TOPLED® RG

LS T770, LO T770, LY T770, LG T770, LP T770



Besondere Merkmale

- **Gehäusetyp:** weißes SMT-Gehäuse, farbloser klarer Verguss
- **Besonderheit des Bauteils:** extrem breite Abstrahlcharakteristik; ideal für Hinterleuchtungen; Bauteil wird top down montiert und strahlt durch das PCB
- **Wellenlänge:** 628 nm (super-rot), 606 nm (orange), 587 nm (gelb), 570 nm (grün), 560 nm (pure green)
- **Abstrahlwinkel:** Lambertscher Strahler (120°)
- **Technologie:** GaAsP (super-rot, orange, gelb, grün), GaP (pure green)
- **optischer Wirkungsgrad:** 1,5 lm/W (super-rot, orange, gelb), 2,5 lm/W (grün), 0,6 lm/W (pure green)
- **Gruppierungsparameter:** Lichtstärke, Wellenlänge
- **Verarbeitungsmethode:** für alle SMT-Bestücktechniken geeignet
- **Lötmethode:** IR Reflow Löten
- **Vorbehandlung:** nach JEDEC Level 2
- **Gurtung:** 12-mm Gurt mit 2000/Rolle, ø180 mm oder 8000/Rolle, ø330 mm

Features

- **package:** white SMT package, colorless clear
- **feature of the device:** extremely wide viewing angle; ideal for backlighting; LED is mounted top down and emits through the PCB
- **wavelength:** 628 nm (super-red), 606 nm (orange), 587 nm (yellow), 570 nm (green), 560 nm (pure green)
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** GaAsP (super-red, orange, yellow, green), GaP (pure green)
- **optical efficiency:** 1.5 lm/W (super-red, orange, yellow), 2.5 lm/W (green), 0.6 lm/W (pure green)
- **grouping parameter:** luminous intensity, wavelength
- **assembly methods:** suitable for all SMT assembly methods
- **soldering methods:** IR reflow soldering
- **preconditioning:** acc. to JEDEC Level 2
- **taping:** 12 mm tape with 2000/reel, ø180 mm or 8000/reel, ø330 mm

Anwendungen

- optischer Indikator
- Hinterleuchtung (LCD, Handy, Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Einkopplung in Lichtleiter
- Signal- und Symbolleuchten
- Innenbeleuchtung im Automobilbereich (z.B. Instrumentenbeleuchtung, u.ä.)
- Markierungsbeleuchtung (z.B. Stufen, Fluchtwege, u.ä.)

Applications

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

Typ Type	Emissions-farbe Color of Emission	Lichtstärke Luminous Intensity I_F = 10 mA I_V (mcd)	Lichtstrom Luminous Flux I_F = 10 mA Φ_V (mlm)	Bestellnummer Ordering Code
LS T770-H2J2-1 LS T770-J2L1-1	super-red	3.55 ... 7.10 5.60 ... 14.00	15 (typ.) 28 (typ.)	Q62703Q5101 Q62703Q5102
LO T770-J1K1-24 LO T770-K1L2-24	orange	4.50 ... 9.00 7.10 ... 18.00	20 (typ.) 36 (typ.)	Q65110A0320 Q65110A0321
LY T770-J1K1-26 LY T770-K1L2-26	yellow	4.50 ... 9.00 7.10 ... 18.00	20 (typ.) 36 (typ.)	Q62703Q5139 Q62703Q5140
LG T770-K1L2-1 LG T770-L1M2-1	green	7.10 ... 18.00 11.20 ... 28.00	36 (typ.) 56 (typ.)	Q65110A0744 Q62703Q5019
LP T770-G1H1-1 LP T770-H1J2-1	pure green	1.80 ... 3.55 2.80 ... 7.10	7.7 (typ.) 14.0 (typ.)	Q65110A0328 Q65110A0329

*Anm.: -1 gesamter Farbbereich (siehe **Seite 4**)*
*-24 gesamter Farbbereich, Lieferung in Einzelgruppen (siehe **Seite 5**)*
*-26 gesamter Farbbereich, Lieferung in Einzelgruppen (siehe **Seite 5**)*

Die Standardlieferform von Serientypen beinhaltet eine untere bzw. eine obere Familiengruppe. Diese besteht aus 3 bzw. 4 Helligkeitshalbgruppen besteht. Einzelne Helligkeitshalbgruppen sind nicht bestellbar.
In einer Verpackungseinheit / Gurt ist immer nur eine Helligkeitshalbgruppe enthalten.

*Note: -1 Total color tolerance range (please see **page 4**)*
*-24 Total color tolerance range, delivery in single groups (please see **page 5**)*
*-26 Total color tolerance range, delivery in single groups (please see **page 5**)*

The standard shipping format for serial types includes a lower or upper family group of 3 or 4 individual luminous intensity half groups. Individual luminous intensity half groups cannotbe ordered.
No packing unit / tape ever contains more than one luminous intensity half group.

Grenzwerte
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		LS, LO, LY, LG	LP	
Betriebstemperatur Operating temperature range	T_{op}	– 40 … + 100		°C
Lagertemperatur Storage temperature range	T_{stg}	– 40 … + 100		°C
Sperrschichttemperatur Junction temperature	T_j	+ 100		°C
Durchlassstrom Forward current (T_A=25°C)	I_F	30		mA
Stoßstrom Surge current $t \leq 10$ µs, $D = 0.005$, T_A=25°C	I_{FM}	0.5		A
Sperrspannung[1] Reverse voltage (T_A=25°C)	V_R	12		V
Leistungsaufnahme Power consumption (T_A=25°C)	P_{tot}	95	90	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung[2] Junction/ambient[2]	$R_{th\ JA}$	400		K/W
Sperrschicht/Lötpad Junction/soldering point	$R_{th\ JS}$	180		K/W

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

[2] Montage auf PC-Board FR 4 (Padgröße ≥ 16 mm^2)
mounted on PC board FR 4 (pad size ≥ 16 mm^2)

Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**					**Einheit** **Unit**
		LS	**LO**	**LY**	**LG**	**LP**	
Wellenlänge des emittierten Lichtes(typ.) Wavelength at peak emission I_F = 10 mA	λ_{peak}	635	610	586	572	557	nm
Dominantwellenlänge [1] Dominant wavelength I_F = 10 mA	λ_{dom}	628 ± 6	606 –6/+3	587 –7/+8	570 ± 6	560 ± 6	nm
Spektrale Bandbreite bei 50 % $I_{rel\ max}$ (typ.) Spectral bandwidth at 50 % $I_{rel\ max}$ I_F = 10 mA	$\Delta\lambda$	45	40	45	25	22	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel)(typ.) Viewing angle at 50 % I_V	2φ	120	120	120	120	120	Grad deg.
Durchlassspannung [2](typ.) Forward voltage (max.) I_F = 10 mA	V_F V_F	2.0 2.5	2.0 2.5	2.0 2.5	2.0 2.5	2.0 2.5	V V
Sperrstrom (typ.) Reverse current (max.) V_R = 12 V	I_R I_R	0.01 10	0.01 10	0.01 10	0.01 10	0.01 10	µA µA
Temperaturkoeffizient von λ_{peak}(typ.) Temperature coefficient of λ_{peak} I_F = 10 mA; –10°C ≤ T ≤ 100°C	$TC_{\lambda peak}$	0.11	0.12	0.10	0.11	0.11	nm/K
Temperaturkoeffizient von λ_{dom}(typ.) Temperature coefficient of λ_{dom} I_F = 10 mA; –10°C ≤ T ≤ 100°C	$TC_{\lambda dom}$	0.07	0.07	0.07	0.07	0.05	nm/K
Temperaturkoeffizient von V_F(typ.) Temperature coefficient of V_F I_F = 10 mA; –10°C ≤ T ≤ 100°C	TC_V	–1.9	–1.9	–1.9	–1.4	–2.1	mV/K
Optischer Wirkungsgrad(typ.) Optical efficiency I_F = 10 mA	η_{opt}	1.5	1.5	1.5	2.5	0.6	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.

[1] **Wellenlängengruppen für Dominantwellenlänge**
Wavelength groups for dominant wavelength

Gruppe Group	yellow		orange		Einheit Unit
	min.	max.	min.	max.	
2	580	583	600	603	nm
3	583	586	603	606	nm
4	586	589	606	609	nm
5	589	592			nm
6	592	595			nm

Helligkeits-Gruppierungsschema
Luminous Intensity Groups

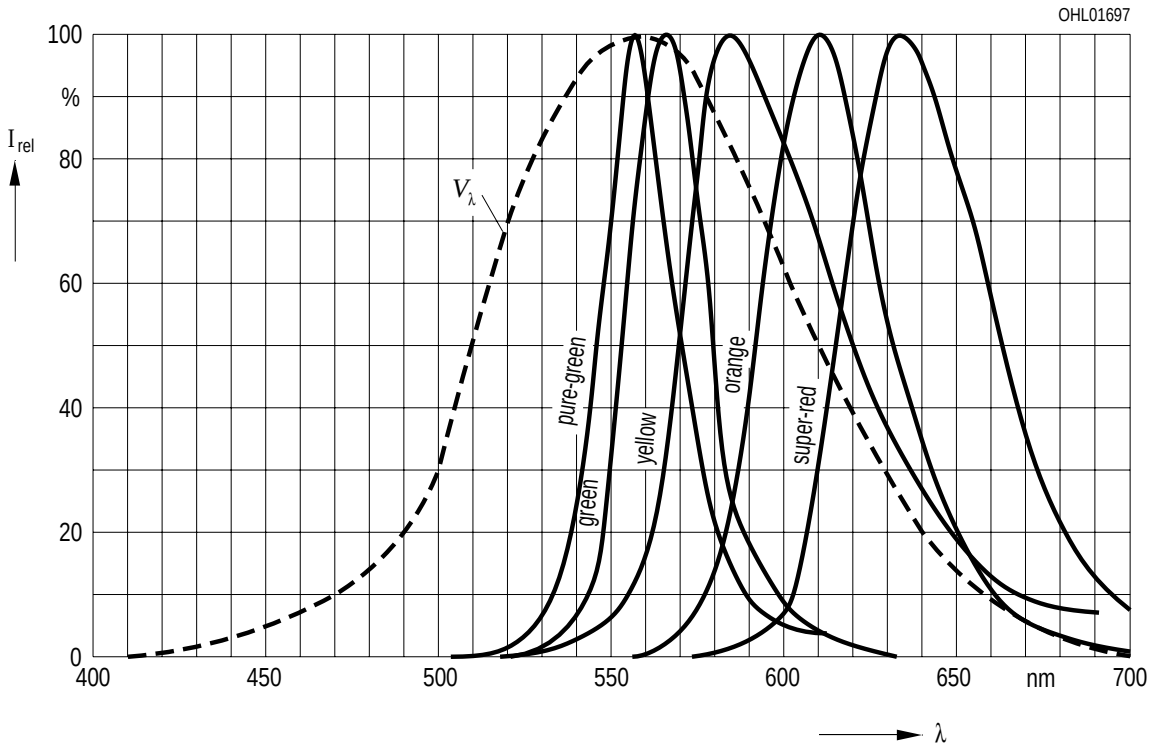
Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity I_V (mcd)	Lichtstrom Luminous Flux Φ_V (mlm)
G1	1.80 ... 2.24	6.0 (typ.)
G2	2.24 ... 2.80	7.5 (typ.)
H1	2.80 ... 3.55	9.5 (typ.)
H2	3.55 ... 4.50	12.0 (typ.)
J1	4.50 ... 5.60	15.0 (typ.)
J2	5.60 ... 7.10	19.0 (typ.)
K1	7.10 ... 9.00	24.0 (typ.)
K2	9.00 ... 11.20	30.0 (typ.)
L1	11.20 ... 14.00	40.0 (typ.)
L2	14.00 ... 18.00	50.0 (typ.)
M1	18.00 ... 22.40	60.0 (typ.)
M2	22.40 ... 28.00	75.0 (typ.)

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%.

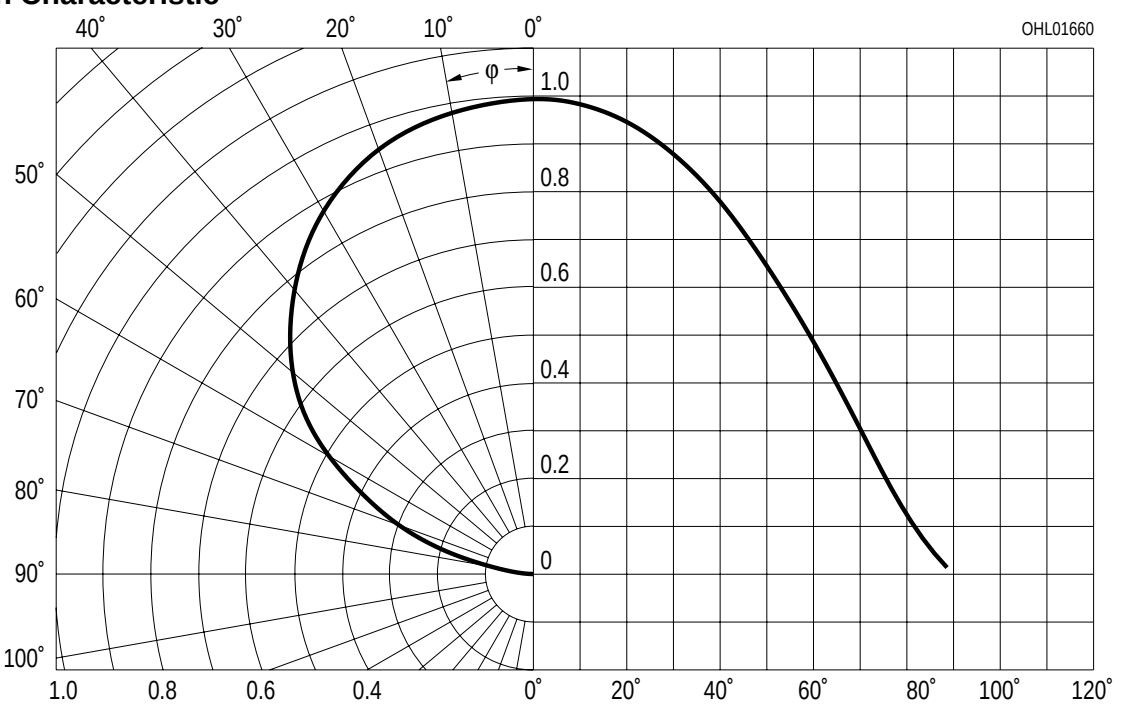
Gruppenbezeichnung auf Etikett
Group Name on Label
Beispiel: K2-3
Example: K2-3

Lichtgruppe Luminous Intensity Group	Halbgruppe Half Group	Wellenlänge Wavelength
■K	2	3

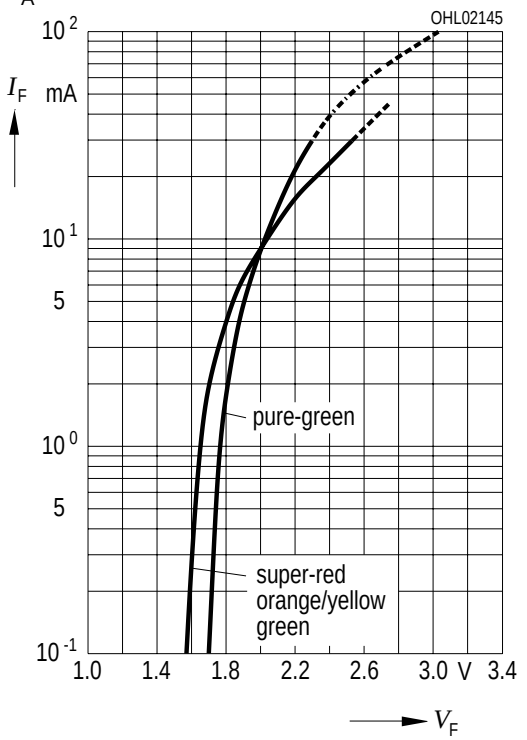
Relative spektrale Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 10 mA
Relative Spectral Emission
V(λ) = spektrale Augenempfindlichkeit
Standard eye response curve



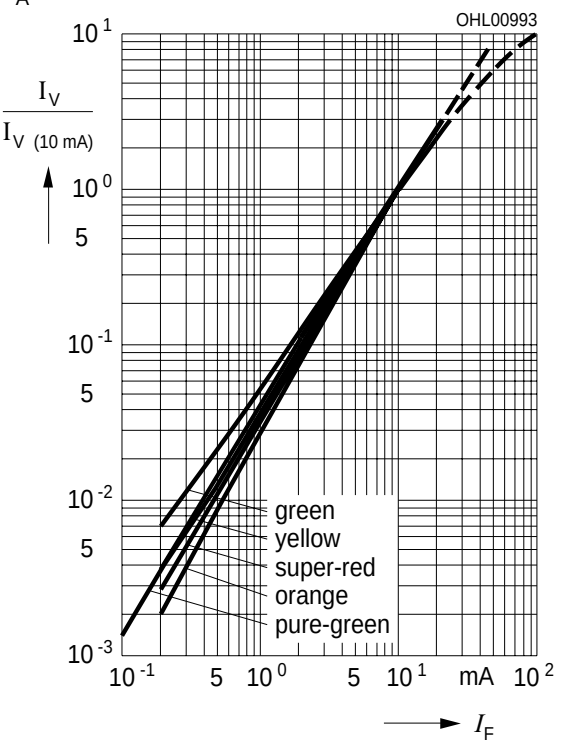
Abstrahlcharakteristik $I_{rel} = f(\varphi)$
Radiation Characteristic



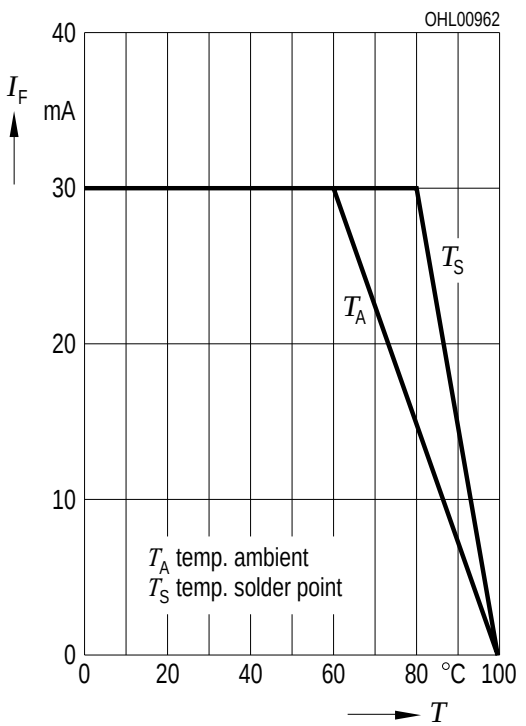
Durchlassstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



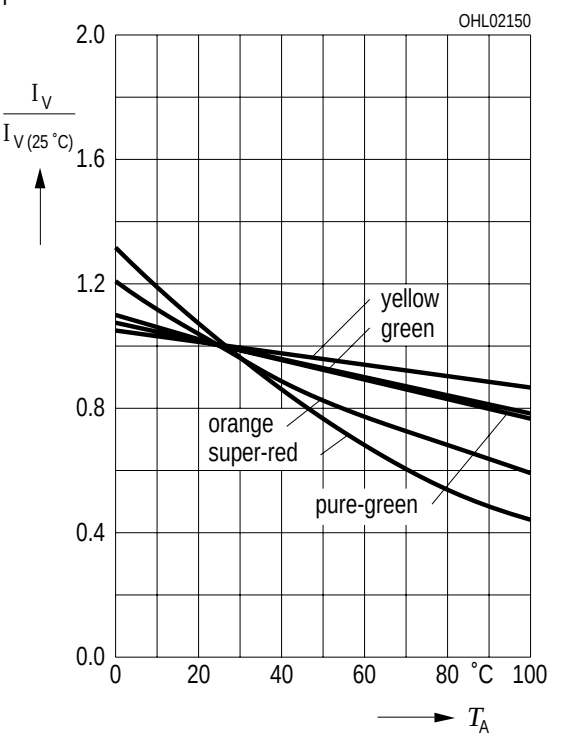
Relative Lichtstärke $I_V/I_{V(10\ mA)} = f(I_F)$
Relative Luminous Intensity
T_A = 25 °C



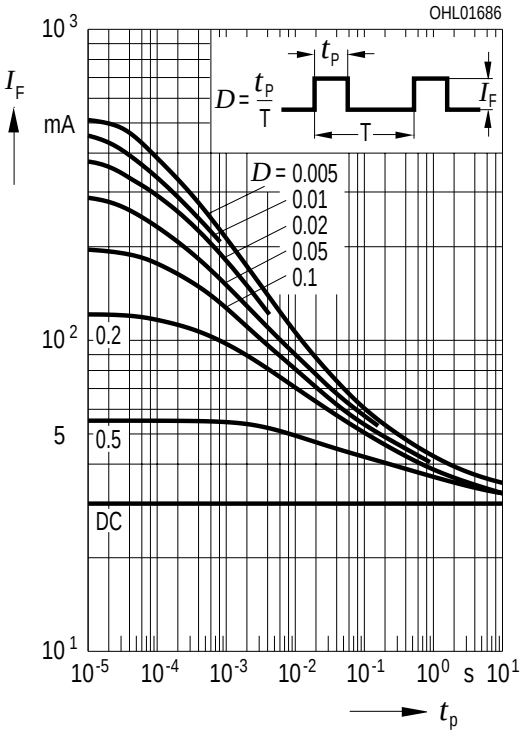
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



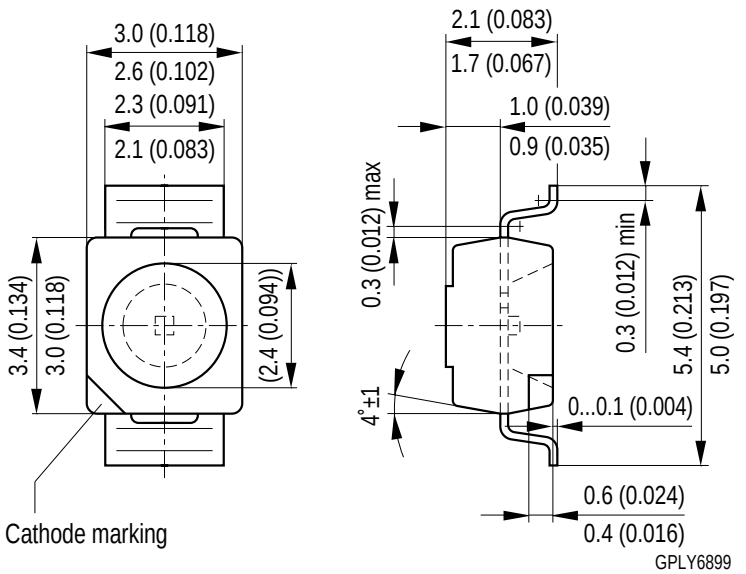
Relative Lichtstärke $I_V/I_{V(25\ °C)} = f(T_A)$
Relative Luminous Intensity
I_F = 10 mA



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



Maßzeichnung
Package Outlines

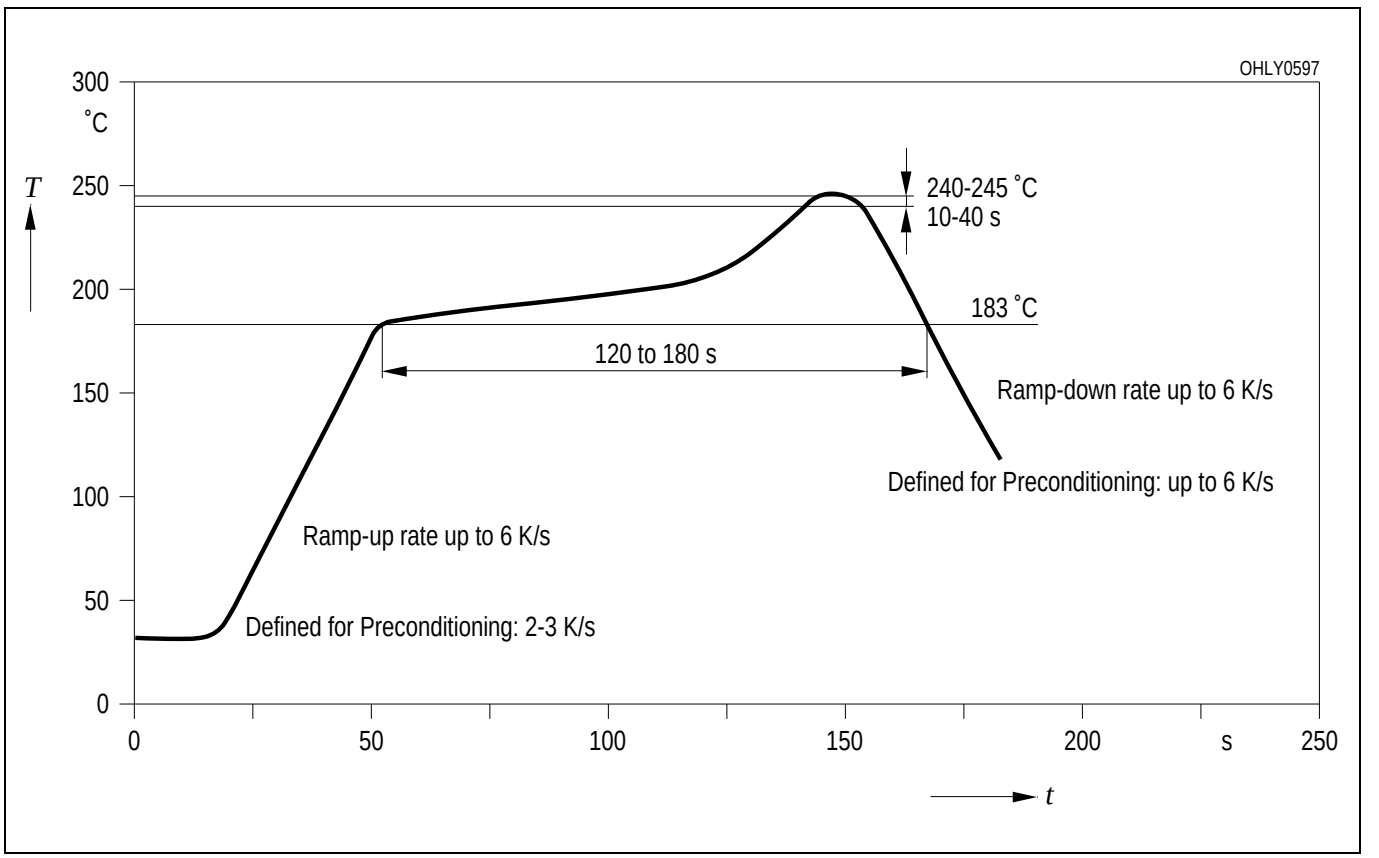


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

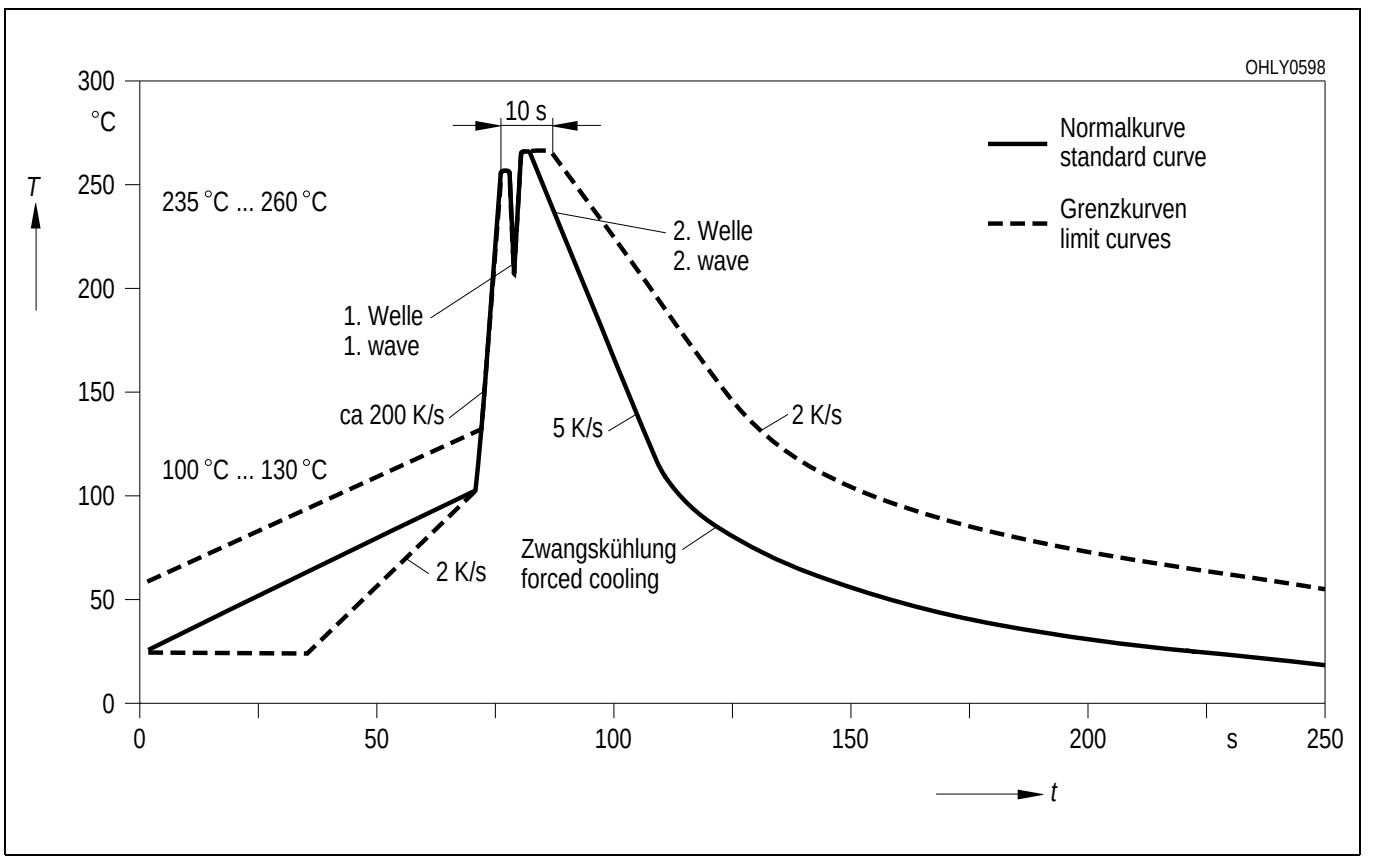
Kathodenkennung: abgeschrägte Ecke
Cathode mark: bevelled Edge
Gewicht / Approx. weight: 35 mg

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

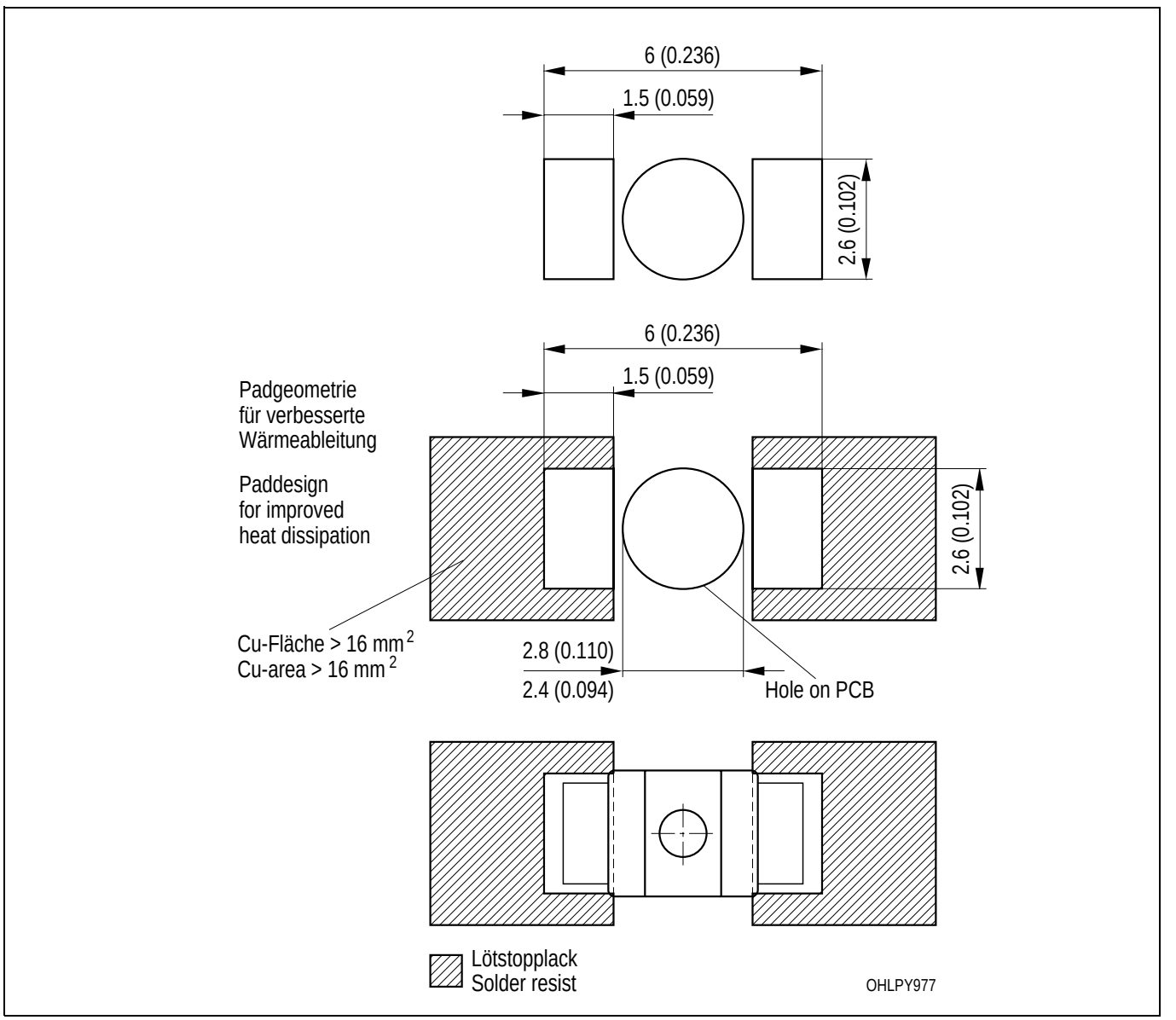
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



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



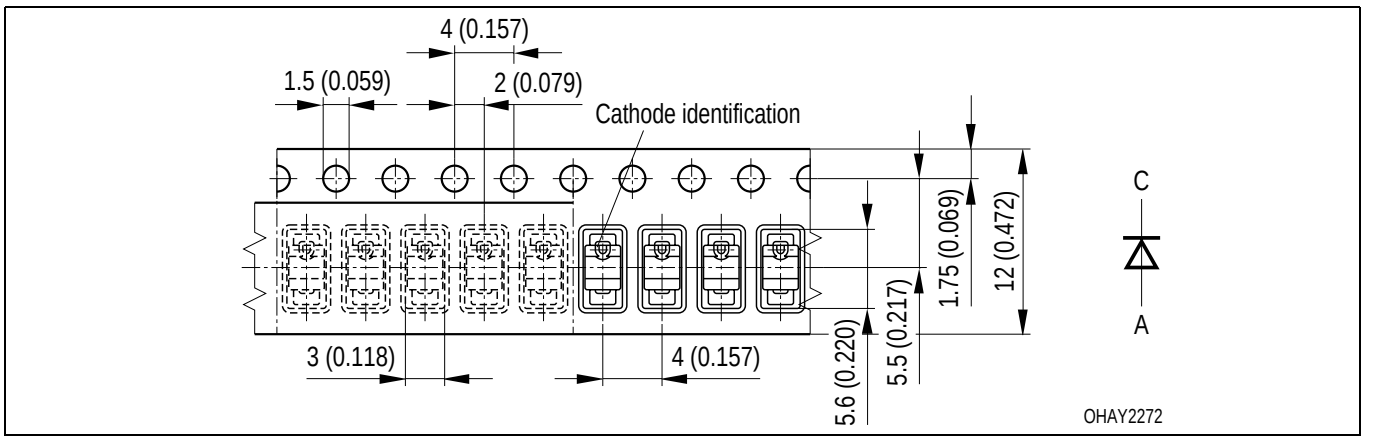
Empfohlenes Lötpaddesign IR Reflow Löten
Recommended Solder Pad IR Reflow Soldering



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).
Gehäuse hält TTW-Löthitze aus / Package able to withstand TTW-soldering heat

Gurtung / Polarität und Lage Verpackungseinheit 2000/Rolle, ø180 mm oder 8000/Rolle, ø330 mm

Method of Taping / Polarity and Orientation Packing unit 2000/reel, ø180 mm or 8000/reel, ø330 mm



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

Anm.: Bezüglich Trockenverpackung finden Sie weitere Hinweise im Internet und in unserem Short Form Catalog im Kapitel "Gurtung und Verpackung" unter dem Punkt "Trockenverpackung". Hier sind Normenbezüge, unter anderem ein Auszug der JEDEC-Norm, enthalten.

Note: Regarding dry pack you will find further information in the internet and in the Short Form Catalog in chapter "Tape and Reel" under the topic "Dry Pack". Here you will also find the normative references like JEDEC.

Revision History: 2003-09-03		Date of change
Previous Version: 2003-08-22		
Page	**Subjects (major changes since last revision)**	
2	New values for luminous flux	
5	New wavelength grouping	
2	wavelength grouping for yellow and orange	
9	change of weight from 40 mg to 35 mg	2002-06-28
14	annotations	2002-07-23
3, 4	value (reverse voltage from 5 V to 12 V)	2002-09-18
2	Ordering Code	2002-09-16
1	feature of the device	2002-09-17
1, 12	removal: pad for TTW soldering	2002-09-30
7	diagram relative luminous intensity $f(I_F)$	2003-03-13
14	note: dry pack	2003-09-03
1	ESD norm	2003-09-03
3	ambient temperature	2003-09-03
2	Ordering code LG T770	2003-09-03

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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.
Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.
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.