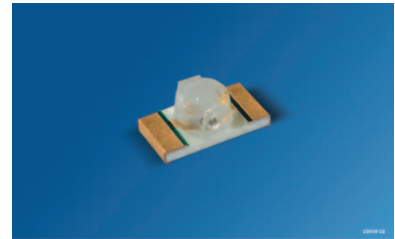


IR-Lumineszenzdiode (850 nm) mit hoher Ausgangsleistung
High Power Infrared Emitter (850 nm)
Lead (Pb) Free Product - RoHS Compliant

SFH 4058



Wesentliche Merkmale

- Sehr kleines Gehäuse:
(LxBxH) 3.2 mm x 1.6mm x 1.1 mm
- Sehr hohe Gesamtleistung

Anwendungen

- Miniaturlichtschranken
- Industrieelektronik
- „Messen/Steuern/Regeln“
- Sensorik

Sicherheitshinweise

Je nach Betriebsart emittieren diese Bauteile hochkonzentrierte, nicht sichtbare Infrarot-Strahlung, die gefährlich für das menschliche Auge sein kann. Produkte, die diese Bauteile enthalten, müssen gemäß den Sicherheitsrichtlinien der IEC-Normen 60825-1 und 62471 behandelt werden.

Features

- Very small package:
(LxWxH) 3.2 mm x 1.6 mm x 1.1 mm
- High optical total power

Applications

- Miniature photointerrupters
- Industrial electronics
- For drive and control circuits
- Sensor technology

Safety Advices

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.

Typ Type	Bestellnummer Ordering Code	Strahlstärkegruppierung¹⁾ ($I_F = 70 \text{ mA}$, $t_p = 20 \text{ ms}$) Radiant Intensity Grouping¹⁾ $I_e \text{ (mW/sr)}$
SFH 4058	Q65110A9218	$\geq 6.3 \text{ (typ. 15)}$

¹⁾ gemessen bei einem Raumwinkel $\Omega = 0.01 \text{ sr}$ / measured at a solid angle of $\Omega = 0.01 \text{ sr}$

Grenzwerte ($T_A = 25\text{ °C}$)**Maximum Ratings**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	T_{op}, T_{stg}	- 40 ... + 85	°C
Sperrspannung Reverse voltage	V_R	5	V
Vorwärtsgleichstrom Forward current	I_F	70	mA
Stoßstrom, $t_p = 10\ \mu\text{s}$, $D = 0$ Surge current	I_{FSM}	700	mA
Verlustleistung Power dissipation	P_{tot}	140	mW
Wärmewiderstand Sperrschicht - Umgebung bei Montage auf FR4 Platine, Padgröße je $5\ \text{mm}^2$ Thermal resistance junction - ambient mounted on PC-board (FR4), pads size $5\ \text{mm}^2$ each	R_{thJA}	540	K/W
Wärmewiderstand Sperrschicht - Lötstelle bei Montage auf Metall-Block Thermal resistance junction - soldering point, mounted on metal block	R_{thJS}	360	K/W

Kennwerte ($T_A = 25\text{ °C}$)**Characteristics**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength at peak emission $I_F = 70\ \text{mA}$, $t_p = 10\ \text{ms}$	λ_{peak}	860	nm
Schwerpunkts-Wellenlänge der Strahlung Centroid Wavelength $I_F = 70\ \text{mA}$, $t_p = 10\ \text{ms}$	$\lambda_{centroid}$	850	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} $I_F = 70\ \text{mA}$, $t_p = 10\ \text{ms}$	$\Delta\lambda$	42	nm
Abstrahlwinkel Half angle	φ	± 40	Grad deg.
Aktive Chipfläche Active chip area	A	0.04	mm^2

Kennwerte ($T_A = 25\text{ °C}$)

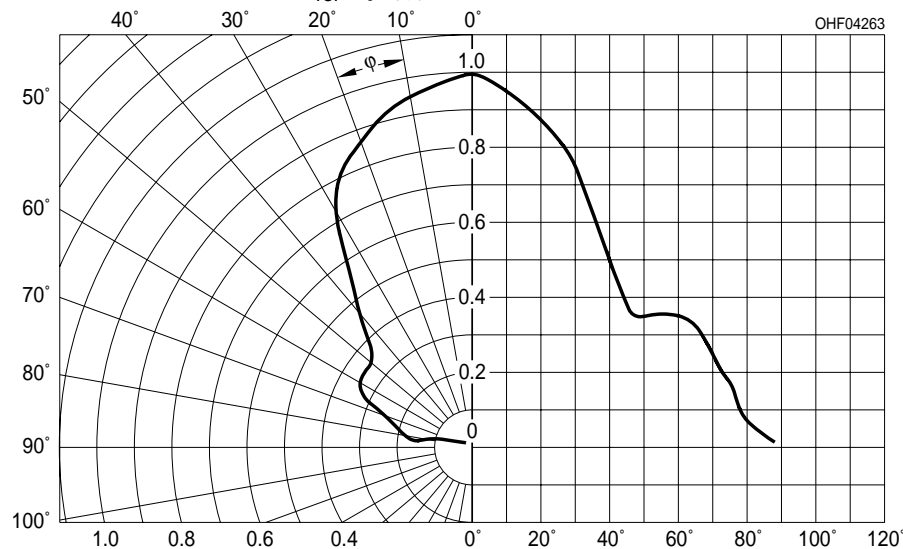
Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	0.2×0.2	mm ²
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 70\text{ mA}$, $R_L = 50\ \Omega$ Switching times, I_e from 10% to 90% and from 90% to 10%, $I_F = 70\text{ mA}$, $R_L = 50\ \Omega$	t_r , t_f	10	ns
Durchlassspannung Forward voltage $I_F = 70\text{ mA}$, $t_p = 20\text{ ms}$	V_F	1.6 (< 2.0)	V
Sperrstrom Reverse current	I_R	not designed for reverse operation	μA
Gesamtstrahlungsfluss Total radiant flux $I_F = 70\text{ mA}$, $t_p = 20\text{ ms}$	$\Phi_{e\text{ typ}}$	33	mW
Temperaturkoeffizient von I_e bzw. Φ_e , $I_F = 70\text{ mA}$ Temperature coefficient of I_e or Φ_e , $I_F = 70\text{ mA}$	TC_I	- 0.5	%/K
Temperaturkoeffizient von V_F , $I_F = 70\text{ mA}$ Temperature coefficient of V_F , $I_F = 70\text{ mA}$	TC_V	- 0.7	mV/K
Temperaturkoeffizient von λ , $I_F = 70\text{ mA}$ Temperature coefficient of λ , $I_F = 70\text{ mA}$	TC_λ	+ 0.3	nm/K

Strahlstärke I_e in Achsrichtung¹⁾gemessen bei einem Raumwinkel $\Omega = 0.01$ sr**Radiant Intensity I_e in Axial Direction**at a solid angle of $\Omega = 0.01$ sr

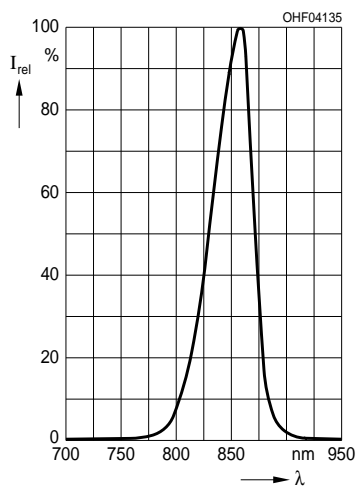
Bezeichnung Parameter	Symbol	Werte Values			Einheit Unit
		SFH 4058			
		-Q	-R	-S	
Strahlstärke Radiant intensity $I_F = 70$ mA, $t_p = 20$ ms	$I_{e \text{ min}}$ $I_{e \text{ max}}$	6.3 12.5	10 20	16 32	mW/sr mW/sr
Strahlstärke Radiant intensity $I_F = 500$ mA, $t_p = 25$ μ s	$I_{e \text{ typ}}$	36	55	90	mW/sr

¹⁾ Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 2:1) /
Only one bin in one packing unit (variation lower 2:1)

Abstrahlcharakteristik**Radiation Characteristics $I_{\text{rel}} = f(\varphi)$** 

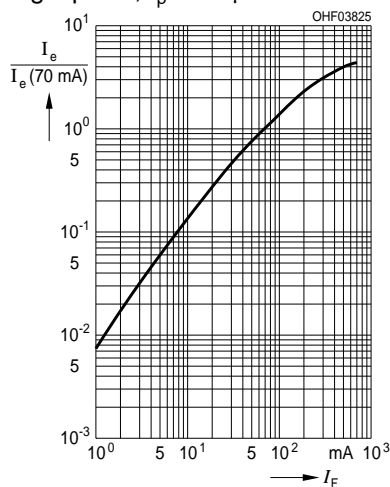
Relative Spectral Emission

$I_{rel} = f(\lambda)$



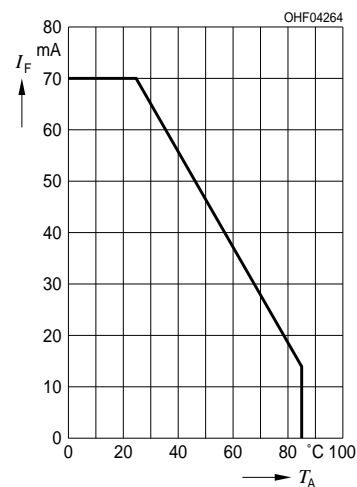
Radiant Intensity $\frac{I_e}{I_e(70 \text{ mA})} = f(I_F)$

Single pulse, $t_p = 25 \mu\text{s}$



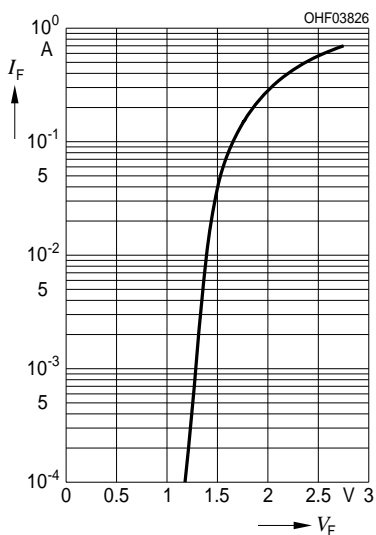
Max. Permissible Forward Current

$I_F = f(T_A), R_{thJA} = 540 \text{ K/W}$



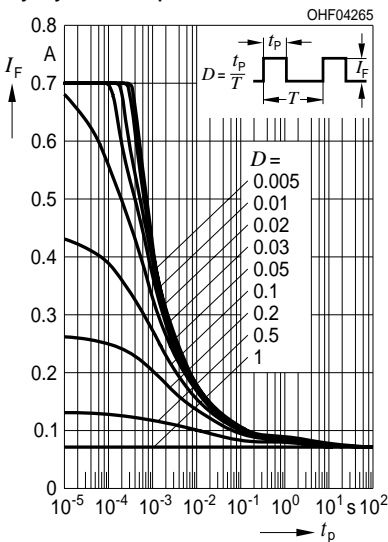
Forward Current $I_F = f(V_F)$

Single pulse, $t_p = 100 \mu\text{s}$



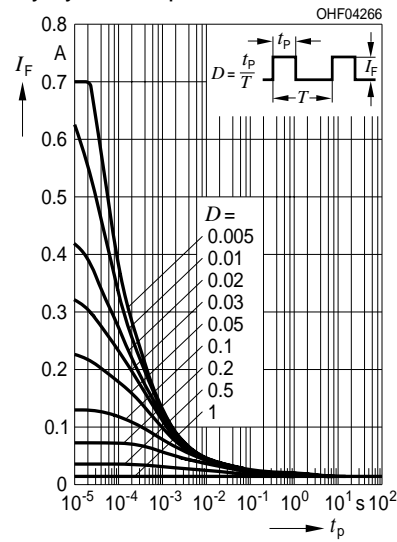
Permissible Pulse Handling Capability

$I_F = f(\tau), T_A = 25 \text{ °C}$,
duty cycle $D =$ parameter

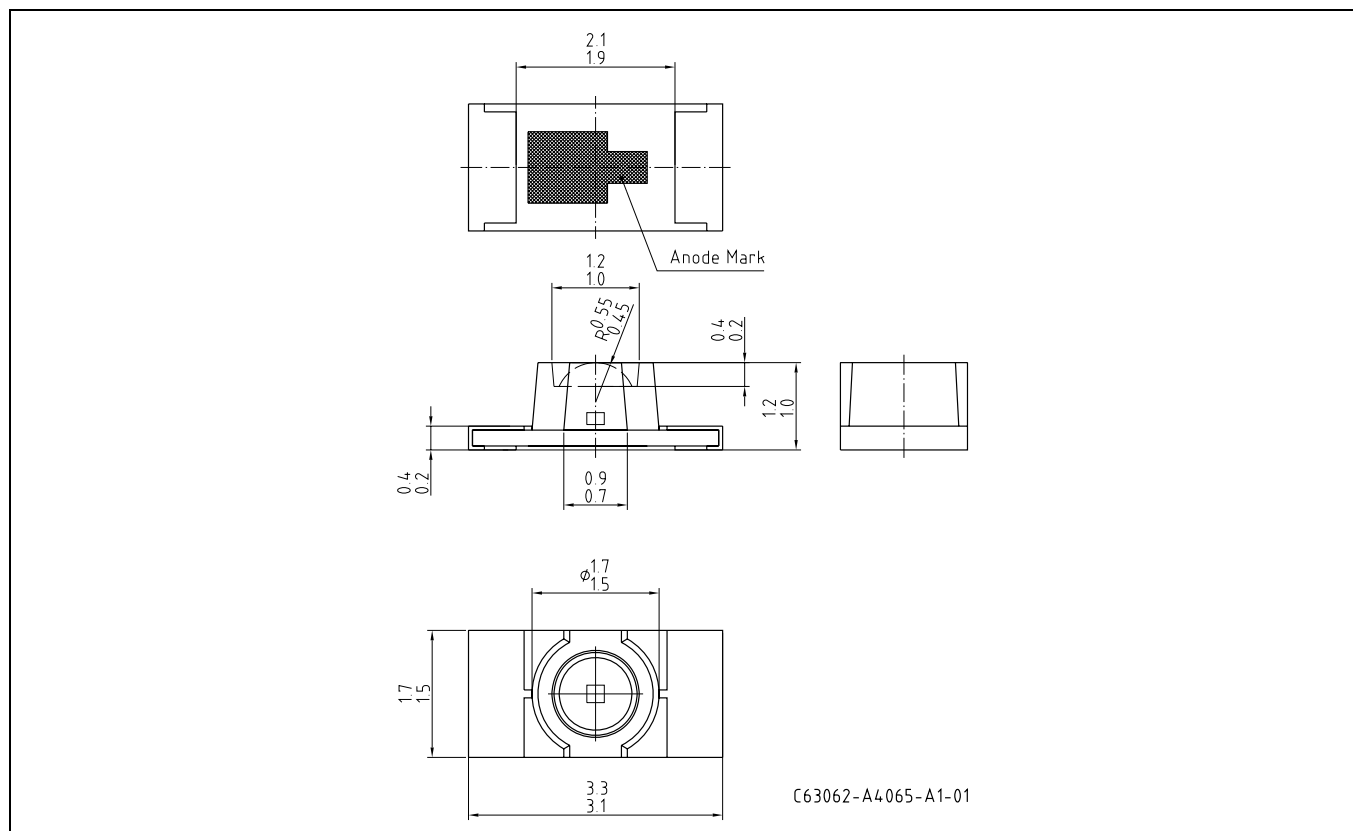


Permissible Pulse Handling Capability

$I_F = f(\tau), T_A = 85 \text{ °C}$,
duty cycle $D =$ parameter



Maßzeichnung Package Outlines

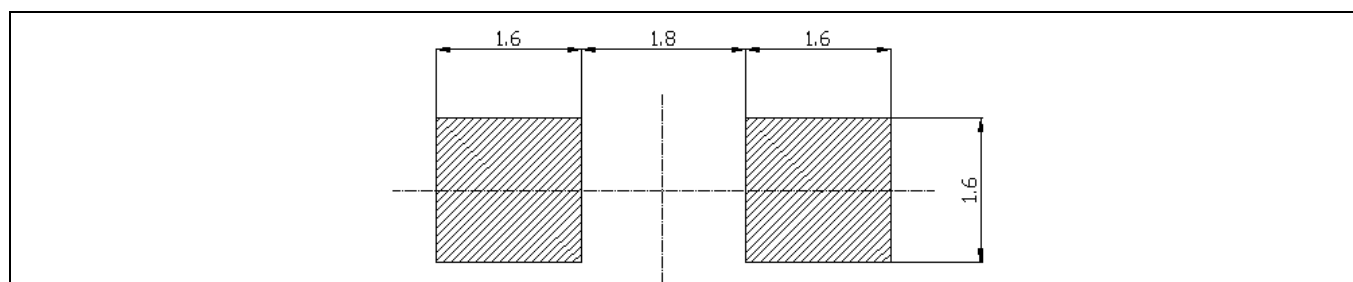


Maße in mm/ Dimensions in mm.

Gehäuse / Package	Chip LED/ Chip LED
Farbe / Colour	Farblos klar / colourless clear
Gehäusemarkierung/ Package marking	Anode / anode

Empfohlenes Lötpaddesign Recommended Solder Pad

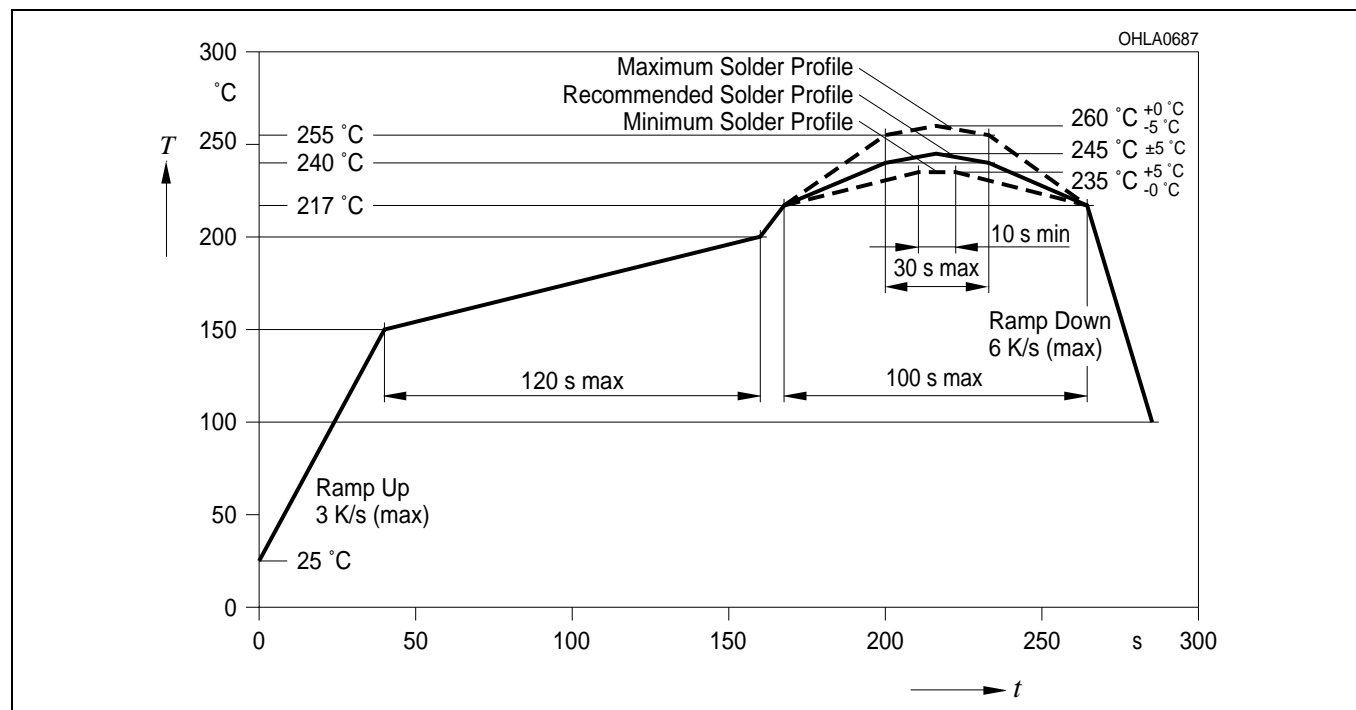
Reflow Löten
Reflow Soldering



Maße in mm / Dimensions in mm.

Lötbedingungen
Soldering Conditions
Reflow Lötprofil für bleifreies Löten
Reflow Soldering Profile for lead free soldering

Vorbehandlung nach JEDEC Level 3
 Preconditioning acc. to JEDEC Level 3
 (nach J-STD-020C)
 (acc. to J-STD-020C)



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