OSRAM KRTTB CRLML1.33

Datasheet

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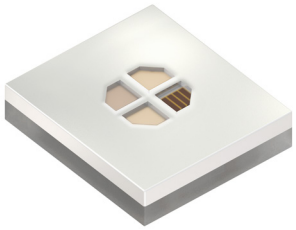
VEGALED™

KRTTB CRLML1.33

Multicolour RGGB LED with four indiviudally adressable chips, for various compact projection (e.g. smart glasses) and visualisation applications, requiring LCoS or DMD imager devices for picture generation.



Applications

- Projection & Display
- Visualization

Features

- Package: Ceramic package with integrated glass cover
- Chip technology: Thinfilm / UX:3
- Typ. Radiation: 120°
- Color: λ_{dom} = 616 nm (● red); λ_{dom} = 530 nm (● true green); λ_{dom} = 455 nm (● blue)
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)

Ordering Information

Type	Brightness [1]	Ordering Code
KRTTBCRLML1.33-GXGZ-23+JZKY-24+RHSG-24		Q65113A9545
● red	● Φ_V = 18 ... 28 lm (I_F = 150 mA)	
● true green	● Φ_V = 61 ... 97 lm (I_F = 150 mA)	
● blue	● Φ_E = 130 ... 210 mW (I_F = 150 mA)	

2 green chips parallel on

Maximum Ratings

Parameter	Symbol		Values ● red	Values ● true green	Values ● blue
Operating Temperature	T_{op}	min. max.	-40 °C 85 °C	-40 °C 85 °C	-40 °C 85 °C
Storage Temperature	T_{stg}	min. max.	-40 °C 85 °C	-40 °C 85 °C	-40 °C 85 °C
Junction Temperature	T_j	max.	125 °C	125 °C	125 °C
Forward Current T_S = 25 °C	I_F	min. max.	5 mA 250 mA	5 mA 250 mA	5 mA 250 mA
Forward Current pulsed D = 0,5; f = 240Hz; $T_j = T_{jmax}$	$I_{F\ pulse}$		350 mA	350 mA	350 mA
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}		2 kV	2 kV	2 kV
Reverse voltage [2)]	V_R		Not designed for reverse operation	Not designed for reverse operation	Not designed for reverse operation

Characteristics

I_F = 150 mA; T_S = 25 °C

Parameter	Symbol		Values ● red	Values ● true green	Values ● blue
Peak Wavelength	λ_{peak}	typ.	624 nm	522 nm	452 nm
Dominant Wavelength [3]	λ_{dom}	min. typ. max.	610 nm 616 nm 622 nm	518 nm 530 nm 536 nm	450 nm 455 nm 465 nm
Spectral bandwidth at 50% $I_{rel,max}$	$\Delta\lambda$	typ.	18 nm	35 nm	18 nm
Viewing angle at 50% I_V	2φ	typ.	110 °	110 °	110 °
Radiating surface	A_{color}	typ.	0.5 x 0.5 mm²	0.5 x 0.5 mm²	0.5 x 0.5 mm²
Partial Flux acc. CIE 127:2007 [4] $\Phi_{E/V\ 120°} = x * \Phi_{E/V\ 180°}$	$\Phi_{E/V,\ 120°}$	typ.	0.76	0.76	0.76
Forward Voltage [5] I_F = 150 mA	V_F	min. typ. max.	1.70 V 2.20 V 2.70 V	2.60 V 2.80 V 3.40 V	2.70 V 2.90 V 3.30 V
Reverse current [2]	I_R		Not designed for reverse operation	Not designed for reverse operation	Not designed for reverse operation
Real thermal resistance junction/solderpoint 1 Chip on	$R_{thJS\ real}$	typ.	14 K / W	14 K / W	14 K / W

2 green chips parallel on except for Rth values

Brightness Groups

- red

Group	Luminous Flux [1] I_F = 150 mA min. Φ_V	Luminous Flux [1] I_F = 150 mA max. Φ_V
GX	18 lm	21 lm
GY	21 lm	24 lm
GZ	24 lm	28 lm

Brightness Groups

- true green

Group	Luminous Flux [1] I_F = 150 mA min. Φ_V	Luminous Flux [1] I_F = 150 mA max. Φ_V
JZ	61 lm	71 lm
KX	71 lm	82 lm
KY	82 lm	97 lm

2 green chips parallel on

Brightness Groups

- blue

Group	Radiant Flux [1] I_F = 150 mA min. Φ_E	Radiant Flux [1] I_F = 150 mA max. Φ_E
RH	130 mW	150 mW
RI	150 mW	180 mW
SG	180 mW	210 mW

Wavelength Groups

● red

Group	Dominant Wavelength [3] min. λ_{dom}	Dominant Wavelength [3] max. λ_{dom}
2	610 nm	616 nm
3	616 nm	622 nm

Wavelength Groups

● true green

Group	Dominant Wavelength [3] min. λ_{dom}	Dominant Wavelength [3] max. λ_{dom}
2	518 nm	524 nm
3	524 nm	530 nm
4	530 nm	536 nm

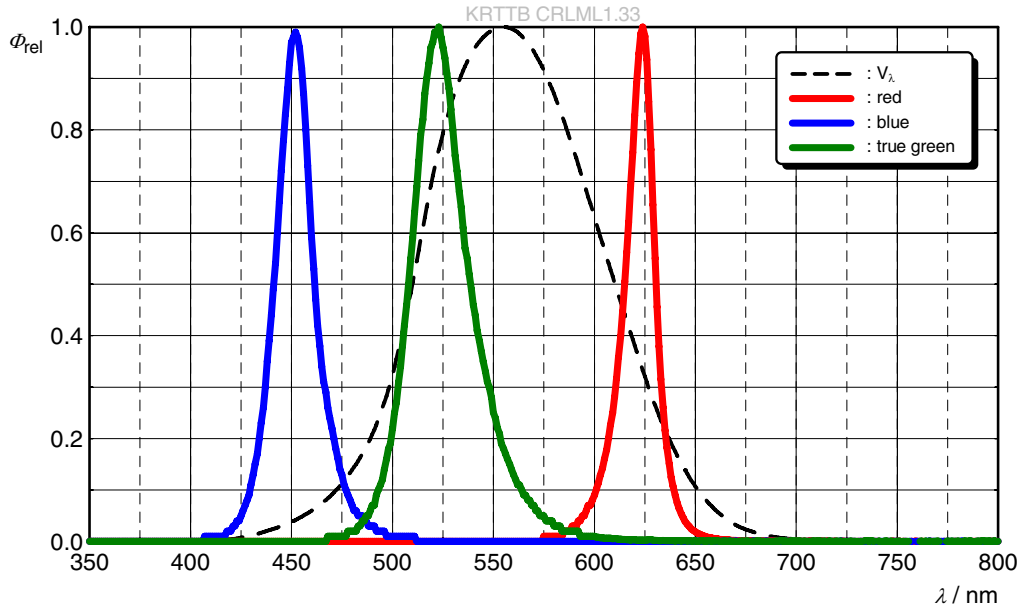
Wavelength Groups

● blue

Group	Dominant Wavelength [3] min. λ_{dom}	Dominant Wavelength [3] max. λ_{dom}
2	450 nm	455 nm
3	455 nm	460 nm
4	460 nm	465 nm

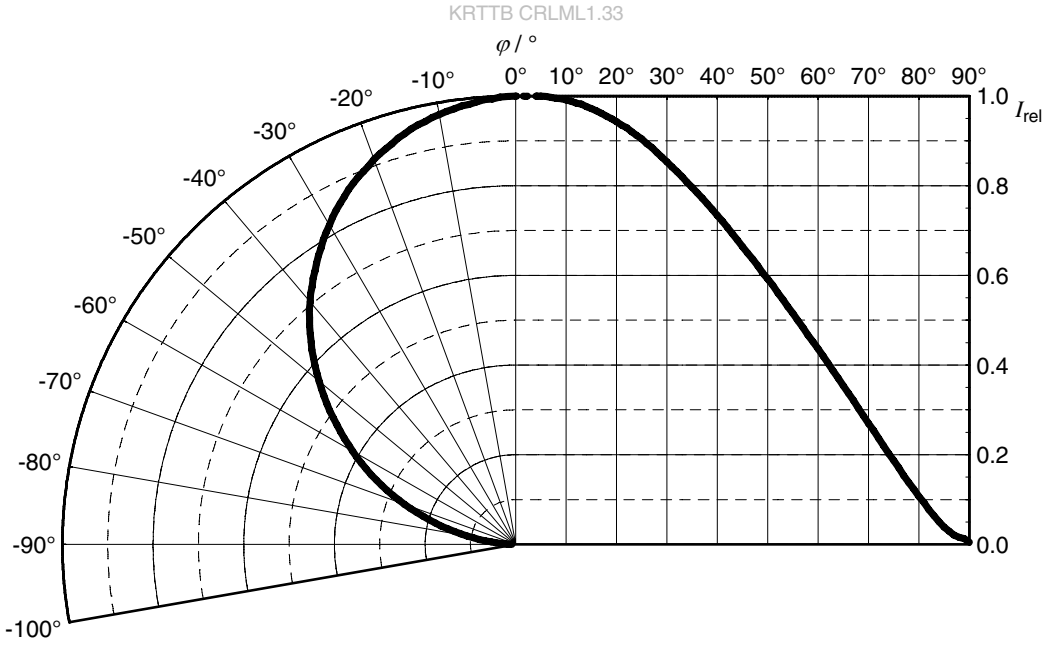
Relative Spectral Emission [4)]

$\Phi_{rel} = f(\lambda)$; I_F = 150 mA; T_J = 25 °C



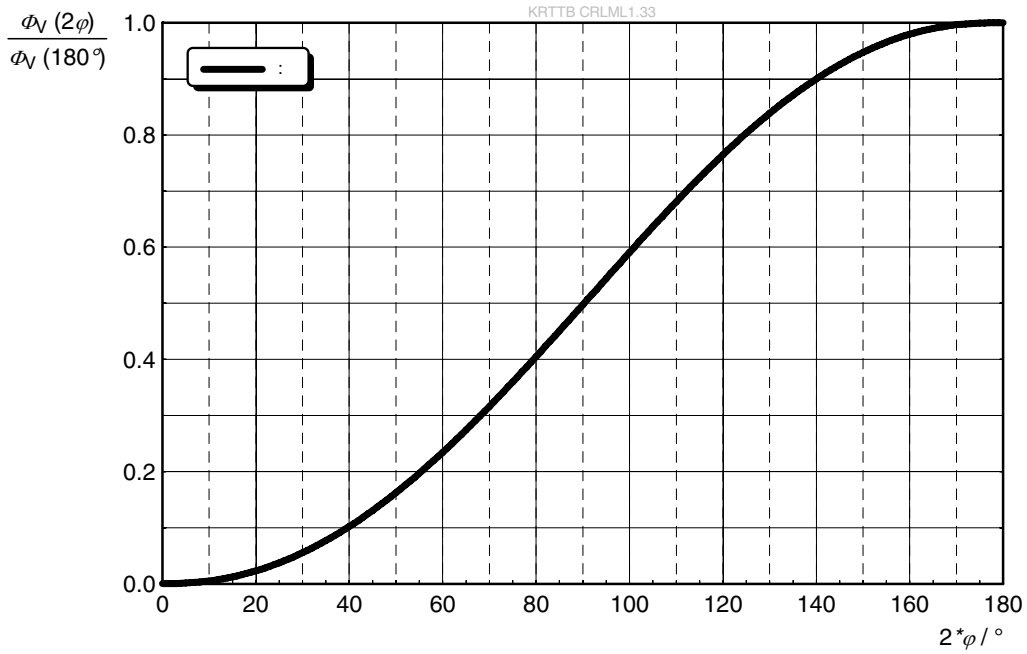
Radiation Characteristics [4)]

$I_{rel} = f(\varphi)$; $T_J = 25$ °C



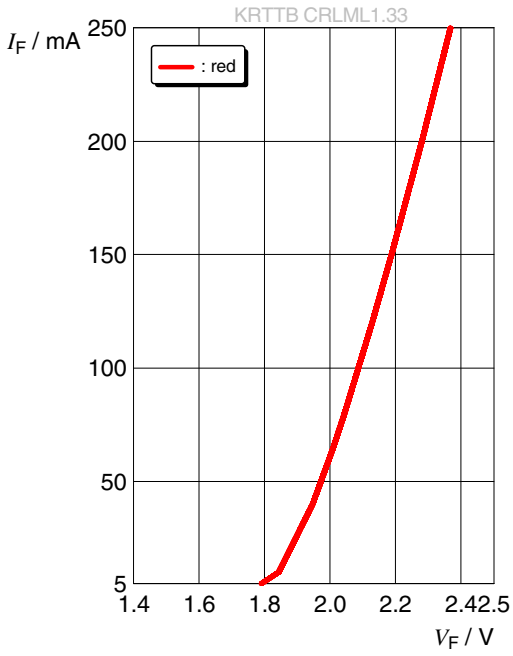
Relative Partial Flux [4)]

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



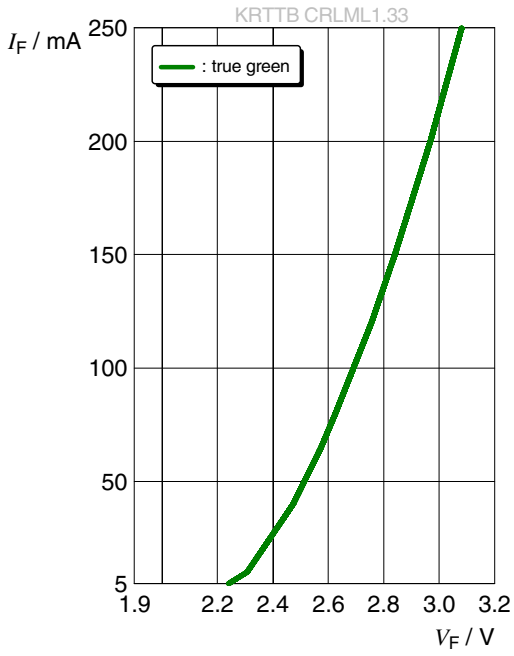
Forward current [4)]

$I_F = f(V_F)$; $T_J = 25$ °C



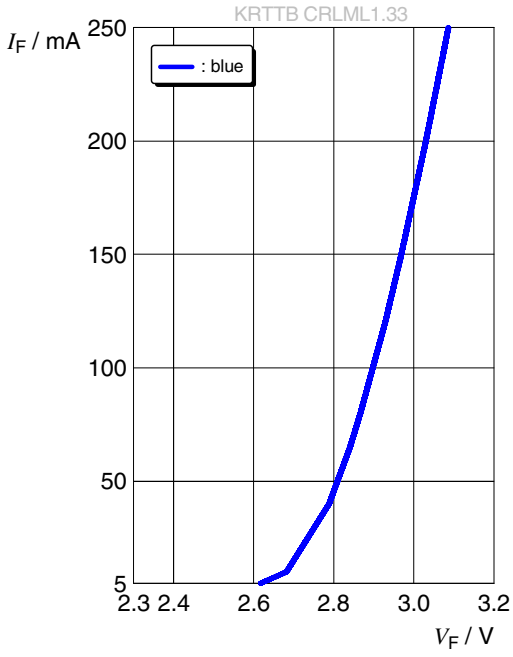
Forward current [4)]

$I_F = f(V_F)$; $T_J = 25$ °C



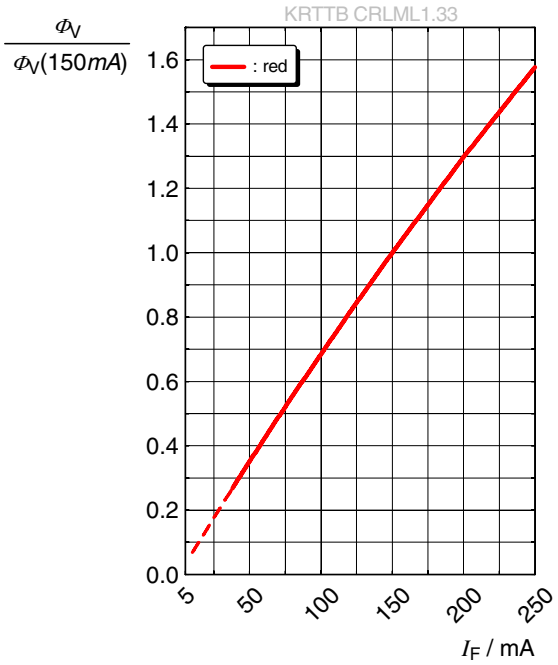
Forward current [4)]

$I_F = f(V_F)$; $T_J = 25$ °C



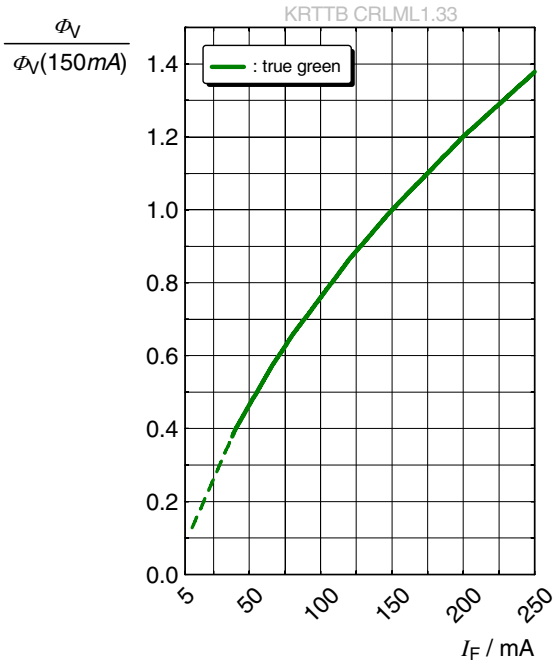
Relative Luminous Flux 4), 6)

$\Phi_v/\Phi_v(150\ mA) = f(I_F);\ T_J = 25\ °C$



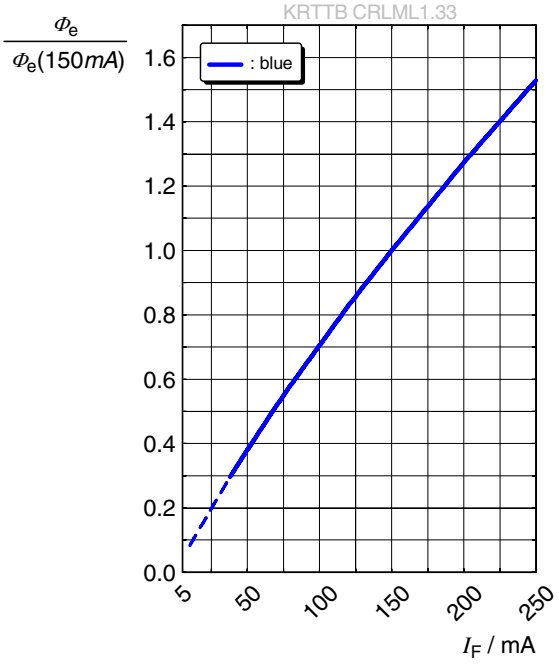
Relative Luminous Flux 4), 6)

$\Phi_v/\Phi_v(150\ mA) = f(I_F);\ T_J = 25\ °C$



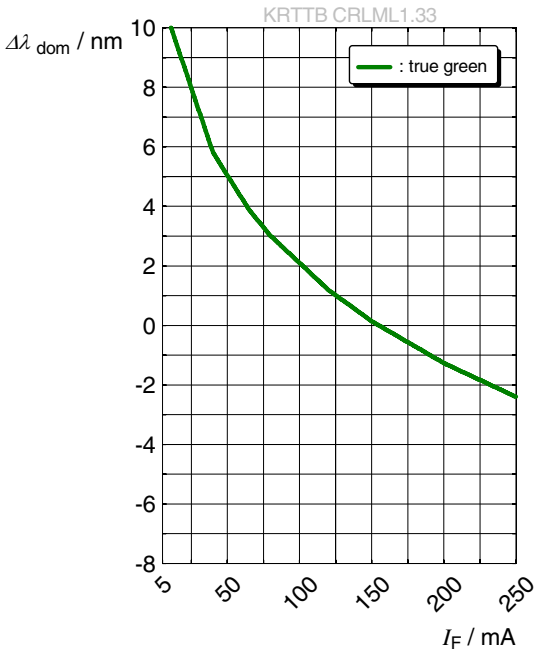
Relative Radiant Power 4), 6)

$\Phi_E/\Phi_E(150\ mA) = f(I_F);\ T_J = 25\ °C$



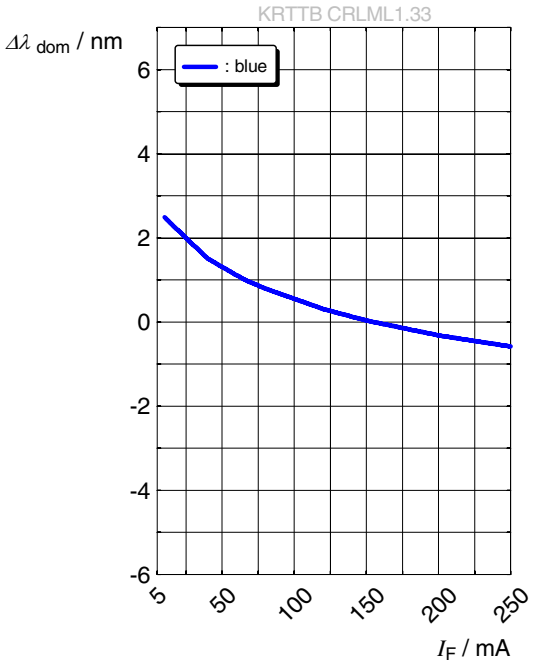
Dominant Wavelength [4)]

$\Delta\lambda_{dom} = f(I_F)$; T_J = 25 °C



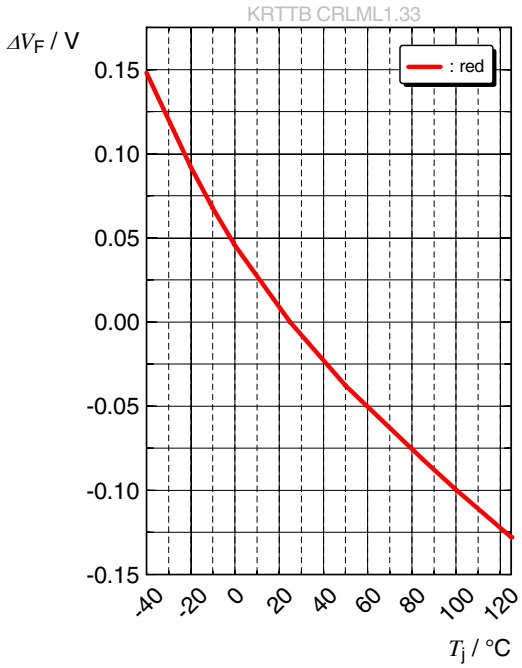
Dominant Wavelength [4)]

$\Delta\lambda_{dom} = f(I_F)$; T_J = 25 °C



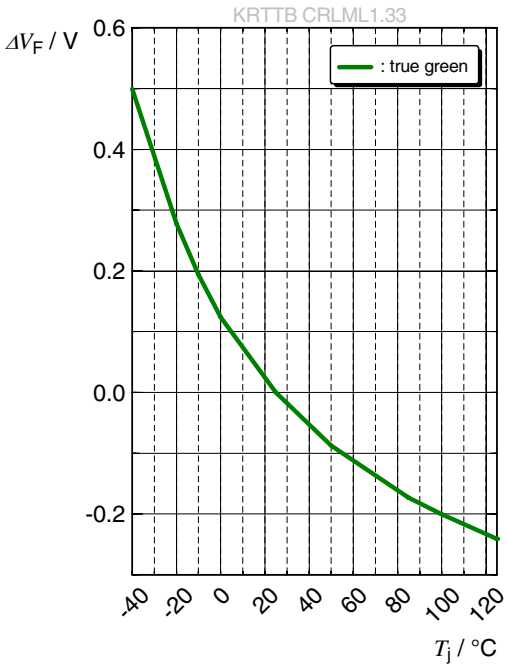
Forward Voltage [4)]

$\Delta V_F = V_F - V_F(25\ °C) = f(T_j)$; $I_F = 150$ mA



Forward Voltage [4)]

$\Delta V_F = V_F - V_F(25\ °C) = f(T_j)$; $I_F = 150$ mA



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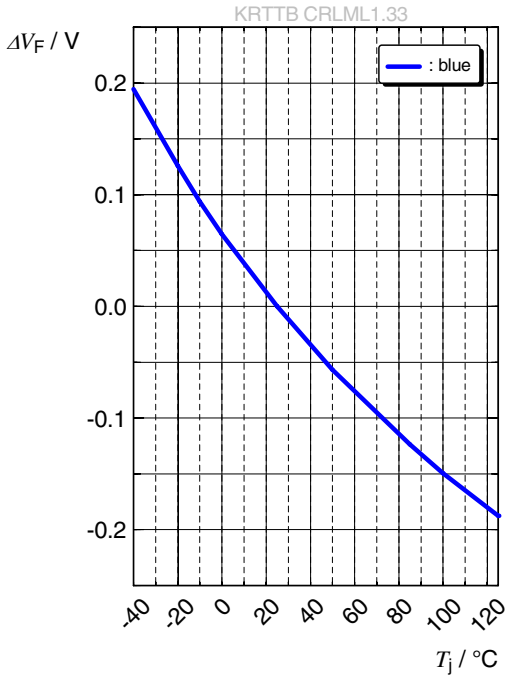
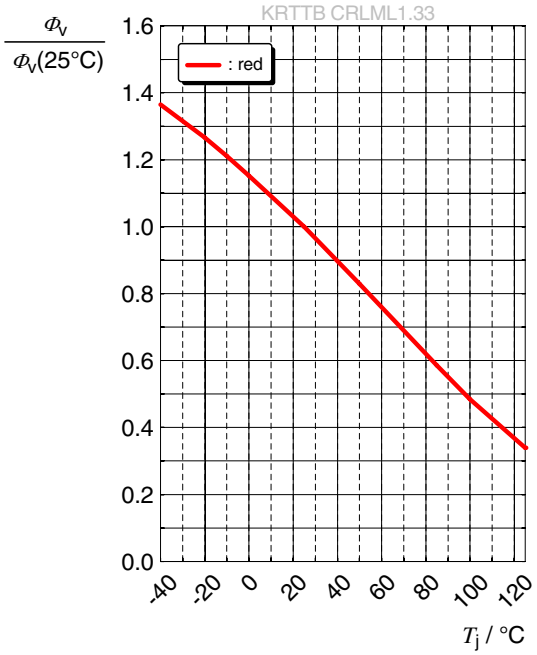


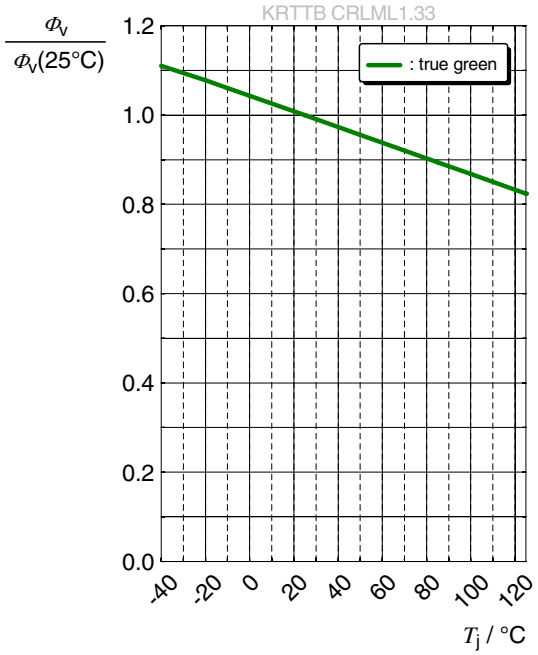
Relative Luminous Flux [4)]

$\Phi_v/\Phi_v(25\ °C) = f(T_j);\ I_F = 150\ mA$



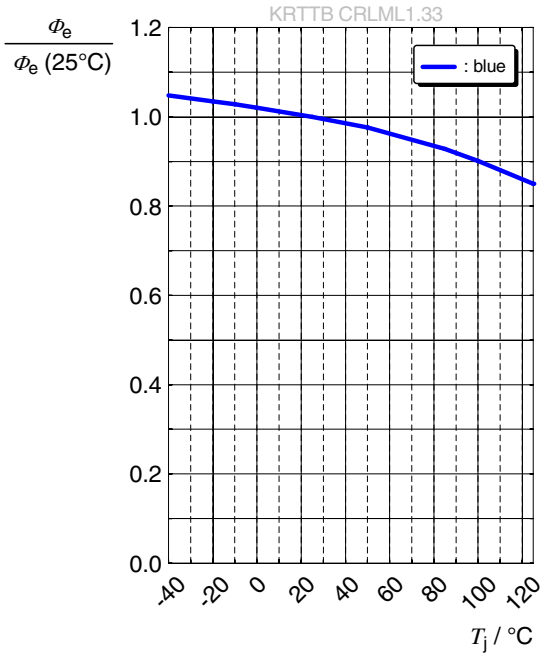
Relative Luminous Flux [4)]

$\Phi_v/\Phi_v(25\ °C) = f(T_j);\ I_F = 150\ mA$



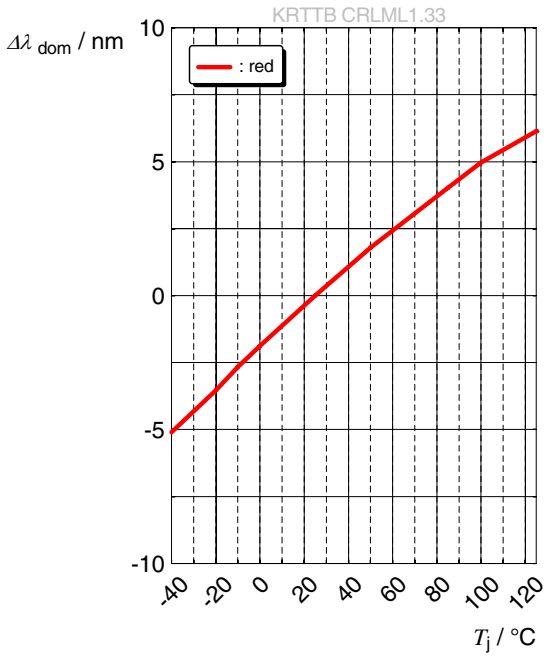
Relative Radiant Power [4)]

$\Phi_E/\Phi_E(25\ °C) = f(T_j);\ I_F = 150\ mA$



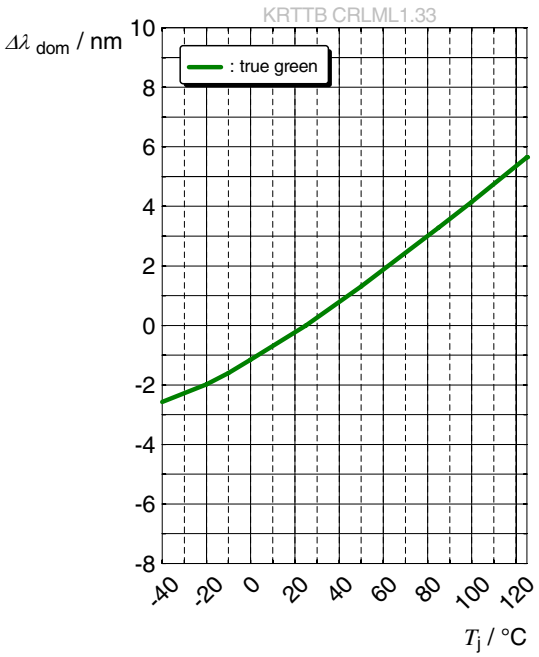
Dominant Wavelength [4)]

$\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\ °C) = f(T_j);\ I_F = 150\ mA$



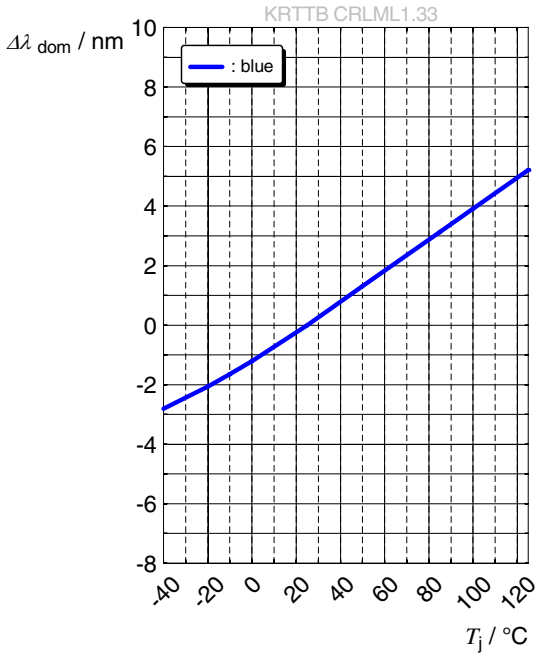
Dominant Wavelength [4)]

$\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\ °C) = f(T_j);\ I_F = 150\ mA$

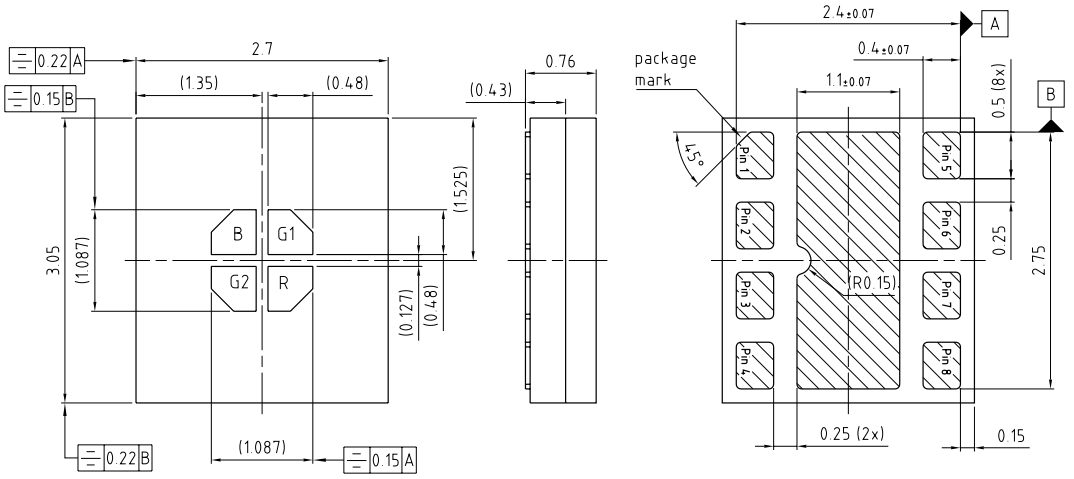


Dominant Wavelength [4)]

$\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\ °C) = f(T_j);\ I_F = 150\ mA$



Dimensional Drawing [7)]



general tolerance ±0.1
lead finish Au

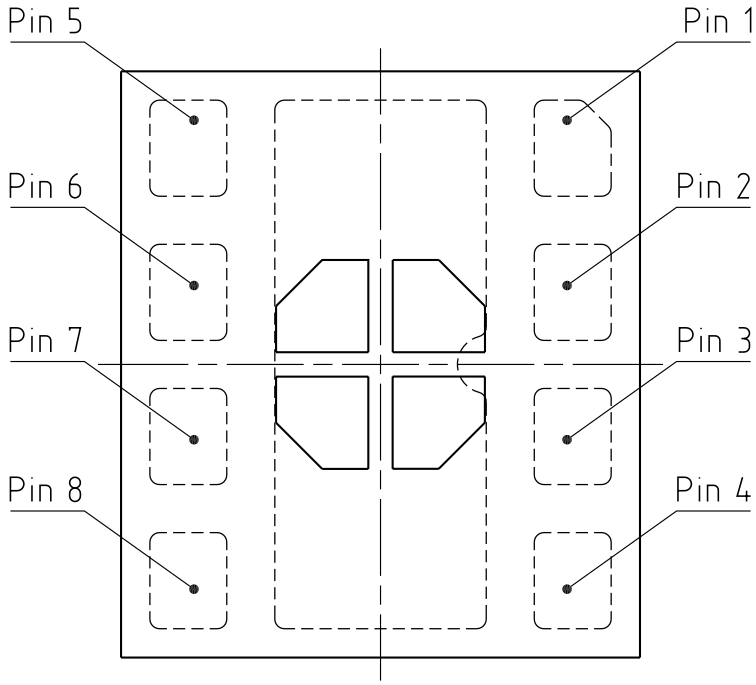
C67062-A0459-A2 -04

Further Information:

Approximate Weight: 0.6 mg

Corrosion test: Class: 1B
Test condition: 25°C / 75 % RH / 200ppb SO_2, 200ppb NO_2, 10ppb H_2S, 10ppb Cl_2 / 21 days (EN 60068-2-60 (Method 4))

Electrical Internal Circuit

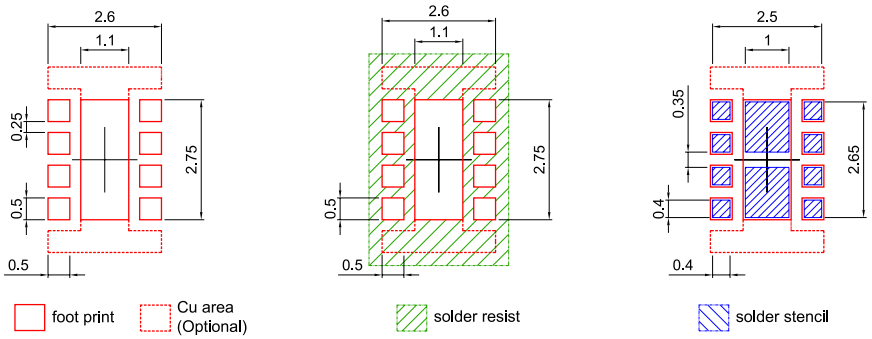


Pin Description	
1	Green1 (Cathode)
2	Green1 (Anode)
3	Red (Cathode)
4	Red (Anode)
5	Blue (Cathode)
6	Blue (Anode)
7	Green2 (Anode)
8	Green2 (Cathode)

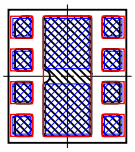
Pin	Description
Pin 1	true green 1 (Cathode)
Pin 2	true green 1 (Anode)
Pin 3	red (Cathode)
Pin 4	red (Anode)
Pin 5	blue (Cathode)
Pin 6	blue (Anode)
Pin 7	true green 2 (Anode)
Pin 8	true green 2 (Cathode)

Recommended Solder Pad [7)]

SOLDER PAD & STENCIL



SOLDER PAD & STENCIL with COMPONENT



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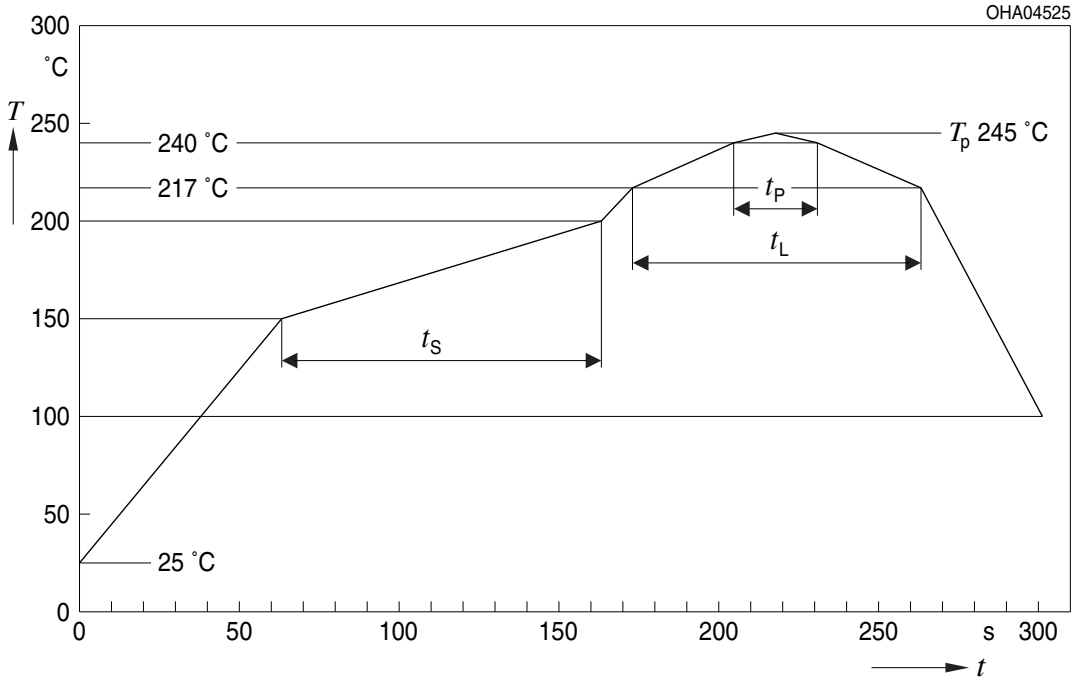
For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere. Package not suitable for any kind of wet cleaning or ultrasonic cleaning. To ensure a high solder joint reliability and to minimize the risk of solder joint cracks, the customer is responsible to evaluate the combination of PCB board and solder paste material for his application.

Reflow Soldering Profile

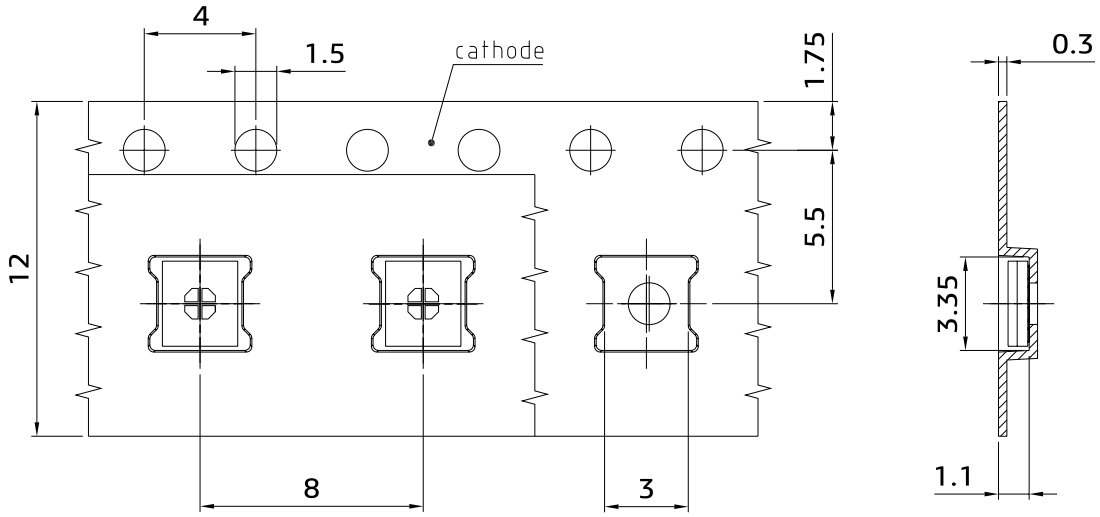
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



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 [7)]



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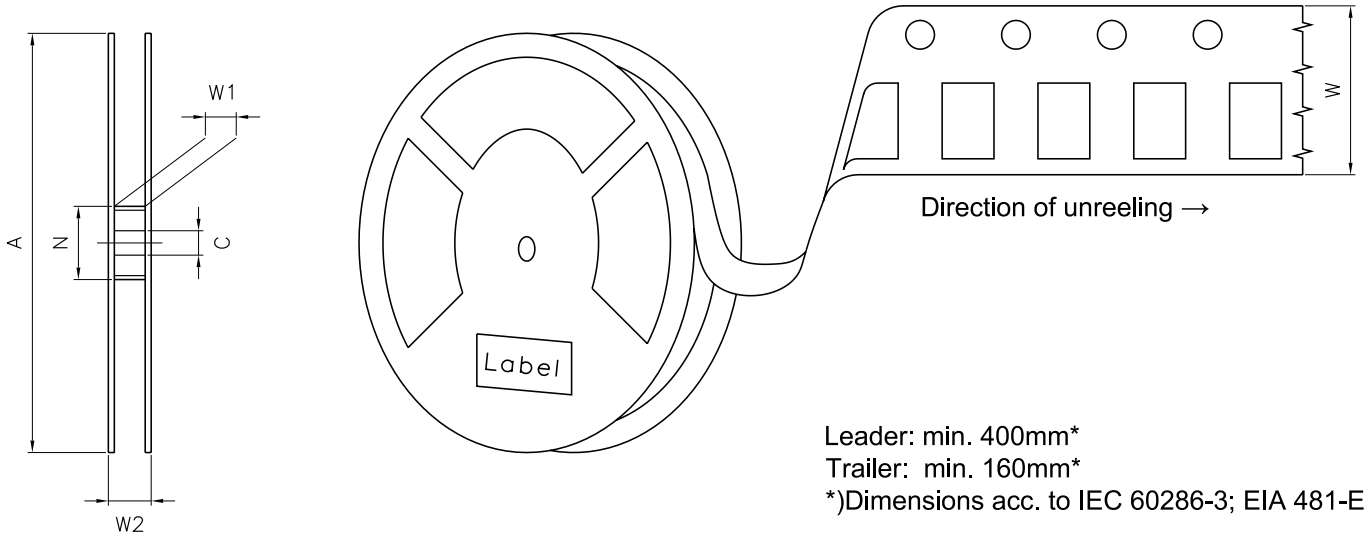
Tape and Reel [8)]

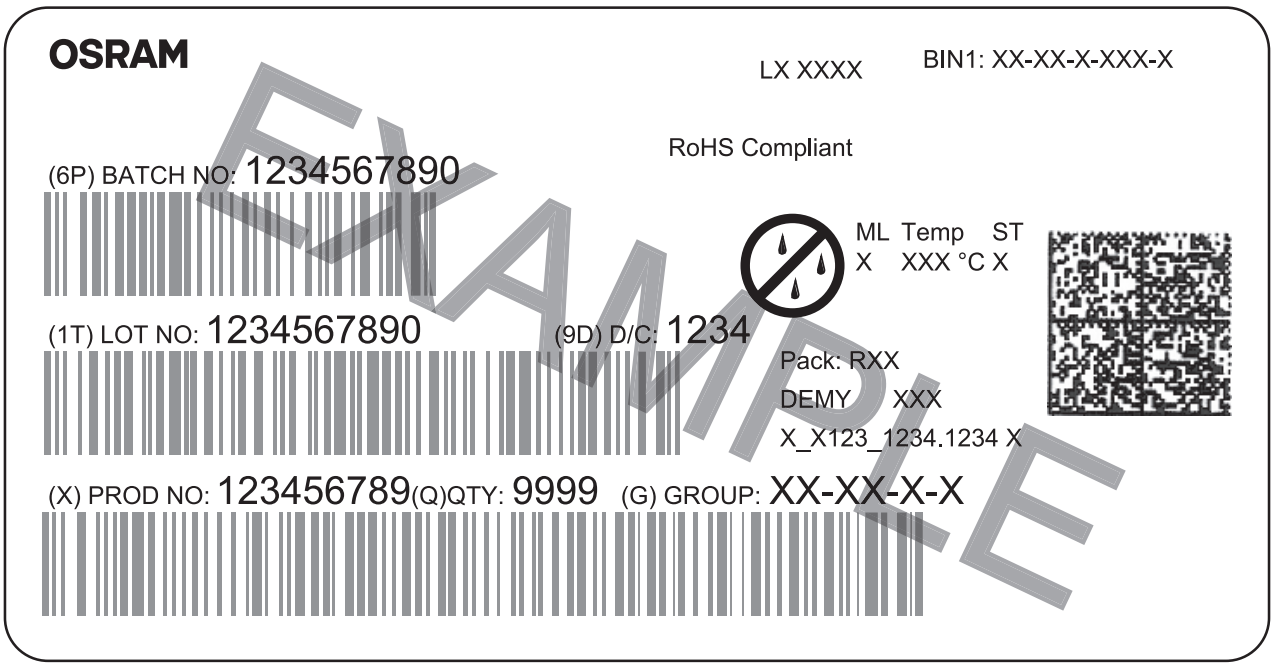


Leader: min. 400mm*
Trailer: min. 160mm*
*)Dimensions acc. to IEC 60286-3; EIA 481-E

Reel Dimensions

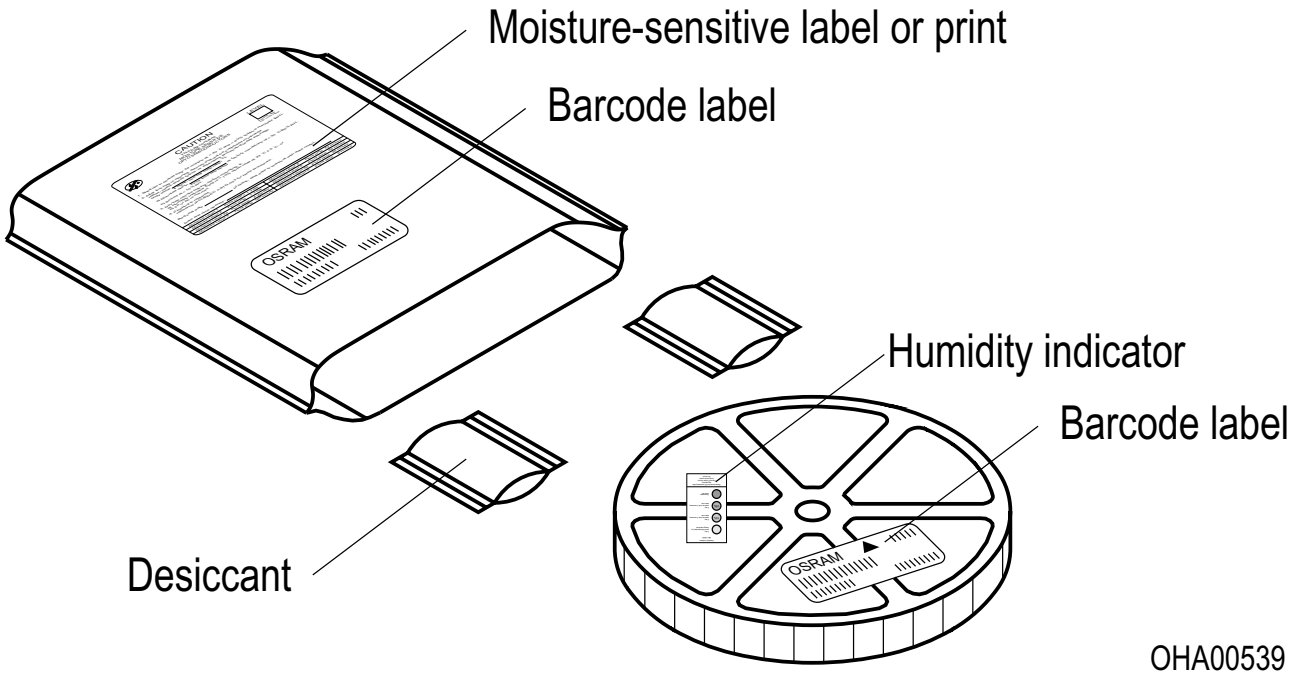
A	W	N_{min}	W_1	$W_{2\,max}$	Pieces per PU
180 mm	12 + 0.3 / - 0.1 mm	60 mm	12.4 + 2 mm	18.4 mm	1000

Barcode-Product-Label (BPL)



OHA04563

Dry Packing Process and Materials [7)]



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 **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.

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

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) **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.

5) **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).

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

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

Revision History

Version	Date	Change
1.0	2025-10-29	Initial Version
1.1	2025-12-12	Brand
1.2	2025-12-17	Applications Description

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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