Multi TOPLED

LSG T670, LSP T670, LSY T670, LOP T670, LYG T670

Besondere Merkmale

- **Gehäusetyp:** weißes P-LCC-4 Gehäuse
- **Besonderheit des Bauteils:** beide Leuchtdiondenchips getrennt ansteuerbar, hohe Signalwirkung durch Farbwechsel der LED möglich
- **Wellenlänge:** 628 nm (super-rot), 606 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 und Wellenlöten (TTW)
- **Vorbehandlung:** nach JEDEC Level 2
- **Gurtung:** 8 mm Gurt mit 2000/Rolle, ø180 mm oder 8000/Rolle, ø330 mm

Features

- **package:** white P-LCC-4 package
- **feature of the device:** both chips can be controlled separately, high signal efficiency possible by color change of the LED
- **wavelength:** 628 nm (super-red), 606 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 and TTW soldering
- **preconditioning:** acc. to JEDEC Level 2
- **taping:** 8 mm tape with 2000/reel, ø180 mm or 8000/reel, ø330 mm

Anwendungen

- Informationsanzeigen im Innen- und Außenbereich
- optischer Indikator
- Hinterleuchtung (Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Innenbeleuchtung im Automobilbereich (z. B. Instrumentenbeleuchtung)
- Markierungsbeleuchtung (z.B. Stufen, Fluchtwege, u.ä.)
- Einkopplung in Lichtleiter
- Laufschriftanzeigen
- Signal- und Symbolleuchten

Applications

- indoor and outdoor displays
- optical indicators
- backlighting (switches, keys, displays, illuminated advertising, general lighting)
- interior automotive lighting (e.g. dashboard backlighting)
- marker lights (e.g. steps, exit ways, etc.)
- coupling into light guides
- light writing displays
- signal and symbol luminaire

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)		Bestellnummer Ordering Code
			color 1	color 2	
LSG T670	super-red / green	colorless clear	4.5 ... 18.0	4.5 ... 18.0	Q62703-Q4316
LSG T670-J+J			4.5 ... 7.1	4.5 ... 7.1	
LSG T670-J+K			4.5 ... 7.1	7.1 ... 11.2	
LSG T670-J+L			4.5 ... 7.1	11.2 ... 18.0	
LSG T670-K+J			7.1 ... 11.2	4.5 ... 7.1	
LSG T670-K+K			7.1 ... 11.2	7.1 ... 11.2	
LSG T670-K+L			7.1 ... 11.2	11.2 ... 18.0	
LSG T670-L+J			11.2 ... 18.0	4.5 ... 7.1	
LSG T670-L+K			11.2 ... 18.0	7.1 ... 11.2	
LSG T670-L+L			11.2 ... 18.0	11.2 ... 18.0	
LSP T670	super-red / pure green	colorless clear	2.8 ... 11.2	1.8 ... 7.1	Q62703-Q4318
LSP T670-H+G			2.8 ... 4.5	1.8 ... 2.8	
LSP T670-H+H			2.8 ... 4.5	2.8 ... 4.5	
LSP T670-J+G			4.5 ... 7.1	1.8 ... 2.8	
LSP T670-J+H			4.5 ... 7.1	2.8 ... 4.5	
LSP T670-J+J			4.5 ... 7.1	4.5 ... 7.1	
LSP T670-K+G			7.1 ... 11.2	1.8 ... 2.8	
LSP T670-K+H			7.1 ... 11.2	2.8 ... 4.5	
LSP T670-K+J			7.1 ... 11.2	4.5 ... 7.1	
LSY T670	super-red / yellow	colorless clear	4.5 ... 18.0	4.5 ... 18.0	Q62703-Q4317
LSY T670-J+J			4.5 ... 7.1	4.5 ... 7.1	
LSY T670-J+K			4.5 ... 7.1	7.1 ... 11.2	
LSY T670-J+L			4.5 ... 7.1	11.2 ... 18.0	
LSY T670-K+J			7.1 ... 11.2	4.5 ... 7.1	
LSY T670-K+K			7.1 ... 11.2	7.1 ... 11.2	
LSY T670-K+L			7.1 ... 11.2	11.2 ... 18.0	
LSY T670-L+J			11.2 ... 18.0	4.5 ... 7.1	
LSY T670-L+K			11.2 ... 18.0	7.1 ... 11.2	
LSY T670-L+L			11.2 ... 18.0	11.2 ... 18.0	

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)		Bestellnummer Ordering Code
			color 1	color 2	
LOP T670	orange / green	colorless clear	4.5 ... 11.2	7.1 ... 28.0	Q62703-Q4319
LOP T670-J+K			4.5 ... 7.1	7.1 ... 11.2	
LOP T670-J+L			4.5 ... 7.1	11.2 ... 18.0	
LOP T670-J+M			4.5 ... 7.1	18.0 ... 28.0	
LOP T670-K+K			7.1 ... 11.2	7.1 ... 11.2	
LOP T670-K+L			7.1 ... 11.2	11.2 ... 18.0	
LOP T670-K+M			7.1 ... 11.2	18.0 ... 28.0	
LYG T670	yellow / green	colorless clear	4.5 ... 18.0	4.5 ... 18.0	Q62703-Q4502
LYG T670-J+J			4.5 ... 7.1	4.5 ... 7.1	
LYG T670-J+K			4.5 ... 7.1	7.1 ... 11.2	
LYG T670-J+L			4.5 ... 7.1	11.2 ... 18.0	
LYG T670-K+J			7.1 ... 11.2	4.5 ... 7.1	
LYG T670-K+K			7.1 ... 11.2	7.1 ... 11.2	
LYG T670-K+L			7.1 ... 11.2	11.2 ... 18.0	
LYG T670-L+J			11.2 ... 18.0	4.5 ... 7.1	
LYG T670-L+K			11.2 ... 18.0	7.1 ... 11.2	
LYG T670-L+L			11.2 ... 18.0	11.2 ... 18.0	

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 %.

Anm.: Die Standardlieferform von Serientypen beinhaltet eine Familiengruppe. Einzelne Gruppen sind nicht erhältlich.
In einer Verpackungseinheit / Gurt ist immer nur eine Gruppe pro Farbe enthalten.

Streuung der Lichtstärke in einer Verpackungseinheit $I_{V\,max} / I_{V\,min} \leq 2.0$
Streuung der Lichtstärke in einer LED $I_{V\,max} / I_{V\,min} \leq 3.0$ (LSG T670, LSY T670),
≤ 4.0 (LSP T670, LOP T670)

Note: The standard shipping format for serial types includes a family group. Individual groups are not available.
No packing unit / tape ever contains more than one luminous intensity group per color.

Luminous intensity ratio in one packaging unit $I_{V\,max} / I_{V\,min} \leq 2.0$
Luminous intensity ratio in one LED $I_{V\,max} / I_{V\,min} \leq 3.0$ (LSG T670, LSY T670),
≤ 4.0 (LSP T670, LOP T670)

Grenzwerte
Maximum Ratings

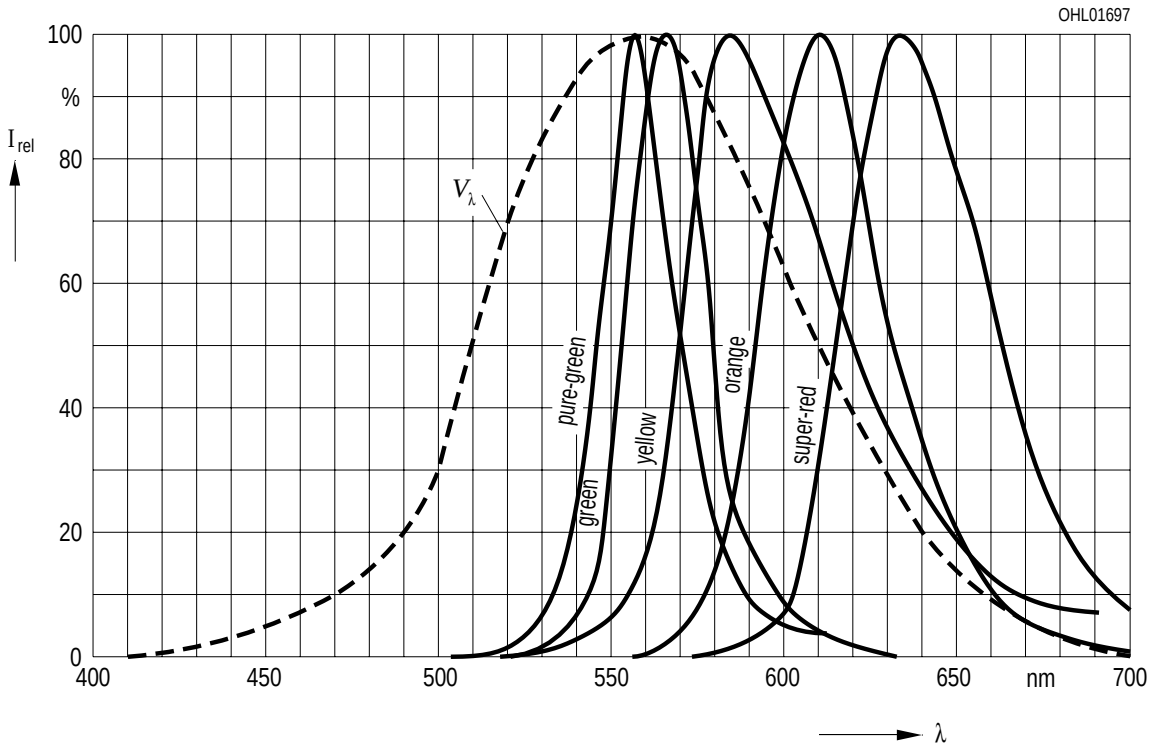
Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**		**Einheit** **Unit**
		LS, LO, LY, LG	**LP**	
Betriebstemperatur Operating temperature range	T_{op}	– 40 … + 100		°C
Lagertemperatur Storage temperature range	T_{stg}	– 40 … + 100		°C
Sperrschichttemperatur Junction temperature	T_j	+ 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 consumption	P_{tot}	95	90	mW
Wärmewiderstand Thermal resistance				
Sperrschicht / Umgebung 1 chip on	$R_{th\ JA}$	480		K/W
Junction / air 2 chips on	$R_{th\ JA}$	650		K/W
Sperrschicht / Lötpad 1 chip on	$R_{th\ JS}$	260		K/W
Junction / solder point 2 chips on	$R_{th\ JS}$	430		K/W
Montage auf PC-Board FR 4 (Padgröße ≥ 16 mm^2) mounted on PC board FR 4 (pad size ≥ 16 mm^2)				

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	572	557	nm
Dominantwellenlänge [1] Dominant wavelength [1] I_F = 10 mA	(typ.)	λ_{dom}	628 ± 6	606 ± 6	590 ± 6	570 ± 6	560 ± 6	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 [2] Forward voltage [2] I_F = 10 mA	(typ.) (max.)	V_F V_F	2.0 2.5	2.0 2.5	2.0 2.5	2.0 2.5	2.0 2.5	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; –10°C ≤ T ≤ 100°C	(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; –10°C ≤ T ≤ 100°C	(typ.)	$TC_{\lambda dom}$	0.07	0.07	0.07	0.07	0.05	nm/K
Temperaturkoeffizient vonV_F Temperature coefficient of V_F I_F = 10 mA; –10°C ≤ T ≤ 100°C	(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

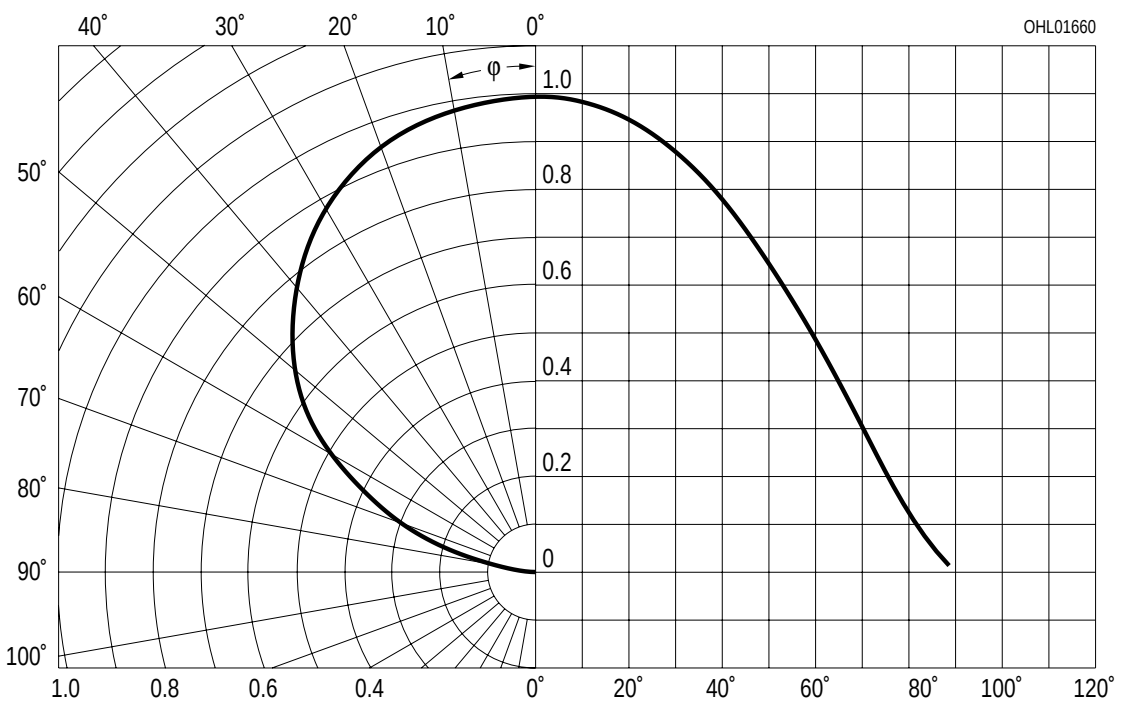
[1] Wellenlängen werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von ±1 nm ermittelt.
Wavelengths are tested at a current pulse duration of 25 ms and a tolerance of ±1 nm.

[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.

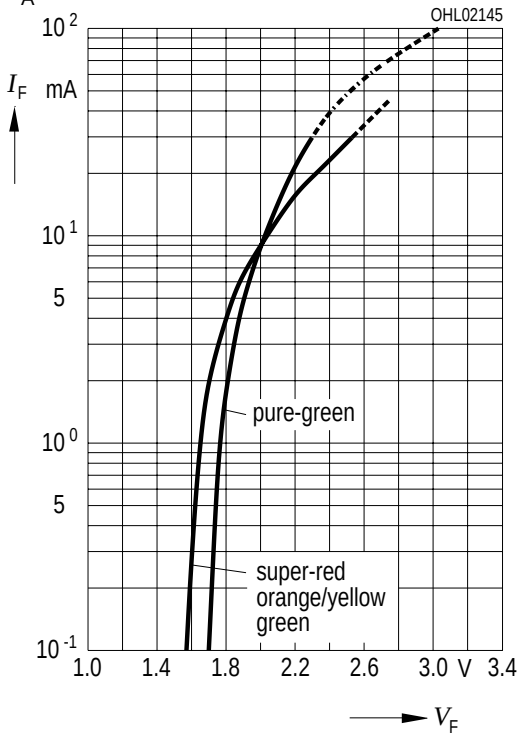
Relative spektrale Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 10 mA
Relative Spectral Emission
V(λ) = spektrale Augenempfindlichkeit
Standard eye response curve



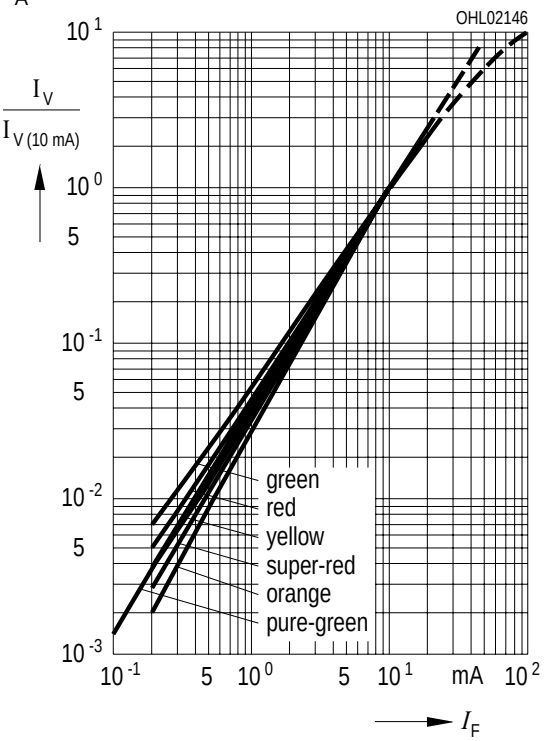
Abstrahlcharakteristik $I_{rel} = f(\varphi)$
Radiation Characteristic



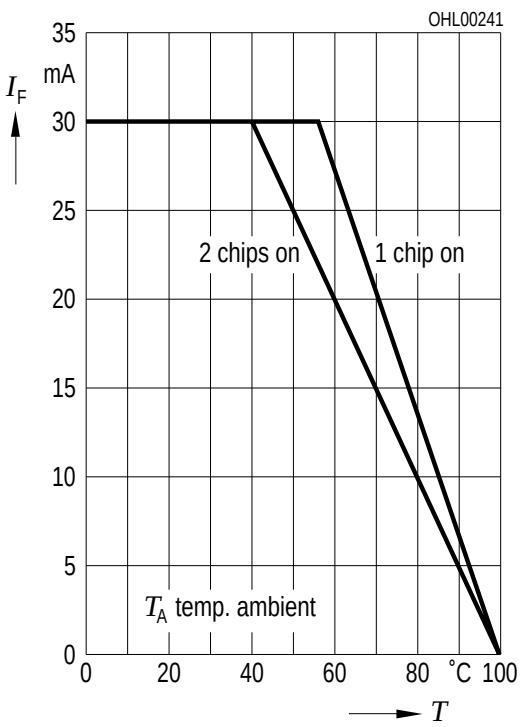
Durchlassstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



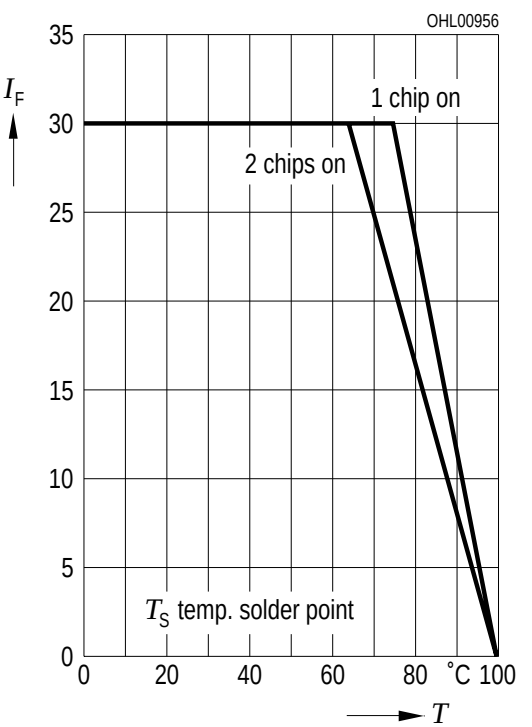
Relative Lichtstärke $I_V/I_{V(10\ mA)} = f(I_F)$
Relative Luminous Intensity
T_A = 25 °C



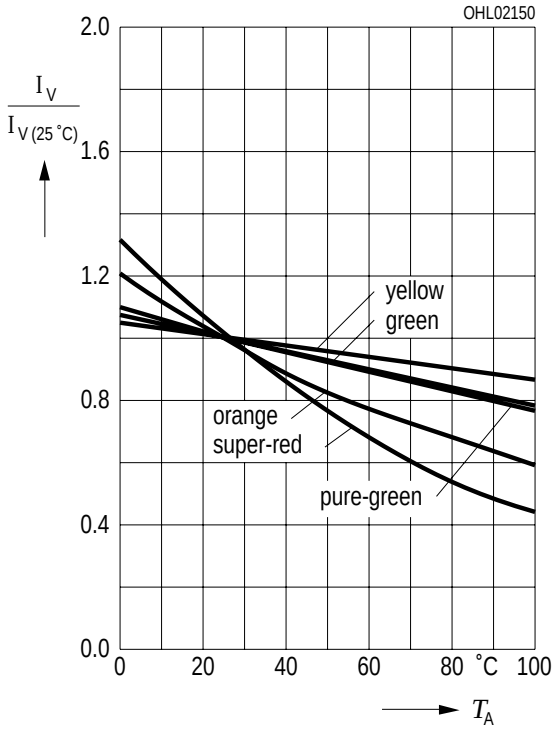
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



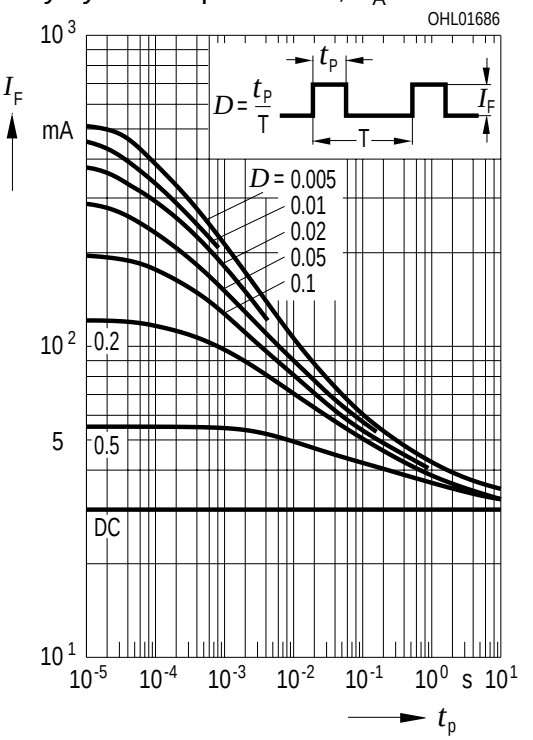
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



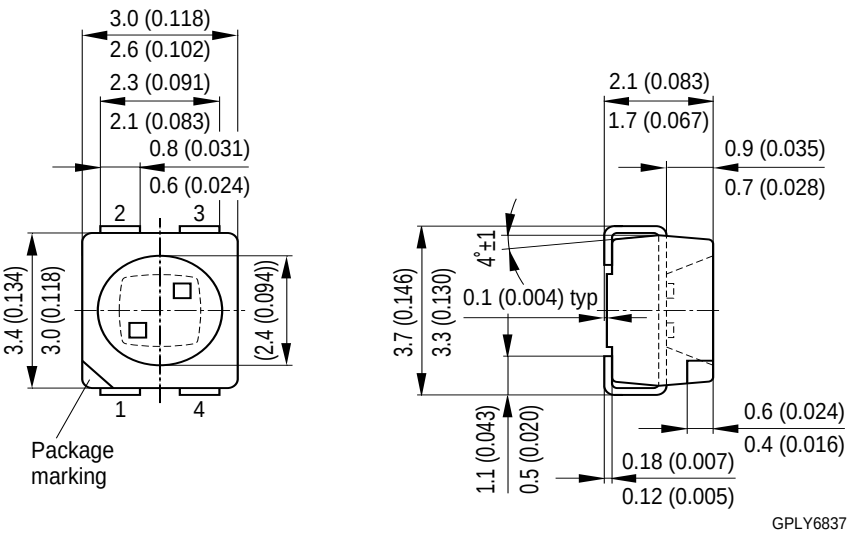
Relative Lichtstärke $I_V/I_{V(25\,°C)} = f(T_A)$
Relative Luminous Intensity
I_F = 10 mA



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



Maßzeichnung
Package Outlines



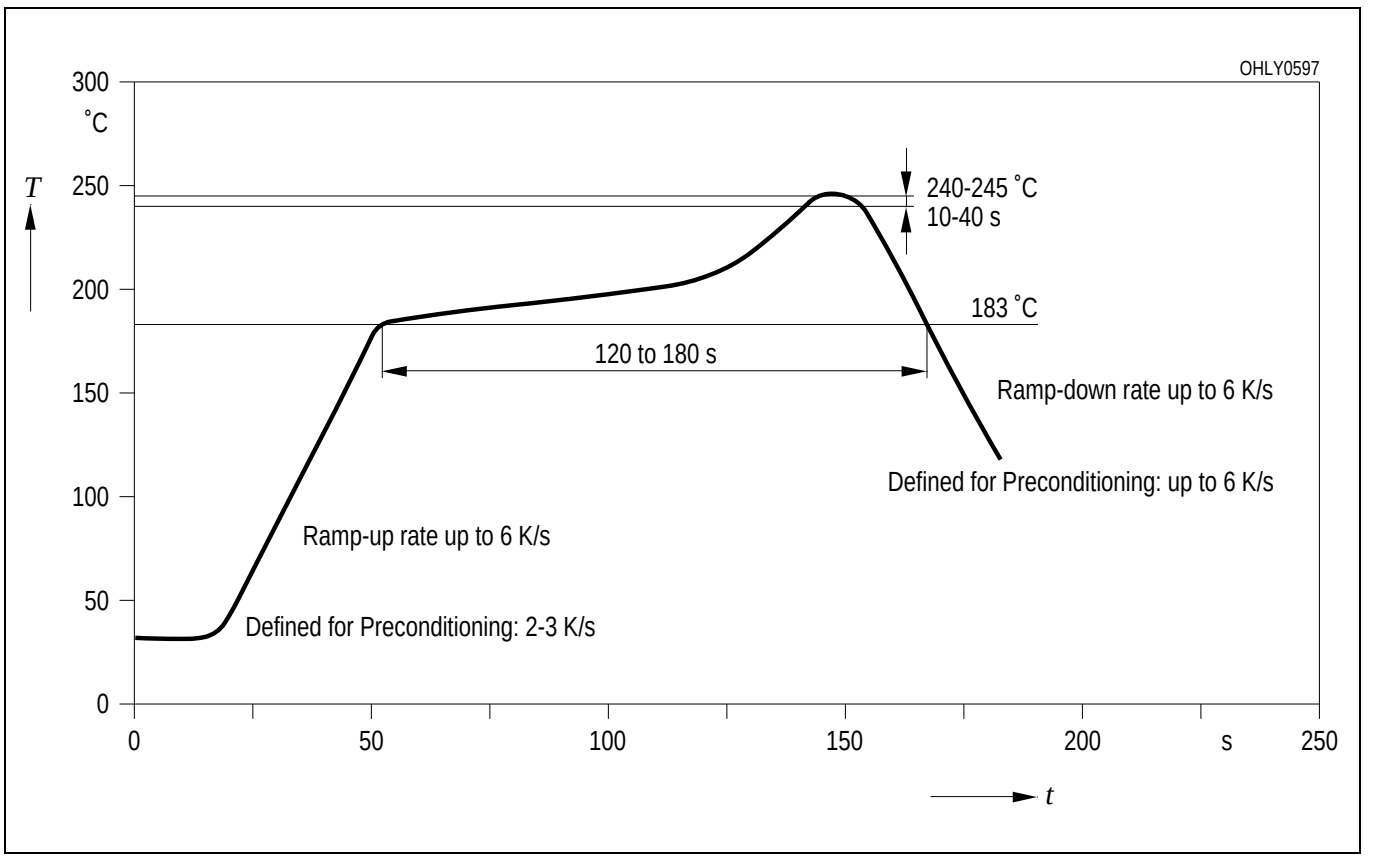
L	Color 1	Color 2	T670
LED	Emission color 1	Emission color 2	Package
	Cathode: pin 1	Cathode: pin 3	

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

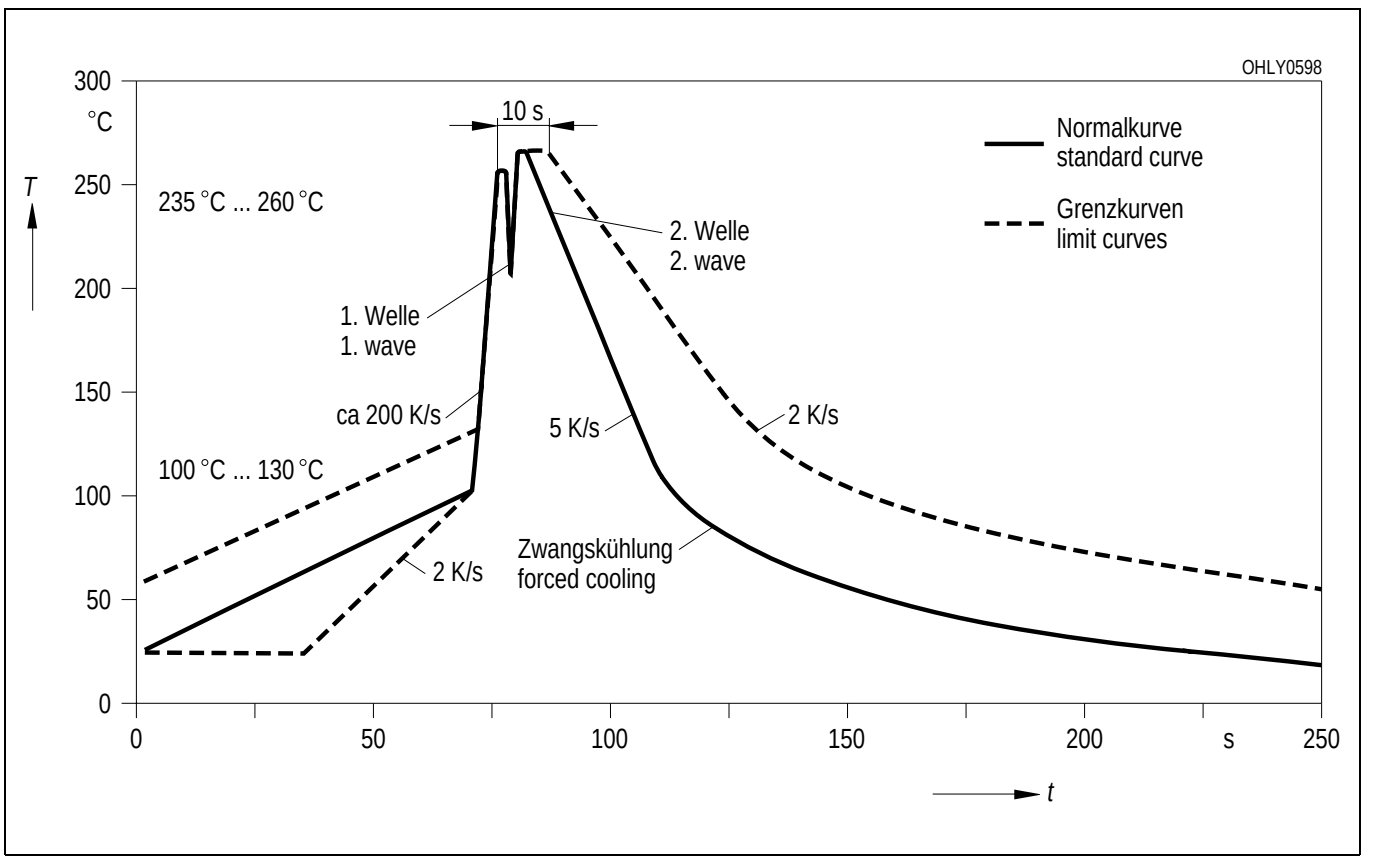
Kathodenkennung: abgeschrägte Ecke
Cathode mark: bevelled edge
Gewicht / Approx. weight: 34 mg

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

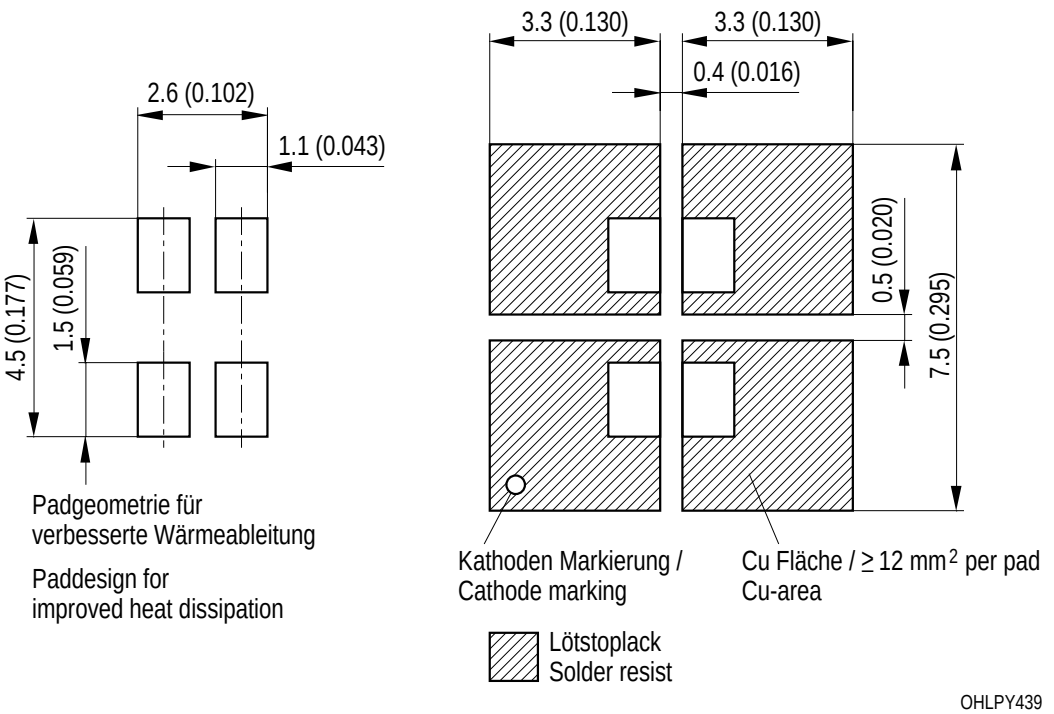
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



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

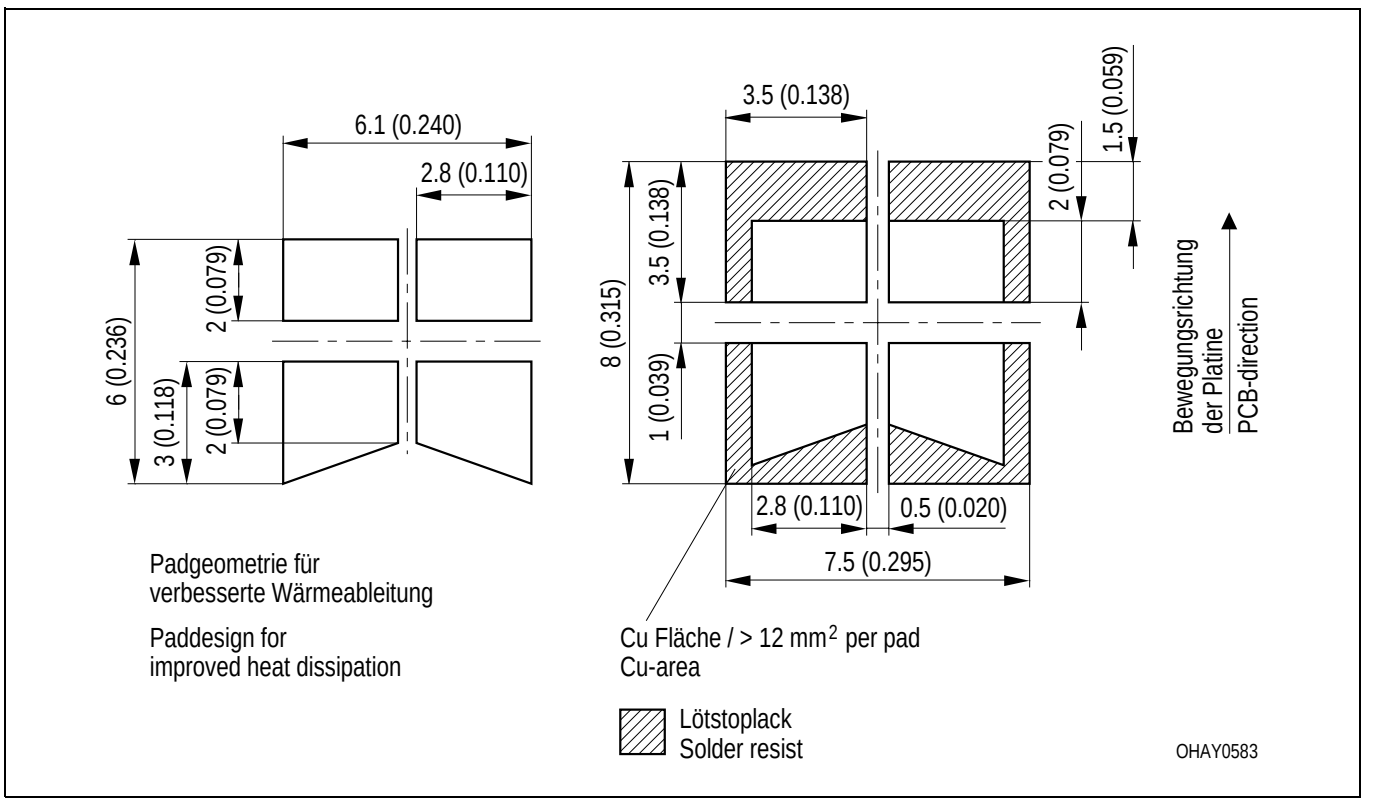


Empfohlenes Lötpaddesign IR Reflow Löten
Recommended Solder Pad IR Reflow Soldering



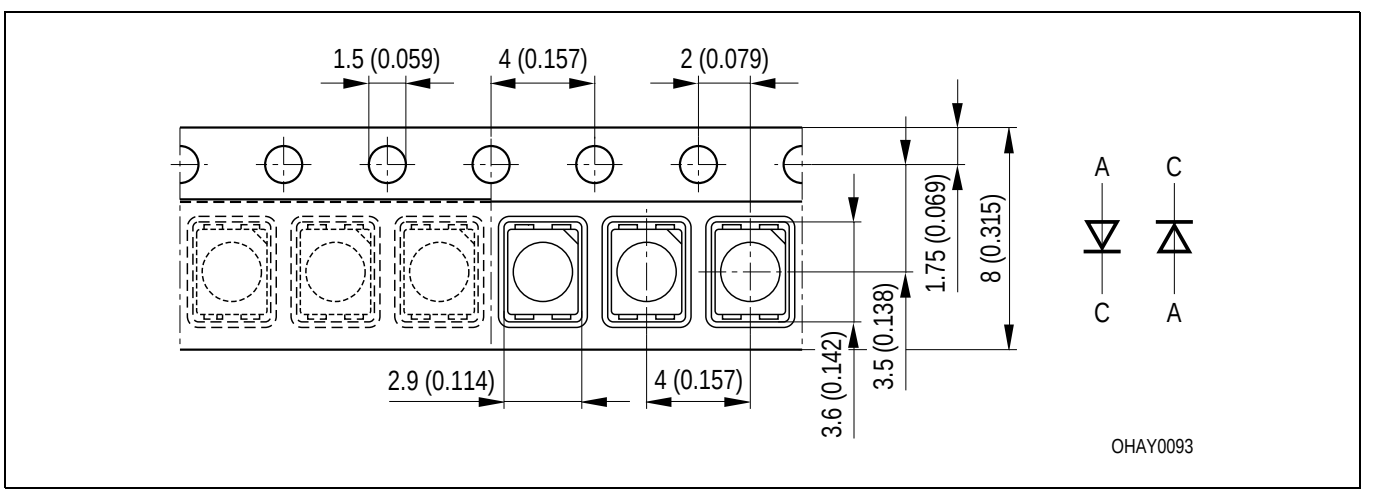
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Empfohlenes Lötpaddesign Wellenlöten (TTW)
Recommended Solder Pad TTW Soldering



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

Gurtung / Polarität und Lage Verpackungseinheit 2000/Rolle, ø180 mm oder 8000/Rolle, ø330 mm
Method of Taping / Polarity and Orientation Packing unit 2000/reel, ø180 mm or 8000/reel, ø330 mm



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

Revision History: 2001-07-23	
Previous Version: 2001-05-07	
Page	**Subjects (major changes since last revision)**
3	note changed
5	dominant wavelength (yellow)
13	graphic (taping)

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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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