

BLUE LINE™ Hyper 3 mm (T1) LED, Non Diffused Hyper-Bright LED

LB 3336



Besondere Merkmale

- **Gehäusotyp:** nicht eingefärbtes, klares 3 mm (T1) Gehäuse
- **Besonderheit des Bauteils:** geeignet für Tastenhinterleuchtungen, Statusanzeigen und Displays
- **Wellenlänge:** 465 nm
- **Abstrahlwinkel:** 50°
- **Technologie:** GaN
- **optischer Wirkungsgrad:** 1 lm/W
- **Gruppierungsparameter:** Lichtstärke
- **Lötmethode:** Wellenlöten (TTW)
- **Verpackung:** Schüttgut, gegurtet lieferbar
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

Anwendungen

- Informationsanzeigen im Innen- und Außenbereich (z.B. im Verkehrsbereich; Laufschriftanzeigen)
- optischer Indikator
- Hinterleuchtung (Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Innenbeleuchtung im Automobilbereich (z.B. Schalterbeleuchtung, u.ä.)
- Signal- und Symbolleuchten
- Markierungsbeleuchtung (z.B. Stufen, Fluchtwege, u.ä.)

Features

- **package:** colorless, clear 3 mm (T1) package
- **feature of the device:** suitable for backlighting, status indication and displays
- **wavelength:** 465 nm
- **viewing angle:** 50°
- **technology:** GaN
- **optical efficiency:** 1 lm/W
- **grouping parameter:** luminous intensity
- **soldering methods:** TTW soldering
- **packing:** bulk, available taped on reel
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

Applications

- indoor and outdoor displays (e.g. displays for traffic; light writing displays)
- optical indicators
- backlighting (keys, displays, illuminated advertising, general lighting)
- interior automotive lighting (e.g. key backlighting, etc.)
- signal and symbol luminaire
- marker lights (e.g. steps, exit ways, etc.)

Typ	Emissions- farbe	Farbe der Lichtaustritts- fläche	Lichtstärke	Lichtstrom	Bestellnummer
Type	Color of Emission	Color of the Light Emitting Area	Luminous Intensity $I_F = 10 \text{ mA}$ $I_V \text{ (mcd)}$	Luminous Flux $I_F = 10 \text{ mA}$ $\Phi_V \text{ (mlm)}$	Ordering Code
LB 3336-MQ	blue	colorless clear	18 ... 112	25 (typ.)	Q62703Q4068
LB 3336-M			18 ... 28	15 (typ.)	Q62703Q3902
LB 3336-N			28 ... 45	23 (typ.)	Q62703Q3903
LB 3336-P			45 ... 71	36 (typ.)	Q62703Q3904

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!

Grenzwerte
Maximum Ratings

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	20	mA
Stoßstrom Surge current $t \leq 10 \mu s, D = 0.005$	I_{FM}	0.2	A
Sperrspannung ¹⁾ Reverse voltage	V_R	5	V
Leistungsaufnahme Power consumption $T_A \leq 25 \text{ °C}$	P_{tot}	90	mW
Wärmewiderstand ²⁾ Thermal resistance Sperrschicht/Umgebung Junction/air Sperrschicht/Löt­pad Junction/solder point Montage auf PC-Board FR 4 (Padgröße $\geq 16 \text{ mm}^2$) mounted on PC board FR 4 (pad size $\geq 16 \text{ mm}^2$) Minimale Beinchenlänge Minimum lead length	$R_{th JA}$ $R_{th JS}$	500 280	K/W K/W

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

²⁾ 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.

Kennwerte ($T_A = 25\text{ °C}$)**Characteristics**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge des emittierten Lichtes (typ.) Wavelength at peak emission $I_F = 10\text{ mA}$	λ_{peak}	428	nm
Dominantwellenlänge (typ.) Dominant wavelength $I_F = 10\text{ mA}$	λ_{dom}	465	nm
Spektrale Bandbreite bei 50 % $I_{\text{rel max}}$ (typ.) Spectral bandwidth at 50 % $I_{\text{rel max}}$ $I_F = 10\text{ mA}$	$\Delta\lambda$	60	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) (typ.) Viewing angle at 50 % I_V	2ϕ	50	Grad deg.
Durchlassspannung ¹⁾ (typ.) Forward voltage ¹⁾ (max.) $I_F = 10\text{ mA}$	V_F V_F	3.5 4.1	V V
Sperrstrom (typ.) Reverse current (max.) $V_R = 5\text{ V}$	I_R I_R	0.01 10	μA μA
Temperaturkoeffizient von λ_{peak} (typ.) Temperature coefficient of λ_{peak} $I_F = 10\text{ mA}; -10^\circ\text{C} \leq T \leq 100^\circ\text{C}$	$TC_{\lambda_{\text{peak}}}$	0.004	nm/K
Temperaturkoeffizient von λ_{dom} (typ.) Temperature coefficient of λ_{dom} $I_F = 10\text{ mA}; -10^\circ\text{C} \leq T \leq 100^\circ\text{C}$	$TC_{\lambda_{\text{dom}}}$	0.03	nm/K
Temperaturkoeffizient von V_F (typ.) Temperature coefficient of V_F $I_F = 10\text{ mA}; -10^\circ\text{C} \leq T \leq 100^\circ\text{C}$	TC_V	- 3.1	mV/K
Optischer Wirkungsgrad (typ.) Optical efficiency $I_F = 10\text{ mA}$	η_{opt}	1	lm/W

¹⁾ Spannungswerte werden mit einer Stromeinprägedauer von 1 ms und einer Genauigkeit von $\pm 0,1\text{ V}$ ermittelt.
 Voltages are tested at a current pulse duration of 1 ms and a tolerance of $\pm 0.1\text{ V}$.

Helligkeits-Gruppierungsschema
Luminous Intensity Groups

Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity I_V (mcd)	Lichtstrom Luminous Flux Φ_V (lm)
M	18 ... 28	15 (typ.)
N	28 ... 45	23 (typ.)
P	45 ... 71	36 (typ.)
Q	71 ... 112	58 (typ.)

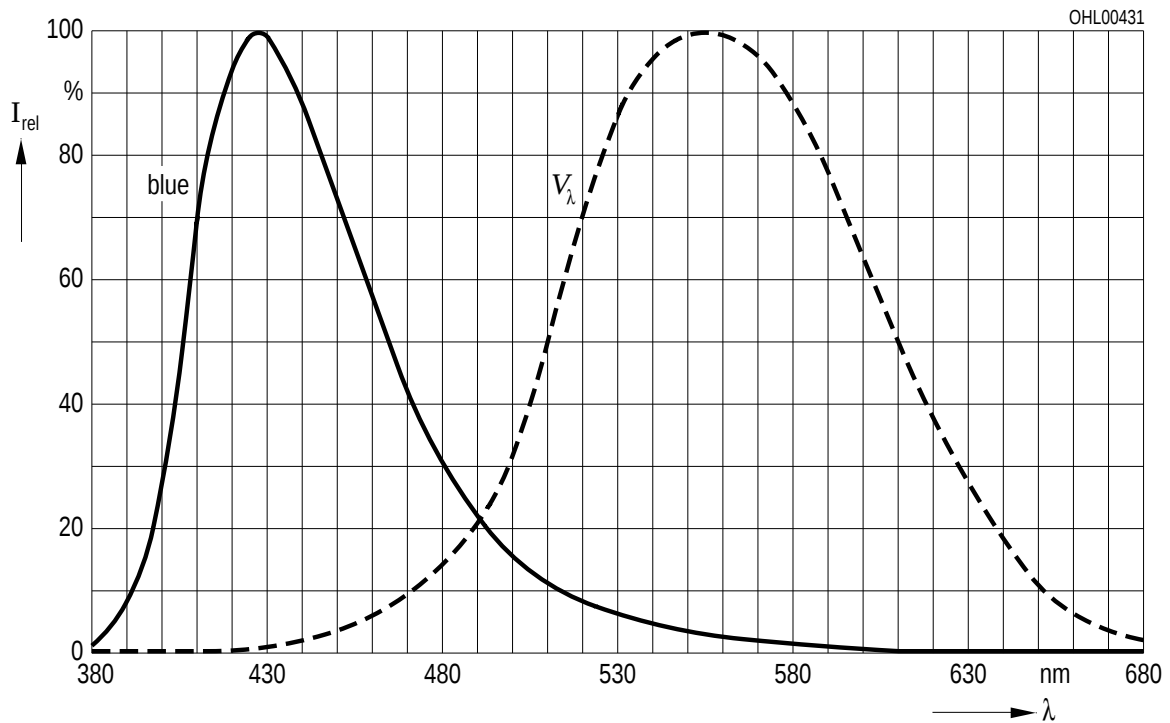
Helligkeitswerte werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von ± 11 % ermittelt.
 Luminous intensity is tested at a current pulse duration of 25 ms and a tolerance of ± 11 %.

Relative spektrale Emission $I_{\text{rel}} = f(\lambda)$, $T_A = 25^\circ\text{C}$, $I_F = 10\text{ mA}$

Relative Spectral Emission

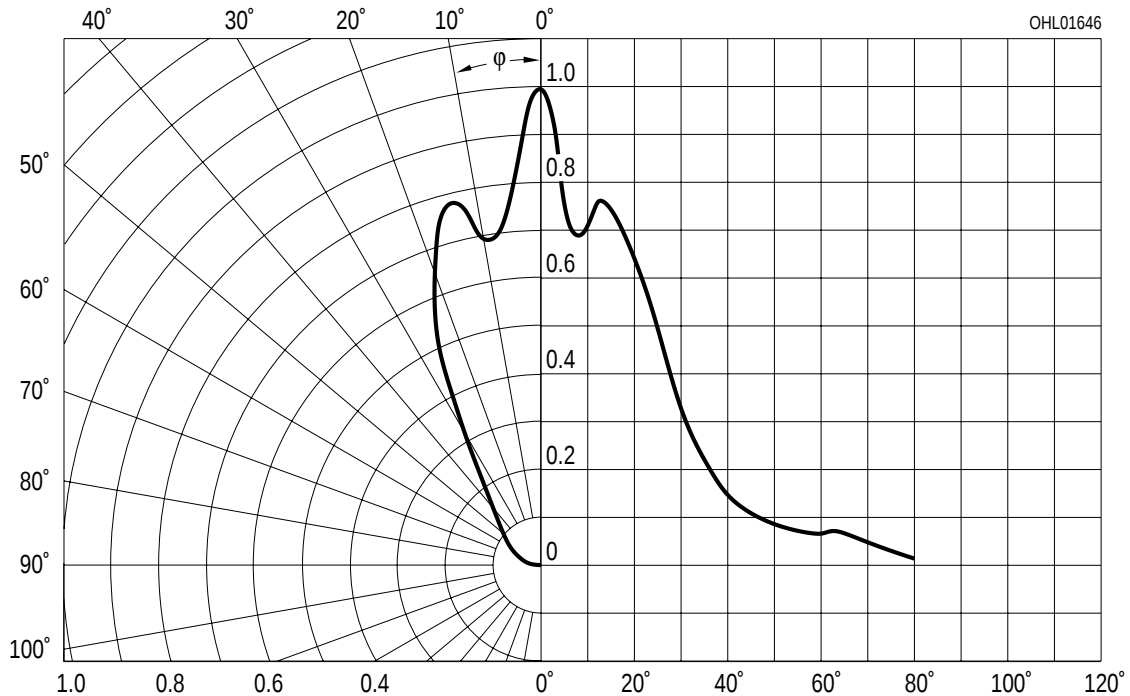
$V(\lambda)$ = spektrale Augenempfindlichkeit

Standard eye response curve



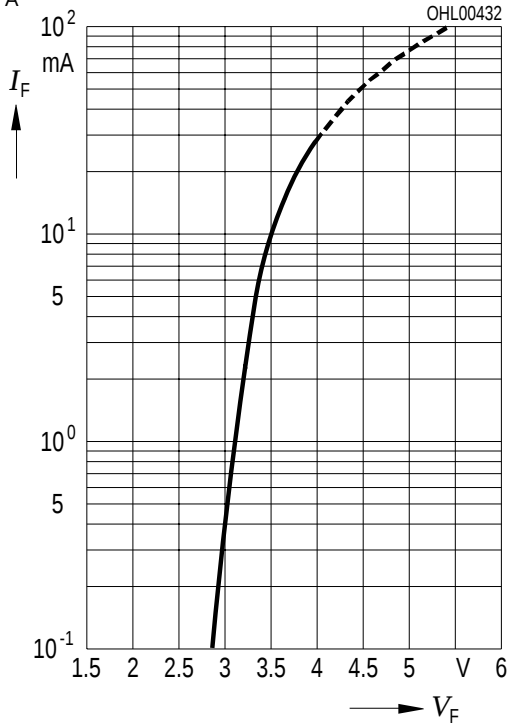
Abstrahlcharakteristik $I_{\text{rel}} = f(\varphi)$

Radiation Characteristic



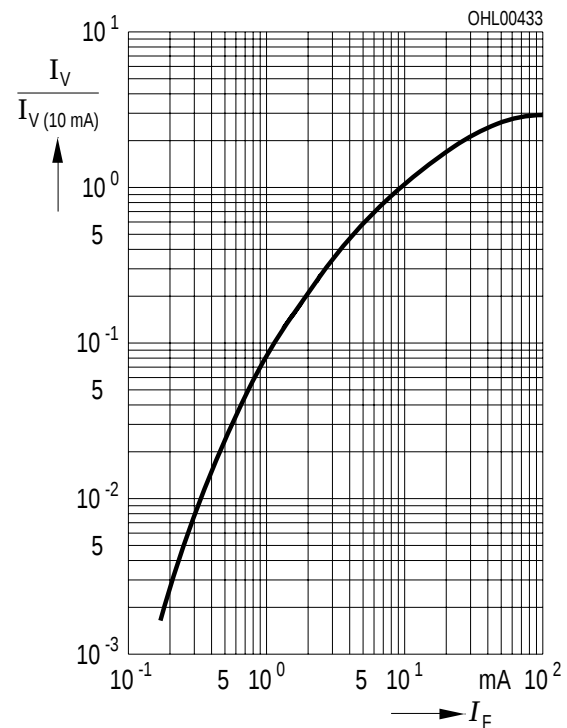
Durchlassstrom $I_F = f(V_F)$
Forward Current

$T_A = 25\text{ °C}$

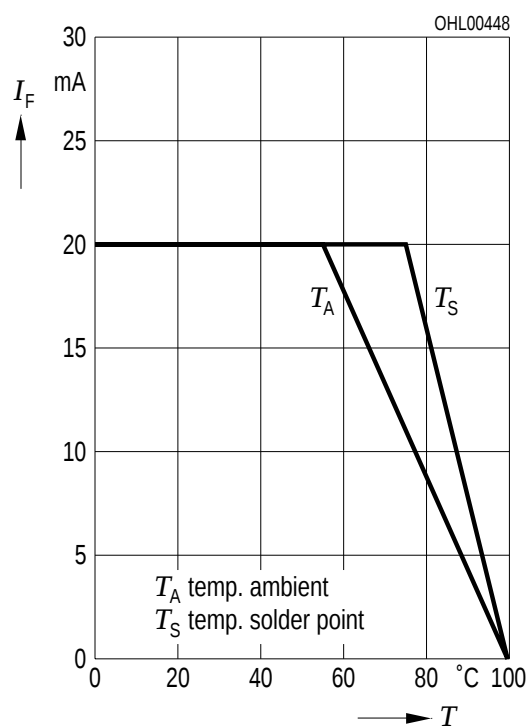


Relative Lichtstärke $I_V/I_{V(10\text{ mA})} = f(I_F)$
Relative Luminous Intensity

$T_A = 25\text{ °C}$

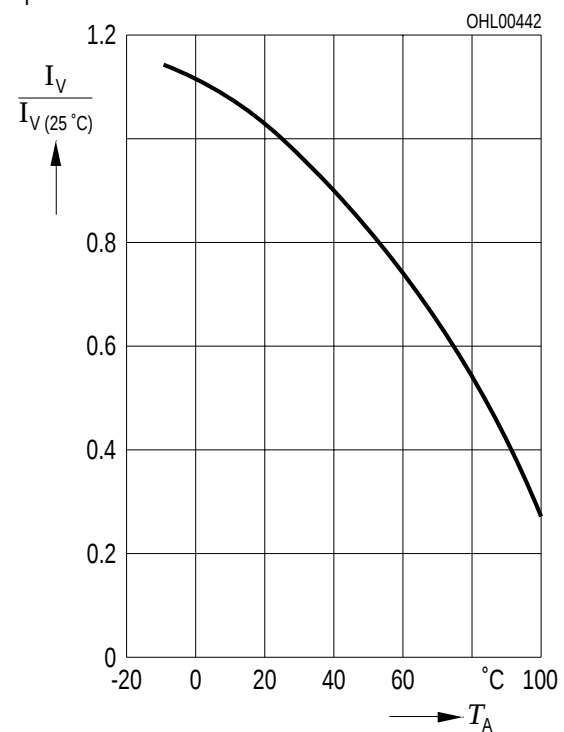


Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



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

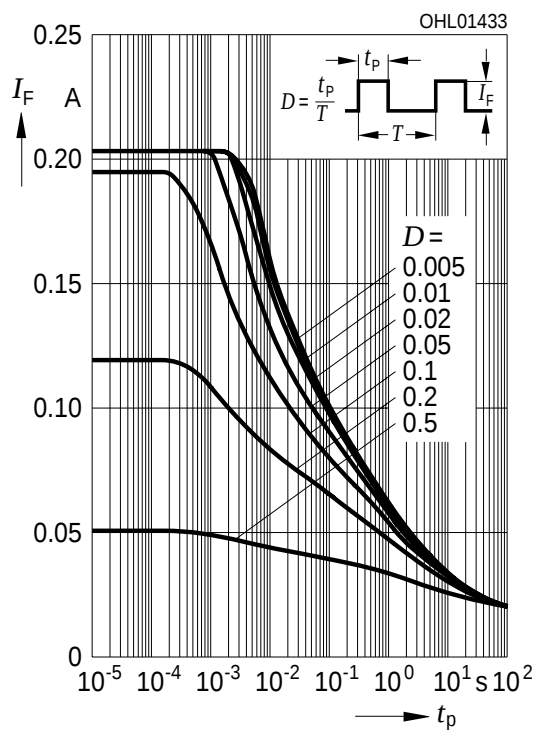
$I_F = 10\text{ mA}$



Zulässige Impulsbelastbarkeit $I_F = f(t_p)$

Permissible Pulse Handling Capability

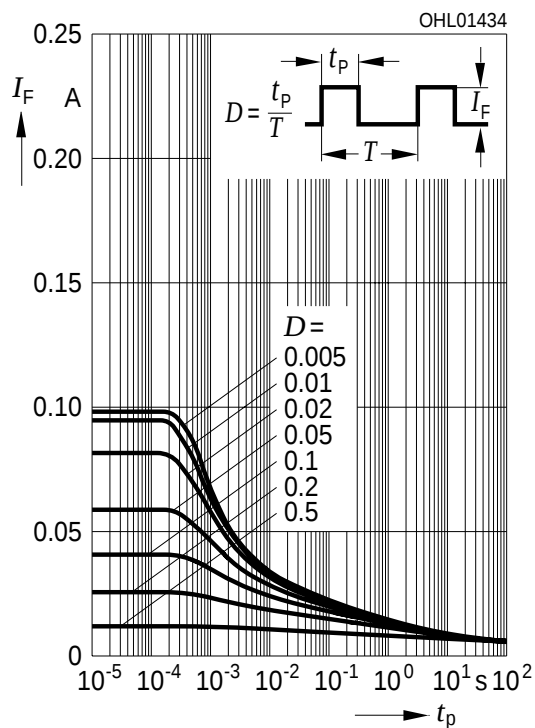
Duty cycle D = parameter, $T_A = 25\text{ °C}$



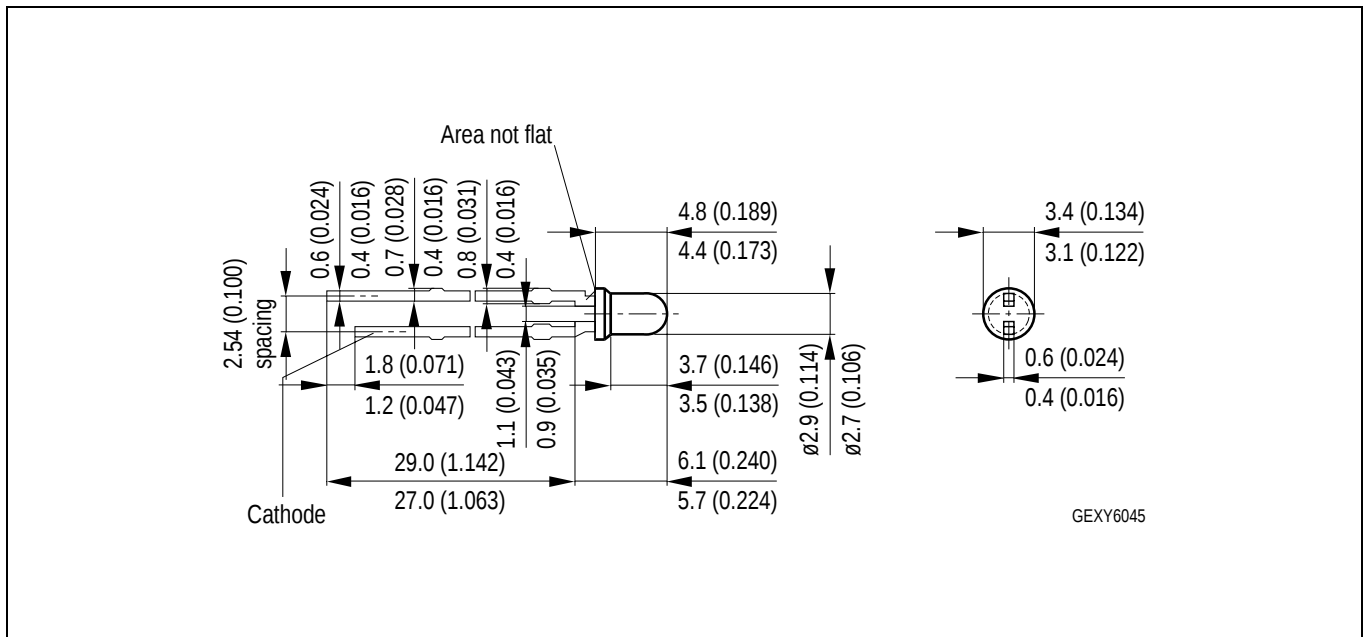
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$

Permissible Pulse Handling Capability

Duty cycle D = parameter, $T_A = 85\text{ °C}$



Maßzeichnung Package Outlines

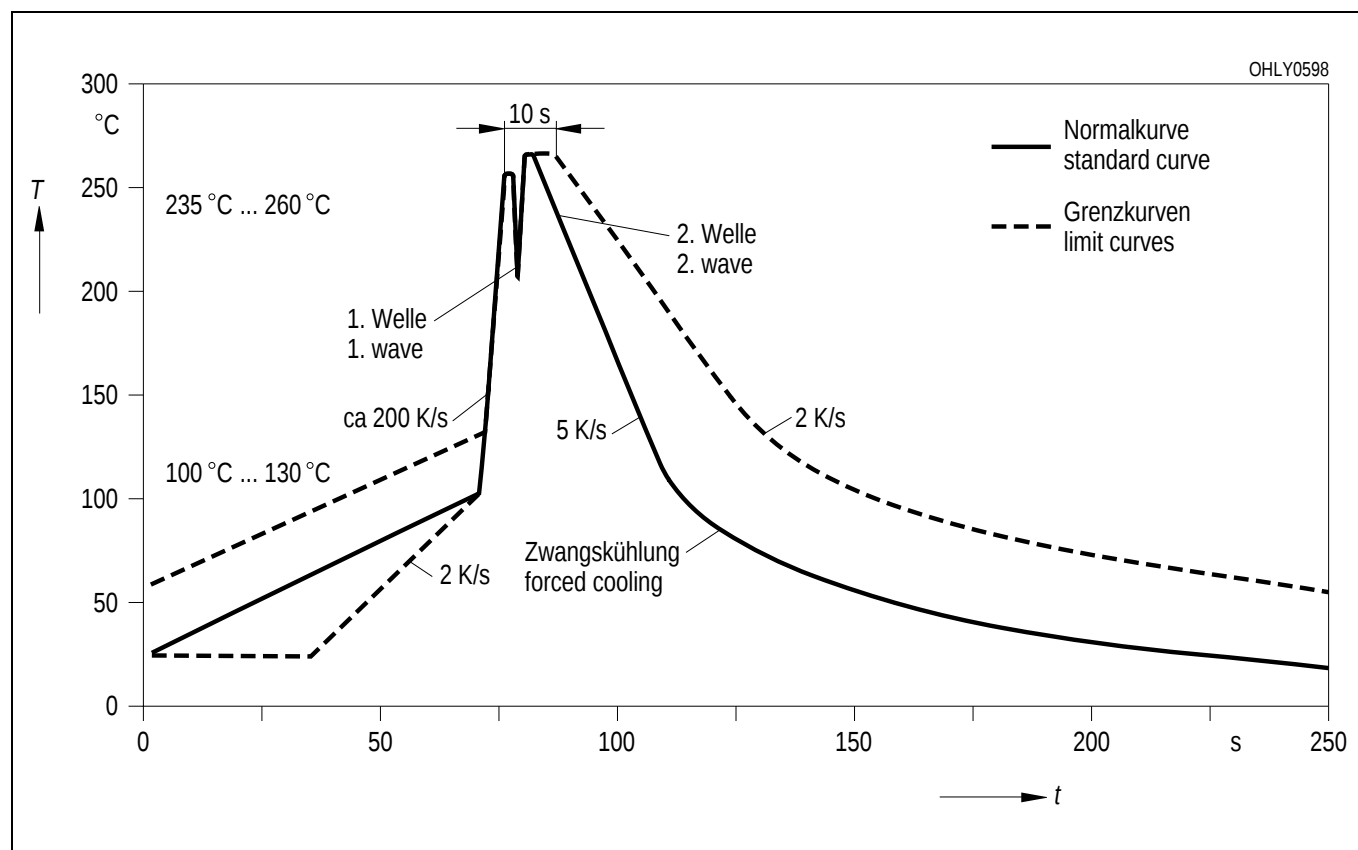


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

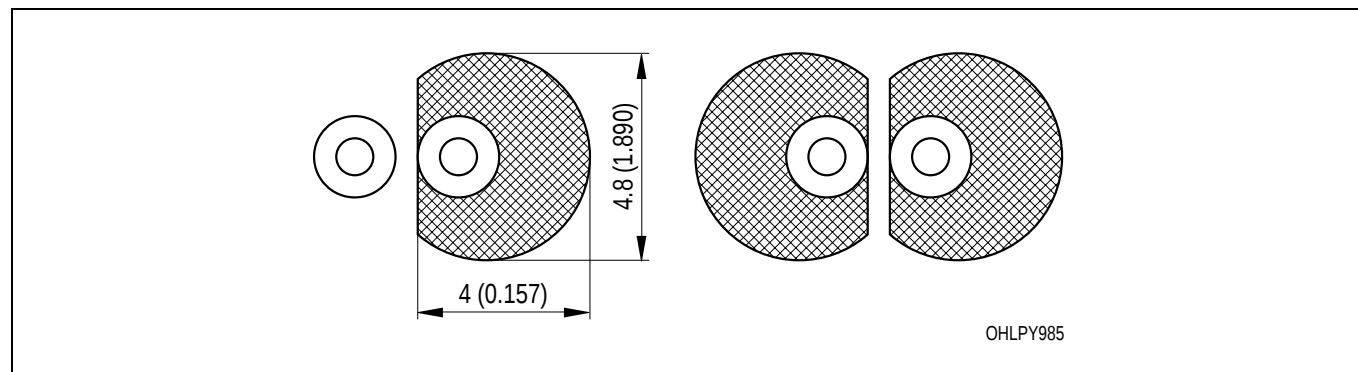
Kathodenkennung: kürzerer Lötspieß
Cathode mark: short solder lead
Gewicht / Approx. weight: 0.15 g

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: 2003-01-14		Date of change
Previous Version: 2002-09-18		
Page	Subjects (major changes since last revision)	
3	thermal resistance (footnote)	
10	annotations	2002-07-23
5	luminous intensity groups	2002-07-30

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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 components¹ may only be used in life-support devices or systems² 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.