Hyper Multi TOPLED®
Enhanced optical Power LED (HOP2000 / ATON®)

LATB T66B

Vorläufige Daten / Preliminary Data

Besondere Merkmale

- **Gehäusetyp:** weißes P-LCC-4 Gehäuse; Kontrasterhöhung durch schwarze Oberfläche (RGB-Displays) und diffuses Harz
- **Besonderheit des Bauteils:** additive Farbmischung durch unabhängige Ansteuerung aller Chips
- **Wellenlänge:** 617 nm (amber), 528 nm (true green), 470 nm (blau)
- **Abstrahlwinkel:** Lambertscher Strahler (120°)
- **Technologie:** InGaAlP (amber), InGaN (true green, blau)
- **optischer Wirkungsgrad:** 24 lm/W (amber), 13 lm/W (true green), 3 lm/W (blau)
- **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
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

Features

- **package:** white P-LCC-4 package; higher contrast by a black surface (RGB-Displays) and diffused resin
- **feature of the device:** additive mixture of color stimuli by independent driving of each chip
- **wavelength:** 617 nm (amber), 528 nm (true green), 470 nm (blue)
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** InGaAlP (amber), InGaN (true green, blue)
- **optical efficiency:** 24 lm/W (amber), 13 lm/W (true green), 3 lm/W (blue)
- **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
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

Anwendungen

- Anzeigen im Innen- und Außenbereich (z.B. im Verkehrsbereich; Laufschriftanzeigen)
- Leuchtdiodenchips getrennt ansteuerbar
- Vollfarbdisplays bzw. RGB-Displays
- Hinterleuchtung (LCD, Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Einkopplung in Lichtleiter

Applications

- indoor and outdoor displays (e.g. displays for traffic; light writing displays)
- LED chips can be controlled separately
- full color displays, RGB-Displays
- backlighting (LCD, switches, keys, displays, illuminated advertising, general lighting)
- coupling into light guides

Typ Type	Emissions-farbe Color of Emission	Farbe der Lichtaustritts-fläche Color of the Light Emitting Area	Lichtstärke Luminous Intensity I_F = 20 mA I_V (mcd)		
			amber	true green	blue
LATB T66B	amber true green blue	colorless diffused and black painted package surface	180 ... 450	180 ... 450	45 ... 112

Bestell - Information
Ordering Information

Typ Type	Bestellnummer Ordering Code
LATB T66B-ST-1+ST-78+PQ-1	Q65110-A0152
LATB T66B-ST-1+ST-7+PQ-1	Q65110-A0181
LATB T66B-ST-1+ST-8+PQ-1	Q65110-A0182

*Anm.: -78 gesamter Farbbereich, Lieferung in Einzelgruppen (siehe **Seite 5**)*

Die Standardlieferform von Serientypen beinhaltet eine Familiengruppe. Einzelne Gruppen sind nicht erhältlich.
In einer Verpackungseinheit / Gurt ist immer nur eine Gruppe pro Farbe enthalten.
Dimmverhältnis im Gleichstrom-Betrieb max. 5:1 für amber

*Note: -78 Total color tolerance range, delivery in single groups (please see **page 5**)*

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.
Dimming range for direct current mode max. 5:1 for amber

Grenzwerte
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Werte Values			Einheit Unit
		LA	LT	LB	
Betriebstemperatur Operating temperature range	T_{op}	– 40 … + 100			°C
Lagertemperatur Storage temperature range	T_{stg}	– 40 … + 100			°C
Sperrschichttemperatur Junction temperature	T_j	+ 125	+ 125	+ 110	°C
Durchlassstrom Forward current	I_F	70	30	30	mA
Stoßstrom Surge current t_p = 10 µs, D = 0.005	I_{FM}	0.10	0.25	0.20	A
Sperrspannung Reverse voltage	V_R	5	5	5	V
Leistungsaufnahme Power consumption	P_{tot}	180	140	140	mW
Wärmewiderstand Thermal resistance					
Sperrschicht/Umgebung 1 chip on	$R_{th\ JA}$	480	530	530	K/W
Junction/ambient 3 chips on	$R_{th\ JA}$	770	820	820	K/W
Sperrschicht/Lötpad 1 chip on	$R_{th\ JS}$	260	310	310	K/W
Junction/solder point 3 chips on	$R_{th\ JS}$	420	470	470	K/W
Montage auf PC-Board FR 4 (Padgröße ≥ 16 mm²) mounted on PC board FR 4 (pad size ≥ 16 mm²)					

Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**		**Symbol** **Symbol**	**Werte** **Values**			**Einheit** **Unit**
			LA	**LT**	**LB**	
Wellenlänge des emittierten Lichtes Wavelength at peak emission I_F = 20 mA	(typ.)	λ_{peak}	628	523	465	nm
Dominantwellenlänge [1] Dominant wavelength I_F = 20 mA	(typ.)	λ_{dom}	617 –2 / +7	528 ± 9	470 ± 6	nm
Spektrale Bandbreite bei 50 % $I_{rel\ max}$ Spectral bandwidth at 50 % $I_{rel\ max}$ I_F = 20 mA	(typ.)	$\Delta\lambda$	16	33	25	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V	(typ.)	2φ	120	120	120	Grad deg.
Durchlassspannung [2] Forward voltage I_F = 20 mA	(min.) (typ.) (max.)	V_F V_F V_F	 2.0 2.4	 3.5 4.3	 3.8 4.3	V V V
Sperrstrom Reverse current V_R = 5 V	(typ.) (max.)	I_R I_R	0.01 10	0.01 10	0.01 10	µA µA
Temperaturkoeffizient von λ_{peak} Temperature coefficient of λ_{peak} I_F =20 mA; –10°C ≤ T ≤ 100°C	(typ.)	$TC_{\lambda peak}$	0.13	0.04	0.05	nm/K
Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} I_F = 20 mA; –10°C ≤ T ≤ 100°C	(typ.)	$TC_{\lambda dom}$	0.06	0.03	0.04	nm/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 20 mA; –10°C ≤ T ≤ 100°C	(typ.)	TC_V	– 1.8	– 3.6	– 3.1	mV/K
Optischer Wirkungsgrad Optical efficiency I_F = 20 mA	(typ.)	η_{opt}	24	13	3	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	true green		Einheit Unit
	min.	max.	
7	519	528	nm
8	528	537	nm

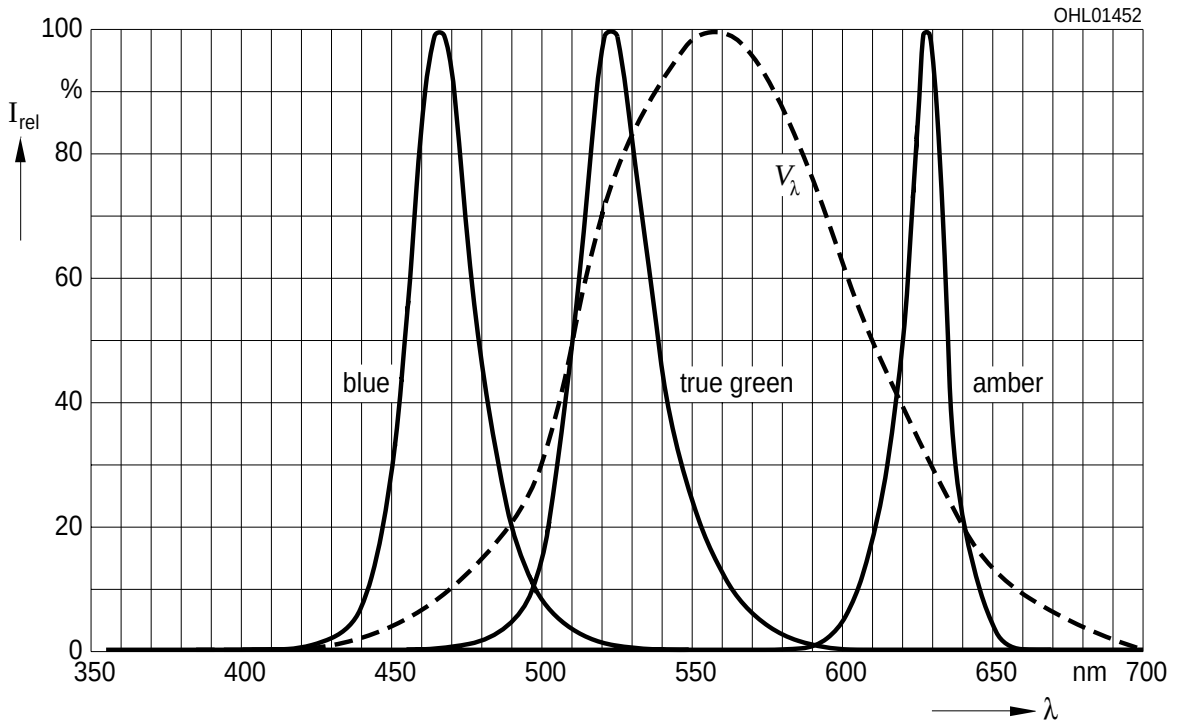
Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity I_V (mcd)	Lichtstrom Luminous Flux Φ_V (mlm)	Lichtstärke Luminous Intensity I_V (mcd)	Lichtstrom Luminous Flux Φ_V (mlm)	Lichtstärke Luminous Intensity I_V (mcd)	Lichtstrom Luminous Flux Φ_V (mlm)
	amber		true green		blue	
S+S+P	180 ... 280	680 (typ.)	180 ... 280	680 (typ.)	45 ... 71	95 (typ.)
S+S+Q	180 ... 280	680 (typ.)	180 ... 280	680 (typ.)	71 ... 112	270 (typ.)
S+T+P	180 ... 280	680 (typ.)	280 ... 450	1075 (typ.)	45 ... 71	95 (typ.)
S+T+Q	180 ... 280	680 (typ.)	280 ... 450	1075 (typ.)	71 ... 112	270 (typ.)
T+S+P	280 ... 450	1075 (typ.)	180 ... 280	680 (typ.)	45 ... 71	95 (typ.)
T+S+Q	280 ... 450	1075 (typ.)	180 ... 280	680 (typ.)	71 ... 112	270 (typ.)
T+T+P	280 ... 450	1075 (typ.)	280 ... 450	1075 (typ.)	45 ... 71	95 (typ.)
T+T+Q	280 ... 450	1075 (typ.)	280 ... 450	1075 (typ.)	71 ... 112	270 (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 %.

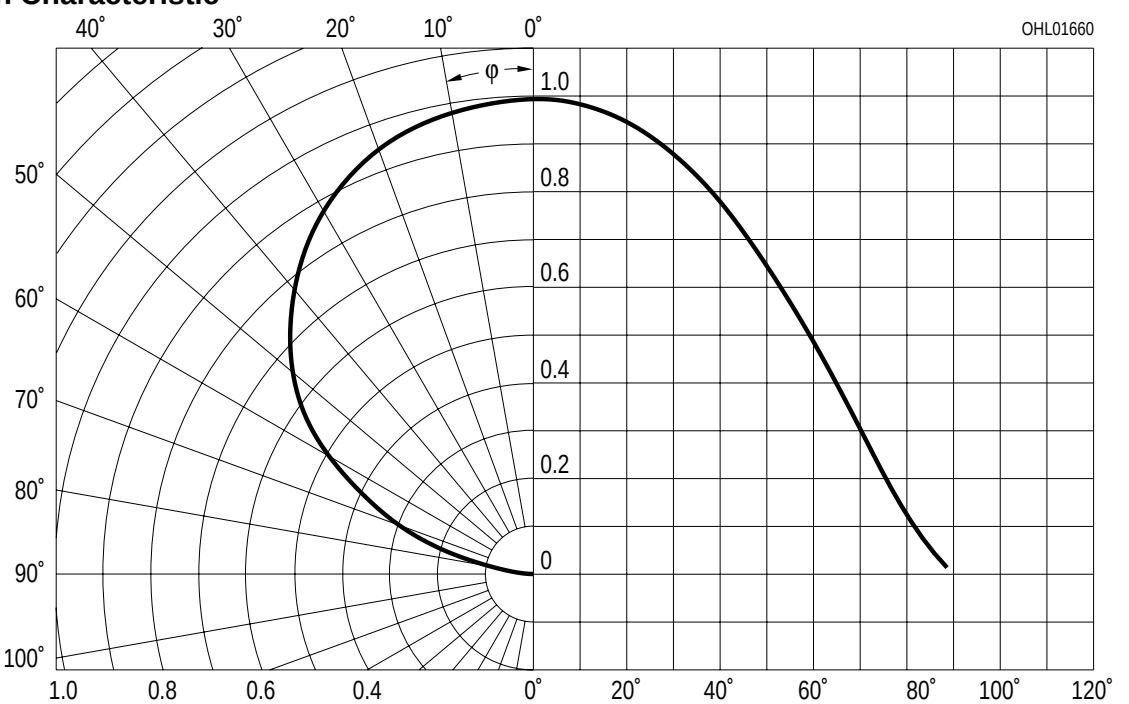
Gruppenbezeichnung auf Etikett
Group Name on Label
Beispiel: T-1+S-7+P-1
Example: T-1+S-7+P-1

Lichtgruppe Luminous Intensity Group (amber)	Wellenlänge (keine Gruppierung) Wavelength (no grouping) (amber)	Lichtgruppe Luminous Intensity Group (true green)	Wellenlänge Wavelength (true green)	Lichtgruppe Luminous Intensity Group (blue)	Wellenlänge (keine Gruppierung) Wavelength (no grouping) (blue)
T	1	S	7	P	1

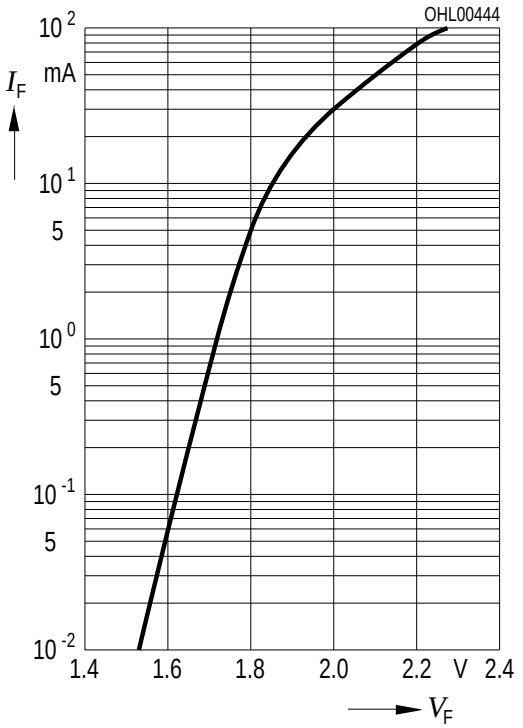
Relative spektrale Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 20 mA
Relative Spectral Emission
V(λ) = spektrale Augenempfindlichkeit
Standard eye response curve



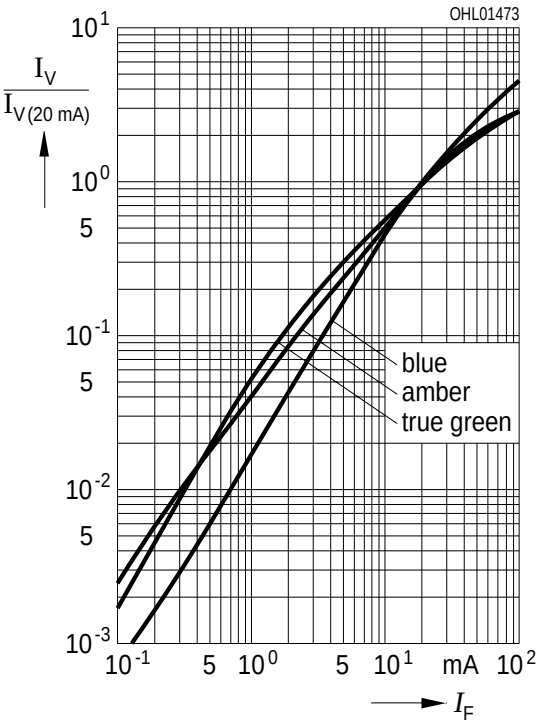
Abstrahlcharakteristik $I_{rel} = f(\varphi)$
Radiation Characteristic



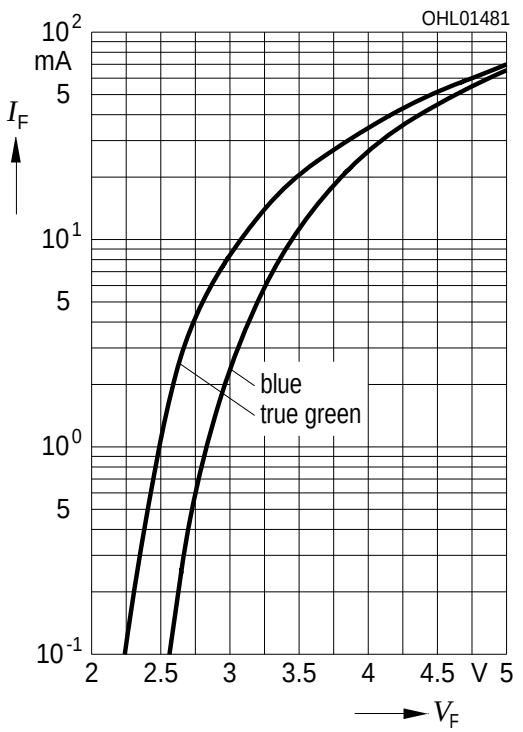
Durchlassstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



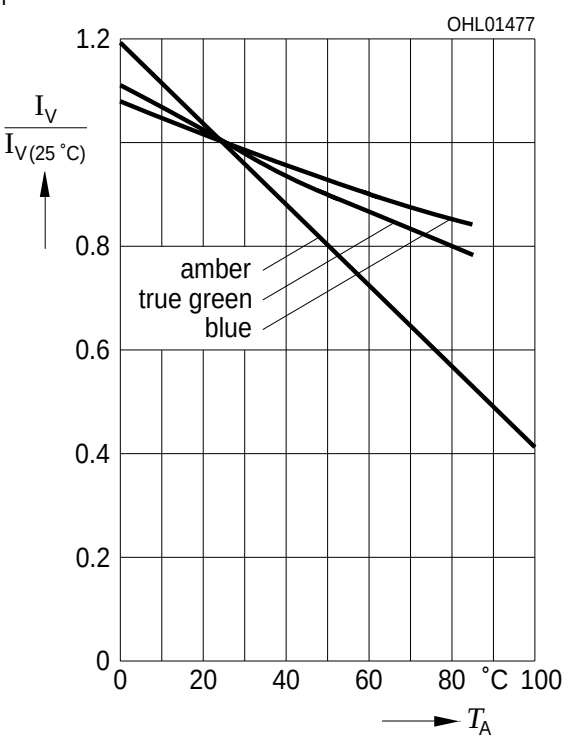
Relative Lichtstärke $I_V/I_{V(20\ mA)} = f(I_F)$
Relative Luminous Intensity
T_A = 25 °C



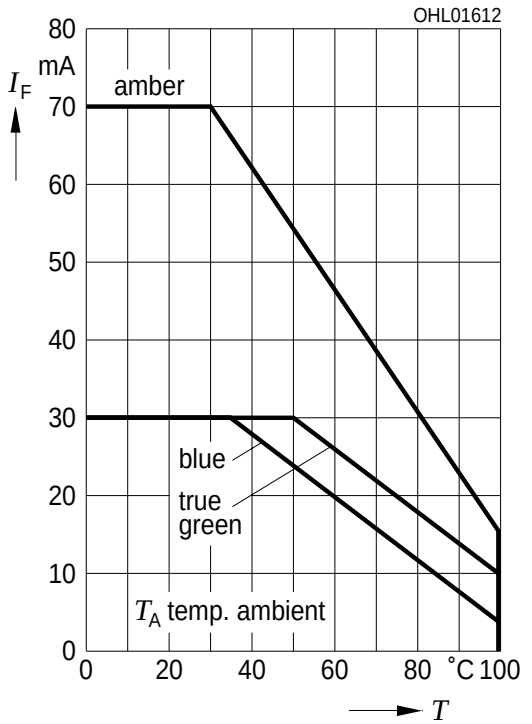
Durchlassstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



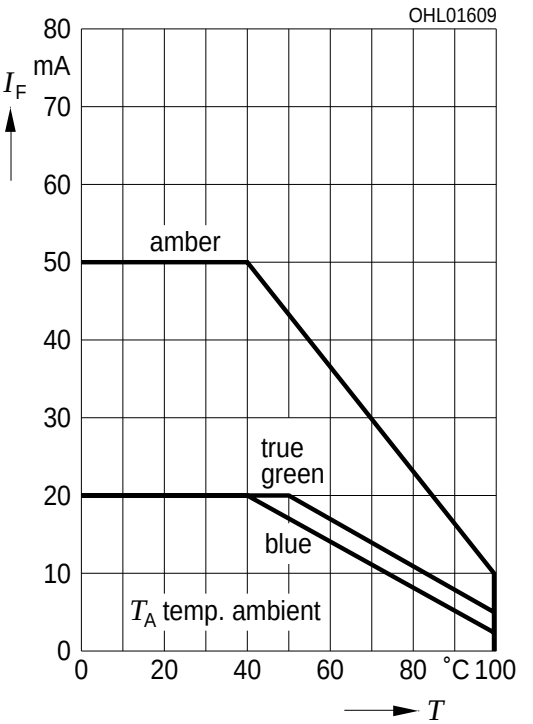
Relative Lichtstärke $I_V/I_{V(25\ °C)} = f(T_A)$
Relative Luminous Intensity
I_F = 20 mA



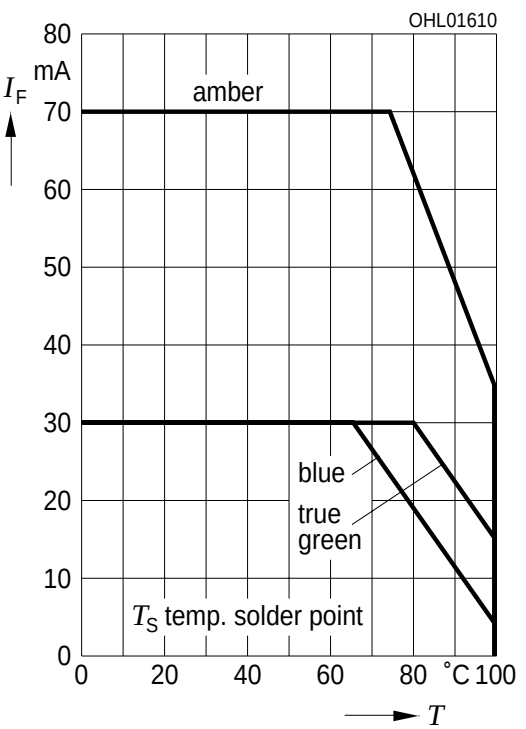
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current
1 chip on



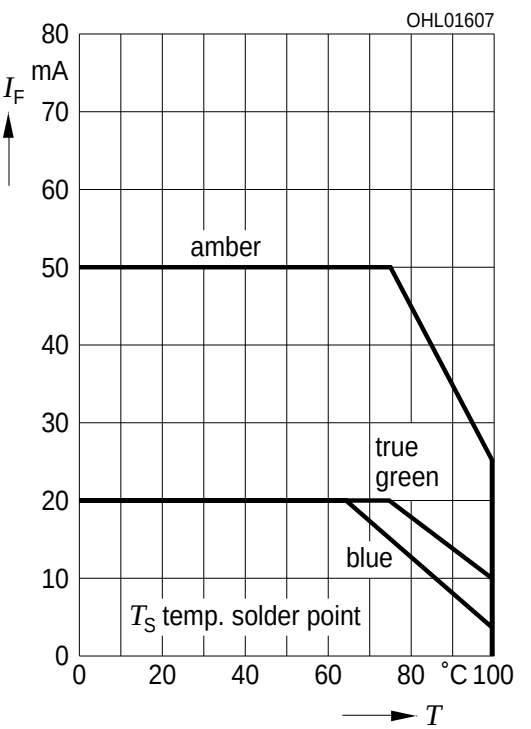
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current
3 chips on



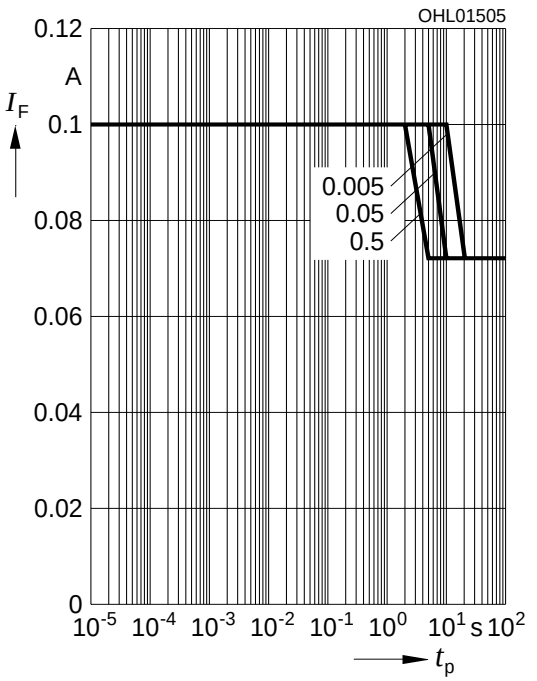
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current
1 chip on



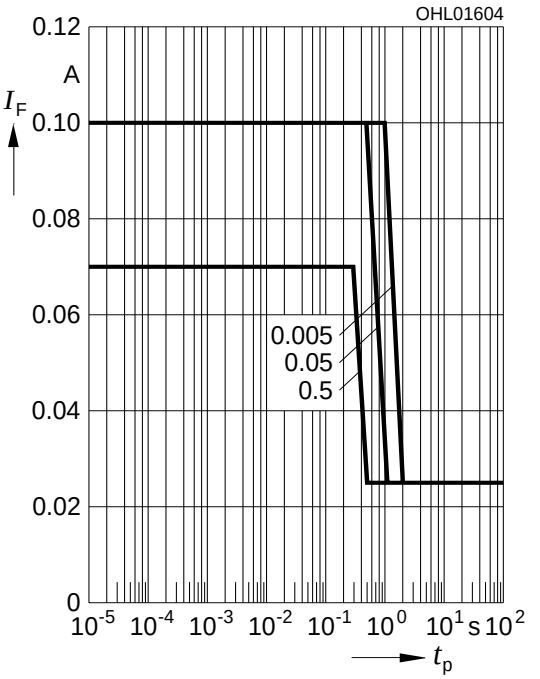
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current
3 chips on



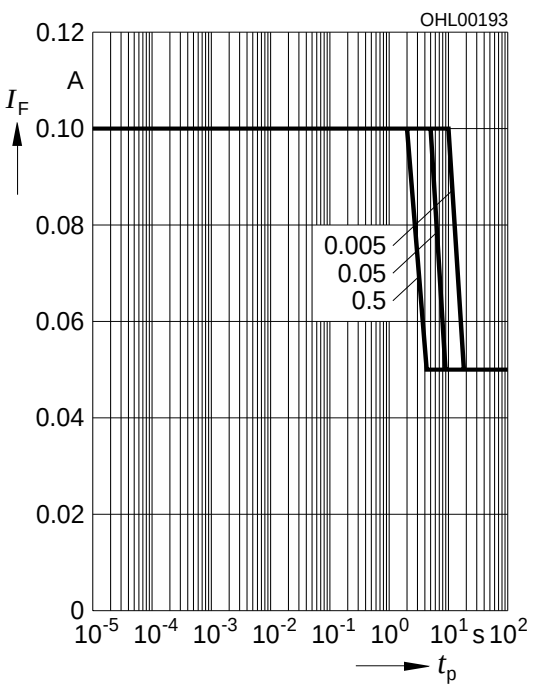
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 25 °C
amber (1 Chip on)



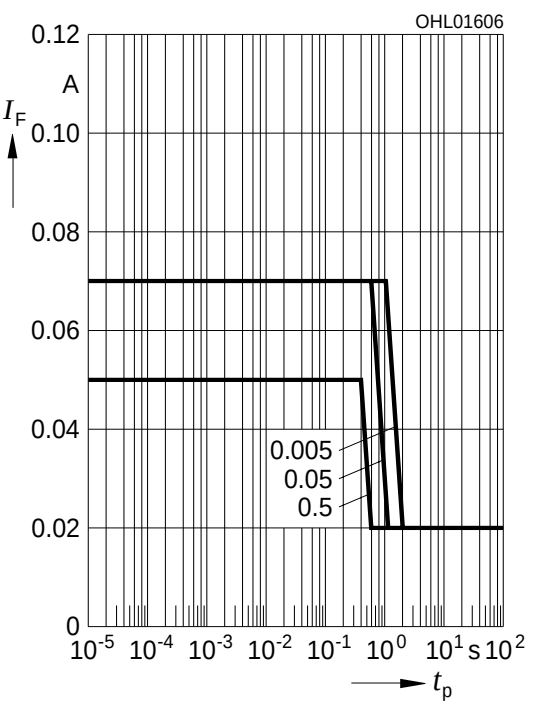
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 85 °C
amber (1Chip on)



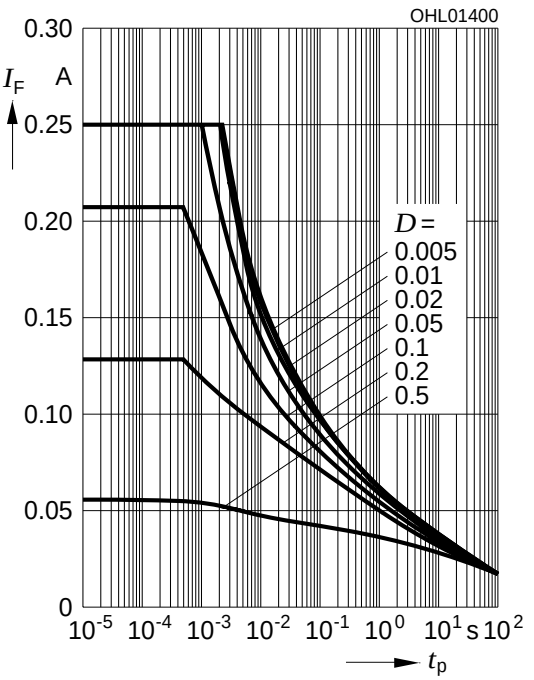
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 25 °C
amber (3 Chips on)



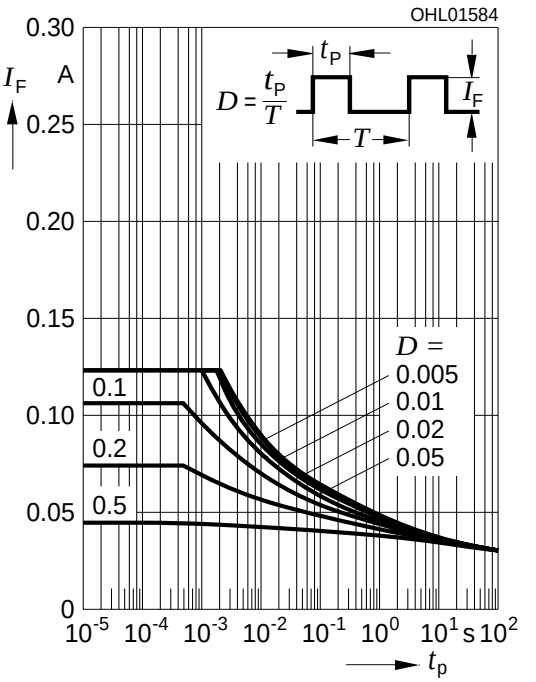
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 85 °C
amber (3 Chips on)



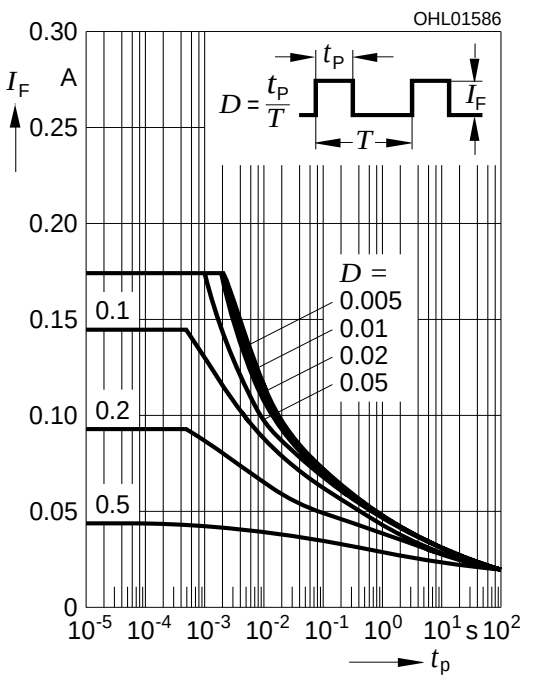
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 25 °C
true green (1 Chip on)



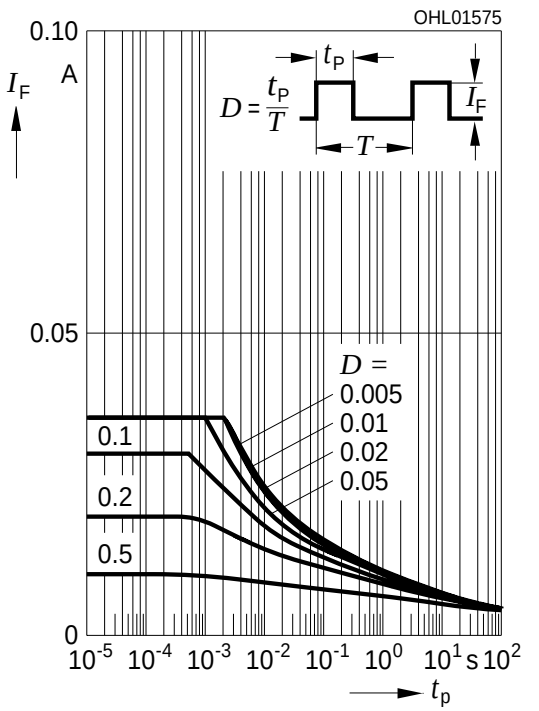
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 85 °C
true green (1 Chip on)



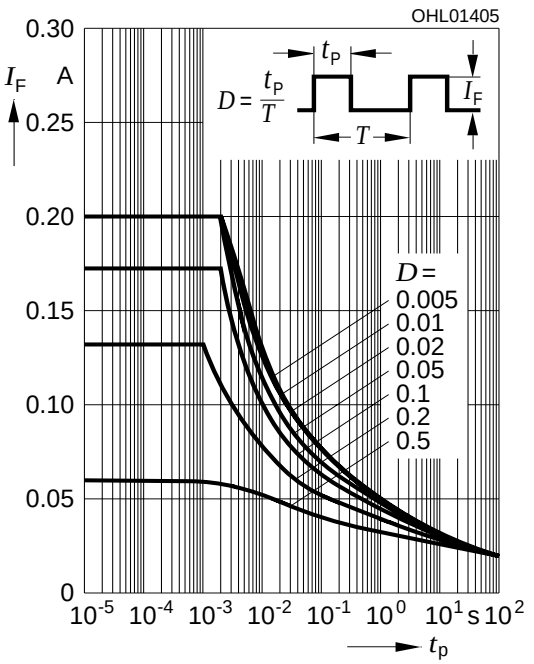
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 25 °C
true green (3 Chips on)



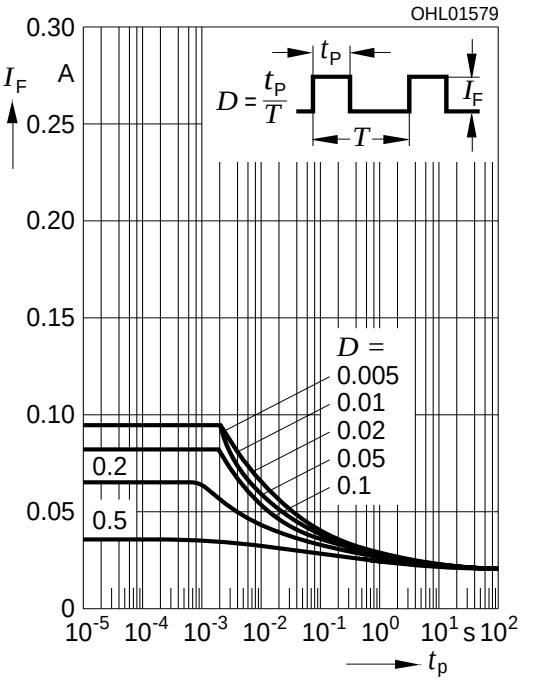
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 85 °C
true green (3 Chips on)



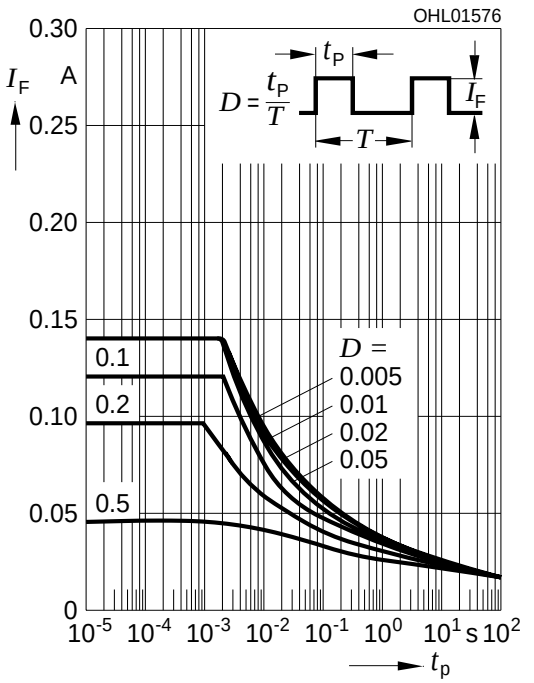
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 25 °C
blue (1 Chip on)



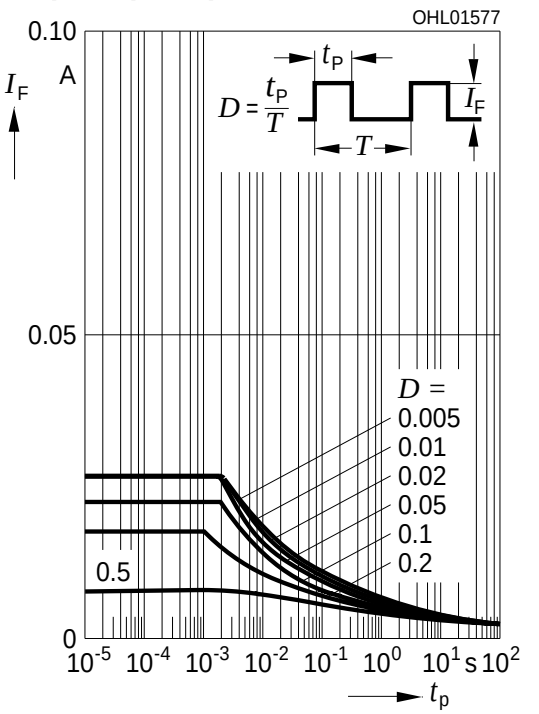
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 85 °C
blue (1 Chip on)

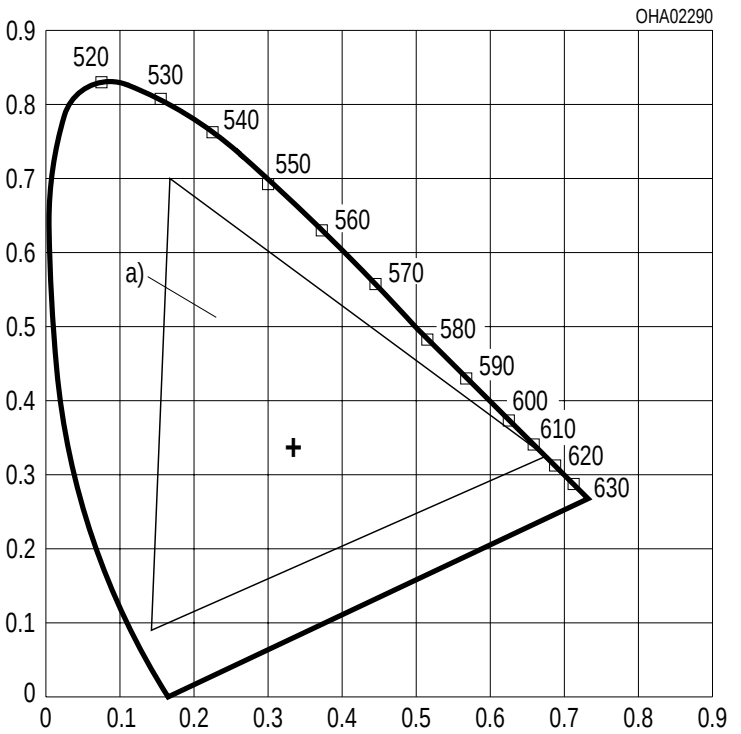


Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 25 °C
blue (3 Chips on)



Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 85 °C
blue (3 Chips on)

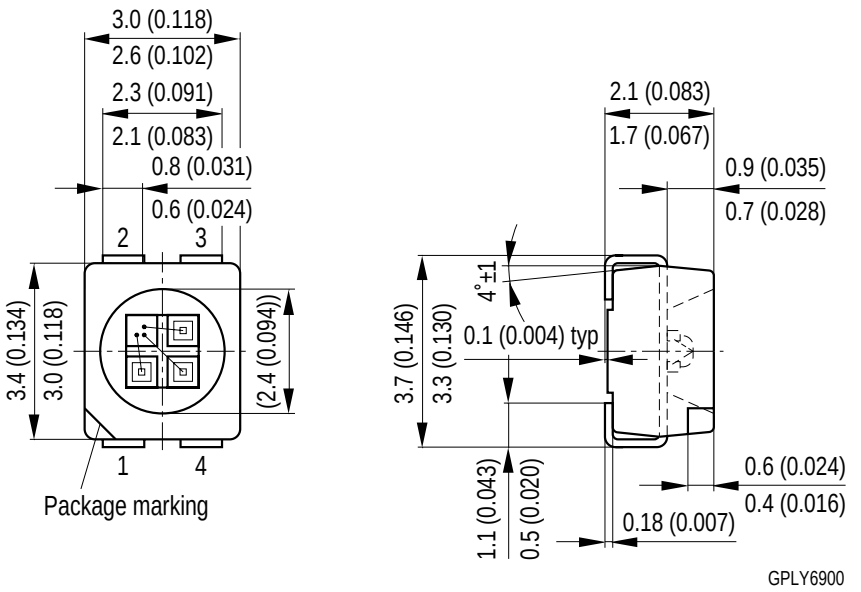




Die Farbkoordinaten des Mischlichtes können innerhalb des mit a) gekennzeichneten Bereichs des Farbdreiecks erwartet werden.Der Unbuntpunkt (x = 0,33, y = 0,33) ist mit „+“ gekennzeichnet.

The color coordinates of the mixed light can be expected within the area of the color triangle marked a).
The achromatic point (x = 0.33, y = 0.33) is marked „+“.

Maßzeichnung
Package Outlines



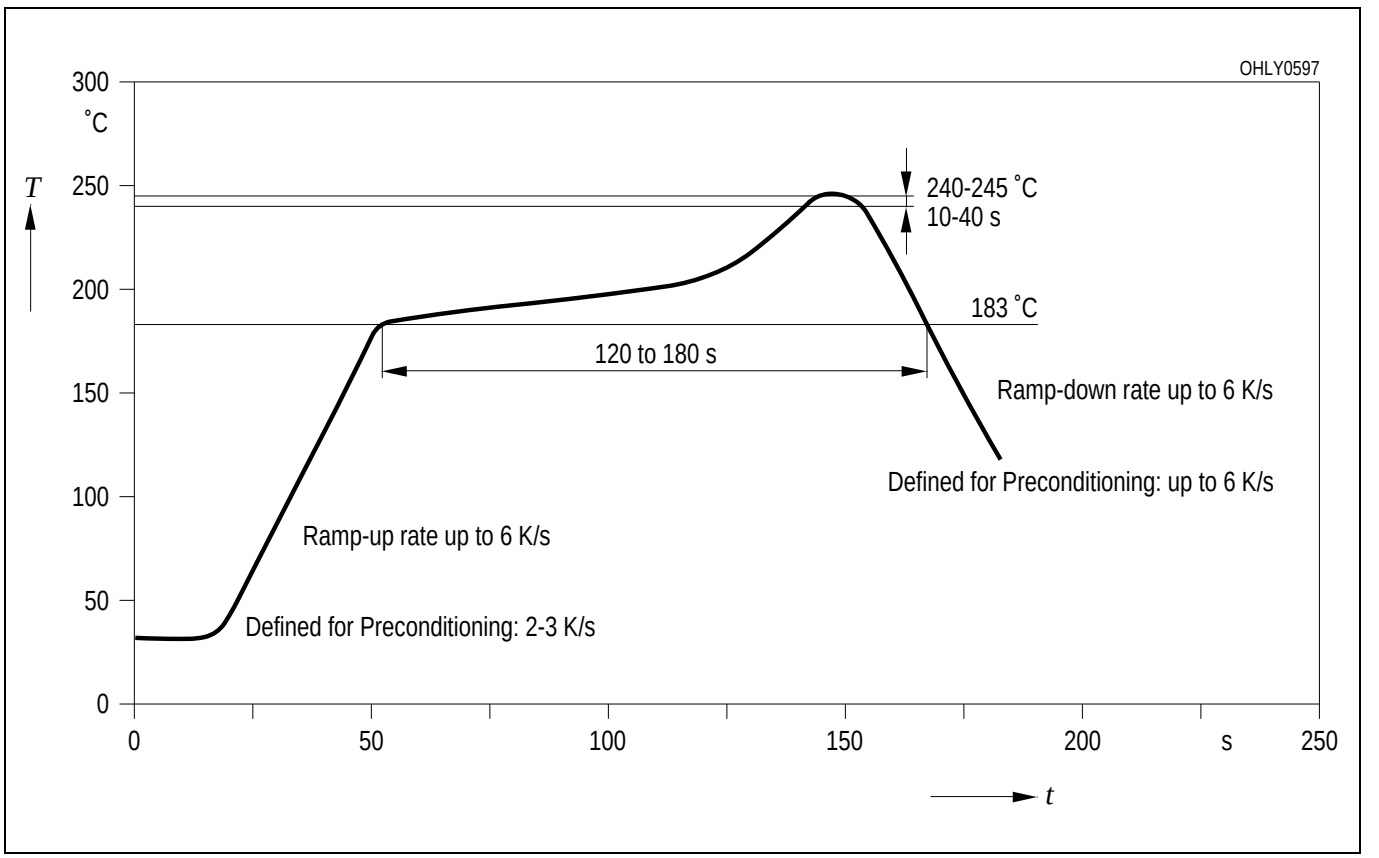
1	Cathode	Amber (A)
2	Anode	A, T, B
3	Cathode	Blue (B)
4	Cathode	True Green (T)

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

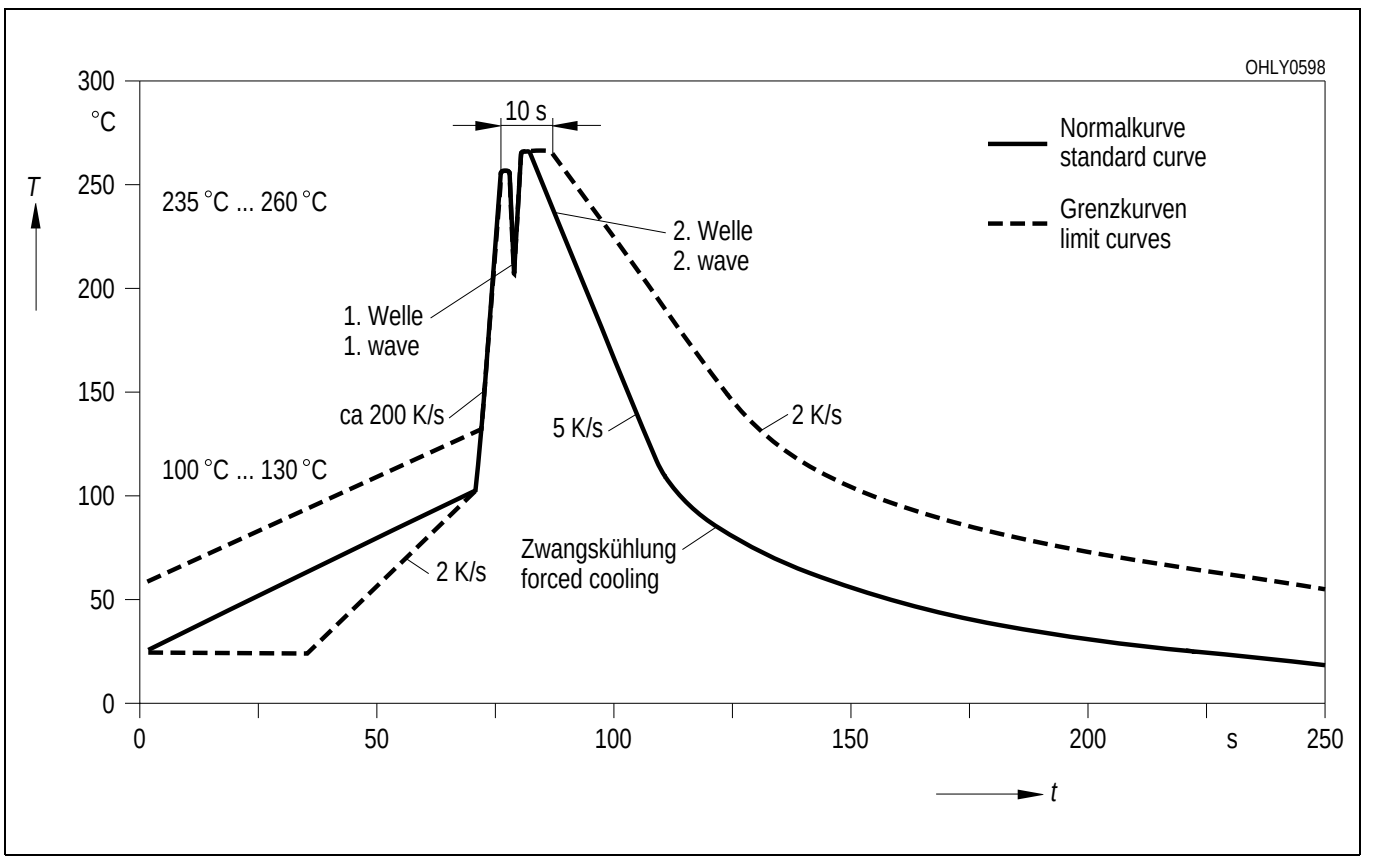
Gewicht / Approx. weight: 34 mg

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

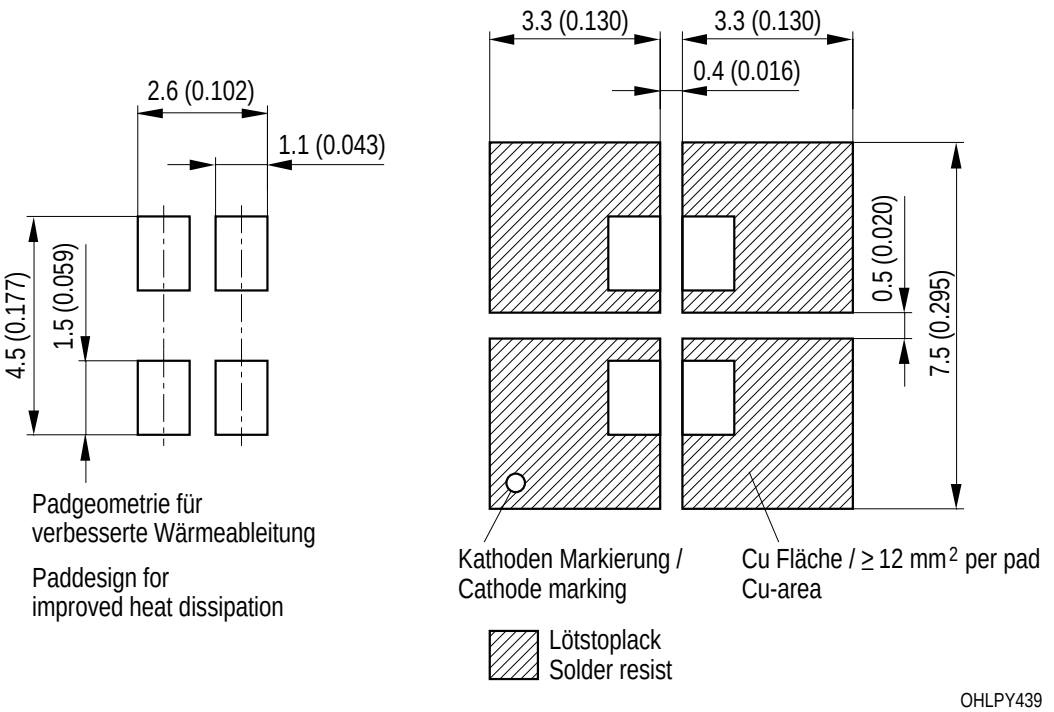
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



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

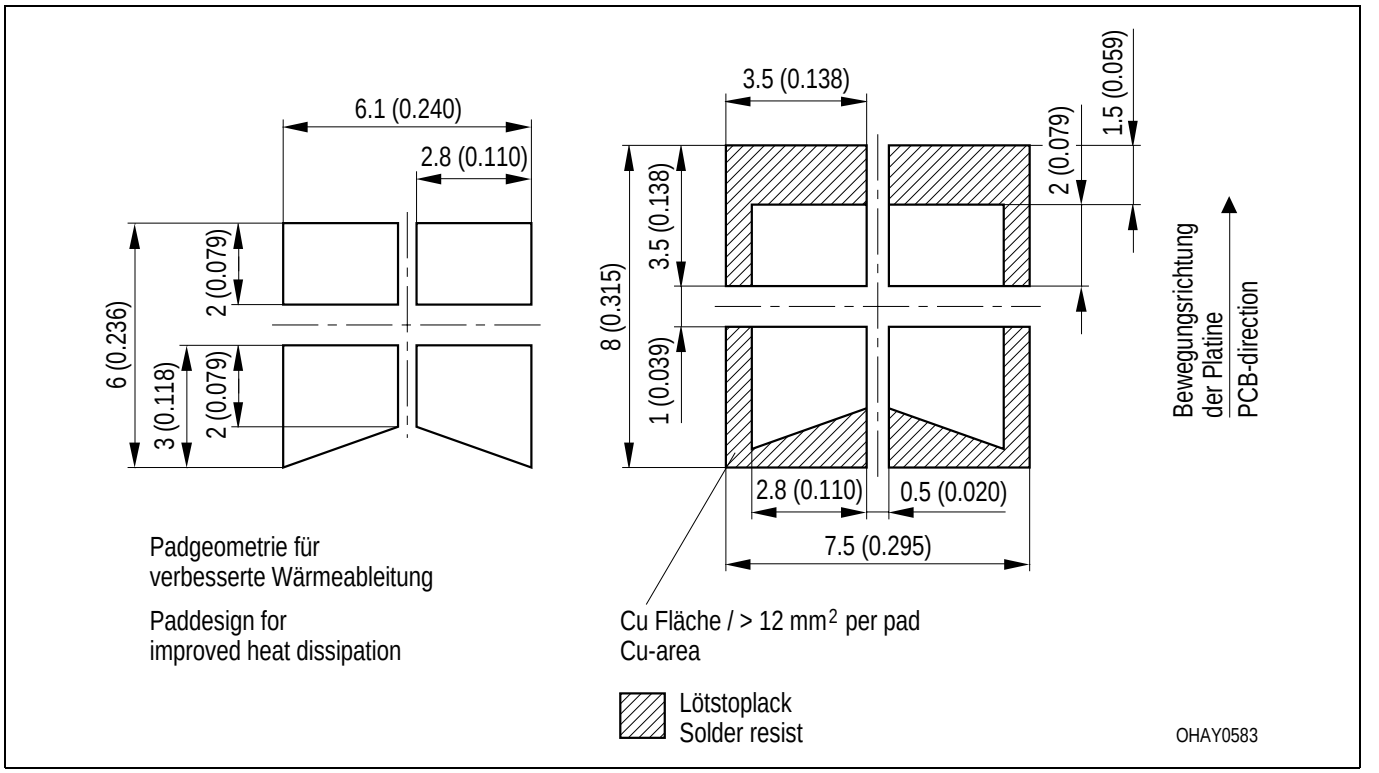


Empfohlenes Lötpaddesign IR Reflow Löten
Recommended Solder Pad IR Reflow Soldering



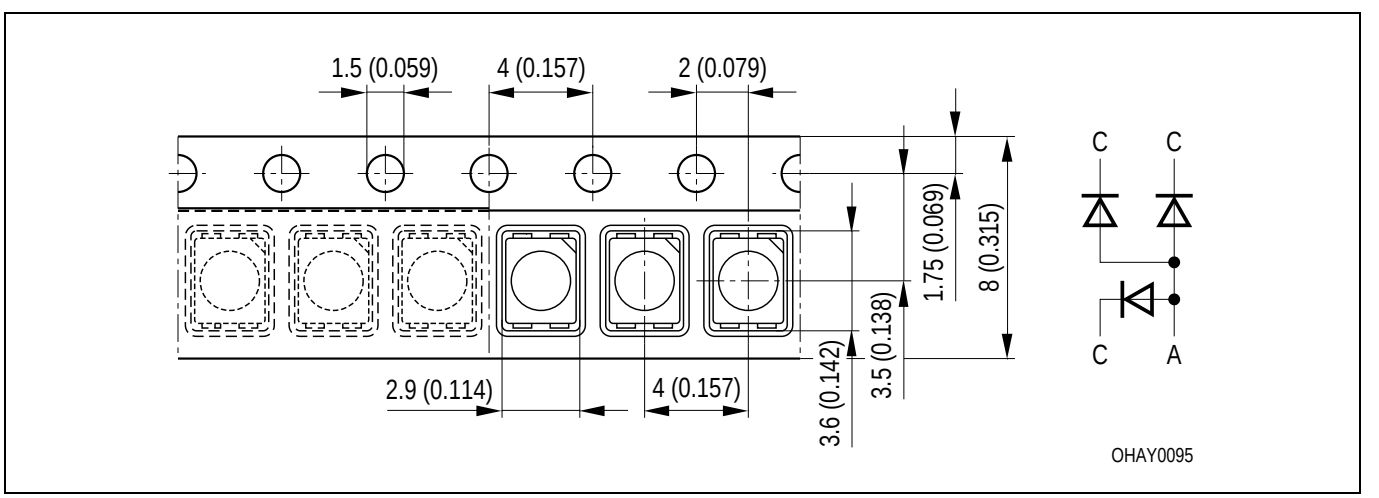
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

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: 2002-05-24	
Previous Version: 2001-11-30	
Page	**Subjects (major changes since last revision)**
1	ESD-withstand voltage
2	ordering informaion
5	grouping information

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Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components [1] may only be used in life-support devices or systems [2] with the express written approval of OSRAM OS.
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[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.