

Hyper Mini TOPLED Santana® Hyper-Bright Low Current LED

LG M47K



Vorläufige Daten / Preliminary Data

Besondere Merkmale

- **Gehäusotyp:** weißes SMT-Gehäuse
- **Besonderheit des Bauteils:** gerichtete Abstrahlcharakteristik; Bauteil wird top-down im PCB versenkt; dadurch ideal für extrem flache Hinterleuchtungen
- **Wellenlänge:** 570 nm
- **Abstrahlwinkel:** Lambertscher Strahler (120°)
- **Technologie:** InGaAlP
- **optischer Wirkungsgrad:** 4 lm/W
- **Gruppierungsparameter:** Lichtstärke, Wellenlänge
- **Verarbeitungsmethode:** für alle SMT-Bestücktechniken geeignet
- **Lötmethode:** IR Reflow Löten
- **Vorbehandlung:** nach JEDEC Level 2
- **Gurtung:** 8-mm Gurt mit 3000/Rolle, ø180 mm oder 11800/Rolle, ø330 mm
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

Anwendungen

- Einkopplung in Lichtleiter
- Tastenhinterleuchtung
- optischer Indikator
- Hinterleuchtung (LCD, Handy, Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Innenbeleuchtung im Automobilbereich (z.B. Instrumentenbeleuchtung, u.ä.)

Features

- **package:** white SMT package
- **feature of the device:** directed radiation characteristics; LED is mounted top-down into the PCB; therefore ideal for extremely flat backlight
- **wavelength:** 570 nm
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** InGaAlP
- **optical efficiency:** 4 lm/W
- **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:** 8-mm tape with 3000/reel, ø180 mm or 11800/reel, ø330 mm
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

Applications

- coupling into light guides
- Key pad illumination
- optical indicators
- backlighting (LCD, cellular phones, switches, keys, displays, illuminated advertising, general lighting)
- Interior automotive lighting (e.g. dashboard backlighting, etc.)

Type	Emissions- farbe	Farbe der Lichtaustritts- fläche	Lichtstärke	Lichtstrom	Bestellnummer
Type	Color of Emission	Color of the Light Emitting Area	Luminous Intensity $I_F = 2 \text{ mA}$ $I_V \text{ (mcd)}$	Luminous Flux $I_F = 2 \text{ mA}$ $\Phi_V \text{ (mlm)}$	Ordering Code
LG M47K-G1H1-24	green	colorless clear	1.80 ... 3.55	8 (typ.)	Q65110A0508
LG M47K-H1J2-24			2.80 ... 7.10	15 (typ.)	Q65110A0509

Anm.: -24 gesamter Farbbereich, 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.*

Anm.: -24 Total color tolerance range, 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	+ 125	°C
Durchlassstrom Forward current	I_F	15	mA
Stoßstrom Surge current $t \leq 10 \mu s, D = 0.005$	I_{FM}	100	A
Sperrspannung ¹⁾ Reverse voltage	V_R	12	V
Leistungsaufnahme Power consumption	P_{tot}	40	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient	$R_{th JA}$	530	K/W
Sperrschicht/Lötpad Junction/soldering point Montage auf PC-Board FR 4 (Padgröße $\geq 5 \text{ mm}^2$) mounted on PC board FR 4 (pad size $\geq 5 \text{ mm}^2$)	$R_{th JS}$	280	K/W

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

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

Bezeichnung Parameter	Symbol Symbol	Werte Value	Einheit Unit
Wellenlänge des emittierten Lichtes (typ.) Wavelength at peak emission $I_F = 2\text{ mA}$	λ_{peak}	572	nm
Dominantwellenlänge ¹⁾ (typ.) Dominant wavelength ¹⁾ $I_F = 2\text{ mA}$	λ_{dom}	570 –4/+5	nm
Spektrale Bandbreite bei 50 % $I_{\text{rel max}}$ (typ.) Spectral bandwidth at 50 % $I_{\text{rel max}}$ $I_F = 2\text{ mA}$	$\Delta\lambda$	22	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) (typ.) Viewing angle at 50 % I_V	2ϕ	120	Grad deg.
Durchlassspannung ²⁾ (typ.) Forward voltage ²⁾ (max.) $I_F = 2\text{ mA}$	V_F V_F	1.8 2.2	V V
Sperrstrom (typ.) Reverse current (max.) $V_R = 12\text{ V}$	I_R I_R	0.01 10	μA μA
Temperaturkoeffizient von λ_{peak} (typ.) Temperature coefficient of λ_{peak} $I_F = 30\text{ mA}; -10^\circ\text{C} \leq T \leq 100^\circ\text{C}$	$TC_{\lambda_{\text{peak}}}$	0.11	nm/K
Temperaturkoeffizient von λ_{dom} (typ.) Temperature coefficient of λ_{dom} $I_F = 30\text{ mA}; -10^\circ\text{C} \leq T \leq 100^\circ\text{C}$	$TC_{\lambda_{\text{dom}}}$	0.10	nm/K
Temperaturkoeffizient von V_F (typ.) Temperature coefficient of V_F $I_F = 30\text{ mA}; -10^\circ\text{C} \leq T \leq 100^\circ\text{C}$	TC_V	– 2.3	mV/K
Optischer Wirkungsgrad (typ.) Optical efficiency $I_F = 2\text{ mA}$	η_{opt}	4	lm/W

¹⁾ Wellenlängen werden mit einer Stromeinprägungsdauer von 25 ms und einer Genauigkeit von $\pm 1\text{ nm}$ ermittelt.
Wavelengths are tested at a current pulse duration of 25 ms and a tolerance of $\pm 1\text{ nm}$.

²⁾ Spannungswerte werden mit einer Stromeinprägungsdauer 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 $\pm 0.1\text{ V}$.

¹⁾ **Wellenlängengruppen**
Wavelength groups

Gruppe Group	green		Einheit Unit
	min.	max.	
2	566	569	nm
3	569	572	nm
4	572	575	nm

Helligkeits-Gruppierungsschema
Luminous Intensity Groups

Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity I_V (mcd)	Lichtstrom Luminous Flux Φ_V (lm)
G1	1.80 ... 2.24	6.0 (typ.)
G2	2.24 ... 2.80	7.6 (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.)

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: G2-4

Example: G2-4

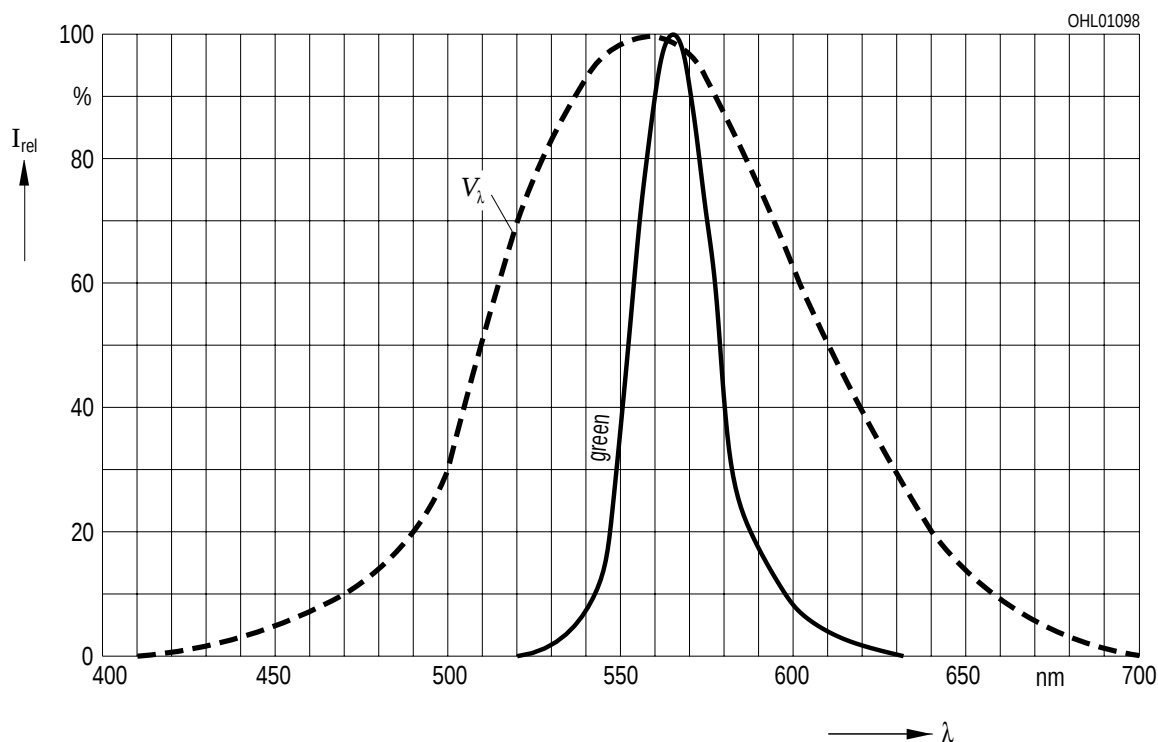
Lichtgruppe Luminous Intensity Group	Halbgruppe Half Group	Wellenlänge Wavelength
G	2	4

Relative spektrale Emission $I_{\text{rel}} = f(\lambda)$, $T_A = 25\text{ °C}$, $I_F = 2\text{ mA}$

Relative Spectral Emission

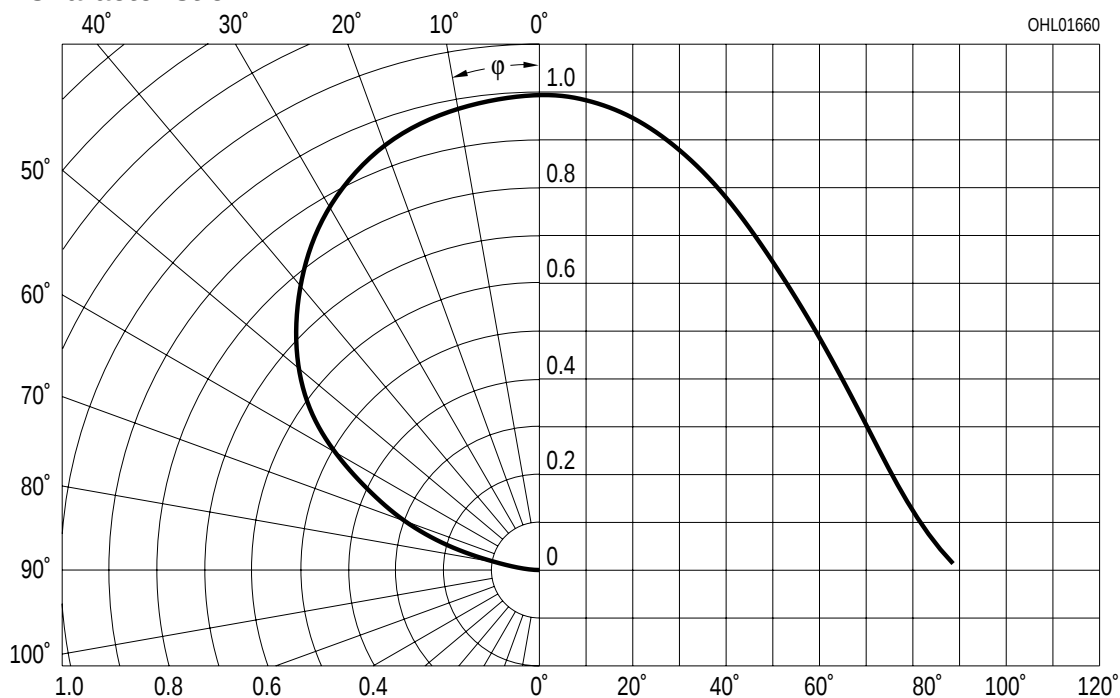
$V(\lambda)$ = spektrale Augenempfindlichkeit

Standard eye response curve



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

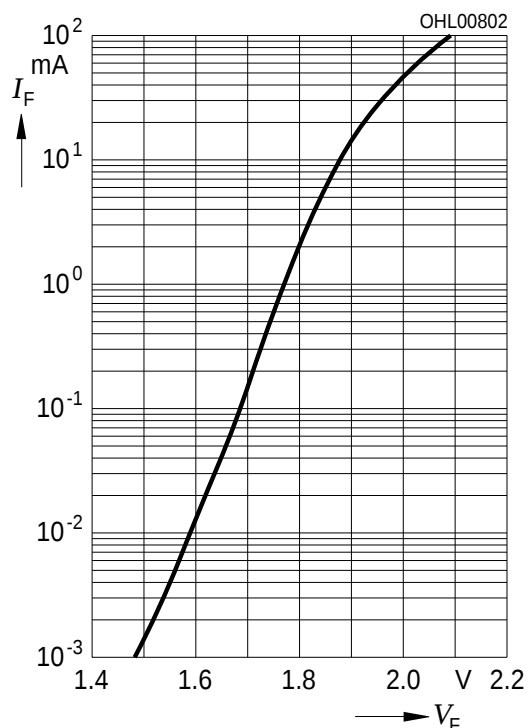
Radiation Characteristic



Durchlassstrom $I_F = f(V_F)$

Forward Current

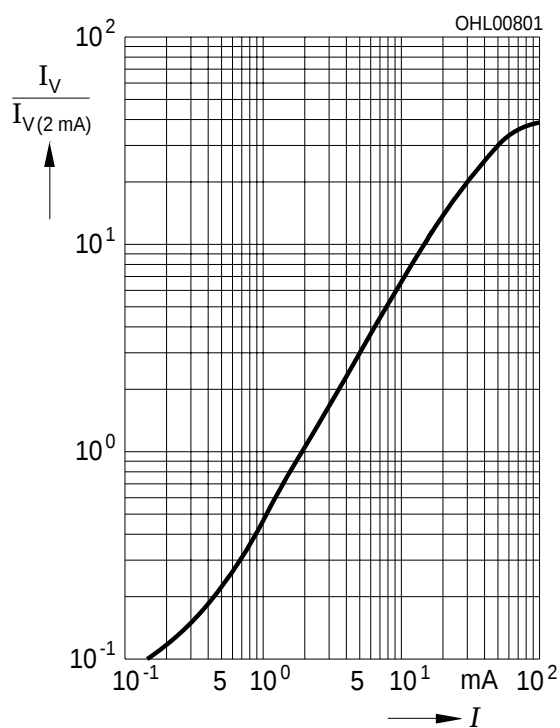
$T_A = 25\text{ °C}$



Relative Lichtstärke $I_V / I_{V(2\text{ mA})} = f(I_F)$

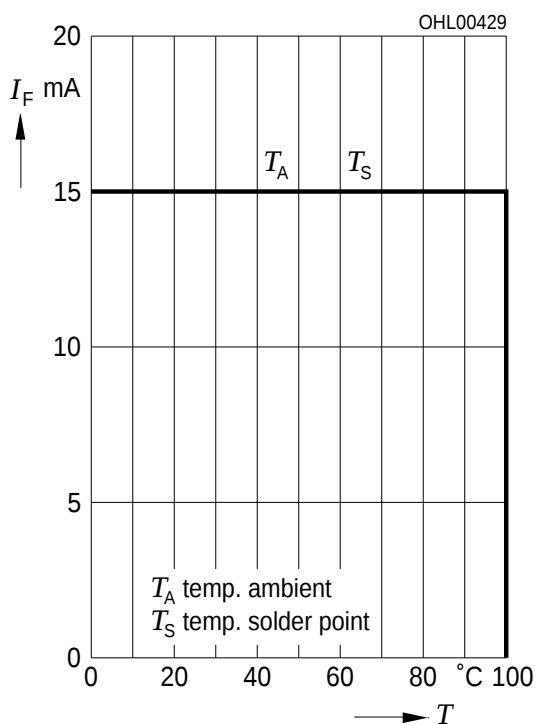
Relative Luminous Intensity

$T_A = 25\text{ °C}$



Maximal zulässiger Durchlassstrom $I_F = f(T_A)$

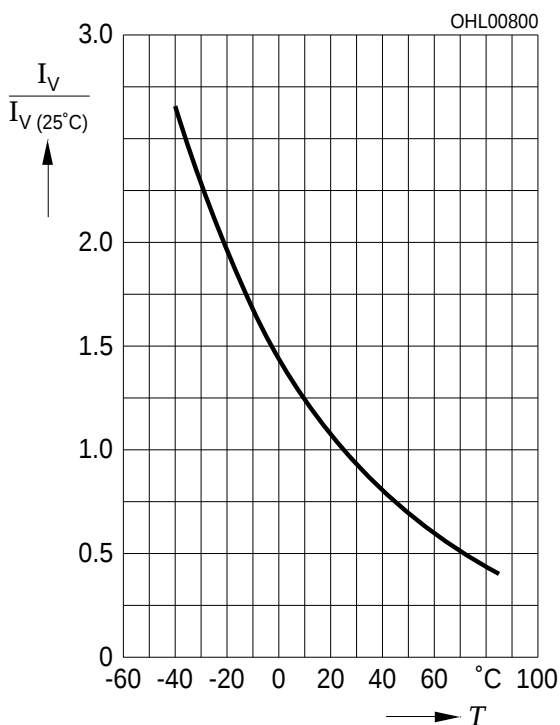
Max. Permissible Forward Current

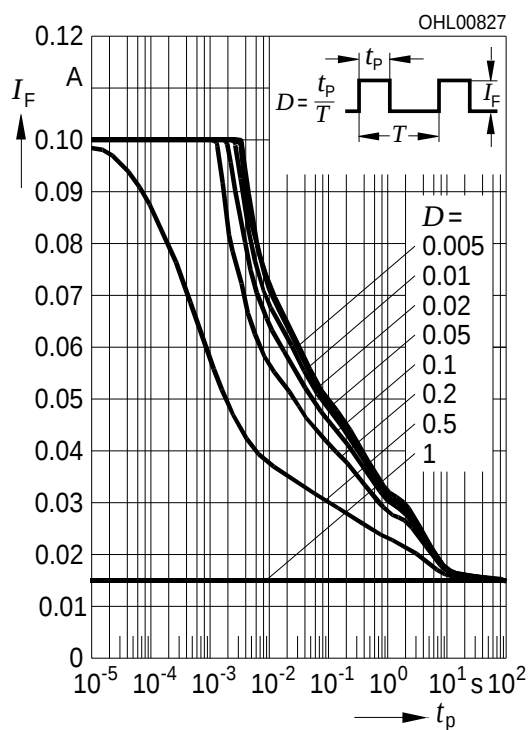
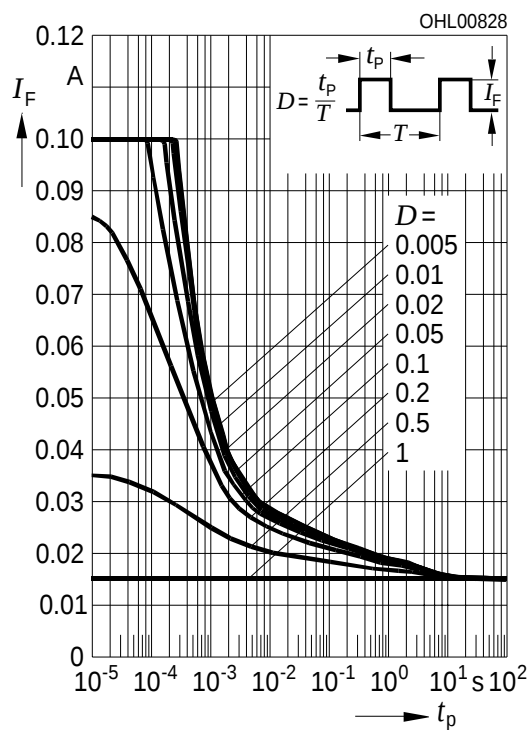


Relative Lichtstärke $I_V / I_{V(25\text{ °C})} = f(T_A)$

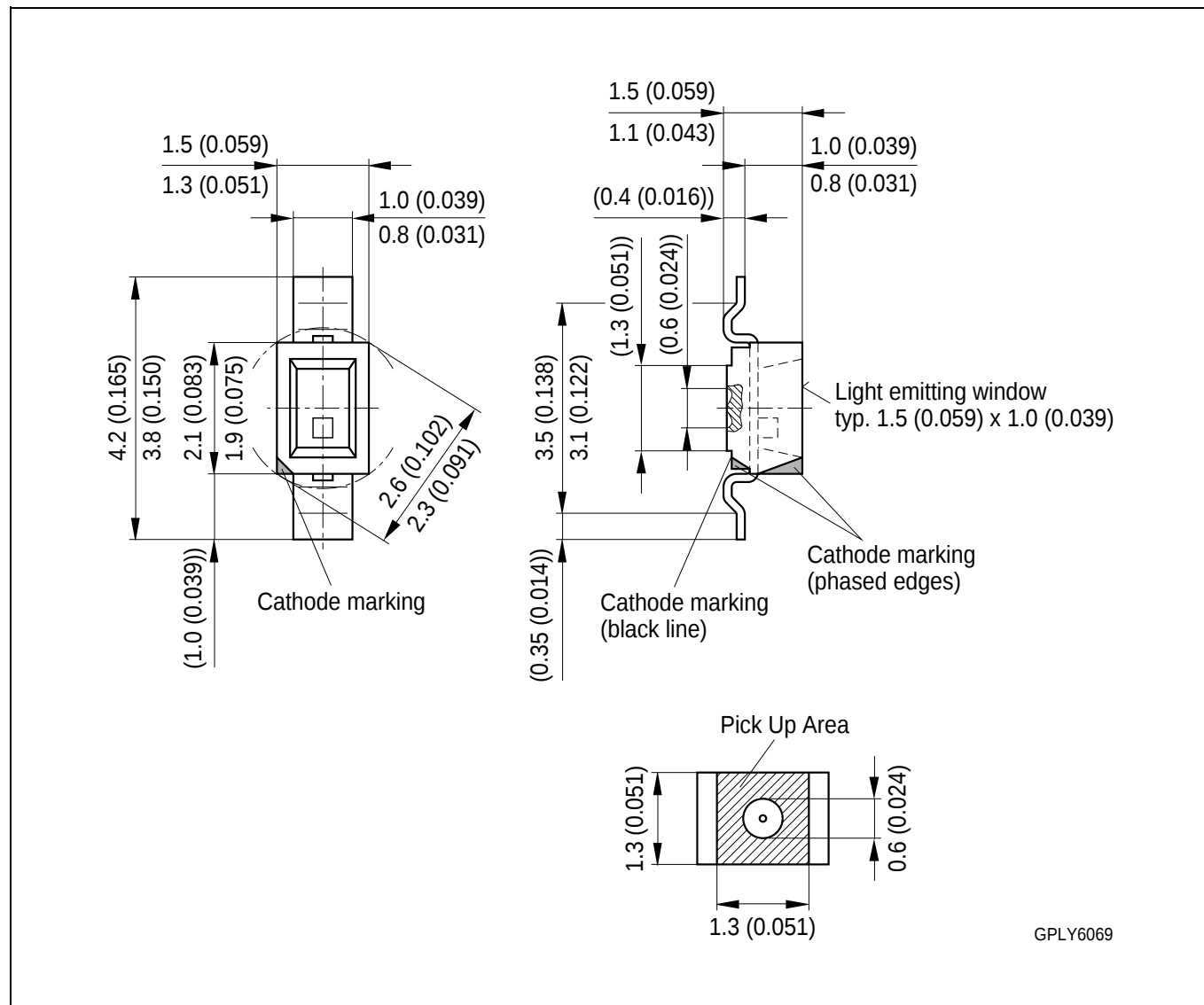
Relative Luminous Intensity

$I_F = 2\text{ mA}$



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

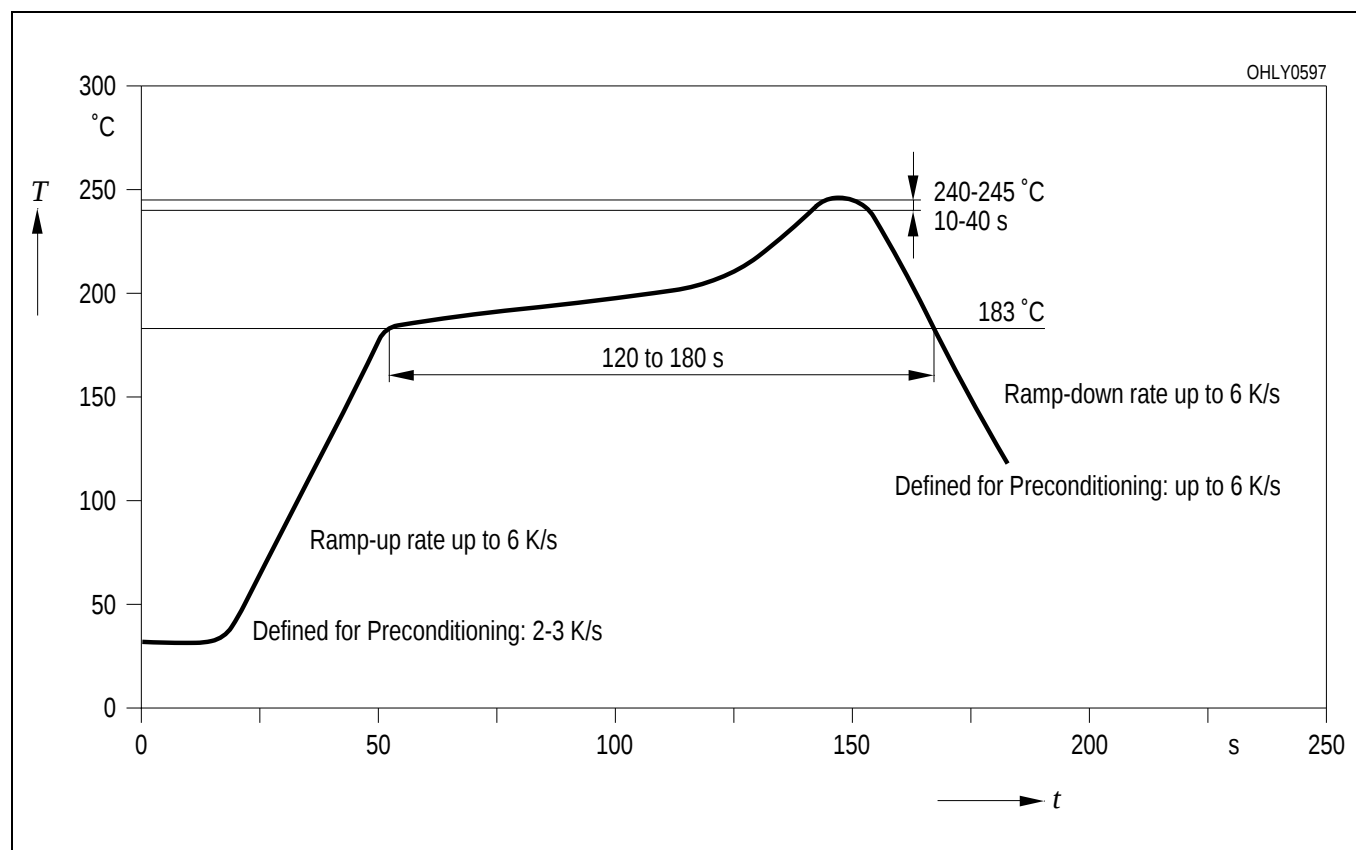


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

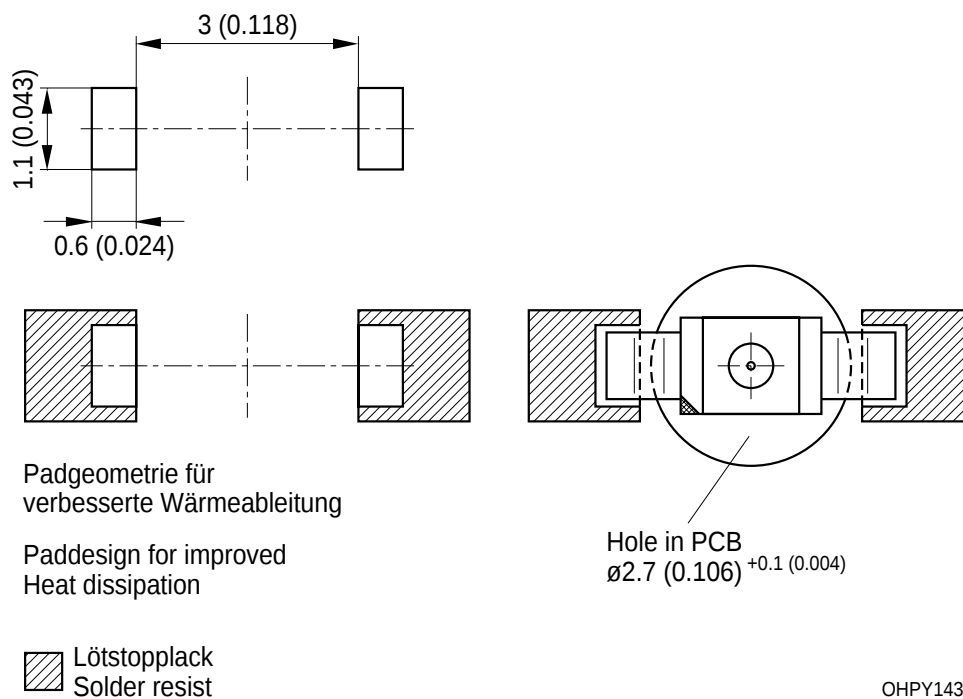
Kathodenkennung: abgeschrägte Ecke
Cathode mark: bevelled edge
Gewicht / Approx. weight: 10 mg

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)



Empfohlenes Lötpaddesign IR-Reflow Löten
Recommended Solder Pad IR Reflow Soldering



OHPY1438

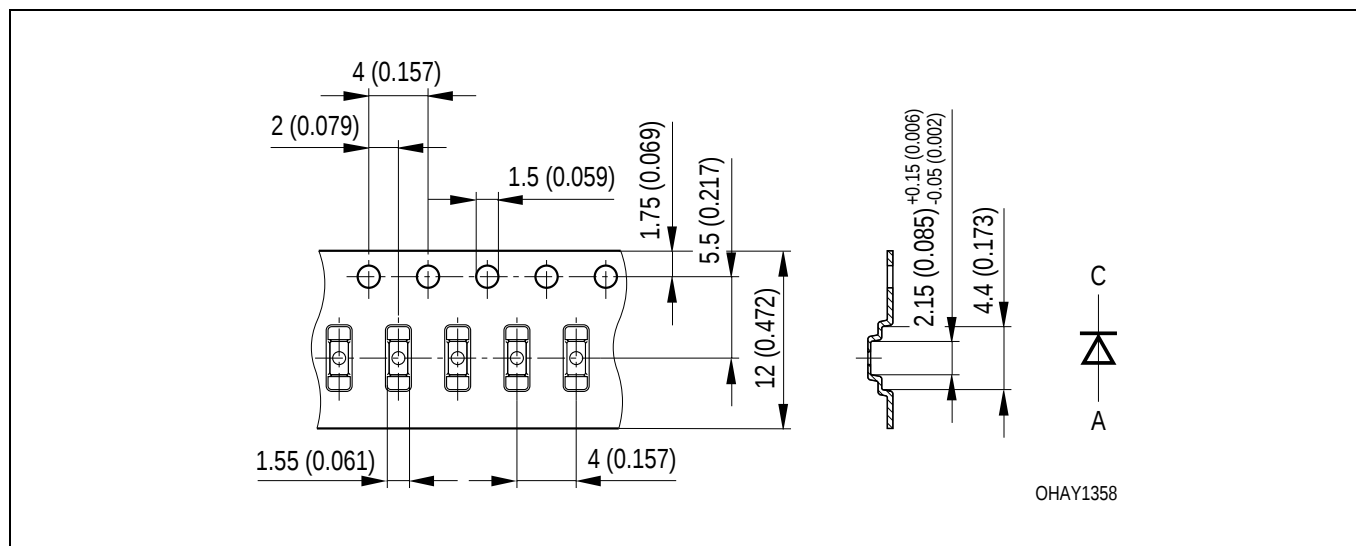
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).
 Gehäuse hält TTW-Löthitze aus / Package able to withstand TTW-soldering heat

Gurtung / Polarität und Lage

Verpackungseinheit 3000/Rolle, ø180 mm oder
11800/Rolle, ø330 mm

Method of Taping / Polarity and Orientation

Packing unit 3000/reel, ø180 mm or
11800/reel, ø330 mm



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

Revision History: 2002-11-04		Date of change
Previous Version: -		
Page	Subjects (major changes since last revision)	

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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.

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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.