Schnelle IR-Lumineszenzdiode (950 nm) im 3 mm Radial-Gehäuse
High-Speed Infrared Emitter (950 nm) in 3 mm Radial Package

SFH 4301



Wesentliche Merkmale

- Hohe Pulsleistung und hoher Gesamt-strahlungsfluß Φ_e
- Sehr kurze Schaltzeiten (10 ns)
- Sehr hohe Langzeitstabilität
- Hohe Zuverlässigkeit

Features

- High pulse power and high radiant flux Φ_e
- Very short switching times (10 ns)
- Very high long-time stability
- High reliability

Anwendungen

- Schnelle Datenübertragung mit Übertragungsraten bis 100 Mbaud (IR Tastatur, Joystick, Multimedia)
- Analoge und digitale Hi-Fi Audio- und Videosignalübertragung
- Batteriebetriebene Geräte (geringe Stromaufnahme)
- Anwendungen mit hohen Zuverlässigkeits-ansprüchen bzw. erhöhten Anforderungen
- Alarm- und Sicherungssysteme
- IR Freiraumübertragung

Applications

- High data transmission rate up to 100 Mbaud (IR keyboard, Joystick, Multimedia)
- Analog and digital Hi-Fi audio and video signal transmission
- Low power consumption (battery) equipment
- Suitable for professional and high-reliability applications
- Alarm and safety equipment
- IR free air transmission

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 4301	Q62702-P5166	3-mm-LED-Gehäuse (T1), schwarz eingefärbt, Anschlüsse im 2.54-mm-Raster ($^1/_{10}$''), Kathodenkennung: längerer Anschluß 3 mm LED package (T1), black-colored epoxy resin, solder tabs lead spacing 2.54 mm ($^1/_{10}$''), cathode marking: long lead

Grenzwerte (T_A = 25 °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 Surge current t_p = 10 µs, D = 0	I_{FSM}	2.2	A
Verlustleistung Power dissipation	P_{tot}	180	mW
Wärmewiderstand Sperrschicht - Umgebung, freie Beinchenlänge max. 10 mm Thermal resistance junction - ambient, lead length between package bottom and PCB max. 10 mm	R_{thJA}	375	K/W

Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Wellenlänge der Strahlung Wavelength of peak emission I_F = 100 mA, t_p = 20 ms	λ_{peak}	950	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} I_F = 100 mA, t_p = 20 ms	$\Delta\lambda$	40	nm
Abstrahlwinkel Half angle	φ	± 10	Grad deg.
Aktive Chipfläche Active chip area	A	0.09	mm^2
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	0.3 × 0.3	mm
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10% Switching times, I_e from 10% to 90% and from 90% to 10%, I_F = 100 mA, t_P = 20 ms, R_L = 50 Ω	t_r, t_f	10	ns
Kapazität Capacitance V_R = 0 V, f = 1 MHz	C_o	35	pF
Durchlaßspannung Forward voltage I_F = 100 mA, t_p = 20 ms I_F = 1 A, t_p = 100 µs	 V_F V_F	 1.5 (≤ 1.8) 3.2 (≤ 4.0)	 V V
Sperrstrom Reverse current V_R = 3 V	I_R	0.01 (≤ 10)	µA
Gesamtstrahlungsfluß Total radiant flux I_F = 100 mA, t_p = 20 ms	Φ_e	32	mW
Temperaturkoeffizient von I_e bzw. Φ_e Temperature coefficient of I_e or Φ_e I_F = 100 mA	TC_I	– 0.44	%/K

Kennwerte (T_A = 25 °C) (cont'd)
Characteristics

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 100 mA	TC_V	– 1.5	mV/K
Temperaturkoeffizient von λ Temperature coefficient of λ I_F = 100 mA	TC_λ	+ 0.2	nm/K

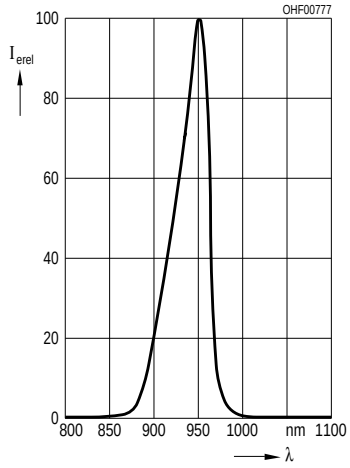
Strahlstärke I_e in Achsrichtung
gemessen bei einem Raumwinkel von Ω = 0.01 sr
Radiant Intensity I_e in Axial Direction
measured at a solid angle of Ω = 0.01 sr

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Strahlstärke Radiant intensity I_F = 100 mA, t_p = 20 ms	$I_{e\ min}$ $I_{e\ typ}$	16 60	mW/sr mW/sr
Strahlstärke Radiant intensity I_F = 1 A, t_p = 100 µs	$I_{e\ typ}$	400	mW/sr

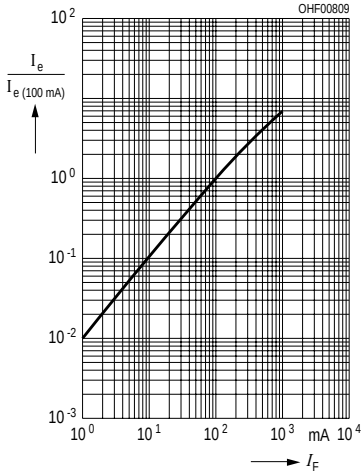
Lötbedingungen
Soldering Conditions

Tauch-, Schwall- und Schlepplötung **Dip, Wave and Drag Soldering**			**Kolbenlötung (mit 1,5-mm-Kolbenspitze)** **Iron Soldering (with 1.5-mm-bit)**		
Lötpad-temperatur **Temperature of the Soldering Bath**	**Maximal zulässige Lötzeit** **Max. Perm. Soldering Time**	**Abstand Lötstelle – Gehäuse** **Distance between Solder Joint and Case**	**Temperatur des Kolbens** **Temperature of the Soldering Iron**	**Maximale zulässige Lötzeit** **Max. Permissible Soldering Time**	**Abstand Lötstelle – Gehäuse** **Distance between Solder Joint and Case**
260 °C	10 s	≥ 1.5 mm	300 °C	3 s	≥ 1.5 mm

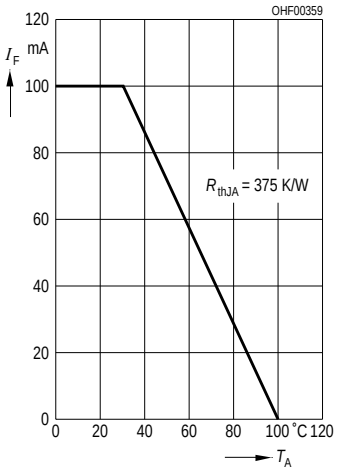
Relative Spectral Emission
$I_{erel} = f(\lambda)$



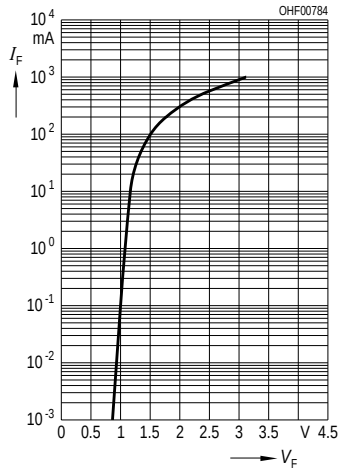
Radiant Intensity $I_e/I_{e\,(100\,mA)} = f(I_F)$
Single pulse, t_p = 20 µs



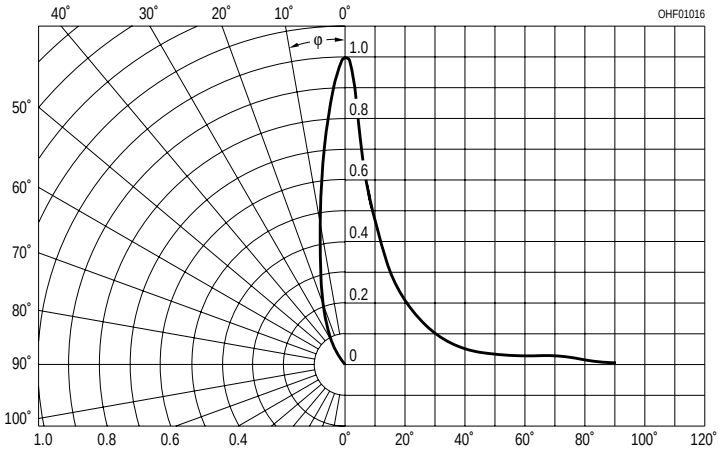
Max. Permissible Forward Current
$I_F = f(T_A)$



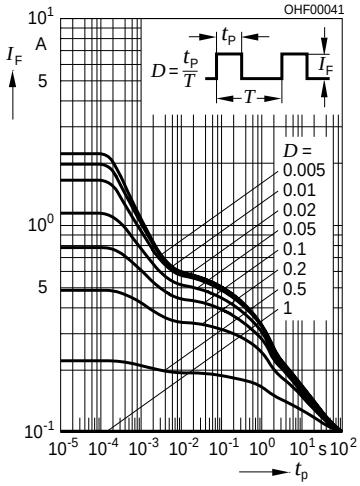
Forward Current $I_F = f(V_F)$
single pulse, t_p = 20 µs



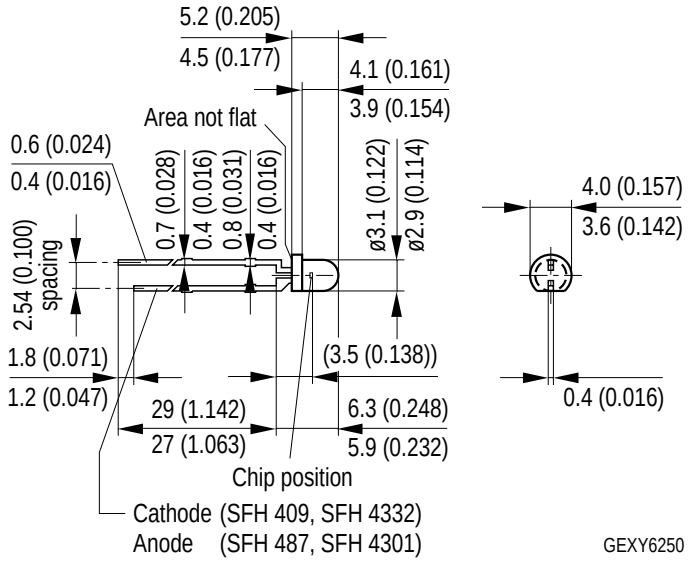
Radiation Characteristic
$I_{erel} = f(\varphi)$



Permissible Pulse Handling Capability $I_F = f(\tau)$, T_A = 25 °C,
duty cycle D = parameter



Maßzeichnung
Package Outlines



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

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