OSRAM KR CULPM1.23

Datasheet

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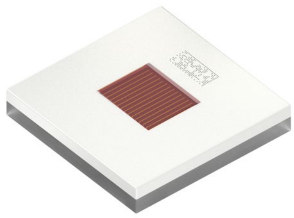
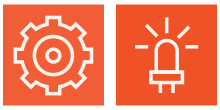
ams OSRAM

OSRAM OSTAR® Projection Compact

KR CULPM1.23

Compact light source with isolated heat sink for improved heat dissipation and high current chip technology for increased light output.





Applications

- Entertainment
- Factory Automation

Features

- Package: white molded SMD ceramic package
- Chip technology: Thinfilm
- Color: λ_{dom} = 622 nm (● red)
- Corrosion Robustness Class: 3B
- ESD: 8 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 3B)

Ordering Information

Type	Luminous Flux [1)] I_F = 1400 mA Φ_V	Ordering Code
KR CULPM1.23-LTMP-34	150 ... 194 lm	Q65113A6287
KR CULPM1.23-LTMR-25	150 ... 224 lm	Q65113A6286
KR CULPM1.23-MPMR-23	180 ... 224 lm	Q65113A6285

Maximum Ratings

Parameter	Symbol		Values
Operating Temperature	T_{op}	min. max.	-40 °C 100 °C
Storage Temperature	T_{stg}	min. max.	-40 °C 100 °C
Junction Temperature	T_j	max.	125 °C
Forward current T_S = 25 °C	I_F	min. max.	50 mA 5000 mA
Forward current pulsed	$I_{F\ pulse}$	max.	6000 mA
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 3B)	V_{ESD}		8 kV
Reverse current [2)]	I_R	max.	200 mA

Characteristics

I_F = 1400 mA; T_S = 25 °C

Parameter	Symbol		Values
Peak Wavelength	λ_{peak}	typ.	627 nm
Dominant Wavelength [3]	λ_{dom}	min. typ. max.	615 nm 622 nm 629 nm
Viewing angle at 50% I_V	2φ	typ.	110 °
Radiating surface	A_{color}	typ.	1.5 x 1.2 mm²
Partial Flux acc. CIE 127:2007	$\Phi_{E/V,\ 120°}$	typ.	0.88
Forward Voltage [4]	V_F	min. typ. max.	2.00 V 2.15 V 2.90 V
Reverse voltage (ESD device)	$V_{R\ ESD}$	min.	45 V
Reverse voltage [2] I_R = 20 mA	V_R	max.	1.2 V
Real thermal resistance junction/solderpoint [5]	$R_{thJS\ real}$	typ. max.	1.8 K / W 2.2 K / W
Electrical thermal resistance junction/solderpoint [5] with efficiency η_e = 29 %	$R_{thJS\ elec.}$	typ. max.	1.3 K / W 1.6 K / W

Brightness Groups

Group	Luminous Flux [1] I_F = 1400 mA min. Φ_V	Luminous Flux [1] I_F = 1400 mA max. Φ_V
LT	150 lm	164 lm
LU	164 lm	180 lm
MP	180 lm	194 lm
MQ	194 lm	210 lm
MR	210 lm	224 lm

Wavelength Groups

Group	Dominant Wavelength [3] I_F = 1400 mA min. λ_{dom}	Dominant Wavelength [3] I_F = 1400 mA max. λ_{dom}
2	615 nm	619 nm
3	618 nm	622 nm
4	621 nm	625 nm
5	624 nm	629 nm

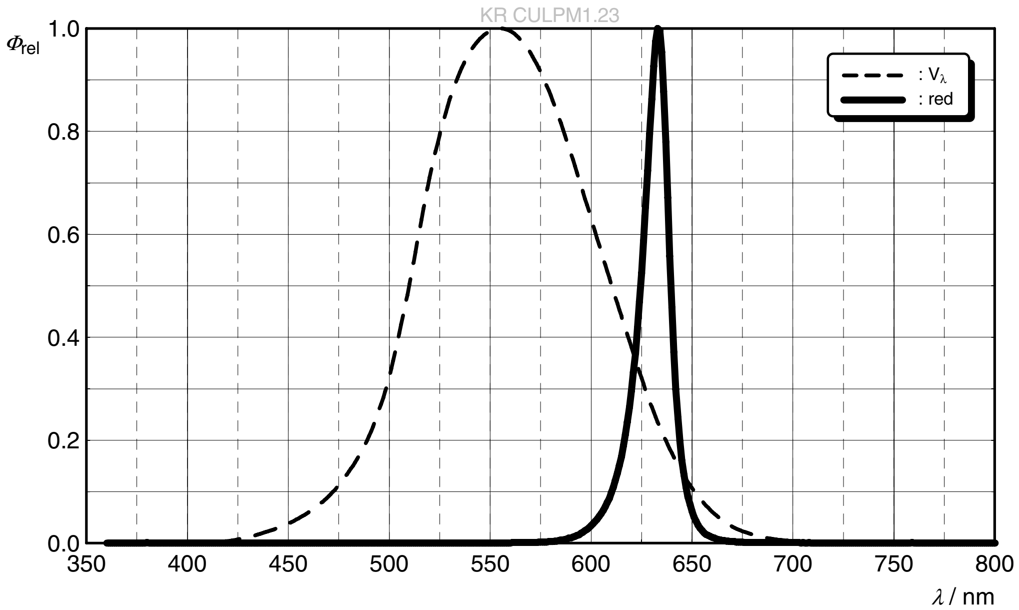
Group Name on Label

Example: LT-2

Brightness	Wavelength
LT	2

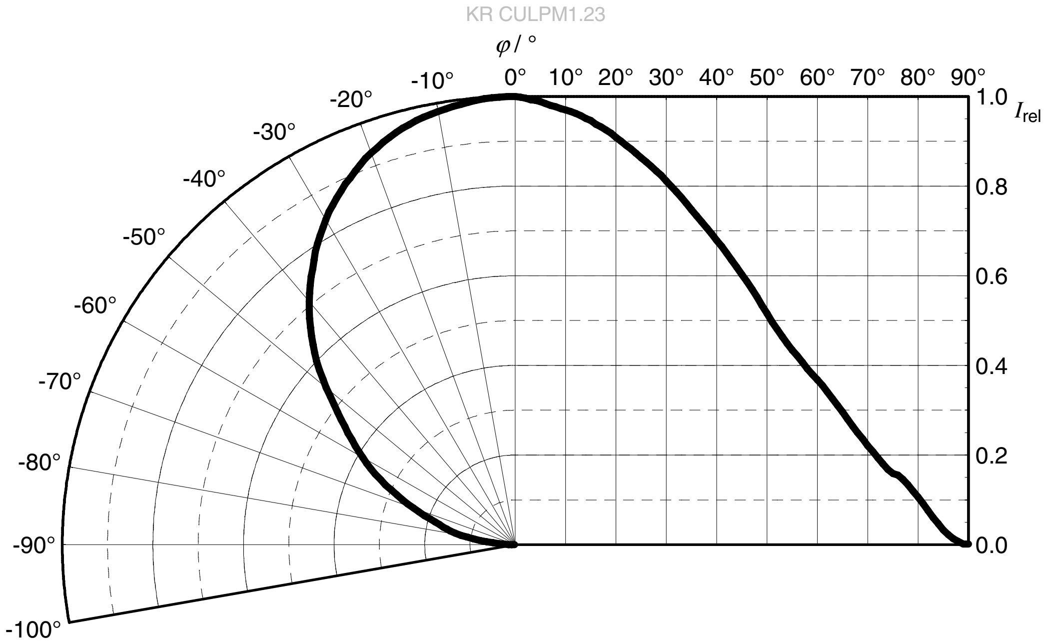
Relative Spectral Emission [6)]

$\Phi_{rel} = f(\lambda)$; I_F = 1400 mA; T_S = 25 °C



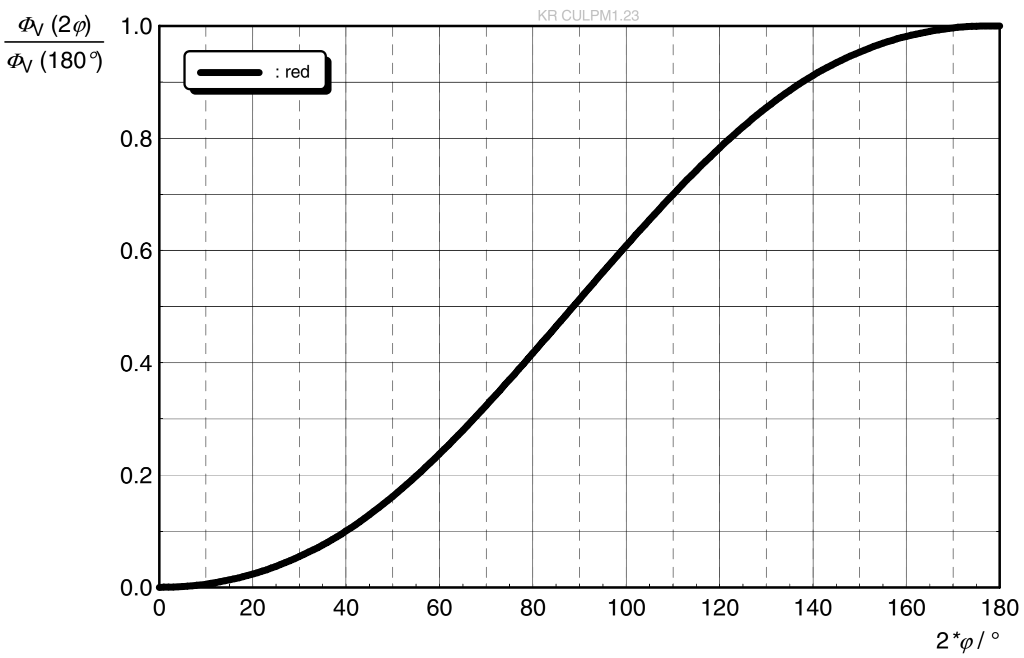
Radiation Characteristics [6)]

I_{rel} = f (ϕ); T_S = 25 °C



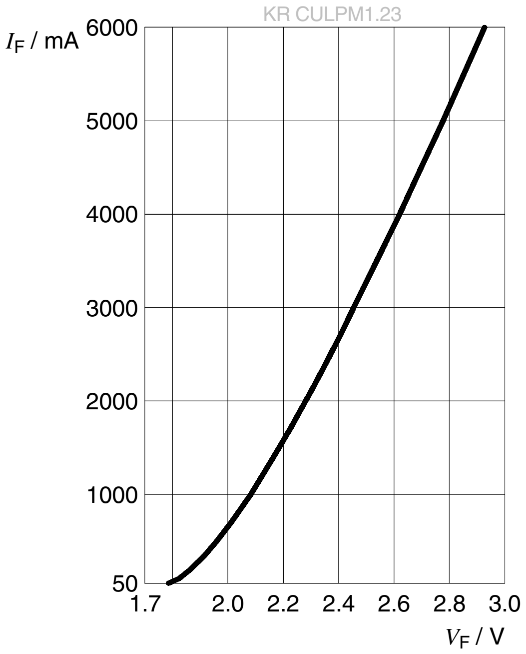
Relative Partial Flux [6)]

$\Phi_v(2\varphi)/\Phi_v(180°)$ = f(φ); T_S = 25 °C



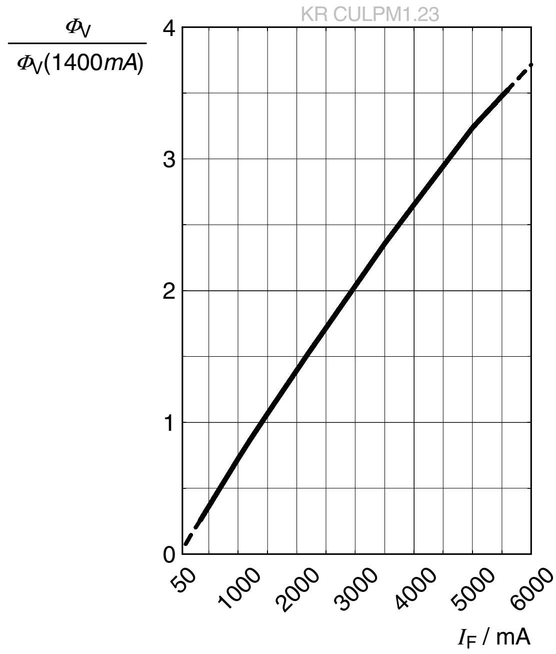
Forward current [6)]

$I_F = f(V_F)$; T_S = 25 °C



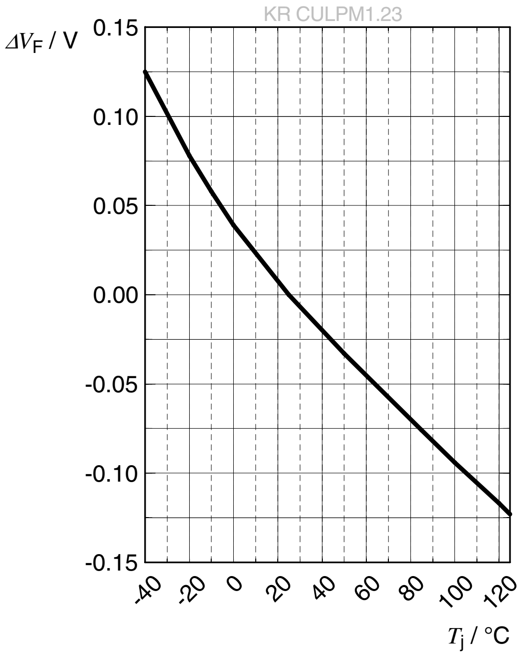
Relative Luminous Flux [6), 7)]

Φ_v/Φ_v(1400 mA) = f(I_F); T_S = 25 °C



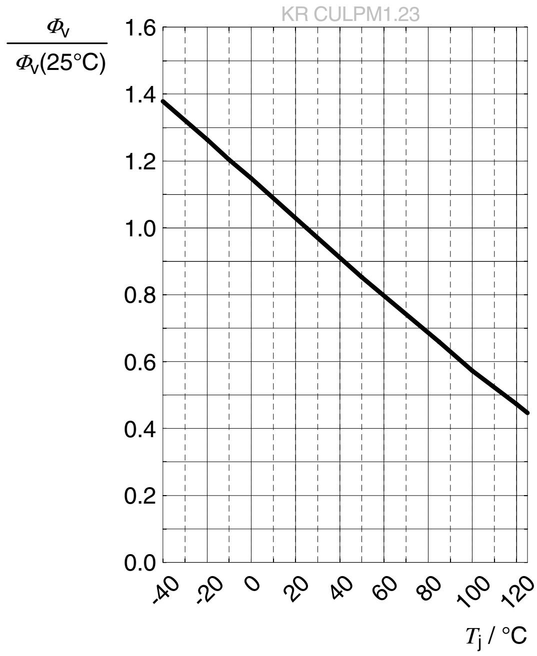
Forward Voltage [6)]

$\Delta V_F = V_F - V_F(25\ °C) = f(T_j)$; $I_F = 1400$ mA



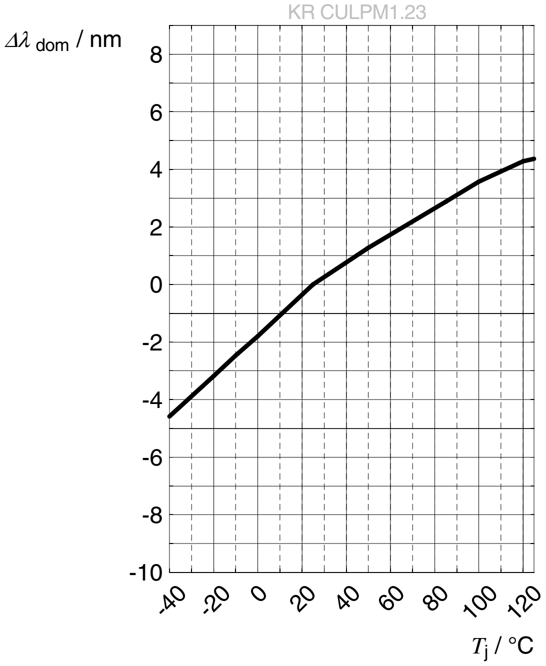
Relative Luminous Flux [6)]

$\Phi_v/\Phi_v(25\ °C) = f(T_j)$; $I_F = 1400$ mA



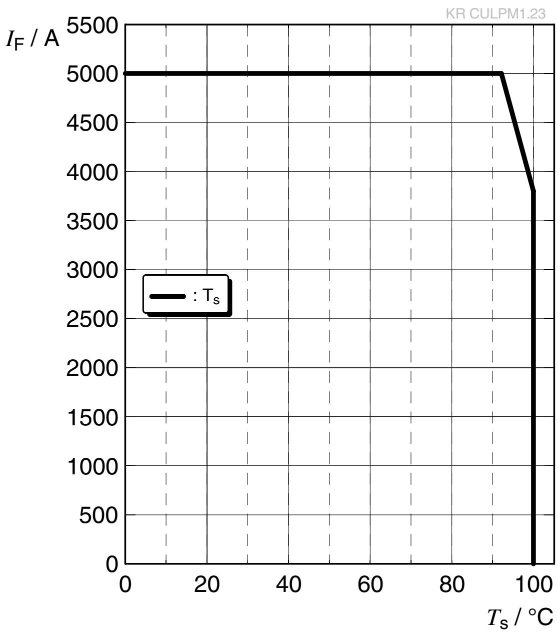
Dominant Wavelength [6)]

$\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\ °C) = f(T_j)$; $I_F = 1400$ mA



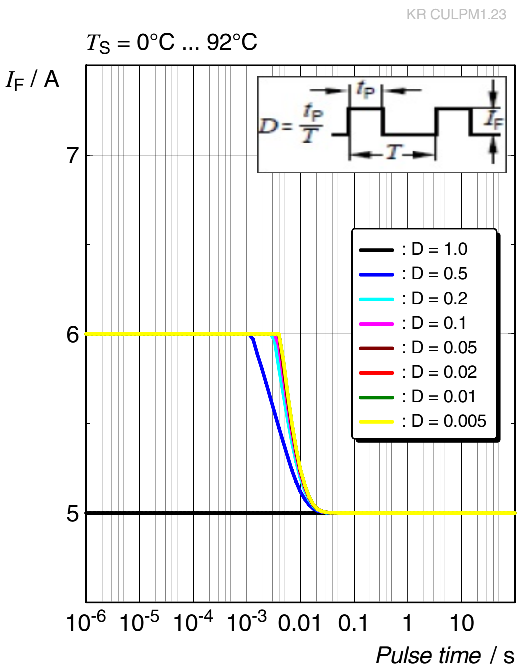
Max. Permissible Forward Current [5]

$I_F = f(T)$



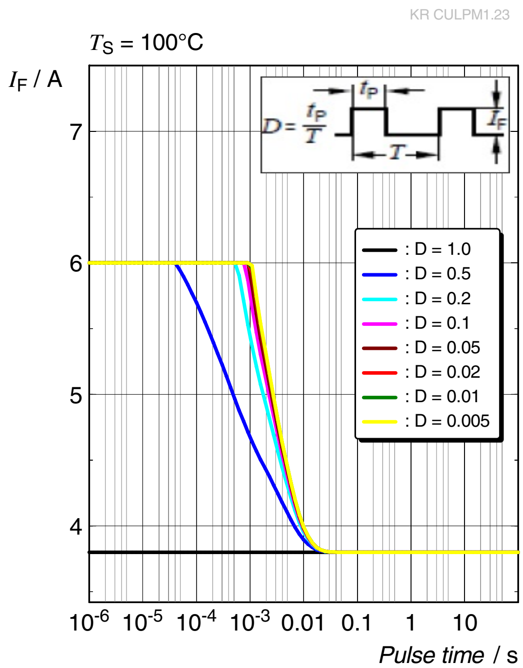
Permissible Pulse Handling Capability

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



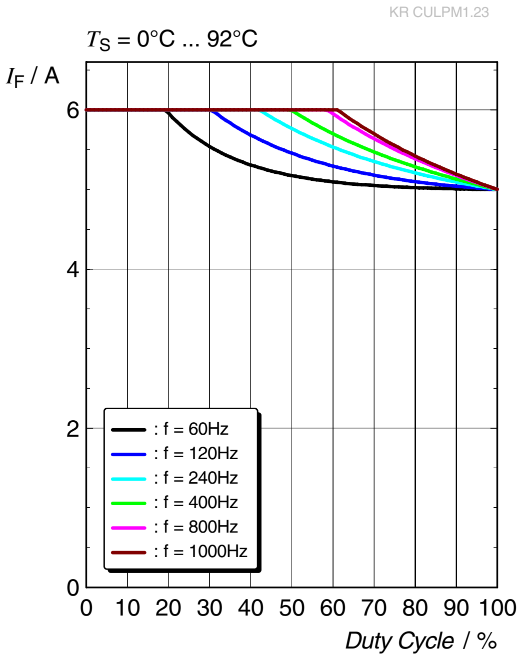
Permissible Pulse Handling Capability

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



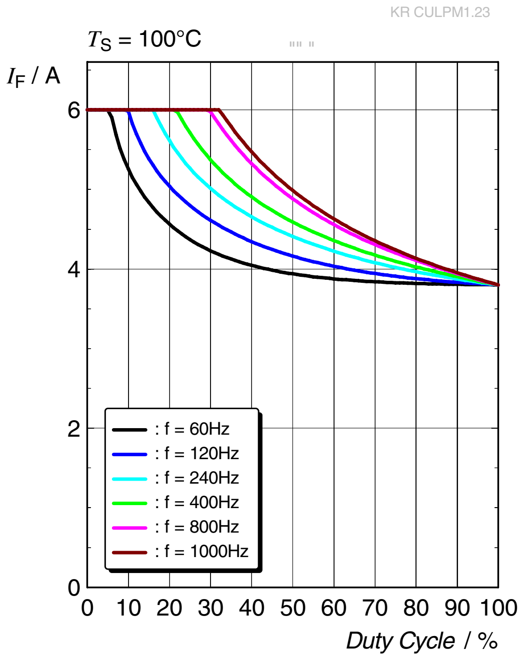
Permissible F. Handling Capability

I_F = f(D); f : frequency

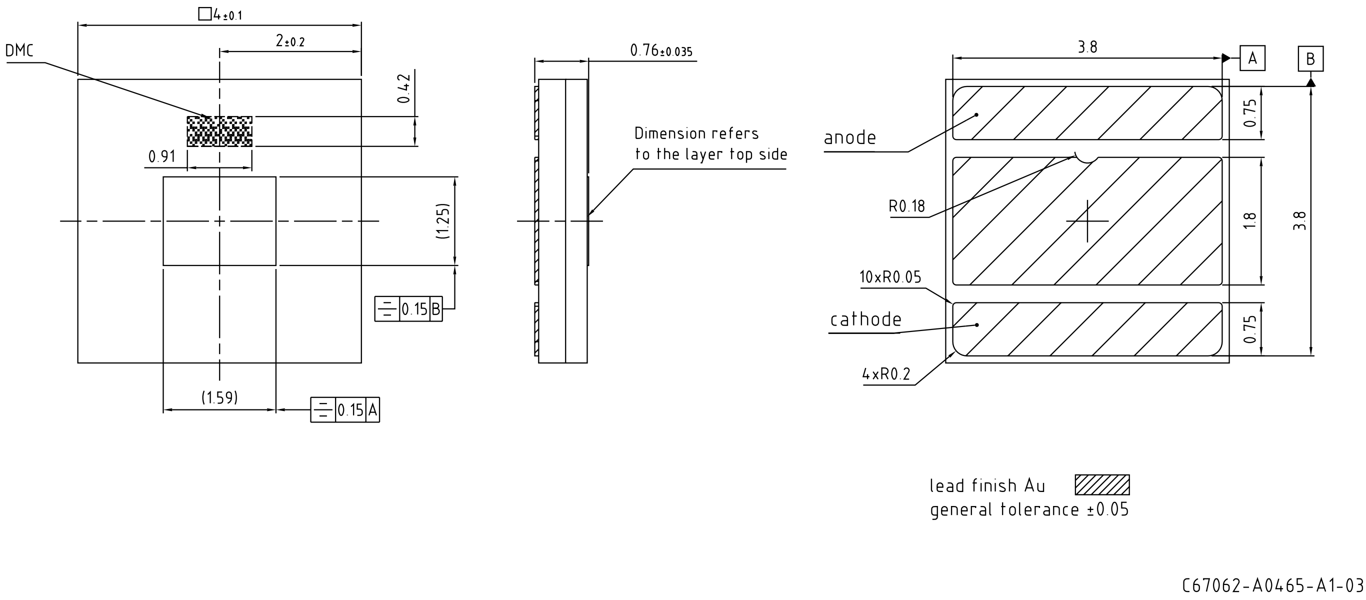


Permissible F. Handling Capability

I_F = f(D); f : frequency



Dimensional Drawing [8)]



Further Information:

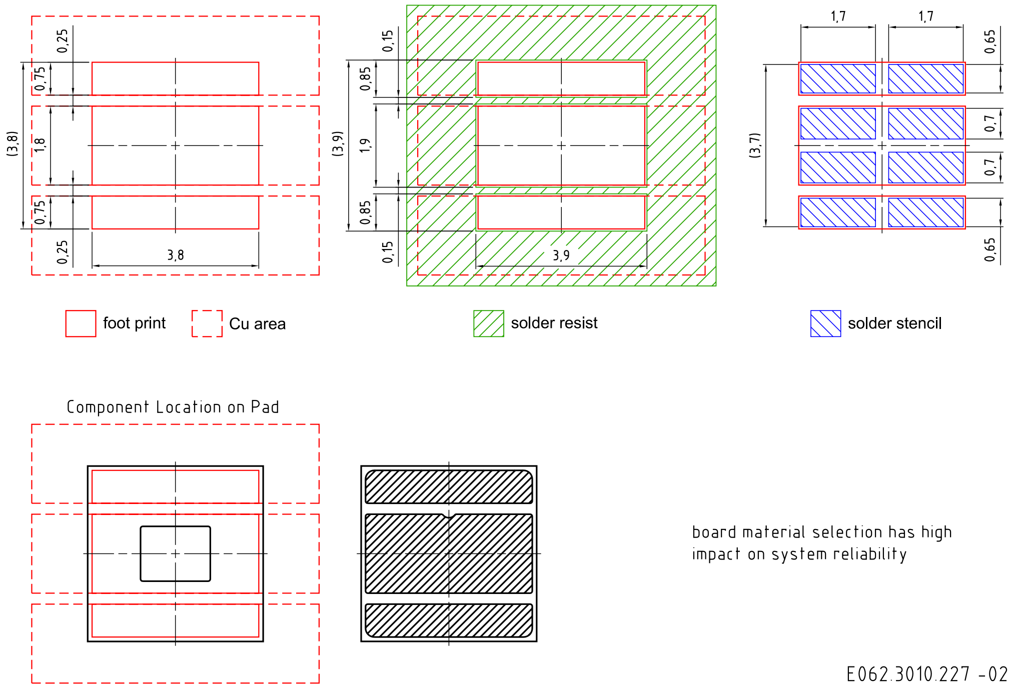
Approximate Weight: 45.0 mg

Package marking: Anode

Corrosion test: Class: 3B
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.

Recommended Solder Pad [8)]



For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere. Package not suitable for any kind of wet cleaning or ultrasonic cleaning.

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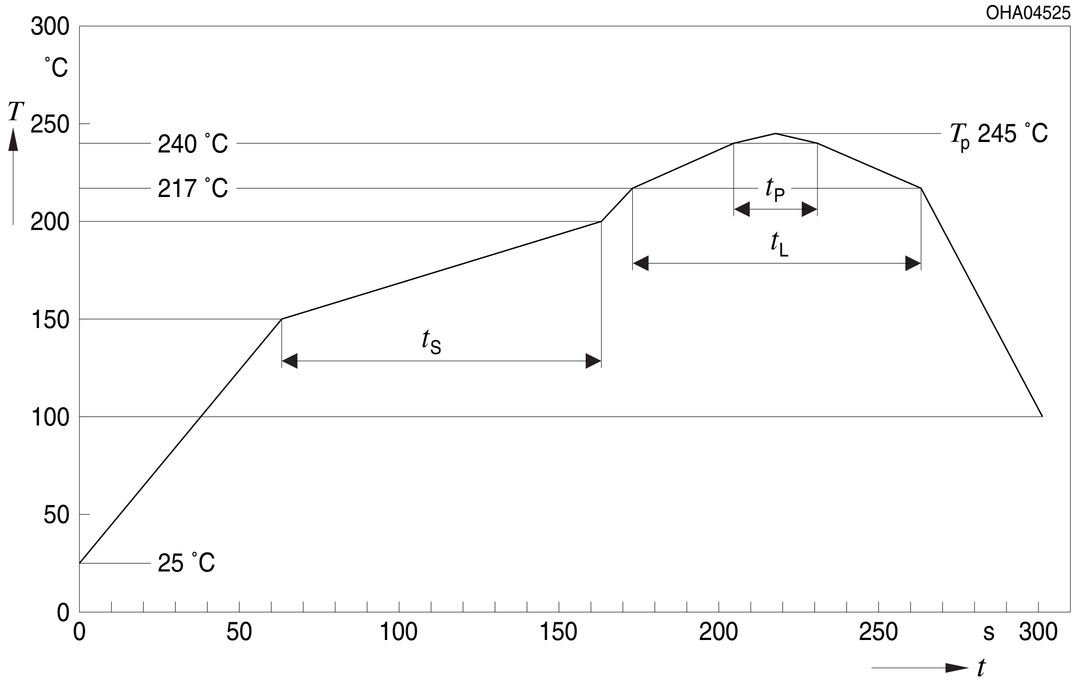
Reflow Soldering Profile

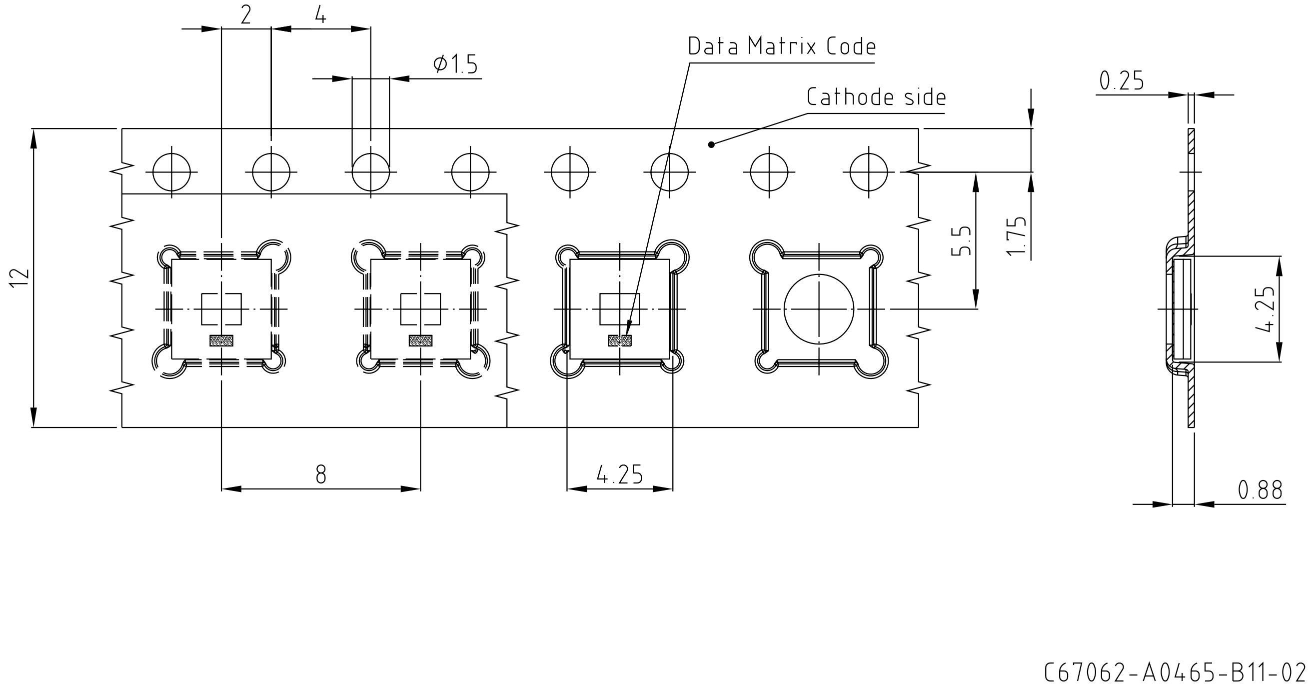
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



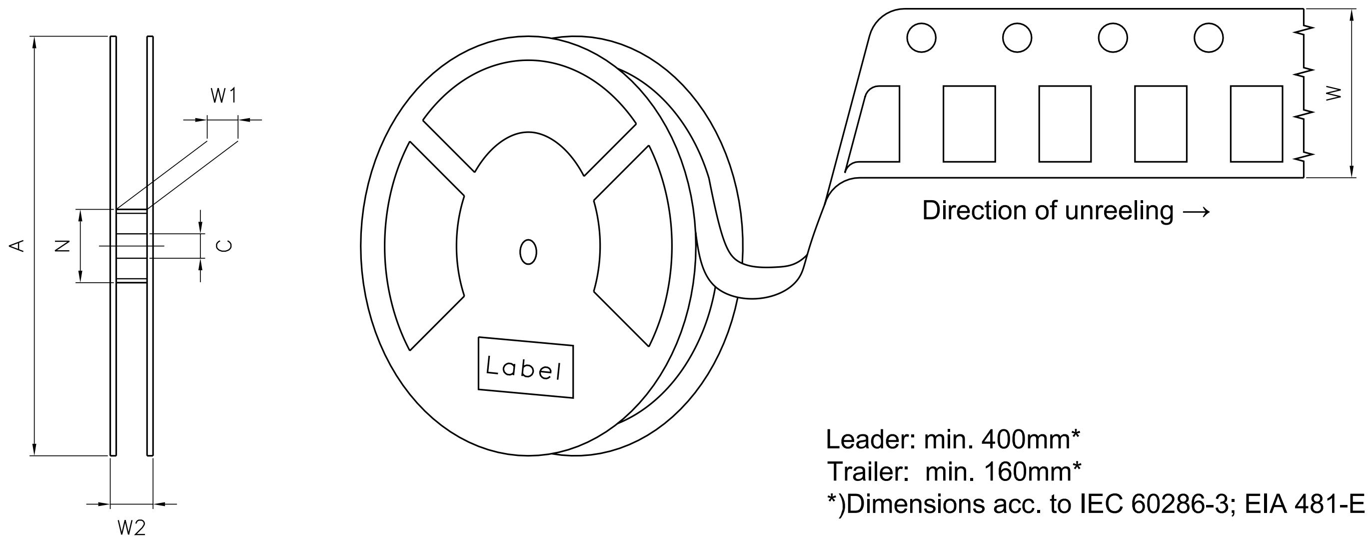
Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature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


2
4
Ø1.5
Data Matrix Code
Cathode side
0.25
12
5.5
1.75
4.25
8
4.25
0.88
C67062-A0465-B11-02

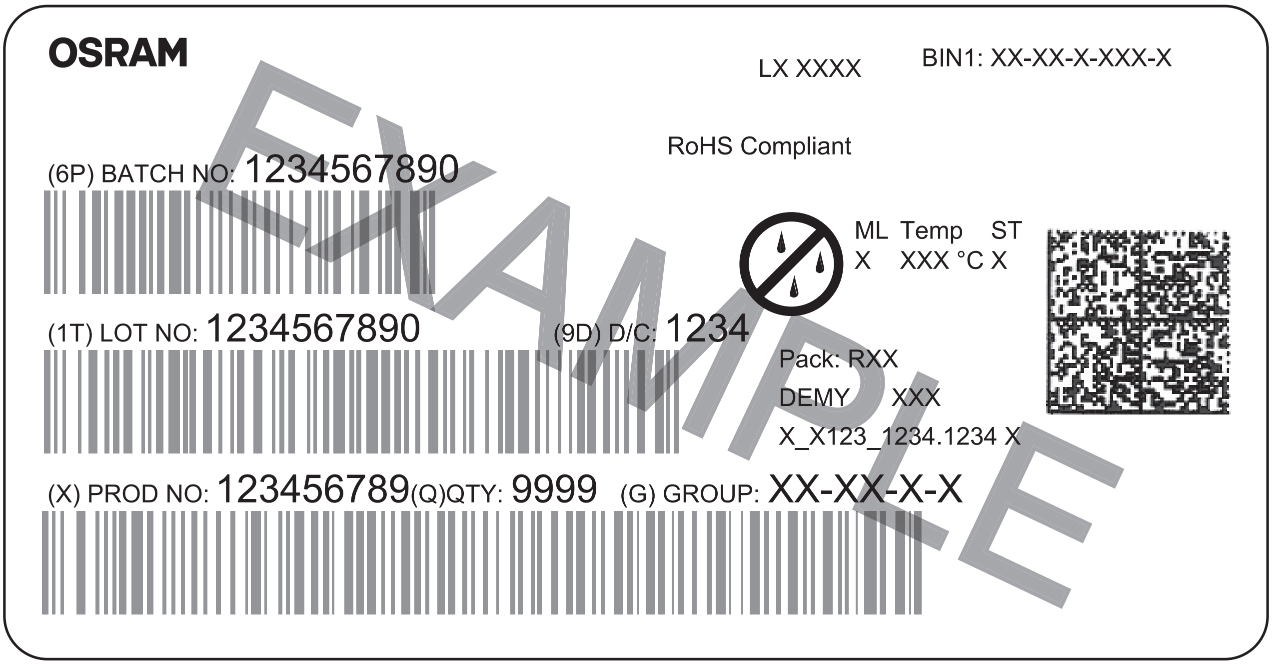
Tape and Reel [9)]



Reel Dimensions

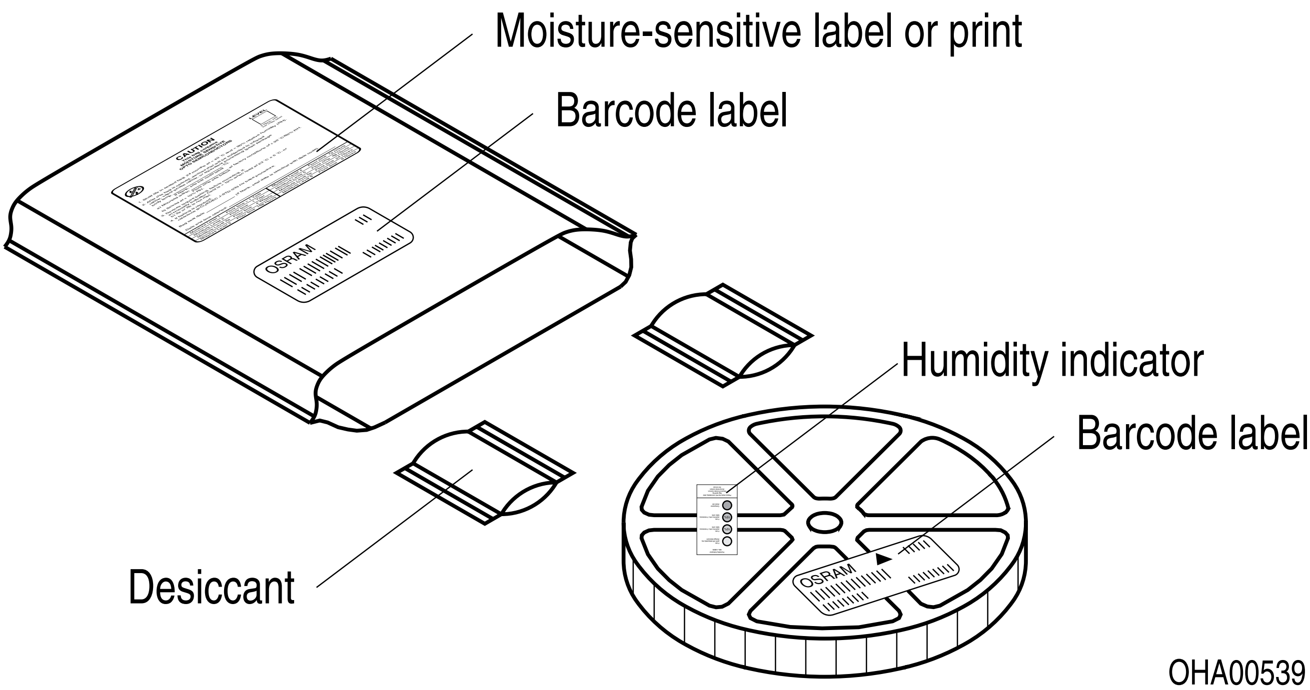
A	W	N_{min}	W_1	$W_{2\,max}$	Pieces per PU
180 mm	12 + 0.3 / - 0.1 mm	60 mm	12.4 + 2 mm	18.4 mm	2000

Barcode-Product-Label (BPL)



OHA04563

Dry Packing Process and Materials [8)]



OHA00539

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 exempt group (exposure time 10000 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.

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

[2] **Reverse Operation:** This product is intended to be operated applying a forward current within the specified range. Applying any continuous reverse bias or forward bias below the voltage range of light emission shall be avoided because it may cause migration which can change the electro-optical characteristics or damage the LED.

[3] **Wavelength:** The wavelength is measured at a current pulse of typically 25 ms, with an internal reproducibility of ±0.5 nm and an expanded uncertainty of ±1 nm (acc. to GUM with a coverage factor of k = 3).

[4] **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).

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

[6] **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.

[7] **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.

[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	2023-09-11	Dimensional Drawing Taping

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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