

Hyper Mini TOPLED® Hyper-Bright Low Current LED

LG M67K, LP M67K



Vorläufige Daten / Preliminary Data

Besondere Merkmale

- **Gehäusotyp:** weißes SMT-Gehäuse
- **Besonderheit des Bauteils:** kleine Bauform
2,3 mm x 1,3 mm x 1,4 mm
- **Wellenlänge:** 570 nm (grün),
560 nm (pure green)
- **Abstrahlwinkel:** Lambertischer Strahler (120°)
- **Technologie:** InGaAIP
- **optischer Wirkungsgrad:** 4 lm/W (grün),
1,2 lm/W (pure green)
- **Gruppierungsparameter:** Lichtstärke,
Wellenlänge
- **Verarbeitungsmethode:** für alle
SMT-Bestücktechniken geeignet
- **Lötmethode:** IR Reflow Löten und
Wellenlöten (TTW)
- **Vorbehandlung:** nach JEDEC Level 2
- **Gurtung:** 8-mm Gurt mit 3000/Rolle, \varnothing 180 mm
oder 12000/Rolle, \varnothing 330 mm
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach
EOS/ESD-5.1-1993

Anwendungen

- Informationsanzeigen im Innen- und
Außenbereich
- optischer Indikator
- Einkopplung in Lichtleiter
- Hinterleuchtung (z. B. LCD, Schalter, Tasten
usw. in Display- und Werbebeleuchtung,
Telekommunikation, weißer Ware,
Allgemeinbeleuchtung)
- Innenbeleuchtung im Automobilbereich (z.B. In-
strumentenbeleuchtung)
- Signal- und Symbolleuchten

Features

- **package:** white SMT package
- **feature of the device:** small package
2.3 mm x 1.3 mm x 1.4 mm
- **wavelength:** 570 nm (green),
560 nm (pure green)
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** InGaAIP
- **optical efficiency:** 4 lm/W (green),
1.2 lm/W (pure green)
- **grouping parameter:** luminous intensity,
wavelength
- **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 3000/reel, \varnothing 180 mm
or 12000/reel, \varnothing 330 mm
- **ESD-withstand voltage:** up to 2 kV acc. to
EOS/ESD-5.1-1993

Applications

- indoor and outdoor displays
- optical indicators
- coupling into light guides
- backlighting (e.g. LCD, switches, keys etc. in
displays, illuminated advertising,
telecommunication, white goods,
general lighting)
- interior automotive lighting (e.g. dashboard
backlighting)
- signal and symbol luminaire

Typ	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 M67K-G1H1-24	green	colorless clear	1.80 ... 3.55	8 (typ.)	Q65110A0510
LG M67K-H1J2-24			2.80 ... 7.10	15 (typ.)	Q65110A0511
LP M67K-D2E2-25	pure green	colorless clear	0.56 ... 1.12	2.5 (typ.)	Q65110A0532
LP M67K-E2G1-25			0.90 ... 2.24	4.7 (typ.)	Q65110A0533

Anm.: -24 gesamter Farbbereich, Lieferung in Einzelgruppen (siehe **Seite 5**)
 -25 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**)
 -25 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/Löt看垫 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
		LG	LP	
Wellenlänge des emittierten Lichtes (typ.) Wavelength at peak emission $I_F = 2\text{ mA}$	λ_{peak}	572	562	nm
Dominantwellenlänge ¹⁾ (typ.) Dominant wavelength ¹⁾ $I_F = 2\text{ mA}$	λ_{dom}	570 -4/+5	560 ± 6	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	22	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) (typ.) Viewing angle at 50 % I_V	2ϕ	120	120	Grad deg.
Durchlassspannung ²⁾ (typ.) Forward voltage ²⁾ (max.) $I_F = 2\text{ mA}$	V_F ²⁾ V_F	1.8 2.2	1.8 2.2	V V
Sperrstrom (typ.) Reverse current (max.) $V_R = 12\text{ V}$	I_R I_R	0.01 10	0.01 10	μA μA
Temperaturkoeffizient von λ_{peak} (typ.) Temperature coefficient of λ_{peak} $I_F = 30\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_{\lambda_{\text{peak}}}$	0.11	0.10	nm/K
Temperaturkoeffizient von λ_{dom} (typ.) Temperature coefficient of λ_{dom} $I_F = 30\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_{\lambda_{\text{dom}}}$	0.10	0.10	nm/K
Temperaturkoeffizient von V_F (typ.) Temperature coefficient of V_F $I_F = 30\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	TC_V	- 2.3	- 2.5	mV/K
Optischer Wirkungsgrad (typ.) Optical efficiency $I_F = 2\text{ mA}$	η_{opt}	4	1.2	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
Wavelength groups

Gruppe Group	pure green		green		Einheit Unit
	min.	max.	min.	max.	
2	554	557	566	569	nm
3	557	560	569	572	nm
4	560	563	572	575	nm
5	563	566			nm

Helligkeits-Gruppierungsschema
Luminous Intensity Groups

Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity I_V (mcd)	Lichtstrom Luminous Flux Φ_V (lm)
D2	0.56 ... 0.71	2.0 (typ.)
E1	0.71... 0.90	2.5 (typ.)
E2	0.90 ... 1.12	3.0 (typ.)
F1	1.12 ... 1.40	3.8 (typ.)
F2	1.40 ... 1.80	4.8 (typ.)
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 $\pm 11\%$ ermittelt.
Luminous intensity is tested at a current pulse duration of 25 ms and a tolerance of $\pm 11\%$.

Gruppenbezeichnung auf Etikett
Group Name on Label

Beispiel: G2-3

Example: G2-3

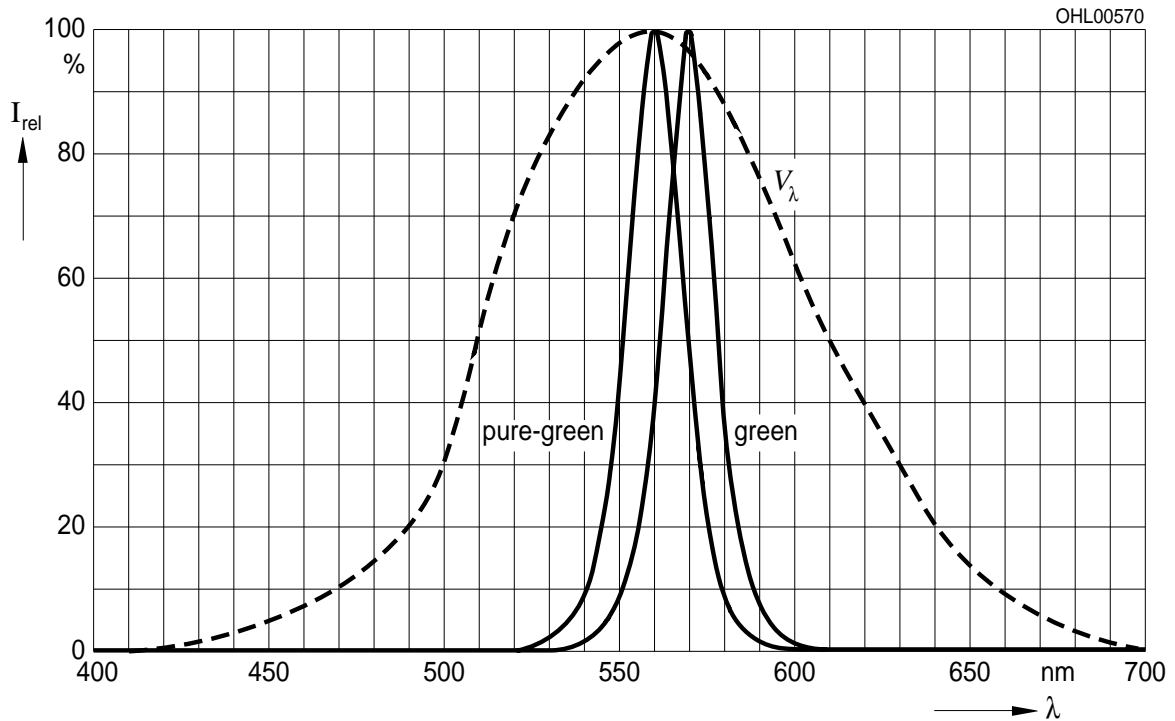
Lichtgruppe Luminous Intensity Group	Halbgruppe Half Group	Wellenlänge Wavelength
G	2	3

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

Relative Spectral Emission

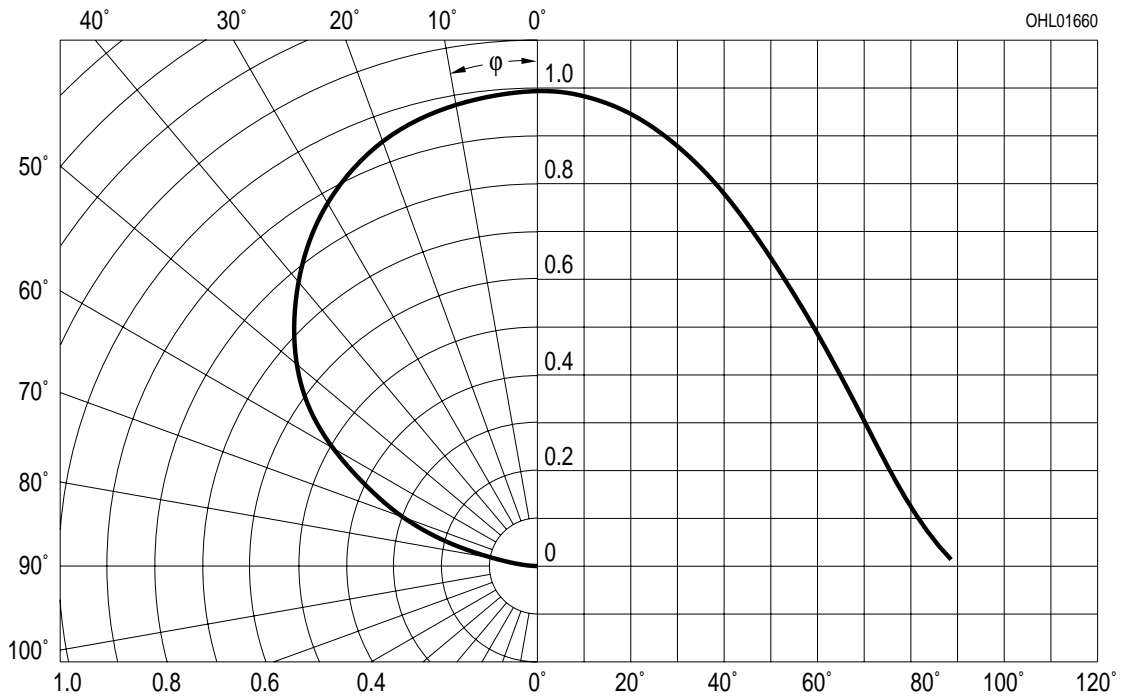
$V(\lambda)$ = spektrale Augenempfindlichkeit

Standard eye response curve



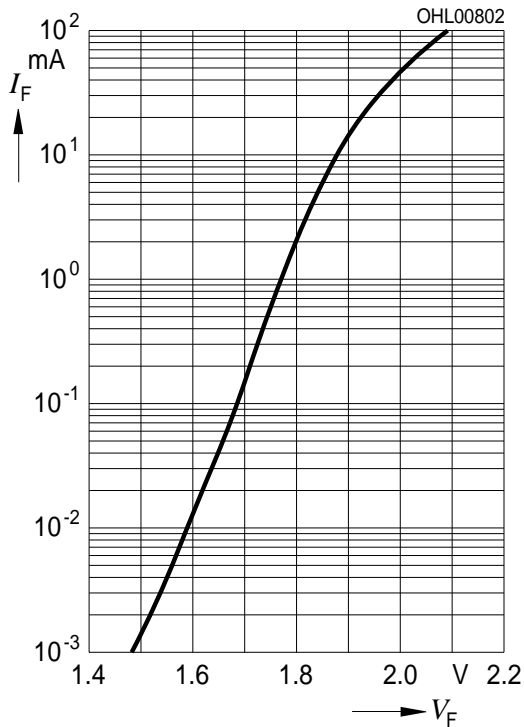
Abstrahlcharakteristik $I_{rel} = f(\varphi)$

Radiation Characteristic



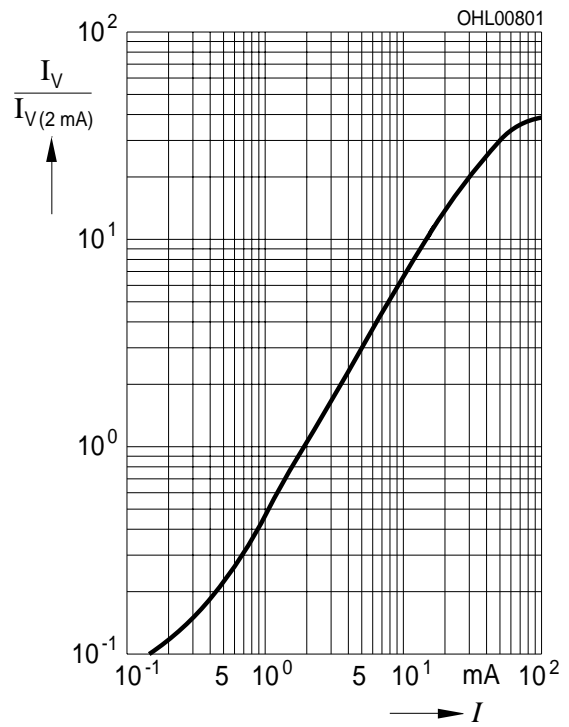
Durchlassstrom $I_F = f(V_F)$
Forward Current

$T_A = 25\text{ °C}$

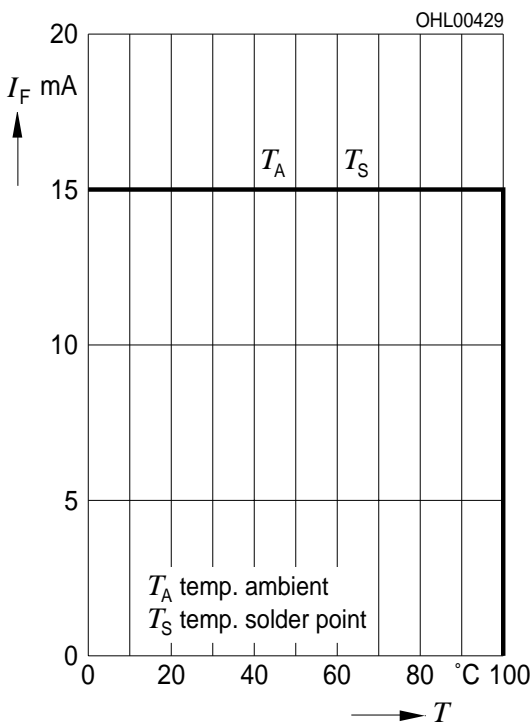


Relative Lichtstärke $I_V/I_{V(2\text{ mA})} = f(I_F)$
Relative Luminous Intensity

$T_A = 25\text{ °C}$

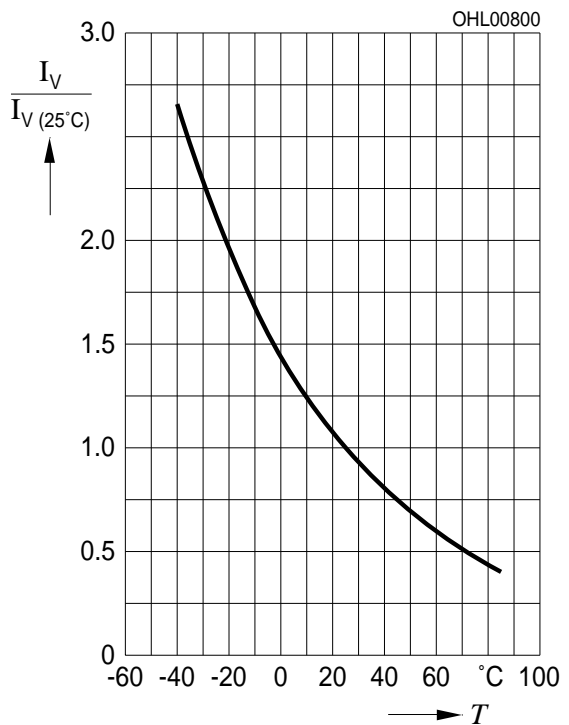


Maximal zulässiger Durchlassstrom $I_F = f(T_A)$
Max. Permissible Forward Current

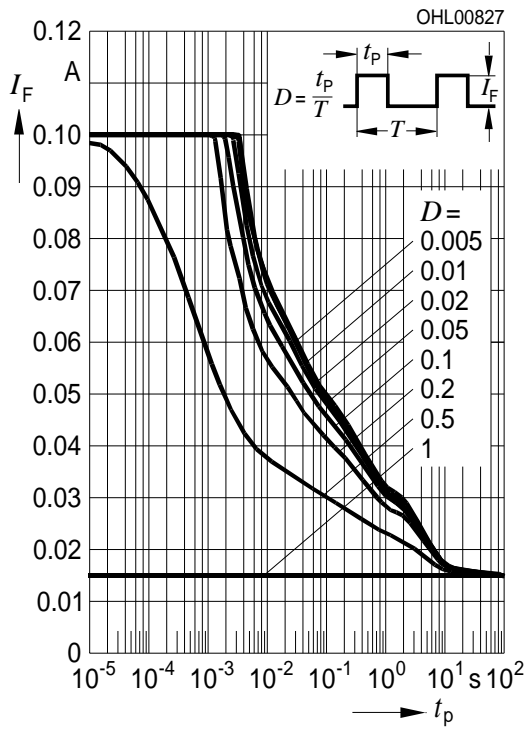


Relative Lichtstärke $I_V / I_{V(25\text{ °C})} = f(T_A)$
Relative Luminous Intensity

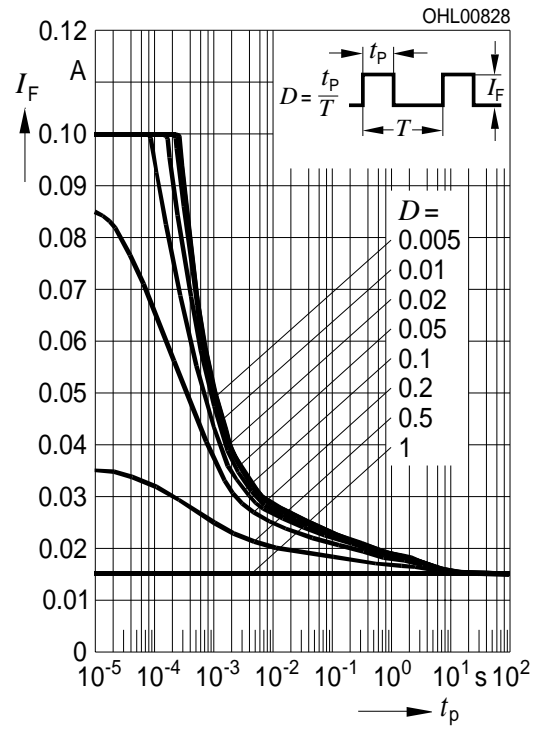
$I_F = 2\text{ mA}$



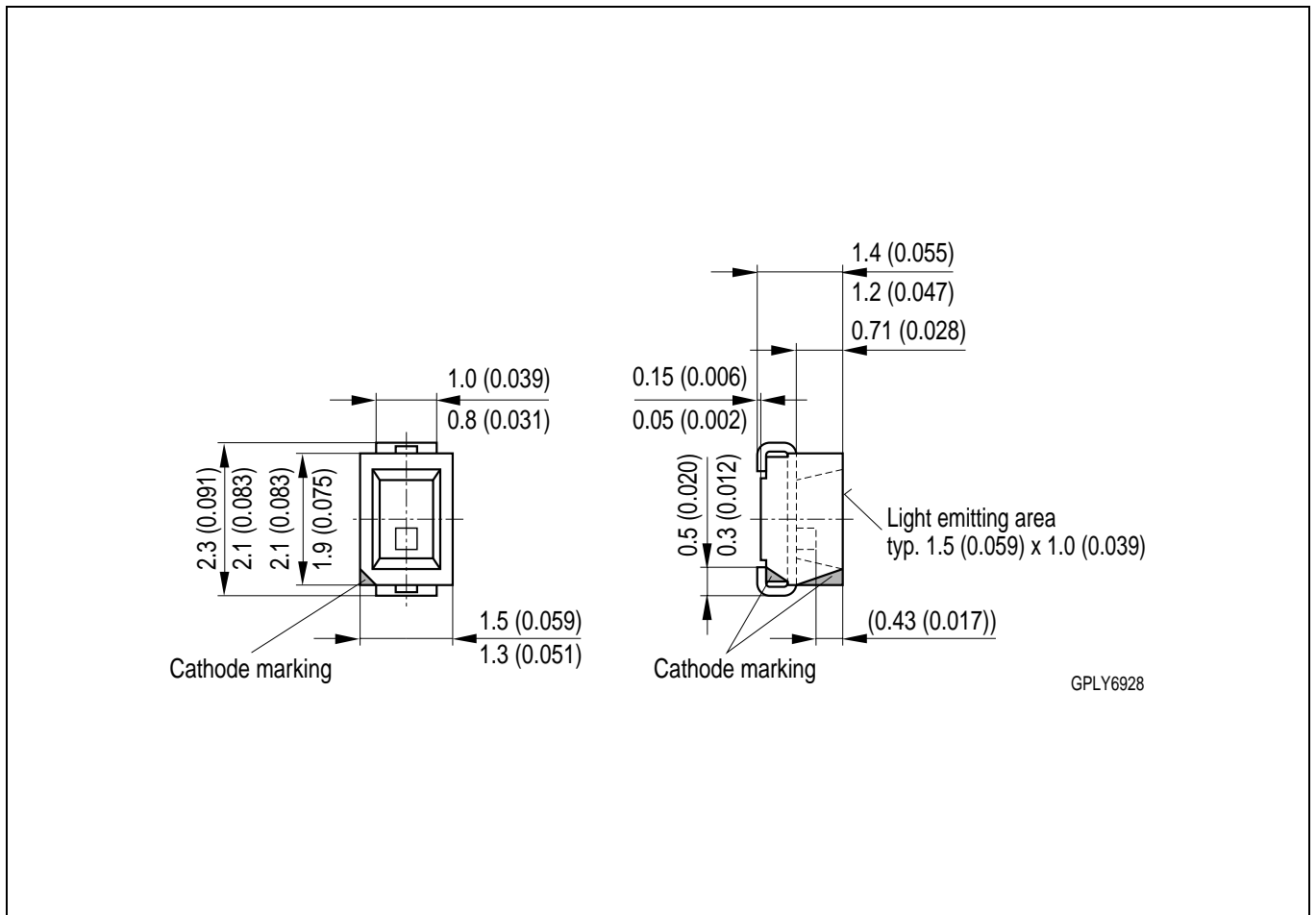
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
 Duty cycle $D =$ parameter, $T_A = 25\text{ °C}$



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



Maßzeichnung
Package Outlines

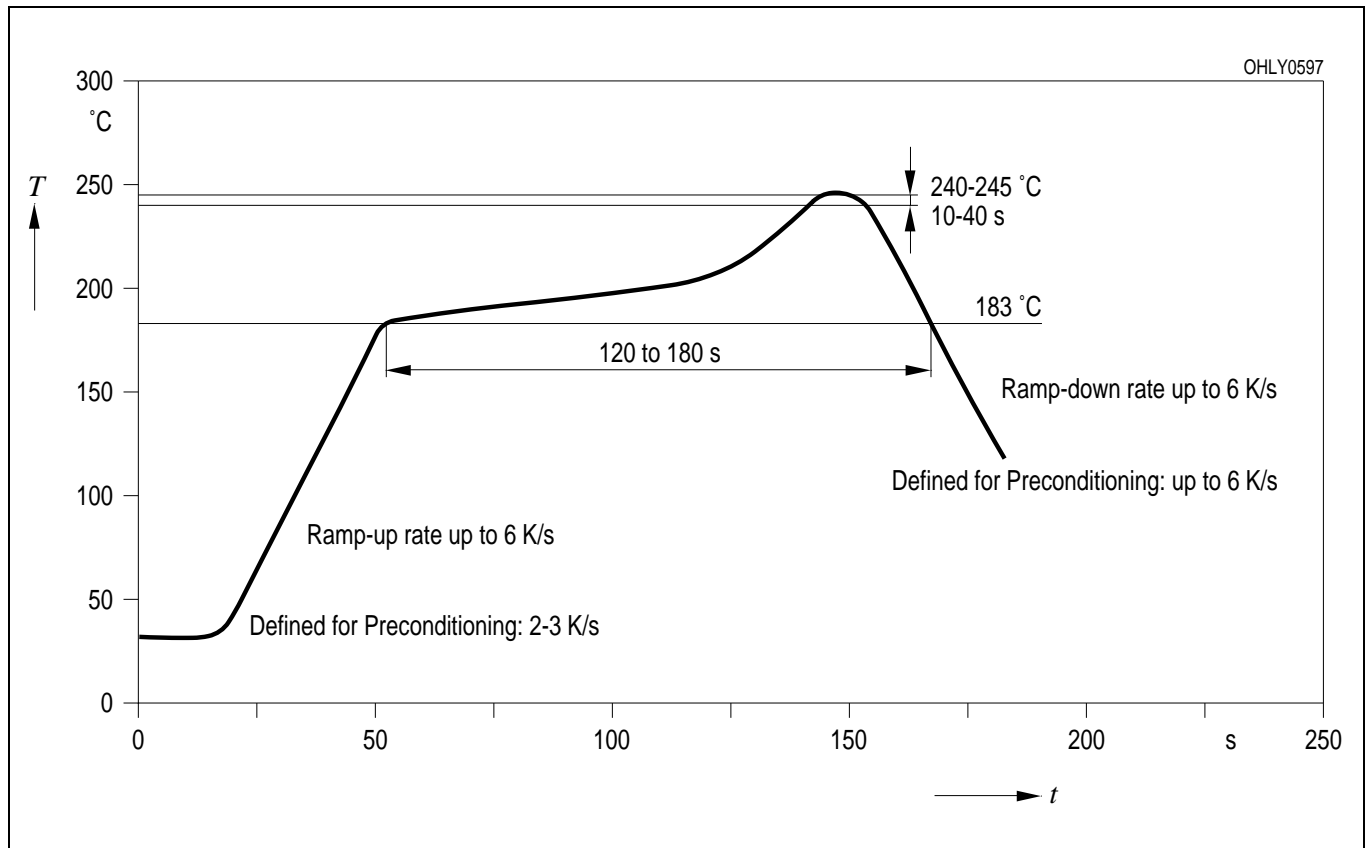


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

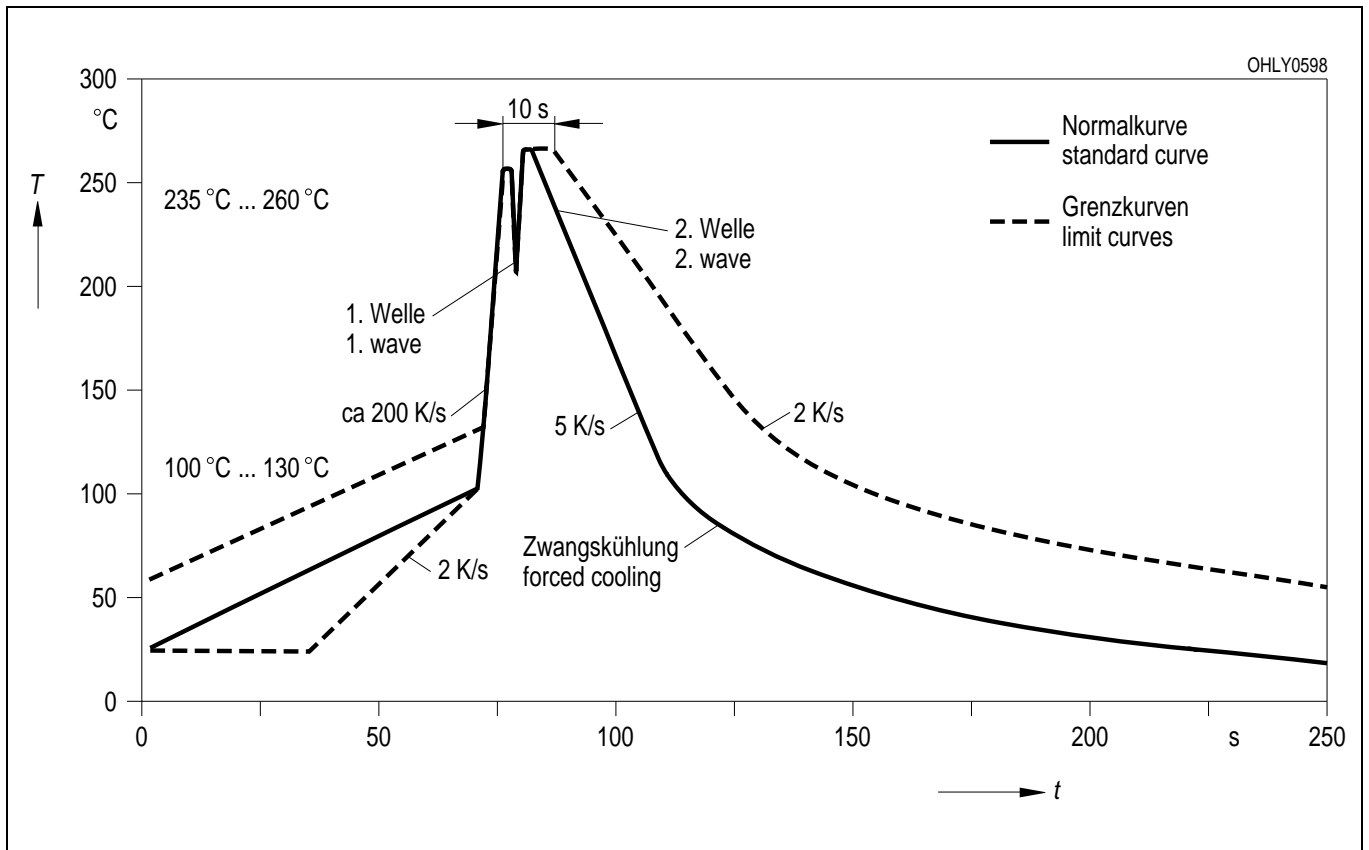
Kathodenkennung: abgeschrägte Ecke
Cathode mark: bevelled edge
Gewicht / Approx. weight: 10 mg

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

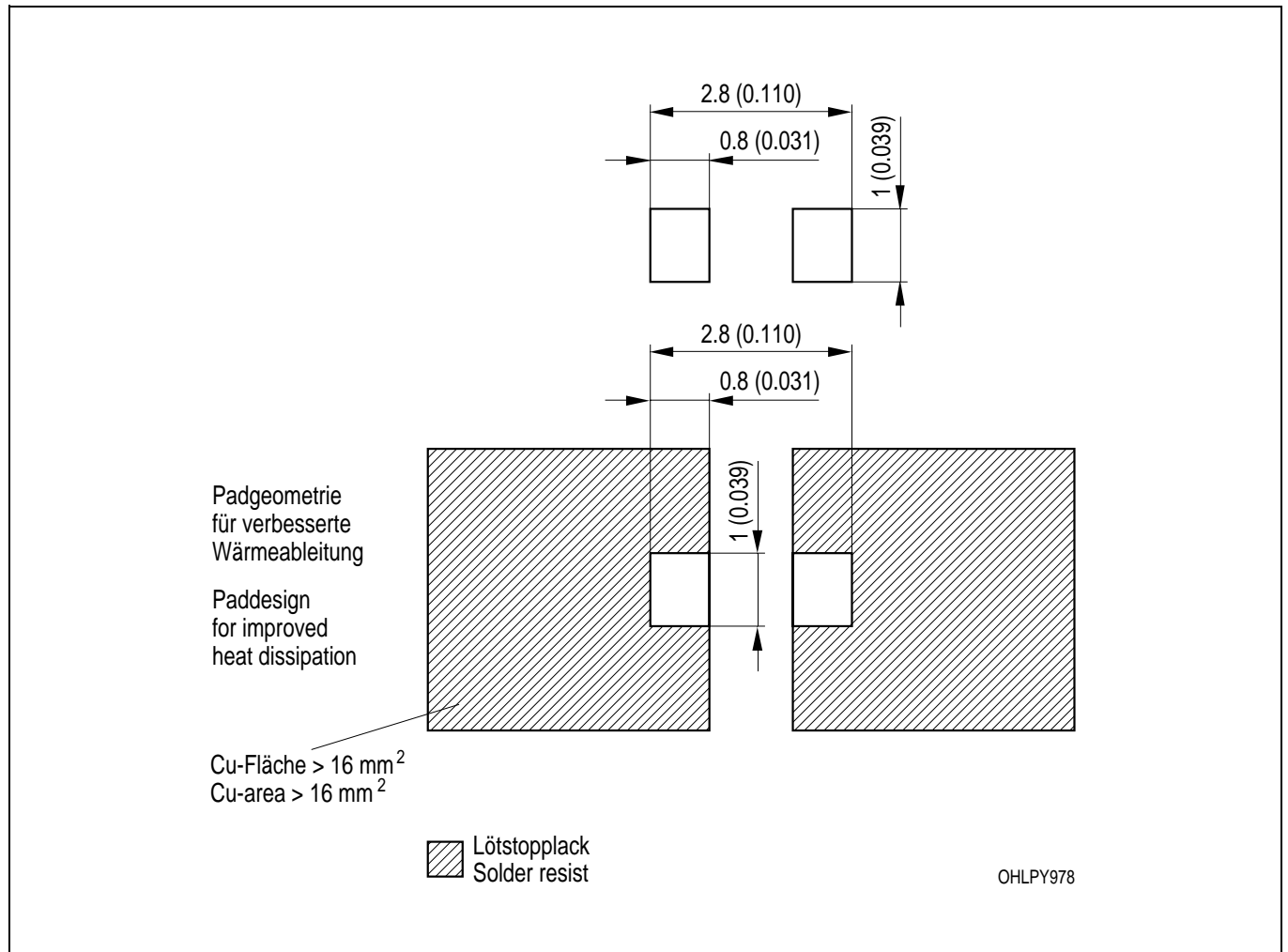
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



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



Empfohlenes Lötpad Design IR-Reflow Löten
Recommended Solder Pad IR Reflow Soldering



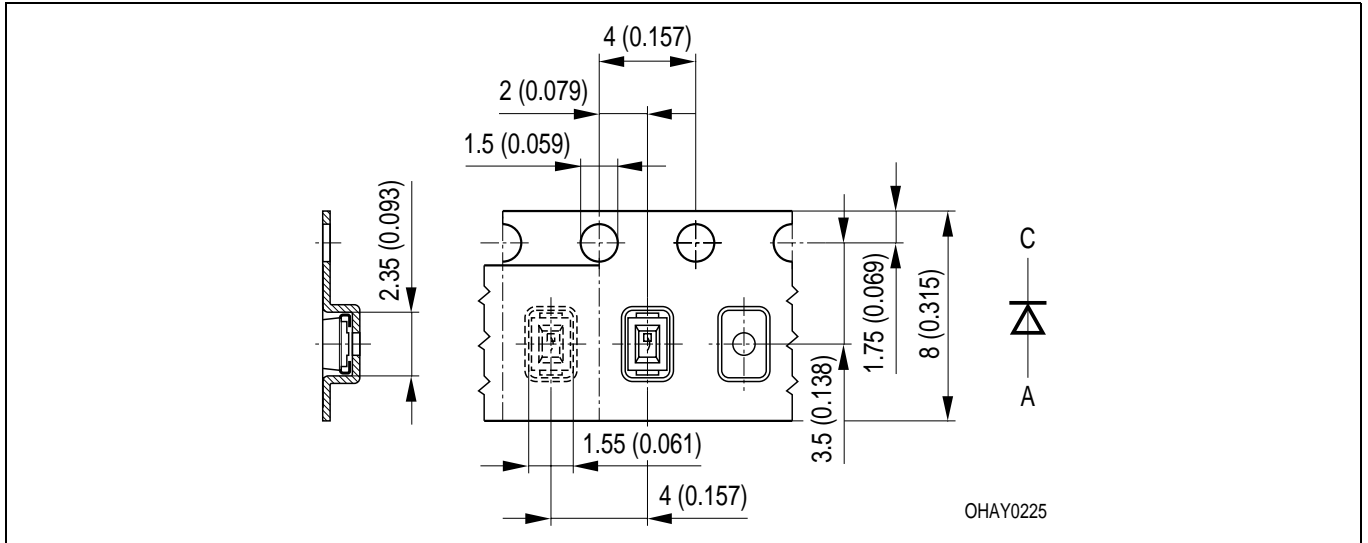
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).
Gehäuse hält TTW-Löthitze aus / Package able to withstand TTW-soldering heat

Gurtung / Polarität und Lage

Verpackungseinheit 3000/Rolle, ø180 mm oder
12000/Rolle, ø330 mm

Method of Taping / Polarity and Orientation

Packing unit 3000/reel, ø180 mm or
12000/reel, ø330 mm



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

Revision History: 2002-10-16		Date of change
Previous Version: -		
Page	Subjects (major changes since last revision)	

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