OSRAM GW CSSRM4.HW

Datasheet

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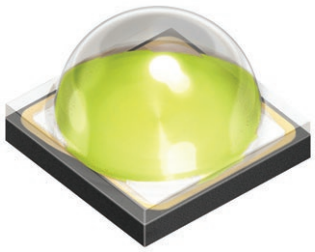
OSLON® Square

GW CSSRM4.HW



New generation of OSLON Square Horti White with Photon Flux hot binning for closer match to typical operating temperatures. With higher brightness, it maximizes the photon flux efficacy on system level for horticulture applications.
Unlike conventional white LEDs, ams OSRAM's Horti White LEDs utilizes a customized phosphor solution designed to facilitate the increase of non-converted red photons to deliver superior fixture level efficacy. Additionally, this high-power LED provides excellent reliability, long lifetime, proven robustness and low thermal resistance in a compact footprint.

Applications

- Agriculture & Horticulture
- Entertainment
- Outdoor & Industrial Lighting

Features

- Package: SMD ceramic package with silicone lens
- Typ. Radiation: 120° (Lambertian emitter)
- ESD: 8 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 3B)
- Radiant Flux (@ 700mA): typ. 1207 mW @ 25°C; typ. 1159 mW @ 85°C
- Radiant Efficiency (@ 700mA): typ. 59.4% @ 25°C; typ. 58.7% @ 85°C
- Photon Flux (@ 700mA): typ. 5.32 µmol/s @ 25°C; typ. 5.11 µmol/s @ 85°C
- Photon Flux Efficacy (@ 700mA): typ. 2.62 µmol/J @ 25°C; typ. 2.59 µmol/J @ 85°C

Ordering Information

Type	Photon Flux [1] I_F = 700 mA Φ_P	Ordering Code
GW CSSRM4.HW-SHSM-H1H2-1	4.60 ... 5.75 µmol/s	Q65113A6880
GW CSSRM4.HW-SJSM-H3H4-1	4.80 ... 5.75 µmol/s	Q65113A6943

Maximum Ratings

Parameter	Symbol		Values
Operating Temperature	T_{op}	min. max.	-40 °C 125 °C
Storage Temperature	T_{stg}	min. max.	-40 °C 125 °C
Junction Temperature	T_j	max.	135 °C
Forward current	I_F	min. max.	100 mA 1800 mA
Surge Current t ≤ 10 µs; D = 0.005 ; T_J = 85 °C	I_{FS}	max.	2000 mA
Reverse voltage [2)]	V_R		Not designed for reverse operation
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 3B)	V_{ESD}		8 kV

Characteristics

I_F = 700 mA; T_J = 85 °C

Parameter	Symbol		Values
Viewing angle at 50% I_V	2φ	typ.	120 °
Forward Voltage [3] I_F = 700 mA	V_F	min. typ. max.	2.70 V 2.80 V 3.10 V
Reverse current [2]	I_R		Not designed for reverse operation
Electrical thermal resistance junction/solderpoint with efficiency η_e = 59.5 %	$R_{thJS\ elec.}$	typ.	1.4 K / W

Brightness Groups

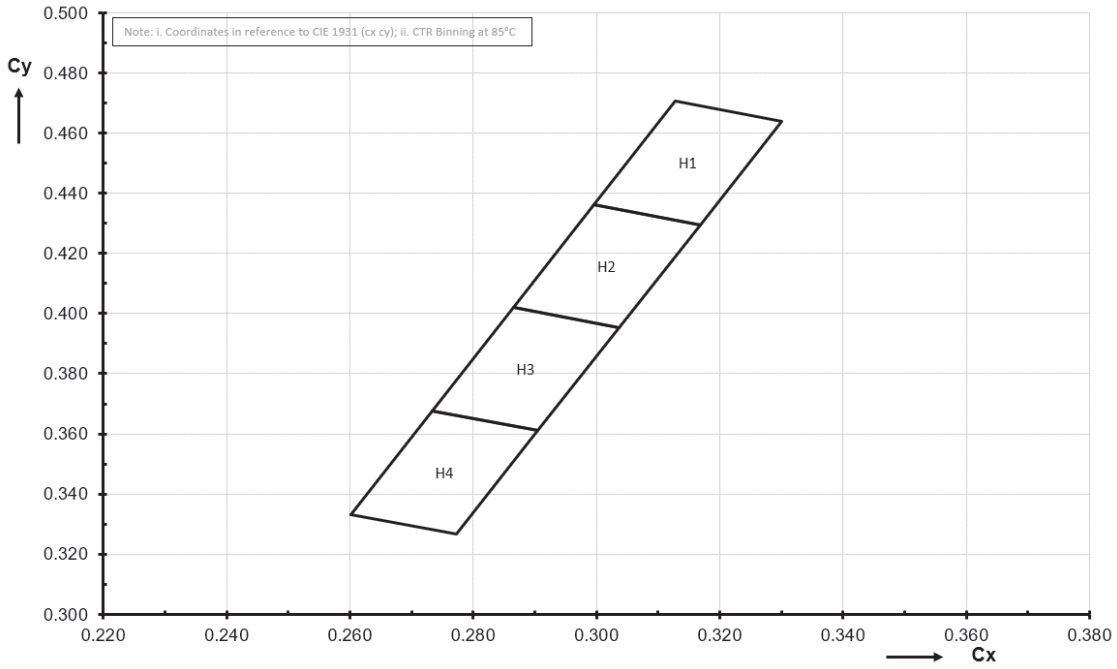
Group	Photon Flux [1] I_F = 700 mA min. Φ_P	Photon Flux [1] I_F = 700 mA max. Φ_P	PF/W typ.	Total Radiant Flux min. Φ_E	Total Radiant Flux max. Φ_E
SH	4.60 µmol/s	4.80 µmol/s	2.40 µmol/J	1,043 mW	1,088 mW
SJ	4.80 µmol/s	5.00 µmol/s	2.50 µmol/J	1,088 mW	1,134 mW
SK	5.00 µmol/s	5.25 µmol/s	2.61 µmol/J	1,134 mW	1,190 mW
SL	5.25 µmol/s	5.50 µmol/s	2.74 µmol/J	1,190 mW	1,248 mW
SM	5.50 µmol/s	5.75 µmol/s	2.87 µmol/J	1,248 mW	1,305 mW

Note: [*] Photon Flux includes wavelengths between 280 and 800 nm.
Note: [**] Radiant Flux values are for reference only.

Forward Voltage Groups

Group	Forward Voltage [3] I_F = 700 mA min. V_F	Forward Voltage [3] I_F = 700 mA max. V_F
K2	2.70 V	2.80 V
L1	2.80 V	2.90 V
L2	2.90 V	3.00 V
M1	3.00 V	3.10 V

Chromaticity Coordinate Groups [4)]



Chromaticity Coordinate Groups

Group	Cx	Cy	Group	Cx	Cy
H1	0.3128	0.4706	H3	0.2865	0.4019
	0.3300	0.4640		0.3036	0.3953
	0.3168	0.4296		0.2905	0.3610
	0.2996	0.4362		0.2733	0.3676
H2	0.2996	0.4362	H4	0.2733	0.3676
	0.3168	0.4296		0.2905	0.3610
	0.3036	0.3953		0.2773	0.3266
	0.2865	0.4019		0.2601	0.3332

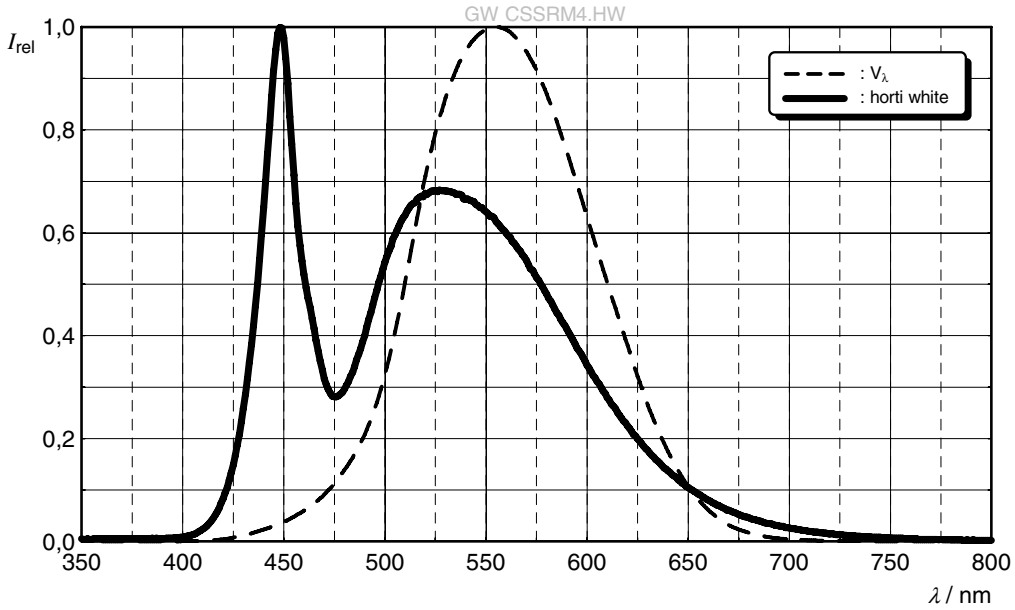
Group Name on Label

Example: SH-H1-K2

Brightness	Color Chromaticity	Forward Voltage
SH	H1	K2

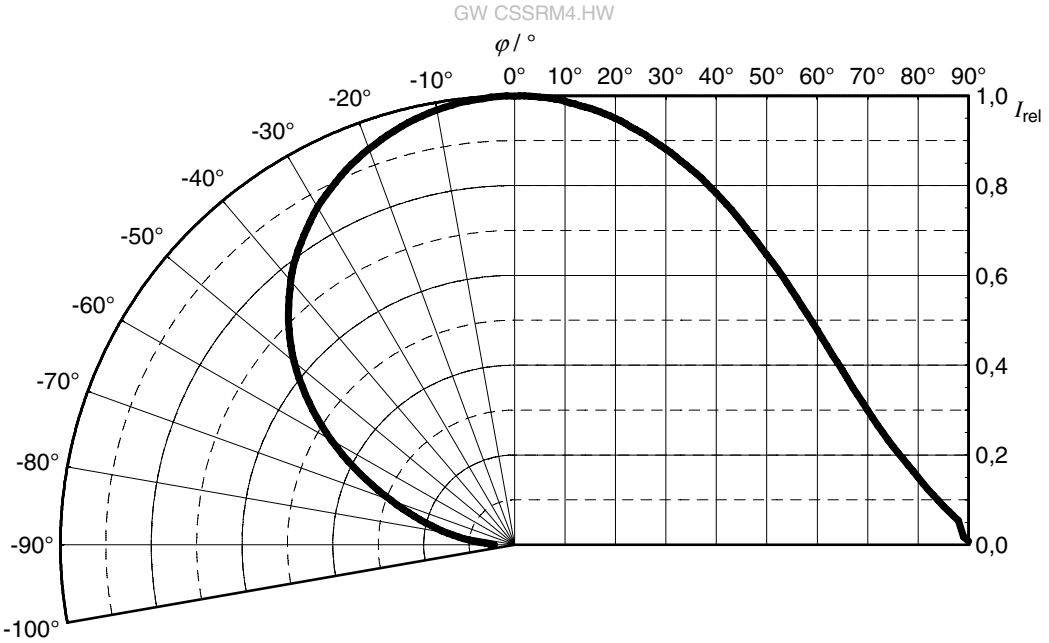
Relative Spectral Emission [5)]

$I_{rel} = f(\lambda)$; I_F = 700 mA; T_J = 85 °C



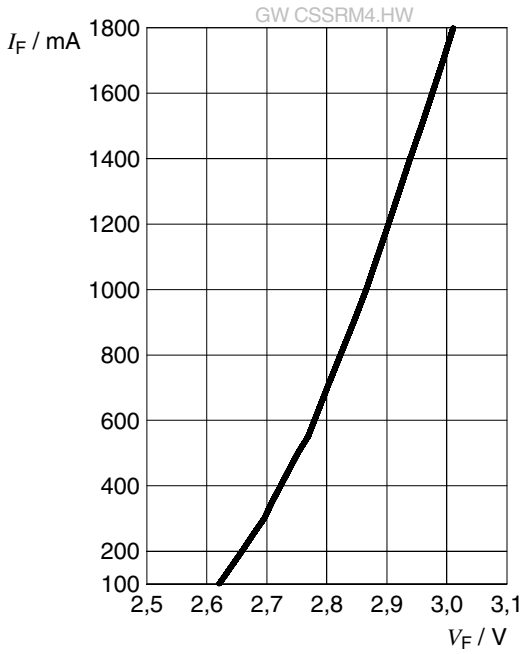
Radiation Characteristics [5)]

$I_{rel} = f(\varphi)$; T_J = 85 °C



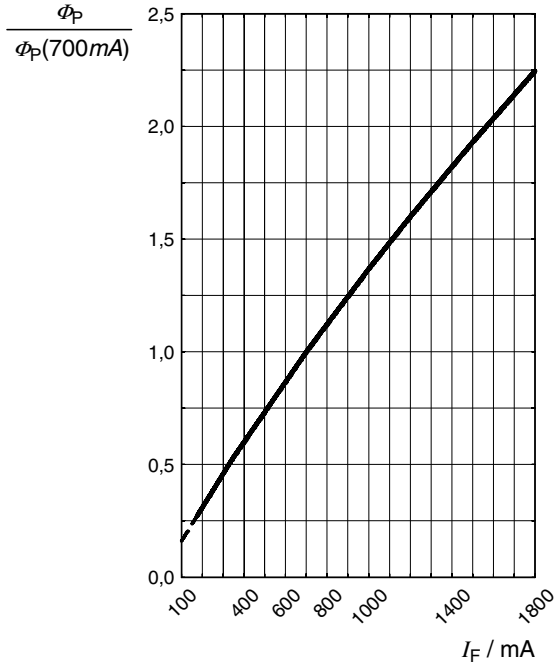
Forward current [5]

$I_F = f(V_F)$; T_J = 85 °C



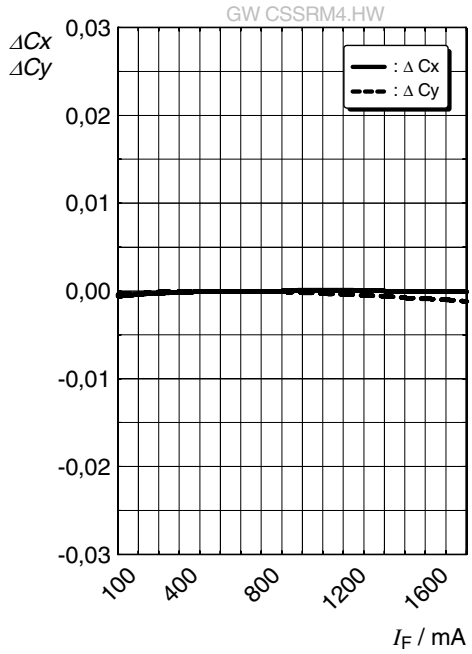
Relative Photon Flux [5], [6]

$\Phi_P/\Phi_P(700\ mA) = f(I_F)$; T_J = 85 °C



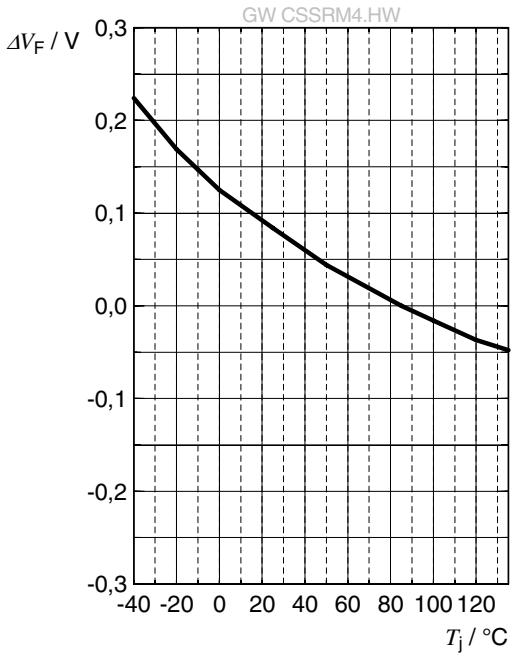
Chromaticity Coordinate Shift [5]

$\Delta Cx, \Delta Cy = f(I_F)$; T_J = 85 °C



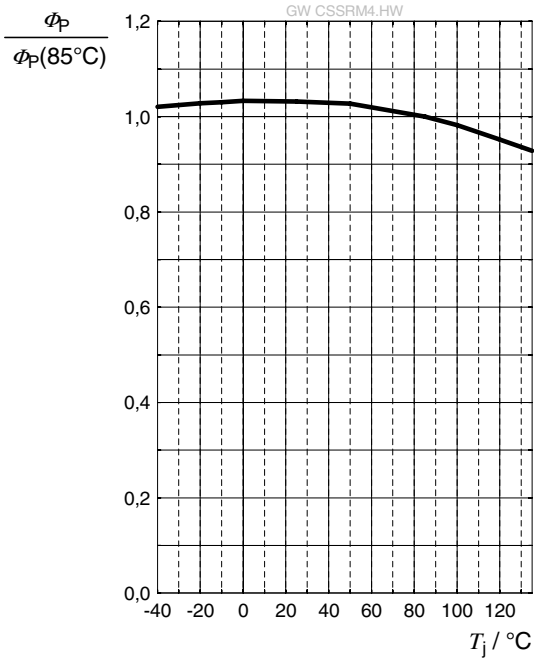
Forward Voltage [5)]

$\Delta V_F = V_F - V_F(85\ °C) = f(T_j);\ I_F = 700\ mA$



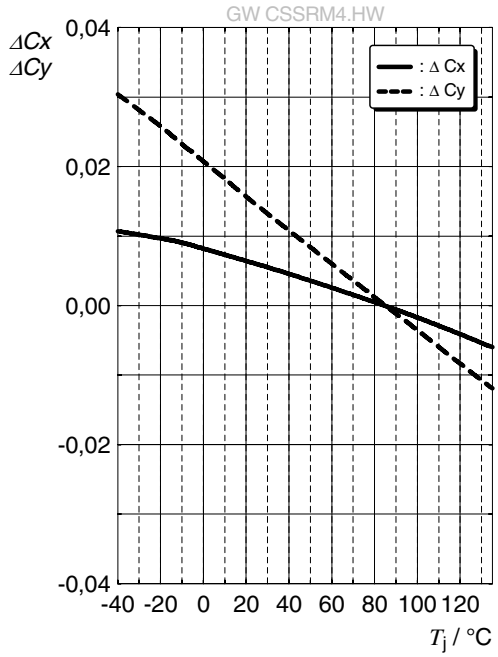
Relative Photon Flux [5)]

$\Phi_P/\Phi_P(85\ °C) = f(T_j);\ I_F = 700\ mA$



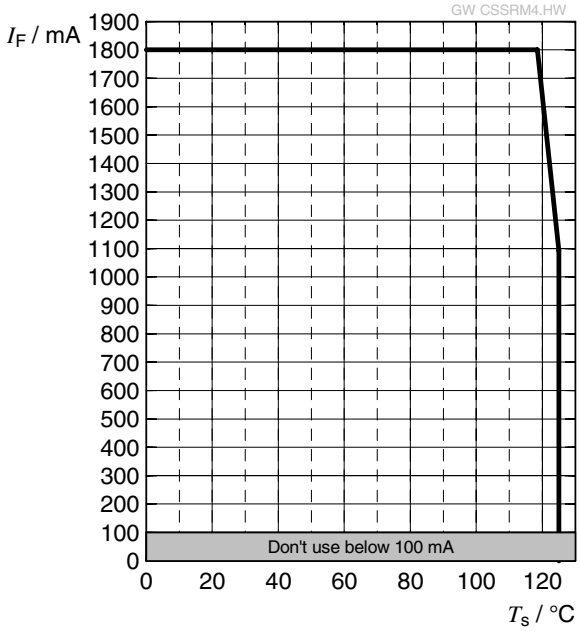
Chromaticity Coordinate Shift [5)]

$\Delta Cx, \Delta Cy = f(T_j);\ I_F = 700\ mA$

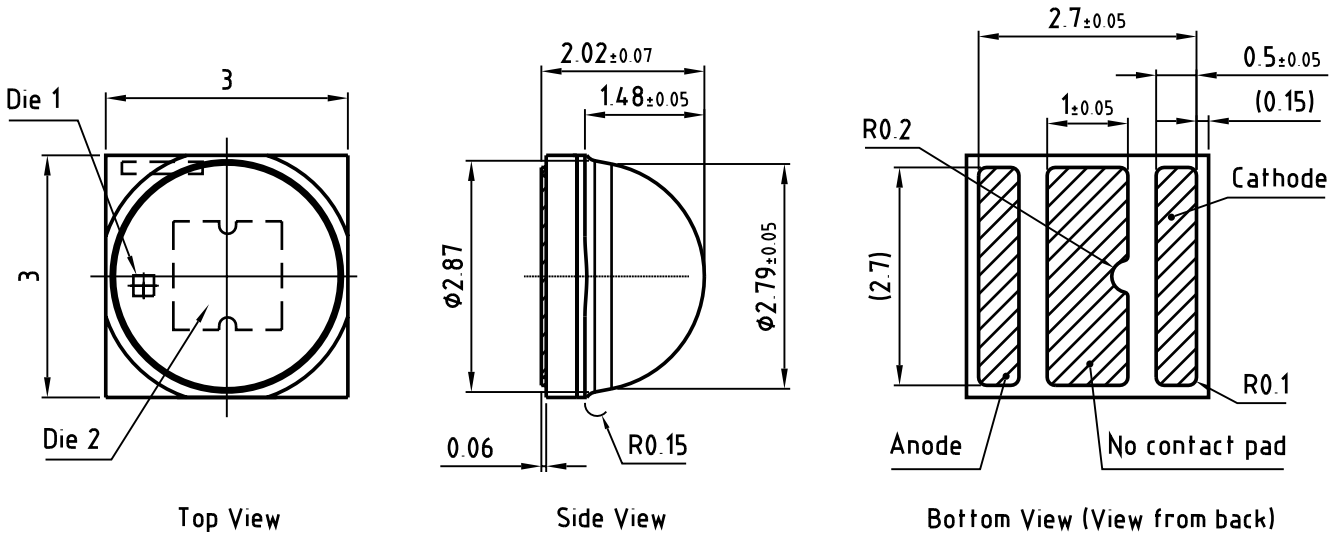


Max. Permissible Forward Current [7)]

$I_F = f(T)$



Dimensional Drawing [8)]



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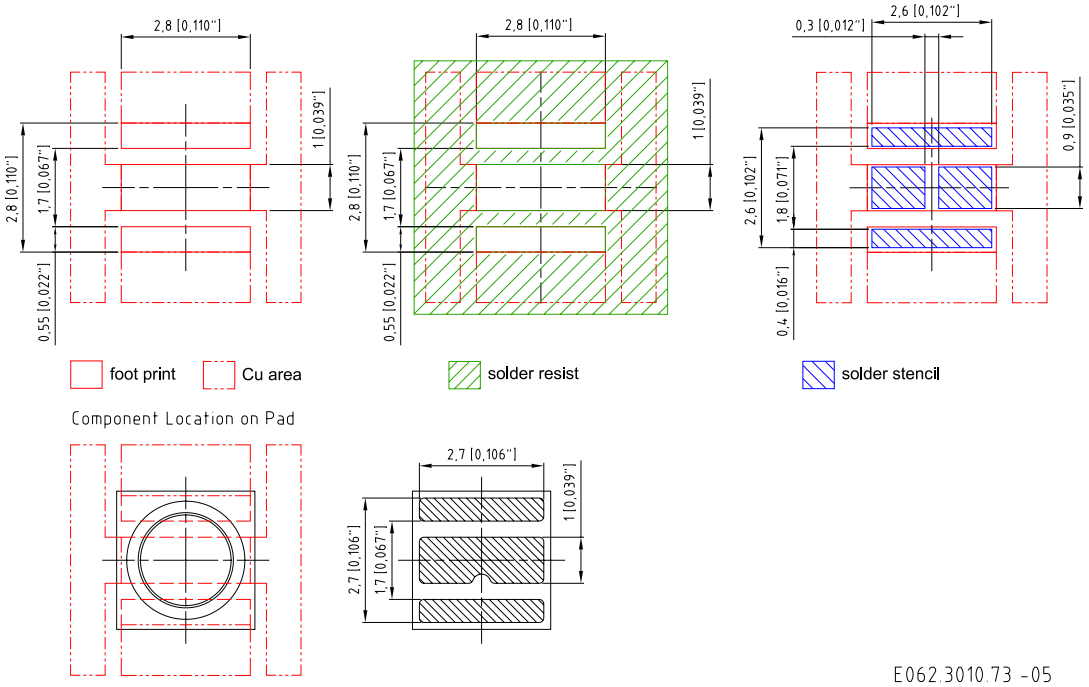
Further Information:

Approximate Weight: 29.0 mg

Package marking: Cathode

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

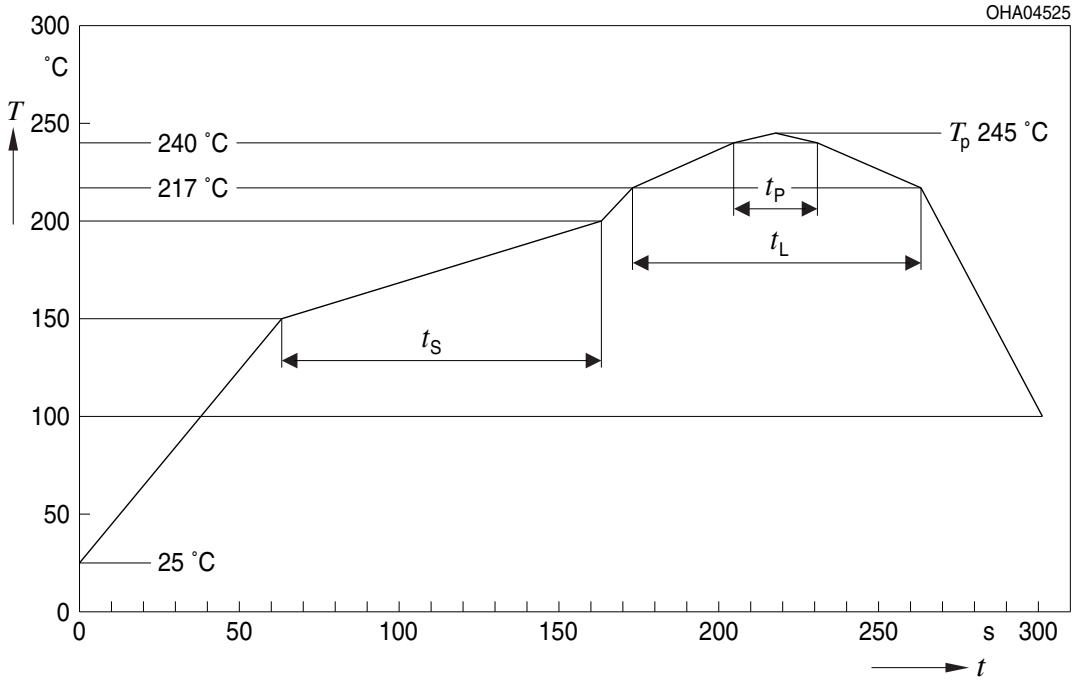
Recommended Solder Pad [8)]



For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere. Further information can be found in our Application Note: “Handling and Processing Details for Ceramic LEDs”.

Reflow Soldering Profile

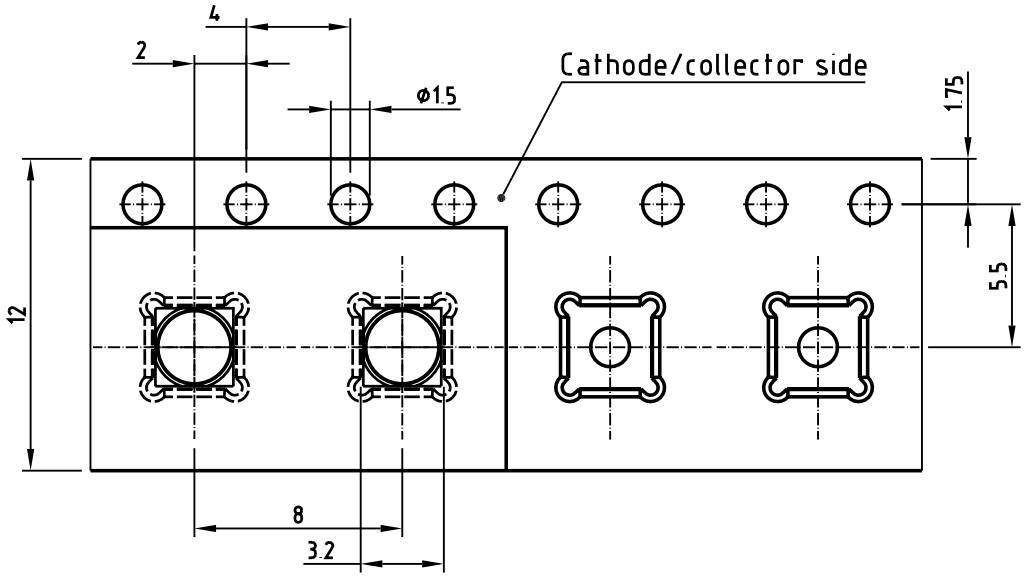
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E

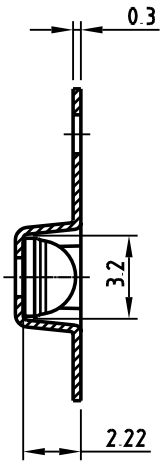


Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	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 [8)]





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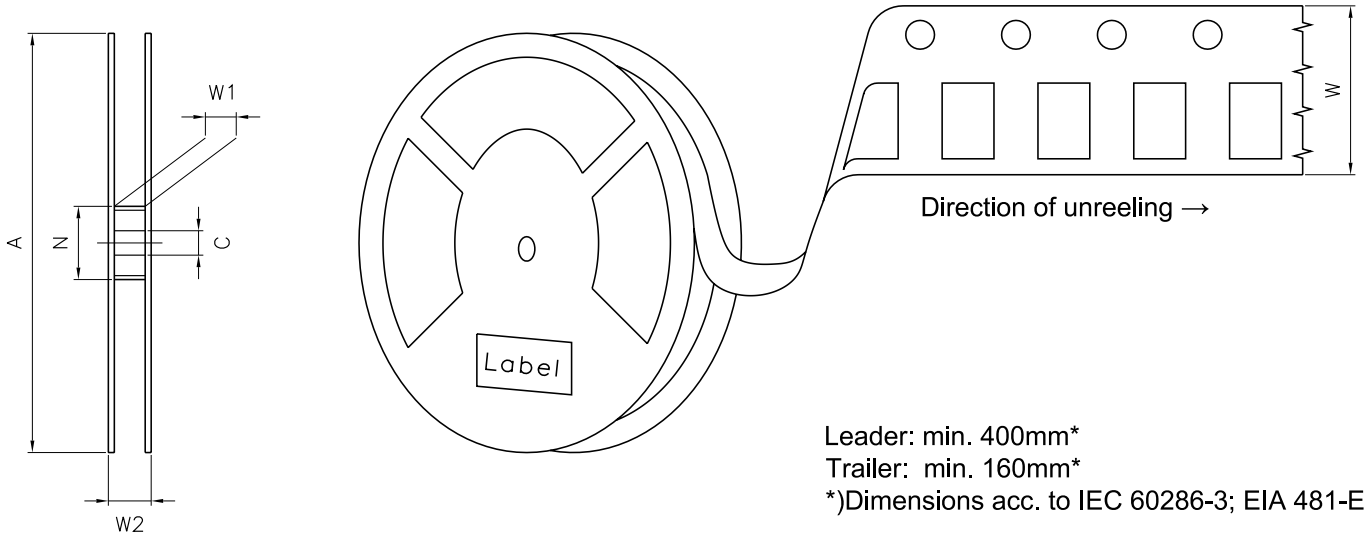
Tape and Reel [9)]

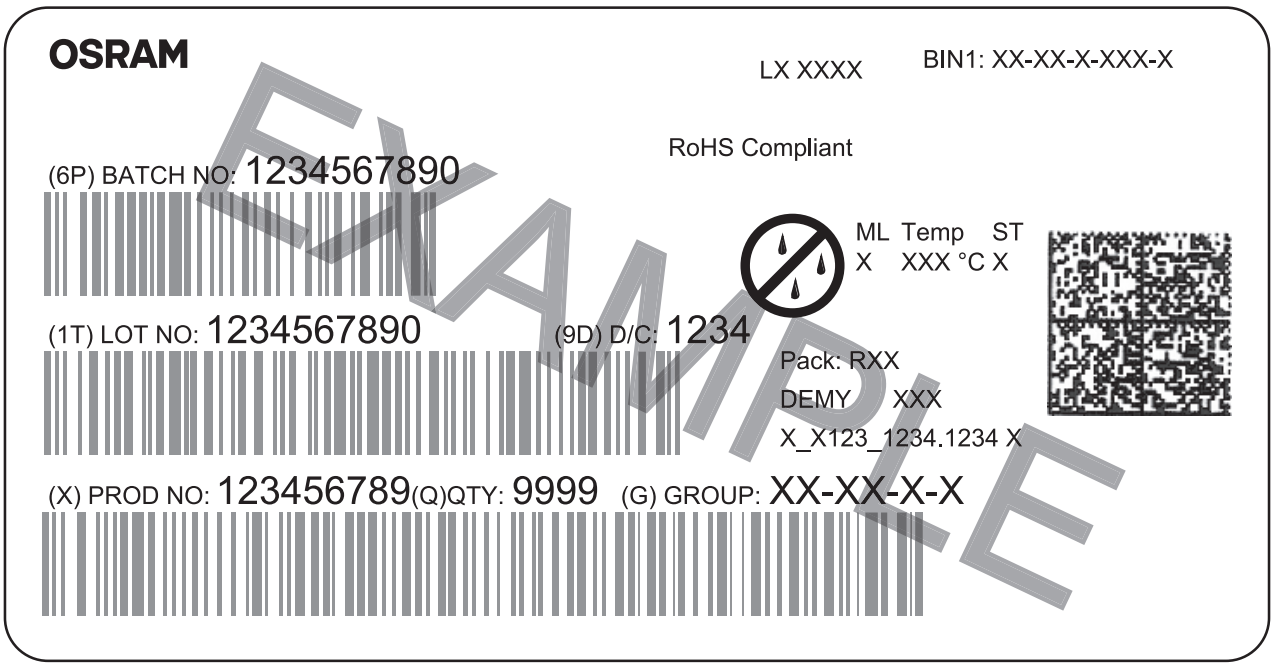


Leader: min. 400mm*
Trailer: min. 160mm*
*)Dimensions acc. to IEC 60286-3; EIA 481-E

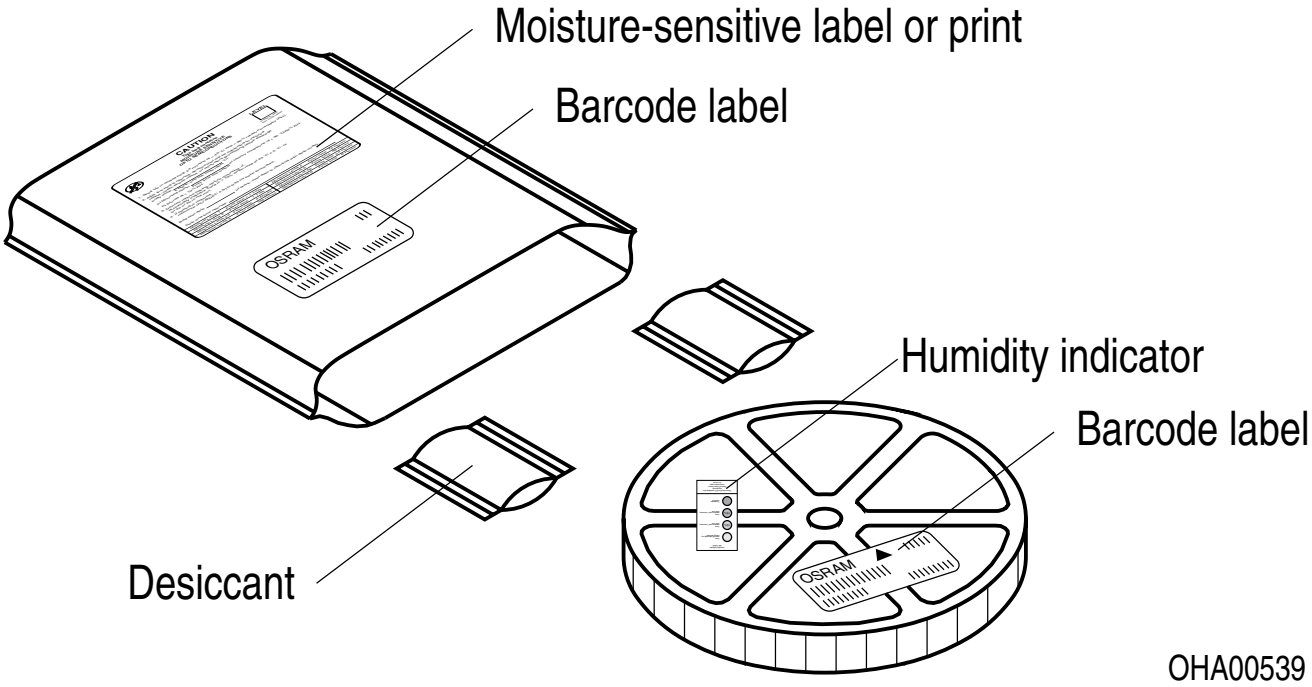
Reel Dimensions

A	W	N_{min}	W_1	$W_{2\,max}$	Pieces per PU
330 mm	12 + 0.3 / - 0.1 mm	60 mm	12.4 + 2 mm	18.4 mm	3000

Barcode-Product-Label (BPL)



Dry Packing Process and Materials



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 fall 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 including silver. Metal filled materials can be affected by environments that contain traces of aggressive substances. Therefore, we recommend that customers minimize device exposure to aggressive substances during storage, production, and use. Devices 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.

This device is designed for specific/recommended applications only. Please consult OSRAM Opto Semiconductors Sales Staff in advance for detailed information on other non-recommended applications (e.g. automotive).

Change management for this component is aligned with the requirements of the lighting market.

For further application related information please visit https://ams-osram.com/support/application-notes

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 our 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 and functional safety devices/applications or medical devices/applications

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

In case buyer – or customer supplied by buyer – considers using our components in product safety devices/ applications or medical devices/applications, buyer and/or customer has to inform our local sales partner immediately and we and buyer and /or customer will analyze and coordinate the customer-specific request between us and buyer and/or customer.

Glossary

1) **Brightness:** Brightness values are measured during a current pulse of typically 10 ms, with a tolerance of +/- 7%.

2) **Reverse Operation:** Not designed for reverse operation. Continuous reverse operation can cause migration and damage of the device.

3) **Forward Voltage:** The Forward voltage is measured during a current pulse duration of typically 1 ms with a tolerance of ± 0.05V .

4) **Chromaticity coordinate groups:** Chromaticity coordinate groups are measured during a current pulse duration of typically 10ms with a tolerance of ±0.005.

5) **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.

6) **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.

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

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

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

Revision History

Version	Date	Change
1.0	2024-01-30	Initial Version
1.1	2024-03-29	Description Glossary

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。

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