GaAs-IR-Lumineszenzdioden
GaAs Infrared Emitters

SFH 415
SFH 416



SFH 415



SFH 416

Wesentliche Merkmale

- GaAs-LED mit sehr hohem Wirkungsgrad
- Hohe Zuverlässigkeit
- Gute spektrale Anpassung an Si-Fotoempfänger
- SFH 415: Gehäusegleich mit SFH 300, SFH 203

Features

- Very highly efficient GaAs-LED
- High reliability
- Spectral match with silicon photodetectors
- SFH 415: Same package as SFH 300, SFH 203

Anwendungen

- IR-Fernsteuerung von Fernseh- und Rundfunkgeräten, Videorecordern, Lichtdimmern
- Gerätefernsteuerungen für Gleich- und Wechsellichtbetrieb
- Sensorik
- Diskrete Lichtschranken

Applications

- IR remote control of hi-fi and TV-sets, video tape recorders, dimmers
- Remote control for steady and varying intensity
- Sensor technology
- Discrete interrupters

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 415	Q62702-P296	5-mm-LED-Gehäuse (T $1^3/_4$), schwarz eingefärbt, Anschluß im 2.54-mm-Raster ($^1/_{10}$''), Kathodenkennzeichnung: kürzerer Anschluß 5 mm LED package (T $1^3/_4$), black-colored epoxy resin lens, solder tabs lead spacing 2.54 mm ($^1/_{10}$''), cathode marking: short lead
SFH 415-U	Q62702-P1137	
SFH 416-R	Q62702-P1139	

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	5	V
Durchlaßstrom Forward current	I_F	100	mA
Stoßstrom, t_p = 10 µs, D = 0 Surge current	I_{FSM}	3	A
Verlustleistung Power dissipation	P_{tot}	165	mW
Wärmewiderstand Thermal resistance	R_{thJA}	450	K/W

Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Wellenlänge der Strahlung Wavelength at 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	$\Delta\lambda$	55	nm
Abstrahlwinkel Half angle SFH 415 SFH 416	 φ φ	 ± 17 ± 28	 Grad deg.
Aktive Chipfläche Active chip area	A	0.09	mm^2
Abmessungen der aktiven Chipfläche Dimensions of the active chip area	$L \times B$ $L \times W$	0.3 × 0.3	mm
Abstand Chipoberfläche bis Linsenscheitel Distance chip front to lens top SFH 415 SFH 416	 H H	 4.2 … 4.8 3.4 … 4.0	 mm mm

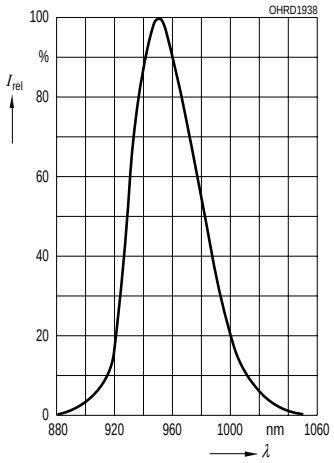
Kennwerte (T_A = 25 °C)
Characteristics (cont'd)

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei I_F = 100 mA, R_L = 50 Ω Switching times, I_e from 10% to 90% and from 90% to 10%, I_F = 100 mA, R_L = 50 Ω	t_r, t_f	0.5	µs
Kapazität, Capacitance V_R = 0 V, f = 1 MHz	C_o	25	pF
Durchlaßspannung, Forward voltage I_F = 100 mA, t_p = 20 ms I_F = 1 A, t_p = 100 µs	 V_F V_F	 1.3 (≤ 1.5) 2.3 (≤ 2.8)	 V V
Sperrstrom, Reverse current V_R = 5 V	I_R	0.01 (≤ 1)	µA
Gesamtstrahlungsfluß, Total radiant flux I_F = 100 mA, t_p = 20 ms	Φ_e	22	mW
Temperaturkoeffizient von I_e bzw. Φ_e, I_F = 100 mA Temperature coefficient of I_e or Φ_e, I_F = 100 mA	TC_I	– 0.5	%/K
Temperaturkoeffizient von V_F, I_F = 100 mA Temperature coefficient of V_F, I_F = 100 mA	TC_V	– 2	mV/K
Temperaturkoeffizient von λ, I_F = 100 mA Temperature coefficient of λ, I_F = 100 mA	TC_λ	+ 0.3	nm/K

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

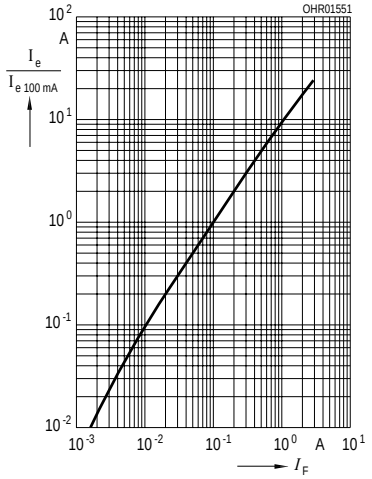
Bezeichnung **Parameter**	**Symbol**	**Wert** **Value**			**Einheit** **Unit**
		SFH 415	**SFH 415-U**	**SFH 416-R**	
Strahlstärke Radiant intensity I_F = 100 mA, t_p = 20 ms	 $I_{e\ min}$ $I_{e\ max}$	 ≥ 25 –	 > 40 –	 > 10 –	mW/sr mW/sr
Strahlstärke Radiant intensity I_F = 1 A, t_p = 100 µs	$I_{e\ typ.}$	–	600	150	mW/sr

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

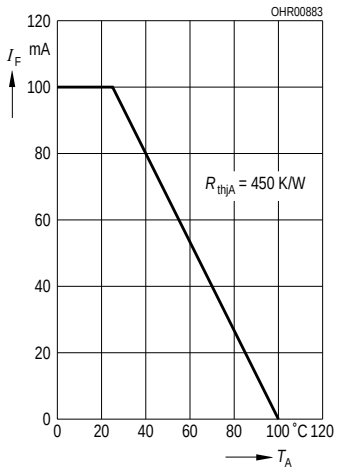


Radiant Intensity $\frac{I_e}{I_{e\,100\,mA}} = f(I_F)$

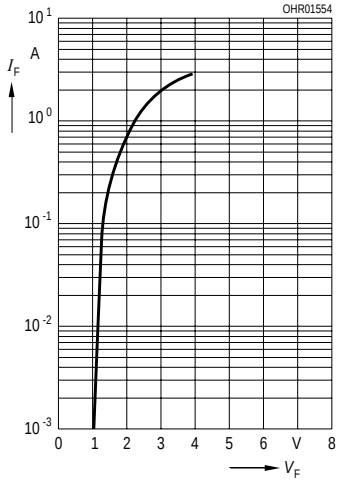
Single pulse, t_p = 20 µs



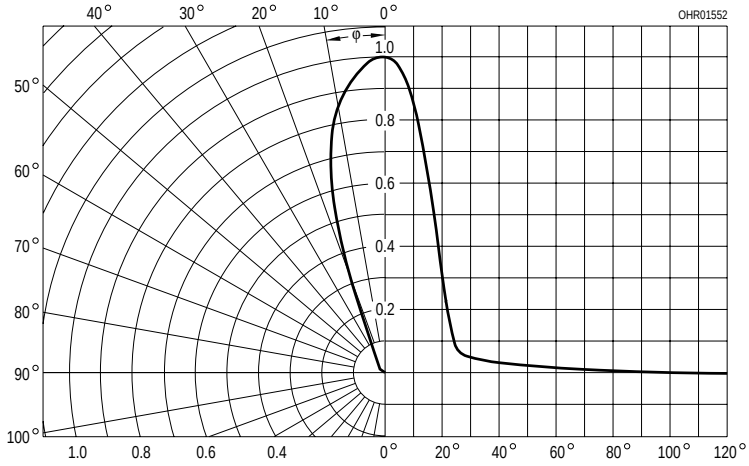
Max. Permissible Forward Current
$I_F = f(T_A)$



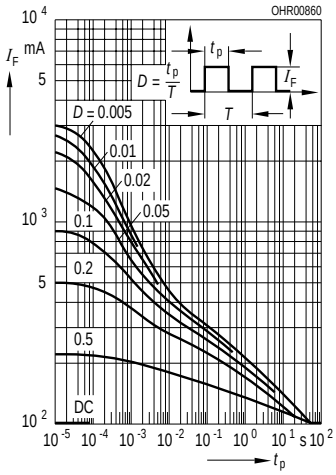
Forward Current
$I_F = f(V_F)$, single pulse, t_p = 20 µs



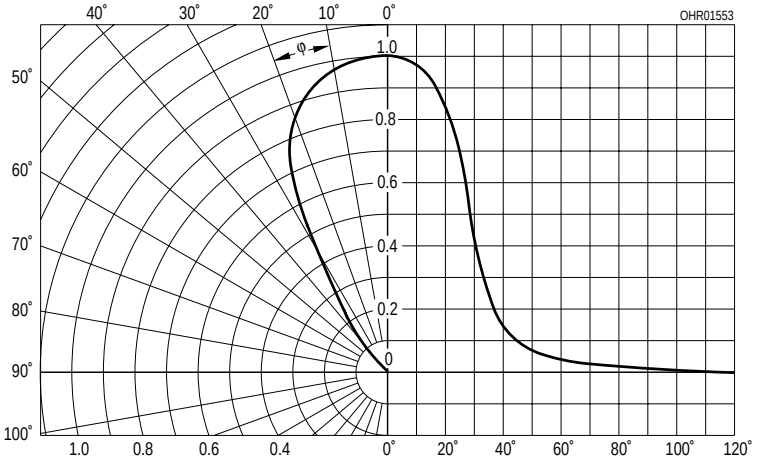
Radiation Characteristics,
SFH 415 $I_{rel} = f(\varphi)$



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

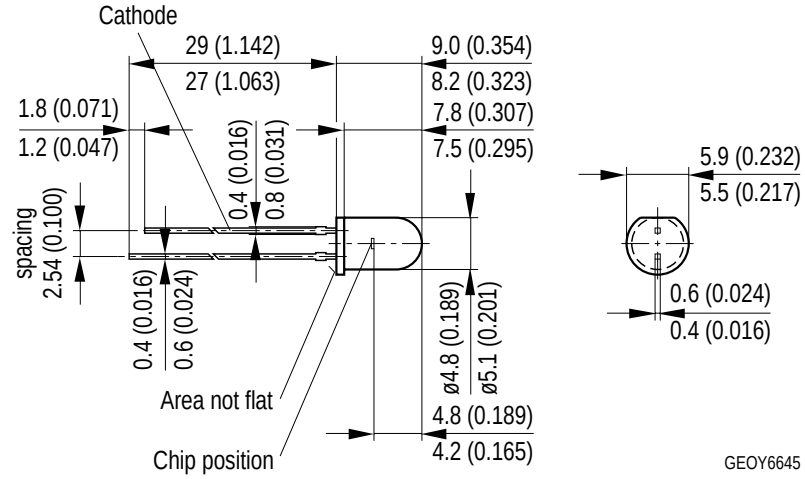


Radiation Characteristics,
SFH 416 $I_{rel} = f(\varphi)$

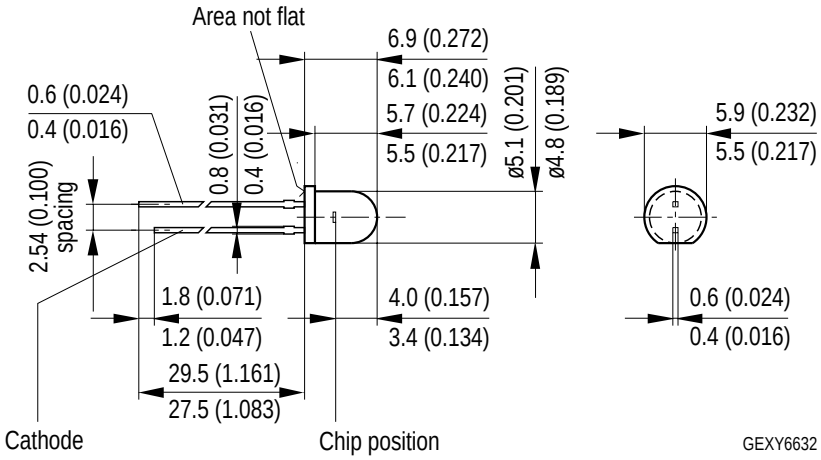


Maßzeichnung
Package Outlines

SFH 415



SFH 416



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

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