5 mm (T1 ¾) LED, Non Diffused
Super-Bright LED

LS 5421, LO 5411, LY 5421, LG 5411

Nicht für Neuentwicklungen / Not for New Designs

Besondere Merkmale

- **Gehäusetyp:** klares 5 mm (T1 ¾) Gehäuse, eingefärbt (super-rot und gelb), nicht eingefärbt (orange und grün)
- **Besonderheit des Bauteils:** enge Abstrahlcharakteristik
- **Wellenlänge:** 628 nm (super-rot), 606 nm (orange), 587 nm (gelb), 570 nm (grün)
- **Abstrahlwinkel:** engwinklig (20°)
- **Technologie:** GaAlP
- **optischer Wirkungsgrad:** 1,5 lm/W (super-rot, orange, gelb), 2,5 lm/W (grün)
- **Gruppierungsparameter:** Lichtstärke
- **Lötmethode:** Wellenlöten (TTW)
- **Verpackung:** Schüttgut, gegurtet lieferbar

Features

- **package:** clear 5 mm (T1 ¾) package, colored (super-red and yellow), colorless (orange and green)
- **feature of the device:** narrow viewing angle
- **wavelength:** 628 nm (super-red), 606 nm (orange), 587 nm (yellow), 570 nm (green)
- **viewing angle:** narrow (20°)
- **technology:** GaAlP
- **optical efficiency:** 1.5 lm/W (super-red, orange, yellow), 2.5 lm/W (green)
- **grouping parameter:** luminous intensity
- **soldering methods:** TTW soldering
- **packing:** bulk, available taped on reel

Anwendungen

- optischer Indikator
- Hinterleuchtung (LCD, Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Innenbeleuchtung im Automobilbereich (z.B. Tastenhinterleuchtung, u.ä.)
- Ersatz von Kleinst-Glühlampen

Applications

- optical indicators
- backlighting (LCD, switches, keys, displays, illuminated advertising, general lighting)
- interior automotive lighting. (e.g. key backlighting, etc.)
- substitution of micro incandescent lamps

Typ Type	Emissions-farbe Color of Emission	Gehäuse-farbe Color of Package	Lichtstärke Luminous Intensity I_F = 10 mA I_V (mcd)	Lichtstrom Luminous Flux I_F = 10 mA Φ_V (mlm)	Bestellnummer Ordering Code
■ LS 5421-NR	super-red	red clear	28 ... 180	20 (typ.)	Q62703-Q1994
■ LS 5421-Q			71 ... 112	20 (typ.)	Q62703-Q1442
■ LS 5421-R			112 ... 180	30 (typ.)	Q62703-Q1738
■ LS 5421-S			180 ... 280	50 (typ.)	Q62703-Q2405
■ LS 5421-QT			71 ... 450	60 (typ.)	Q62703-Q1995
■ LO 5411-QT	orange	colorless clear	71 ... 450	40 (typ.)	Q62703-Q3928
■ LO 5411-R			112 ... 180	20 (typ.)	Q62703-Q3929
■ LO 5411-S			180 ... 280	30 (typ.)	Q62703-Q3930
■ LO 5411-T			280 ... 450	50 (typ.)	Q62703-Q3931
■ LO 5411-RU			112 ... 710	60 (typ.)	Q62703-Q3932
■ LY 5421-NR	yellow	yellow clear	28 ... 180	20 (typ.)	Q62703-Q1444
■ LY 5421-Q			71 ... 112	20 (typ.)	Q62703-Q1446
■ LY 5421-R			112 ... 180	30 (typ.)	Q62703-Q2005
■ LY 5421-S			180 ... 280	50 (typ.)	Q62703-Q2632
■ LY 5421-QT			71 ... 450	60 (typ.)	Q62703-Q1447
■ LG 5411-NR	green	colorless clear	28 ... 180	20 (typ.)	Q62703-Q2023
■ LG 5411-Q			71 ... 112	20 (typ.)	Q62703-Q1739
■ LG 5411-R			112 ... 180	30 (typ.)	Q62703-Q1451
■ LG 5411-S			180 ... 280	50 (typ.)	Q62703-Q2321
■ LG 5411-QT			71 ... 450	60 (typ.)	Q62703-Q2024

■ Nicht für Neuentwicklungen/Not for new designs

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.: Die Standardlieferform von Serientypen beinhaltet eine untere bzw. eine obere Familiengruppe oder mindestens zwei Einzelgruppen.
In einer Verpackungseinheit / Gurt ist immer nur eine Helligkeitsgruppe enthalten.
Die technologiebedingte Helligkeits-Streuung der heutigen LED-Herstellprozesse über einen längeren Fertigungszeitraum (Halbleitermaterial - Chipherstellung - Montageprozess) erlaubt keine Zusage einer einzelnen Helligkeitsgruppe. Daher müssen mindestens zwei Helligkeitsgruppen vorgesehen werden!

Note: The standard shipping format for serial types includes a lower or upper family group or at least two individual groups.
No packing unit / tape ever contains more than one luminous intensity group.
Luminosity variations caused by the technology used in current LED manufacturing processes over a protracted manufacturing period (semiconductor material - chip fabrication - assembly process) mean that it is not possible to assign LEDs to a single luminous intensity group. For this reason at least two luminous intensity groups must be provided!

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebstemperatur Operating temperature range	T_{op}	– 55 … + 100	°C
Lagertemperatur Storage temperature range	T_{stg}	– 55 … + 100	°C
Sperrschichttemperatur Junction temperature	T_j	+ 100	°C
Durchlassstrom Forward current	I_F	40	mA
Stoßstrom Surge current $t \leq 10$ µs, $D = 0.005$	I_{FM}	0.5	A
Sperrspannung Reverse voltage	V_R	5	V
Leistungsaufnahme Power consumption $T_A \leq 25$ °C	P_{tot}	130	mW
Wärmewiderstand [1] Thermal resistance Sperrschicht/Umgebung Junction/ambient Sperrschicht/Lötpad Junction/solder point Montage auf PC-Board FR 4 (Padgröße ≥ 16 mm²) mounted on PC board FR 4 (pad size ≥ 16 mm²) Minimale Beinchenlänge Minimum lead length	 $R_{th\ JA}$ $R_{th\ JS}$	 400 180	 K/W K/W

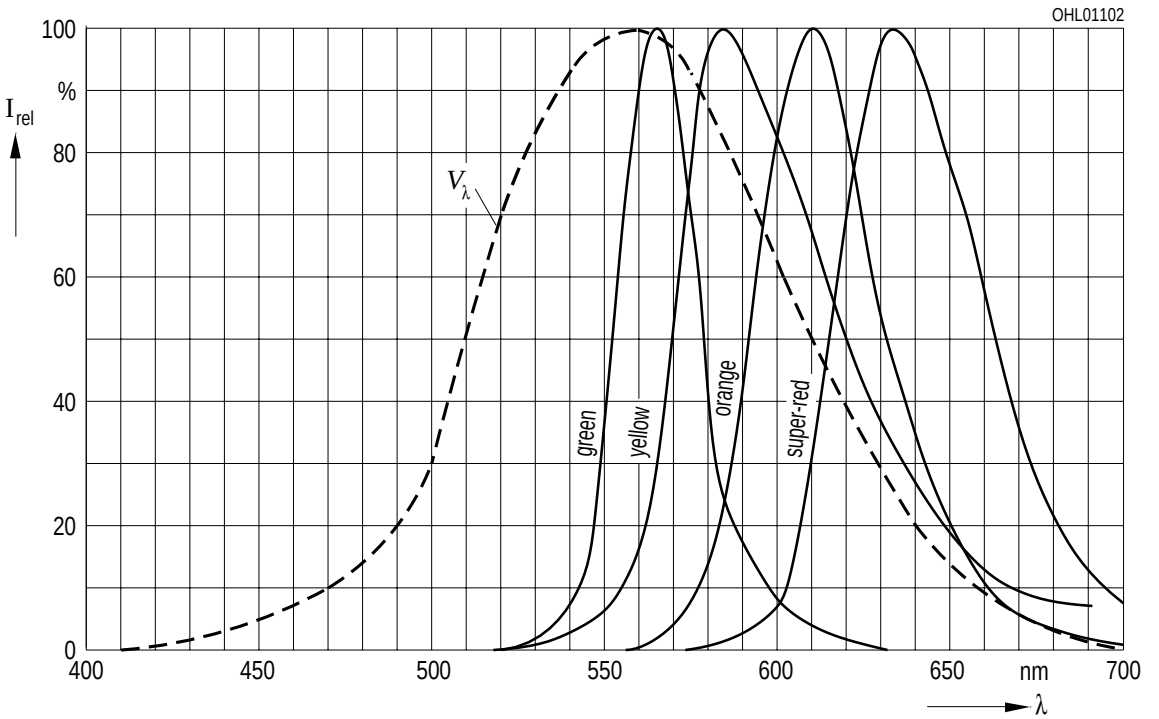
[1] R_{th} erhöht sich um 13 K/W pro mm Beinchenlänge.
Each additional 1 mm of lead length increases R_{th} by 13 K/W.

Bezeichnung Parameter		Symbol Symbol	Werte Values				Einheit Unit
			LS	LO	LY	LG	
Wellenlänge des emittierten Lichtes Wavelength at peak emission I_F = 10 mA	(typ.)	λ_{peak}	635	610	586	572	nm
Dominantwellenlänge [1] Dominant wavelength I_F = 10 mA	(typ.)	λ_{dom}	628	606	587	570	nm
Spektrale Bandbreite bei 50 % $I_{rel\ max}$ Spectral bandwidth at 50 % $I_{rel\ max}$ I_F = 10 mA	(typ.)	$\Delta\lambda$	45	40	45	25	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V	(typ.)	2φ	20	20	20	20	Grad deg.
Durchlassspannung [2] Forward voltage I_F = 10 mA	(typ.) (max.)	V_F V_F	2.0 2.5	2.0 2.5	2.0 2.5	2.0 2.5	V V
Sperrstrom Reverse current V_R = 5 V	(typ.) (max.)	I_R I_R	0.01 10	0.01 10	0.01 10	0.01 10	µA µA
Temperaturkoeffizient von λ_{peak} Temperature coefficient of λ_{peak} I_F = 10 mA; –10°C ≤ T ≤ 100°C	(typ.)	$TC_{\lambda peak}$	0.11	0.12	0.10	0.11	nm/K
Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} I_F = 10 mA; –10°C ≤ T ≤ 100°C	(typ.)	$TC_{\lambda dom}$	0.07	0.07	0.07	0.07	nm/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 10 mA; –10°C ≤ T ≤ 100°C	(typ.)	TC_V	– 1.9	– 1.9	– 1.9	– 1.4	mV/K
Optischer Wirkungsgrad Optical efficiency I_F = 10 mA	(typ.)	η_{opt}	1.5	1.5	1.5	2.5	lm/W

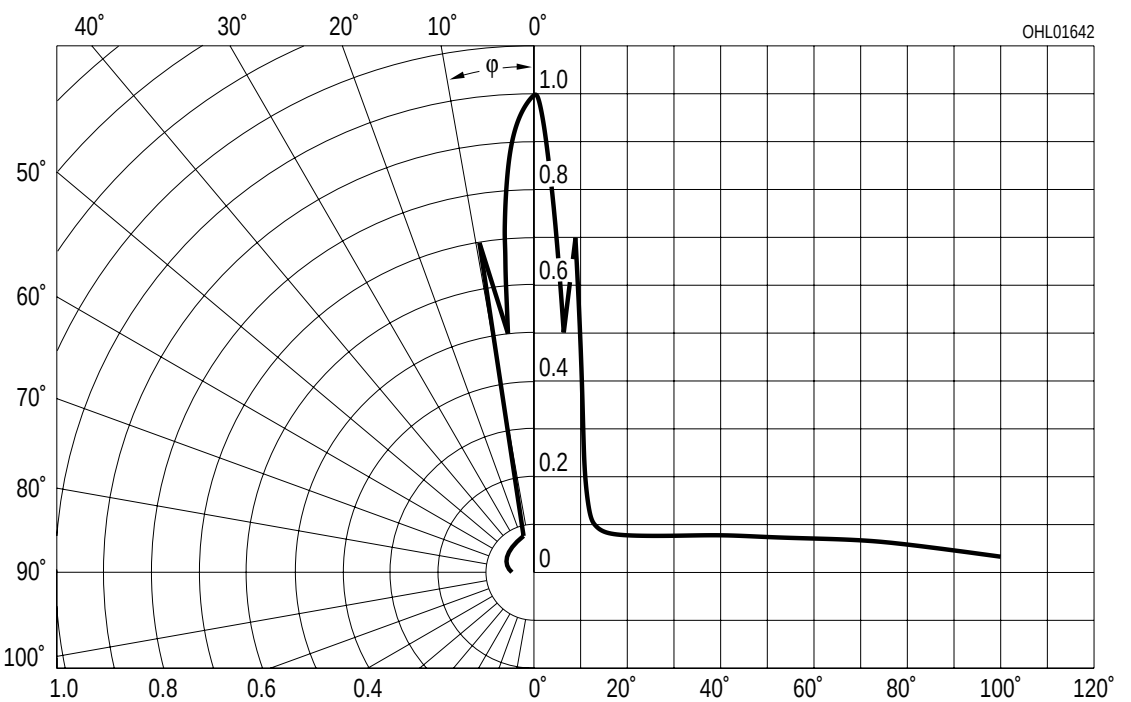
[1] Wellenlängen werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von ±1 nm ermittelt.
Wavelengths are tested at a current pulse duration of 25 ms and a tolerance of ±1 nm.

[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.

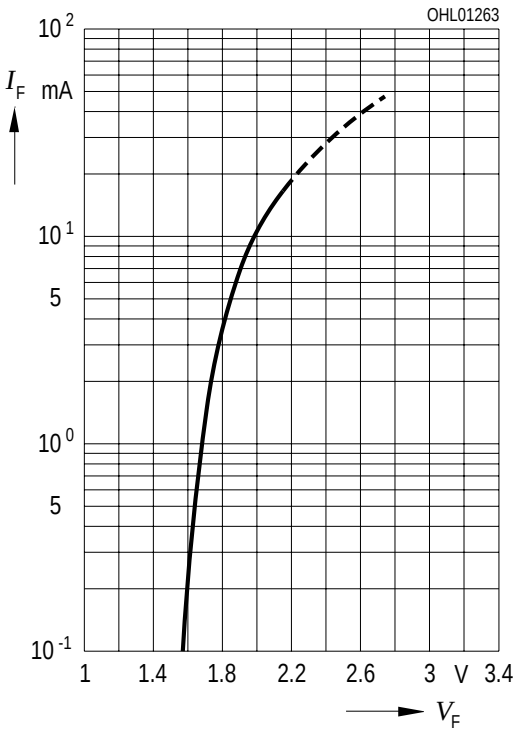
Relative spektrale Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 10 mA
Relative Spectral Emission
V(λ) = spektrale Augenempfindlichkeit
Standard eye response curve



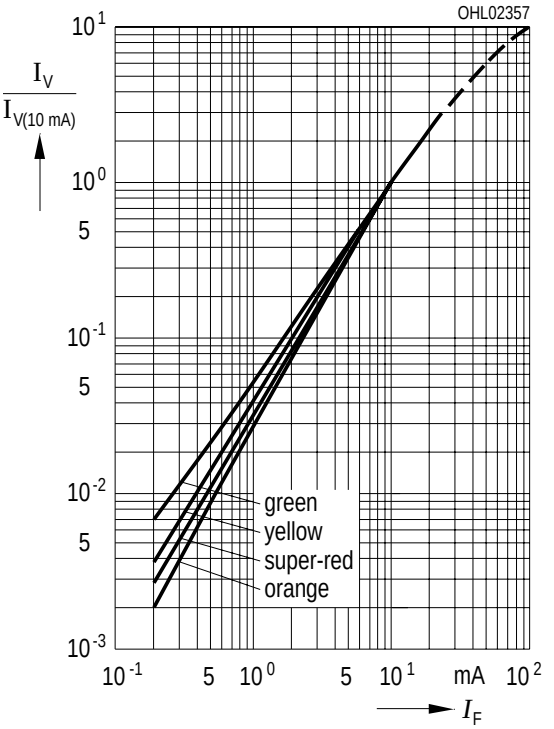
Abstrahlcharakteristik $I_{rel} = f(\varphi)$
Radiation Characteristic



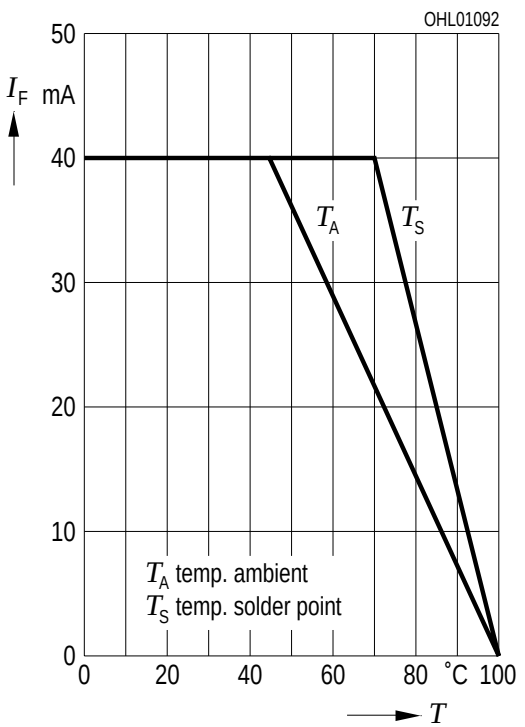
Durchlassstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



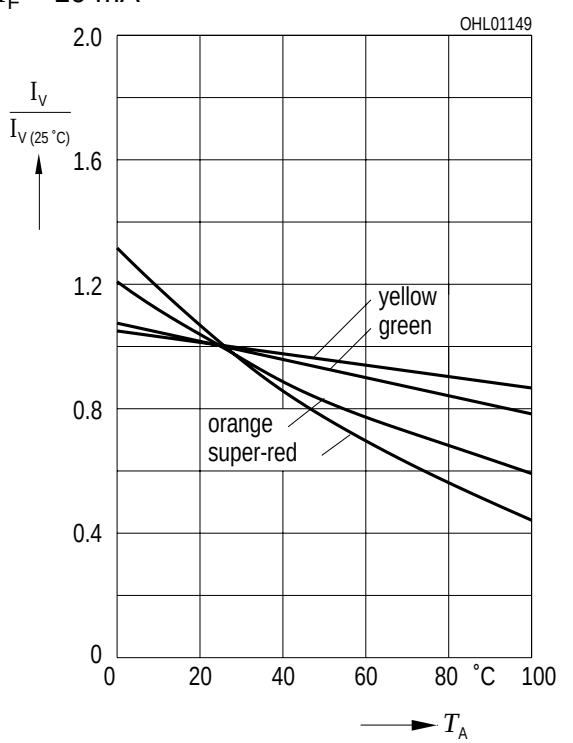
Relative Lichtstärke $I_V/I_{V(10\ mA)} = f(I_F)$
Relative Luminous Intensity
T_A = 25 °C



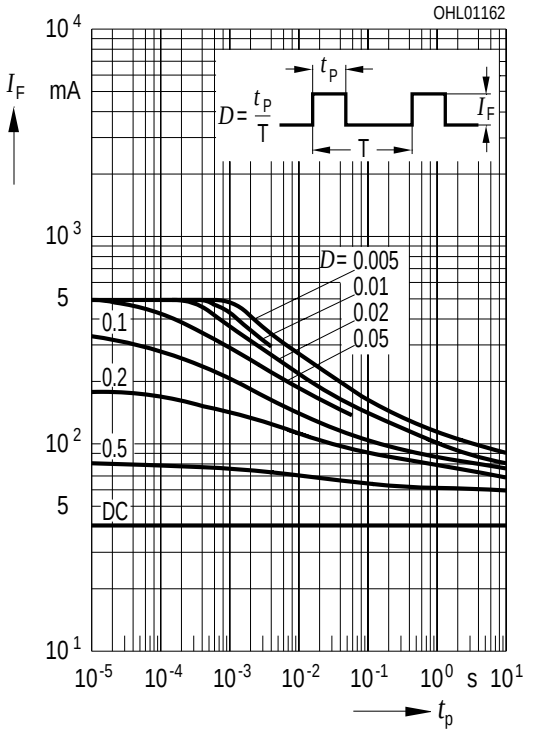
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



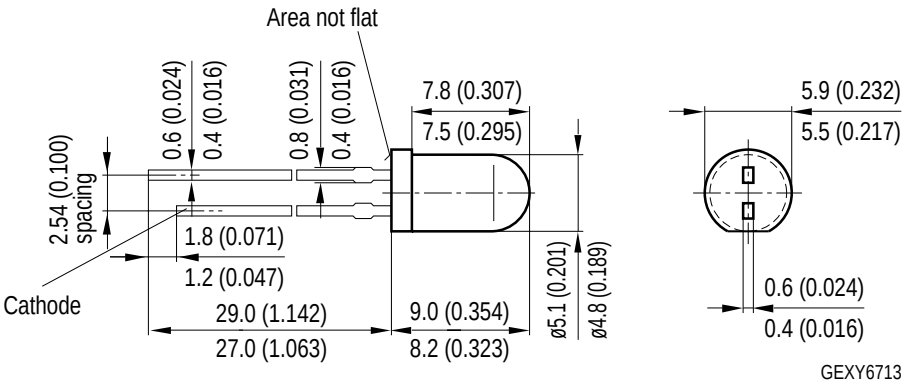
Relative Lichtstärke $I_V / I_V(25\ °C) = f(T_A)$
Relative Luminous Intensity
I_F = 10 mA



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



Maßzeichnung
Package Outlines

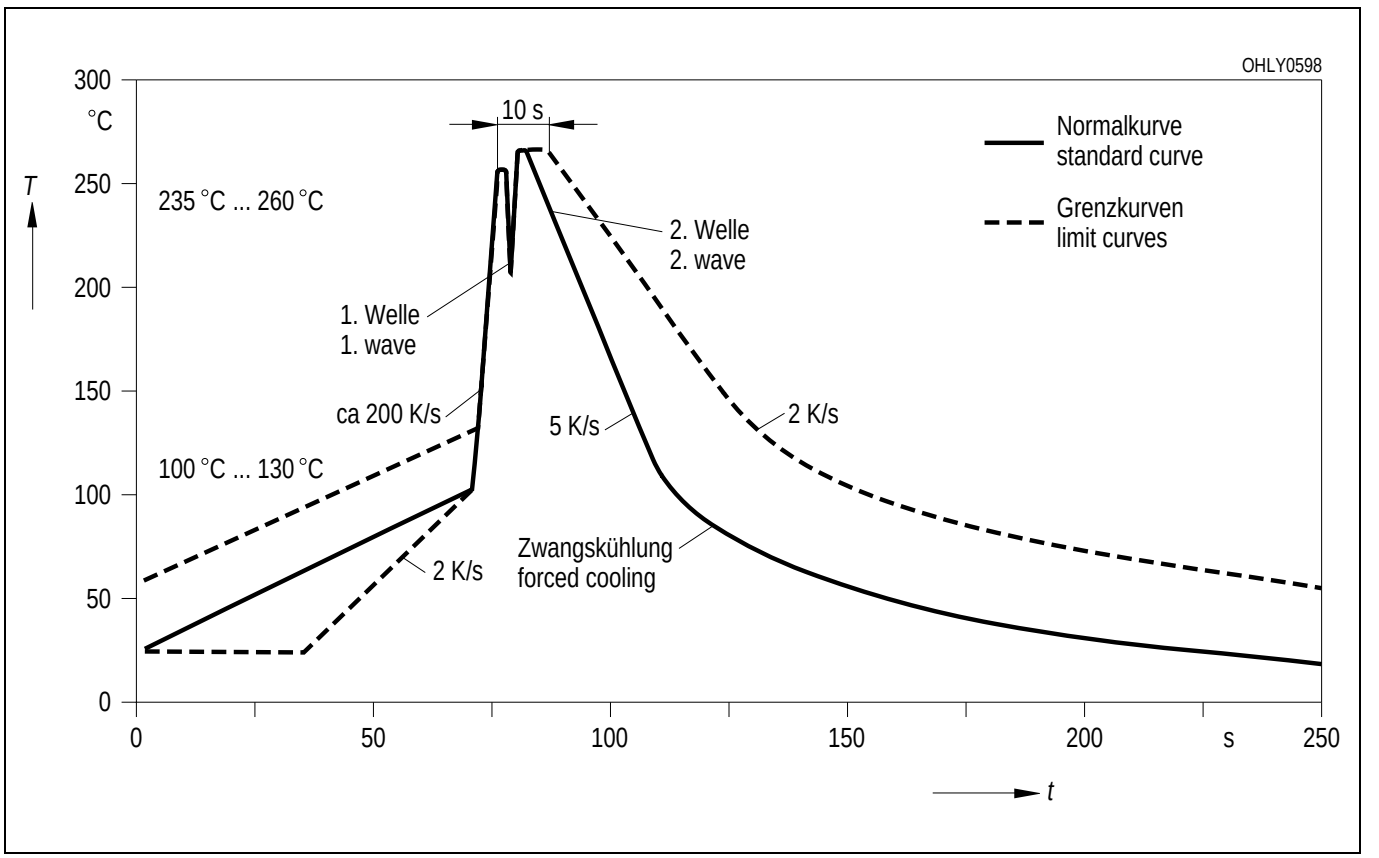


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

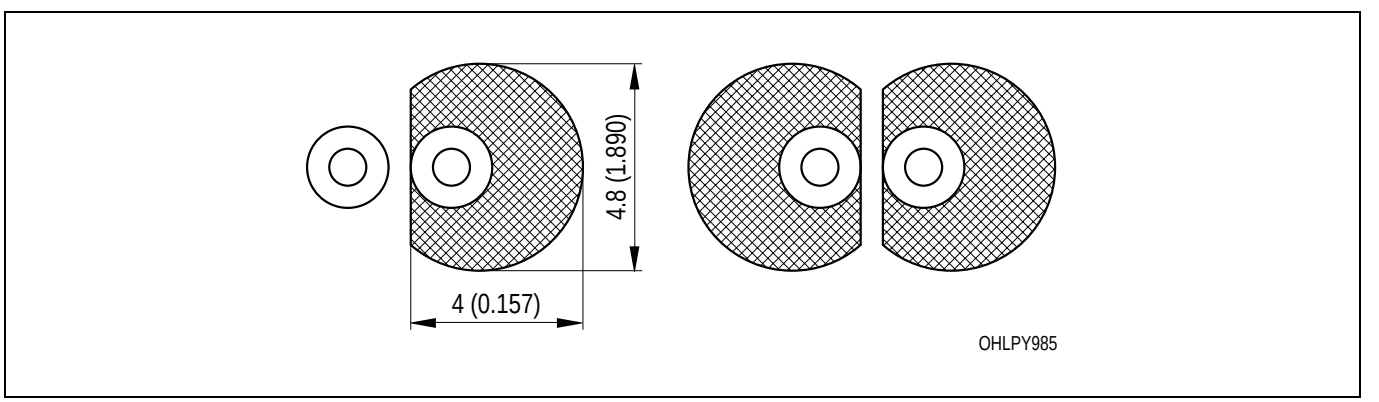
Kathodenkennung: kürzerer Lötspieß
Cathode mark: short solder lead
Gewicht / Approx. weight: 0.35 g

Lötbedingungen
Soldering Conditions

Wellenlöten (TTW) (nach CECC 00802)
TTW Soldering (acc. to CECC 00802)



Empfohlenes Lötpaddesign Wellenlöten (TTW)
Recommended Solder Pad TTW Soldering



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

Revision History: 2002-04-03	
Previous Version: 2001-03-13	
Page	**Subjects (major changes since last revision)**
3	thermal resistance (footnote)
4	dominant wavelength (orange)

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