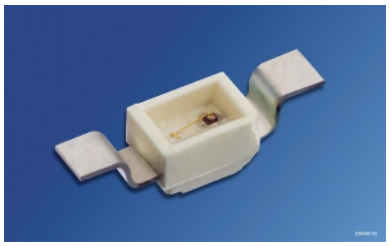
Mini TOPLED® RG

LS M770, LO M770, LY M770, LG M770, LP M770



Besondere Merkmale

- **Gehäusetyp:** weißes SMT-Gehäuse
- **Besonderheit des Bauteils:** extrem breite Abstrahlcharakteristik; Bauteil wird top-down montiert und strahlt durch das PCB; ideal für Hinterleuchtungen und Einkopplungen in Lichtleiter
- **Wellenlänge:** 628 nm (super-rot), 605 nm (orange), 590 nm (gelb), 570 nm (grün), 560 nm (pure green)
- **Abstrahlwinkel:** Lambertscher Strahler (120°)
- **Technologie:** GaAlP (super-rot, orange, gelb, grün), GaP (pure green)
- **optischer Wirkungsgrad:** 1,5 lm/W (super-rot, orange, gelb), 2,5 lm/W (grün), 0,6 lm/W (pure green)
- **Gruppierungsparameter:** Lichtstärke
- **Verarbeitungsmethode:** für alle SMT-Bestücktechniken geeignet
- **Lötmethode:** IR Reflow Löten
- **Vorbehandlung:** nach JEDEC Level 2
- **Gurtung:** 12-mm Gurt mit 3000/Rolle, ø180 mm oder 11800/Rolle, ø330 mm

Features

- **package:** white SMT package
- **feature of the device:** extremely wide viewing angle; LED is mounted top down and emits through the PCB; ideal for backlighting and coupling in light guides
- **wavelength:** 628 nm (super-red), 605 nm (orange), 590 nm (yellow), 570 nm (green), 560 nm (pure green)
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** GaAlP (super-red, orange, yellow, green), GaP (pure green)
- **optical efficiency:** 1.5 lm/W (super-red, orange, yellow), 2.5 lm/W (green), 0.6 lm/W (pure green)
- **grouping parameter:** luminous intensity
- **assembly methods:** suitable for all SMT assembly methods
- **soldering methods:** IR reflow soldering
- **preconditioning:** acc. to JEDEC Level 2
- **taping:** 12-mm tape with 3000/reel, ø180 mm or 11800/reel, ø330 mm

Anwendungen

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

Applications

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

Typ Type	Emissions-farbe Color of Emission	Farbe der Lichtaustritts-fläche Color of the Light Emitting Area	Lichtstärke Luminous Intensity I_F = 10 mA I_V (mcd)	Lichtstrom Luminous Flux I_F = 10 mA Φ_V (mlm)	Bestellnummer Ordering Code
LS M770-H2J2-1	super-red	colorless clear	3.55 ... 7.10	15 (typ.)	Q62703-Q5087
LS M770-J2L1-1			5.60 ... 14.00	28 (typ.)	Q62703-Q5088
LS M770-H2			3.55 ... 4.50	12 (typ.)	
LS M770-J1			4.50 ... 5.60	15 (typ.)	
LS M770-J2			5.60 ... 7.10	19 (typ.)	
LS M770-K1			7.10 ... 9.00	24 (typ.)	
LS M770-K2			9.00 ... 11.20	30 (typ.)	
LS M770-L1			11.20 ... 14.00	40 (typ.)	
LO M770-H2J2-1	orange	colorless clear	3.55 ... 7.10	15 (typ.)	Q62703-Q5042
LO M770-J2L1-1			5.60 ... 14.00	28 (typ.)	Q62703-Q5043
LO M770-H2			3.55 ... 4.50	12 (typ.)	
LO M770-J1			4.50 ... 5.60	15 (typ.)	
LO M770-J2			5.60 ... 7.10	19 (typ.)	
LO M770-K1			7.10 ... 9.00	24 (typ.)	
LO M770-K2			9.00 ... 11.20	30 (typ.)	
LO M770-L1			11.20 ... 14.00	40 (typ.)	
LY M770-J1K1-1	yellow	colorless clear	4.5 ... 9.0	20 (typ.)	Q62703-Q5125
LY M770-K1L2-1			7.1 ... 18.0	36 (typ.)	Q62703-Q5126
LY M770-J1			4.5 ... 5.6	15 (typ.)	
LY M770-J2			5.6 ... 7.1	19 (typ.)	
LY M770-K1			7.1 ... 9.0	24 (typ.)	
LY M770-K2			9.0 ... 11.2	30 (typ.)	
LY M770-L1			11.2 ... 14.0	40 (typ.)	
LY M770-L2			14.0 ... 18.0	50 (typ.)	
LG M770-J2K2-1	green	colorless clear	5.6 ... 11.2	25 (typ.)	Q62703-Q5008
LG M770-K2M1-1			9.0 ... 22.4	45 (typ.)	Q62703-Q5009
LG M770-J2			5.6 ... 7.1	19 (typ.)	
LG M770-K1			7.1 ... 9.0	24 (typ.)	
LG M770-K2			9.0 ... 11.2	30 (typ.)	
LG M770-L1			11.2 ... 14.0	40 (typ.)	
LG M770-L2			14.0 ... 18.0	50 (typ.)	
LG M770-M1			18.0 ... 22.4	60 (typ.)	

Typ Type	Emissions-farbe Color of Emission	Farbe der Lichtaustritts-fläche Color of the Light Emitting Area	Lichtstärke Luminous Intensity I_F = 10 mA I_V (mcd)	Lichtstrom Luminous Flux I_F = 10 mA Φ_V (mlm)	Bestellnummer Ordering Code
LP M770-F2G2-1	pure green	colorless clear	1.40 ... 2.80	6.1 (typ.)	Q62703-Q5062
LP M770-G2J1-1			2.24 ... 5.60	11.0 (typ.)	Q62703-Q5063
LP M770-F2			1.40 ... 1.80	4.8 (typ.)	
LP M770-G1			1.80 ... 2.24	6.0 (typ.)	
LP M770-G2			2.24 ... 2.80	7.6 (typ.)	
LP M770-H1			2.80 ... 3.55	9.5 (typ.)	
LP M770-H2			3.55 ... 4.50	12.0 (typ.)	
LP M770-J1			4.50 ... 5.60	15.0 (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 an accuracy of ±11 %.

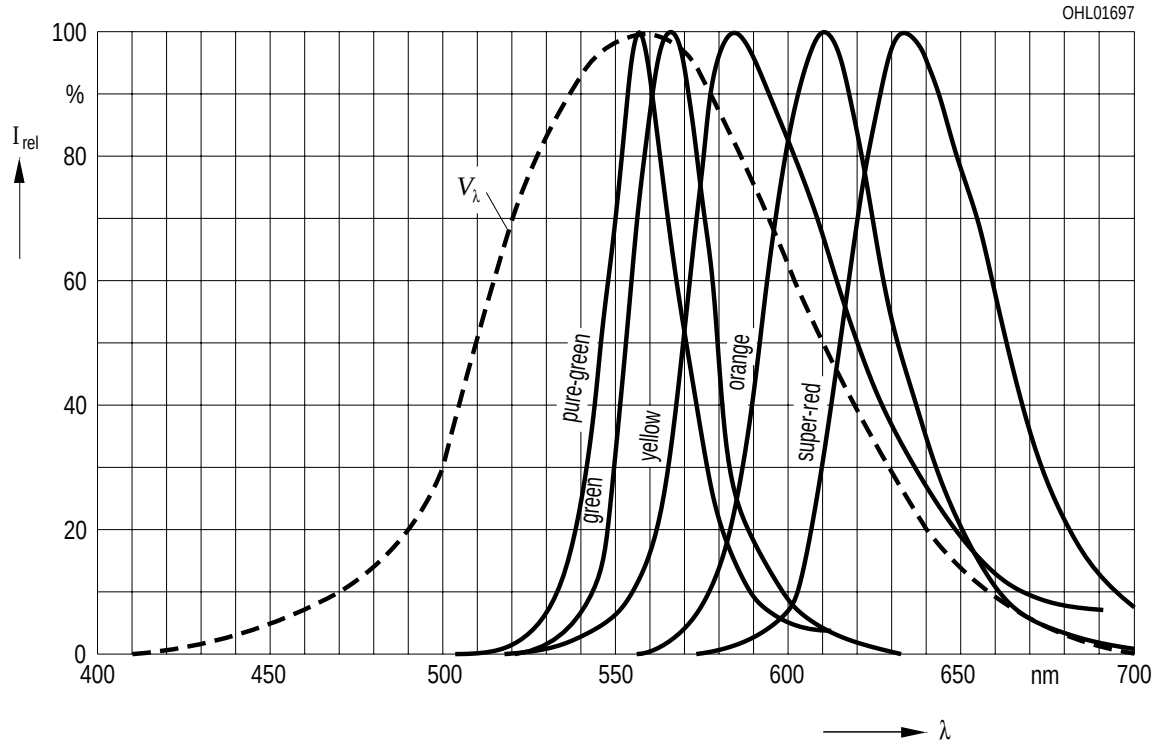
Grenzwerte
Maximum Ratings

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**		**Einheit** **Unit**
		LS, LO, LY, LG	**LP**	
Betriebstemperatur Operating temperature range	T_{op}	– 40 … + 100		°C
Lagertemperatur Storage temperature range	T_{stg}	– 40 … + 100		°C
Sperrschichttemperatur Junction temperature	T_j	+ 100		°C
Durchlaßstrom Forward current	I_F	30		mA
Stoßstrom Surge current $t \leq 10$ µs, $D = 0.005$	I_{FM}	0.5		A
Sperrspannung Reverse voltage	V_R	5		V
Leistungsaufnahme Power dissipation	P_{tot}	95	90	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/air Sperrschicht/Lötpad Junction/soldering point Montage auf PC-Board FR 4 (Padgröße ≥ 16 mm²) mounted on PC board FR 4 (pad size ≥ 16 mm²)	 $R_{th\ JA}$ $R_{th\ JS}$	 480 230		 K/W K/W

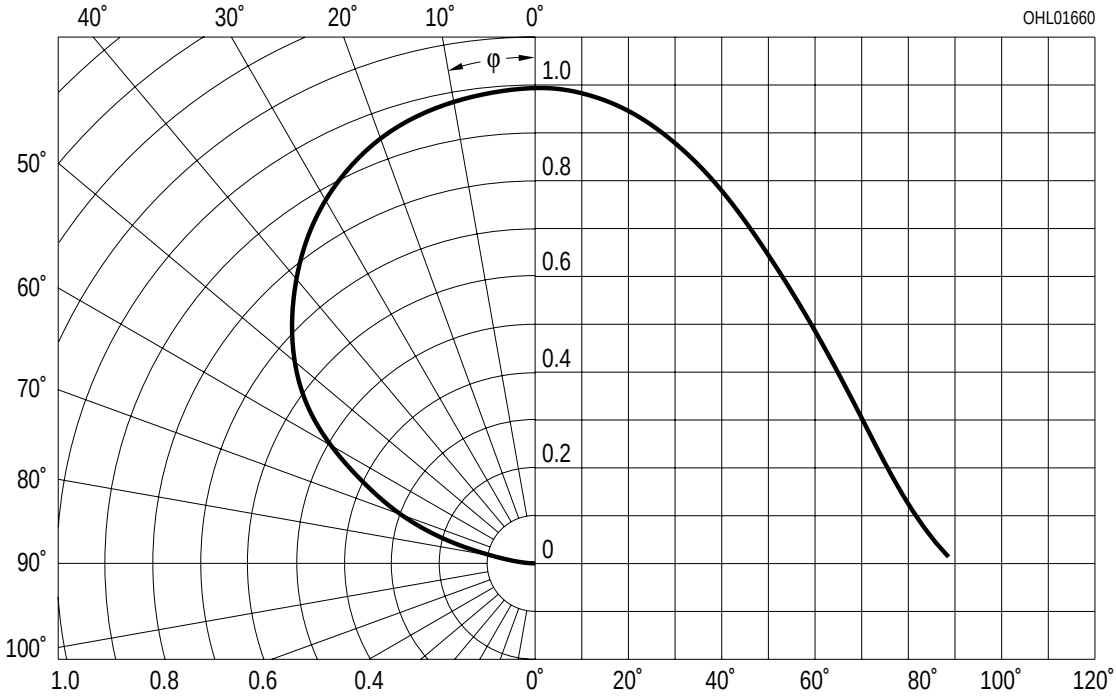
Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**		**Symbol** **Symbol**	**Wert** **Value**					**Einheit** **Unit**
			LS	**LO**	**LY**	**LG**	**LP**	
Wellenlänge des emittierten Lichtes Wavelength at peak emission I_F = 10 mA	(typ.)	λ_{peak}	635	610	586	565	557	nm
Dominantwellenlänge Dominant wavelength I_F = 10 mA	(typ.)	λ_{dom}	628	605	590	570	560	nm
Spektrale Bandbreite bei 50 % $I_{rel\ max}$ Spectral bandwidth at 50 % $I_{rel\ max}$ I_F = 10 mA	(typ.)	$\Delta\lambda$	45	40	45	25	22	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V	(typ.)	2φ	120	120	120	120	120	Grad deg.
Durchlaßspannung Forward voltage I_F = 10 mA	(typ.) (max.)	V_F V_F	2.0 2.6	2.0 2.6	2.0 2.6	2.0 2.6	2.0 2.6	V V
Sperrstrom Reverse current V_R = 5 V	(typ.) (max.)	I_R I_R	0.01 10	0.01 10	0.01 10	0.01 10	0.01 10	µA µA
Temperaturkoeffizient von λ_{peak} Temperature coefficient of λ_{peak} I_F = 10 mA	(typ.)	$TC_{\lambda peak}$	0.11	0.12	0.10	0.11	0.11	nm/K
Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} I_F = 10 mA	(typ.)	$TC_{\lambda dom}$	0.07	0.07	0.07	0.07	0.05	nm/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 10 mA	(typ.)	TC_V	– 1.9	– 1.9	– 1.9	– 1.4	– 2.1	mV/K
Optischer Wirkungsgrad Optical efficiency I_F = 10 mA	(typ.)	η_{opt}	1.5	1.5	1.5	2.5	0.6	lm/W

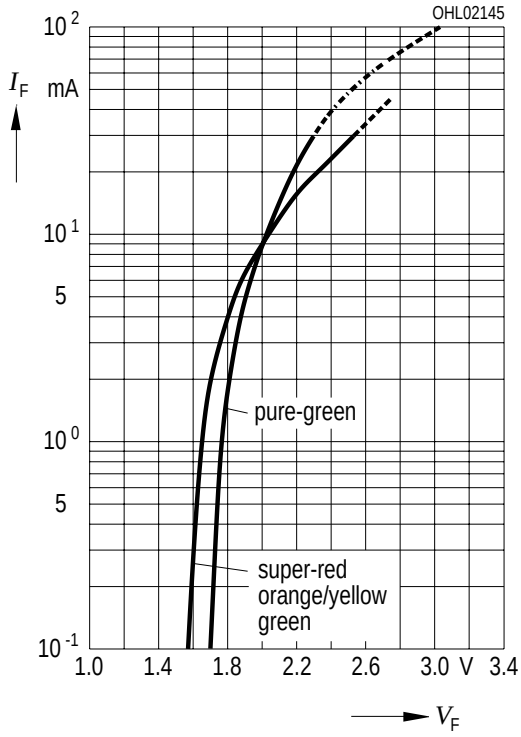
Relative spektrale Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 10 mA
Relative Spectral Emission
V(λ) = spektrale Augenempfindlichkeit
Standard eye response curve



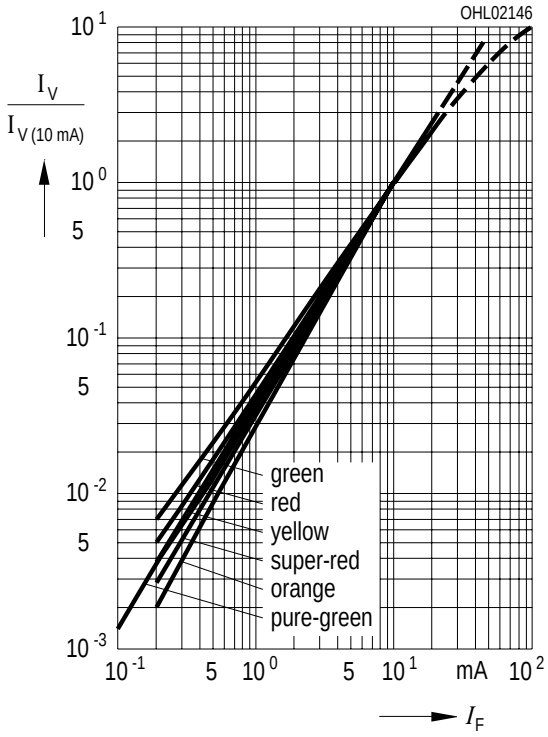
Abstrahlcharakteristik $I_{rel} = f(\varphi)$
Radiation Characteristic



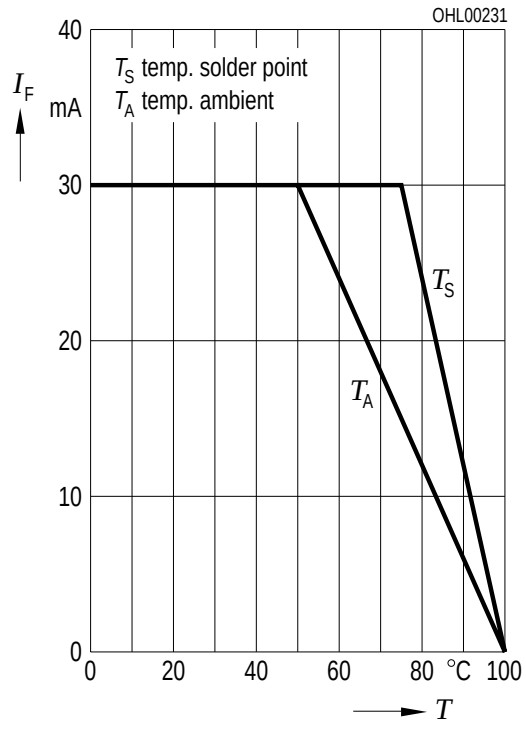
Durchlaßstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



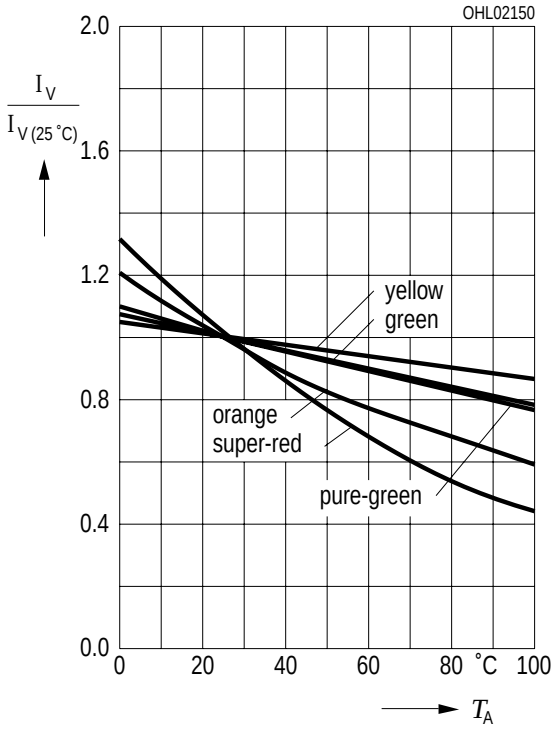
Relative Lichtstärke $I_V/I_{V(10\ mA)} = f(I_F)$
Relative Luminous Intensity
T_A = 25 °C



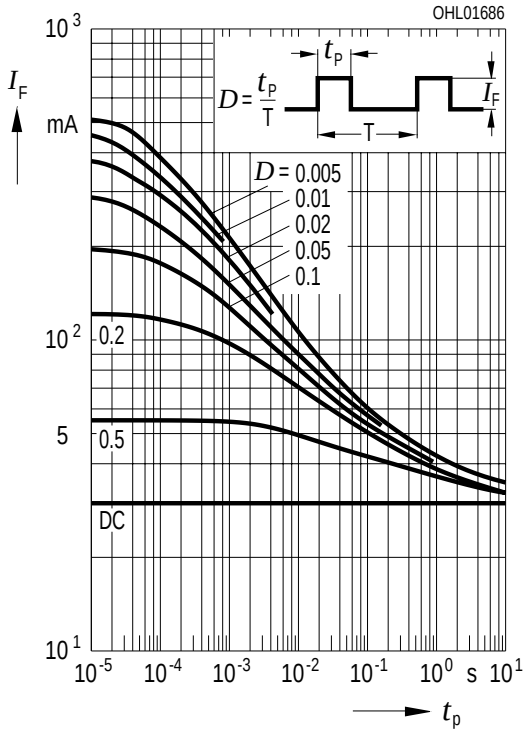
Maximal zulässiger Durchlaßstrom $I_F = f(T_A)$
Max. Permissible Forward Current



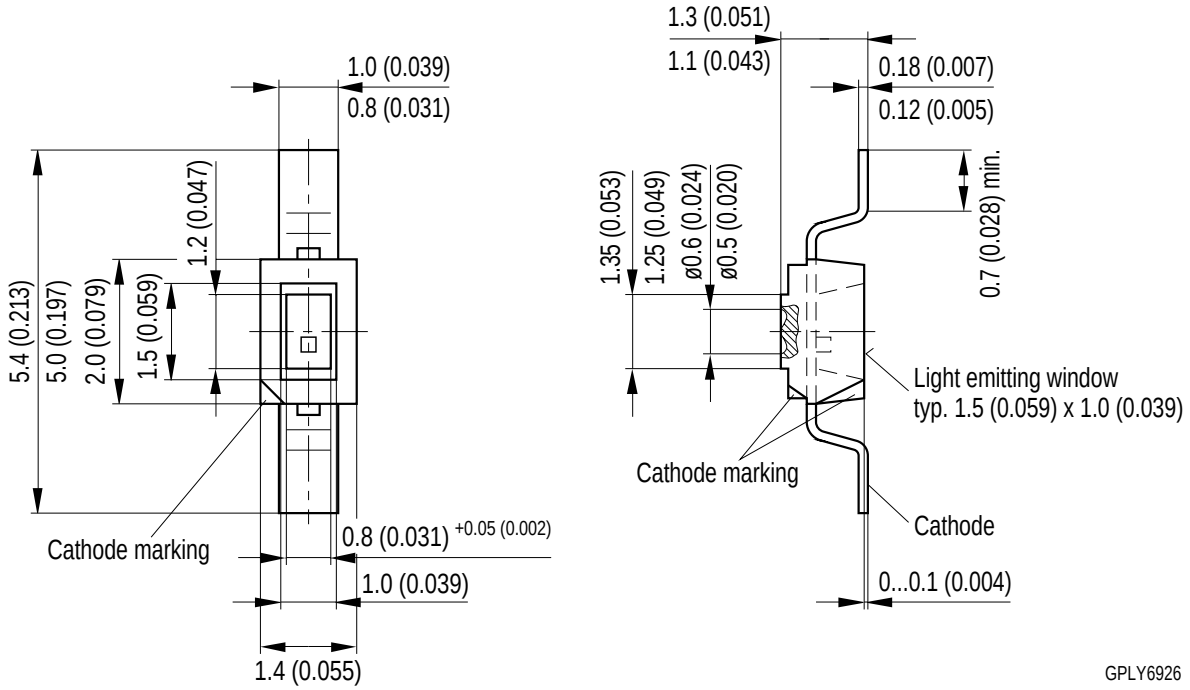
Relative Lichtstärke $I_V / I_V(25\ °C) = f(T_A)$
Relative Luminous Intensity
I_F = 10 mA



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



Maßzeichnung
Package Outlines

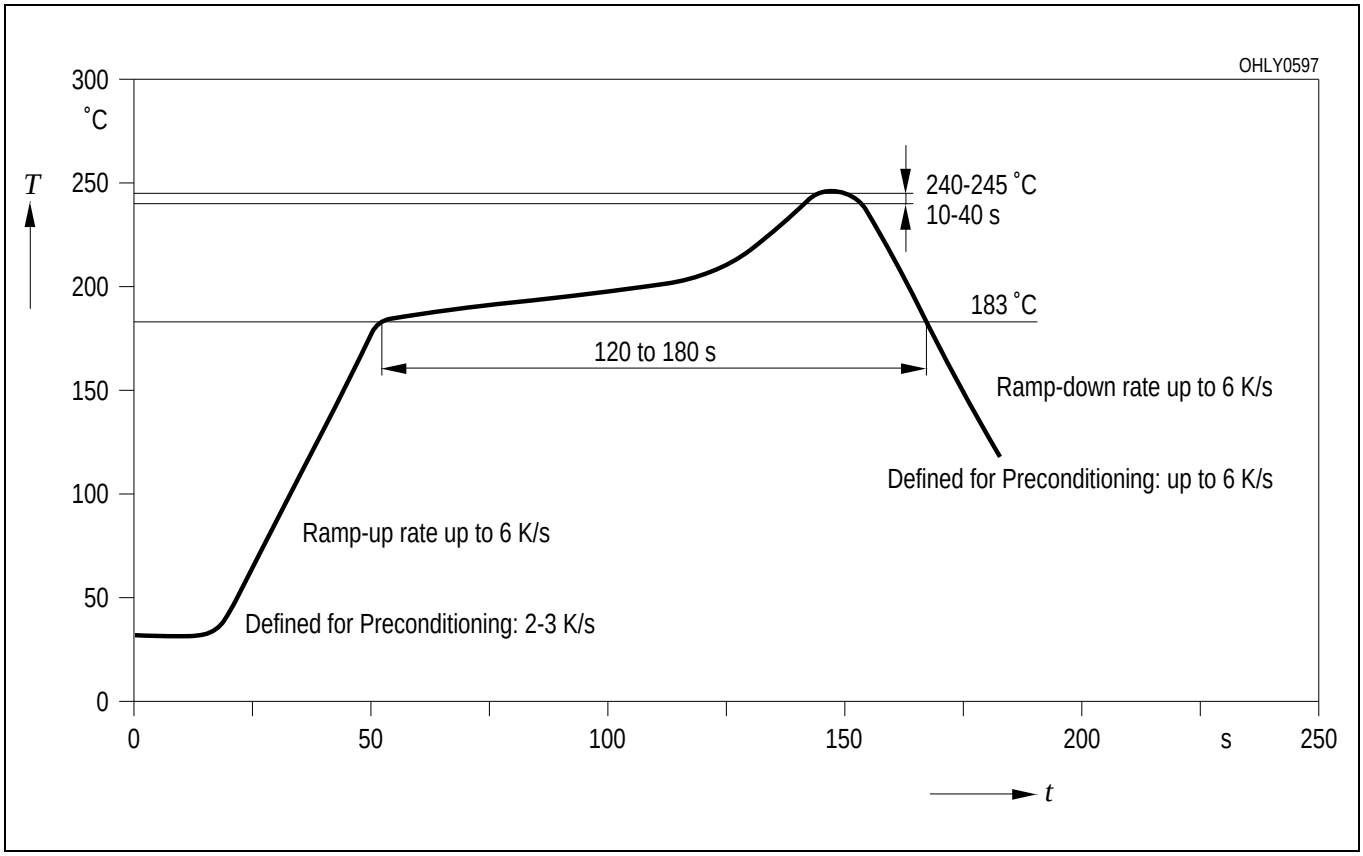


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

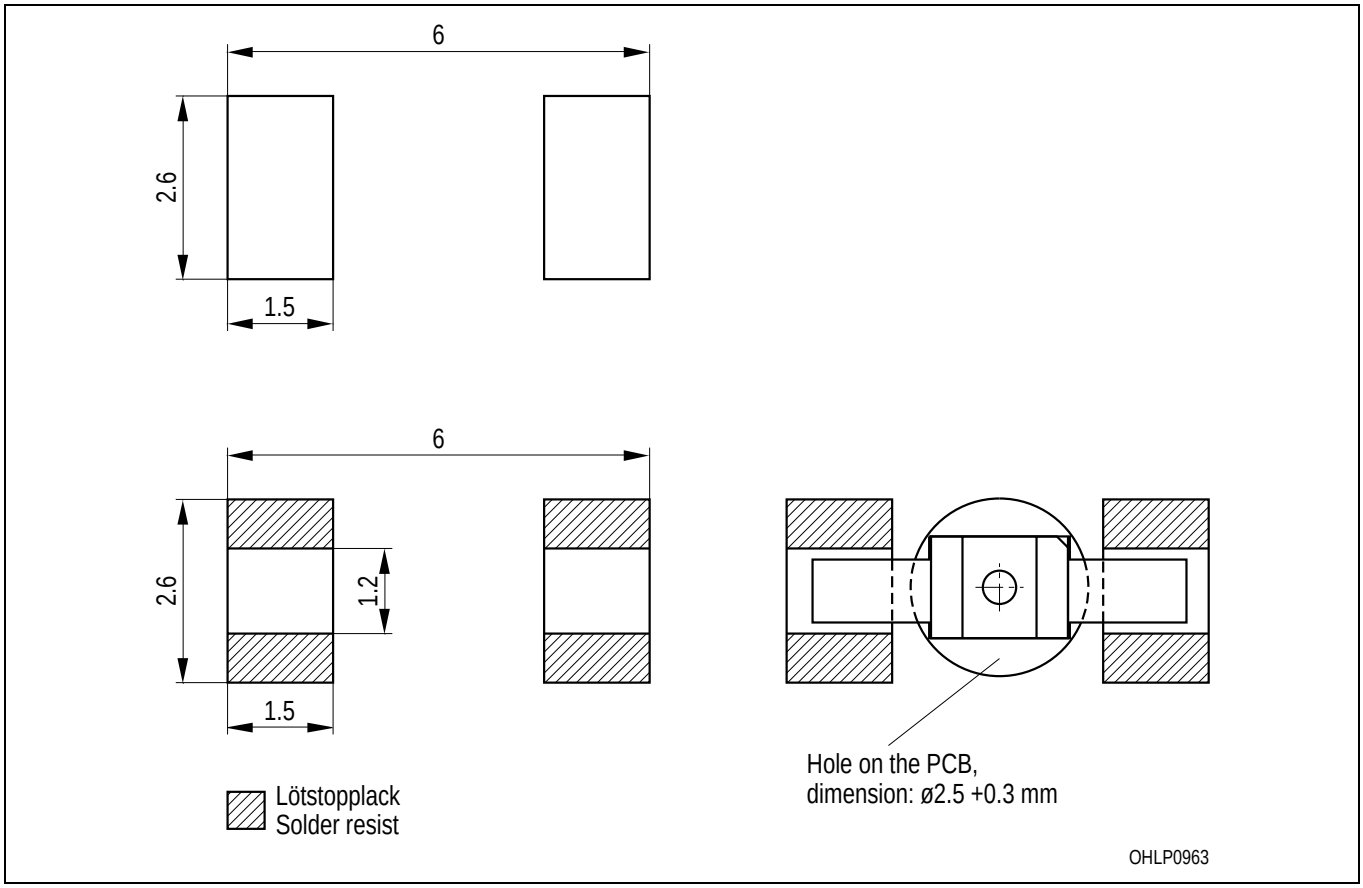
Kathodenkennung: abgeschrägte Ecke
Cathode mark: bevelled edge

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



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