

**Leistungsstarke IR-Lumineszenzdiode**  
**High Power Infrared Emitter**  
**Lead (Pb) Free Product - RoHS Compliant**

**SFH 4203**



**Nicht für Neuentwicklungen / Not for new designs**

**Wesentliche Merkmale**

- Leistungsstarke GaAs-LED (35 mW)
- Hoher Wirkungsgrad bei kleinen Strömen
- Homogene Abstrahlung
- Typische Peakwellenlänge 950 nm

**Features**

- High Power GaAs-LED (35 mW)
- High Efficiency at low currents
- Homogeneous Radiation Pattern
- Typical peak wavelength 950 nm

**Anwendungen**

- Industrieelektronik
- „Messen/Steuern/Regeln“
- Automobiltechnik
- Sensorik
- Alarm- und Sicherungssysteme
- IR-Freiraumübertragung

**Applications**

- Industrial electronics
- For drive and control circuits
- Automotive technology
- Sensor technology
- Alarm and safety equipment
- IR free air transmission

Typ Type	Bestellnummer Ordering Code	Strahlstärkegruppierung <sup>1)</sup> ( $I_F = 100 \text{ mA}$ , $t_p = 20 \text{ ms}$ ) Radiant Intensity Grouping <sup>1)</sup> $I_e$ (mW/sr)
SFH 4203	Q65110A2499	8 (> 4)

<sup>1)</sup> 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 ... + 100	°C
Sperrspannung Reverse voltage	$V_R$	3	V
Durchlassstrom Forward current	$I_F$ (DC)	100	mA
Stoßstrom, $t_p = 10\ \mu\text{s}$ , $D = 0$ Surge current	$I_{FSM}$	1	A
Verlustleistung Power dissipation	$P_{tot}$	180	mW
Wärmewiderstand Sperrschicht - Umgebung bei Montage auf FR4 Platine, Padgröße je $16\ \text{mm}^2$ Thermal resistance junction - ambient mounted on PC-board (FR4), pads size $16\ \text{mm}^2$ each	$R_{thJA}$	450	K/W
Wärmewiderstand Sperrschicht - Lötstelle bei Montage auf Metall-Block Thermal resistance junction - soldering point, mounted on metal block	$R_{thJS}$	200	K/W

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

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength at peak emission $I_F = 100\ \text{mA}$ , $t_p = 20\ \text{ms}$	$\lambda_{peak}$	950	nm
Spektrale Bandbreite bei 50% von $I_{max}$ Spectral bandwidth at 50% of $I_{max}$ $I_F = 100\ \text{mA}$ , $t_p = 20\ \text{ms}$	$\Delta\lambda$	40	nm
Abstrahlwinkel Half angle	$\varphi$	$\pm 65$	Grad deg.
Aktive Chipfläche Active chip area	$A$	0.09	$\text{mm}^2$
Abmessungen der aktiven Chipfläche Dimensions of the active chip area	$L \times B$ $L \times W$	$0.3 \times 0.3$	mm

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

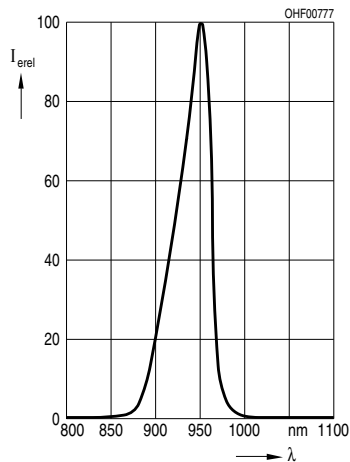
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$ , $R_L = 50\ \Omega$ Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$ , $R_L = 50\ \Omega$	$t_r, t_f$	10	ns
Durchlassspannung Forward voltage $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$ $I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$	$V_F$ $V_F$	1.5 ( $\leq 1.8$ ) 3.2 ( $\leq 4.3$ )	V V
Sperrstrom Reverse current $V_R = 3\text{ V}$	$I_R$	0.01 ( $\leq 10$ )	$\mu\text{A}$
Gesamtstrahlungsfluss Total radiant flux $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$\Phi_e$	35	mW
Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$ , $I_F = 100\text{ mA}$ Temperature coefficient of $I_e$ or $\Phi_e$ , $I_F = 100\text{ mA}$	$TC_I$	- 0.44	%/K
Temperaturkoeffizient von $V_F$ , $I_F = 100\text{ mA}$ Temperature coefficient of $V_F$ , $I_F = 100\text{ mA}$	$TC_V$	- 1.5	mV/K
Temperaturkoeffizient von $\lambda$ , $I_F = 100\text{ mA}$ Temperature coefficient of $\lambda$ , $I_F = 100\text{ mA}$	$TC_\lambda$	+ 0.2	nm/K

**Strahlstärke  $I_e$  in Achsrichtung**gemessen bei einem Raumwinkel  $\Omega = 0.01\text{ sr}$ **Radiant Intensity  $I_e$  in Axial Direction**at a solid angle of  $\Omega = 0.01\text{ sr}$ 

Bezeichnung Parameter	Symbol	Werte Values	Einheit Unit
Strahlstärke Radiant intensity $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$I_{e\text{ min.}}$ $I_{e\text{ typ.}}$	4 8	mW/sr mW/sr
Strahlstärke Radiant intensity $I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$	$I_{e\text{ typ.}}$	48	mW/sr

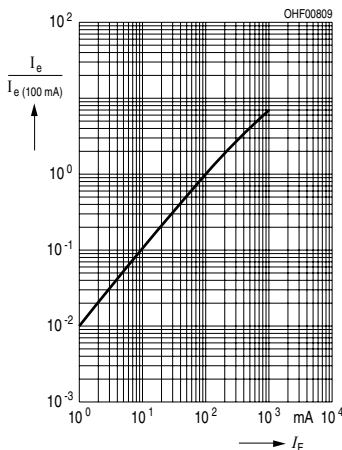
**Relative Spectral Emission**

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



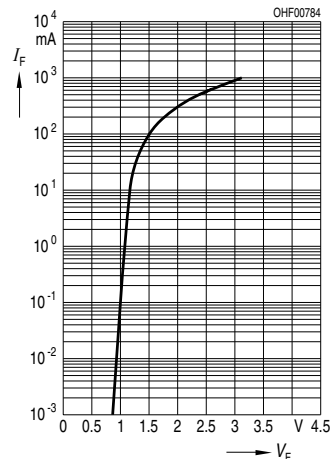
**Radiant Intensity**  $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$ ,

single pulse,  $t_p = 20 \mu\text{s}$



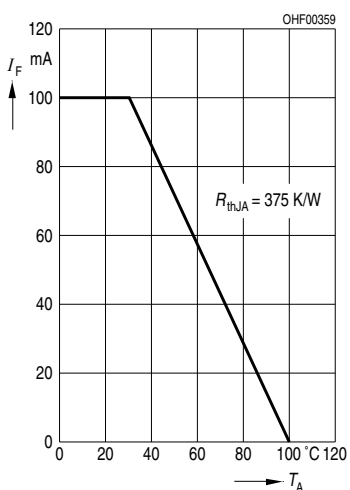
**Forward Current**  $I_F = f(V_F)$ ,

single pulse,  $t_p = 20 \mu\text{s}$



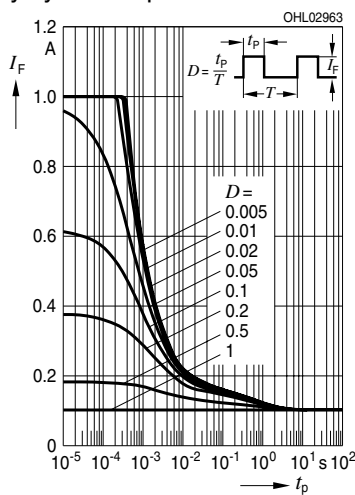
**Max. Permissible Forward Current**

$I_F = f(T_A, R_{thJA}^1)$



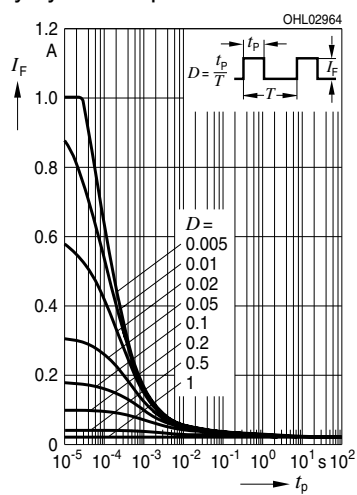
**Permissible Pulse Handling Capability**

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

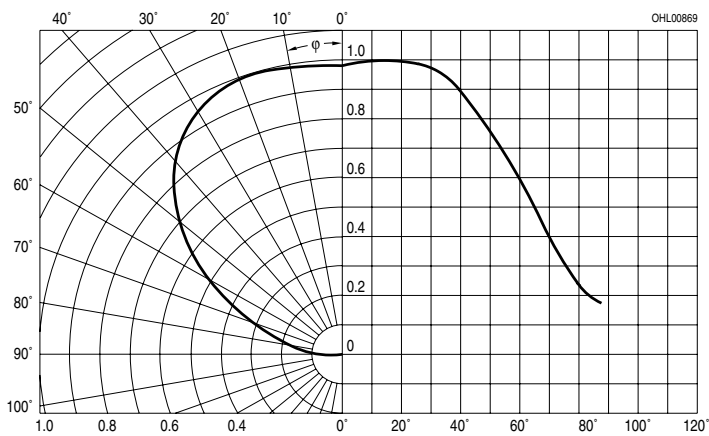


**Permissible Pulse Handling Capability**

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

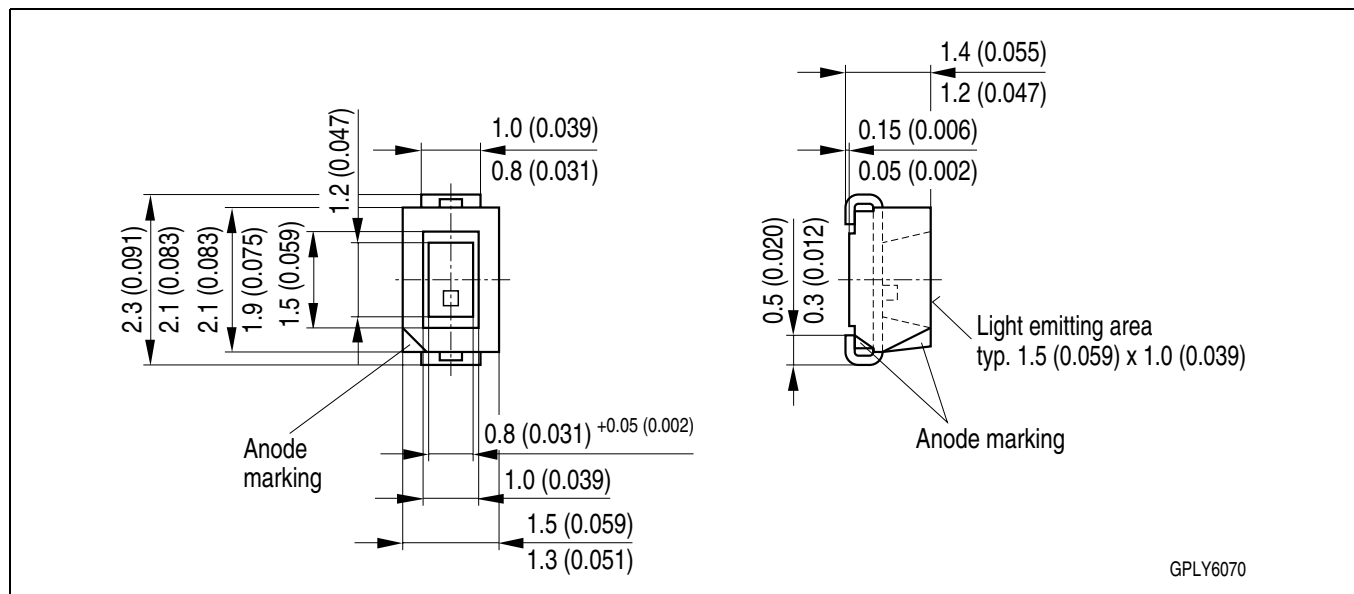


**Radiation Characteristics**  $I_{rel} = f(\varphi)$



<sup>1)</sup> Thermal resistance junction - ambient mounted on PC-board (FR4), pad size 16 mm<sup>2</sup> (each).

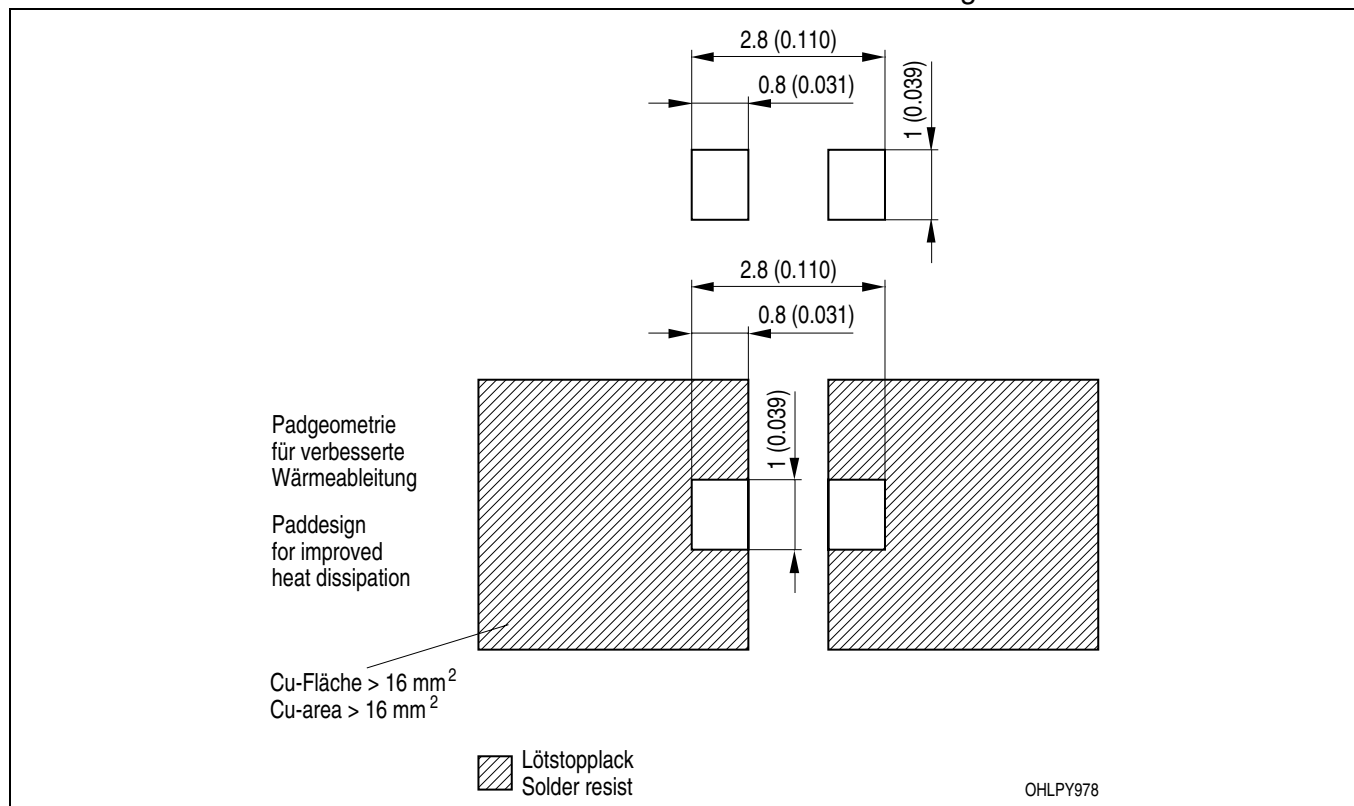
**Maßzeichnung  
Package Outlines**



Maße in mm (inch) / Dimensions in mm (inch).

**Empfohlenes Lötpaddesign  
Recommended Solder Pad**

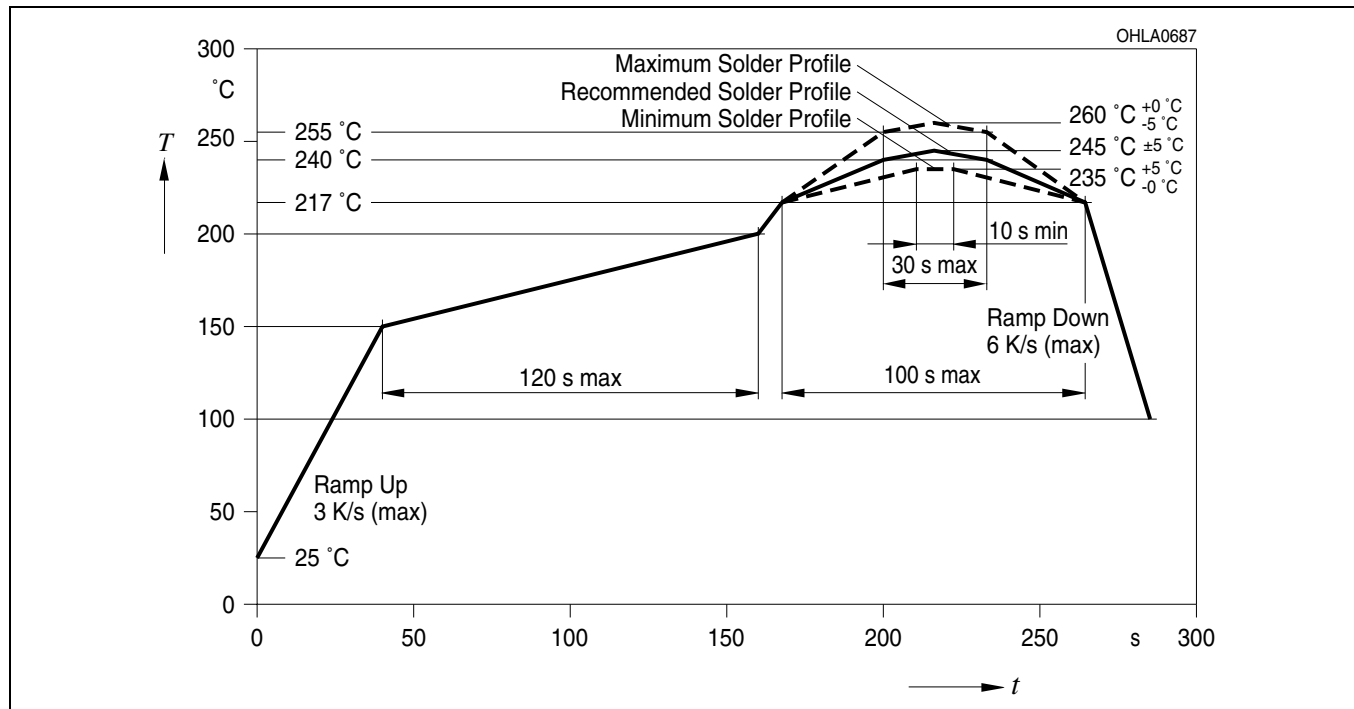
**Reflow Löten  
Reflow Soldering**



Maße in mm (inch) / Dimensions in mm (inch).

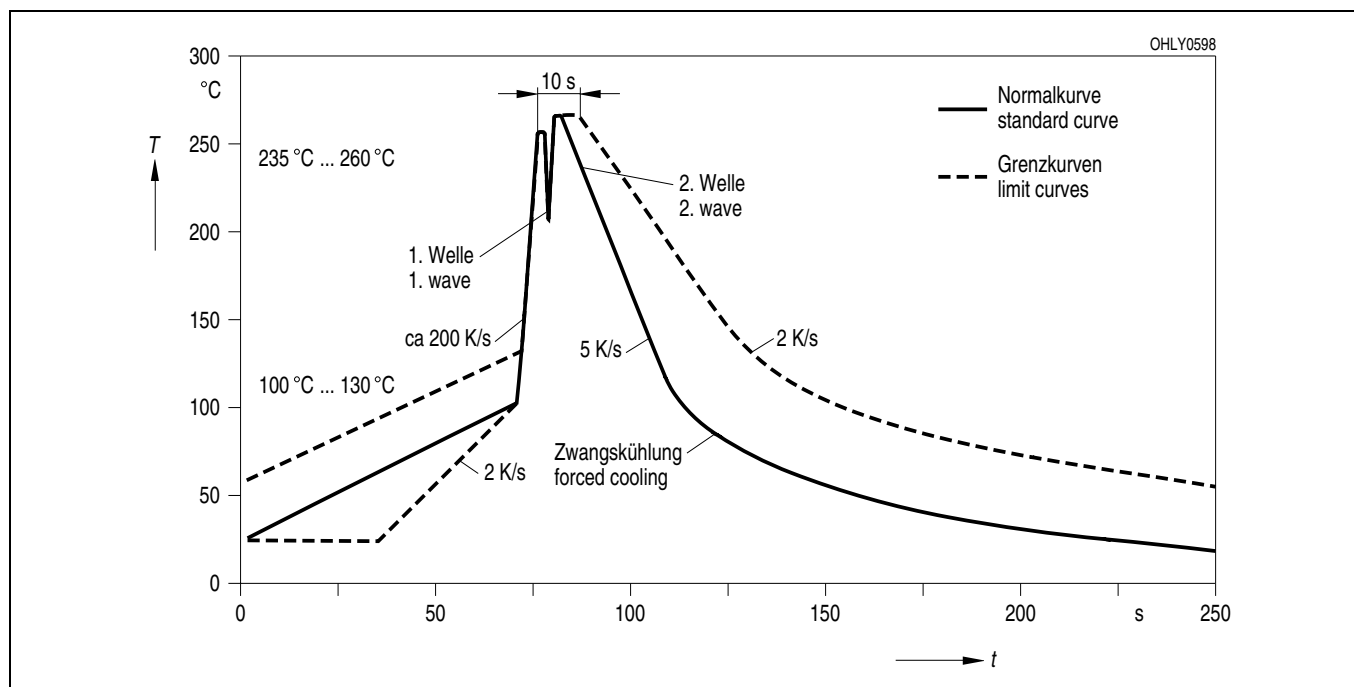
**Lötbedingungen**  
**Soldering Conditions**  
**Reflow Lötprofil für bleifreies Löt**  
**Reflow Soldering Profile for lead free soldering**

Vorbehandlung nach JEDEC Level 2  
 Preconditioning acc. to JEDEC Level 2  
 (nach J-STD-020C)  
 (acc. to J-STD-020C)



**Wellenlöt (TTW)**  
**TTW Soldering**

(nach CECC 00802)  
 (acc. to CECC 00802)



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