFH 5110-36	36			Q62702P5090[1]	
	SFH 5110-38	38			Q62702P5091[1]	
	SFH 5110-40	40			Q62702P5092[1]	
	**SFH 5410**	38	± 60	1.4 typ.	Q65110A2656	105

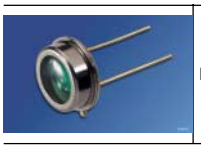
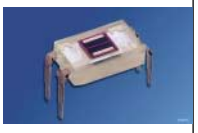
[1] conversion to RoHS compliance 03/2005

4. Fotodetektoren für spezielle Anwendungen 4. Photodetectors for special applications

Package	Type	φ deg.	Radiant sensitive area mm²	I_P µA	I_R (V_R = 10 V) nA	$S_{\lambda rel}$ %	t_r,t_f (V_R = 5 V) µs	Ordering code	Fig. No.
4.1 Blauempfindliche Fotodiode					**4.1 Blue sensitive photodiode**				
	**BPW 34 BS**	± 60	7.45	14.8 (> 10.8) E_e = 1 mW/cm² λ = 400 nm V_R = 5 V	2 (≤ 30)	30% (400 nm)	25 (R_L = 50 Ω) λ = 850 nm	Q65110A2625	14
	**BPW 34 B**							Q62702P0945 [1]	39
4.2 Fotodetektoren für den sichtbaren Bereich					**4.2 Photodetectors for the visible range**				
Fotodiode mit V_λ-Kurve					**Photodiode with V_λ-Curve**				
	**BPW 21**	± 55	2.73 × 2.73 V_R = 5 V	10 (> 5.5) (E_V = 1000 lx standard light A)	8 (≤ 200) pA (V_R = 1 V)	100% (550 nm)	1.5 (R_L = 1 kΩ)	Q62702P0885	50
	**SFH 2430**	± 60	2.65 x 2.65	5.8 (> 4) (E_V = 1000 lx, standard light A)	0.1 (≤ 5)	400 ... 900	200	Q65110A2673	14
SMT DIL									

Package	Type	φ deg.	Radiant sensitive area mm²	I_{PCE} (V_{CE} = 5 V E_v = 20 lx, standard light A) mA	V_{CE} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 50 Ω) µs	Ordering code	Fig. No.
SMT Transistor mit V_λ-Kurve					**SMT Transistor with V_λ-Curve**				
	**SFH 3410**	± 60	0.29	>0.0032	5.5	350 ... 970	-	Q65110A1211	12
	SFH 3410-1/2			0.0032 -0.010				Q65110A2653	
	SFH 3410-2/3			0.005 -0.016				Q65110A2654	
	SFH 3410-3/4			0.008 -0.025				Q65110A2655	

[1] conversion to RoHS compliance 03/2005

Package	Type	φ deg.	Radiant sensitive area mm²	I_P (E_v = 1000 lx, standard light A, V_R = 5 V) µA	I_R (V_R = 10 V) nA	$\lambda_{10\%}$ nm	t_r,t_f (V_R = 5 V) ns	Ordering code	Fig. No.
4.3 Großflächige PIN Fotodiode					**4.3 Large area PIN photodiode**				
	**BPX 61**	± 55	2.65 × 2.65	70 (≥ 50)	2 (≤ 30)	400 ... 1100	20 (R_L = 50 Ω)	Q62705P0025	50
4.4 Doppelfotodioden					**4.4 Dual photodiodes**				
	**SFH 221**	± 55	2 times 2.2 × 0.7	24 (≥ 15)	10 (≤ 100)	400 ... 1100	500 (R_L = 1 kΩ)	Q62702P0270	51
	**BPX 48**	± 60		24 (≥ 15)		400 ... 1150	500 (R_L = 1 kΩ)	Q62702P0017 [1]	52
	**BPX 48F**			7.5 (≥ 4.0) E_e = 0.5 mW/cm² λ = 950 nm		750 ... 1150	500 (R_L = 1 kΩ)	Q62702P0305 [1]	

[1] conversion to RoHS compliance 03/2005

TYPENÜBERSICHT

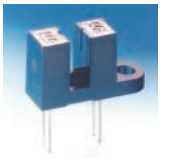
SUMMARY OF TYPES

1. Gabellichtschranken

SFH 9300

SFH 9301

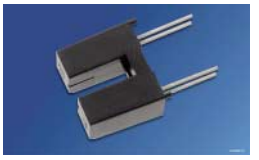
SFH 9302



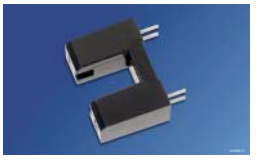
SFH 9303

SFH 9304

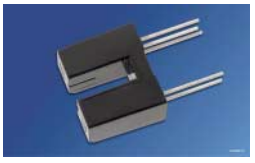
SFH 9305



SFH 9306



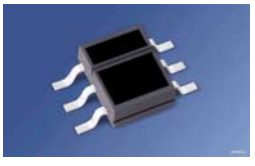
SFH 9310



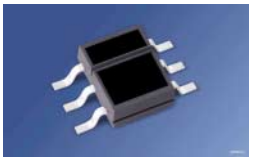
SFH 9340
Schmitt Trigger

SFH 9500

2. SMT Reflexlichtschranken

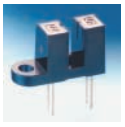


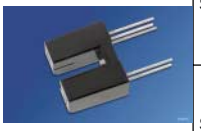
SFH 9201 / SFH 9202
SFH 9210 / SFH 9221

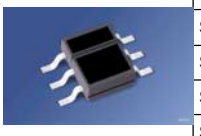


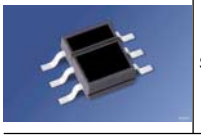
SFH 9240 / SFH 9241
Schmitt Trigger

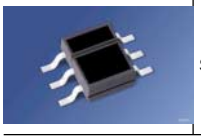
2. SMT Reflective Sensors

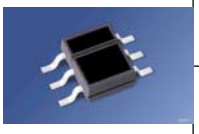
Package	Type	Features	Slot width mm	Aperture slit width on emitter/sensor side mm	I_{CE} (I_F = 20 mA, V_{CE} = 5 V) mA	I_{CEO} (I_F = 0, V_{CE} = 20 V) nA	V_F (I_F = 20 mA) V	Ordering code	Fig.
1. Gabellichtschranken					**1. Slotted Interrupters**				
	**SFH 9300**	no aperture slits, high current transfer ratio	3.65	– / –	> 1	2 (≤ 50)	1.2 (≤ 1.4)	Q62702P5019	54
	**SFH 9301**	with vertical aperture slits, high resolution	3.18	1.27 / 0.25	> 0.7	2 (≤ 50)	1.2 (≤ 1.4)	Q62702P5083	55
	**SFH 9302**	with vertical aperture slits, two mounting tabs	3.18	1.27 / 0.25	> 0.7	2 (≤ 50)	1.2 (≤ 1.4)	Q62702P5084	56
	**SFH 9303**	with vertical aperture slits, mounting tab on sensor side	3.18	1.27 / 0.25	> 0.7	2 (≤ 50)	1.2 (≤ 1.4)	Q62702P5085	57
	**SFH 9304**	with vertical aperture slits, mounting tab on emitter side	3.18	1.27 / 0.25	> 0.7	2 (≤ 50)	1.2 (≤ 1.4)	Q62702P5086	58
	**SFH 9305**	with vertical aperture slits, mounting tab on sensor side, locating pins	3.28	0.5 / 0.5	> 0.7	2 (≤ 50)	1.2 (≤ 1.4)	Q62702P5129	59
	**SFH 9306**	with vertical aperture slits, locating pins	3.18	1.27 / 0.25	> 0.7	2 (≤ 50)	1.2 (≤ 1.4)	Q62702P5130	60
	**SFH 9310**	horizontal slits	5.00	0.5 / 0.5	> 0.7	2 (≤ 50)	1.2 (≤ 1.4)	Q62702P5214	61
	**SFH 9500**	with vertical aperture slits, SMT version, suitable for reflow soldering, locating pins	5.00	0.5 / 0.5	> 1	2 (≤ 50)	1.2 (≤ 1.4)	Q62702P5066	63

Package	Type	Features	Slot width mm	Aperture slit width on emitter/sensor side mm	V_{CC} V	Threshold input current $I_{F, ON}$ mA	Hysteresis $I_{F, OFF}$ / $I_{F, ON}$	Propagation delay time t_{PHL}, t_{PLH} (R_L = 280 Ω, V_{CC} = 5 V, I_F = 4 mA) µs	V_F (I_F = 20 mA) V	Ordering code	Fig.
1. Gabellichtschranken (Forts.)						**1. Slotted Interrupters** (cont'd)					
	**SFH 9340**	Schmitt Trigger output, SFH 9340 active "low"	3.18	1.27 / 0.25	4 ... 18	0.6 (< 2)	0.6	2	1.2 (≤ 1.4)	Q62702P5120	64
	SFH 9341	Schmitt Trigger output, SFH 9341 active "high"								Q62702P5121	

Package	Type	I_{CE} (I_F = 10 mA, V_{CE} = 5 V, d = 1 mm) mA	I_{CEO} (V_{CE} = 20 V) nA	$V_{CE\,max}$ V	V_F (I_F = 50 mA) V	Ordering code	Fig.
2. SMT Reflexlichtschranken				**2. SMT Reflective Sensors**			
	**SFH 9201**	0.25 ... 2.00	3 (≤ 200)	30	1.25 (≤ 1.65)	Q65110A2708	65
	SFH 9201-2/3	0.40 ... 1.25				Q65110A2698	
	SFH 9201-3/4	0.63 ... 2.00				Q65110A2716	
	SFH 9202	0.063 ... 0.8	1 (≤ 50)			Q65110A2712	
	SFH 9202-2/3	0.063 ... 0.2				Q65110A2705	
	SFH 9202-3/4 **SFH 9202-4/5** **SFH 9202-5/6**	0.10 ... 0.32 0.16 ... 0.50 0.25 ... 0.80				Q65110A2710 Q65110A2709 Q65110A2711	

Package	Type	Feature	I_{CE} (I_F = 8 mA, V_{CE} = 5 V, d = 5 mm) mA	I_{CEO} (V_{CE} = 20 V) nA	Threshold current I_{TH} mA	$V_{CE\,max}$ V	V_F (I_F = 10 mA) V	Ordering code	Fig.
	**SFH 9210**	VCSEL emitter	1 ... 8	3 (≤ 200)	2.6 (< 5)	16 30 (t≤2 min)	1.8 (≤ 2.3)	Q65110A2713	65

Package	Type	Feature	I_P (I_F = 8 mA, V_R = 5 V, d = 5 mm) µA	I_R (V_R = 10 V) pA	Threshold current I_{TH} mA	V_F (I_F = 10 mA) V	Ordering code	Fig.
	**SFH 9221**	VCSEL emitter Photodiode output	> 1	50	2.6 (< 5)	1.8 (≤ 2.3)	Q65110A2706	65

Package	Type	Features	V_{CC} V	Threshold input current $I_{F, on}$ (V_{CC} = 5 V, d = 1 mm) mA	Hysteresis $I_{F, OFF}$ / $I_{F, ON}$	Propagation delay time t_{PHL}, t_{PLH} (R_L = 280 Ω, V_{CC} = 5 V, I_F = 20 mA) ns	V_F (I_F = 50 mA) V	Ordering code	Fig.
	**SFH 9240**	Schmitt Trigger Output, active “low”	4 ... 18	3 (< 10)	0.6	2	1.25 (≤ 1.65)	Q65110A2714	65
	SFH 9241	Schmitt Trigger Output, active “high”						Q65110A2715	

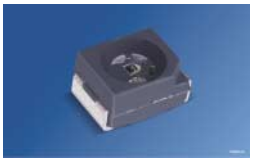
TYPENÜBERSICHT

SUMMARY OF TYPES

1. Emitter in SMT

SmartLED®
SFH 4000 / SFH 4010
SFH 4020 / SFH 4080

TOPLED®
SFH 420 / SFH 4211 /
SFH 421 / SFH 4200



SFH 4257 / SFH 4271
SFH 4272 / SFH 4273

TOPLED® RG
SFH 4281

Mini TOPLED®
SFH 4203

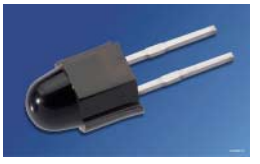
TOPLED® with Lens
SFH 4209 / SFH 4289 / SFH 4219

SFH 4600 / SFH 4605
SFH 4650 / SFH 4655
SFH 4680 / SFH 4685

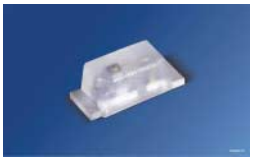
SMR
SFH 4580
SFH 4585

SIDELED®
SFH 425 / SFH 426 / SFH 4205 /
SFH 4255

Multi TOPLED®
SFH 331 / SFH 7222 / SFH 7221 /
SFH 7225 / SFH 7226



SMR
SFH 4500 / SFH 4510
SFH 4505 / SFH 4515

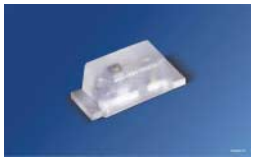


SmartLED® 0603
SFH 4050

TYPENÜBERSICHT

SUMMARY OF TYPES

2. Hochleistungsemitter 850nm



SFH 4050

SFH 4250

SFH 4259

SFH 4650 / SFH 4655

SFH 4255

SFH 4550

SFH 4350

SFH 4850

3. Sehr schnelle Emitter 950nm

SmartLED®
SFH 4000

TOPLED®
SFH 4200

Power TOPLED®
SFH 4202

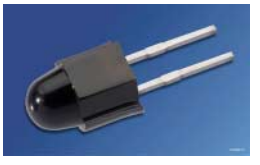
TOPLED® with Lens
SFH 4209

SFH 4600 / SFH 4605

SIDELED®
SFH 4205

Mini TOPLED®
SFH 4203

Micro SIDELED®
SFH 4204



SMR
SFH 4500 / SFH 4505

SFH 4301

SFH 4501 / SFH 4502 / SFH 4503

TYPENÜBERSICHT

SUMMARY OF TYPES

4. Emitter im Plastikgehäuse

4. Emitters in Plastic Package

IRL 80 A / IRL 81 A

SFH 4110

SFH 4111

SFH 4113

SFH 484 / SFH 485 / SFH 486
SFH 4550

LD 274

LD 271

SFH 415 / SFH 4501 / SFH 4502
SFH 4503

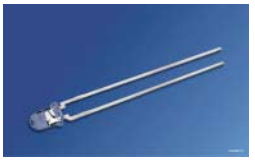
SFH 487

SFH 409

SFH 485 P

SFH 487 P

SFH 4301



SFH 4350

LD 261

LD 263

SFH 405

TYPENÜBERSICHT

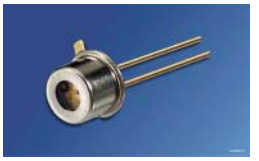
SUMMARY OF TYPES

5. Emitter im Metallgehäuse

5. Emitters in Metal Package

SFH 464 / SFH 483 / LD 242
SFH 4850

SFH 400 / SFH 480 / SFH 4840

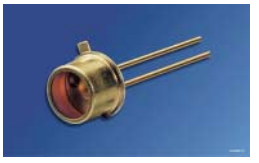


SFH 4860

SFH 401

SFH 482

SFH 4881



SFH 4883

1. Emitter in SMT

1. Emitter in SMT

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA, t_P = 20 ms) V	t_r,t_f ns	Ordering code	Fig. No.
1.1 MIDLED								
	**SFH 4600**	950	± 20	typ. 36	1.5 (≤ 1.8)	10	Q65110A1575	91
	SFH 4680	880		typ. 20		500	Q65110A1570	
	SFH 4650	850		typ. 41		12	Q65110A1572	
	**SFH 4605**	950		typ. 36		10	Q65110A1576	
	SFH 4685	880		typ. 20		500	Q65110A1571	
	SFH 4655	850		typ. 41		12	Q65110A1569	

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA, t_P = 20 ms) V	t_r,t_f ns	Ordering code	Fig. No.
1.2 SmartLED®								
	SFH 4000	950	± 80	> 1.6 typ. 4.4	1.5 (≤ 1.8)	10	Q65110A2649	69
	**SFH 4010**	950		> 1.0 typ. 2.5	1.3 (≤ 1.5)	500	Q65110A2707	
SmartLED®	**SFH 4020**	850	± 15	typ. 8 (at I_F = 8 mA)	1.8 (≤ 2.5) (at I_F = 8 mA, t_P = 20 ms)	2	Q65110A2650	
	SFH 4080	880	± 80	> 1.0 typ. 2.5	1.5 (≤ 1.8)	500	Q65110A1217	
	**SFH 4050**	850		typ. 7		12	Q65110A2109	92
SmartLED® 0603								

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA, t_P = 20 ms) V	t_r,t_f ns	Ordering code	Fig. No.
1.3 TOPLED®/SIDELED® Familie				**1.3 TOPLED®/SIDELED® Family**				
TOPLED®				**TOPLED®**				
 **TOPLED®**	**SFH 420**	950	± 60	≥ 2.5	1.3 (≤ 1.5)	500	Q65110A2473	66
	SFH 4211					500	Q65110A2515	
	SFH 421	880		≥ 4	1.5 (≤ 1.8)	500	Q65110A1218	
	SFH 4200	950		≥ 4 typ. 10		10	Q65110A2494	
 **TOPLED® RG**	**SFH 4281**	880		≥ 4		500	Q65110A2516	89
 **Mini TOPLED®**	**SFH 4203**	950	± 65	≥ 4 typ. 8		10	Q65110A2499	68
 **Power TOPLED®**	**SFH 4250**	850	± 60	typ. 14		12	Q65110A2465	93
	SFH 4257			typ. 6			Q65110A2466	107
 **TOPLED®**	**SFH 4271**	880		> 1 typ. 2		500	Q65110A2521	
	SFH 4272	645		> 0.16 typ. 0.35 (at I_F = 20 mA)	2.0 (≤ 2.5) (at I_F = 20 mA)		Q65110A2522	106
	SFH 4273	660		> 0.63 typ. 1 (at I_F = 50 mA)	2.1 (≤ 2.8) (at I_F = 50 mA)	100	Q65110A2523	

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA, t_P = 20 ms) V	t_r,t_f ns	Ordering code	Fig. No.
TOPLED® mit Linse				**TOPLED® with Lens**				
	**SFH 4209**	950	± 25	> 6.3 typ. 24	1.5 (≤ 1.8)	10	Q65110A2501	67
	SFH 4219			> 4 typ. 13	1.3 (≤ 1.5)	500	Q65110A2518	
	SFH 4289	880		> 6.3 typ. 17	1.5 (≤ 1.8)		Q65110A2519	
 **Power TOPLED® w. Lens**	**SFH 4259**	850		typ. 30		12	Q65110A2464	94

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA, t_P = 20 ms) V	t_r,t_f ns	Ordering code	Fig. No.
SIDELED®				**SIDELED®**				
 **SIDELED®**	**SFH 425**	950	± 60	≥ 2.5	1.3 (≤ 1.5)	500	Q65110A2463	90
	SFH 4205			≥ 4 typ.10	1.5 (≤ 1.8)	10	Q65110A2498	
	SFH 426	880		≥ 4		500	Q65110A2512	
	SFH 4255	850		typ. 14		12	Q65110A2467	
 **MicroSIDELED®**	**SFH 4204**	950		typ. 2.5 (I_F = 40 mA, t_P = 20 ms)	1.4 (I_F = 40 mA, t_P = 20 ms)	7 (I_F = 40 mA)	Q65110A2504	99

Multi TOPLED® **Multi TOPLED®**

Zwei Sender in SMT Multi TOPLED® **Two Emitters in SMT Multi TOPLED®**

Package	Type	λ_{peak} nm	φ deg.	I_V (I_F = 2 mA) mcd	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F V	t_r,t_f ns	Ordering code	Fig. No.
	**SFH 7222**	880	± 60	–	≥ 4	1.5 (I_F = 100 mA)	500	Q65110A2742	72
		565	± 60	≥ 0.25 (I_F = 2 mA)	–	2.0 (I_F = 10 mA)	450		

Empfänger/Sender in SMT Multi TOPLED® **Detector/Emitter in SMT Multi TOPLED®**

Package	Type							Ordering code	Fig. No.
		Sender Emitter	λ_{peak} nm	φ deg.	I_V (I_F = 10 mA) mcd	V_F (I_F = 10 mA) V	t_r,t_f I_F= 100 mA, t_p = 10 µs, R_L = 50 Ω ns		
	**SFH 331-JK**		635	± 60	4 ...12.5	2.0 (≤ 2.6)	300, 150	Q65110A1206	5
		Empfänger Detector	Radiant sensitive area mm²	I_{PCE} (λ = 950 nm, E_e = 0.1 mW/cm², V_{CE} = 5 V) µA	V_{CEO} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ) µs		
			0.045	≥16	35	380 ...1150	7		

Package	Type							Ordering code	Fig. No.
		Sender Emitter	λ_{peak} nm	φ deg.	I_V (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA) V	t_r,t_f I_F= 100 mA, R_L = 50 Ω) ns		
	**SFH 7221**		880	± 60	> 4	1.5 (≤ 1.8)	500	Q65110A2741	6
		Empfänger Detector	Radiant sensitive area mm²	I_{PCE} (λ = 880 nm, E_e = 0.1 mW/cm², V_{CE} = 5 V) µA	V_{CEO} V	$\lambda_{10\%}$ nm	t_r,t_f (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ) µs		
			0.045	≥16	35	380 ... 1150	7		

For information about RoHS compliance of our products, please visit **http://www.osram-os.com/RoHS**

Package	Type	Sender Emitter	λ_{peak} nm	φ deg.	I_V (I_F = 20 mA) mcd	V_F (I_F = 20 mA) V		Ordering code	Fig.
	**SFH 7225**		591	± 60	63 ...200	2.0		Q65110A2743	5
		Empfänger Detector	Radiant sensitive area mm²	I_{PCE} (E_v = 1000 lx Standard light A V_{CE} = 5 V) µA	V_{CEO} V	Crosstalk I_{PCE} (I_F = 20 mA, V_{CE} = 5 V) µA			
			0.045	650 typ.	35	> 0.5			

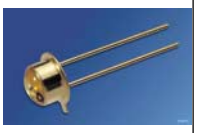
Package	Type	Sender Emitter	λ_{peak} nm	φ deg.	I_V (I_F = 20 mA) mcd	V_F (I_F = 20 mA) V		Ordering code	Fig.
	**SFH 7226**		645	± 60	40 ...125	2.0		Q65110A2744	5
		Empfänger Detector	Radiant sensitive area mm²	I_{PCE} (E_v = 1000 lx Standard light A V_{CE} = 5 V) µA	V_{CEO} V	Crosstalk I_{PCE} (I_F = 20 mA, V_{CE} = 5 V) µA			
			0.045	650 typ.	35	> 2			

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA, t_P = 20 ms) V	t_r,t_f ns	Ordering code	Fig. No.
1.4 SMR				**1.4 SMR**				
	**SFH 4500**	950	± 14	≥ 25 typ. 85	1.5 (≤ 1.8)	10	Q65110A2642	70
	SFH 4510			≥ 25 typ. 50	1.3 (≤ 1.5)	500	Q65110A2630	7
	**SFH 4505**			≥ 25 typ. 85	1.5 (≤ 1.8)	10	Q65110A2643	71
	SFH 4515			≥ 25 typ. 50	1.3 (≤ 1.5)	500	Q65110A2633	8
	**SFH 4580**	880	± 15	≥ 25 typ. 55	1.5 (≤ 1.8)	500	Q65110A2632	70
	**SFH 4585**						Q65110A2631	71

2. Hochleistungsemitter 850nm

2. High Power Emitter 850nm

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA, t_P = 20 ms) V	t_r,t_f ns	Ordering code	Fig. No.
 SmartLED® 0603	**SFH 4050**	850	± 80	typ. 7	1.5 (≤ 1.8) at I_F = 100 mA, t_P = 20 ms 2.4 (≤ 3.0) at I_F = 1 A, t_P = 100 µs	12	Q65110A2109	92
 PowerTOPLED®	**SFH 4250**		± 60	typ. 14			Q65110A2465	93
 TOPLED®	**SFH 4257**			typ. 6			Q65110A2466	107
 PowerTOPLED® w. Lens	**SFH 4259**		± 25	typ. 30			Q65110A2464	94
 SIDELED®	**SFH 4255**		± 60	typ. 14			Q65110A2467	90
 MIDLED	**SFH 4650**		± 20	typ. 35			Q65110A1572	91
 MIDLED	**SFH 4655**						Q65110A1569	
 T 1 3/4	**SFH 4550**		± 3	typ. 700			Q65110A1772	79
 T 1	**SFH 4350**		± 15	typ. 70			Q65110A2091	73

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA, t_P = 20 ms) V	t_r,t_f ns	Ordering code	Fig. No.
 TO 18	**SFH 4850 E7800**	850	± 40	typ. 7	1.5 (≤ 1.8) at I_F = 100 mA, t_P = 20 ms 2.4 (≤ 3.0) at I_F = 1 A, t_P = 100 µs	12	Q65110A2093	40

3. Sehr schnelle Emitter 950 nm

3. High Speed Emitter 950 nm

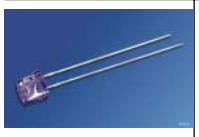
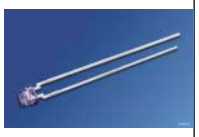
Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA, t_P = 20 ms) V	t_r,t_f ns	Ordering code	Fig. No.
 SmartLED®	**SFH 4000**	950	± 80	> 1.6 typ. 3.5	1.5 (≤ 1.8)	10	Q65110A2649	69
 TOPLED®	**SFH 4200**		± 60	≥ 4 typ. 10			Q65110A2494	66
 PowerTOPLED®	**SFH 4202**			> 6.3 typ. 10			Q65110A2503	93
 TOPLED® with Lens	**SFH 4209**		± 25	> 10 typ. 17			Q65110A2501	67
 SIDELED®	**SFH 4205**		± 25	≥ 4 typ. 10			Q65110A2498	90
	**SFH 4600**		± 20	typ. 36			Q65110A1575	91
	**SFH 4605**						Q65110A1576	
 Mini TOPLED®	**SFH 4203**		± 65	≥ 4 typ. 8			Q65110A2499	68

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA, t_P = 20 ms) V	t_r,t_f ns	Ordering code	Fig. No.
 Micro SIDELED®	**SFH 4204**		± 60	2.5 (I_F = 400 mA, t_P = 20 ms)	1.4	7	Q65110A2504	99
 T 1 3/4 SMR	**SFH 4500**	950	± 14	≥ 25 typ. 85	1.5 (≤ 1.8)	10	Q65110A2642	70
 T 1 3/4 SMR	**SFH 4505**						Q65110A2643	71
 T 1	**SFH 4301**		± 10	≥ 16 typ. 75			Q62702P5166	73
 T 1 3/4	**SFH 4501**		± 7	≥ 63 typ. 110			Q62702P5061	74
	SFH 4502		± 18	≥ 25 typ. 60			Q62702P5062	75
	SFH 4503		± 4	≥ 63 typ. 250			Q62702P5305	76

4. Emitter im Plastikgehäuse

4. Emitter in plastic package

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA, t_P = 20 ms) V	Ordering code	Fig. No.
4.1 Radiale Gehäuse				**4.1 Radial packages**			
 T 1 3/4	**SFH 4550**	850	± 3	typ. 700	1.5 (≤ 1.8)	Q65110A1772	79
 T 1	**SFH 4350**		± 17	typ. 70		Q65110A2091	73
 T 1 3/4	**SFH 484** **SFH 484-2**	880	± 8	≥ 50 ≥ 80		Q62703Q1092 Q62703Q1756	79
	SFH 486		± 11	≥ 40		Q62703Q1094	80
	SFH 485 **SFH 485-2**		± 20	≥ 25 25 ... 100		Q62703Q1093 Q62703Q1547	81

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F (I_F = 100 mA, t_P = 20 ms) V	Ordering code	Fig. No.
 T 1	**SFH 487** **SFH 487-2** **SFH 487-3**		± 20	≥ 12.5 20 ... 80 32 ... 125		Q62703Q1095 Q62703Q2174 Q62703Q2175	73
 T 1 3/4	**SFH 485 P**	880	± 40	≥ 3.15	1.5 (≤ 1.8)	Q62703Q0516	82
 T 1	**SFH 487 P**		± 65	≥ 2		Q62703Q0517	83
 T 1 3/4	**LD 274** **LD 274-3**		± 10	≥ 50 ≥ 80		Q62703Q1031 Q62703Q1820	84
 T 1 3/4	**LD 271** **LD 271 H**		± 25	15 (≥ 10) ≥ 16		Q62703Q0148 Q62703Q0256	85
	LD 271 L **LD 271 LH**					Q62703Q0833 Q62703Q0838	42
 T 1 3/4	**SFH 415** **SFH 415-U**	950	± 17	≥ 25 ≥ 40	1.3 (≤ 1.5)	Q62702P0296 Q62702P1137	
	SFH 4511		± 4	63		Q62703Q5557	
 T 1	**SFH 409** **SFH 409-2**		± 20	≥ 6.3 ≥ 10		Q62702P0860 Q62702P1002	73

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 20 mA, t_P = 20 ms) mW/sr	V_F (I_F = 20 mA, t_P = 20 ms) V	Ordering code	Fig. No.
4.2 Sidelooker				**4.2 Sidelooker**			
	**IRL 81 A**	880	± 25	≥ 1.0	1.5 (≤ 1.8)	Q68000A8000[1)]	78
	**IRL 80 A**	950	± 30	≥ 0.4	1.2 (≤ 1.5)	Q68000A7851[1)]	

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 20 mA, t_P = 20 ms) mW/sr	V_F (I_F = 20 mA, t_P = 20 ms) V	Ordering code	Fig. No.
4.2 Sidelooker (Forts.)				**4.2 Sidelooker** (cont'd)			
	**SFH 4110**	950	± 9	≥ 2.5	1.2 (≤ 1.4)	Q62702P5072[1)]	31

[1)] conversion to RoHS compliance 03/2005

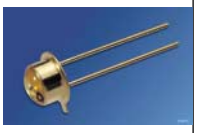
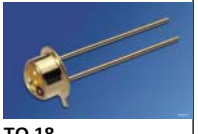
Package	Type	λ_{peak} nm	φ deg.	E_e (d = 6 mm, I_F = 4 mA) mW/cm²	V_F (I_F = 20 mA, t_P = 20 ms) V	Ordering code	Fig. No.
	**SFH 4111**	950	± 30 horizontal ± 60 vertical	0.25 ... 1	1.25 (≤ 1.6)	Q62702P5333	95
	**SFH 4113**		± 33 horizontal ± 43 vertical	0.25 ... 1.25		Q62702P5299	96

Package	Type	λ_{peak} nm	φ deg.	I_e mW/sr	V_F V	Ordering code	Fig. No.
4.3 Zeilen im Plastikgehäuse				**4.3 Arrays in Plastic Package**			
	**LD 261** **LD 261-5**	950	± 15	2 ... 10 3.2 ... 6.3	1.25 (≤ 1.4) (I_F = 50 mA, t_P = 20 ms)	Q62703Q0395[1)] Q62703Q0067[1)]	36
 Array	**LD 262** **LD 263** **LD 264** **LD 265** **LD 266** **LD 267** **LD 268** **LD 269** **LD 260**			2 ... 6.3		Q62703Q0070[1)] Q62703Q0071[1)] Q62703Q0072[1)] Q62703Q0073[1)] Q62703Q0074[1)] Q62703Q0075[1)] Q62703Q0076[1)] Q62703Q0077[1)] Q62703Q0078[1)]	37
	**SFH 405**		± 16	≥ 1.6	1.25 (≤ 1.4) (I_F = 40 mA, t_P = 20 ms)	Q62702P0835[1)]	35

[1)] conversion to RoHS compliance 03/2005

5. Emitter im Metallgehäuse

5. Emitters in Metal Package

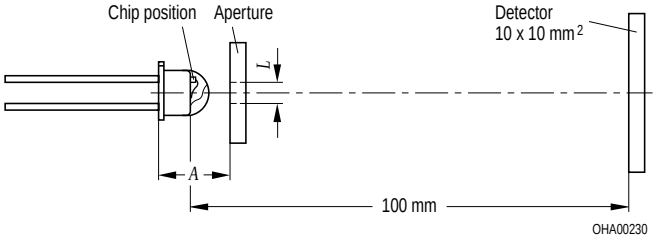
Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F V	Ordering code	Fig. No.
 TO 18	**SFH 464 E 7800**	660	± 23	≥ 1 (I_F = 50 mA, t_P = 20 ms)	2.1 (I_F = 50 mA, t_P = 20 ms)	Q62702P1745[1)]	40
 TO 18	**SFH 4860**		± 50	≥ 0.63 (I_F = 50 mA, t_P = 20 ms)		Q62702P5053[1)]	87
 TO 18	**SFH 4850**	850	± 40	typ. 7	1.5 (≤ 1.8) (I_F = 100 mA, t_P = 20 ms)	Q65110A2093[1)]	40
 TO 18	**SFH 480** **SFH 480-2/3**	880	± 6	≥ 40		Q62703Q1087[1)] Q62703Q5195[1)]	48
 TO 18	**SFH 483-L/M E 7800**		± 23	1 ... 3.2		Q62703Q4755[1)]	40
 TO 18	**SFH 482** **SFH 482-1/2** **SFH 482-2/3**		± 30	≥ 3.15 3.15 ... 10 ≥ 5		Q62703Q1089[1)] Q62703Q4771[1)] Q62703Q4754[1)]	49
	SFH 482-M E7800			1.6 ... 3.2		Q62703Q2186[1)]	
 TO 46	**SFH 4881**		± 5	≥ 40 typ. 72		Q62702P5302[1)]	97
 TO 46	**SFH 4883**		± 35	≥ 4 typ. 8		Q62702P5303[1)]	98
 TO 18	**LD 242-2/3** **LD 242 E7800**	950	± 40	4 ... 25 1 ... 3.2	1.3 (≤ 1.5) (I_F = 100 mA, t_P = 20 ms)	Q62703Q4749[1)] Q62703Q3509[1)]	40

Package	Type	λ_{peak} nm	φ deg.	I_e (I_F = 100 mA, t_P = 20 ms) mW/sr	V_F V	Ordering code	Fig. No.
 TO 18	**SFH 400**	950	± 6	≥ 20	1.3 (≤ 1.5) (I_F = 100 mA, t_P = 20 ms)	Q62702P0096[1)]	48
 TO 18	**SFH 401**		± 15	≥ 10		Q62702P0097[1)]	88
UV- Emitter				**UV- Emitter**			
 TO 18	**SFH 4840**	395	± 3	typ. 45 (I_F = 30 mA, t_P = 20 ms)	3.7 (< 4.3) (I_F = 30 mA, t_P = 20 ms)	Q65110A1303[1)]	48

[1)] conversion to RoHS compliance 03/2005

Lochblendenmessung

Für Lichtschrankenanwendungen sind Bauteile lieferbar, die eine „Lochblendenmessung" durchlaufen haben. Diese Messung ist durch den Anhang „E 7800" an die Typenbezeichnung gekennzeichnet.



Aperture measurement

Components for light reflection switch applications are supplied which have passed an aperture measurement. This measurement is denoted by "E 7800" added to the type designation.

Type	L (mm)	A (mm)
LD 242	Ø 1.1	4
SFH 464	Ø 1.1	4
SFH 482	Ø 2.0	5.4
SFH 483	Ø 1.1	4

Vorteile

Bei der Lochblendenmessung wird nur diejenige Strahlung in Achsrichtung bewertet, die direkt aus der Oberfläche des Chips austritt. Reflexionen der Bodenplatte und Seitenstrahlung fließen nicht in die I_e-Messung ein. Diese reflektierte Strahlung ist störend, wenn die Chipoberfläche über Zusatzoptiken abgebildet wird, z.B. beim Aufbau von Lichtschranken mit großer Reichweite. Der Anwender erhält durch die Lochblendenmessung ein für Lichtschrankenapplikationen optimal gemessenes Bauteil.

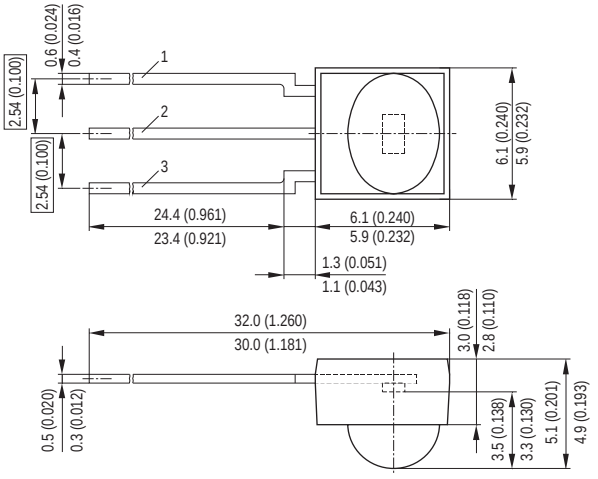
Advantages

Only the radiation in axial direction emitting directly from the chip surface will be evaluated during aperture measurement. Radiation reflected by the bottom plate and sidefacing of the chip will not be evaluated. This reflected radiation is disruptive when the chip surface is supplemented by an additional optical system e.g. in the construction of reflection switches. By using components which have passed the aperture measurement test, the user obtains devices which are optimally suited for the construction of reflection switches.

Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 1 **SFH 5110**



Pinning SFH 5110

1 OUT
2 GND
3 V_{CC}

GEOY6985

Figure 2 **SFH 320, SFH 320 FA**

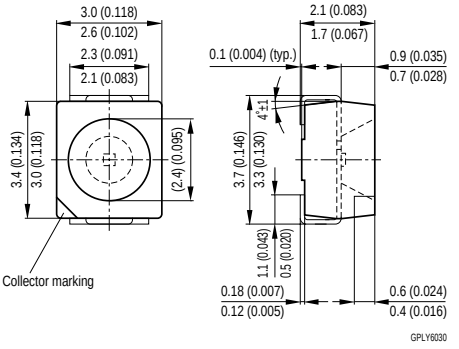


Figure 3 **SFH 3211, SFH 3211 FA**

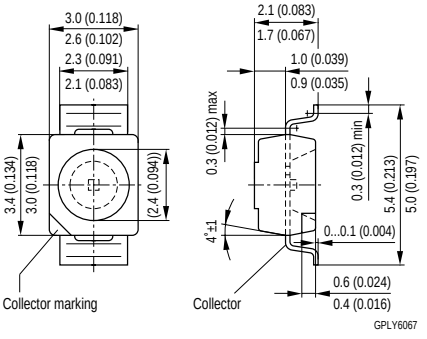


Figure 4 **SFH 325, SFH 325 FA,**

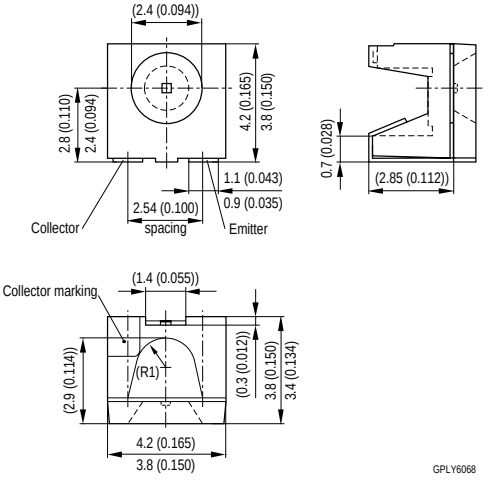


Figure 5 **SFH 331, SFH 7225, SFH 7226**

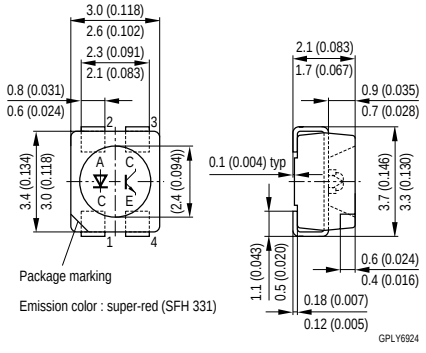
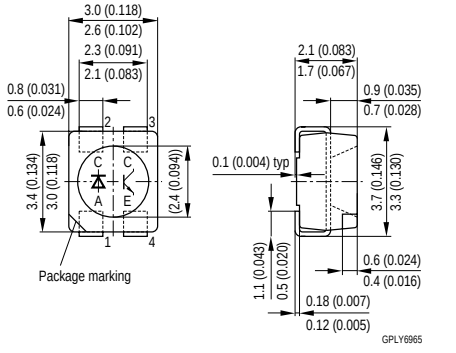


Figure 6 **SFH 7221**



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 7 **SFH 3500, SFH 3500 FA, SFH 2500, SFH 2500 FA, SFH 4510**

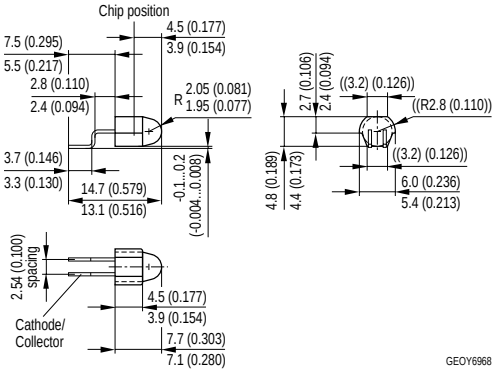


Figure 8 **SFH 3505, SFH 3505 FA, SFH 2505, SFH 2505 FA SFH 4515**

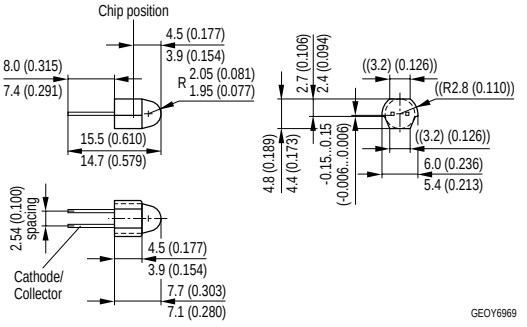


Figure 9 **SFH 3400**

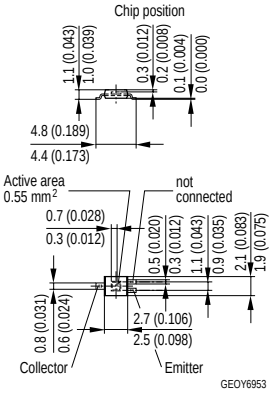


Figure 10 **SFH 3401**

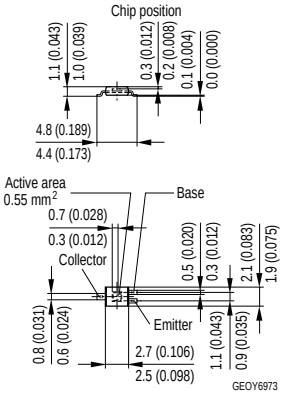


Figure 11 **SFH 3201**

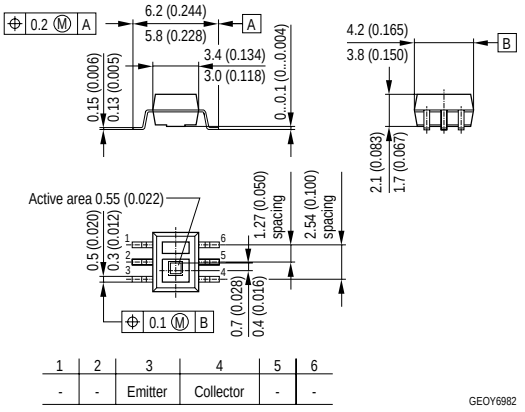
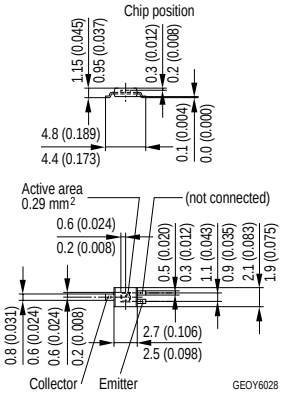


Figure 12 **SFH 3410**



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 13 BP 104 FS, BP 104 S, BP 104 FAS

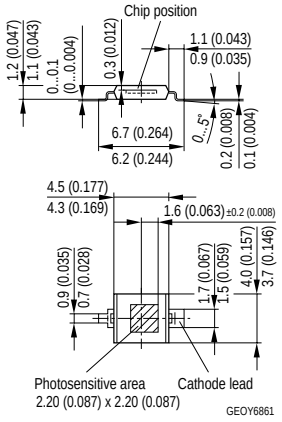


Figure 14 BPW 34 S, BPW 34 FS, BPW 34 FAS, BPW 34 BS SFH 2430

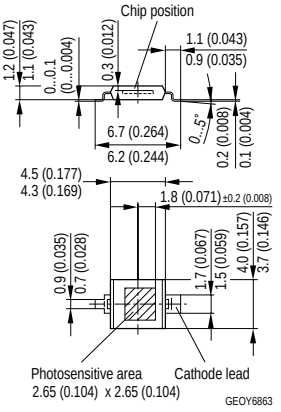


Figure 15 BPW 34 S R18R, BPW 34 FAS R18R, BPW 34 FS R18R

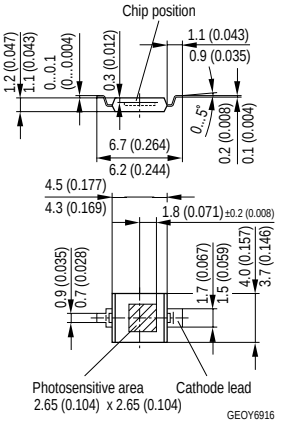


Figure 16 SFH 2400, SFH 2400 FA

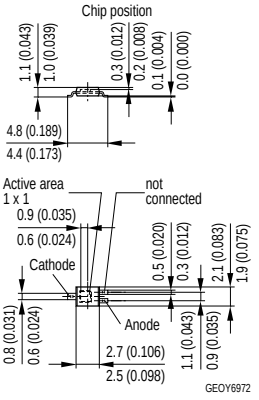


Figure 17 KOM 2125, KOM 2125 FA

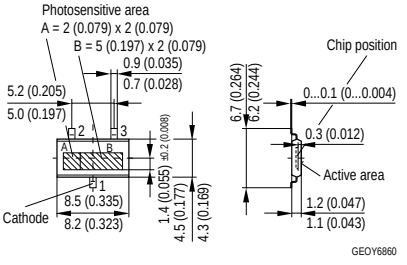


Figure 18 SFH 5440, SFH 5441

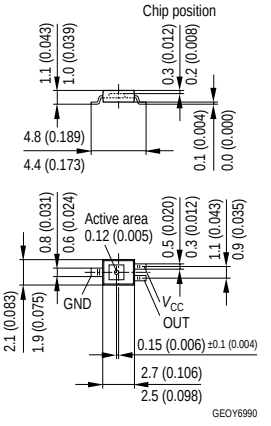


Figure 19 SFH 5140 F, SFH 5141 F

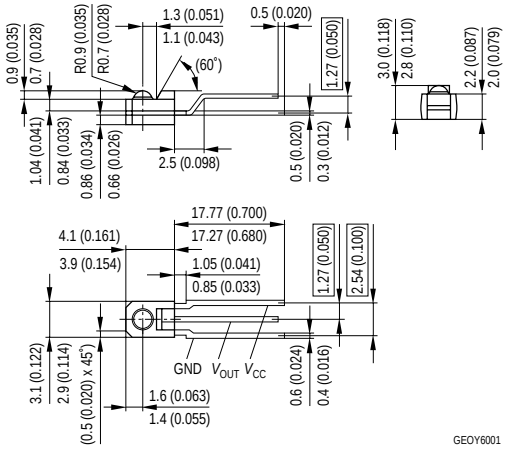
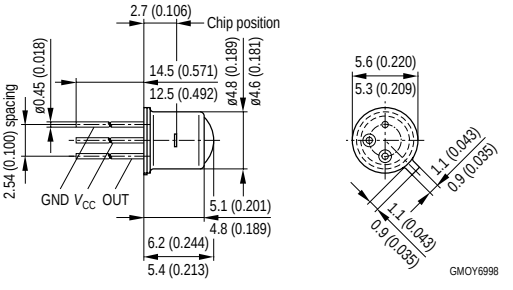


Figure 20 SFH 5840, SFH 5841



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 21 SFH 5400

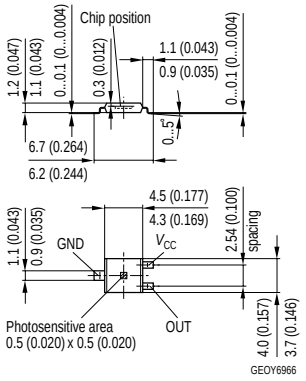


Figure 23 SFH 309, SFH 309 FA, SFH 229, SFH 229 FA

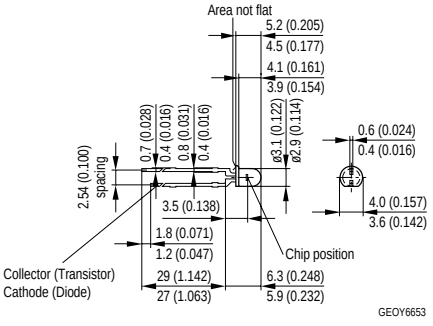


Figure 24 SFH 310, SFH 310 FA

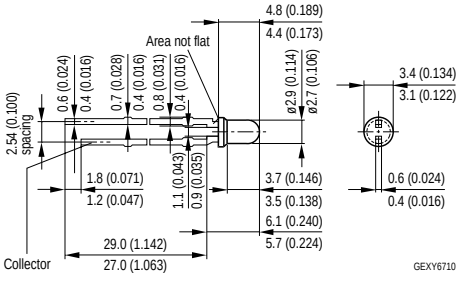


Figure 25 SFH 309 P, SFH 309 PFA

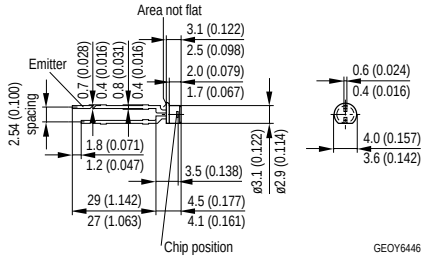
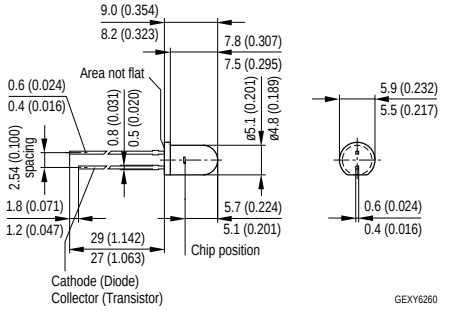


Figure 26 SFH 313, SFH 313 FA SFH 213, SFH 213 FA



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 27 **SFH 314, SFH 314 FA**

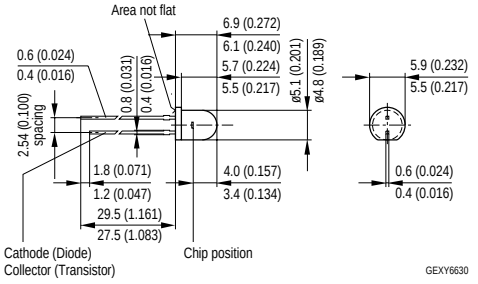


Figure 28 **SFH 300, SFH 300 FA**

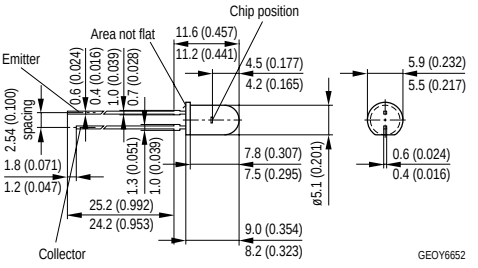


Figure 29 **SFH 303, SFH 303 FA**

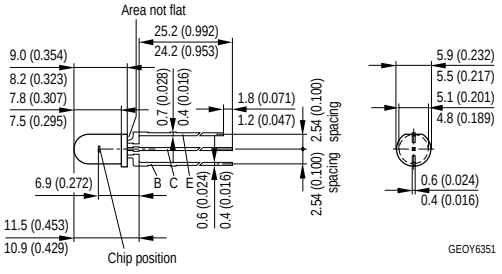


Figure 30 **LPT 80 A**

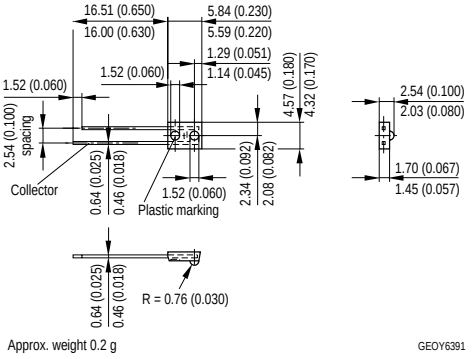


Figure 31 **SFH 3100 F, SFH 4110**

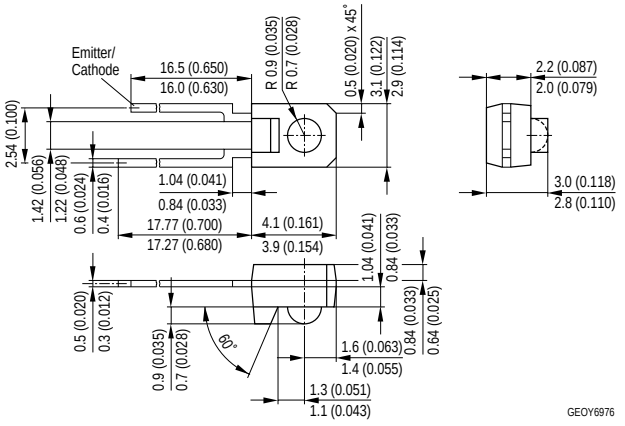
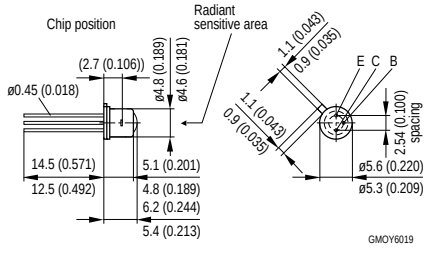


Figure 32 **BPX 43, BPY 62**



Maßbilder in mm (inch) | **Outline Drawings** dimensions in mm (inch)

Figure 33 BPX 38

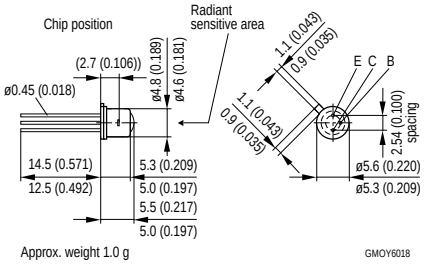


Figure 34 BP 103

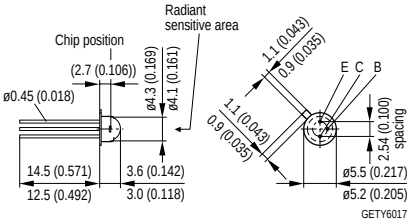


Figure 35 SFH 305, SFH 405

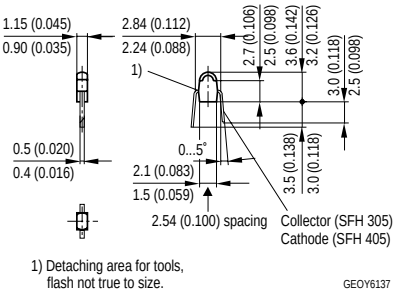


Figure 36 BPX 81, LD 261

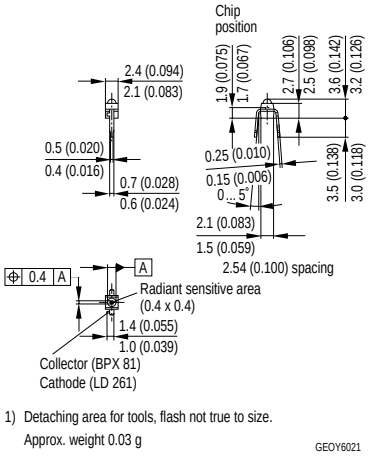


Figure 37 BPX 80, BPX 82-89, LD 260, LD 262-269

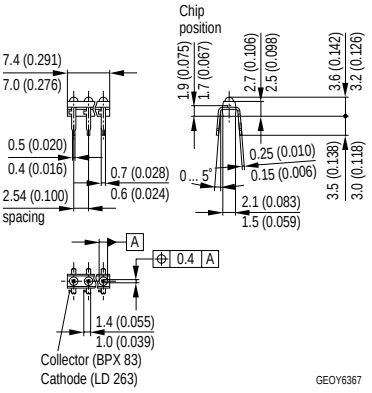


Figure 39 BPW 34, BPW 34 F, BPW 34 B, BPW 34 FA

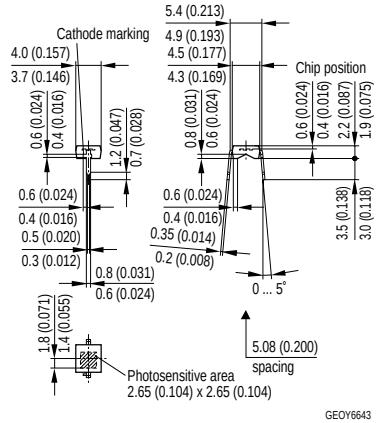
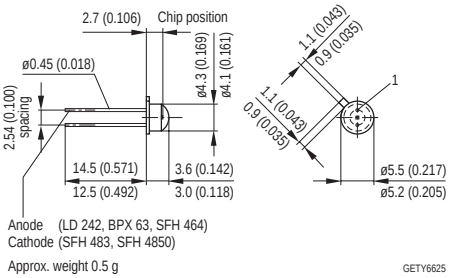


Figure 40 LD 242, SFH 483, SFH 464, SFH 4850



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 41 SFH 206 K

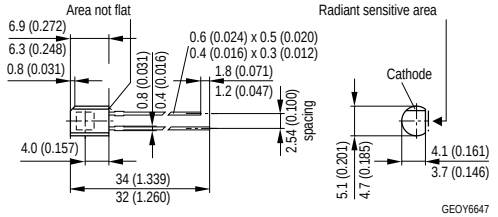


Figure 42 SFH 203, SFH 203 FA, LD 271 L/LH, SFH 415, SFH 4511

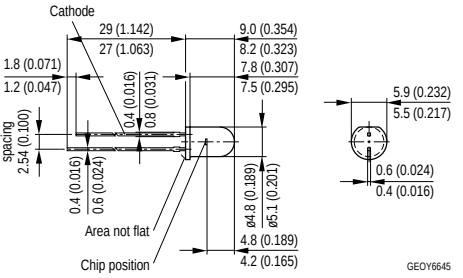


Figure 43 SFH 203 P, SFH 203 PFA

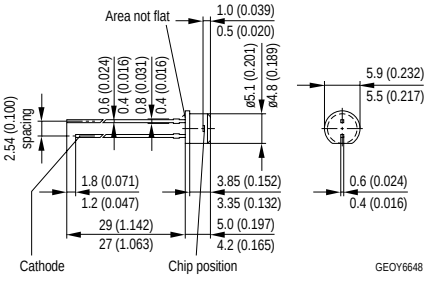


Figure 44 SFH 225 FA, SFH 235 FA

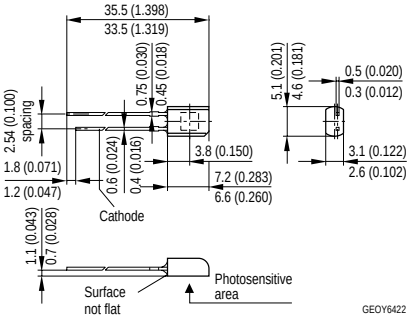


Figure 45 SFH 205 F, SFH 205 FA

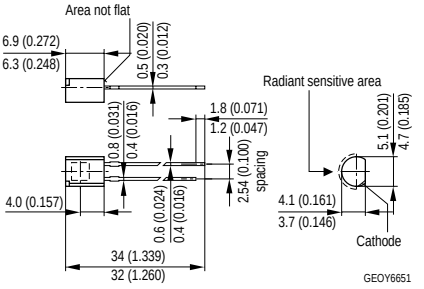


Figure 46 SFH 204 F, SFH 204 FA

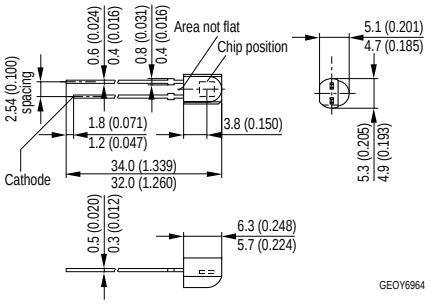


Figure 47 BP 104 F

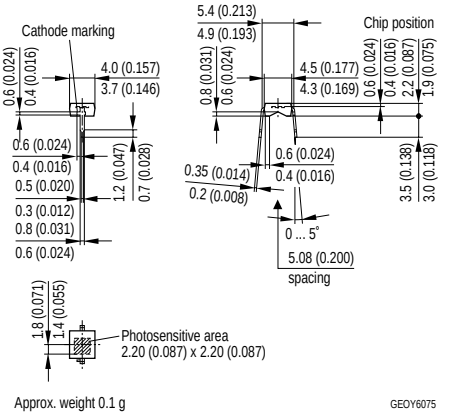


Figure 48 SFH 400, SFH 480, SFH 4840

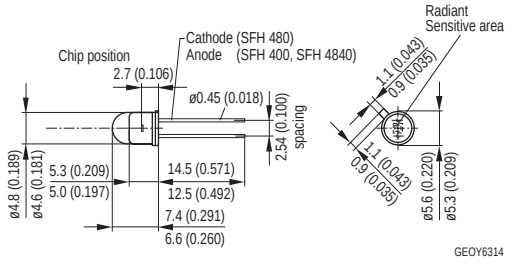
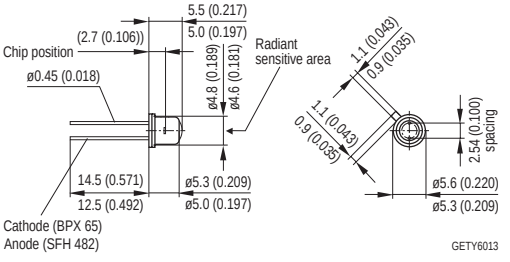


Figure 49 SFH 482, BPX 65



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 50 BPW 21, BPX 61

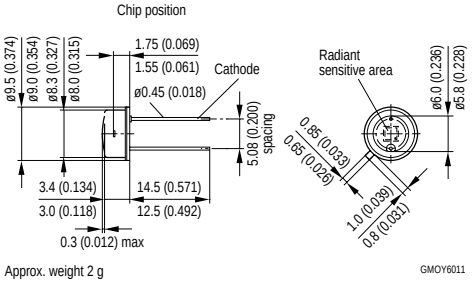


Figure 51 SFH 221

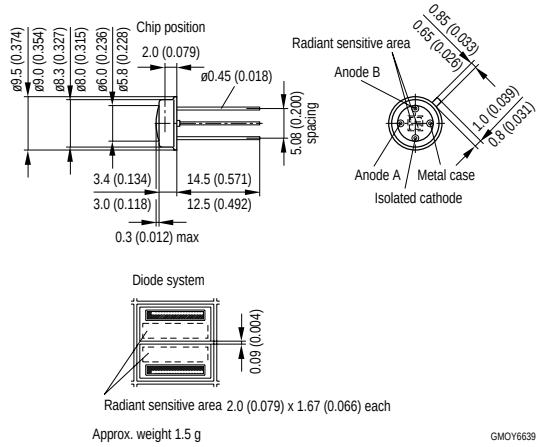


Figure 52 BPX 48, BPX 48 F

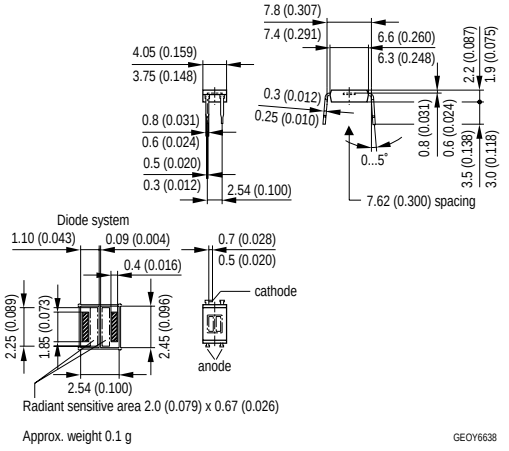


Figure 54 SFH 9300

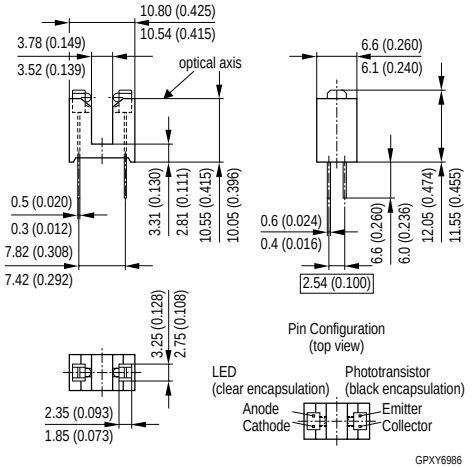
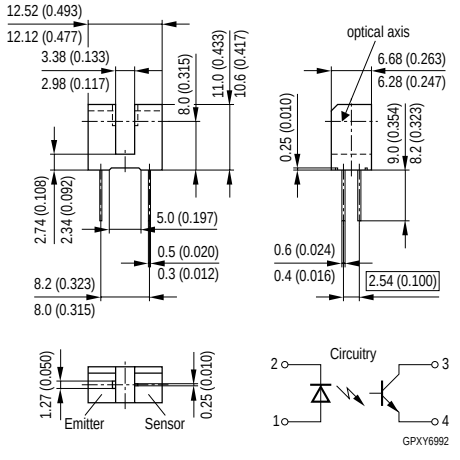


Figure 55 SFH 9301



Maßbilder in mm (inch) | **Outline Drawings** dimensions in mm (inch)

Figure 56 SFH 9302

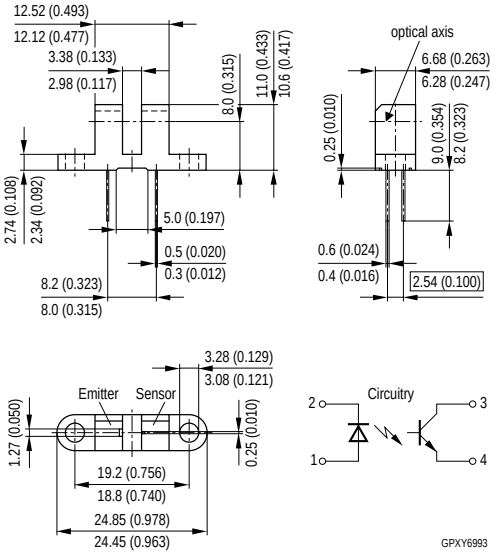


Figure 57 SFH 9303

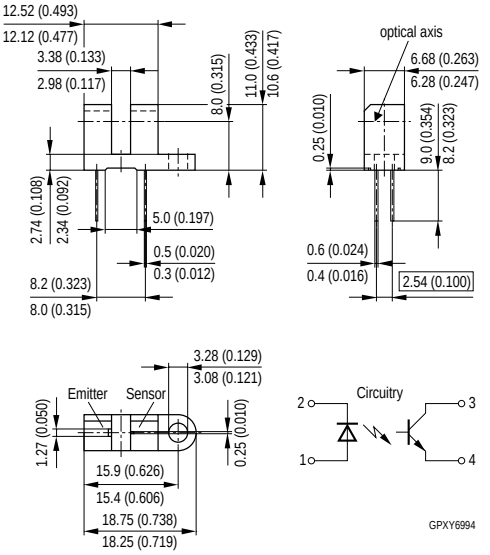


Figure 58 SFH 9304

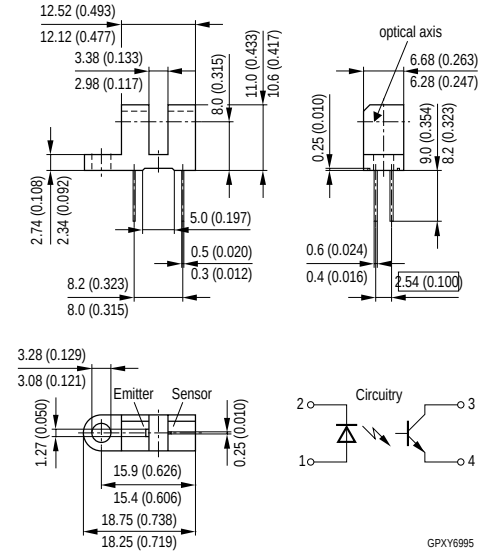
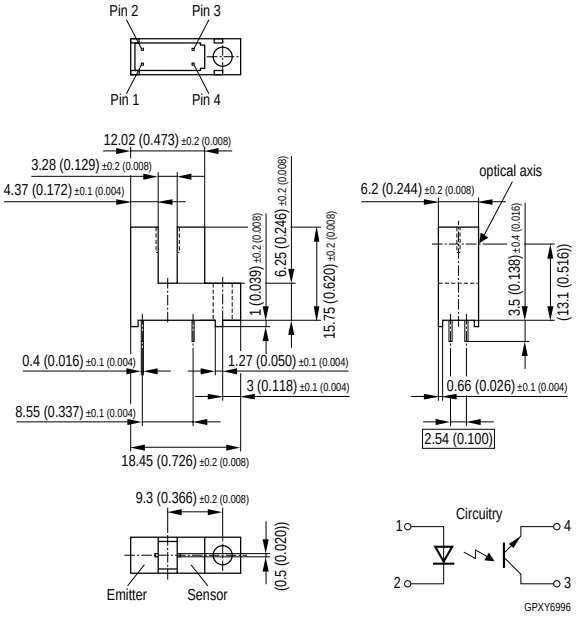


Figure 59 SFH 9305



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 60 SFH 9306

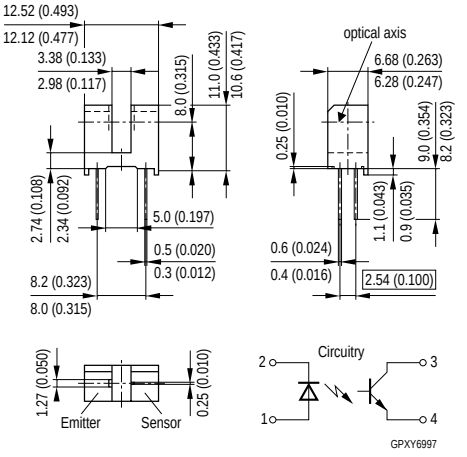


Figure 61 SFH 9310

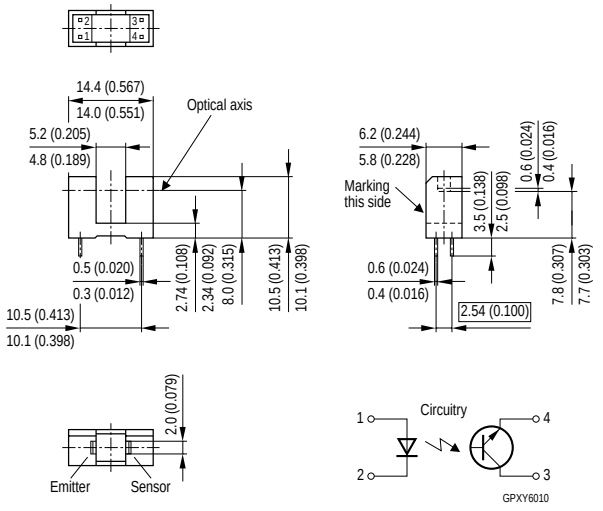


Figure 63 SFH 9500

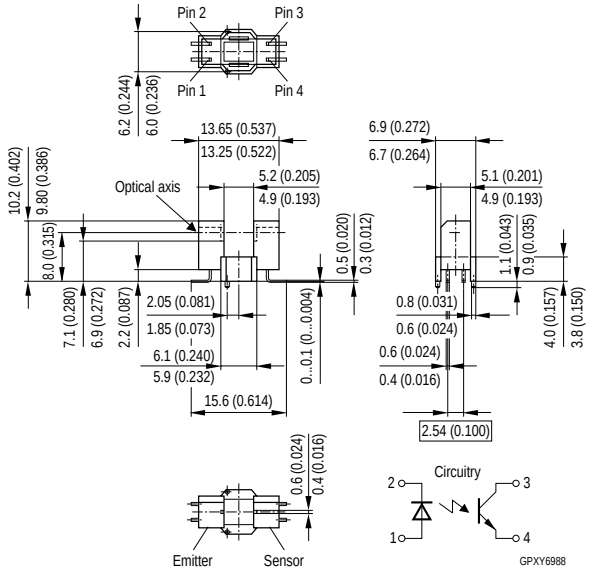
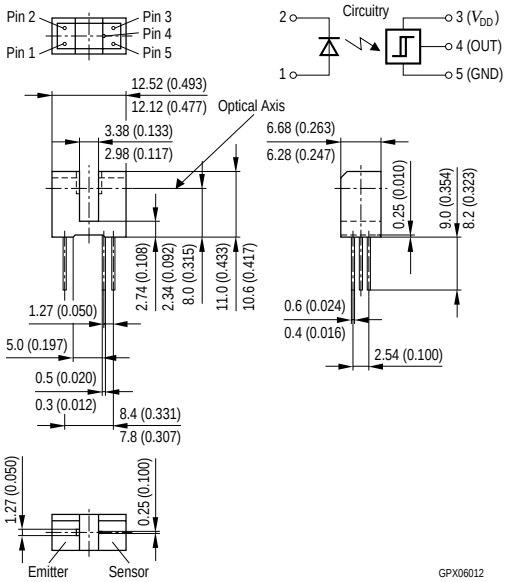


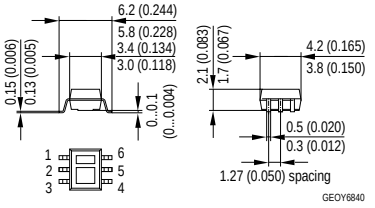
Figure 64 SFH 9340, SFH 9341



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 65 **SFH 9201, SFH 9202, SFH 9240, SFH 9241, SFH 9210, SFH 9221**



Type	1	2	3	4	5	6
SFH 9201, SFH 9202,	Anode	–	Emitter	Collector	–	Cathode
SFH 9240, SFH 9241	Anode	OUT	V_{CC}	–	GND	Cathode
SFH 9210	Anode	–	Emitter	Collecktor	–	Cathode
SFH 9221	Anode (E)	–	Anode (S)	Cathode (S)	–	Cathode (E)

Figure 66 **SFH 420, SFH 4211, SFH 421, SFH 4200**

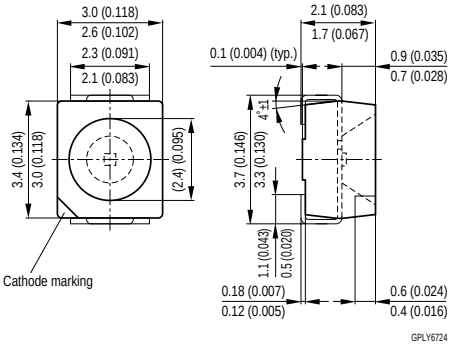


Figure 67 **SFH 4209, SFH 4219, SFH 4289, SFH 3219**

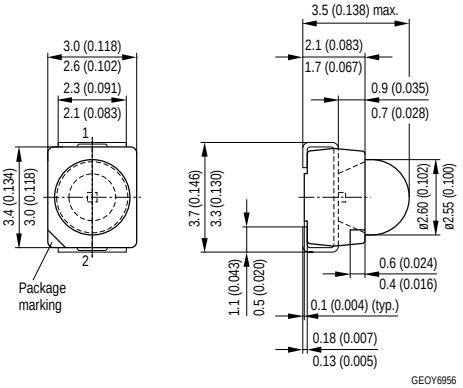


Figure 68 **SFH 4203**

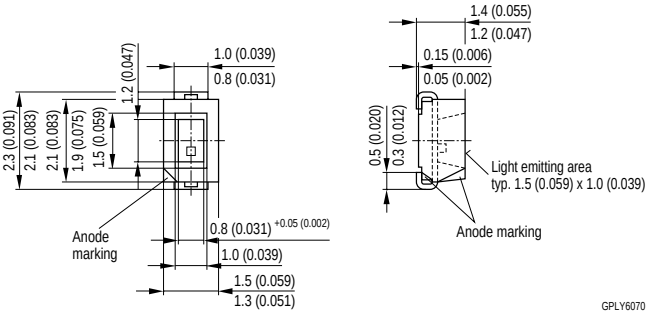


Figure 69 **SFH 3010, SFH 4000, SFH 4010, SFH 4020, SFH 4080**

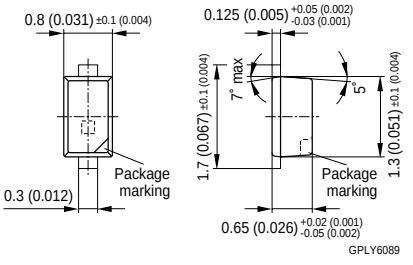
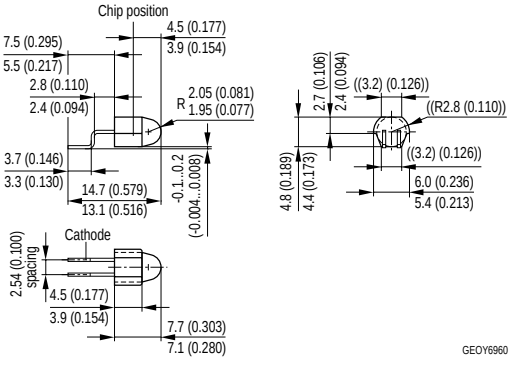


Figure 70 **SFH 4580, SFH 4500**



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 71 SFH 4585, SFH 4505

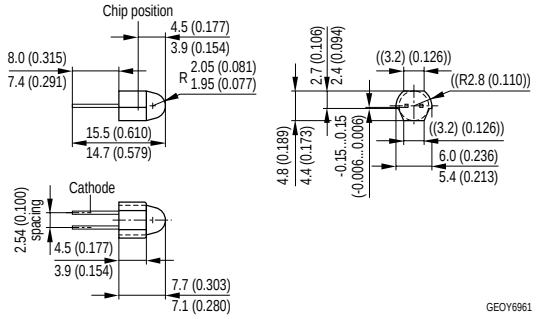


Figure 72 SFH 7222

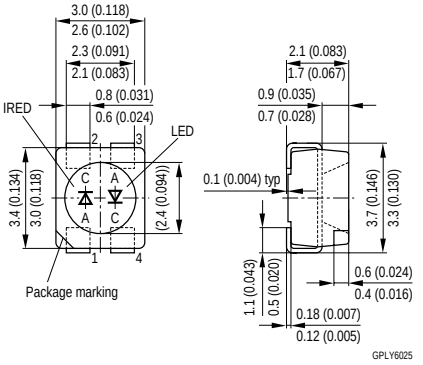


Figure 73 SFH 487, SFH 4301, SFH 409, SFH 4350

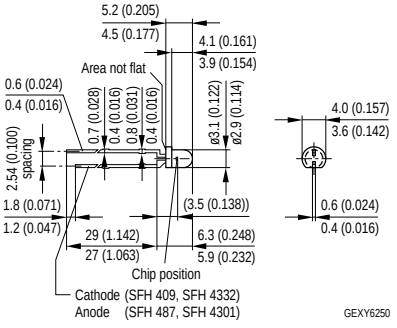


Figure 74 SFH 4501

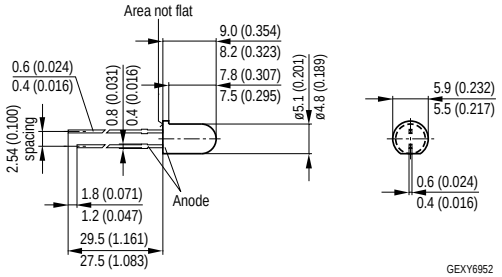


Figure 75 SFH 4502

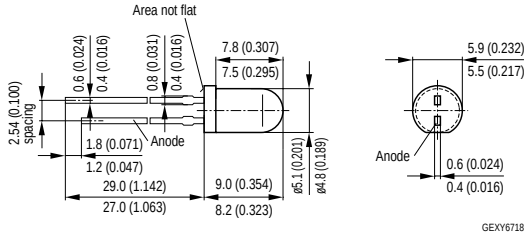


Figure 76 SFH 4503

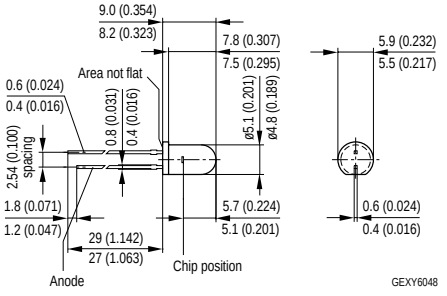


Figure 78 IRL 80 A, IRL 81 A

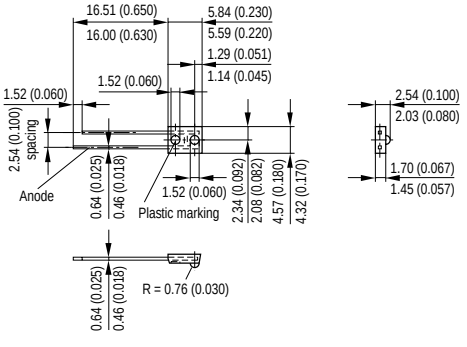
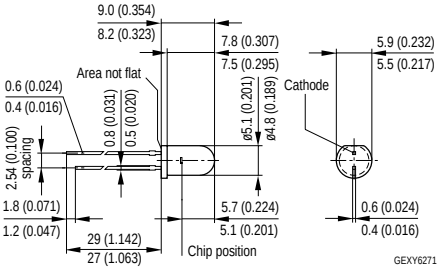


Figure 79 SFH 484, SFH 4550



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 80 SFH 486

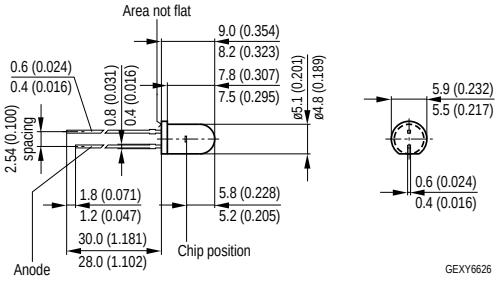


Figure 81 SFH 485

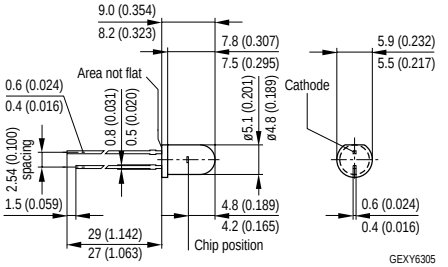


Figure 82 SFH 485 P

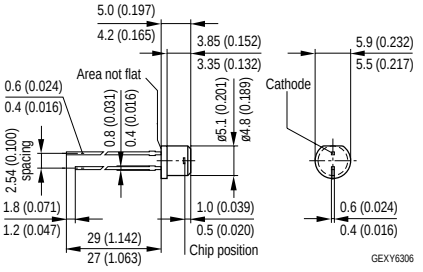


Figure 83 SFH 487 P

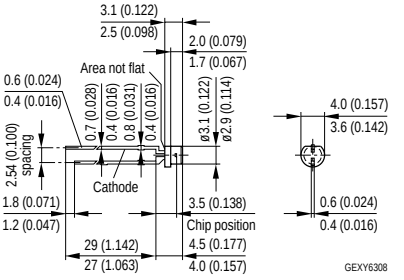


Figure 84 LD 274

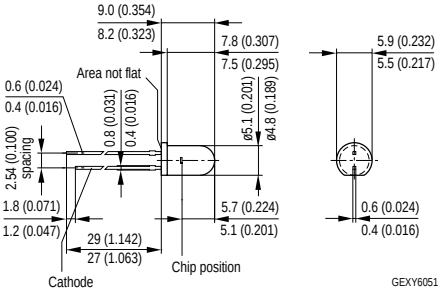


Figure 85 LD 271, LD 271 H

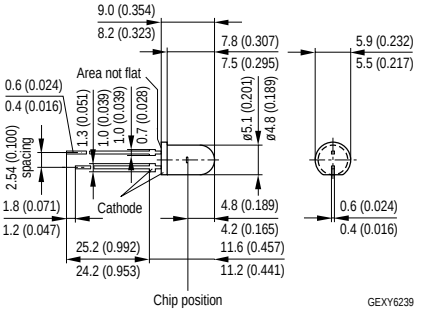


Figure 87 SFH 4860

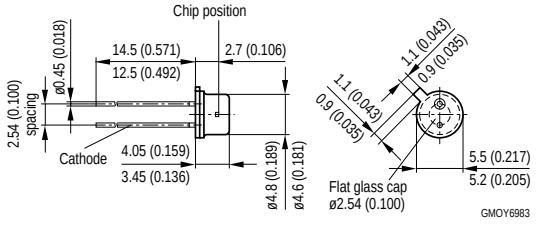
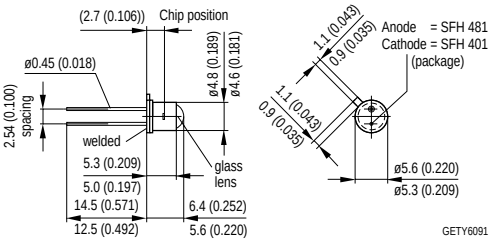


Figure 88 SFH 401



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 89 **SFH 4281**

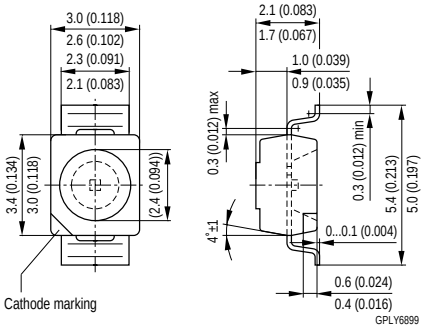


Figure 90 **SFH 425, SFH 426, SFH 4205, SFH 4255**

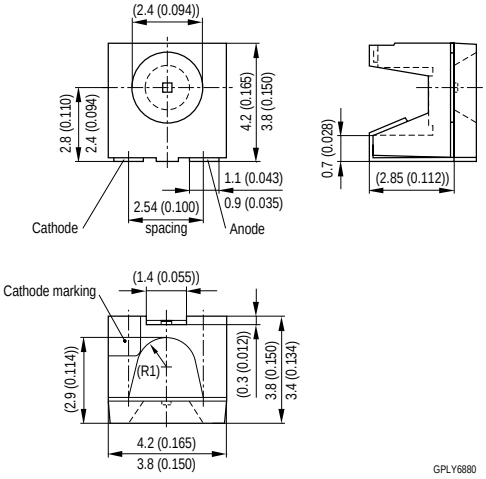


Figure 91 **SFH 3600, SFH 3605, SFH 4600, SFH 4605, SFH 4650, SFH 4655, SFH 4680, SFH 4685**

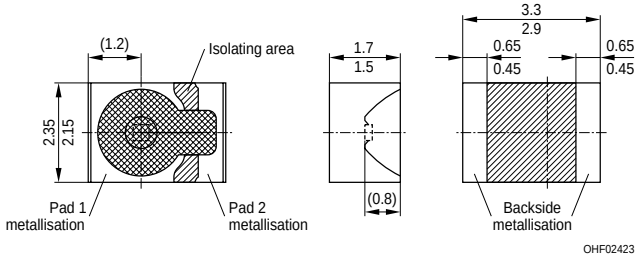


Figure 92 **SFH 4050**

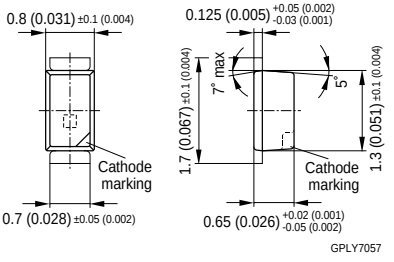


Figure 93 **SFH 4250, SFH 4202**

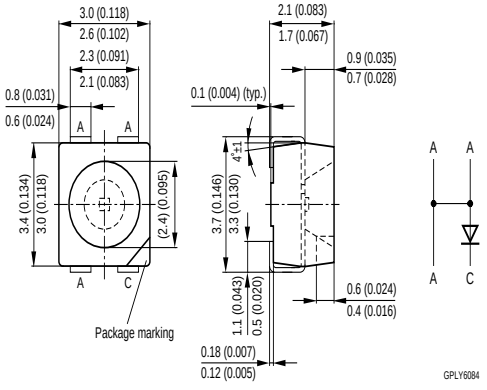
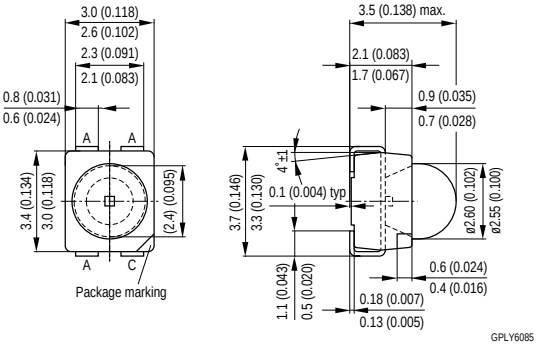


Figure 94 **SFH 4259**



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 95 **SFH 4111**

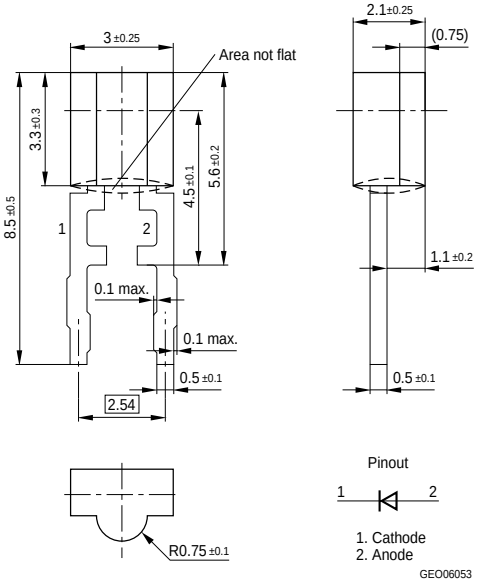


Figure 96 **SFH 4113**

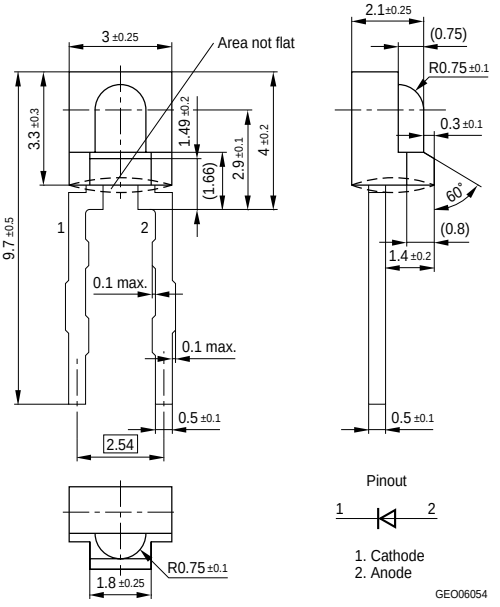


Figure 97 **SFH 4881**

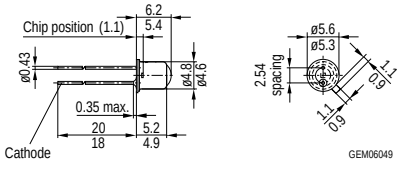


Figure 98 **SFH 4883**

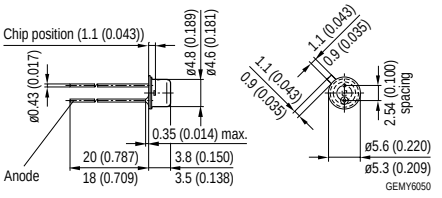


Figure 99 **SFH 4204**

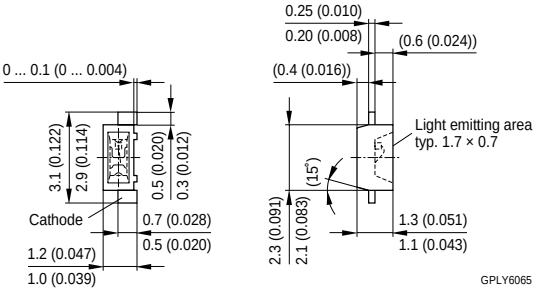
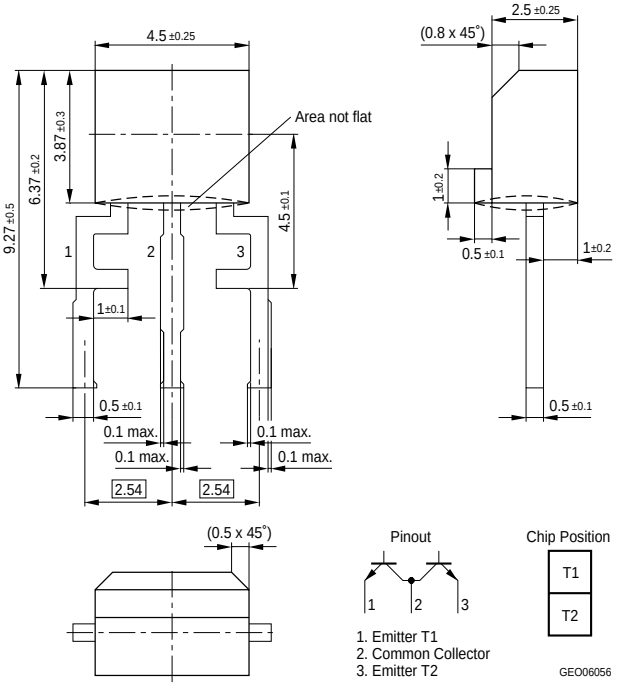


Figure 100 **SFH 3160 F**



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 101 SFH 3162 F

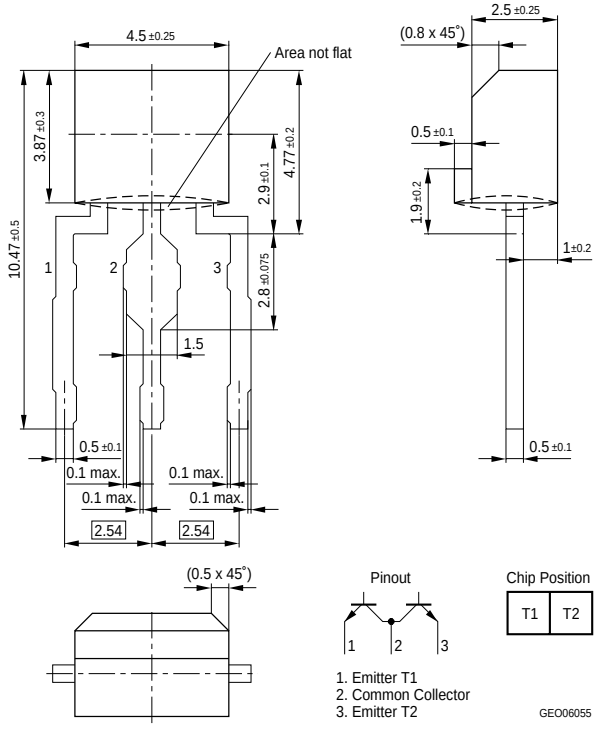


Figure 102 SFH 3163 F

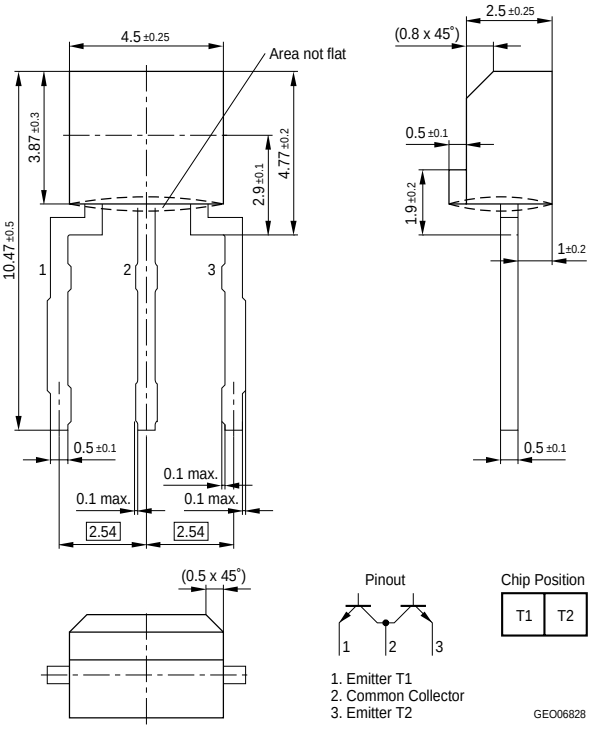


Figure 103 SFH 5130

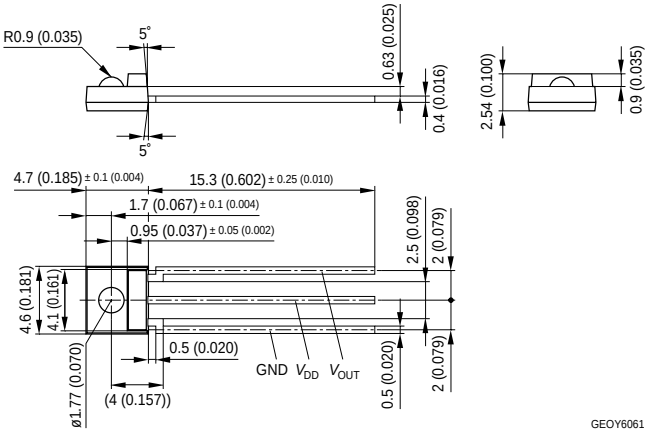
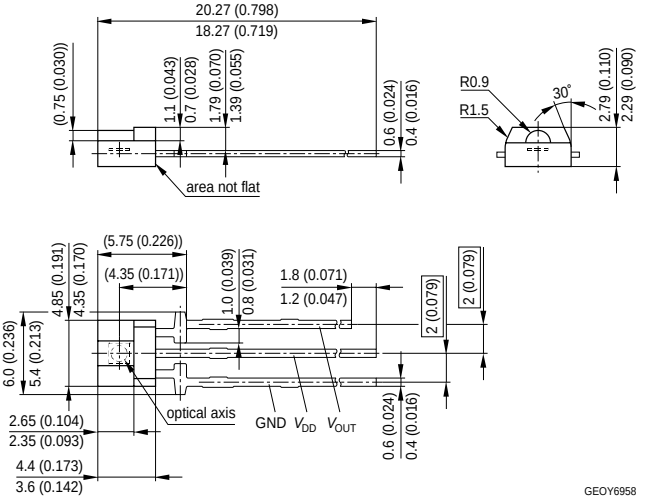


Figure 104 SFH 5133



Maßbilder in mm (inch)

Outline Drawings dimensions in mm (inch)

Figure 105 **SFH 5410**

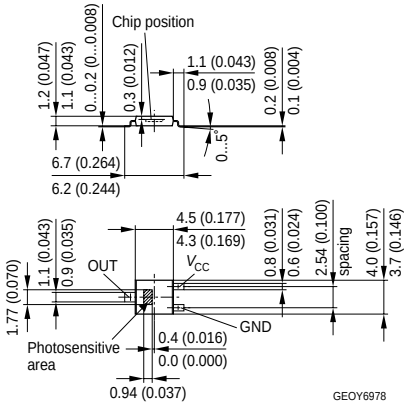


Figure 106 **SFH 4272, SFH 4273**

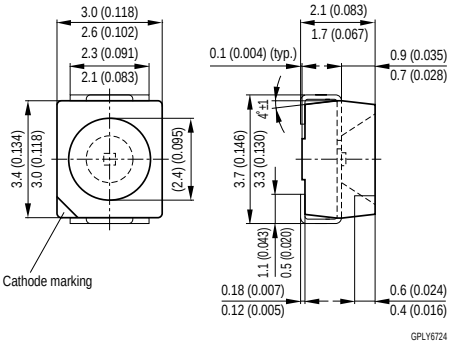


Figure 107 **SFH 4271, SFH 4257**

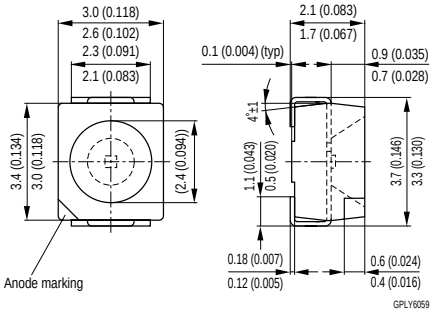


Figure 108 **SFH 3204**

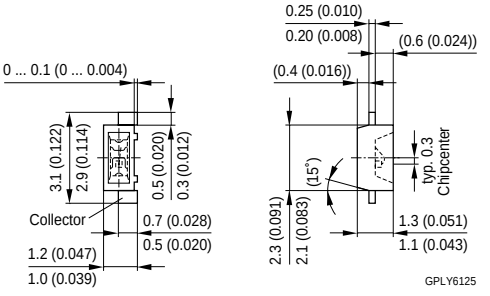


Figure 109 **SFH 4850**