SmartLED™
Enhanced optical power LED (ATON®)

LW L88C

Abgekündigt nach OS-PD-2003-007 - wird durch LW L283 ersetzt werden
Obsolete acc. to OS-PD-2003-007 - will be replaced by LW L283

Besondere Merkmale

- **Gehäusetyp:** SMT Gehäuse SCD 80
- **Besonderheit des Bauteils:** kleinste Bauform 1,7 x 0,8 x 0,65 mm (LxBxH)
- **Farbort:** x = 0,33, y = 0,33 nach CIE 1931 (weiß)
- **typische Farbtemperatur:** 5600 K
- **Farbwiedergabeindex:** 80
- **Abstrahlwinkel:** horizontal 170°, vertikal 130°
- **Technologie:** InGaN
- **optischer Wirkungsgrad:** 10 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 5000/Rolle, ø180 mm
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

Features

- **package:** SMT package SCD 80
- **feature of the device:** smallest package 1.7 x 0.8 x 0.65 mm (LxWxH)
- **color coordinates:** x = 0.33, y = 0.33 acc. to CIE 1931 (white)
- **typ. color temperature:** 5600 K
- **color reproduction index:** 80
- **viewing angle:** horizontal 170°, vertical 130°
- **technology:** InGaN
- **optical efficiency:** 10 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 5000/reel, ø180 mm
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

Anwendungen

- flache Hinterleuchtung (LCD, Mobile Phone, Schalter, Display)
- elektrische Spielsachen
- Informationsanzeigen im Außenbereich
- Signal- und Symbolleuchten
- Markierungsbeleuchtung (Stufen, Fluchtwege u. ä.)

Applications

- flat backlighting (LCD, cellular phones, switches, displays)
- electrical toys
- outdoor displays
- signal and symbol luminary
- marker lights (e.g. steps, exit ways, etc.)

Typ Type	Emissions-farbe Color of Emission	Farbe der Lichtaustritts-fläche Color of the Light Emitting Area	Lichtstärke Luminous Intensity I_F = 20 mA I_V (mcd)	Lichtstrom Luminous Flux I_F = 20 mA Φ_V (mlm)	Bestellnummer Ordering Code
■LW L88C-Q1R1-35 ■LW L88C-R1S2-35	white	colored diffused	71 ... 140 112 ... 280	400 (typ.) 750 (typ.)	Q65110A0615 Q65110A0617
■LW L88C-Q1R1-25 ■LW L88C-R1S2-25	white	colored diffused	71 ... 140 112 ... 280	400 (typ.) 750 (typ.)	on request on request

■ Abgekündigt nach OS-PD-2003-007 - wird durch LW L283 ersetzt werden
Obsolete acc. to OS-PD-2003-007 - will be replaced by LW L283
Letzte Bestellung / Last Order: 2004-02-28
Letzte Lieferung / Last Delivery: 2004-08-31

*Anm.: -25 Farbselektiert nach Farbortgruppen, Lieferung in Einzelgruppen(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: -25 Color selection acc. to chromaticity coordinate groups, delivery in single 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	20	mA
Stoßstrom Surge current $t \leq 10$ µs, $D = 0.005$	I_{FM}	300	mA
Sperrspannung[1)] Reverse voltage	V_R	5	V
Leistungsaufnahme Power consumption $T_A \leq 25$ °C	P_{tot}	85	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)	 $R_{th\ JA}$ $R_{th\ JS}$	 500 200	 K/W K/W

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

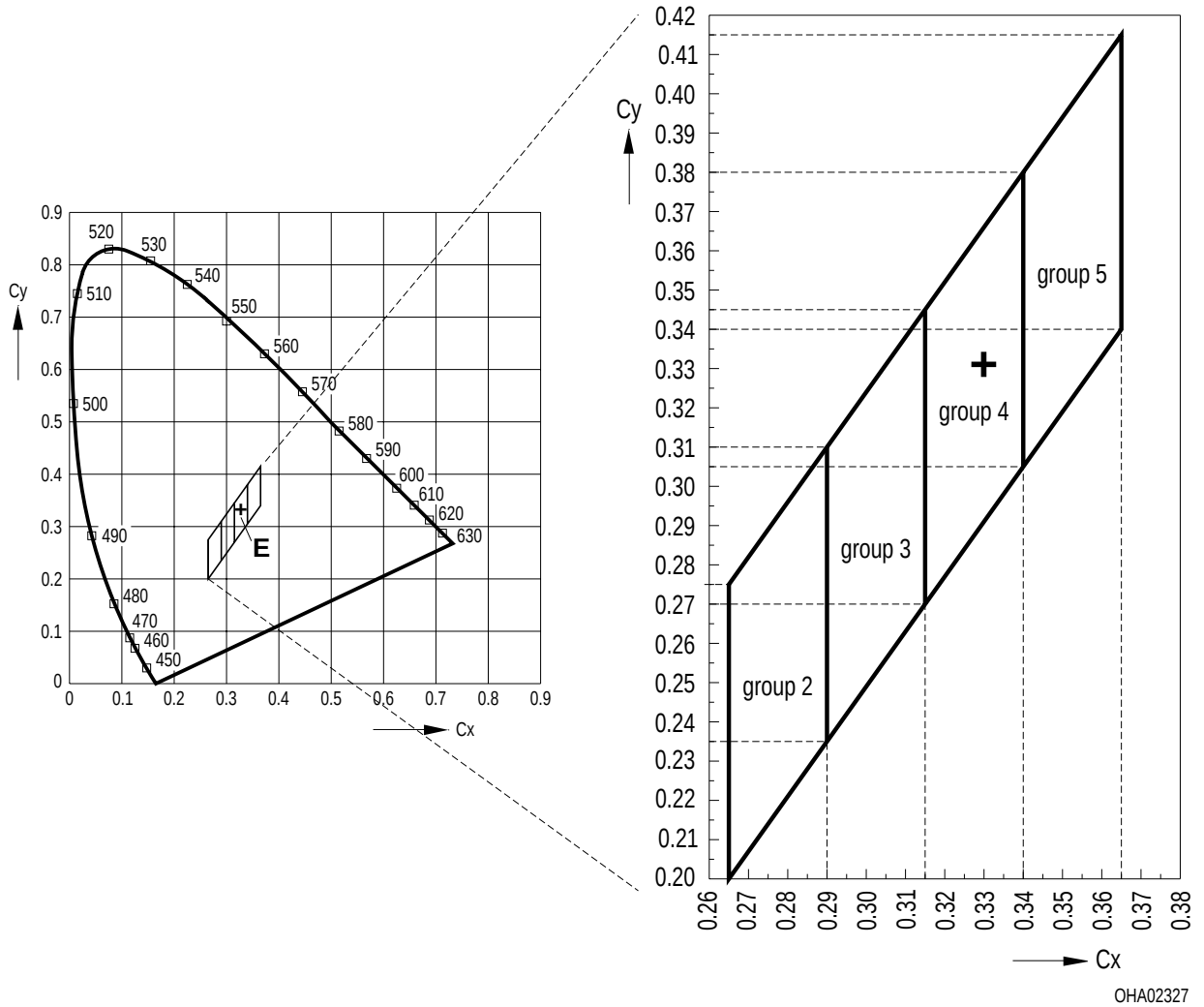
Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**		**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Farbkoordinate x nach CIE 1931[1)] Chromaticity coordinate x acc. to CIE 1931 I_F = 20 mA	(typ.)	x	0.33	–
Farbkoordinate y nach CIE 1931 Chromaticity coordinate y acc. to CIE 1931 I_F = 20 mA	(typ.)	y	0.33	–
Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V	(typ.)	2φ	170 (horizontal) 130 (vertical)	Grad deg.
Durchlassspannung [2)] Forward voltage I_F = 20 mA	(min.) (typ.) (max.)	V_F V_F V_F	3.0 3.6 4.1	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 = 20 mA; –10°C ≤ T ≤ 100°C	(typ.)	TC_x	–0.1	10^{-3}/K
Temperaturkoeffizient von y Temperature coefficient of y I_F = 20 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 = 20 mA; –10°C ≤ T ≤ 100°C	(typ.)	TC_V	– 5.0	mV/K
Optischer Wirkungsgrad Optical efficiency I_F = 20 mA	(typ.)	η_{opt}	10	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

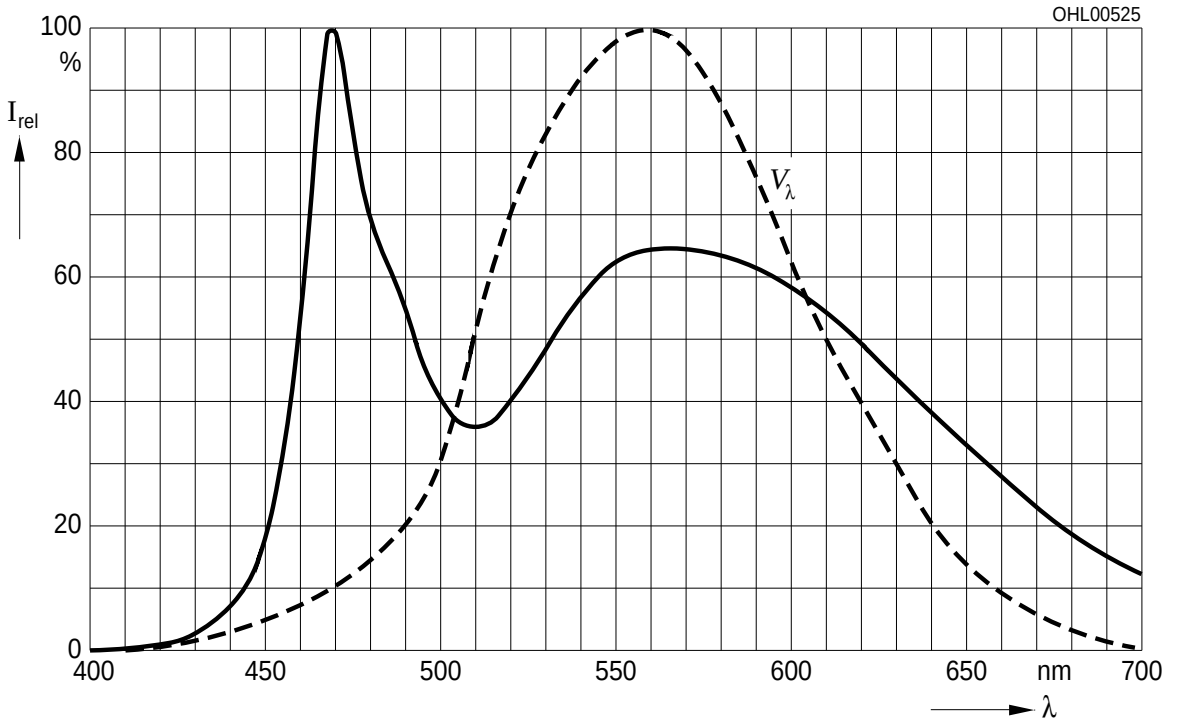
Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity I_V (mcd)	Lichtstrom Luminous Flux Φ_V (mlm)
Q1	71 ... 90	320 (typ.)
Q2	90 ... 112	400 (typ.)
R1	112 ... 140	500 (typ.)
R2	140 ... 180	640 (typ.)
S1	180 ... 224	800 (typ.)
S2	224 ... 280	1000 (typ.)

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%.

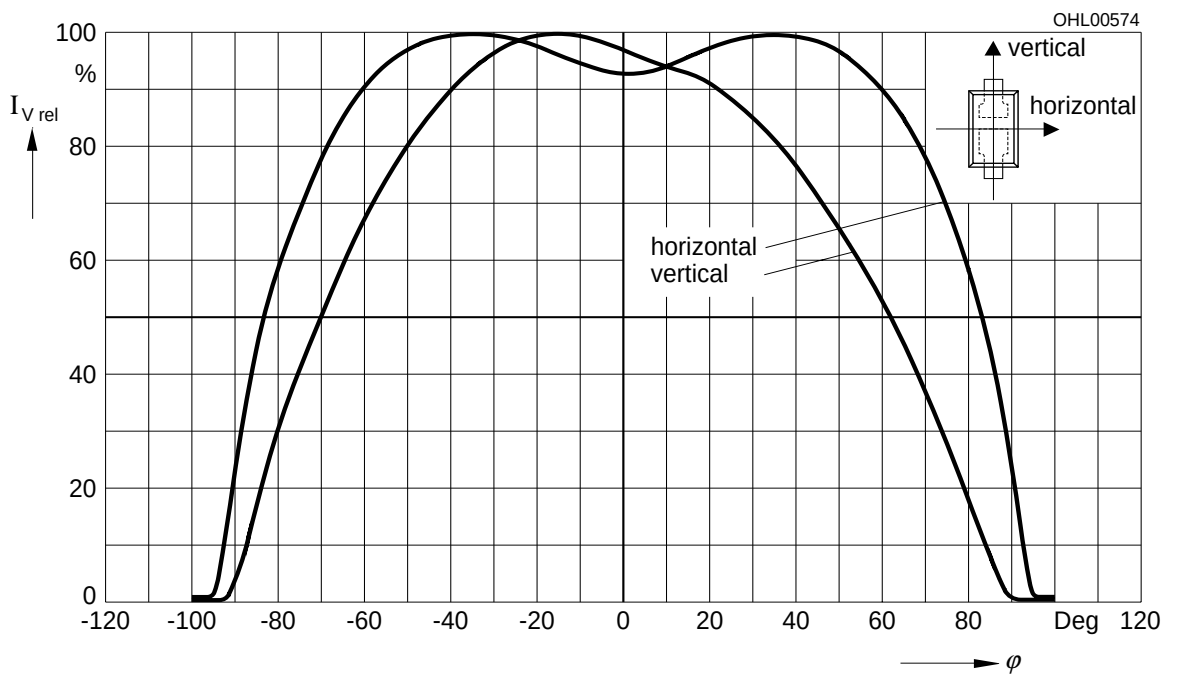
Gruppenbezeichnung auf Etikett
Group Name on Label
Beispiel: R1-3
Example: R1-3

Lichtgruppe Luminous Intensity Group	Halbgruppe Half Group	Farbortgruppe Chromaticity Coordinate Group
R	1	3

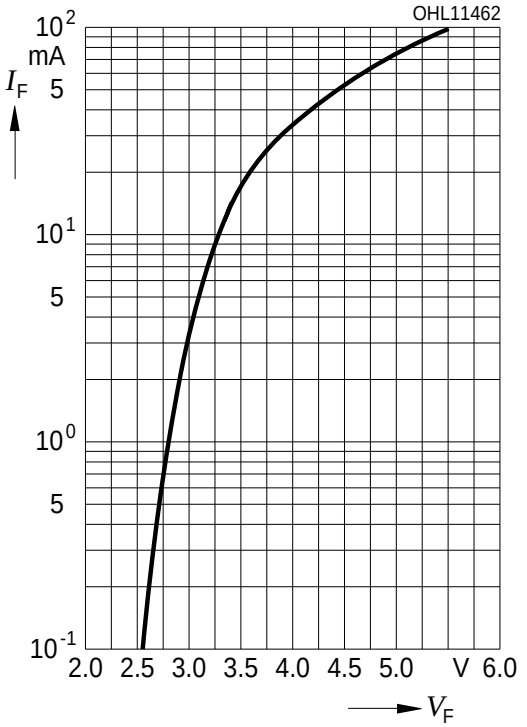
Relative spektrale Emission $I_{rel} = f(\lambda)$, $T_A = 25$ °C, $I_F = 20$ mA
Relative Spectral Emission
V(λ) = spektrale Augenempfindlichkeit
Standard eye response curve



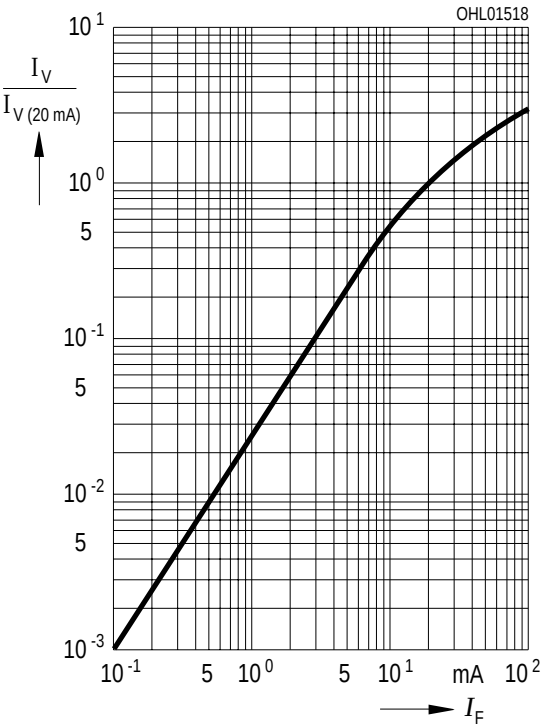
Abstrahlcharakteristik $I_{rel} = f(\varphi)$
Radiation Characteristic



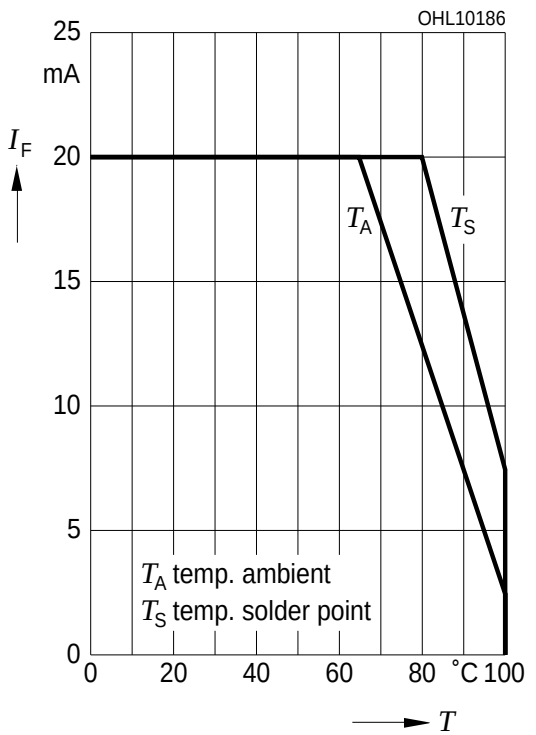
Durchlassstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



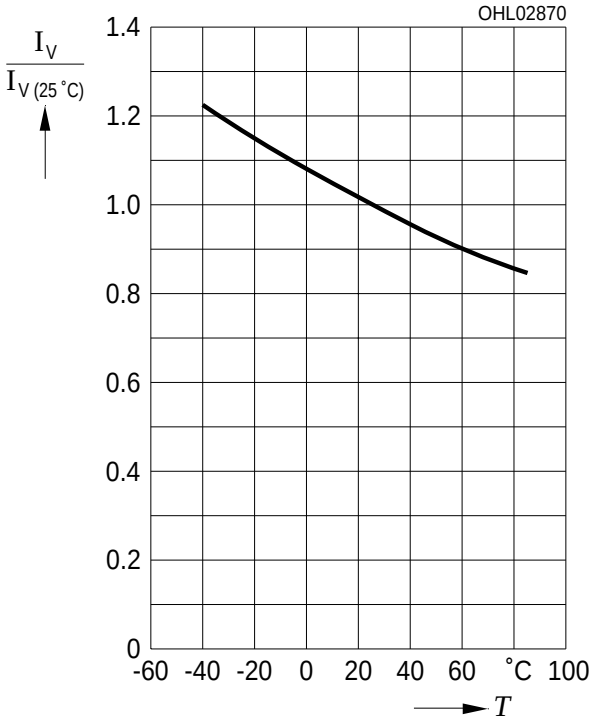
Relative Lichtstärke $I_V/I_{V(20\ mA)} = f(I_F)$
Relative Luminous Intensity
T_A = 25 °C



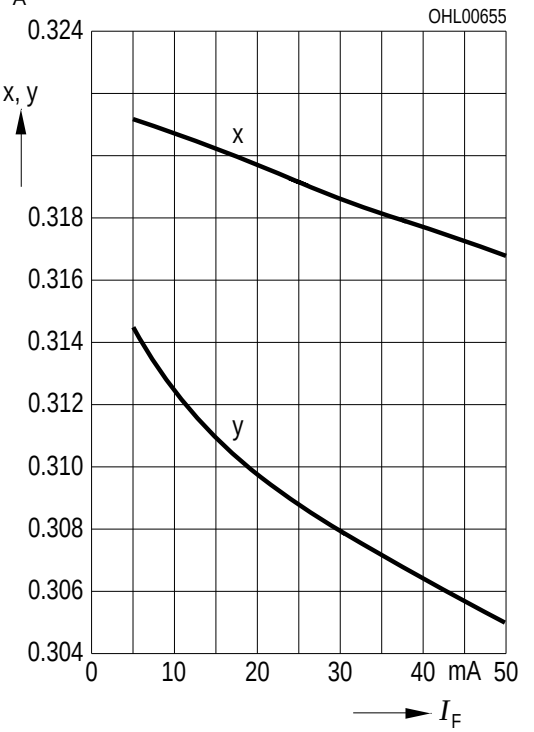
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



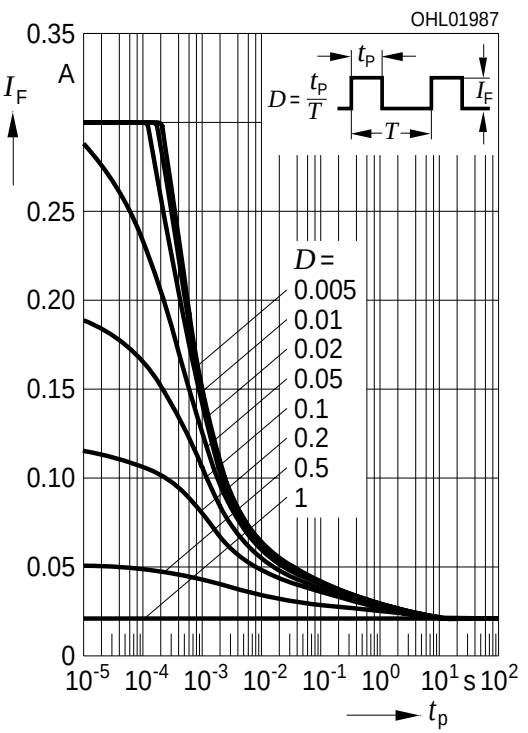
Relative Lichtstärke $I_V/I_{V(25\,°C)} = f(T_A)$
Relative Luminous Intensity
I_F = 20 mA



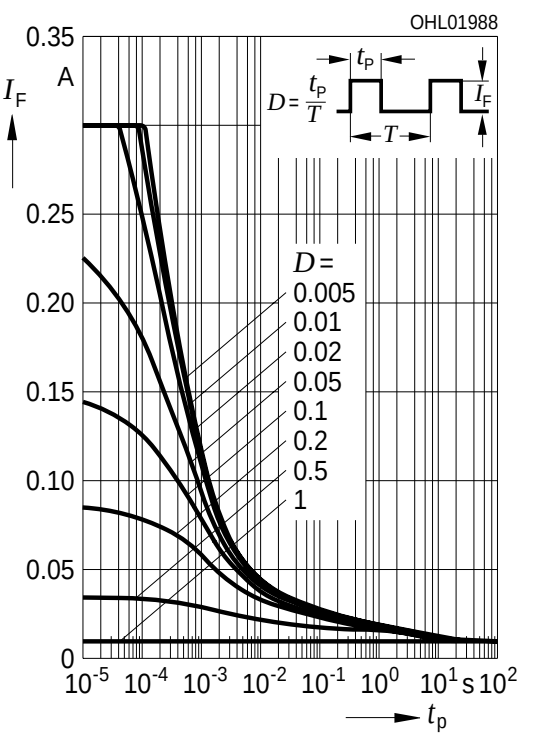
Farbortverschiebung x, y = $f(I_F)$
Chromaticity Coordinate Shift
T_A = 25 °C



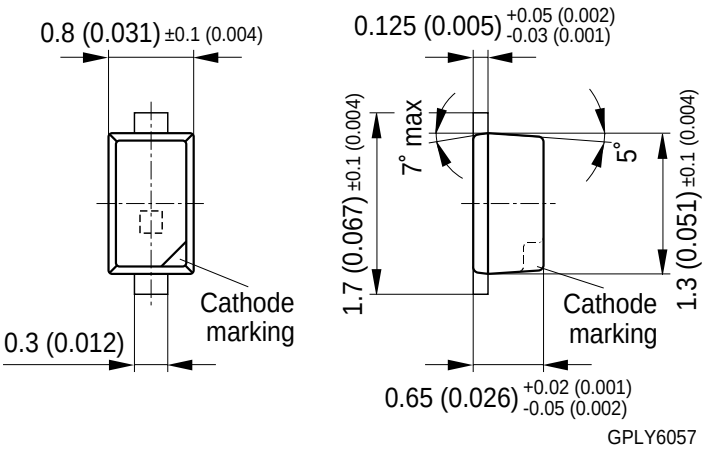
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 25 °C



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



Maßzeichnung
Package Outlines

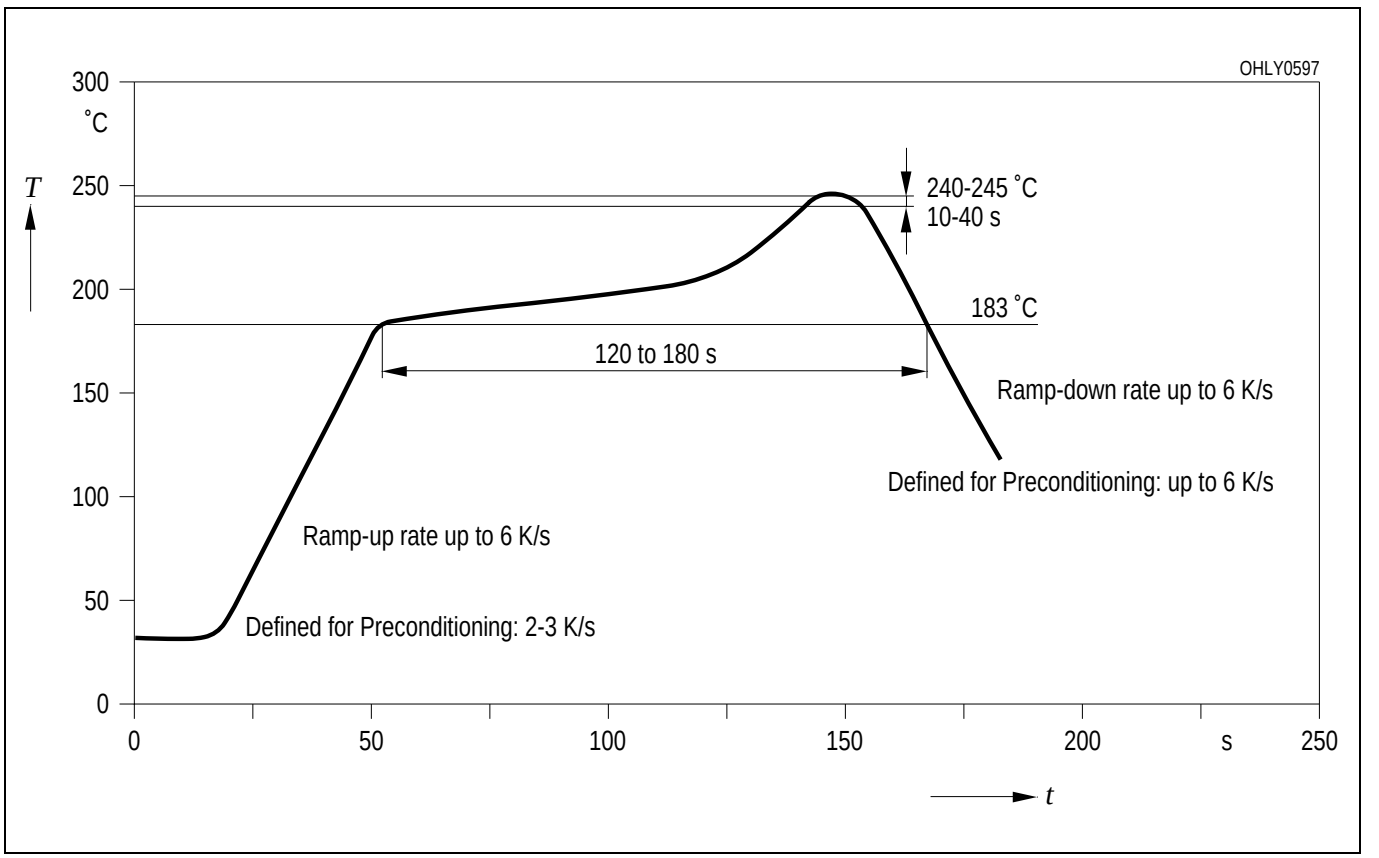


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

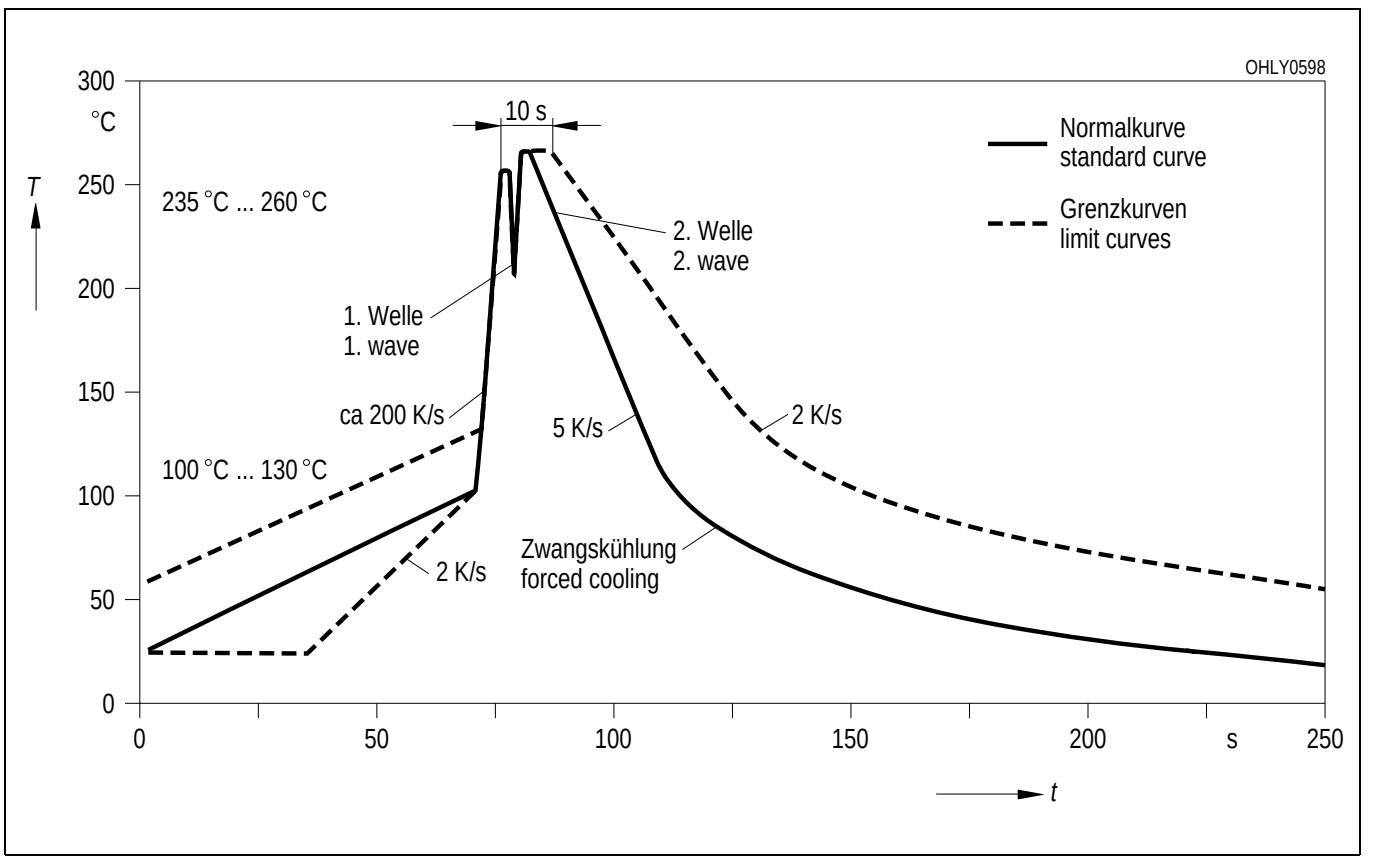
Gewicht / Approx. weight: 1.4 mg

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

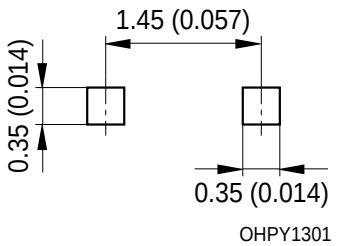
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



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

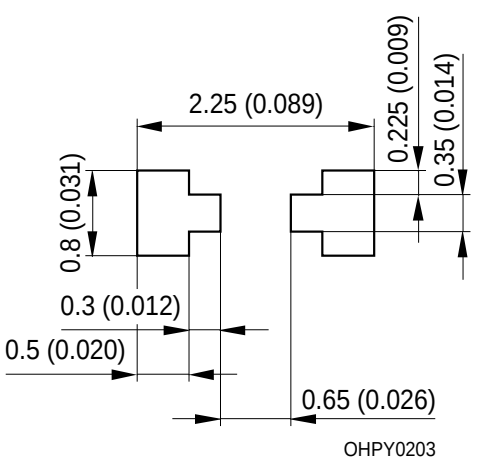


Empfohlenes Lötpaddesign IR Reflow Löten
Recommended Solder Pad IR Reflow Soldering



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

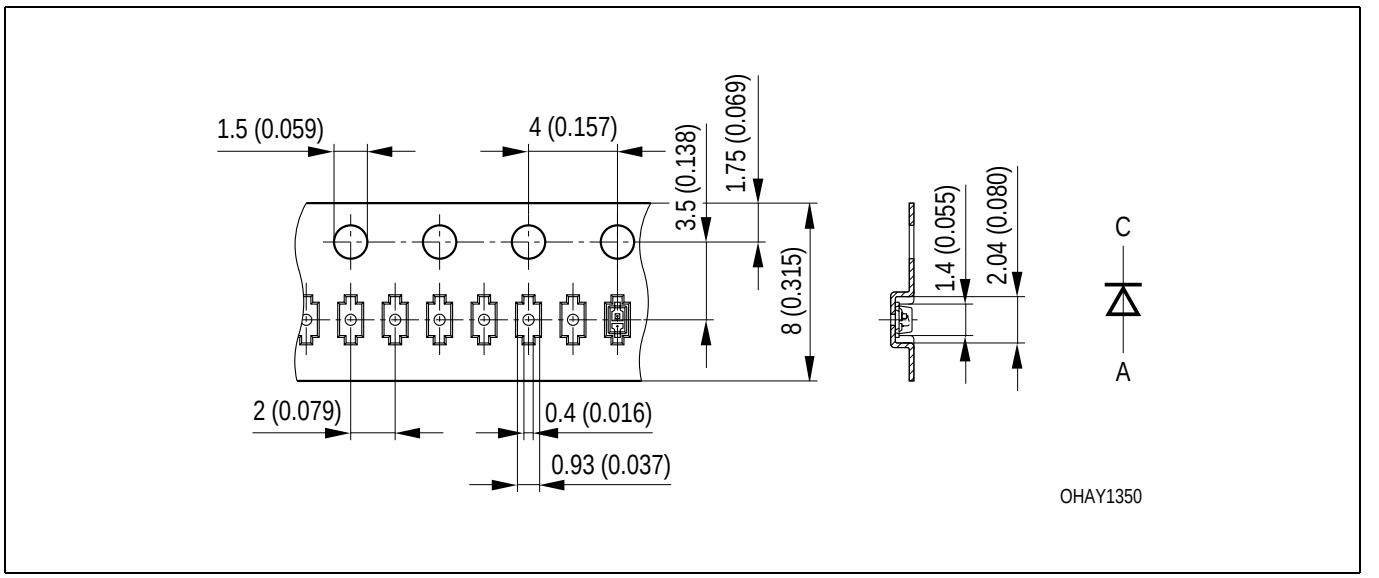
Empfohlenes Lötpaddesign verwendbar für SmartLED™ und Chipled - Bauform 0603
IR Reflow Löten
Recommended Solder Pad useable for SmartLED™ and Chipled - Package 0603
IR Reflow Soldering



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).
Empfohlene Lötpastendicke: 120 µm/ recommended thickness of solder paste: 120 µm
Gehäuse für Wellenlöten (TTW) geeignet / Package suitable for TTW-soldering

Gurtung / Polarität und Lage Verpackungseinheit 8 mm Gurt mit 5000/Rolle, ø180 mm

Method of Taping / Polarity and Orientation Packing unit 8 mm tape with 5000/reel, ø180 mm



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

Revision History: 2003-08-28		Date of change
Previous Version: 2003-06-26		
Page	**Subjects (major changes since last revision)**	
3	power consumption from 90 mW to 85 mW	
8	diagram luminous intensity from OHL01462 to OHL11462	
3	surge current	
9	diagram permissible pulse handling capability from OHL01405/01406 to 11405/11406	
2	wavelength grouping for white	
3	pad size from 16 mm^2 to 5 mm^2	
15	annotations	2002-07-25
3	reverse voltage (footnote)	2002-08-21
2,5	color coordinate grouping	2002-11-04
1, 14	tape with 5000/reel	2002-11-22
all	PCN data sheet	2003-03-31
8	new diagram permissible forward current	2003-06-02
9	new pulse derating	2003-06-26
1, 2	obsolete	2003-08-28

Published by OSRAM Opto Semiconductors GmbH
Wernerwerkstrasse 2, D-93049 Regensburg

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.