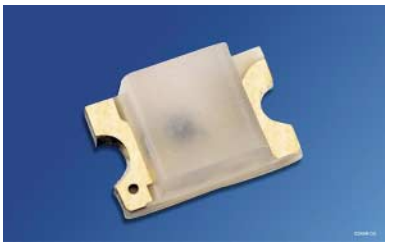
Hyper CHIPLED
Hyper-Bright LED

LS R976, LO R976, LY R976



Besondere Merkmale

- **Gehäusetyp:** 0805
- **Besonderheit des Bauteils:** extrem kleine Bauform 2,0 mm x 1,25 mm x 0,8 mm
- **Wellenlänge:** 633 nm (super-rot), 606 nm (orange), 588 nm (gelb)
- **Abstrahlwinkel:** extrem breite Abstrahlcharakteristik (160°)
- **Technologie:** InGaAlP
- **optischer Wirkungsgrad:** 7 lm/W (super-rot), 11 lm/W (orange, gelb)
- **Verarbeitungsmethode:** für alle SMT-Bestücktechniken geeignet
- **Lötmethode:** IR Reflow Löten
- **Vorbehandlung:** nach JEDEC Level 2
- **Gurtung:** 8 mm Gurt mit 4000/Rolle, ø180 mm

Features

- **package:** 0805
- **feature of the device:** extremely small package 2.0 mm x 1.25 mm x 0.8 mm
- **wavelength:** 633 nm (super-red), 606 nm (orange), 588 nm (yellow)
- **viewing angle:** extremely wide (160°)
- **technology:** InGaAlP
- **optical efficiency:** 7 lm/W (super-red), 11 lm/W (orange, yellow)
- **assembly methods:** suitable for all SMT assembly methods
- **soldering methods:** IR reflow soldering
- **preconditioning:** acc. to JEDEC Level 2
- **taping:** 8 mm tape with 4000/reel, ø180 mm

Anwendungen

- Informationsanzeigen im Außenbereich
- Einkopplung in Lichtleiter
- Hinterleuchtung (LCD, Handy, Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Signal- und Symbolleuchten
- Markierungsbeleuchtung (z.B. Stufen, Fluchtwege, u.ä.)
- Spielsachen

Applications

- outdoor displays
- coupling into light guides
- backlighting (LCD, cellular phones, switches, keys, displays, illuminated advertising, general lighting)
- signal and symbol luminaire
- marker lights (e.g. steps, exit ways, etc.)
- toys

Typ Type	Emissionsfarbe Color of Emission	Farbe der Lichtaustritts-fläche Color of the Light Emitting Area	Lichtstärke Luminous Intensity I_F = 20 mA I_V (mcd)		Bestellnummer Ordering Code
			min.	typ.	
LS R976	super-red	colorless diffused	18	50	Q62702P5178
LO R976	orange	colorless diffused	28	70	Q62702P5101
LY R976	yellow	colorless diffused	28	60	Q62702P5177

Helligkeitswerte werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von ± 11% ermittelt.
Luminous intensity is tested at a current pulse duration of 25 ms and a tolerance of ± 11%.

*Anm.: gesamter Farbbereich, Lieferung in Einzelgruppen (siehe **Seite 5**)*

Die Standardlieferform von Serientypen beinhaltet alle Gruppen. Einzelne Gruppen sind nicht erhältlich.
In einer Verpackungseinheit / Gurt ist immer nur eine Gruppe enthalten.

*Note: Total color tolerance range, delivery in single groups (please see **page 5**)*

The standard shipping format for serial types includes all groups. Individual groups are not available.
No packing unit / tape ever contains more than one luminous intensity group.

Grenzwerte
Maximum Ratings

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Betriebstemperatur Operating temperature range	T_{op}	– 30 … + 85	°C
Lagertemperatur Storage temperature range	T_{stg}	– 40 … + 85	°C
Sperrschichttemperatur Junction temperature	T_j	+ 95	°C
Durchlassstrom Forward current	I_F	25	mA
Stoßstrom Surge current $t_p = 10\ \mu s$, $D = 0.1$	I_{FM}	0.1	A
Sperrspannung[1)] Reverse voltage	V_R	12	V
Leistungsaufnahme Power consumption	P_{tot}	65	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient Sperrschicht/Lötpad Junction/solder point Montage auf PC-Board FR 4 (Padgröße ≥ 5 mm²) mounted on PC board FR 4 (pad size ≥ 5 mm²)	 $R_{th\ JA}$ $R_{th\ JS}$	 800 450	 K/W K/W

[1)] für kurzzeitigen Betrieb geeignet / suitable for short term application

Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**		**Symbol** **Symbol**	**Werte** **Values**			**Einheit** **Unit**
			LS	**LO**	**LY**	
Wellenlänge des emittierten Lichtes Wavelength at peak emission I_F = 20 mA	(typ.)	λ_{peak}	645	610	591	nm
Dominantwellenlänge [1] Dominant wavelength I_F = 20 mA	(typ.)	λ_{dom}	633 ± 6	606 ± 6	588 ± 8	nm
Spektrale Bandbreite bei 50 % $I_{rel\ max}$ Spectral bandwidth at 50 % $I_{rel\ max}$ I_F = 20 mA	(typ.)	$\Delta\lambda$	16	16	15	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V	(typ.)	2φ	160	160	160	Grad deg.
Durchlassspannung [2] Forward voltage I_F = 20 mA	(typ.) (max.)	V_F V_F	2.0 2.5	2.0 2.5	2.0 2.5	V V
Sperrstrom Reverse current V_R = 12 V	(typ.) (max.)	I_R I_R	0.01 100	0.01 100	0.01 100	µA µA
Temperaturkoeffizient von λ_{peak} Temperature coefficient of λ_{peak} I_F = 20 mA; –10°C ≤ T ≤ 100°C	(typ.)	$TC_{\lambda peak}$	0.14	0.13	0.13	nm/K
Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} I_F = 20 mA; –10°C ≤ T ≤ 100°C	(typ.)	$TC_{\lambda dom}$	0.05	0.07	0.10	nm/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 20 mA; –10°C ≤ T ≤ 100°C	(typ.)	TC_V	– 2.0	– 1.7	– 2.5	mV/K
Optischer Wirkungsgrad Optical efficiency I_F = 20 mA	(typ.)	η_{opt}	7	11	11	lm/W

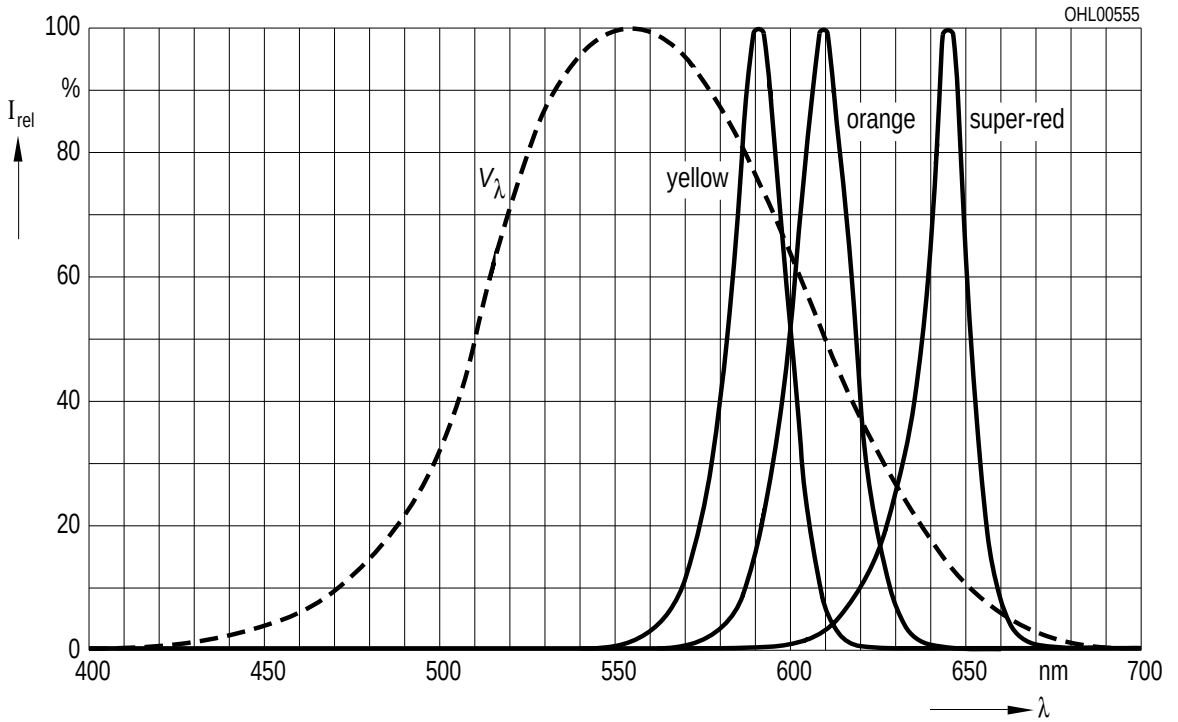
[1] Wellenlängengruppen werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von ±1 nm ermittelt.
Wavelength groups are tested at a current pulse duration of 25 ms and a tolerance of ±1 nm.

[2] Spannungswerte werden mit einer Stromeinprägedauer von 1 ms und einer Genauigkeit von ±0,1 V ermittelt.
Voltages are tested at a current pulse duration of 1 ms and a tolerance of ±0.1 V.

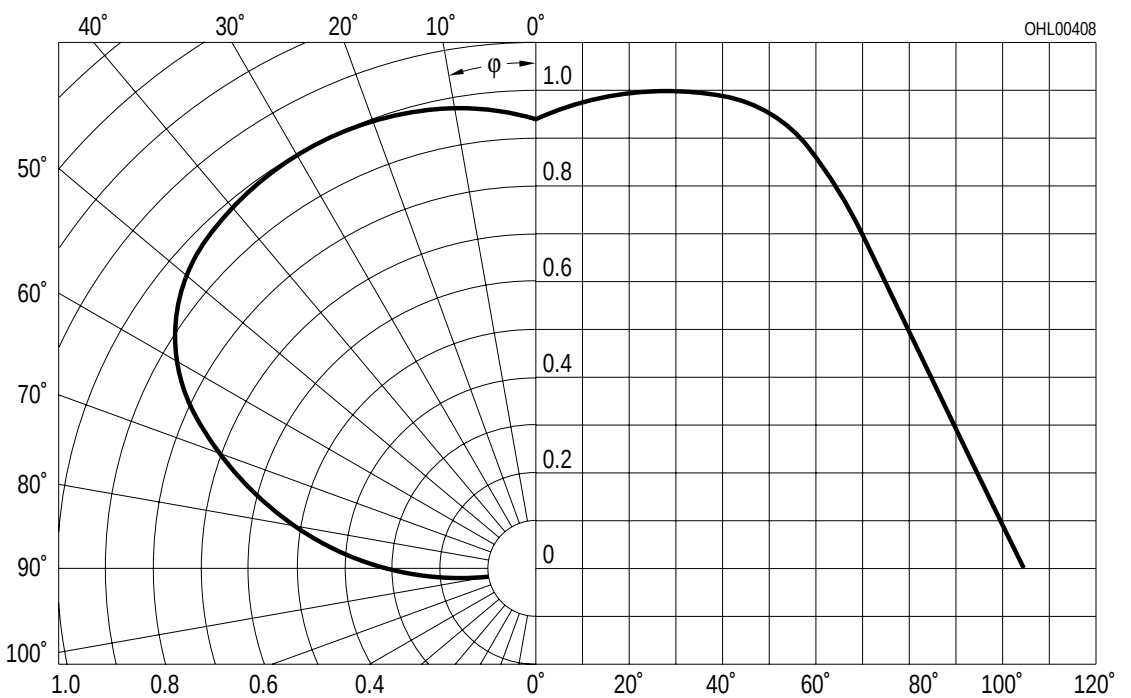
[1] **Wellenlängengruppen für LY R976**
Wavelength groups for LY R976

Gruppe Group	Wellenlänge Wavelength		Einheit Unit
	min.	max.	
3	580	584	nm
4	584	588	nm
5	588	592	nm
6	592	596	nm

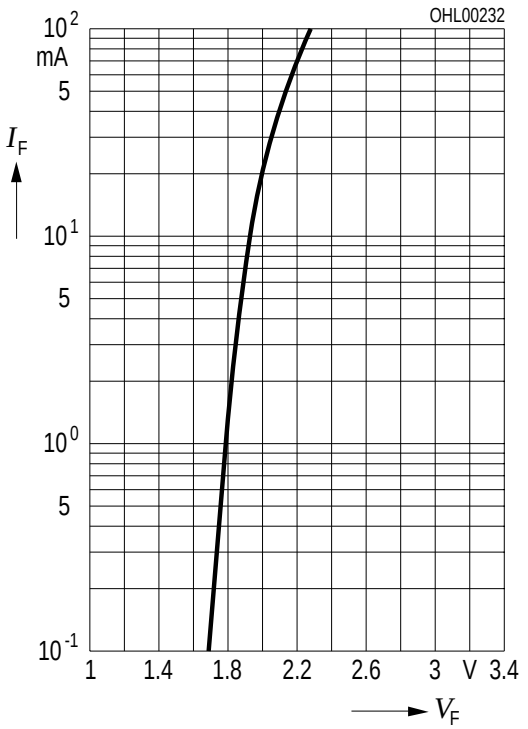
Relative spektrale Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 20 mA
Relative Spectral Emission
V(λ) = spektrale Augenempfindlichkeit
Standard eye response curve



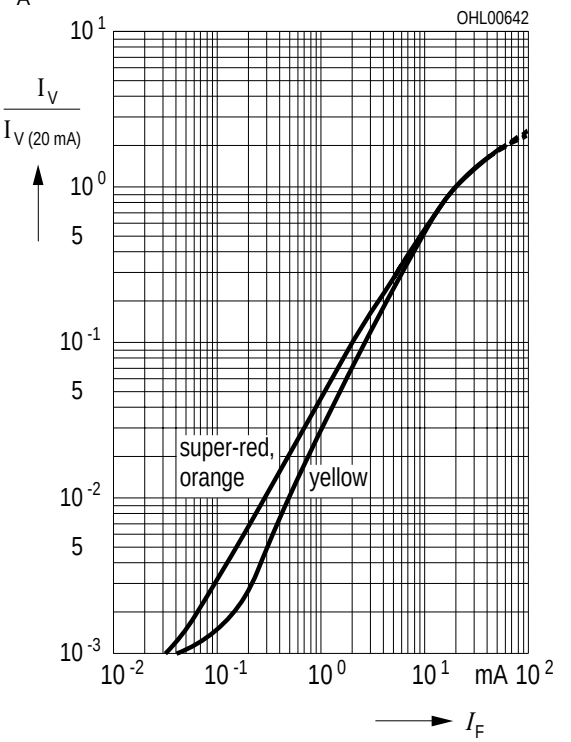
Abstrahlcharakteristik $I_{rel} = f(\varphi)$
Radiation Characteristic



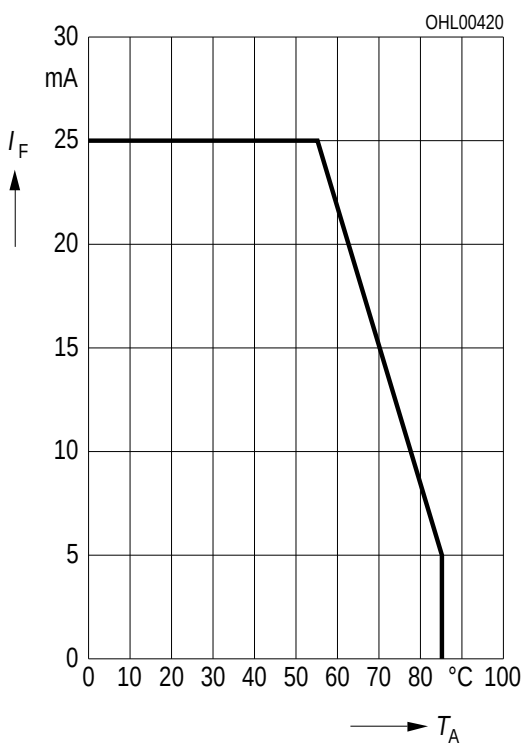
Durchlassstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



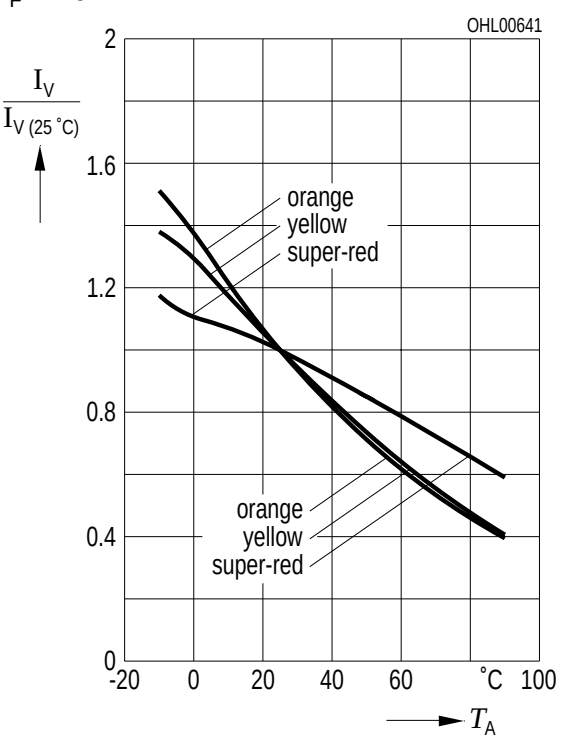
Relative Lichtstärke $I_V/I_{V(20\ mA)} = f(I_F)$
Relative Luminous Intensity
T_A = 25 °C



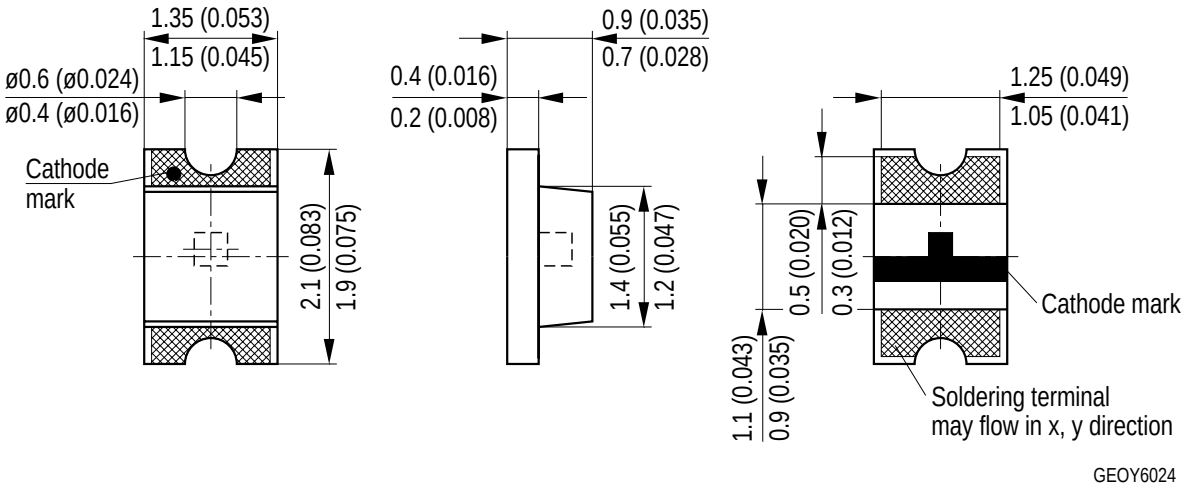
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



Relative Lichtstärke $I_V/I_{V(25\ °C)} = f(T_A)$
Relative Luminous Intensity
I_F = 20 mA



Maßzeichnung
Package Outlines

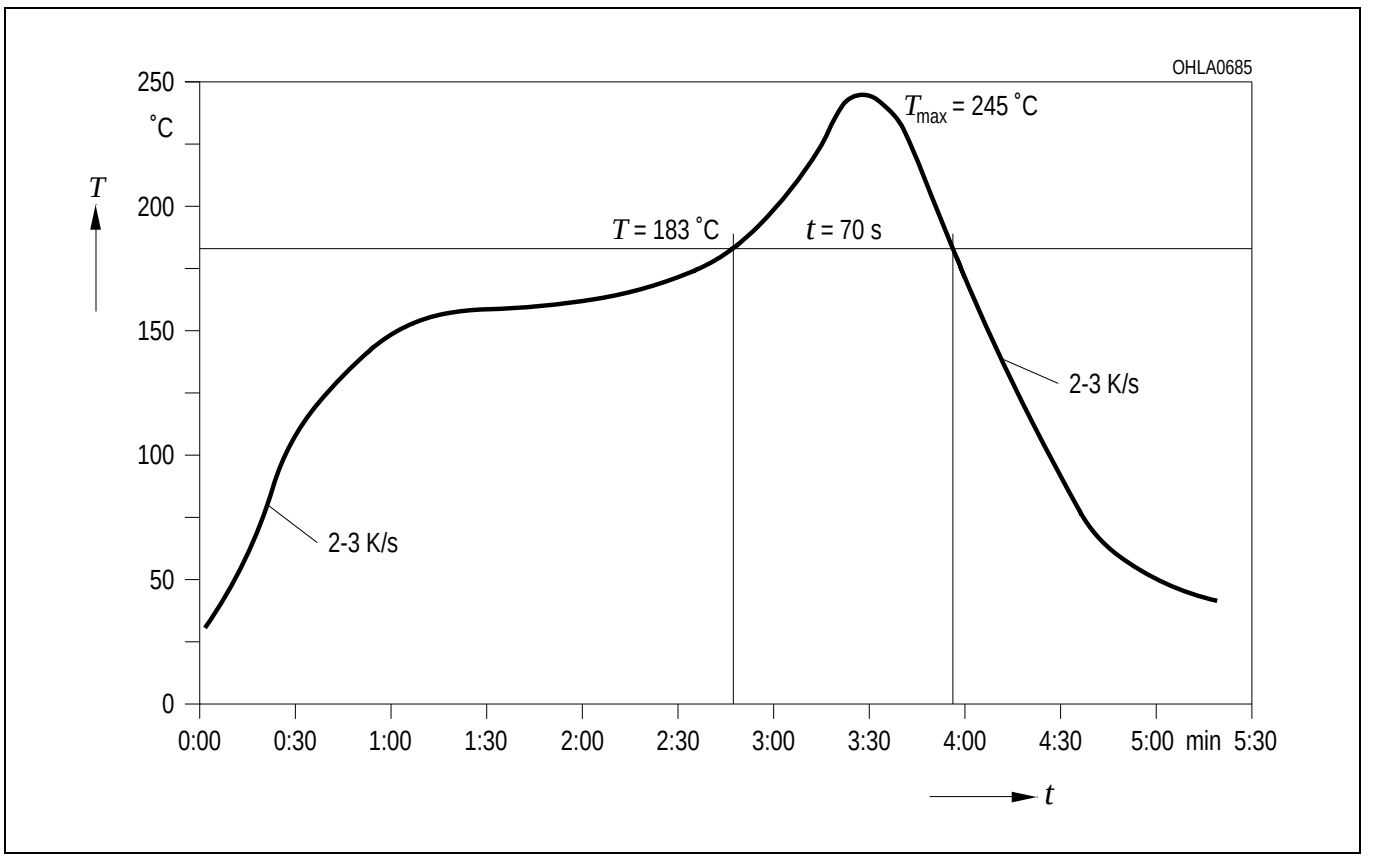


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

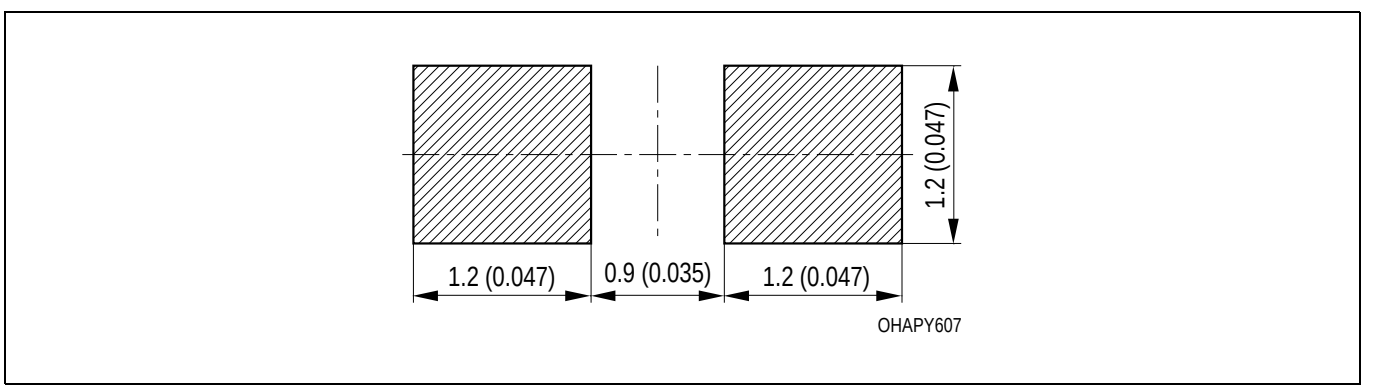
Gewicht / Approx. weight: 3.2 mg

Lötbedingungen Vorbehandlung nach JEDEC Level 2
Soldering Conditions Preconditioning acc. to JEDEC Level 2

IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)

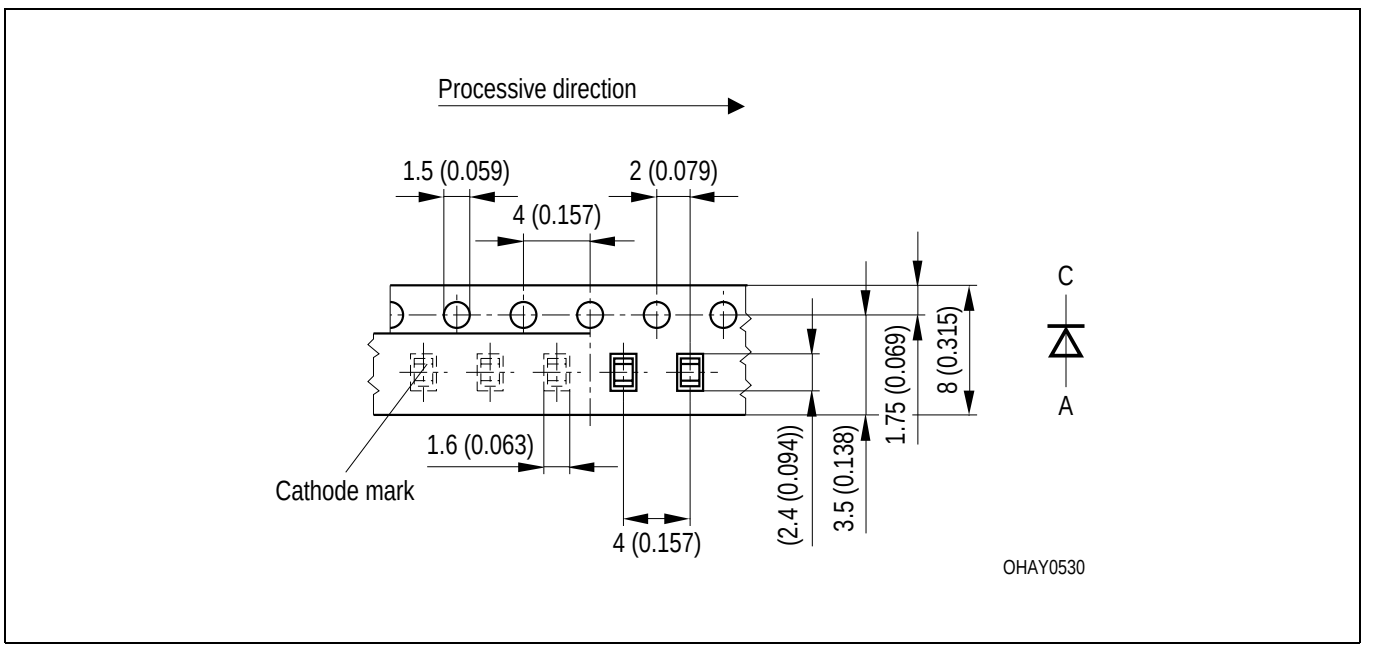


Empfohlenes Lötpaddesign IR Reflow Löten
Recommended Solder Pad IR Reflow Soldering



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

Gurtung / Polarität und Lage Verpackungseinheit 4000/Rolle, ø180 mm
Method of Taping / Polarity and Orientation Packing unit 4000/reel, ø180 mm



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

Revision History: 2002-09-19		Date of change
Previous Version: 2002-08-19		
Page	**Subjects (major changes since last revision)**	
4	value (wavelength yellow)	
4	forward voltage	
3	pad size from 16 mm^2 to 5 mm^2	
11	annotations	2002-07-25
4	value ($TC_{\lambda dom}$ from 0.01 to 0.05 nm/K)	2002-07-25
3, 4	value (reverse voltage from 5 V to 12 V)	2002-09-18
2	ordering code	2002-09-19

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Attention please!
The information describes the type of component and shall not be considered as assured characteristics.
All typical data and graphs are basing on representative samples, but don't represent the production range. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.
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If printed or downloaded, please find the latest version in the Internet.
Packing
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.
Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components [1] may only be used in life-support devices or systems [2] with the express written approval of OSRAM OS.
[1] A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.
[2] Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.