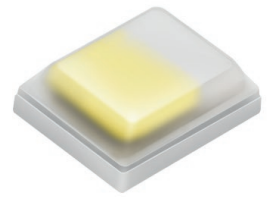


CW CBLPM4.PW

CERAMOS® Gen 4

Highly efficient lightsource, slim package design



Applications

- Flash & Autofocus

Features:

- Package: SMD ceramic package with silicone resin
- Chip technology: UX:3
- Typ. Radiation: 120° (Lambertian emitter)
- Color: $C_x = 0.5$, $C_y = 0.43$ acc. to CIE 1931 (● white)
- Corrosion Robustness Class: 3B
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2); 8 kV acc. to IEC 61000-4-2, level 4 (contact discharge)

Ordering Information

Type	Luminous Flux ¹⁾ $I_F = 1000 \text{ mA}$ Φ_V	Ordering Code
CW CBLPM4.PW-MXMZ-S1S3	180 ... 280 lm	Q65111A9724

Maximum Ratings

Parameter	Symbol		Values
Operating Temperature	T_{op}	min.	-40 °C
		max.	85 °C
Storage Temperature	T_{stg}	min.	-40 °C
		max.	85 °C
Junction Temperature ²⁾	T_j	max.	150 °C
Junction Temperature Pulse ³⁾	T_j	max.	175 °C
Forward Current ²⁾ $T_s = 25\text{ °C}$	I_F	min.	30 mA
		max.	500 mA
Forward Current pulsed ³⁾ $D = 0.016 ; T_s = 25\text{ °C}$	$I_{F\ pulse}$	max.	2000 mA
Reverse current ⁴⁾	I_R	max.	200 mA

Characteristics

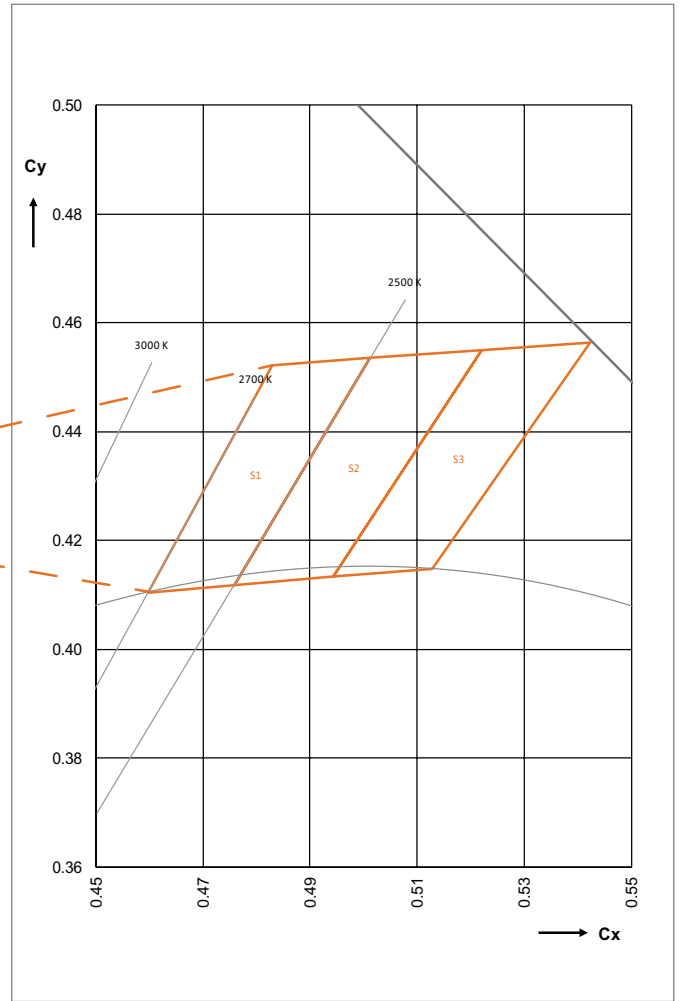
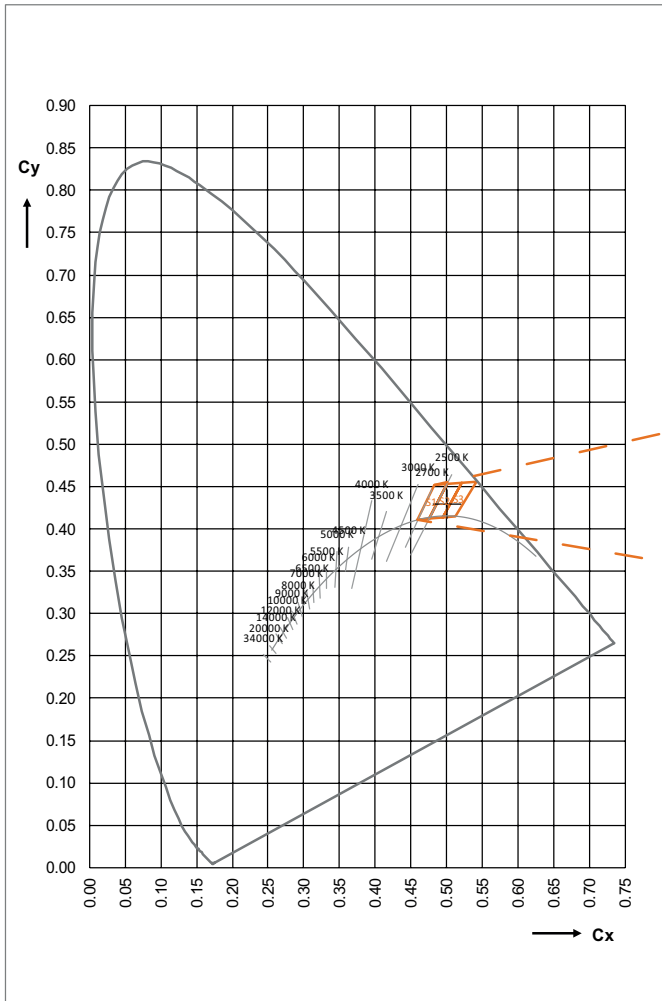
$I_F = 1000 \text{ mA}$; $T_S = 25 \text{ °C}$

Parameter	Symbol		Values
Chromaticity Coordinate ⁵⁾	C_x	typ.	0.5
	C_y	typ.	0.43
Viewing angle at 50 % I_V	2ϕ	typ.	120 °
Forward Voltage ⁶⁾ $I_F = 1000 \text{ mA}$	V_F	min.	2.70 V
		typ.	3.05 V
		max.	3.70 V
Reverse voltage (ESD device)	$V_{R\text{ESD}}$	min.	5 V
Reverse voltage ⁴⁾ $I_R = 20 \text{ mA}$	V_R	max.	1.2 V
Electrical thermal resistance junction/solderpoint ⁷⁾ with efficiency $\eta_e = 27 \text{ %}$	$R_{\text{thJS elec.}}$	typ.	8.0 K / W

Brightness Groups

Group	Luminous Flux ¹⁾ $I_F = 1000 \text{ mA}$ min. Φ_V	Luminous Flux ¹⁾ $I_F = 1000 \text{ mA}$ max. Φ_V
MX	180 lm	210 lm
MY	210 lm	240 lm
MZ	240 lm	280 lm

Chromaticity Coordinate Groups ⁵⁾



Color Chromaticity Groups

Group	C_x	C_y	Group	C_x	C_y	Group	C_x	C_y
S1	0.4759	0.4118	S2	0.4944	0.4133	S3	0.5128	0.4148
	0.5012	0.4535		0.5220	0.4549		0.5424	0.4564
	0.4830	0.4522		0.5012	0.4535		0.5220	0.4549
	0.4598	0.4105		0.4759	0.4118		0.4944	0.4133

Group Name on Label

Example: MX-S1

Brightness

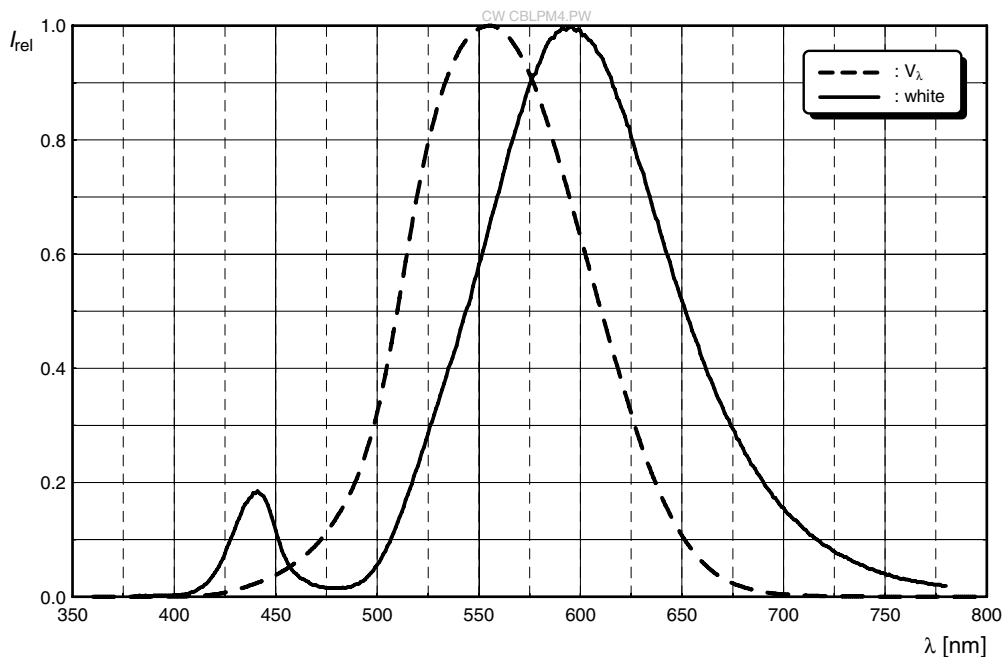
Color chromaticity

MX

S1

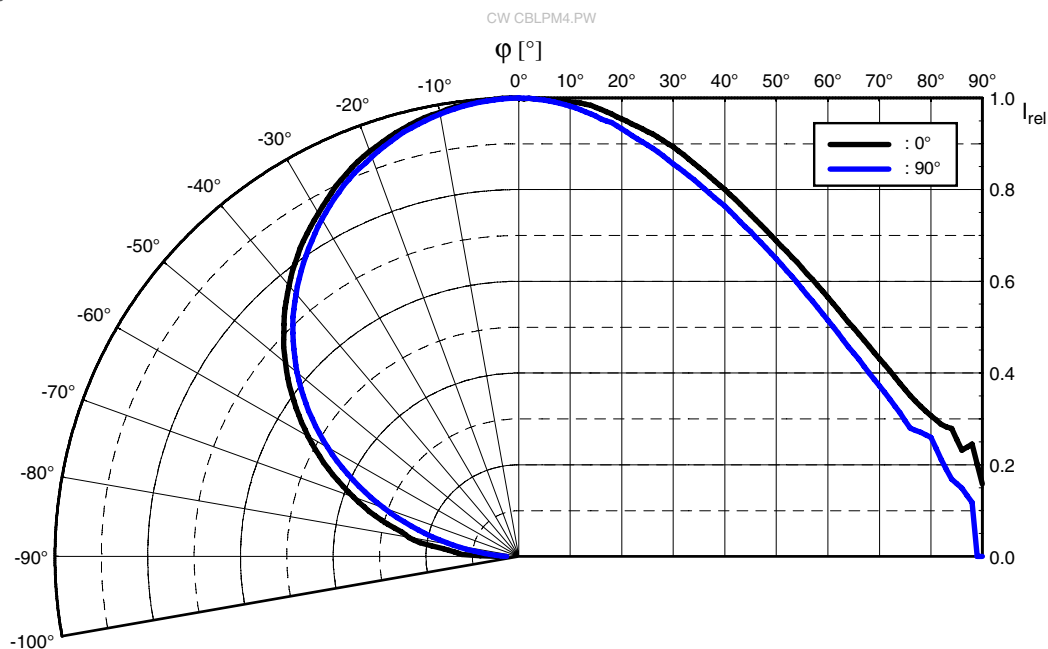
Relative Spectral Emission ⁸⁾

$I_{rel} = f(\lambda); I_F = 1000 \text{ mA}; T_J = 25 \text{ }^\circ\text{C}$



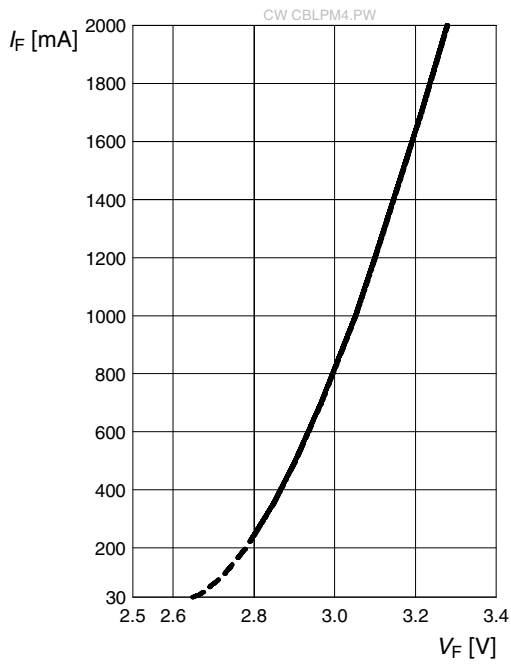
Radiation Characteristics ⁸⁾

$I_{rel} = f(\phi); T_J = 25 \text{ }^\circ\text{C}$



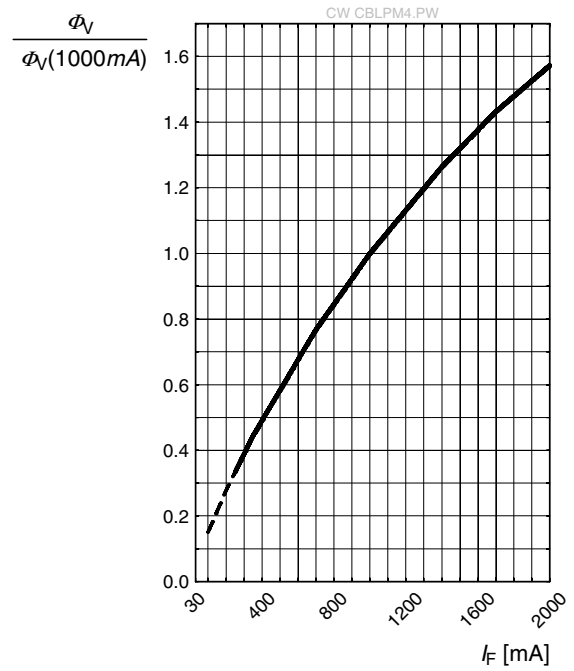
Forward current ^{8), 9)}

$I_F = f(V_F); T_J = 25\text{ }^\circ\text{C}$



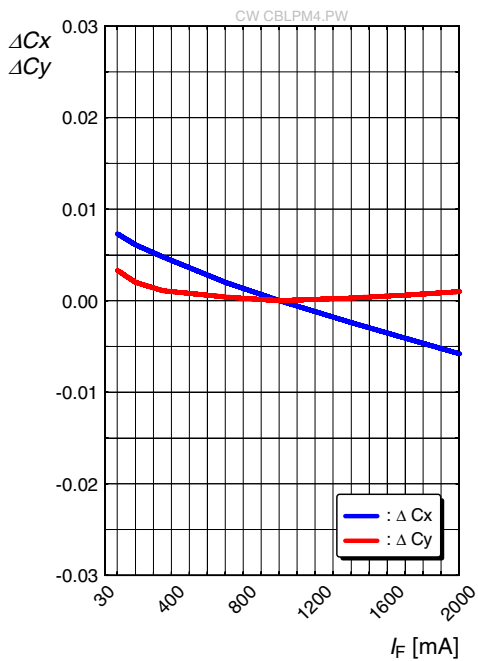
Relative Luminous Flux ^{8), 9)}

$\Phi_V/\Phi_V(1000\text{ mA}) = f(I_F); T_J = 25\text{ }^\circ\text{C}$



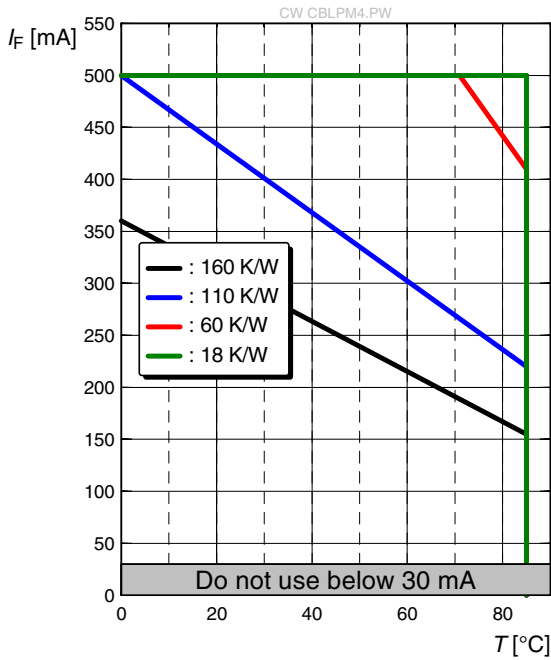
Chromaticity Coordinate Shift ⁸⁾

$\Delta C_x, \Delta C_y = f(I_F); T_J = 25\text{ }^\circ\text{C}$



Max. Permissible Forward Current

$$I_F = f(T)$$



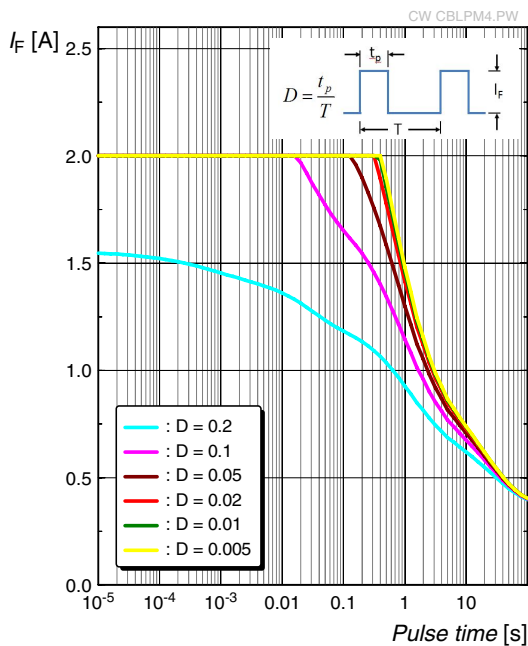
Note:

Deratings strongly relate on the boundary conditions of each individual device:

- The DC-derating on the left represents several thermal resistance values $R_{th JA}$ (Junction/Ambient) as examples.
- The shown pulse-deratings represent just one of alternative options for use. For further information please refer to application note „Thermal Management of Flash LEDs“.

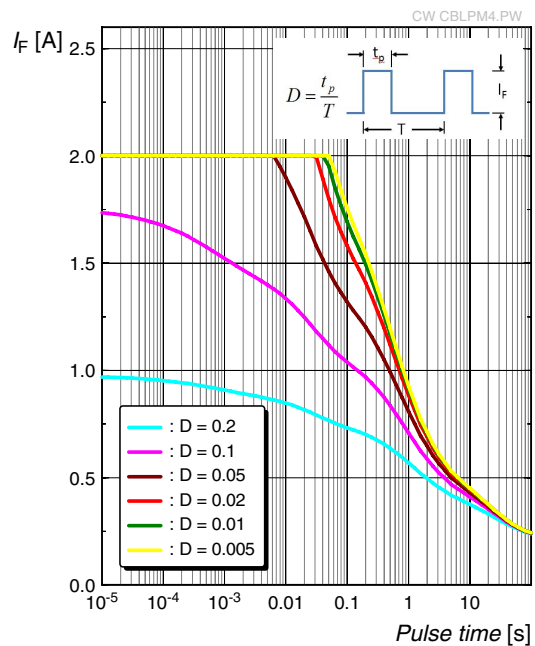
Permissible Pulse Handling Capability

$$R_{th JA el} = 160 K/W; T_A = 25 °C; \text{ still air; FR4}$$

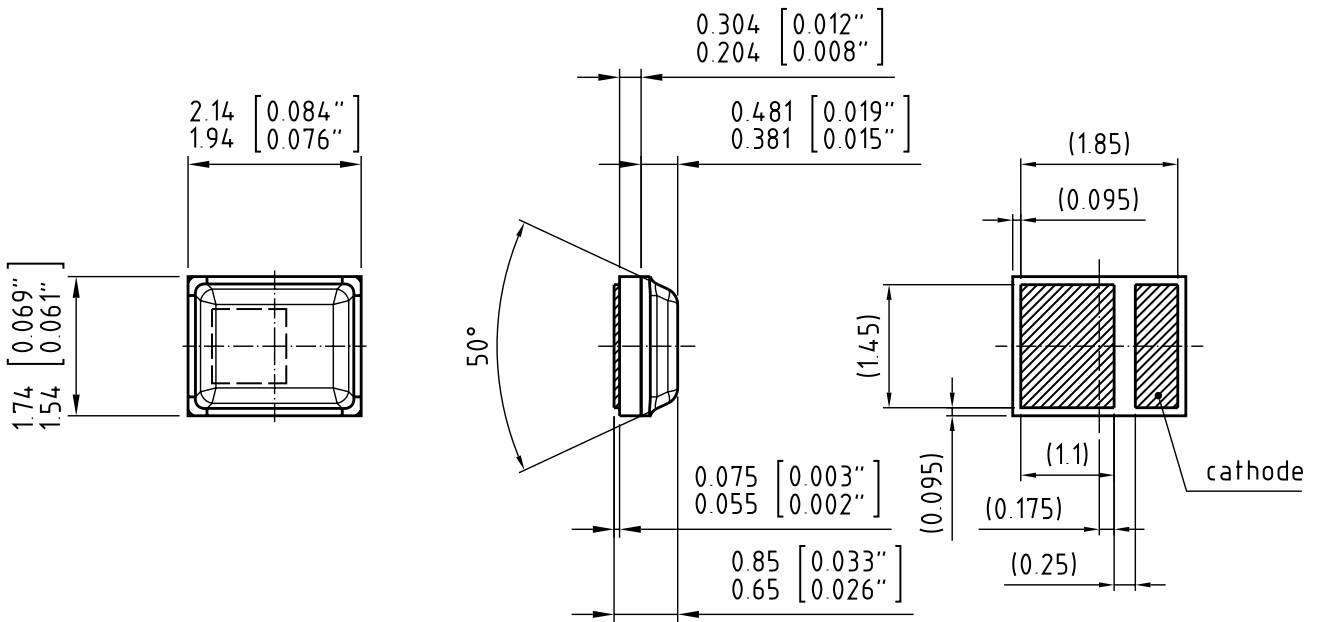


Permissible Pulse Handling Capability

$$R_{th JA el} = 160 K/W; T_A = 85 °C; \text{ still air; FR4}$$



Dimensional Drawing ¹⁰⁾



C63062-A4.053-A1.-06

Approximate Weight:

8.2 mg

Corrosion test:

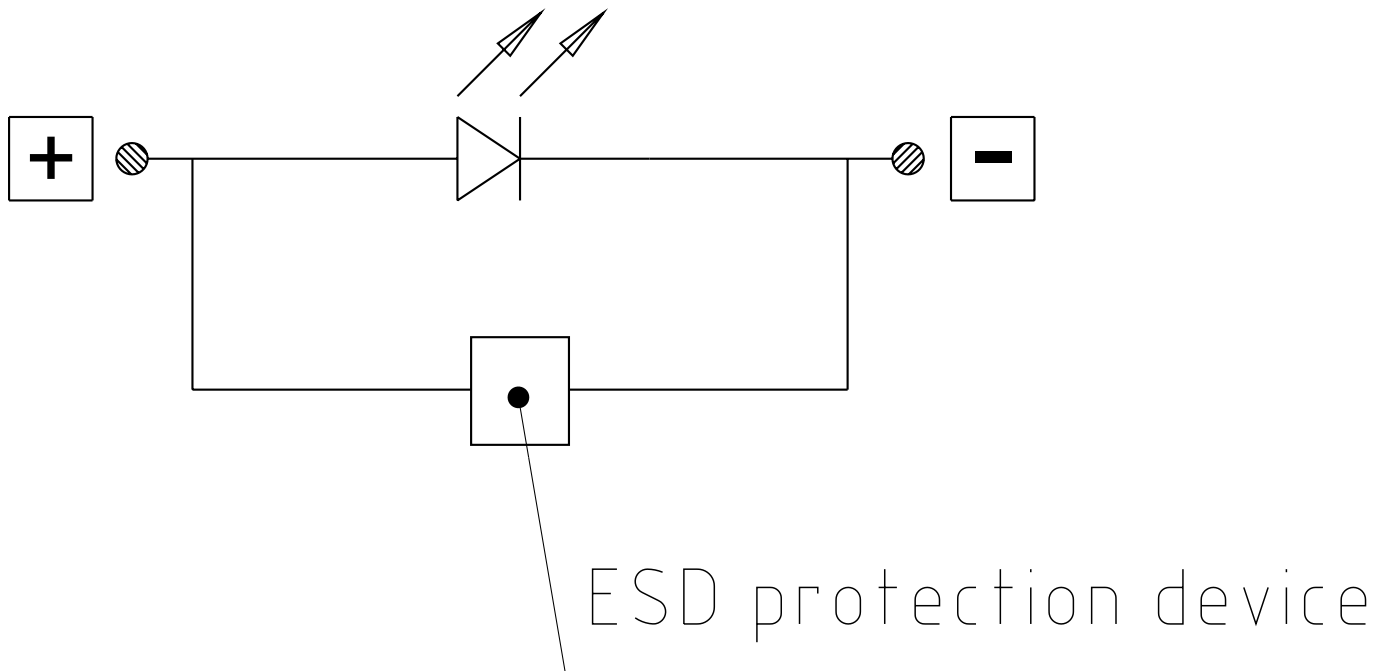
Class: 3B

Test condition: 40°C / 90 % RH / 15 ppm H₂S / 14 days (stricter than IEC 60068-2-43)

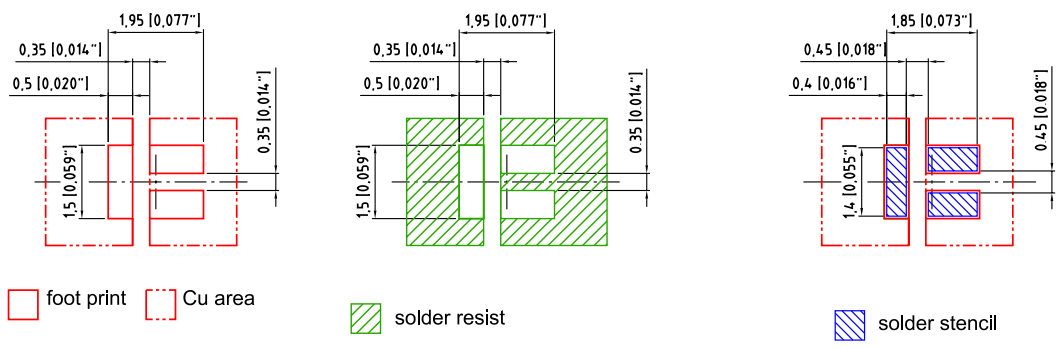
ESD advice:

LED is protected by ESD device which is connected in parallel to LED-Chip.

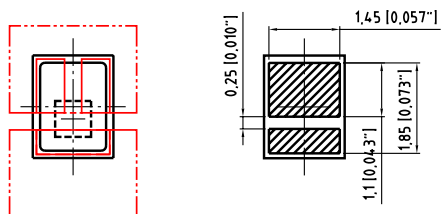
Electrical internal circuit



Recommended Solder Pad ¹⁰⁾



Component Location on Pad

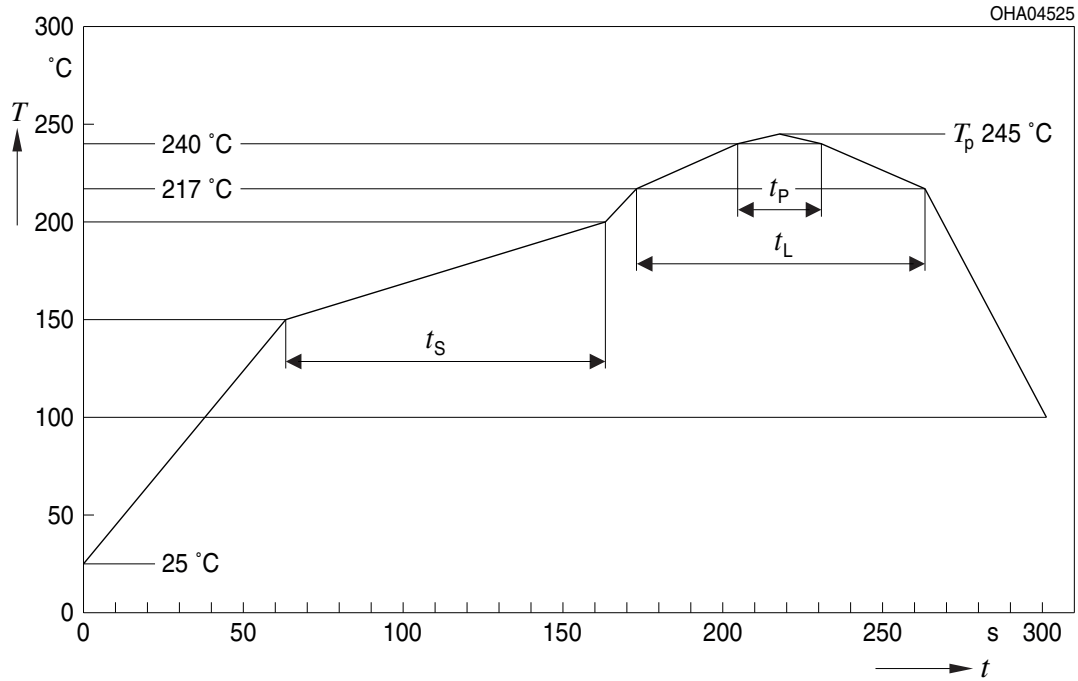


E062.3010.136 -01

For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere. Package not suitable for ultra sonic cleaning.

Reflow Soldering Profile

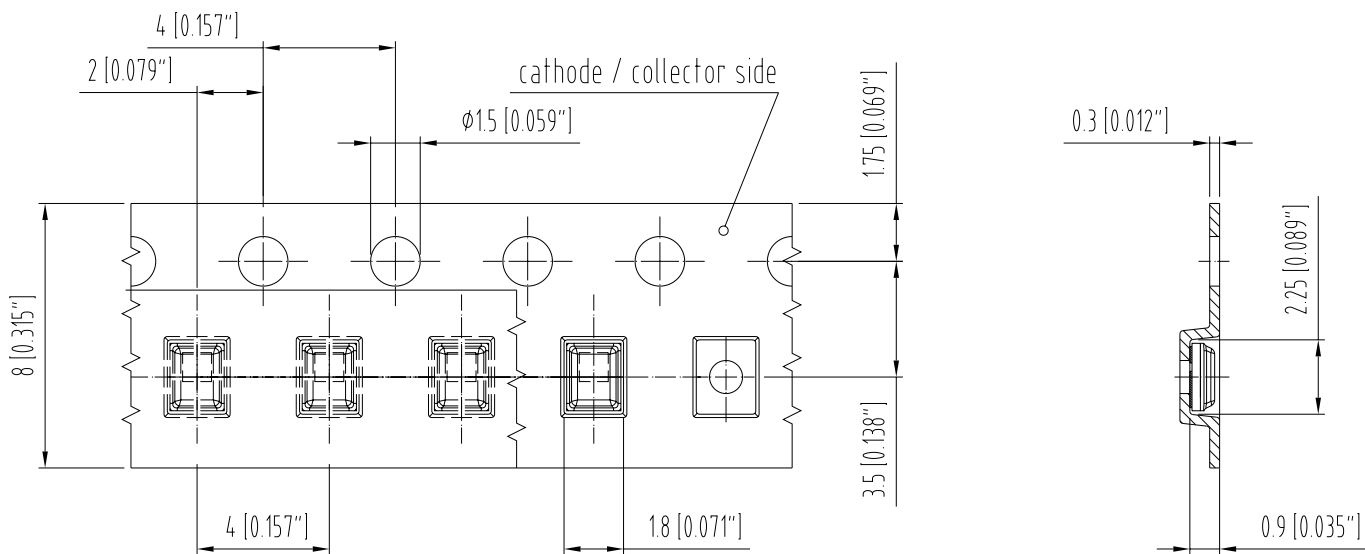
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_s T_{Smin} to T_{Smax}	t_s	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_p			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	t_L		80	100	s
Peak temperature	T_p		245	260	°C
Time within 5 °C of the specified peak temperature $T_p - 5$ K	t_p	10	20	30	s
Ramp-down rate* T_p to 100 °C			3	6	K/s
Time 25 °C to T_p				480	s

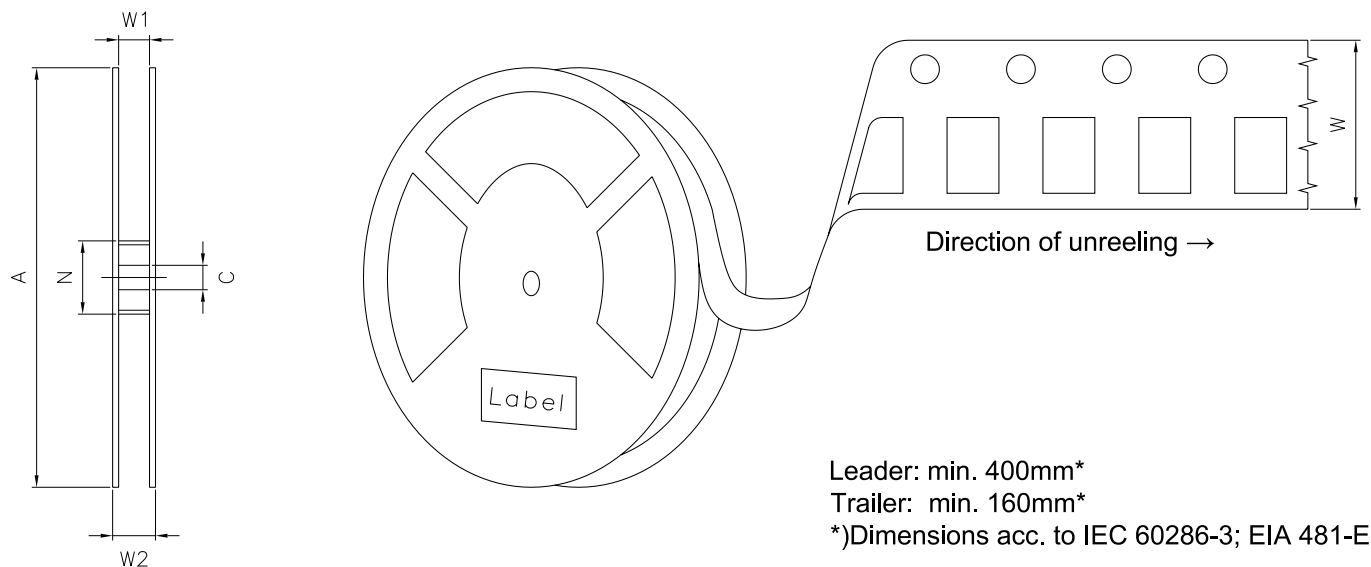
All temperatures refer to the center of the package, measured on the top of the component
 *) slope calculation DT/Dt : Dt max. 5 s; fulfillment for the whole T-range

Taping ¹⁰⁾



C63062-A4053-B6 -04

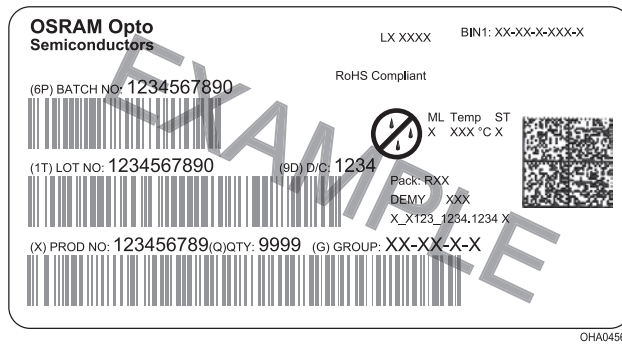
Tape and Reel ¹¹⁾



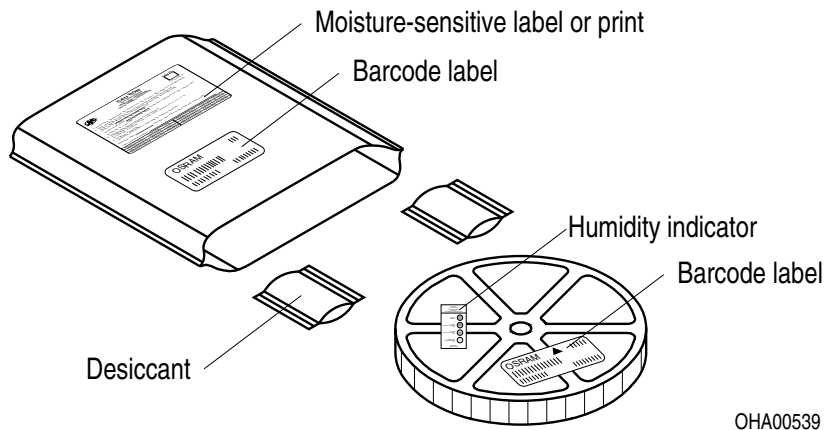
Reel dimensions [mm]

A	W	N _{min}	W ₁	W _{2max}	Pieces per PU
180 mm	8 + 0.3 / - 0.1	60	8.4 + 2	14.4	4000

Barcode-Product-Label (BPL)

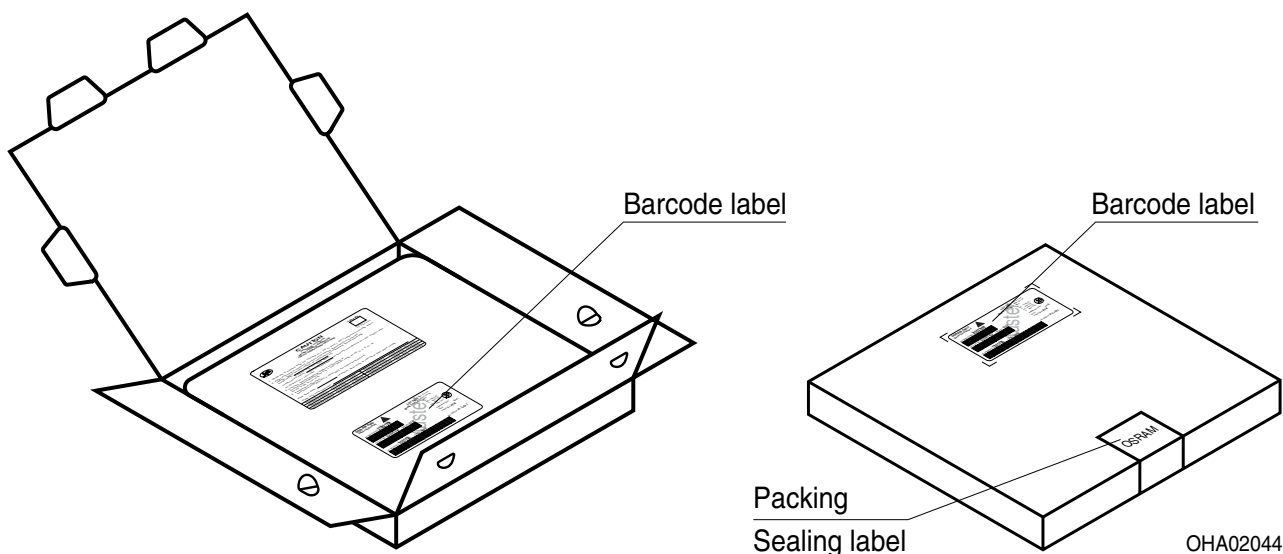


Dry Packing Process and Materials ¹⁰⁾



Moisture-sensitive product is packed in a dry bag containing desiccant and a humidity card according JEDEC-STD-033.

Transportation Packing and Materials ¹⁰⁾



Dimensions of transportation box in mm

Width	Length	Height
200 ± 5 mm	195 ± 5 mm	30 ± 5 mm

Notes

The evaluation of eye safety occurs according to the standard IEC 62471:2006 (photo biological safety of lamps and lamp systems). Within the risk grouping system of this IEC standard, the LED specified in this data sheet fall into the class **exempt group (exposure time 10000 s)**. Under real circumstances (for exposure time, eye pupils, observation distance), it is assumed that no endangerment to the eye exists from these devices. As a matter of principle, however, it should be mentioned that intense light sources have a high secondary exposure potential due to their blinding effect. As is also true when viewing other bright light sources (e.g. headlights), temporary reduction in visual acuity and afterimages can occur, leading to irritation, annoyance, visual impairment, and even accidents, depending on the situation.

Subcomponents of this LED contain, in addition to other substances, metal filled materials including silver. Metal filled materials can be affected by environments that contain traces of aggressive substances. Therefore, we recommend that customers minimize LED exposure to aggressive substances during storage, production, and use. LEDs that showed visible discoloration when tested using the described tests above did show no performance deviations within failure limits during the stated test duration. Respective failure limits are described in the IEC60810.

For further application related informations please visit www.osram-os.com/appnotes

Disclaimer

Disclaimer

Language english will prevail in case of any discrepancies or deviations between the two language wordings.

Attention please!

The information describes the type of component and shall not be considered as assured characteristics. Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances.

For information on the types in question please contact our Sales Organization.

If printed or downloaded, please find the latest version on the OSRAM OS website.

Packing

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.

Product safety devices/applications or medical devices/applications

OSRAM OS components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.

In case Buyer – or Customer supplied by Buyer– considers using OSRAM OS components in product safety devices/applications or medical devices/applications, Buyer and/or Customer has to inform the local sales partner of OSRAM OS immediately and OSRAM OS and Buyer and /or Customer will analyze and coordinate the customer-specific request between OSRAM OS and Buyer and/or Customer.

Glossary

- 1) **Brightness:** Brightness values are measured during a current pulse of typically 25 ms, with an internal reproducibility of $\pm 8\%$ and an expanded uncertainty of $\pm 11\%$ (acc. to GUM with a coverage factor of $k = 3$).
- 2) **Operating Conditions:** Operating conditions according DC-derating (Max. Permissible Forward Current)
- 3) **Operating Conditions:** Operating conditions according Pulse-derating (Permissible Pulse Handling Capability)
- 4) **Reverse Operation:** Reverse Operation of 10 hours is permissible in total. Continuous reverse operation is not allowed.
- 5) **Chromaticity coordinate groups:** Chromaticity coordinates are measured during a current pulse of typically 25 ms, with an internal reproducibility of ± 0.005 and an expanded uncertainty of ± 0.01 (acc. to GUM with a coverage factor of $k = 3$).
- 6) **Forward Voltage:** The forward voltage is measured during a current pulse of typically 8 ms, with an internal reproducibility of ± 0.05 V and an expanded uncertainty of ± 0.1 V (acc. to GUM with a coverage factor of $k = 3$).
- 7) **Thermal Resistance:** The typical R value is the average of a distribution. The value was determined on a sample basis and is not monitored.
- 8) **Typical Values:** Due to the special conditions of the manufacturing processes of LED, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.
- 9) **Characteristic curve:** In the range where the line of the graph is broken, you must expect higher differences between single LEDs within one packing unit.
- 10) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimensions are specified in mm.
- 11) **Tape and Reel:** All dimensions and tolerances are specified acc. IEC 60286-3 and specified in mm.

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