Hyper 5 mm (T1 ¾) LED, Non Diffused
Enhanced optical Power LED (ATON®)

LW 541C

Vorläufige Daten / Preliminary Data

Besondere Merkmale

- **Gehäusetyp:** nicht eingefärbtes, klares 5 mm (T1¾) Gehäuse
- **Besonderheit des Bauteils:** enge Abstrahlcharakteristik; Lötspieße ohne Aufsetzebene
- **Farbort:** x= 0.32, y = 0.31 nach CIE 1931 (weiß)
- **typ. Farbtemperatur:** 6500 K
- **Farbwiedergabeindex:** 80
- **Abstrahlwinkel:** 20°
- **Technologie:** InGaN
- **optischer Wirkungsgrad:** 12 lm/W
- **Gruppierungsparameter:** Lichtstärke, Farbort
- **Lötmethode:** Wellenlöten (TTW)
- **Verpackung:** Schüttgut, gegurtet lieferbar
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

Anwendungen

- Informationsanzeigen im Außenbereich
- optischer Indikator
- Signal- und Symbolleuchten
- Markierungsbeleuchtung (z.B. Stufen, Fluchtwege, u.ä.)
- Effektbeleuchtung (z.B. Sternenhimmel)
- Ersatz von Miniaturlampen
- Möbelbeleuchtung (z.B. Vitrinen)

Features

- **package:** colorless, clear 5 mm (T1¾) package
- **feature of the device:** narrow viewing angle, solder leads without stand-off
- **color coordinates:** x = 0.32, y = 0.31 acc. to CIE 1931 (white)
- **typ. color temperature:** 6500 K
- **color reproduction index:** 80
- **viewing angle:** 20°
- **technology:** InGaN
- **optical efficiency:** 12 lm/W
- **grouping parameter:** luminous intensity, color coordinates
- **soldering methods:** TTW soldering
- **packing:** bulk, available taped on reel
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

Applications

- outdoor displays
- optical indicators
- signal and symbol luminaire
- marker lights (e.g. steps, exit ways, etc.)
- lighting for special effects (e.g. starry sky)
- substitute for miniature flashlight
- furniture lighting (e.g. glass cupboards)

Typ Type	Emissions-farbe Color of Emission	Gehäusefarbe Color of Package	Lichtstärke Luminous Intensity I_F = 20 mA I_V (mcd)	Lichtstrom Luminous Flux I_F = 20 mA Φ_V (mlm)	Bestellnummer Ordering Code
LW 541C-AWBW-35 LW 541C-BWCW-35	white	colorless clear	1120 ...2800 1800 ...4500	590 (typ.) 950 (typ.)	Q62703-Q6400 Q62703-Q6401

*Anm.: -35 Farbselektiert nach Farbortgruppen (siehe **Seite 5**).*

Die Standardlieferform von Serientypen beinhaltet eine untere bzw. eine obere Familiengruppe oder mindestens zwei Einzelgruppen.
In einer Verpackungseinheit / Gurt ist immer nur eine Helligkeitsgruppe enthalten.
Die technologiebedingte Helligkeits-Streuung der heutigen LED-Herstellprozesse über einen längeren Fertigungszeitraum (Halbleitermaterial - Chipherstellung - Montageprozess) erlaubt keine Zusage einer einzelnen Helligkeitsgruppe. Daher müssen mindestens zwei Helligkeitsgruppen vorgesehen werden!

*Note: -35 Color selection acc. to Chromaticity coordinate groups (see **page 5**)*

The standard shipping format for serial types includes a lower or upper family group or at least two individual groups.
No packing unit / tape ever contains more than one luminous intensity group.
Luminosity variations caused by the technology used in current LED manufacturing processes over a protracted manufacturing period (semiconductor material - chip fabrication - assembly process) mean that it is not possible to assign LEDs to a single luminous intensity group. For this reason at least two luminous intensity groups must be provided!

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	+ 100	°C
Durchlassstrom Forward current	I_F	20	mA
Stoßstrom Surge current $t \leq 10$ µs, $D = 0.005$	I_{FM}	200	mA
Sperrspannung Reverse voltage	V_R	5	V
Leistungsaufnahme Power consumption $T_A \leq 25$ °C	P_{tot}	85	mW
Wärmewiderstand [1] Thermal resistance Sperrschicht/Umgebung Junction/ambient Sperrschicht/Lötpad Junction/solder point Montage auf PC-Board FR 4 (Padgröße ≥ 16 mm²) mounted on PC board FR 4 (pad size ≥ 16 mm²) Minimale Beinchenlänge Minimum lead length	 $R_{th\ JA}$ $R_{th\ JS}$	 450 230	 K/W K/W

[1] R_{th} erhöht sich um 13 K/W pro mm Beinchenlänge.
Each additional 1 mm of lead length increases R_{th} by 13 K/W.

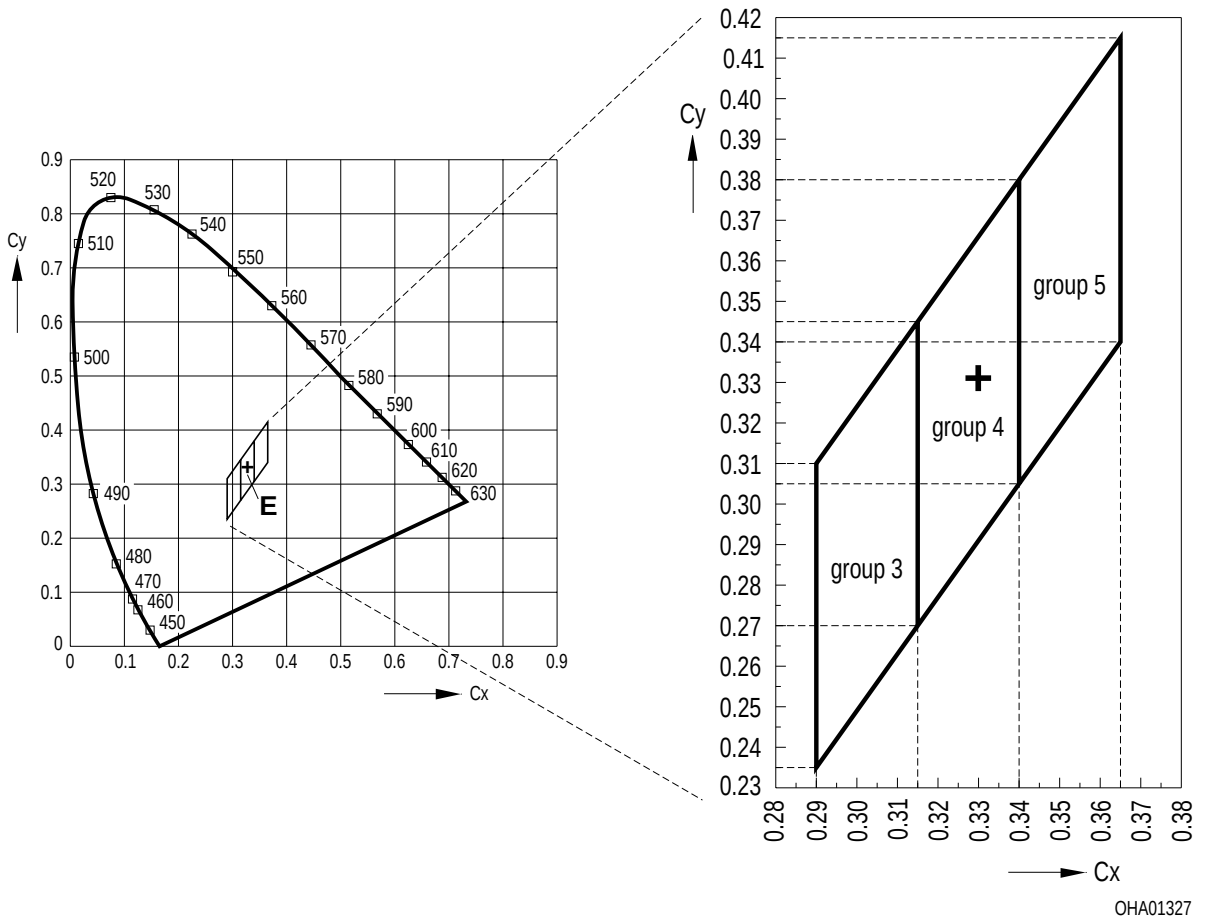
Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**		**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Farbkoordinate x nach CIE 1931 [1] Chromaticity coordinate x acc. to CIE 1931 I_F = 20 mA		x	0.32	–
Farbkoordinate y nach CIE 1931[1] Chromaticity coordinate y acc. to CIE 1931 I_F = 20 mA		y	0.31	–
Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V		2φ	20	Grad deg.
Durchlassspannung [2] Forward voltage I_F = 20 mA	(min.) (typ.) (max.)	V_F V_F V_F	3.0 3.6 4.1	V V V
Sperrstrom Reverse current V_R = 5 V	(typ.) (max.)	I_R I_R	0.01 10	µA µA
Temperaturkoeffizient von x Temperature coefficient of x I_F = 20 mA; –10°C ≤ T ≤ 100°C		TC_X	–0.1	10^{-3}/K
Temperaturkoeffizient von y Temperature coefficient of y I_F = 20 mA; –10°C ≤ T ≤ 100°C		TC_Y	–0.2	10^{-3}/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F) I_F = 20 mA; –10°C ≤ T ≤ 100°C		TC_V	–3.0	mV/K
Optischer Wirkungsgrad Optical efficiency I_F = 20 mA	(typ.)	η_{opt}	12	lm/W

[1] Farbortgruppen werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von ±0,01 ermittelt.
Chromaticity coordinate groups are tested at a current pulse duration of 25 ms and a tolerance of ±0.01.

[2] Durchlassspannungsgruppen werden mit einer Stromeinprägedauer von 1 ms und einer Genauigkeit von ±0,1 V ermittelt.
Forward voltage groups are tested at a current pulse duration of 1 ms and a tolerance of ±0.1 V.

1) **Farbortgruppen**
Chromaticity coordinate groups



Helligkeits-Gruppierungsschema
Luminous Intensity Groups

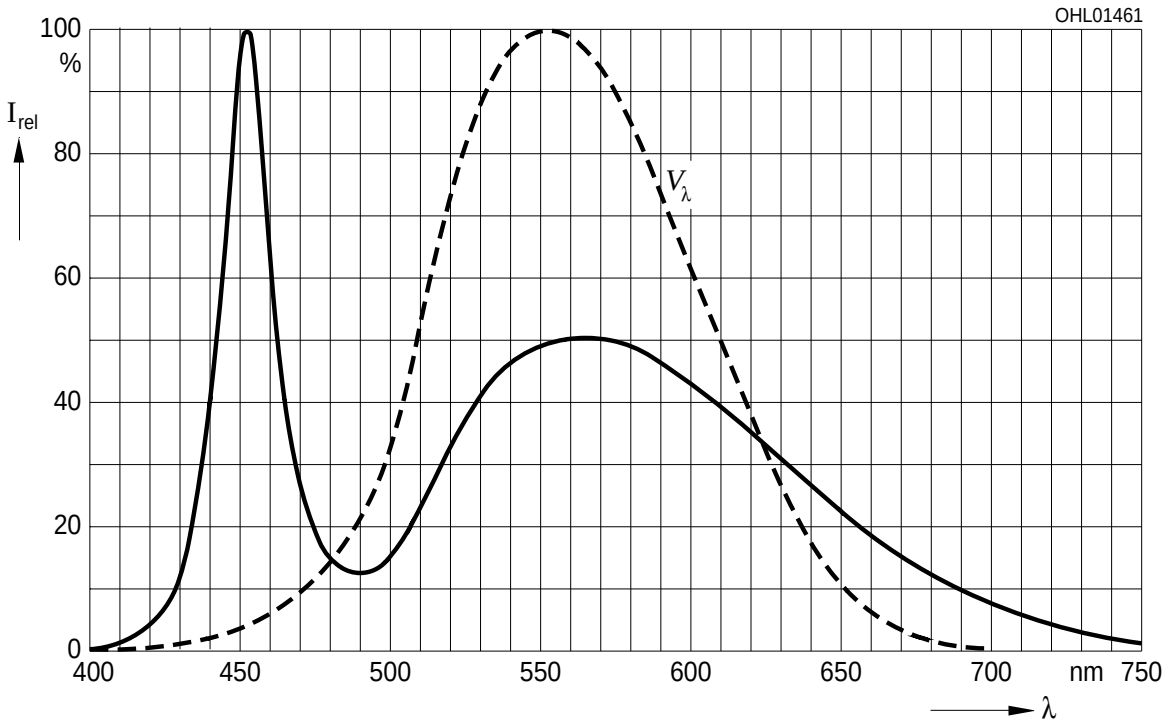
Lichtgruppe **Luminous Intensity Group**	**Lichtstärke** **Luminous Intensity** **I_V (mcd)**	**Lichtstrom** **Luminous Flux** **Φ_V (mlm)**
AW	1120 … 1800	440 (typ.)
BW	1800 … 2800	690 (typ.)
CW	2800 … 4500	1090(typ.))

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%.

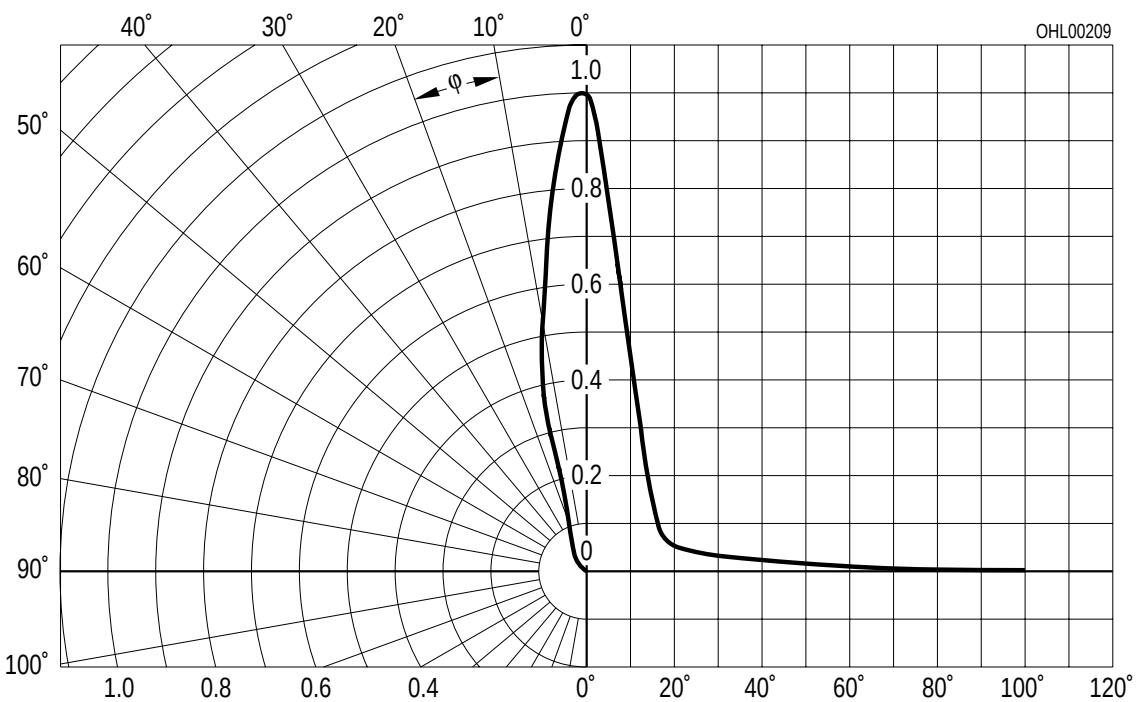
Gruppenbezeichnung auf Etikett
Group Name on Label
Beispiel: BW-3
Example: BW-3

Lichtgruppe **Luminous Intensity Group**	**Farbortgruppe** **Chromaticity Coordinate Group**
BW	3

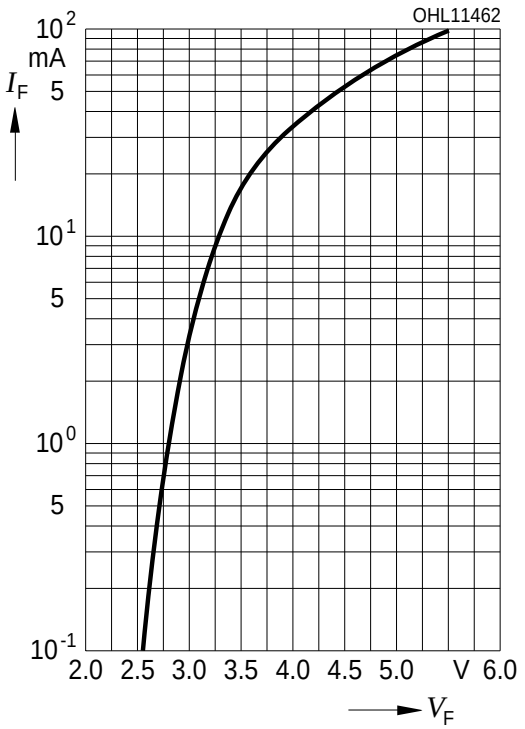
Relative spektrale Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 20 mA
Relative Spectral Emission
V(λ) = spektrale Augenempfindlichkeit
Standard eye response curve



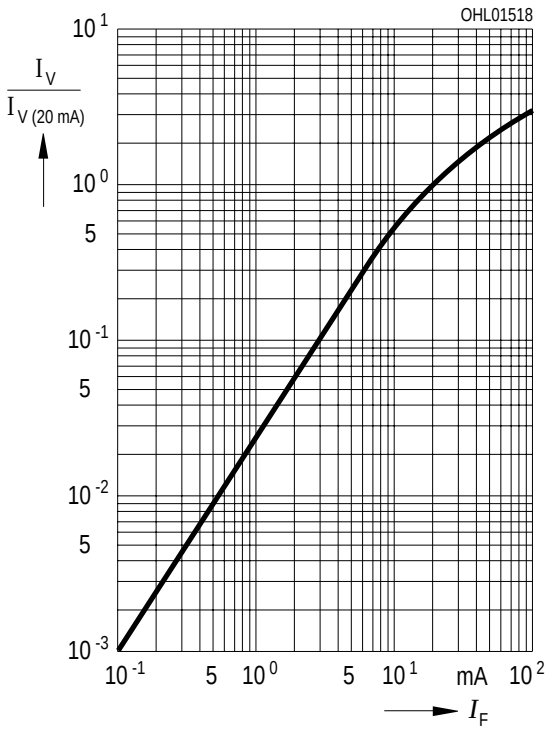
Abstrahlcharakteristik $I_{rel} = f(\varphi)$
Radiation Characteristic



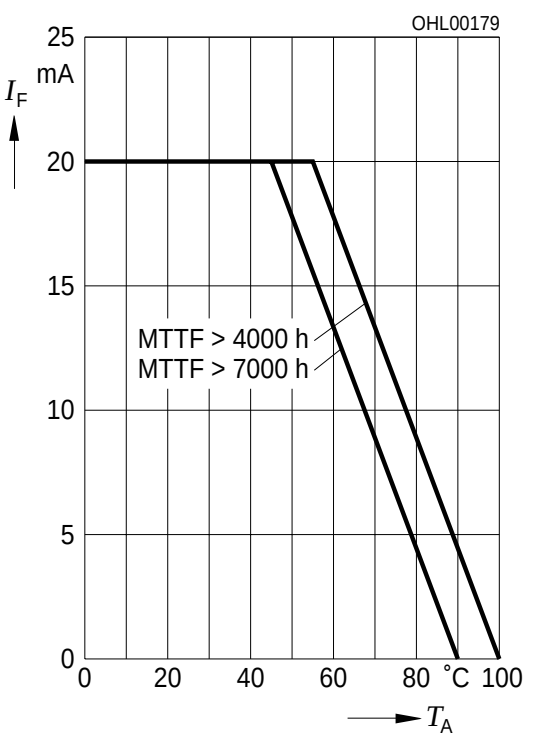
Durchlassstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



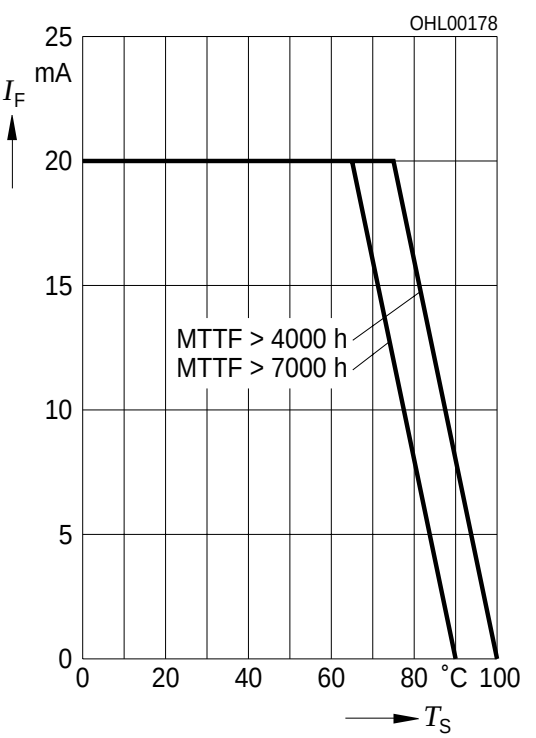
Relative Lichtstärke $I_V/I_{V(20\ mA)} = f(I_F)$
Relative Luminous Intensity
T_A = 25 °C



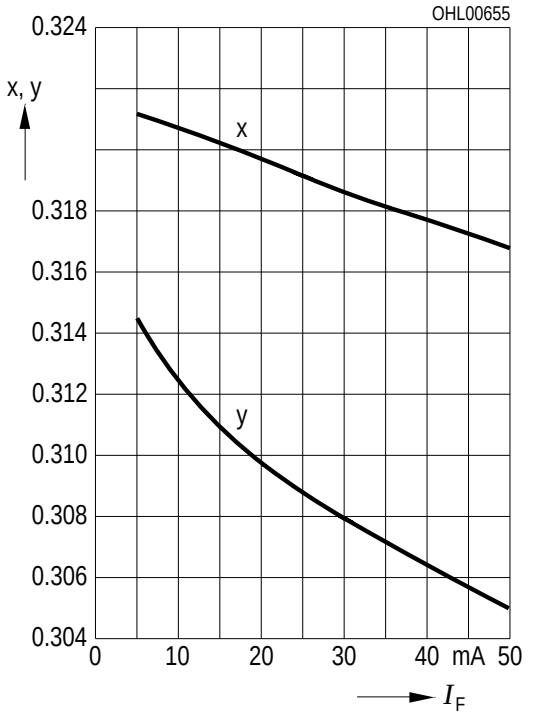
Maximal zulässiger Durchlassstrom
Max. Permissible Forward Current
$I_F = f(T_A)$



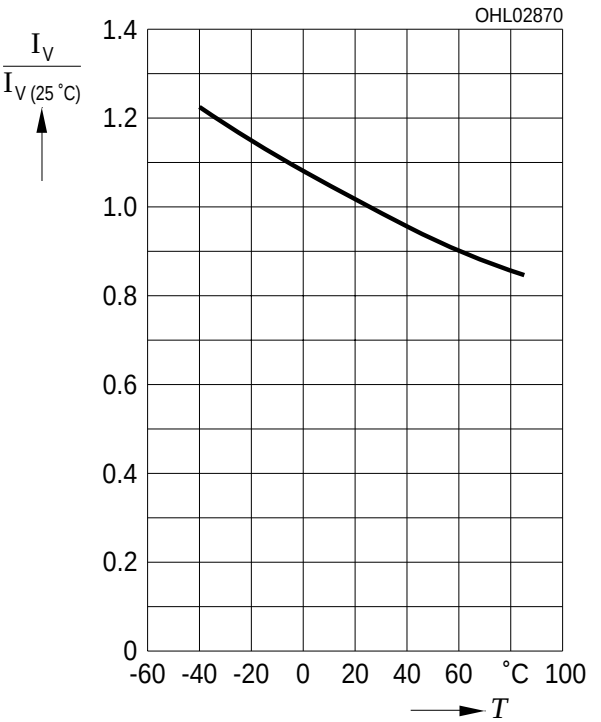
Maximal zulässiger Durchlassstrom
Max. Permissible Forward Current
$I_F = f(T_S)$



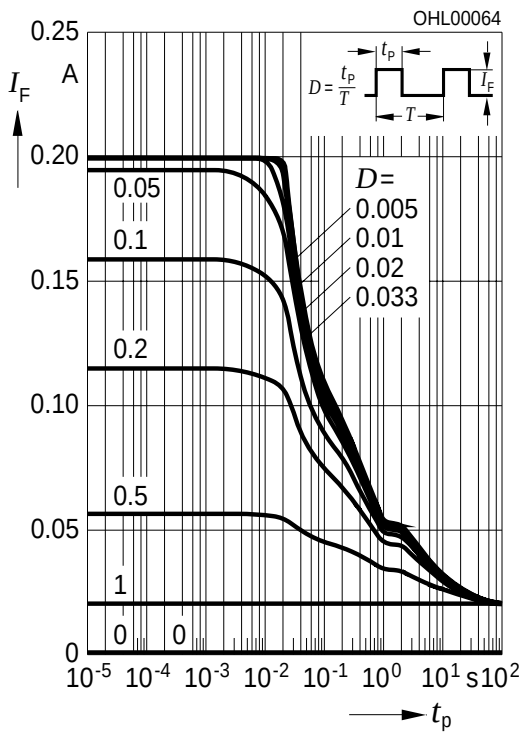
Farbortverschiebung x, y = $f(I_F)$
Chromaticity Coordinate Shift
T_A = 25 °C



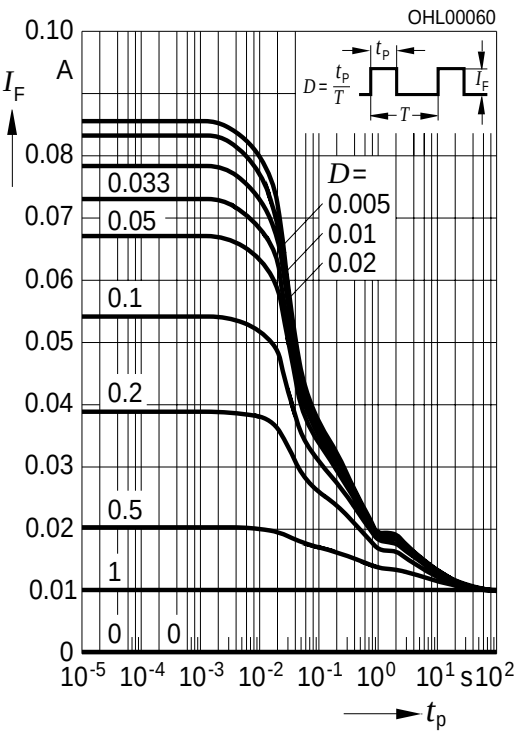
Relative Lichtstärke $I_V/I_{V(25\,°C)} = f(T_A)$
Relative Luminous Intensity
I_F = 20 mA



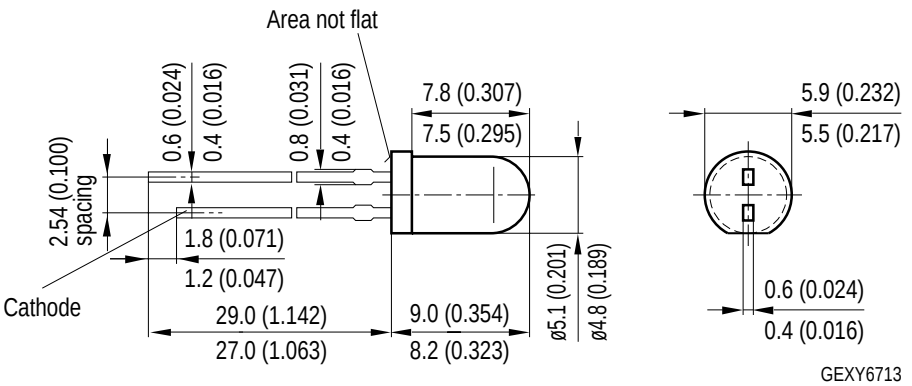
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 25 °C



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



Maßzeichnung
Package Outlines

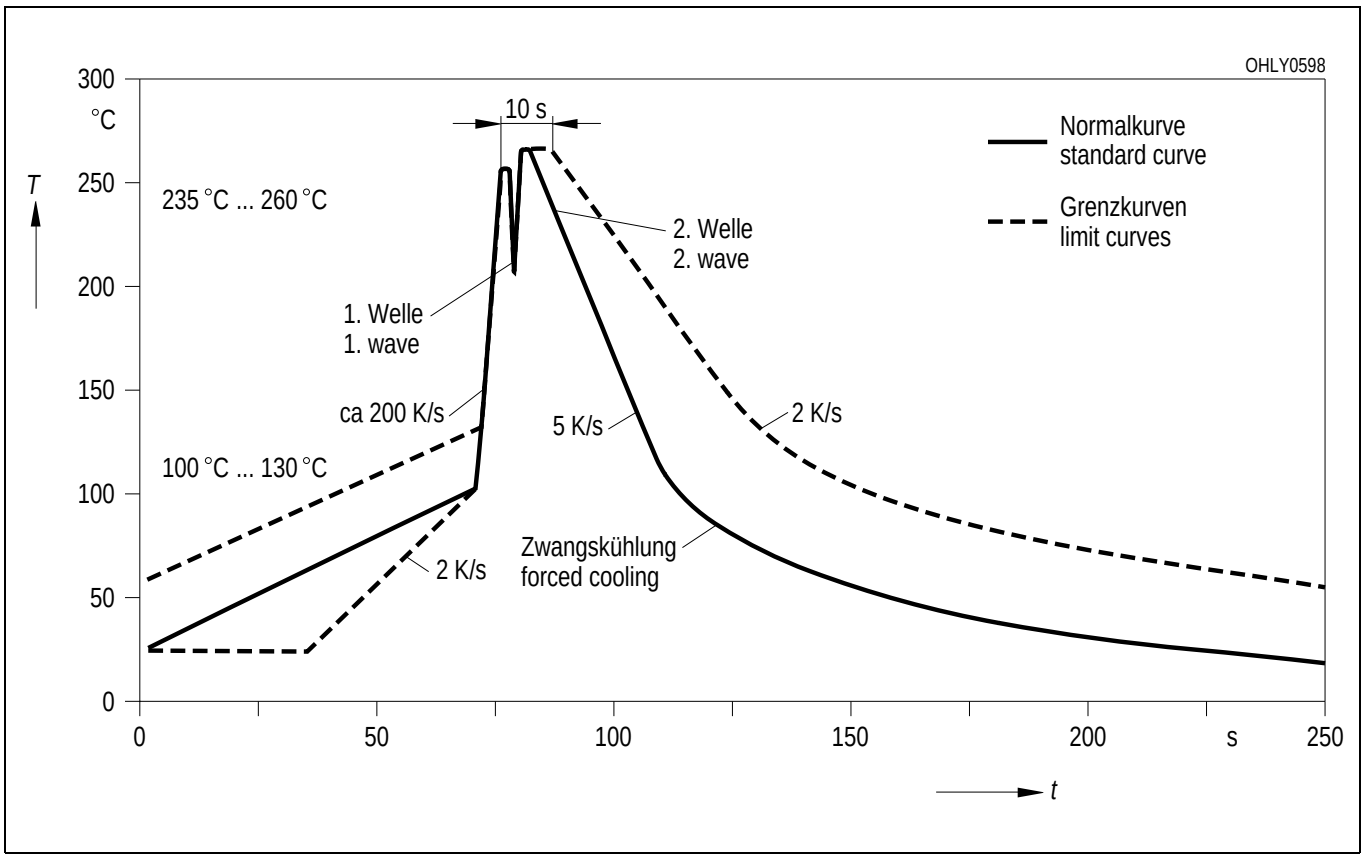


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

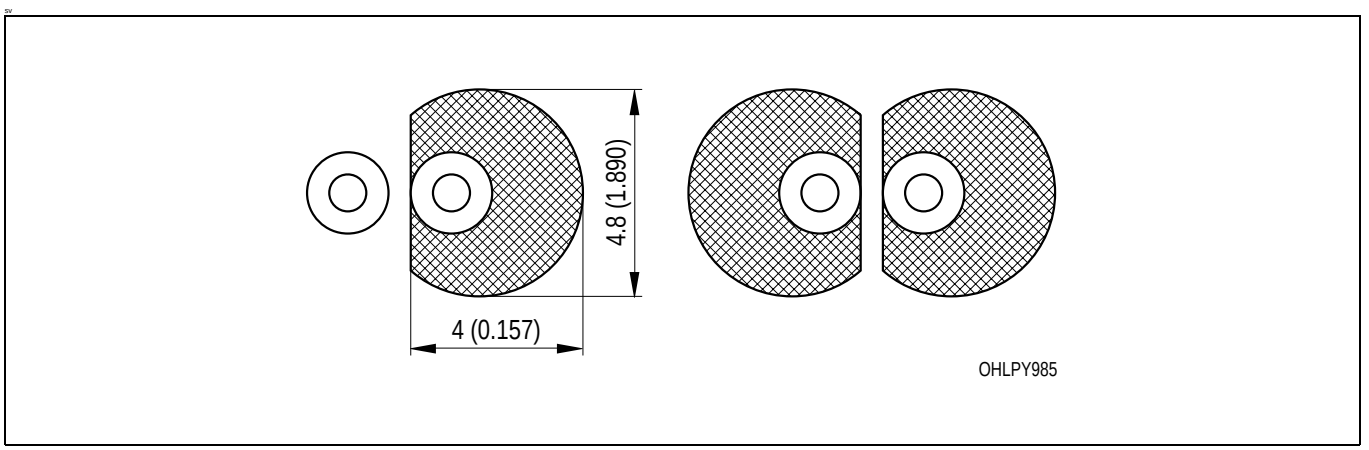
Kathodenkennung: kürzerer Lötspieß
Cathode mark: short solder lead
Gewicht / Approx. weight: 0.35 g

Lötbedingungen
Soldering Conditions

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



Empfohlenes Lötpaddesign Wellenlöten (TTW)
Recommended Solder Pad TTW Soldering



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

Revision History: 2002-04-26	
Previous Version: 2002-04-05	
Page	**Subjects (major changes since last revision)**
3	thermal resistance (footnote)
4	value (forward voltage)
2	change grouping from ABBB to AWBW and from BBCB to BWCW
6	change grouping from half groups to single groups acc. to page 2
3	power consumption from 90 mW to 85 mW
8	diagram luminous intensity from OHL01462 to OHL11462
2	value of R_{th} from 470 to 450 K/W
9	diagram pulse handling from OHL01405 to OHL00064 and from OHL01406 to OHL00060

Patent List

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