KW CULNM1.TG

OSLON® Boost HL

OSLON Boost HL utilizes the high current capability of the latest chip generation in a special package for good thermal behaviour. The LED is characterized by a high luminance of up to 200 cd / mm² and a high luminous flux. Therefore this LED is ideally suited as a powerful light source for very high luminous intensity in ultra-flat headlight designs.

Applications

- Headlamps, LED & Laser & Night Vision

Features:

- Package: Ceramic package
- Chip technology: UX:3
- Typ. Radiation: 120° (Lambertian emitter)
- Color: Cx = 0.32, Cy = 0.33 acc. to CIE 1931 (• white)
- Corrosion Robustness Class: 3A
- Qualifications: AEC-Q102 Qualified
- ESD: 8 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 3B)

Ordering Information

Type	Luminous Flux [1] I_F = 3000 mA Φ_V	Ordering Code
KW CULNM1.TG-Z8PF5-ebvFfcbB46-65G5	669 ... 949 lm	Q65112A1574

Maximum Ratings

Parameter	Symbol		Values
Operating Temperature [2]	T_{op}	min. max.	-40 °C 125 °C
Storage Temperature	T_{stg}	min. max.	-40 °C 125 °C
Junction Temperature	T_j	max.	150 °C
Junction Temperature for short time applications*	T_j	max.	175 °C
Forward Current T_S = 25 °C	I_F	min. max.	50 mA 3300 mA
Forward Current pulsed D = 0.005 ; T_S = 25 °C	$I_{F\ pulse}$	max.	4000 mA
Surge Current t ≤ 10 µs; D = 0.005 ; T_S = 25 °C	I_{FS}	max.	5000 mA
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 3B)	V_{ESD}		8 kV
Reverse current [3]	I_R	max.	200 mA

* The median lifetime (L70/B50) for Tj = 175°C is 100h.

Characteristics

I_F = 3000 mA; T_S = 25 °C

Parameter	Symbol		Values
Chromaticity Coordinate [4]	Cx	typ.	0.32
	Cy	typ.	0.33
Viewing angle at 50% I_V	2φ	typ.	120 °
Forward Voltage [5] I_F = 3000 mA	V_F	min. typ. max.	3.00 V 3.35 V 3.75 V
Reverse voltage (ESD device)	$V_{R\ ESD}$	min.	45 V
Reverse voltage [3] I_R = 20 mA	V_R	max.	1.2 V
Real thermal resistance junction/solderpoint [6]	$R_{thJS\ real}$	typ. max.	3.2 K / W 3.8 K / W
Electrical thermal resistance junction/solderpoint [6] with efficiency η_e = 25 %	$R_{thJS\ elec.}$	typ. max.	2.4 K / W 2.9 K / W

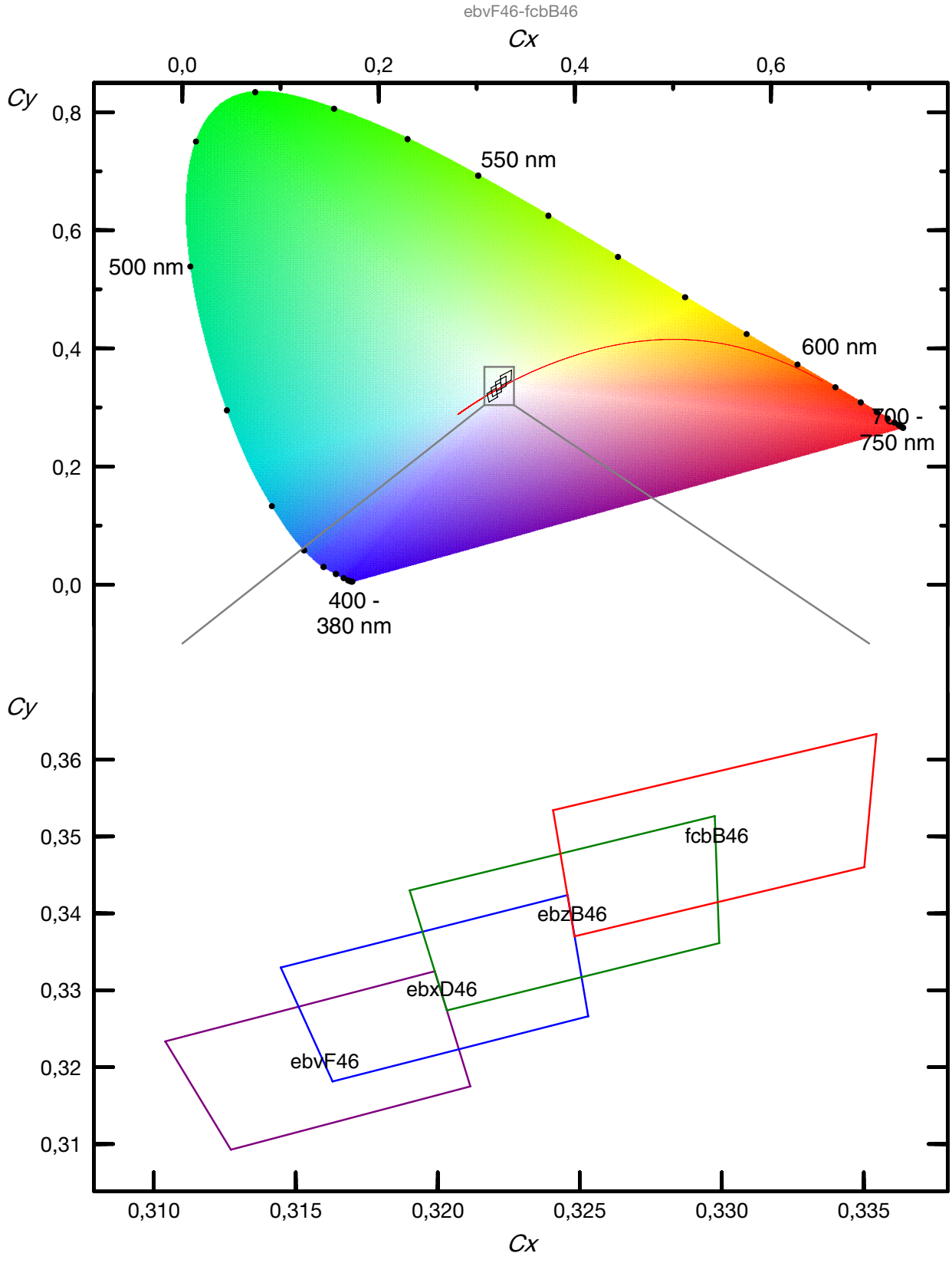
Brightness Groups

Group	Luminous Flux [1] I_F = 3000 mA min. Φ_V	Luminous Flux [1] I_F = 3000 mA max. Φ_V
8PF	669 lm	754 lm
5Q	710 lm	800 lm
5QF	754 lm	849 lm
6Q	800 lm	900 lm
6QF	849 lm	949 lm

Forward Voltage Groups

Group	Forward Voltage [5] I_F = 3000 mA min. V_F	Forward Voltage [5] I_F = 3000 mA max. V_F
65	3.00 V	3.25 V
B5	3.25 V	3.50 V
G5	3.50 V	3.75 V

Chromaticity Coordinate Groups



Chromaticity Coordinate Groups [4)]

Group	Cx	Cy	Group	Cx	Cy
ebvF46	0.3127	0.3093	ebzB46	0.3203	0.3274
	0.3212	0.3175		0.3299	0.3361
	0.3199	0.3325		0.3298	0.3526
	0.3104	0.3234		0.3190	0.3430
ebxD46	0.3163	0.3181	fcbB46	0.3248	0.3370
	0.3253	0.3266		0.3350	0.3460
	0.3246	0.3424		0.3355	0.3633
	0.3145	0.3330		0.3241	0.3534

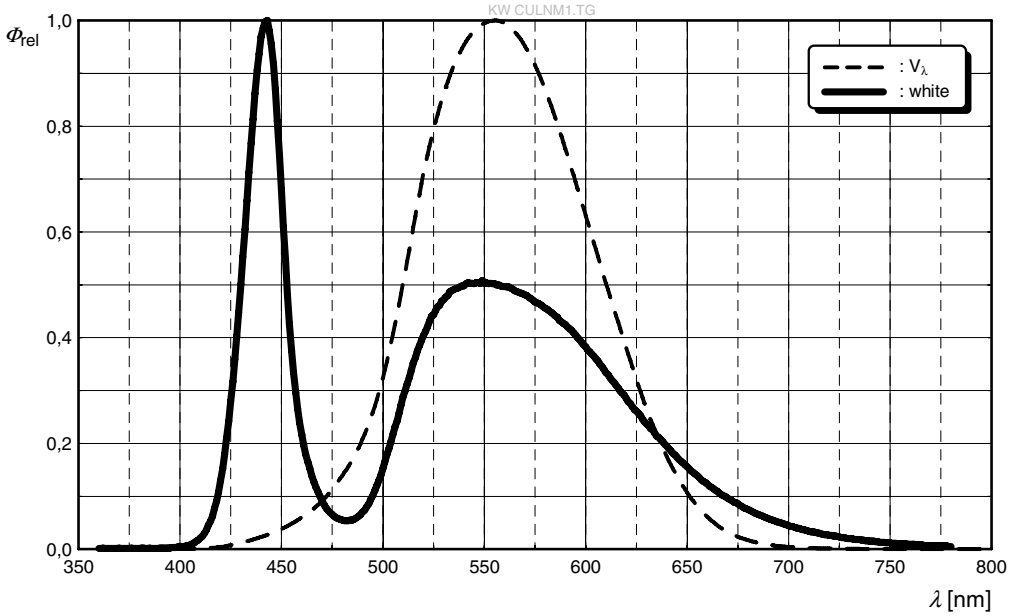
Group Name on Label

Example: 5Q-ebvF46-65

Brightness	Color Chromaticity	Forward Voltage
5Q	ebvF46	65

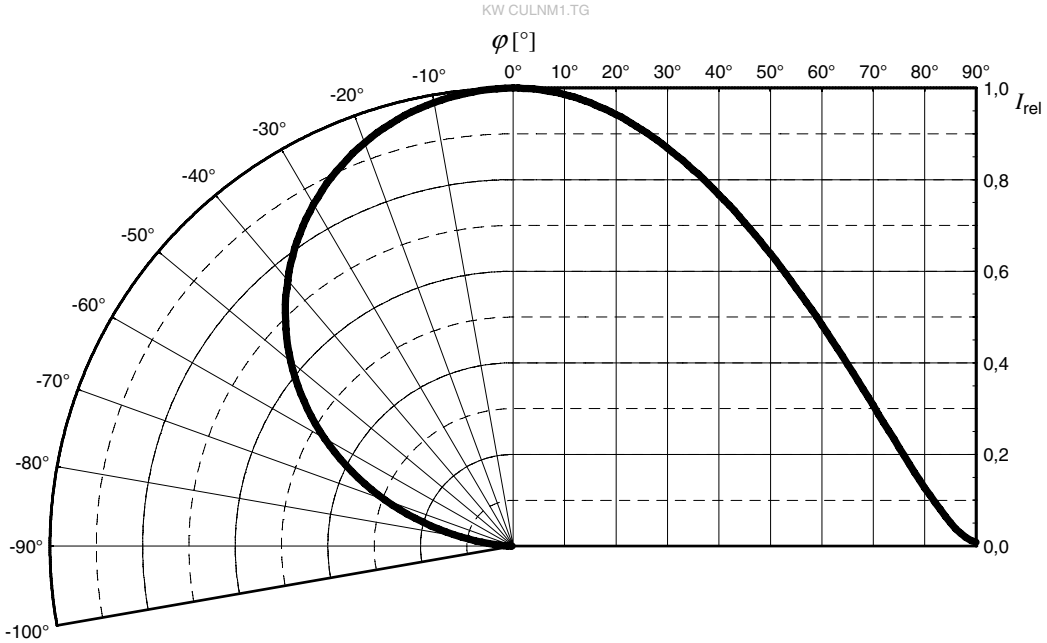
Relative Spectral Emission 7)

$\Phi_{rel} = f(\lambda)$; I_F = 3000 mA; T_J = 25 °C



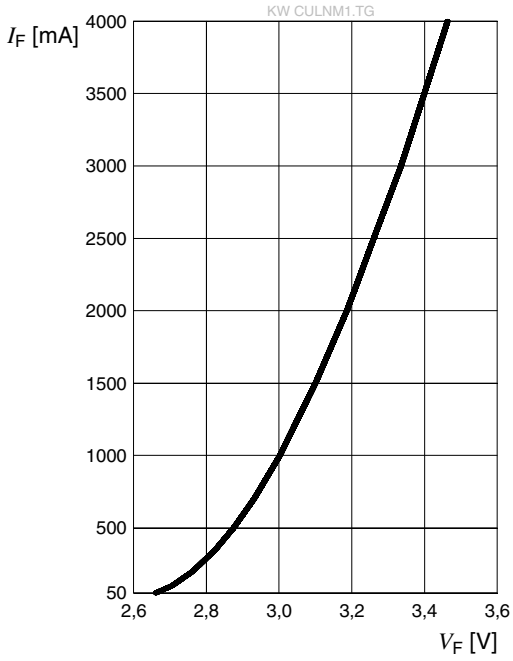
Radiation Characteristics 7)

$I_{rel} = f(\phi)$; T_J = 25 °C



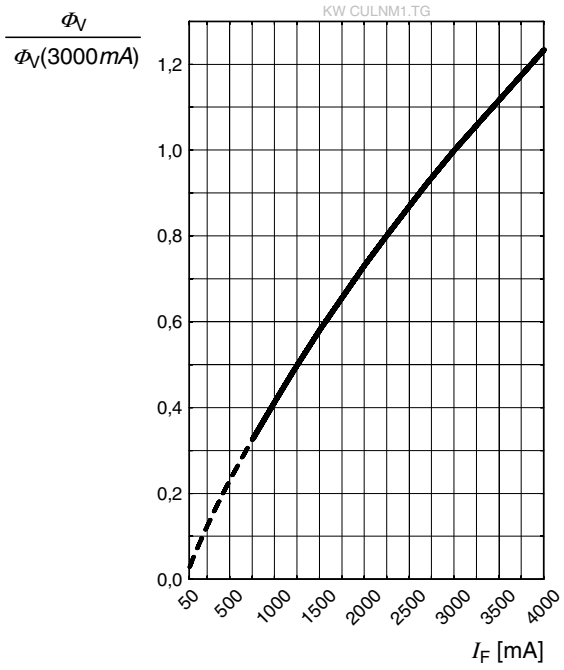
Forward current [7), 8)]

$I_F = f(V_F)$; T_J = 25 °C



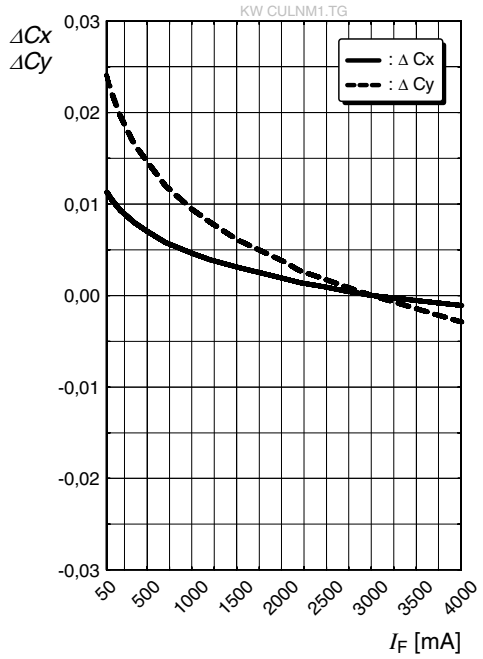
Relative Luminous Flux [7), 8)]

$\Phi_v/\Phi_v(3000\ mA) = f(I_F)$; T_J = 25 °C



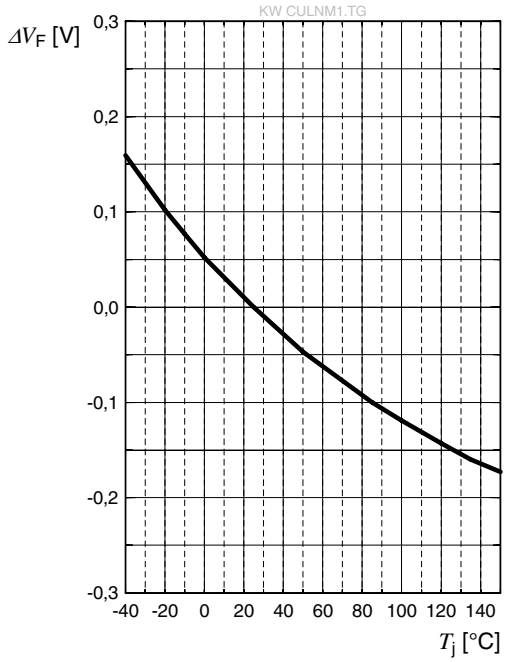
Chromaticity Coordinate Shift [7)]

$\Delta Cx, \Delta Cy = f(I_F)$; T_J = 25 °C



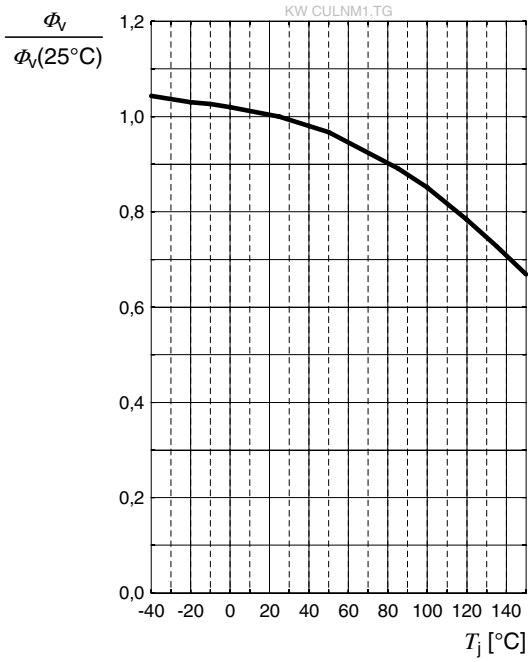
Forward Voltage [7)]

$\Delta V_F = V_F - V_F(25\ °C) = f(T_j);\ I_F = 3000\ mA$



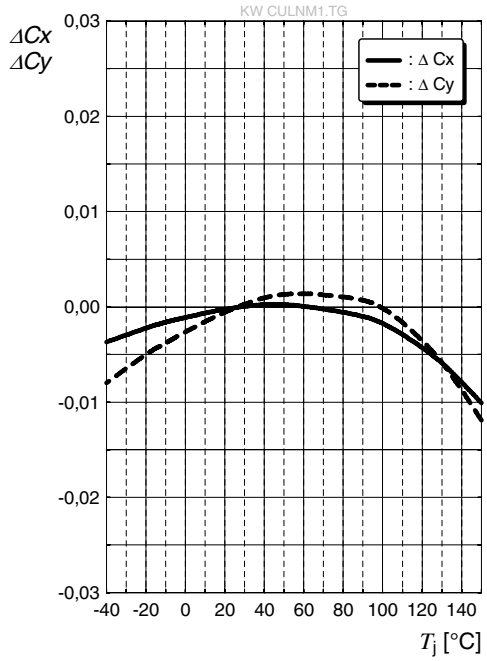
Relative Luminous Flux [7)]

$\Phi_v/\Phi_v(25\ °C) = f(T_j);\ I_F = 3000\ mA$



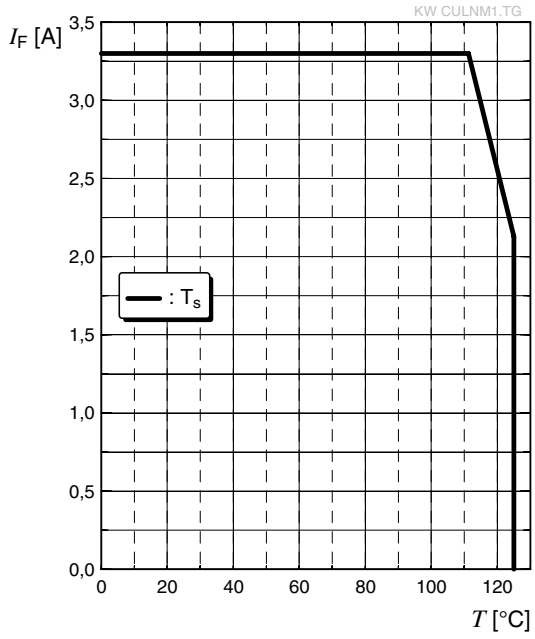
Chromaticity Coordinate Shift [7)]

$\Delta Cx, \Delta Cy = f(T_j);\ I_F = 3000\ mA$



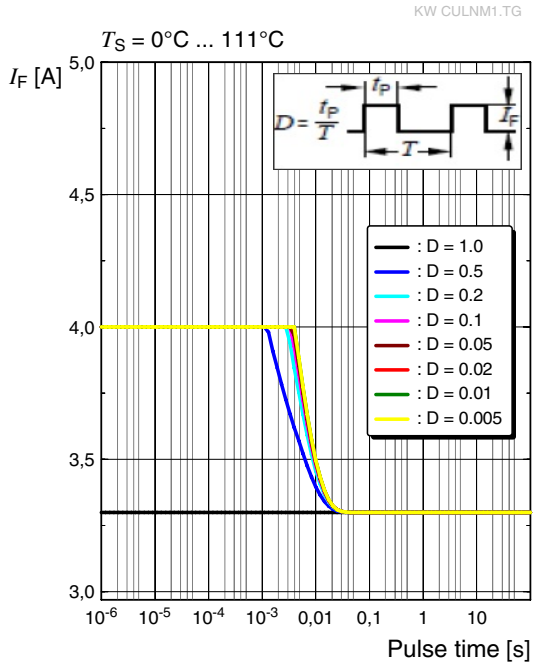
Max. Permissible Forward Current

$I_F = f(T)$



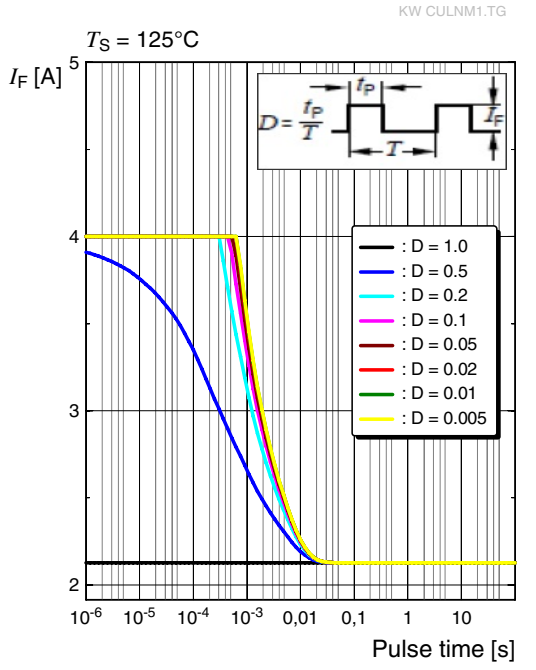
Permissible Pulse Handling Capability

$I_F = f(t_p)$; D: Duty cycle



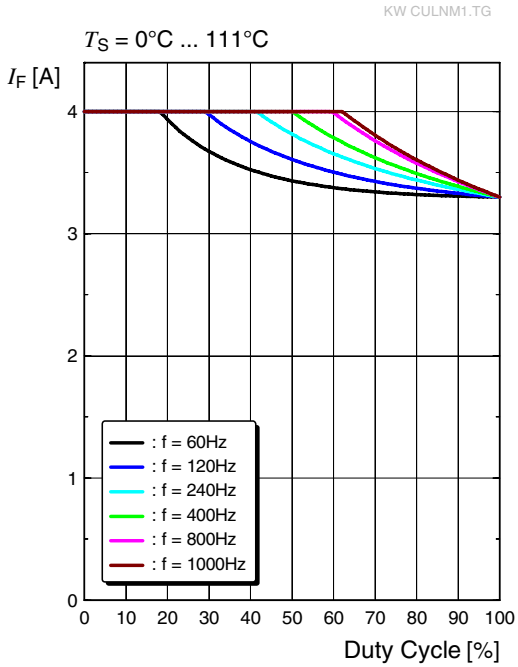
Permissible Pulse Handling Capability

$I_F = f(t_p)$; D: Duty cycle



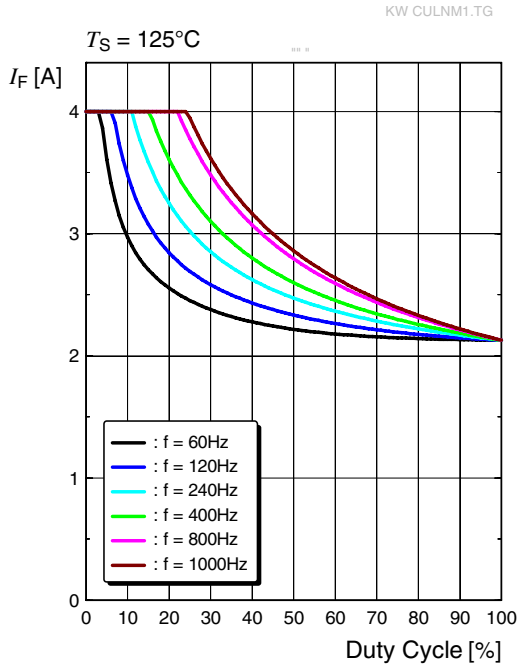
Permissible F. Handling Capability

f: Frequency

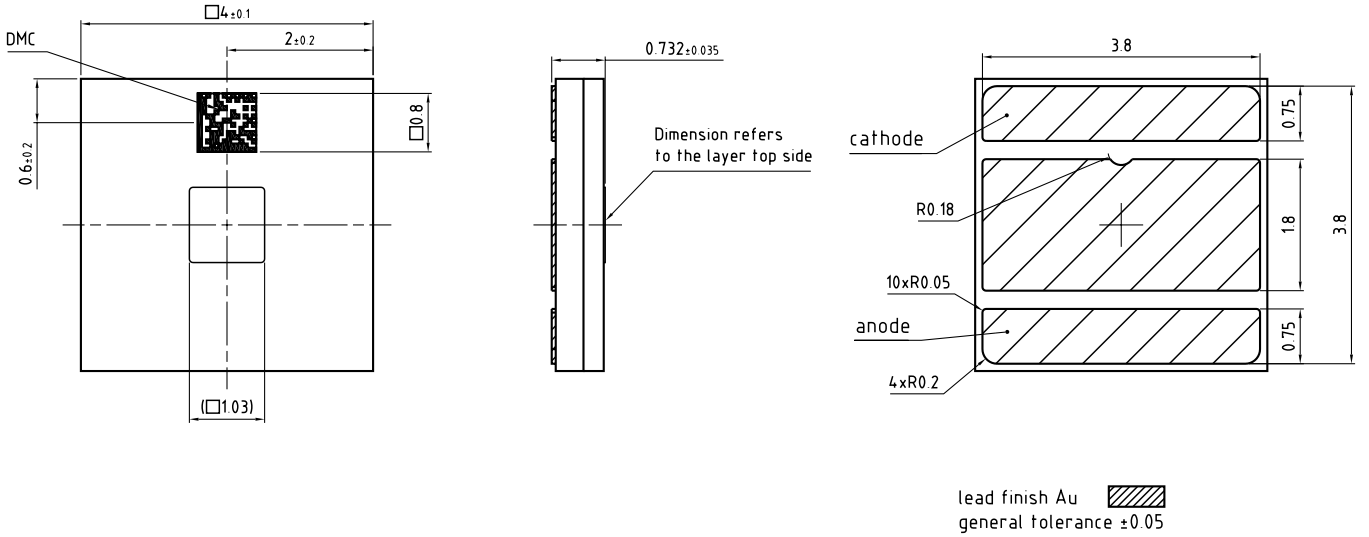


Permissible F. Handling Capability

f: Frequency



Dimensional Drawing [9)]



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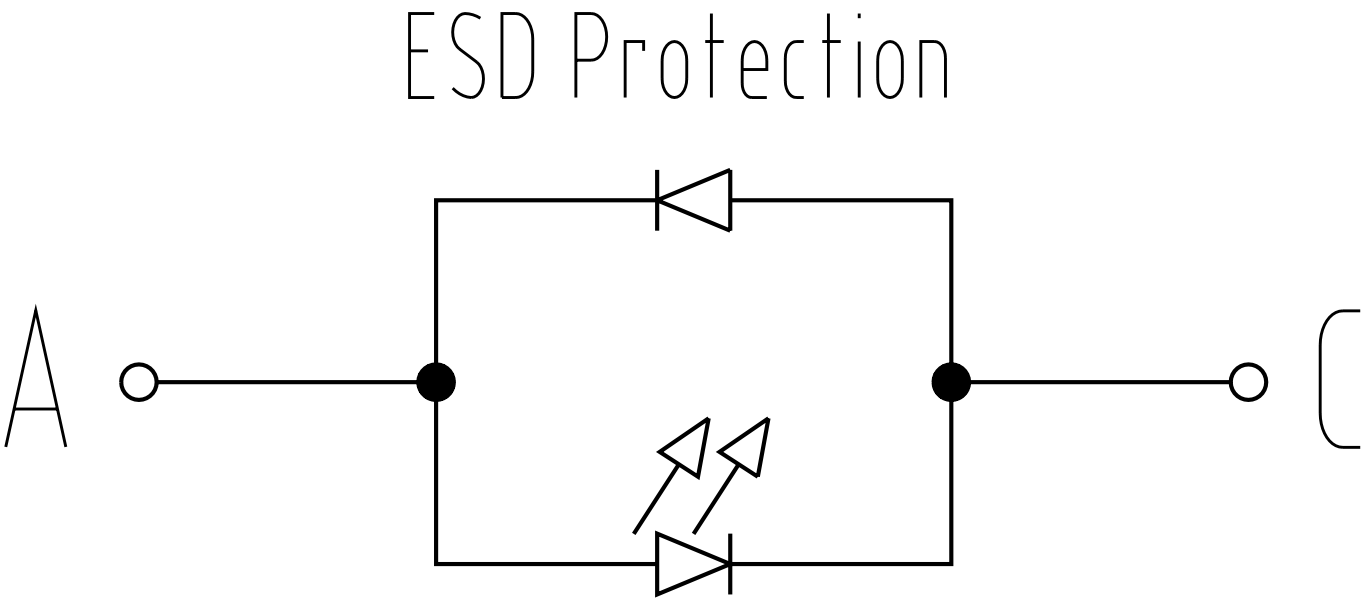
Further Information:

Approximate Weight: 40.8 mg

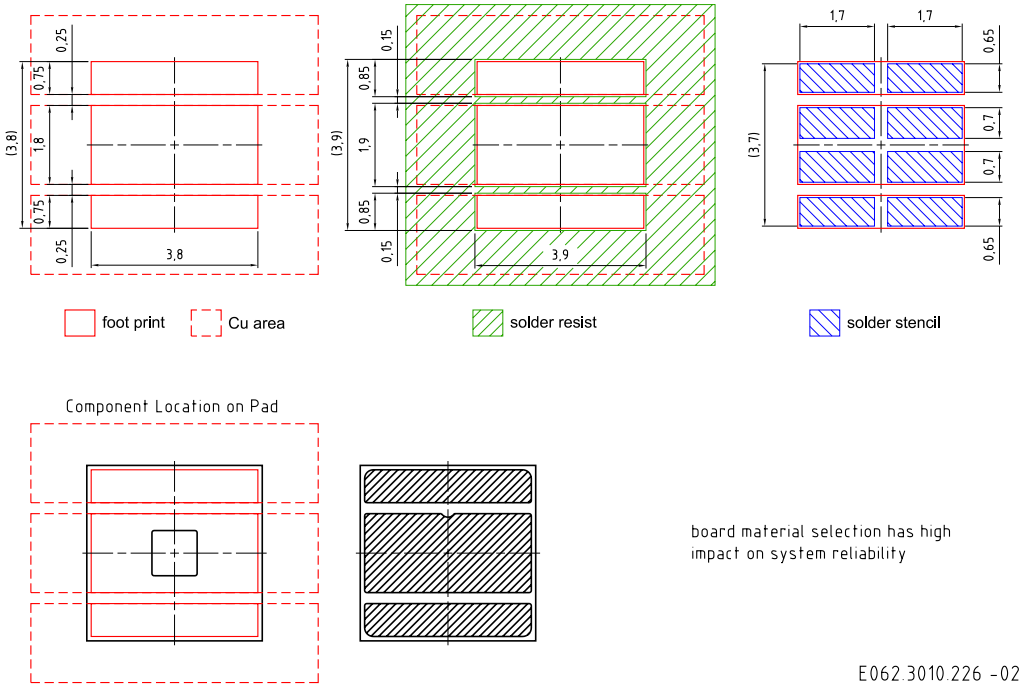
Corrosion test: Class: 3A
Test condition: 40°C / 90 % RH / 15 ppm H_2S / 14 days (stricter than IEC 60068-2-43)

ESD advice: The device is protected by ESD device which is connected in parallel to the Chip.

Electrical Internal Circuit 9)



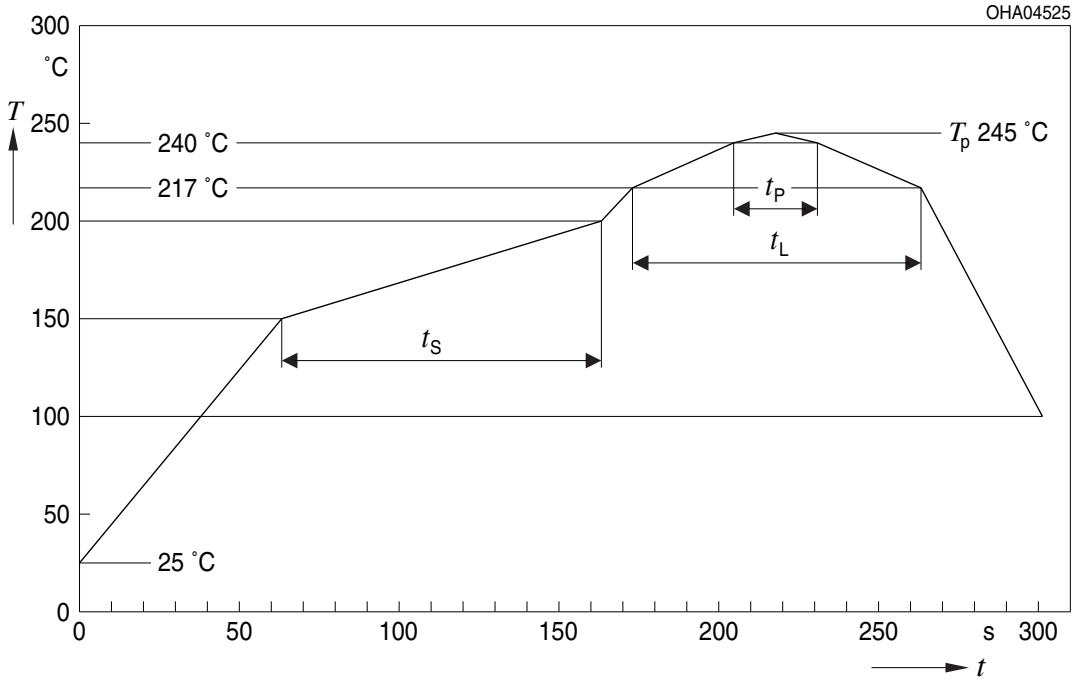
Recommended Solder Pad 9)



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

Reflow Soldering Profile

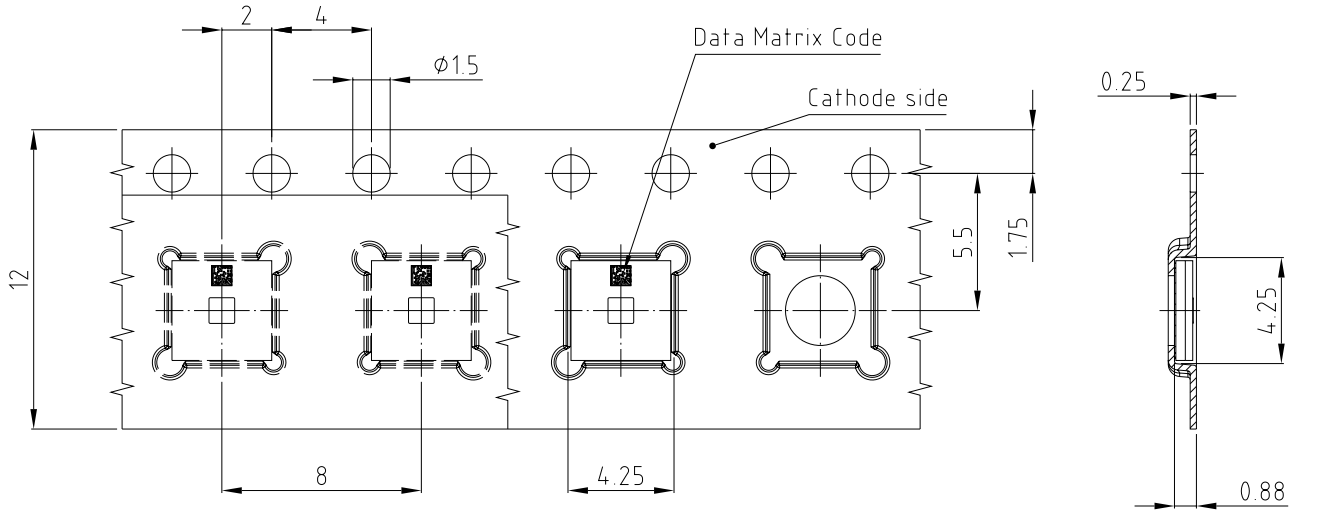
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



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 [9)]



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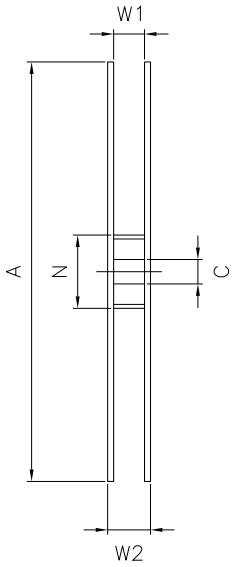
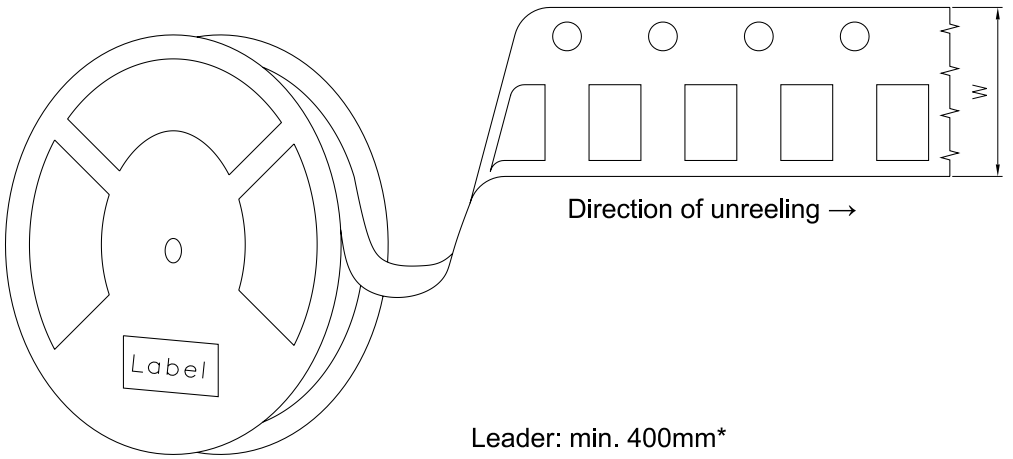
Tape and Reel [10)]



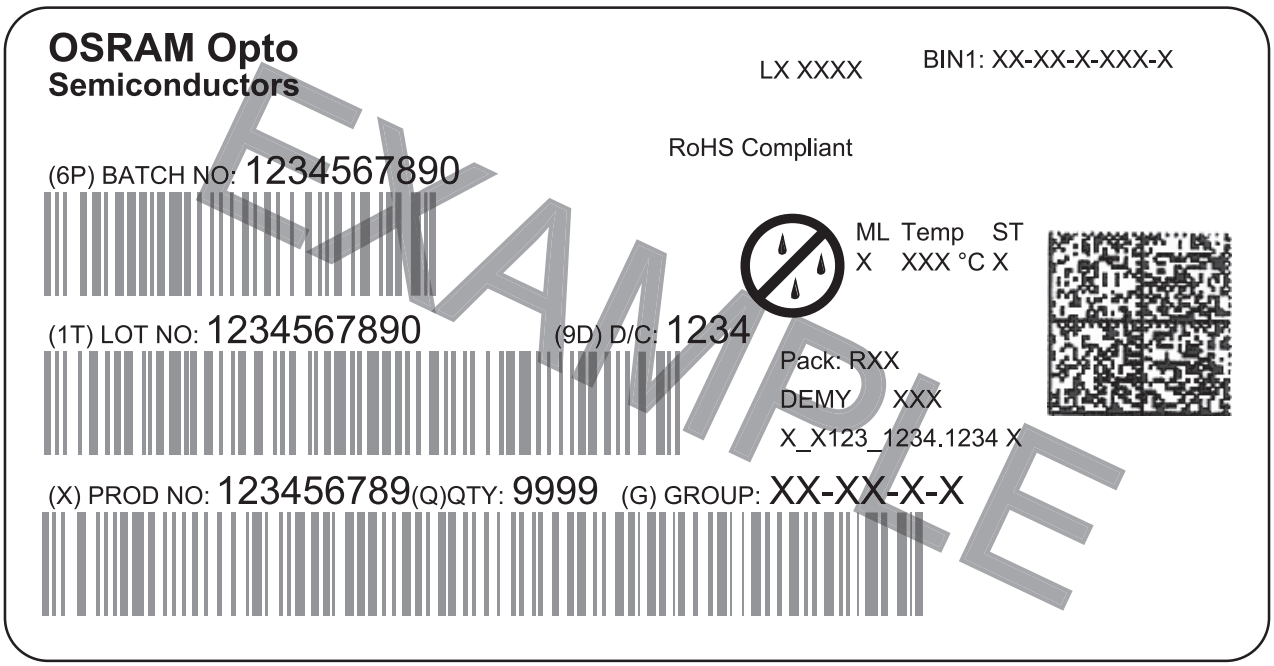


Leader: min. 400mm*
Trailer: min. 160mm*
*)Dimensions acc. to IEC 60286-3; EIA 481-E

Reel Dimensions

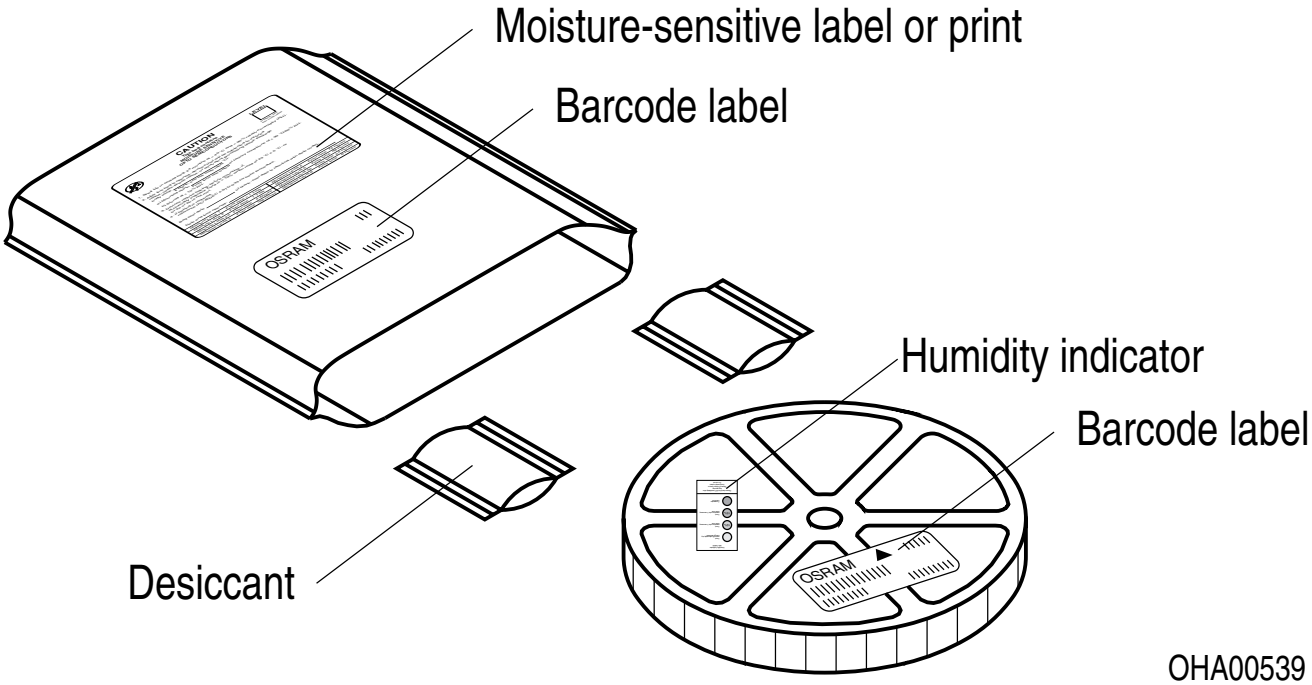
A	W	N_{min}	W_1	$W_{2\,max}$	Pieces per PU
180 mm	12 + 0.3 / - 0.1 mm	60 mm	12.4 + 2 mm	18.4 mm	2000

Barcode-Product-Label (BPL)



OHA04563

Dry Packing Process and Materials [9)]



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

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 device specified in this data sheet falls into the class **moderate risk (exposure time 0.25 s)**. Under real circumstances (for exposure time, conditions of the 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. When looking at 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 device contain, in addition to other substances, metal filled materials. Metal filled materials can be affected by environments that contain traces of aggressive substances. Therefore, we recommend that customers avoid device exposure to aggressive substances during storage, production, and use.

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

Disclaimer

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.

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OSRAM OS components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.
OSRAM OS products are not qualified at module and system level for such application.

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 1 ms, with an internal reproducibility of ±8 % and an expanded uncertainty of ±11 % (acc. to GUM with a coverage factor of k = 3).

2) **Operating Temperature:** The Operating Temperatur Top is referenced to the Solderpoint Ts of this device. Proper current derating must be observed to maintain junction temperature below the maximum.

3) **Reverse Operation:** Reverse Operation of 10 hours is permissible in total. Continuous reverse operation is not allowed.

4) **Chromaticity coordinate groups:** Chromaticity coordinates are measured during a current pulse of typically 1 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).

5) **Forward Voltage:** The forward voltage is measured during a current pulse of typically 1 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).

6) **Thermal Resistance:** Rth max is based on statistic values (6σ).

7) **Typical Values:** Due to the special conditions of the manufacturing processes of semiconductor devices, 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.

8) **Characteristic curve:** In the range where the line of the graph is broken, you must expect higher differences between single devices within one packing unit.

9) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with ±0.1 and dimensions are specified in mm.

10) **Tape and Reel:** All dimensions and tolerances are specified acc. IEC 60286-3 and specified in mm.

Revision History

Version	Date	Change
1.4	2019-06-26	Features Glossary Further Information Not for new design
1.5	2019-06-26	Characteristics Electro - Optical Characteristics (Diagrams)
1.6	2020-04-27	Features Schematic Transportation Box Dimensions of Transportation Box Notes Disclaimer

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Leibnizstraße 4, D-93055 Regensburg

EU RoHS and China RoHS compliant product

此产品符合欧盟 RoHS 指令的要求；
按照中国的相关法规和标准，不含有毒有害物质或元素。