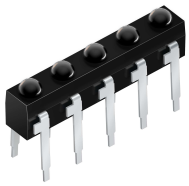
Infrared Emitter Arrays (940 nm)
Version 1.2

SFH 4942/ 4943/ 4944/ 4945/ 4946/ 4947/ 4948/ 4949/ 4940



Features:

- Wavelength 950nm
- Leadframe arrays, available from 2 to 10 Emitters per array
- Short switching times
- Same package dimensions as BPX 80 series
- Miniature package

Applications

- Miniature photointerrupters
- Barcode reader
- Industrial electronics
- For control and drive circuits
- Sensor technology
- Speed controller

Notes

Depending on the mode of operation, these devices emit highly concentrated non visible infrared light which can be hazardous to the human eye. Products which incorporate these devices have to follow the safety precautions given in IEC 60825-1 and IEC 62471.

Ordering Information

Type:	Radiant Intensity I_e [mW/sr] **I_F = 40 mA, t_p = 20 ms**	Ordering Code
SFH 4942	50 (≥ 16)	Q65111A6679
SFH 4943	50 (≥ 16)	Q65111A6680
SFH 4944	50 (≥ 16)	Q65111A6681
SFH 4945	50 (≥ 16)	Q65111A6682
SFH 4946	50 (≥ 16)	Q65111A6683
SFH 4947	50 (≥ 16)	Q65111A6684
SFH 4948	50 (≥ 16)	Q65111A6685
SFH 4949	50 (≥ 16)	Q65111A6686
SFH 4940	50 (≥ 16)	Q65111A6687

Note: measured at a solid angle of Ω = 0.001 sr

Maximum Ratings (T_A = 25 °C)

Parameter	Symbol	Values	Unit
Operation and storage temperature range	T_{op}; T_{stg}	-40 ... 80	°C
Reverse voltage	V_R	5	V
Forward current	I_F	40	mA
Surge current ($t_p \leq 40$ µs, D = 0)	I_{FSM}	1	A
Power consumption	P_{tot}	70	mW
ESD withstand voltage (acc. to ANSI/ ESDA/ JEDEC JS-001 - HBM)	V_{ESD}	2	kV
Thermal resistance junction - ambient [1) *page 9*]	R_{thJA}	750	K / W
Thermal resistance junction - soldering point	R_{thJS}	650	K / W

Characteristics (T_A = 25 °C)

Parameter		Symbol	Values	Unit
Peak wavelength (I_F = 40 mA, t_p = 20 ms)	(typ)	λ_{peak}	950	nm
Centroid wavelength (I_F = 40 mA, t_p = 20 ms)	(typ)	$\lambda_{centroid}$	940	nm
Spectral bandwidth at 50% of I_{max} (I_F = 40 mA, t_p = 20 ms)	(typ)	$\Delta\lambda$	42	nm
Half angle	(typ)	φ	± 10	°
Dimensions of active chip area	(typ)	L x W	0.3 x 0.3	mm x mm
Distance chip surface to lens top	(min .. max)	H	1.3 ... 1.9	mm
Rise and fall time of I_e (10% and 90% of $I_{e\,max}$) (I_F = 40 mA, R_L = 50 Ω)	(typ)	t_r, t_f	12	ns
Forward voltage (I_F = 40 mA, t_p = 20 ms)	(typ (max))	V_F	1.35 (≤ 1.7)	V
Forward voltage (I_F = 1 A, t_p = 100 µs)	(typ (max))	V_F	3.6 (≤ 4.6)	V
Reverse current (V_R = 5 V)		I_R	not designed for reverse operation	µA
Total radiant flux (I_F=40 mA, t_p=20 ms)	(typ)	Φ_e	30	mW

Parameter		Symbol	Values	Unit
Temperature coefficient of I_e or Φ_e (I_F = 40 mA, t_p = 20 ms)	(typ)	TC_I	-0.3	% / K
Temperature coefficient of V_F (I_F = 40 mA, t_p = 20 ms)	(typ)	TC_V	-0.8	mV / K
Temperature coefficient of wavelength (I_F = 40 mA, t_p = 20 ms)	(typ)	TC_λ	0.3	nm / K

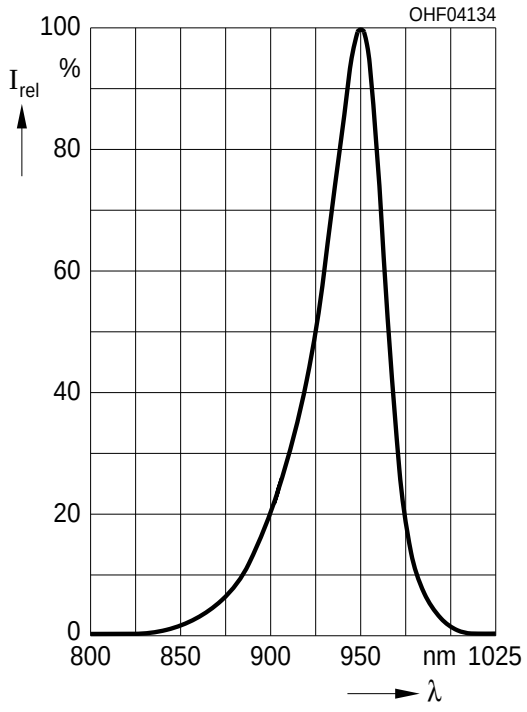
Grouping (T_A = 25 °C)

Group	Min Radiant Intensity I_F = 40 mA, t_p = 20 ms $I_{e, min}$ [mW / sr]	Max Radiant Intensity I_F = 40 mA, t_p = 20 ms $I_{e, max}$ [mW / sr]	Typ Radiant Intensity I_F = 1 A, t_p = 40 µs $I_{e, typ}$ [mW / sr]
SFH 4942/3/4/5/6/7/8/9/0	16	125	520

Note: measured at a solid angle of Ω = 0.01 sr

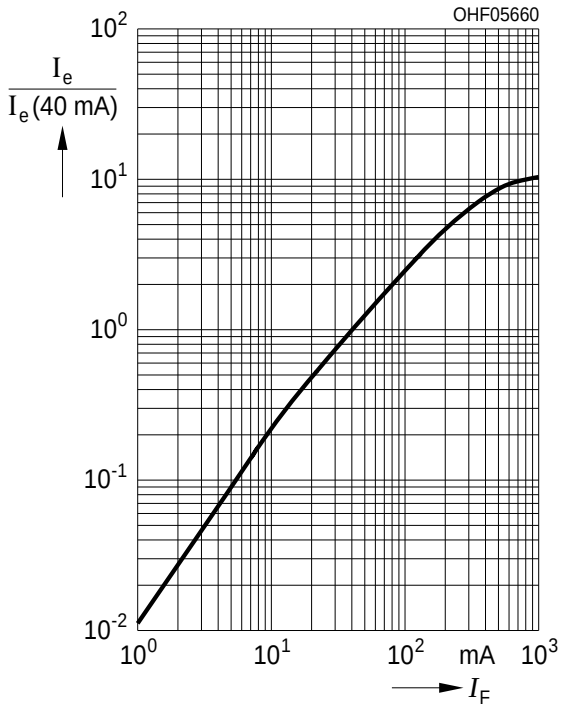
Relative Spectral Emission 2) *page 9*

I_{rel} = f(λ), T_A = 25°C



Radiant Intensity 2) *page 9*

I_e / I_e(40 mA) = f(I_F), single pulse, t_p = 40 µs, T_A= 25°C



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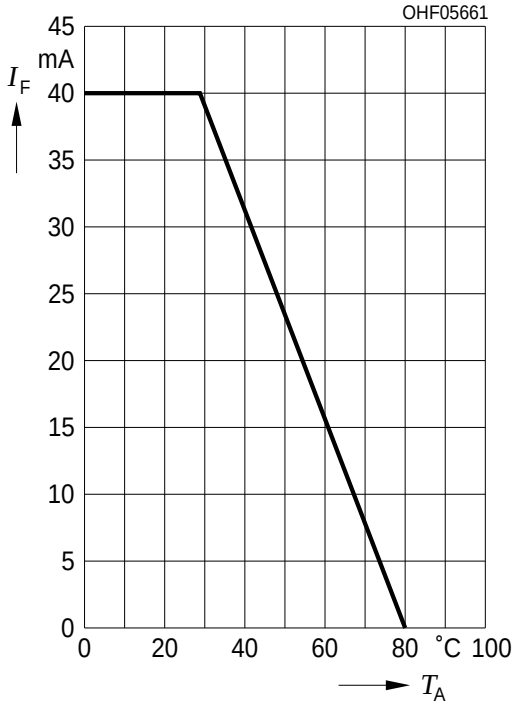
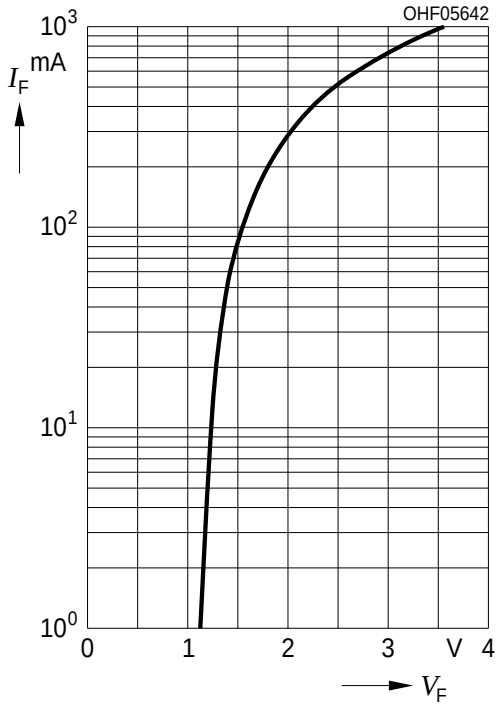
Max. Permissible Forward Current

$I_{F, max} = f(T_A)$, R_{thJA} = 750 K / W



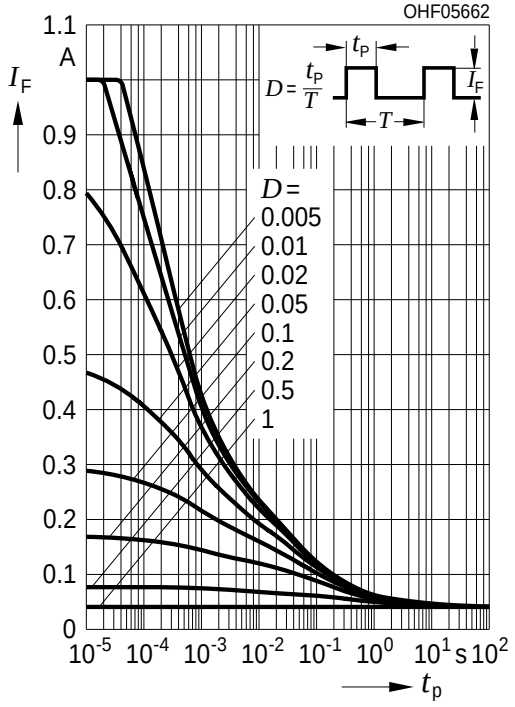
Forward Current 2) *page 9*

$I_F = f(V_F)$, single pulse, t_p = 40 µs, T_A= 25°C



Permissible Pulse Handling Capability

$I_F = f(t_p)$, T_C = 25 °C, duty cycle D = parameter



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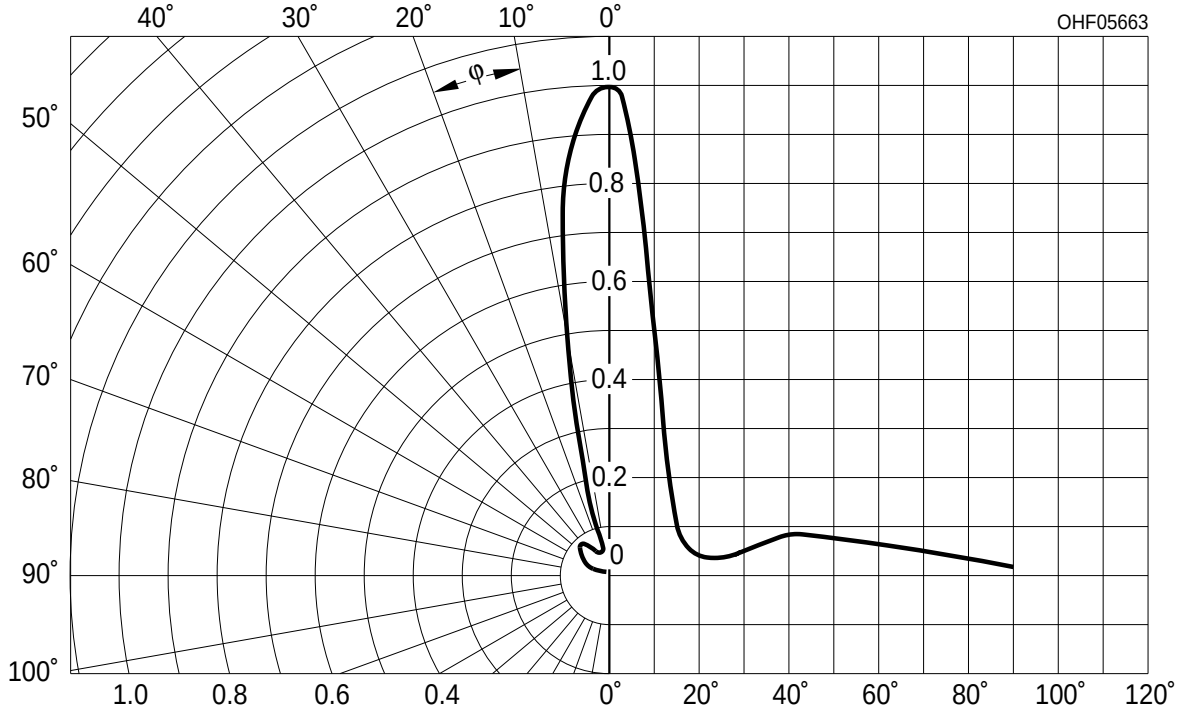
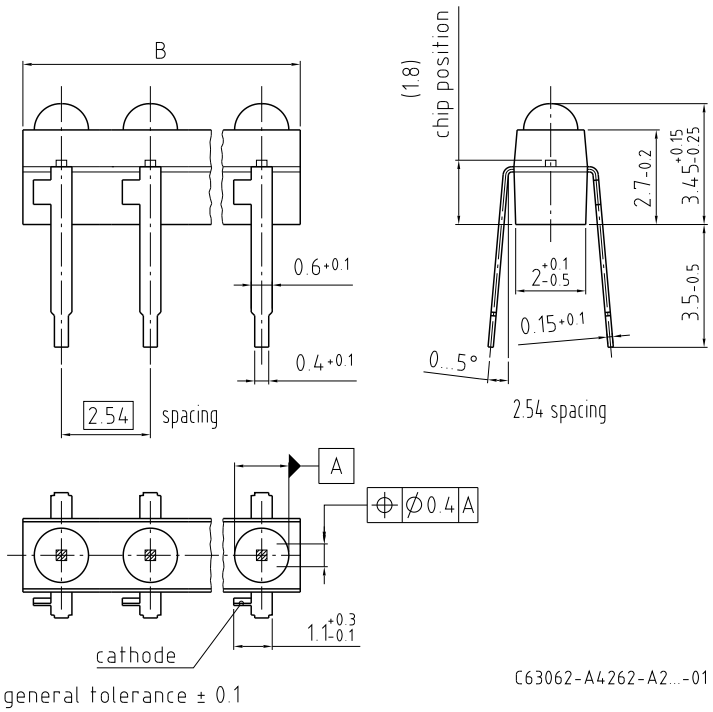
Radiation Characteristics 2) *page 9*

$I_{rel} = f(\phi)$, $T_A = 25°C$



Package Outline



Dimensions in mm.

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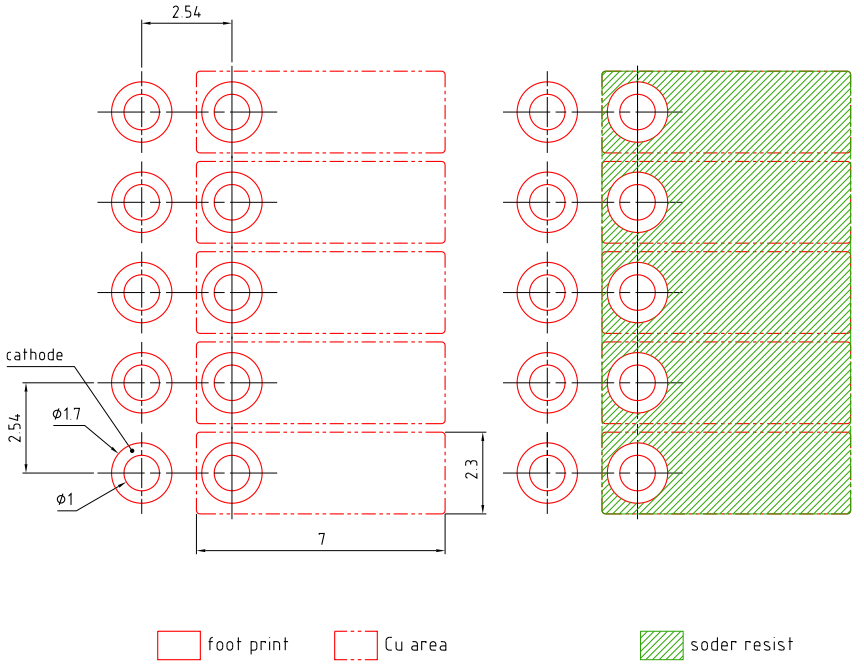
Type:	IRED per Row	Dimension "B"
SFH 4942	2	4.5 ... 4.9
SFH 4943	3	7.0 ... 7.4
SFH 4944	4	9.6 ... 10.0
SFH 4945	5	12.1 ... 12.5
SFH 4946	6	14.6 ... 16.0
SFH 4947	7	17.2 ... 17.6
SFH 4948	8	19.7 ... 20.1
SFH 4949	9	22.3 ... 22.7
SFH 4940	10	24.8 ... 25.2

Package
Miniature Array, Epoxy

Approximate Weight:
0.2 g

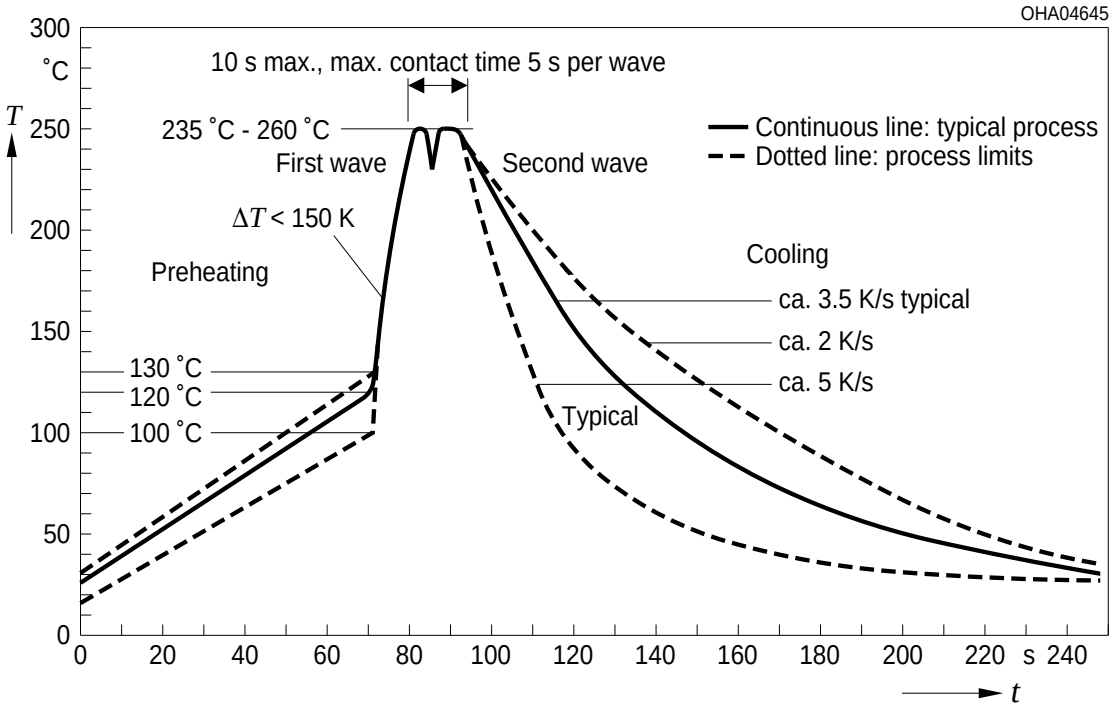
Recommended Solder Pad



Dimensions in mm.

TTW Soldering

IEC-61760-1 TTW



Disclaimer

Language english will prevail in case of any discrepancies or deviations between the two language wordings.

Attention please!

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Components used in life-support devices or systems must be expressly authorized for such purpose!

Critical components* may only be used in life-support devices** or systems with the express written approval of OSRAM OS.

*) A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.

**) Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health and the life of the user may be endangered.

Glossary

[1] **Thermal resistance:** junction -ambient, mounted on PC-board (FR4), padsize 16 mm^2 each

[2] **Typical Values:** Due to the special conditions of the manufacturing processes of LED, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.

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- Подбор аналогов;
- Консультации по применению компонента;
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- Техническая поддержка проекта;
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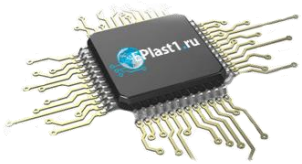

Как с нами связаться

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