Power TOPLED®
Hyper-Bright LED

LW E673

Abgekündigt nach PD_078_02 - wird durch LW E67C ersetzt werden
Obsolete acc. to PD_078_02 - will be replaced by LW E67C

Besondere Merkmale

- **Gehäusetyp:** weißes P-LCC-4 Gehäuse
- **Besonderheit des Bauteils:** mehr Licht durch einen geringen thermischen Widerstand
- **Farbort:** x = 0,32, y = 0,31 nach CIE 1931 (weiß)
- **typische Farbtemperatur:** 6500 K
- **Farbwiedergabeindex:** 80
- **Abstrahlwinkel:** Lambertscher Strahler (120°)
- **Technologie:** InGaN
- **optischer Wirkungsgrad:** 6 lm/W
- **Gruppierungsparameter:** Lichtstärke, Farbort
- **Verarbeitungsmethode:** für alle SMT-Bestücktechniken geeignet
- **Lötmethode:** IR Reflow Löten und Wellenlöten (TTW)
- **Vorbehandlung:** nach JEDEC Level 2
- **Gurtung:** 8 mm Gurt mit 2000/Rolle, ø180 mm oder 8000/Rolle, ø330 mm
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

Features

- **package:** white P-LCC-4 package
- **feature of the device:** more brightness due to a lower thermal resistance
- **color coordinates:** x = 0.32, y = 0.31 acc. to CIE 1931 (white)
- **typ. color temperature:** 6500 K
- **color reproduction index:** 80
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** InGaN
- **optical efficiency:** 6 lm/W
- **grouping parameter:** luminous intensity, color coordinates
- **assembly methods:** suitable for all SMT assembly methods
- **soldering methods:** IR reflow soldering and TTW soldering
- **preconditioning:** acc. to JEDEC Level 2
- **taping:** 8 mm tape with 2000/reel, ø180 mm or 8000/reel, ø330 mm
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

Anwendungen

- Verkehrssignale
- Hinterleuchtung (LCD, Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Innen- und Außenbeleuchtung im Automobilbereich (z.B. Instrumentenbeleuchtung)
- Ersatz von Kleinst-Glühlampen
- Leselampen
- Rettungsnotleuchten
- Signal- und Symbolleuchten
- Markierungsbeleuchtung (z.B. Stufen, Fluchtwege, u.ä.)
- Scanner

Applications

- traffic signals
- backlighting (LCD, switches, keys, displays, illuminated advertising, general lighting)
- Interior and exterior automotive lighting (e.g. dashboard backlighting)
- substitution of micro incandescent lamps
- reading lamps
- emergency lighting
- signal and symbol luminaire
- marker lights (e.g. steps, exit ways, etc.)
- scanners

Typ Type	Emissions-farbe Color of Emission	Farbe der Lichtaustritts-fläche Color of the Light Emitting Area	Lichtstärke Luminous Intensity I_F = 30 mA I_V (mcd)	Lichtstrom Luminous Flux I_F = 30 mA Φ_V (mlm)	Bestellnummer Ordering Code
■LW E673-R2S2-3C5D	white	colored diffused	140 ... 280	610 (typ.)	Q62703Q4862
■LW E673-S2U1-3C5D			224 ... 560	1100 (typ.)	Q62703Q4902

■ Abgekündigt nach PD_078_02 - wird durch LW E67C ersetzt werden
Obsolete acc. to PD_078_02 - will be replaced by LW E67C
Letzte Bestellung / Last Order: 30.09.2003
Letzte Lieferung / Last Delivery: 31.03.2004

*Anm.: -3C5D Farbselektiert nach Farbortgruppen (siehe **Seite 5**)*

Die Standardlieferform von Serientypen beinhaltet eine untere bzw. eine obere Familiengruppe, die aus nur 3 bzw. 4 Halbgruppen besteht. Einzelne Halbgruppen sind nicht erhältlich.
In einer Verpackungseinheit / Gurt ist immer nur eine Halbgruppe enthalten.

*Note: -3C5D Color selection acc. to Chromaticity coordinate groups (see **page 5**)*

The standard shipping format for serial types includes a lower or upper family group of 3 or 4 individual groups. Individual half groups are not available.
No packing unit / tape ever contains more than one luminous intensity half group.

Grenzwerte
Maximum Ratings

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Betriebstemperatur Operating temperature range	T_{op}	– 40 … + 100	°C
Lagertemperatur Storage temperature range	T_{stg}	– 40 … + 100	°C
Sperrschichttemperatur Junction temperature	T_j	+ 110	°C
Durchlassstrom Forward current	I_F	30	mA
Stoßstrom Surge current $t \leq 10$ µs, $D = 0.005$	I_{FM}	200	mA
Sperrspannung[1)] Reverse voltage	V_R	5	V
Leistungsaufnahme Power consumption	P_{tot}	120	mW
Wärmewiderstand 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)	 $R_{th\ JA}$ $R_{th\ JS}$	 300 130	 K/W K/W

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

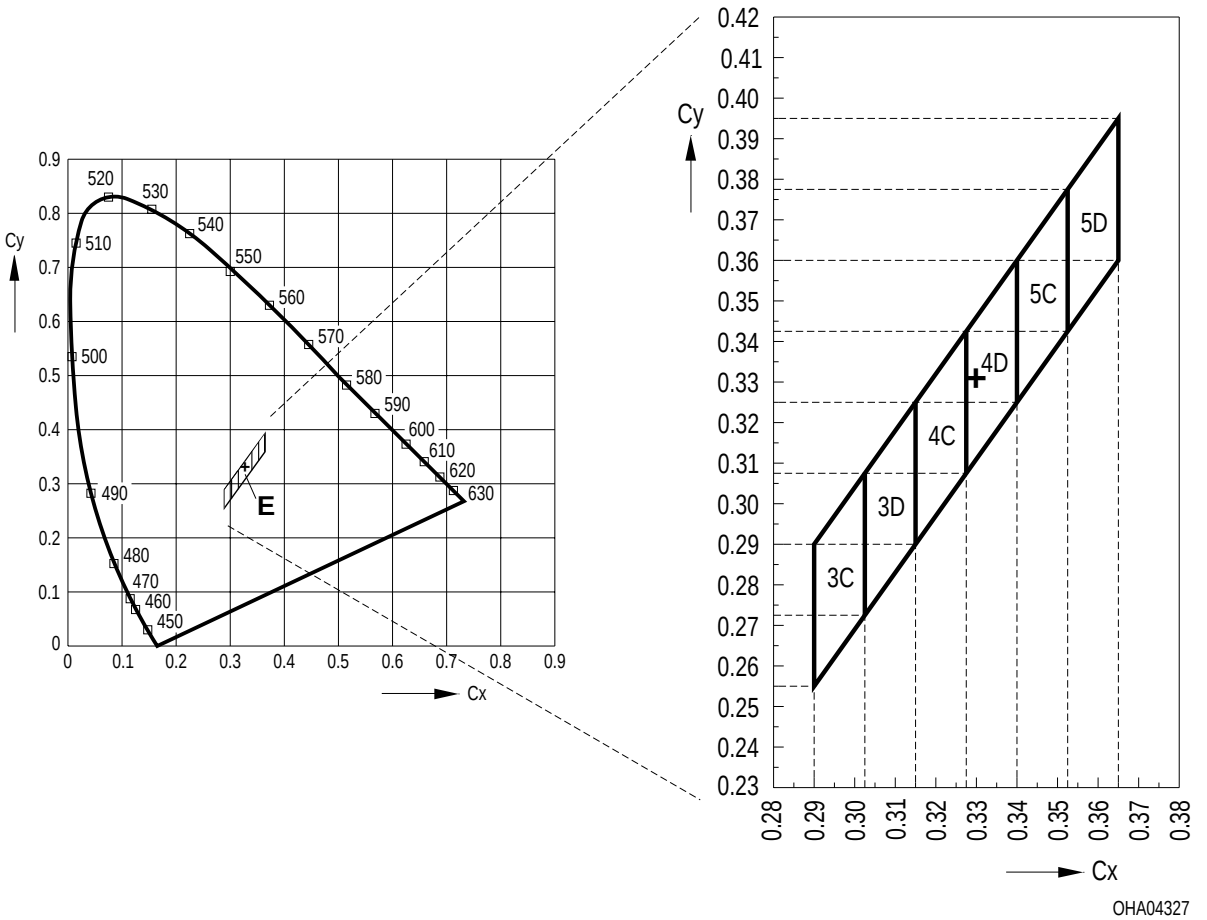
Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**		**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Farbkoordinate x nach CIE 1931 [1] Chromaticity coordinate x acc. to CIE 1931 I_F = 30 mA	(typ.)	x	0.32	–
Farbkoordinate y nach CIE 1931[1] Chromaticity coordinate y acc. to CIE 1931 I_F = 30 mA	(typ.)	y	0.31	–
Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V	(typ.)	2φ	120	Grad deg.
Durchlassspannung [2] Forward voltage I_F = 30 mA	(min.) (typ.) (max.)	V_F V_F V_F	3.1 3.7 4.0	V V V
Sperrstrom Reverse current V_R = 5 V	(typ.) (max.)	I_R I_R	0.01 10	µA µA
Temperaturkoeffizient von x Temperature coefficient of x I_F = 30 mA; –10°C ≤ T ≤ 100°C	(typ.)	TC_x	–0.1	10^{-3}/K
Temperaturkoeffizient von y Temperature coefficient of y I_F = 30 mA; –10°C ≤ T ≤ 100°C	(typ.)	TC_y	–0.2	10^{-3}/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 30 mA; –10°C ≤ T ≤ 100°C	(typ.)	TC_V	– 4.5	mV/K
Optischer Wirkungsgrad Optical efficiency I_F = 30 mA	(typ.)	η_{opt}	6	lm/W

[1] Farbortgruppen werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von ±0,01 ermittelt.
Chromaticity coordinate groups are tested at a current pulse duration of 25 ms and a tolerance of ±0.01.

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

[1] Farbortgruppen
Chromaticity coordinate groups



Helligkeits-Gruppierungsschema
Luminous Intensity Groups

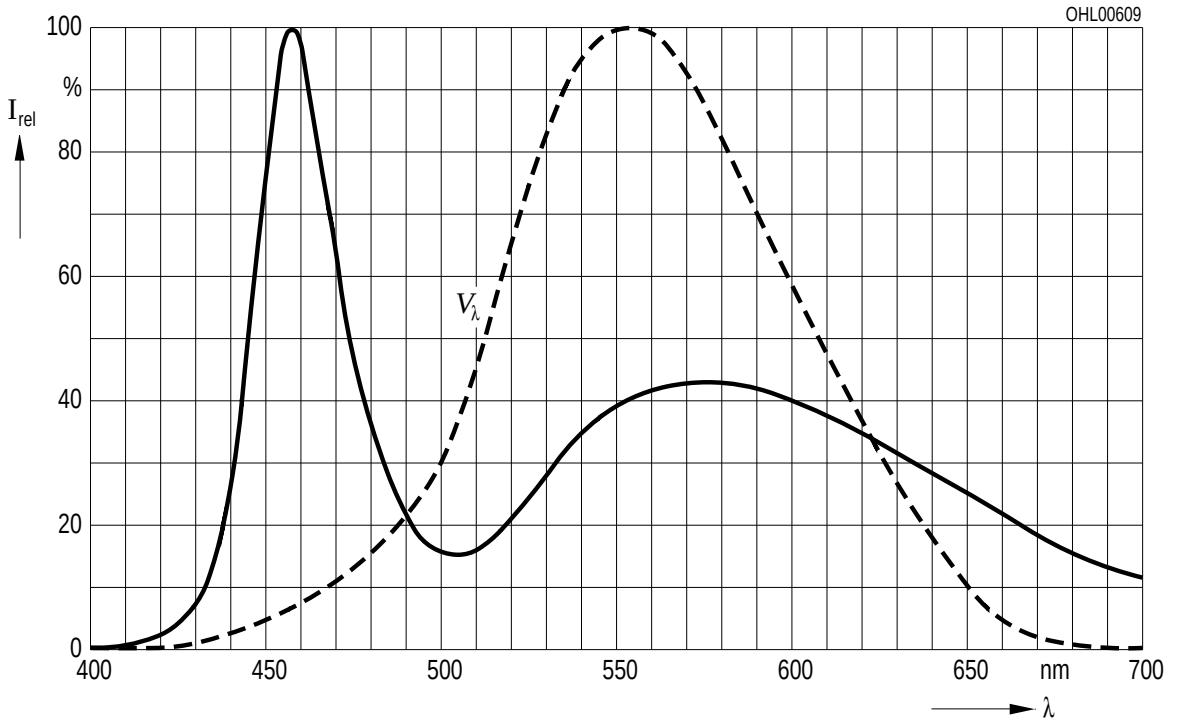
Lichtgruppe **Luminous Intensity Group**	**Lichtstärke** **Luminous Intensity** **I_V (mcd)**	**Lichtstrom** **Luminous Flux** **Φ_V (mlm)**
R2	140 ... 180	480 (typ.)
S1	180 ... 224	600 (typ.)
S2	224 ... 280	760 (typ.)
T1	280 ... 355	950 (typ.)
T2	355 ... 450	1200 (typ.)
U1	450 ... 560	1500 (typ.)

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%.

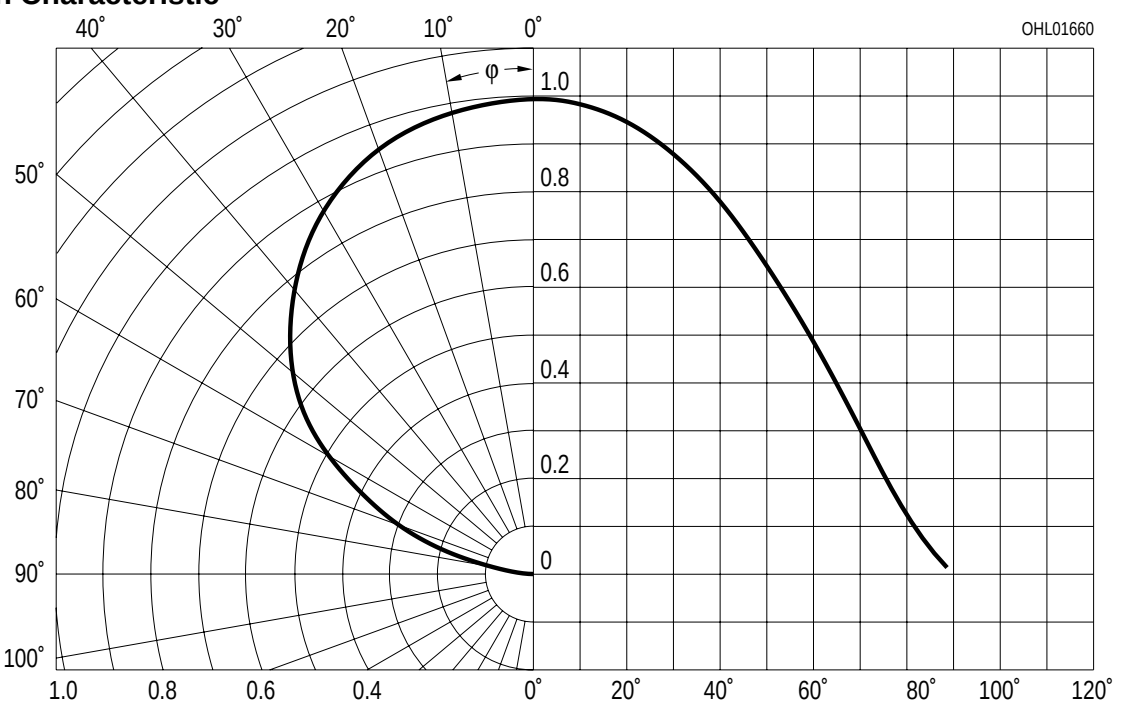
Gruppenbezeichnung auf Etikett
Group Name on Label
Beispiel: R2-4D
Example: R2-4D

Lichtgruppe **Luminous Intensity Group**	**Halbgruppe** **Half Group**	**Farbortgruppe** **Chromaticity Coordinate Group**
R	2	4D

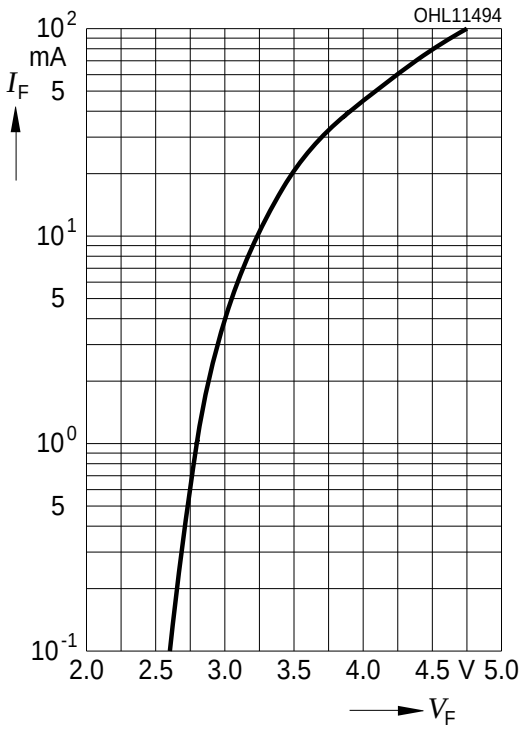
Relative spektrale Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 30 mA
Relative Spectral Emission
V(λ) = spektrale Augenempfindlichkeit
Standard eye response curve



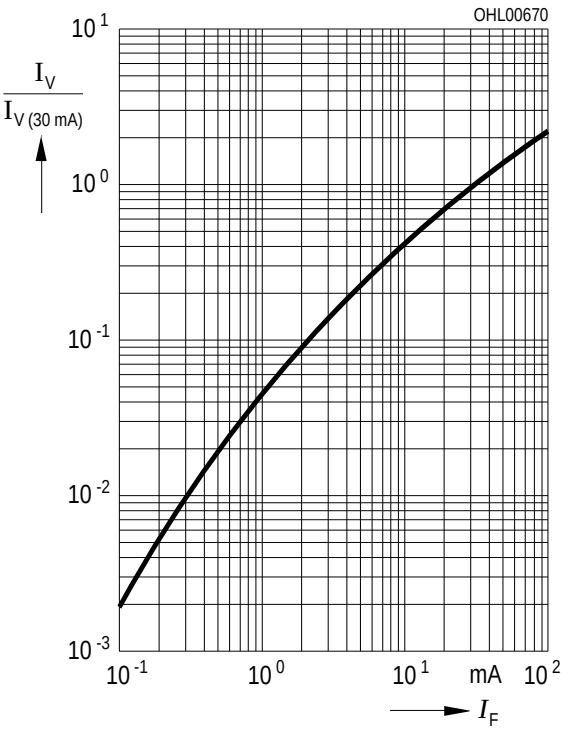
Abstrahlcharakteristik $I_{rel} = f(\varphi)$
Radiation Characteristic



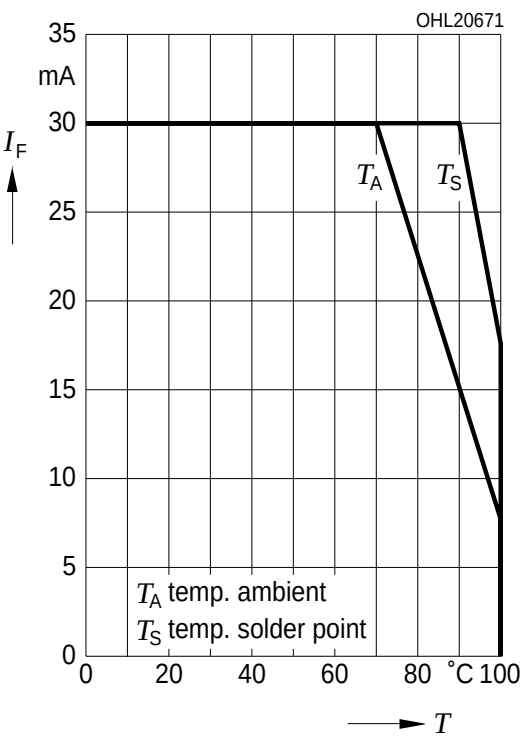
Durchlassstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



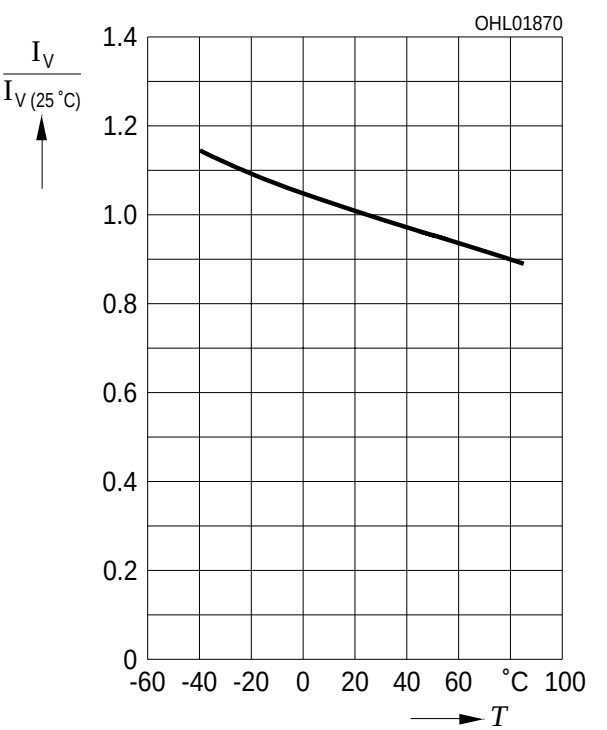
Relative Lichtstärke $I_V/I_{V(30\ mA)} = f(I_F)$
Relative Luminous Intensity
T_A = 25 °C



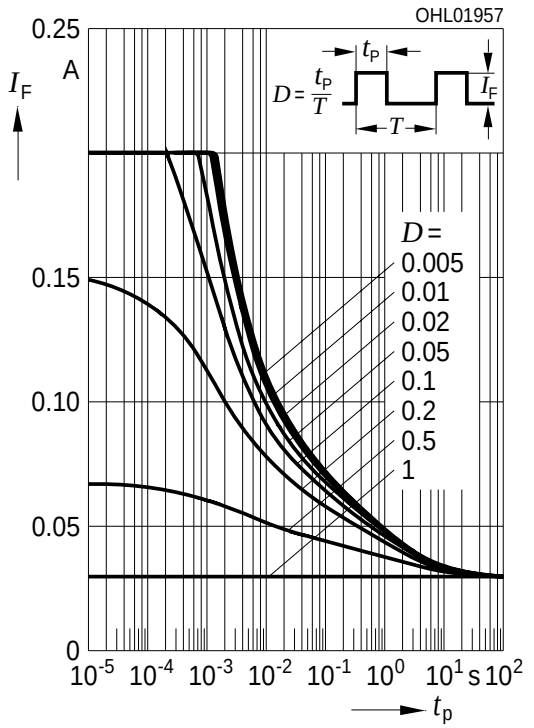
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



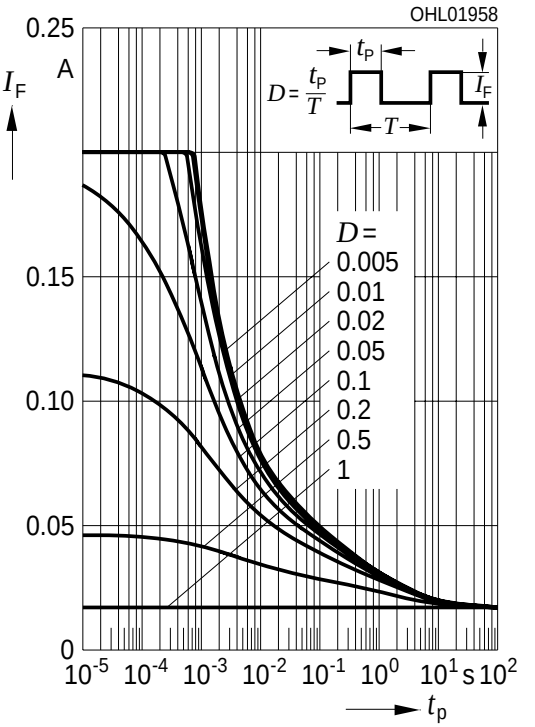
Relative Lichtstärke $I_V/I_{V(25\ °C)} = f(T_A)$
Relative Luminous Intensity
I_F = 30 mA



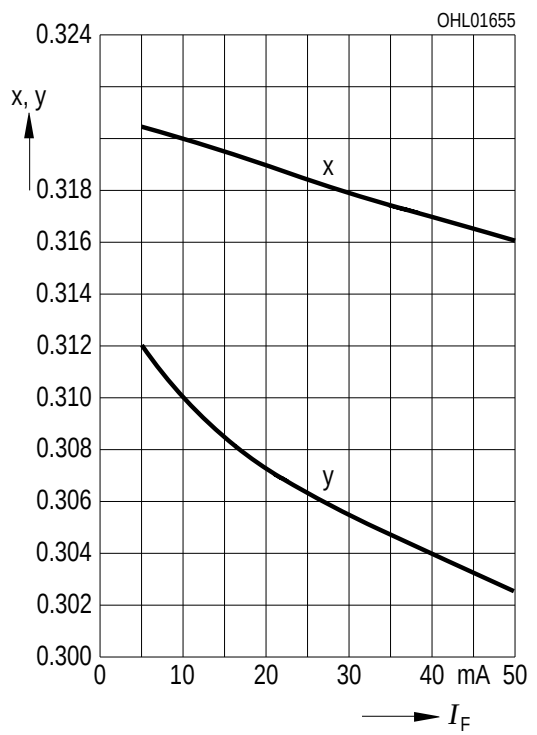
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 25 °C



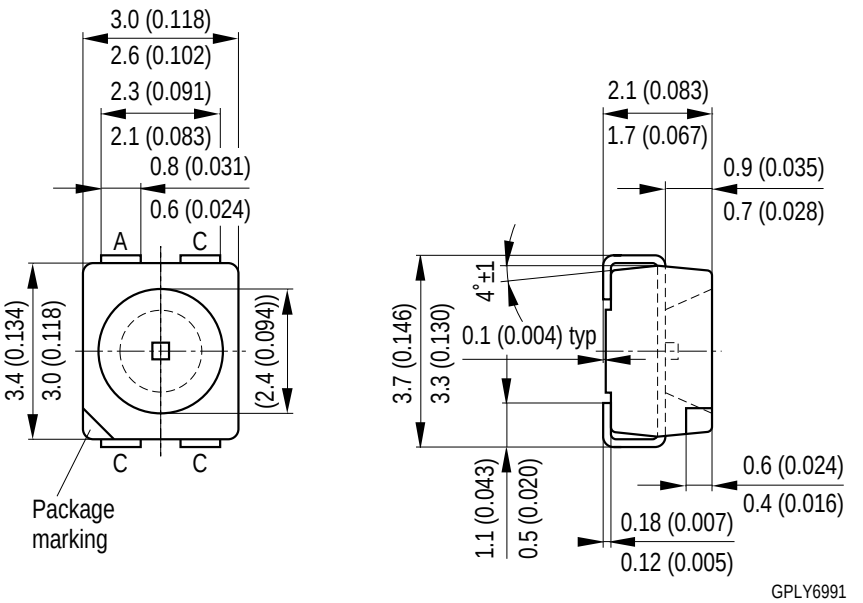
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 85 °C



Farbortverschiebung x, y = $f(I_F)$
Chromaticity Coordinate Shift
T_A = 25 °C



Maßzeichnung
Package Outlines

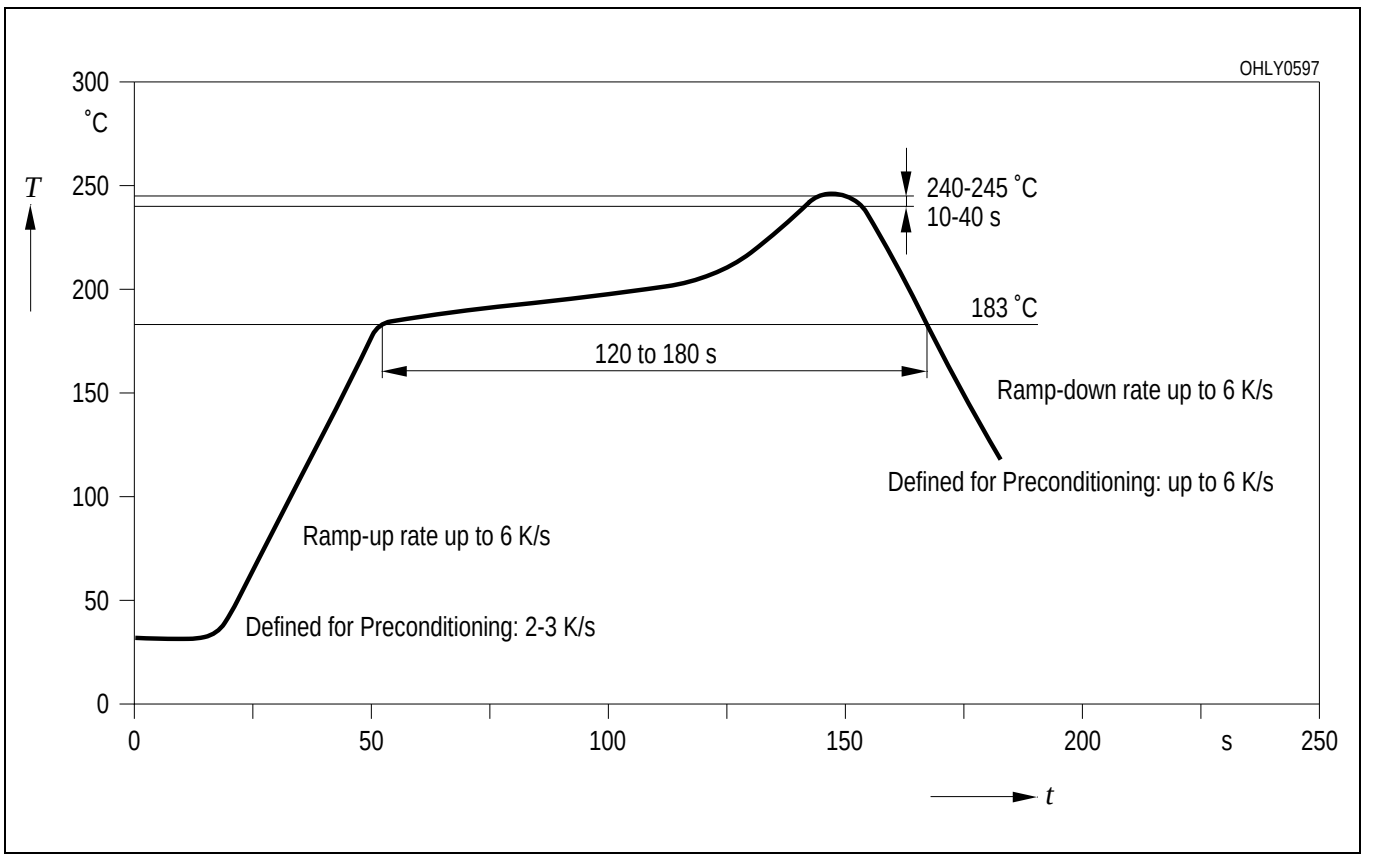


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

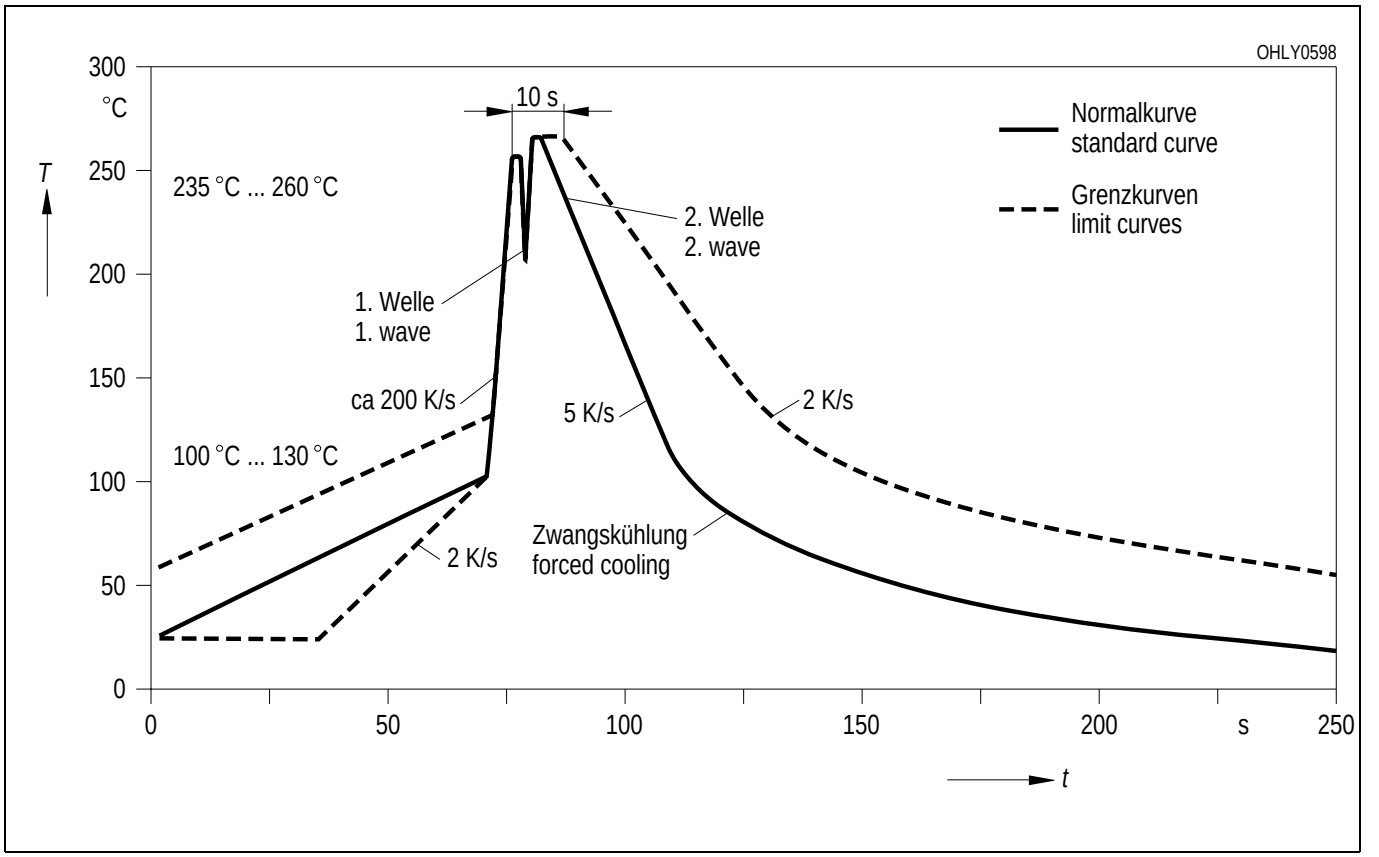
Gewicht / Approx. weight: 35 mg

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

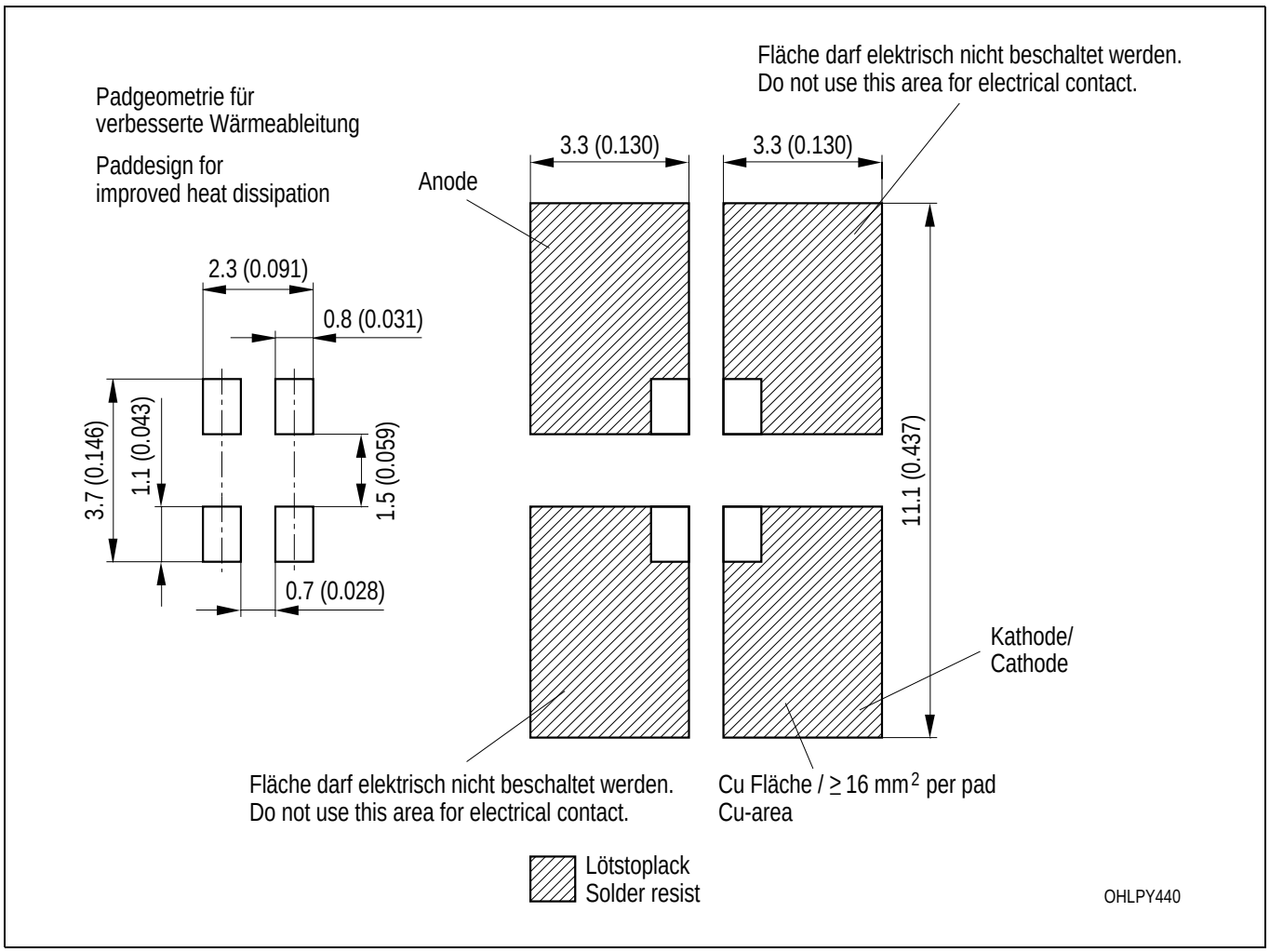
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



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

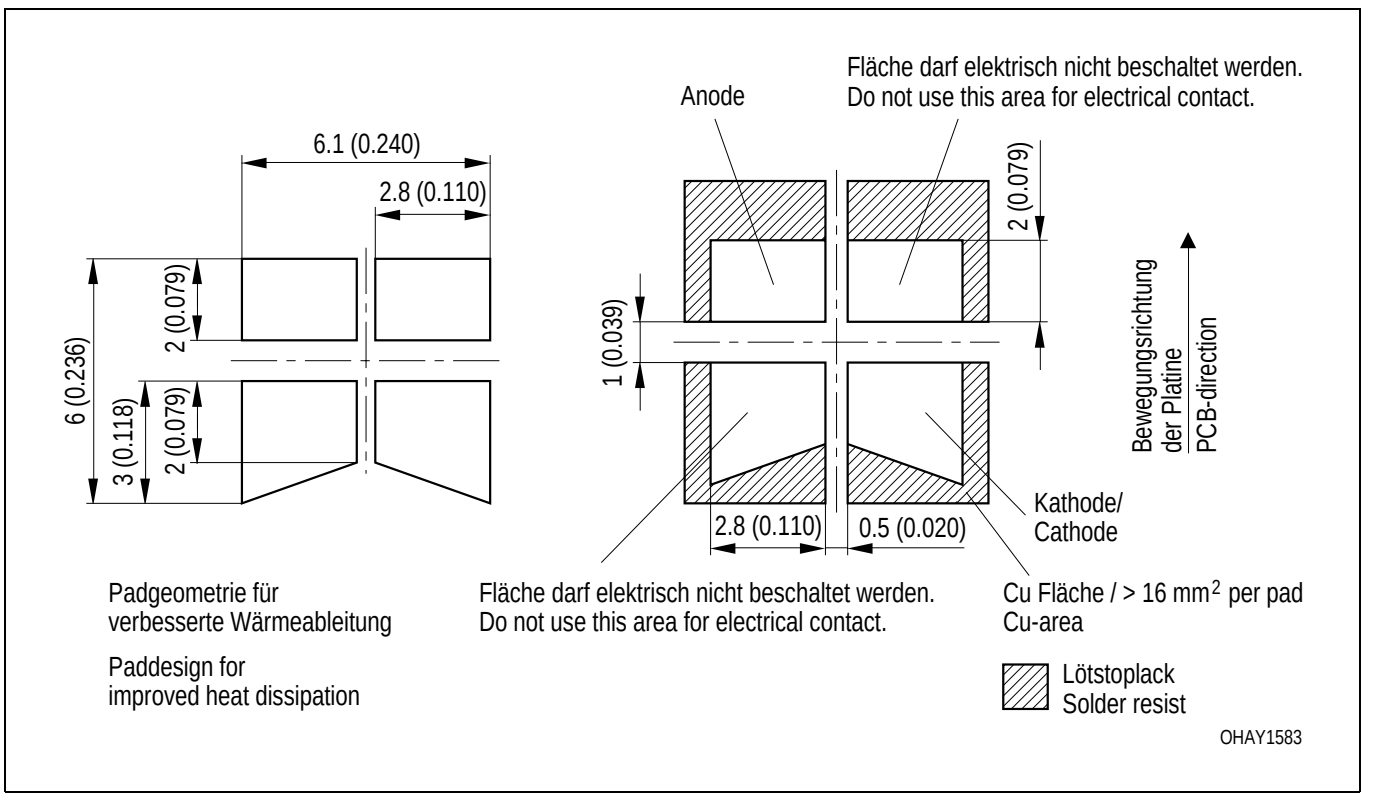


Empfohlenes Lötpaddesign verwendbar für TOPLED® und Power TOPLED®
IR Reflow Löten
Recommended Solder Pad useable for TOPLED® and Power TOPLED®
IR Reflow Soldering



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

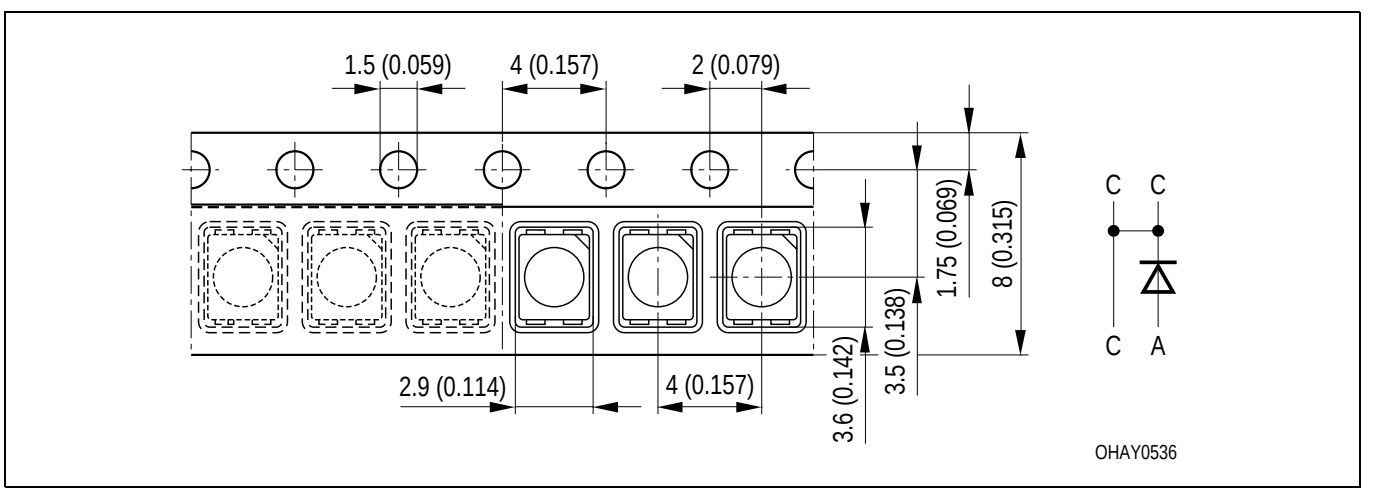
Empfohlenes Lötpaddesign Wellenlöten (TTW)
Recommended Solder Pad TTW Soldering



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

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)

Revision History: 2003-08-11		**Date of change**
Previous Version: 2003-08-05		
Page	**Subjects (major changes since last revision)**	
4	value (forward voltage)	
3	power consumption 130 to 120	
9	diagram luminous intensity OHL00870 to 01870	
2	wavelength grouping for white	
2, 5	color coordinate grouping	2002-07-15
15	annotations	2002-07-25
13	new IR solder pad (OHLPY439 to OHLPY440)	2002-08-05
9	diagram pulse handling (25°C) OHL01407 to OHL11405	2002-08-12
9	diagram pulse handling (85°C) OHL01408 to OHL11406	2002-08-12
8	diagram max. forward current (T_A) OHL00671 to OHL10671	2002-08-12
8	diagram max. forward current (T_S) OHL01085 to OHL11085	2002-08-12
3	reverse voltage (footnote)	2002-08-21
all	not for new design	2002-11-18
15	new patent no.	2003-03-04
14	new recommended solder pad	2003-05-26
8, 9	diagrams	2003-06-16
9	new diagrams pulse derating	2003-06-30
1, 2	obsolete	2003-08-05

Patent List

Patent No.
US 6 066 861, US 6 277 301, US 6 245 259

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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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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.
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[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.