Engwinklige LED in MIDLED-Gehäuse
Narrow beam LED in MIDLED package
Lead (Pb) Free Product - RoHS Compliant

SFH 4650
SFH 4655

SFH 4650

SFH 4655

Vorläufige Daten / Preliminary Data

Wesentliche Merkmale

- Infrarot LED mit hoher Ausgangsleistung (40 mW)
- Emissionswellenlänge typ. 850 nm
- Enger Abstrahlwinkel (± 20°)
- geringe Bauhöhe
- Als Toplooker und Sidelooker einsetzbar
- SFH 4650: Gurtung als Toplooker
  SFH 4655: Gurtung als Sidelooker

Features

- High Power (40 mW) Infrared LED
- Peak wavelength typ. 850 nm
- Narrow halfangle (± 20°)
- low profile component
- Usable as top-looking and side-looking device
- SFH 4650: Taping as Toplooker
  SFH 4655: Taping as Sidelooker

Anwendungen

- Infrarotbeleuchtung für CMOS Kameras
- IR-Datenübertragung
- Sensorik in der Automobiltechnik
- Fernsteuerung

Applications

- Infrared Illumination for CMOS cameras
- IR Data Transmission
- Automotive sensors
- Remote controls

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-Norm 60825-1 behandelt werden.

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 “Safety of laser products”.

Typ **Type**	**Bestellnummer** **Ordering Code**	**Strahlstärkegruppierung** (I_F = 100 mA, t_p = 20 ms) **Radiant Intensity Grouping** I_e (mW/sr)
SFH 4650	Q65110A1572	>16 (typ. 40)
SFH 4655	Q65110A1569	>16 (typ. 40)

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ATTENTION - Observe Precautions For Handling - Electrostatic Sensitive Device

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, τ = 10 µs, D = 0 Surge current	I_{FSM}	1	A
Verlustleistung Power dissipation	P_{tot}	180	mW
Wärmewiderstand Sperrschicht[1)] Thermal resistance junction	R_{thJA}	340	K/W
Wärmewiderstand Sperrschicht[2)] Thermal resistance junction	R_{thJS}	180	K/W

[1)]Umgebung bei Montage auf FR4 Platine, Padgröße je 16 mm^2
ambient mounted on PC-board (FR4), padsize 16 mm^2 each
[2)]Lötstelle bei Montage auf Metall-Block
soldering point, mounted on metal block

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	λ_{peak}	850	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} I_F = 100 mA	$\Delta\lambda$	35	nm
Abstrahlwinkel Half angle	φ	± 20	Grad deg.

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

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
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%, 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	12	ns
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) 2.4 (< 3.0)	 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	40	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	– 0.7	mV/K
Temperaturkoeffizient von λ, I_F = 100 mA Temperature coefficient of λ, I_F = 100 mA	TC_λ	+ 0.2	nm/K

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Strahlstärke I_e in Achsrichtung[1)]
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
		-S	**-T**	**-U**	
Strahlstärke Radiant intensity $I_F = 100$ mA, $t_p = 20$ ms	$I_{e\ min}$ $I_{e\ max}$	16 32	25 50	40 80	mW/sr mW/sr
Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ µs	$I_{e\ typ}$	200	250	300	mW/sr

1) Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 2:1)

1) Only one group in one packing unit, (variation lower 2:1)

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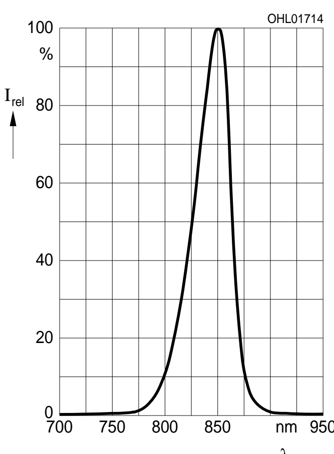
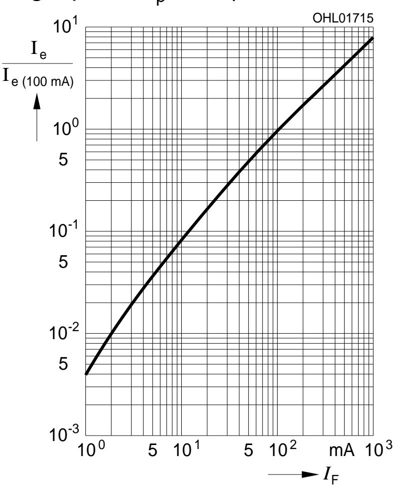
Relative Spectral Emission
$I_{rel} = f(\lambda)$

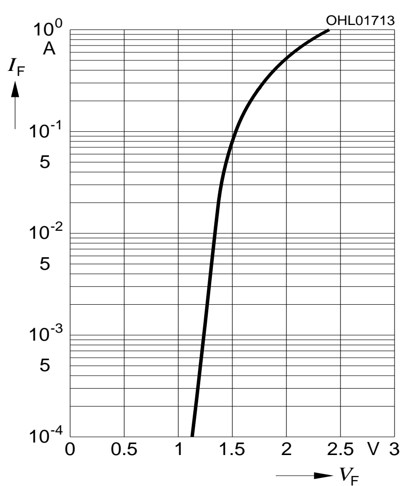


Radiant Intensity $\frac{I_e}{I_e\ 100\ mA} = f(I_F)$

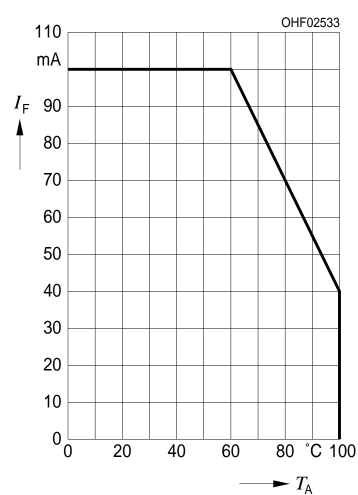
Single pulse, t_p = 20 µs



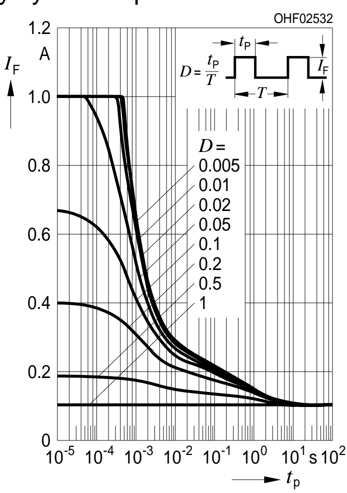
Forward Current $I_F = f(V_F)$
Single pulse, t_p = 20 µs



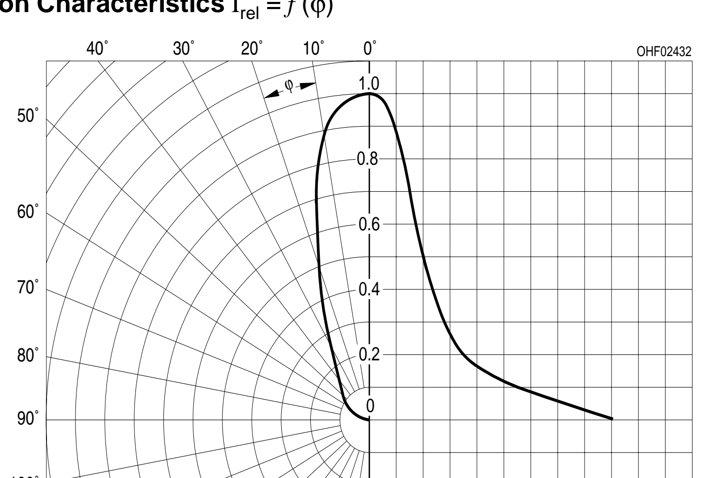
Max. Permissible Forward Current
$I_F = f(T_A)$; R_{thJA} = 450 K/W[1)]



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



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



1) mounted on PC board FR 4 (pad size ≥ 16 mm²)

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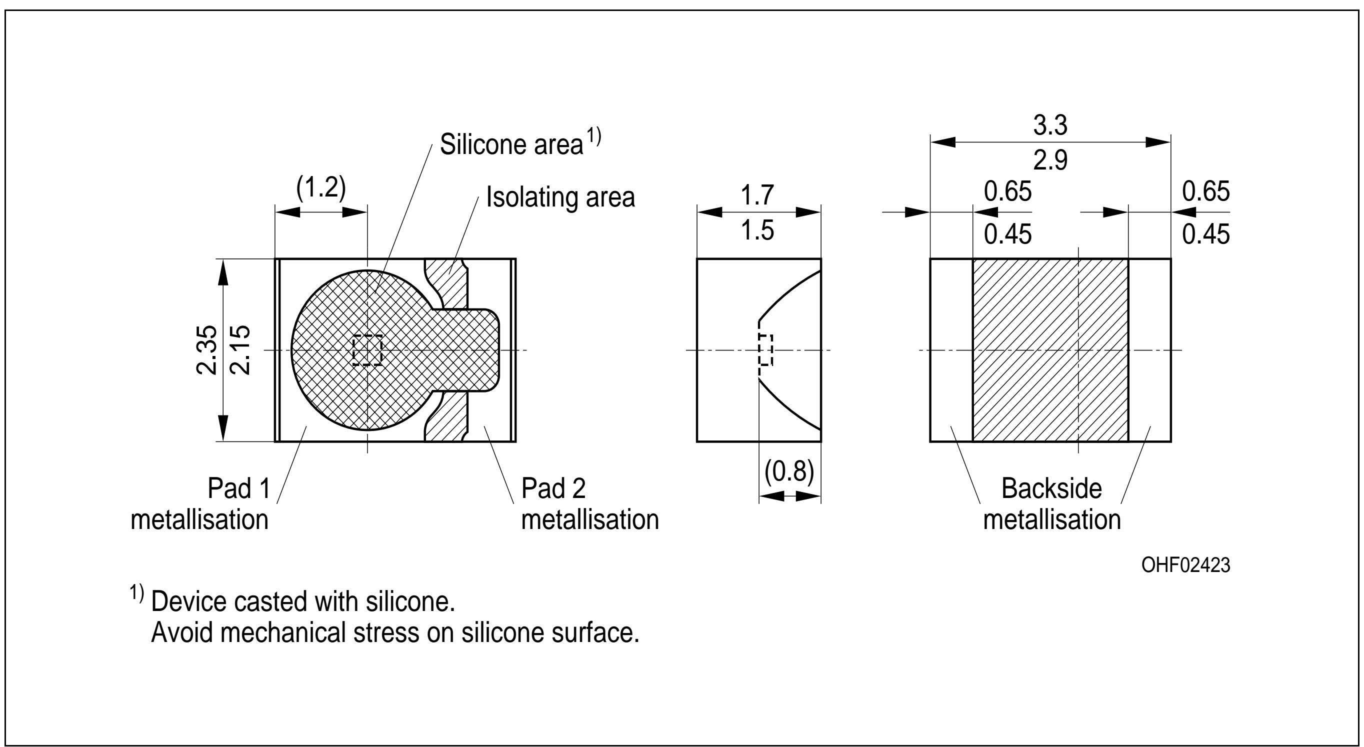
Maßzeichnung
Package Outlines



Maße werden in mm angegeben. Dimensions are specified in mm.

Gehäuse **package**	MID mit klarem Silikonverguss MID casted with clear Silicone
Anschlussbelegung **Pin configuration**	Pad 1 = Anode/ anode Pad 2 = Kathode / cathode

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Empfohlenes Lötpaddesign
Recommended Solderpad Design

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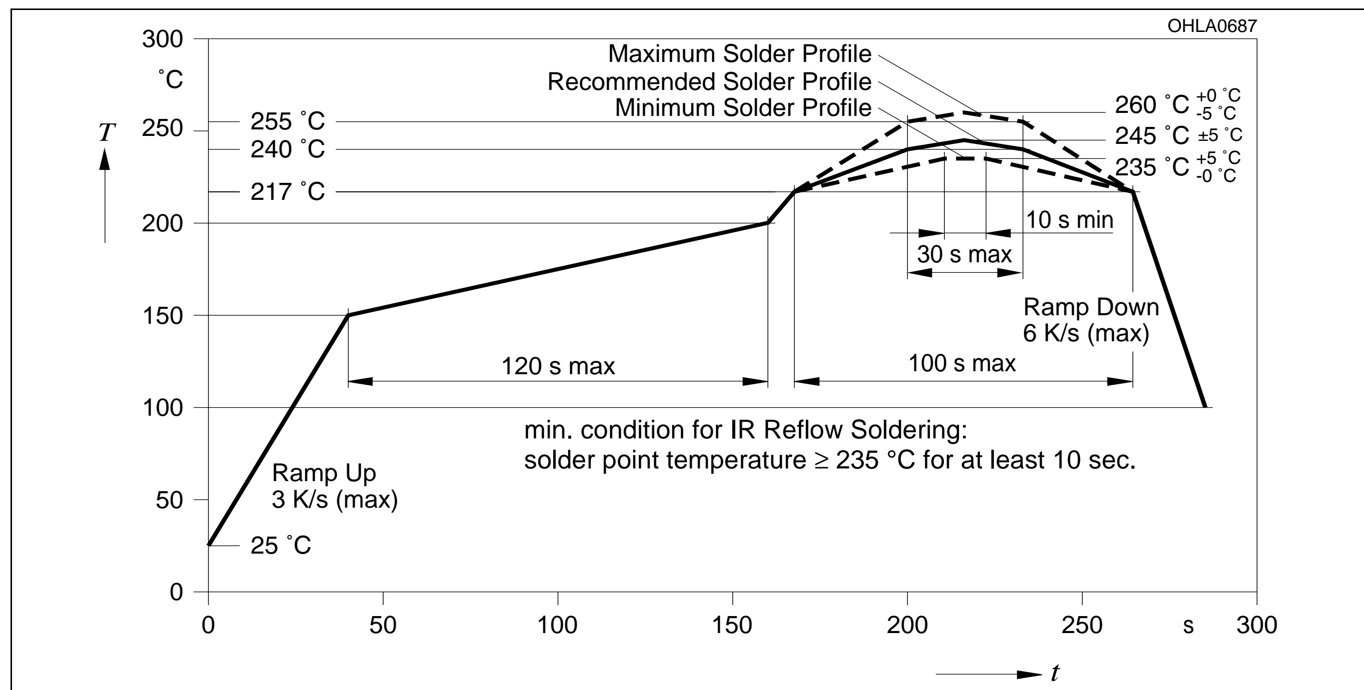
Lötbedingungen
Soldering Conditions
IR-Reflow Lötprofil für bleifreies Löten
IR Reflow Soldering Profile for lead free soldering

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



Verarbeitungshinweis: **Das Gehäuse ist mit Silikon vergossen. Mechanischer Streß auf der Bauteiloberfläche sollte so gering wie möglich gehalten werden.**

Handling indication: **The package is casted with silicone. Mechanical stress at the surface of the unit should be as low as possible.**

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Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

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