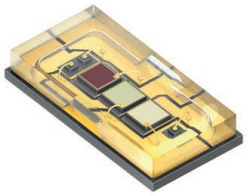
LE RTB N7WM



OSRAM OSTAR® Projection Compact

Compact lightsource in SMT technology, glass window on top, RoHS compliant

Applications

- Augmented Reality, Mixed Reality
- Gaming, Amusement, Gambling
- Projection Mobile (LED & Laser)
- Virtual Reality

Features:

- Package: compact lightsource in multi chip SMT technology with glass window on top
- Chip technology: Thinfilm / UX:3
- Typ. Radiation: 120° (Lambertian emitter)
- Color: λ_{dom} = 617 nm (● red); λ_{dom} = 530 nm (● true green); λ_{dom} = 465 nm (● blue)
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)

Ordering Information

Type	Brightness [1]	Ordering Code
LE RTB N7WM-JXJZ-23+KXKZ-24+3T1U-35		Q65112A4848
● red	● Φ_V = 45 ... 71 lm (I_F = 350 mA)	
● true green	● Φ_V = 71 ... 112 lm (I_F = 350 mA)	
● blue	● Φ_E = 355 ... 500 mW (I_F = 350 mA)	

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 $T_j = T_{j\,max.}$	I_F	min. max.	20 mA 500 mA	20 mA 500 mA	20 mA 500 mA
Forward Current pulsed D = 0.5 ; f = 240 Hz; T_J = 25 °C	$I_{F\,pulse}$		1000 mA	1000 mA	1000 mA
Surge Current t ≤ 10µs; D = 0.5; $T_j = T_{j\,max.}$	I_{FS}	max.	1500 mA	1500 mA	1500 mA
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}		2 kV	2 kV	2 kV
Reverse current [2)]	I_R	max.	200 mA	200 mA	200 mA

Characteristics

I_F = 350 mA; T_J = 25 °C

Parameter	Symbol		Values ● red	Values ● true green	Values ● blue
Peak Wavelength	λ_{peak}	typ.	624 nm	525 nm	459 nm
Dominant Wavelength [3]	λ_{dom}	min. typ. max.	610 nm 617 nm 622 nm	518 nm 530 nm 536 nm	455 nm 465 nm 470 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.	120 °	120 °	120 °
Radiating surface	A_{color}	typ.	0.65 x 0.65 mm²	0.70 x 0.70 mm²	0.70 x 0.70 mm²
Partial Flux acc. CIE 127:2007 [4] $\Phi_{E/V\ 120°} = x * \Phi_{E/V\ 180°}$	$\Phi_{E/V,\ 120°}$	typ.	0.82	0.82	0.82
Forward Voltage [5] I_F = 350 mA	V_F	min. typ. max.	1.90 V 2.30 V 2.60 V	2.40 V 2.80 V 3.30 V	2.70 V 2.95 V 3.30 V
Reverse voltage (ESD device)	$V_{R\ ESD}$	min.	45 V	45 V	45 V
Reverse voltage [2] I_R = 20 mA	V_R	max.	1.2 V	1.2 V	1.2 V
Real thermal resistance junction/solderpoint Only one chip on at a time	$R_{thJS\ real}$	typ.	15 K / W	15 K / W	15.0 K / W
Electrical thermal resistance junction/solderpoint With efficiency: red ηe = 24%; green ηe = 17%; blue ηe = 38%	$R_{thJS\ elec.}$	typ.	11 K / W	12 K / W	9.3 K / W

Brightness Groups

● red

Group	Luminous Flux [1] I_F = 350 mA min. Φ_V	Luminous Flux [1] I_F = 350 mA max. Φ_V
JX	45 lm	52 lm
JY	52 lm	61 lm
JZ	61 lm	71 lm

Brightness Groups

● true green

Group	Luminous Flux [3] I_F = 350 mA min. Φ_V	Luminous Flux [1] I_F = 350 mA max. Φ_V
KX	71 lm	82 lm
KY	82 lm	97 lm
KZ	97 lm	112 lm

Brightness Groups

● blue

Group	Radiant Flux [1] I_F = 350 mA min. Φ_E	Radiant Flux [1] I_F = 350 mA max. Φ_E
3T	355 mW	400 mW
4T	400 mW	450 mW
1U	450 mW	500 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}
3	455 nm	460 nm
4	460 nm	465 nm
5	465 nm	470 nm

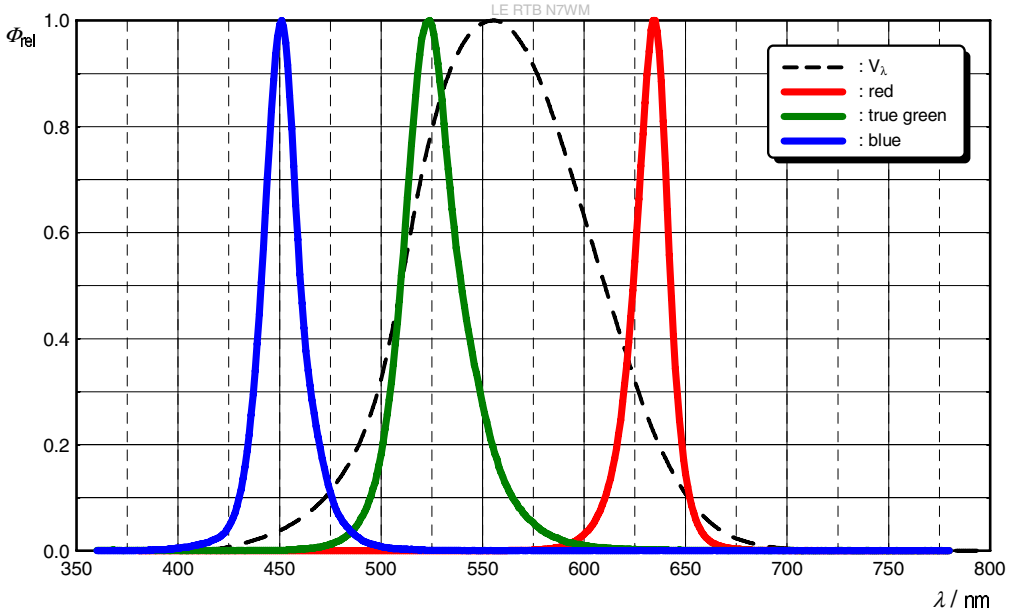
Group Name on Label

Example: 1U-3+KX-2+JX-2

Color	Brightness	Wavelength
● red	JX	2
● true green	KX	2
● blue	1U	3

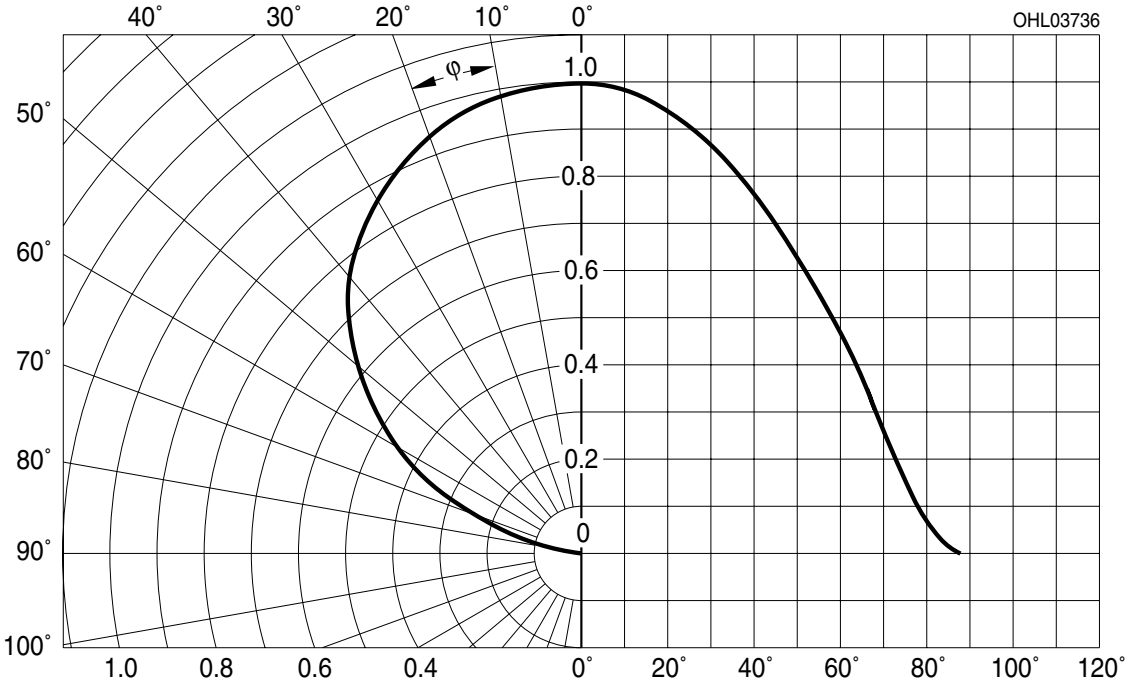
Relative Spectral Emission [4)]

$\Phi_{rel} = f(\lambda)$; I_F = 350 mA; T_J = 25 °C



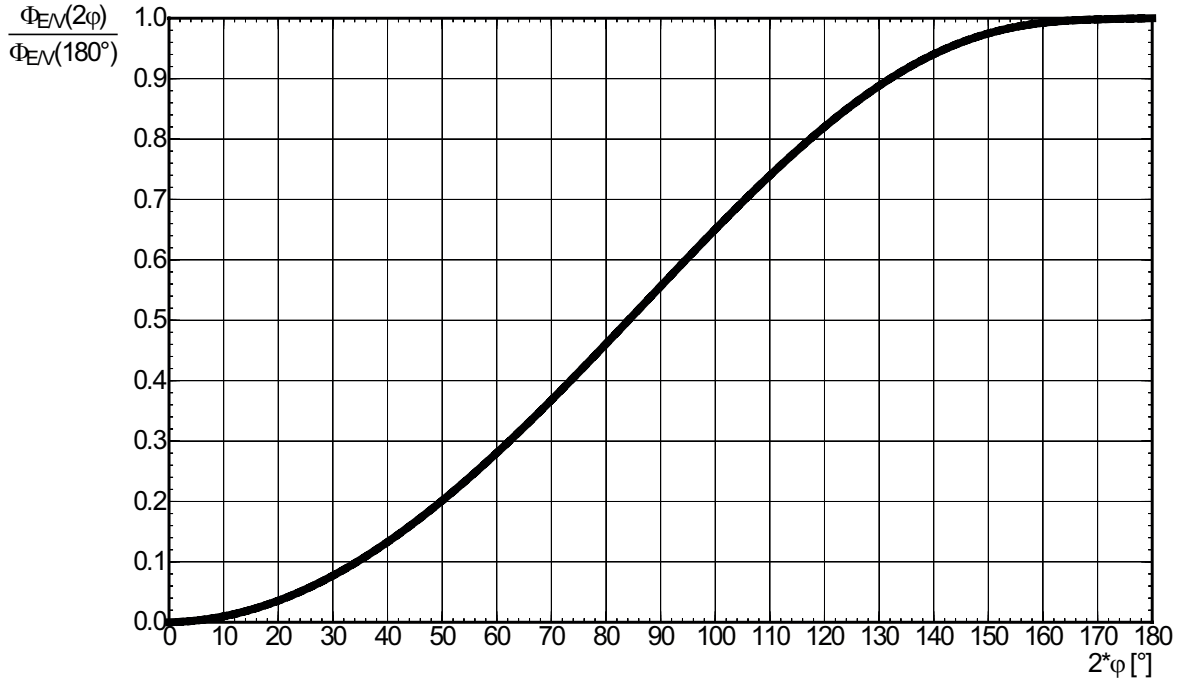
Radiation Characteristics [4)]

$I_{rel} = f(\phi)$; T_J = 25 °C



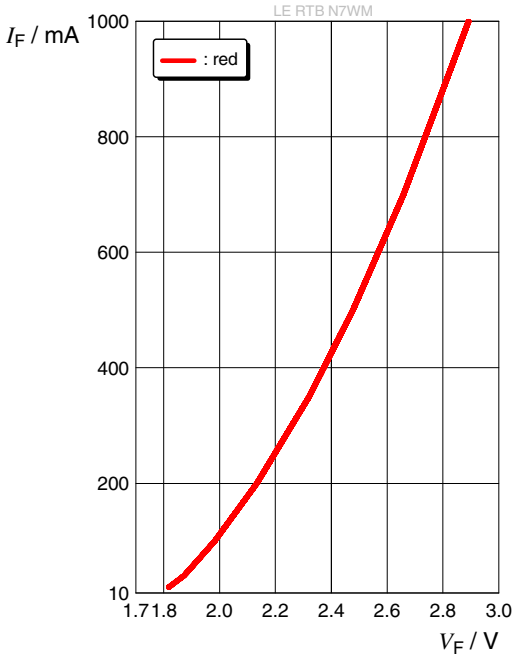
Relative Partial Flux [4)]

$\Phi_{E/V}(2\varphi) / \Phi_{E/V}(180°) = f(\varphi)$; $T_j = 25°C$



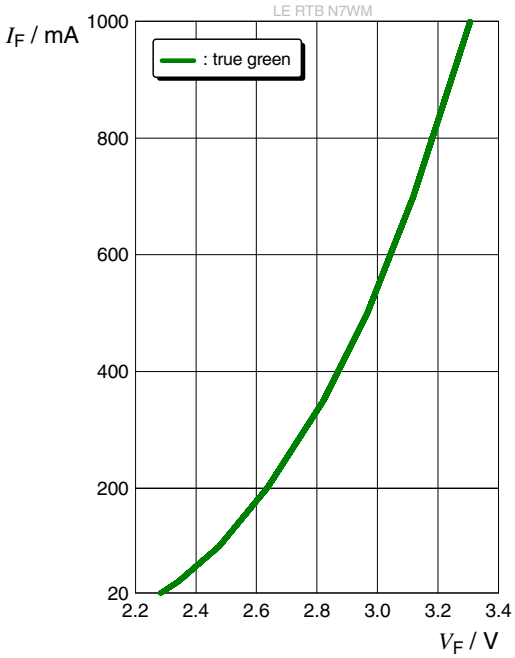
Forward current 4), 6)

$I_F = f(V_F)$; $T_J = 25$ °C



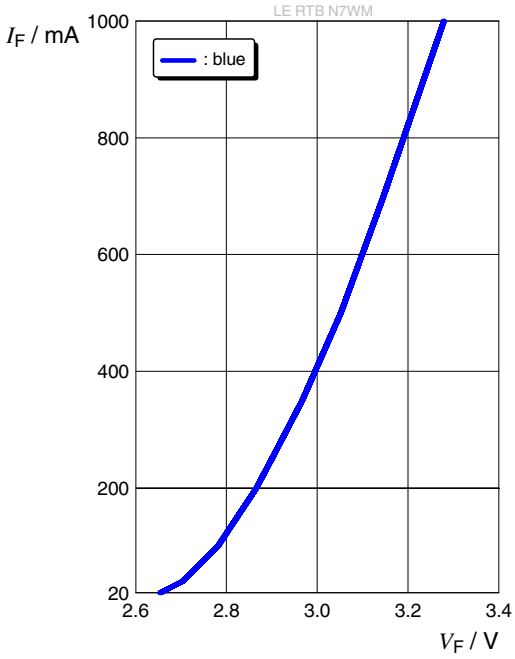
Forward current 4), 6)

$I_F = f(V_F)$; $T_J = 25$ °C



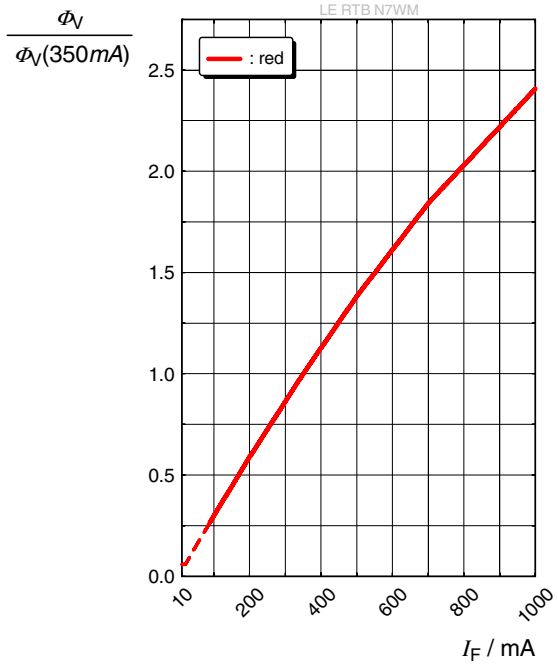
Forward current 4), 6)

$I_F = f(V_F)$; $T_J = 25$ °C



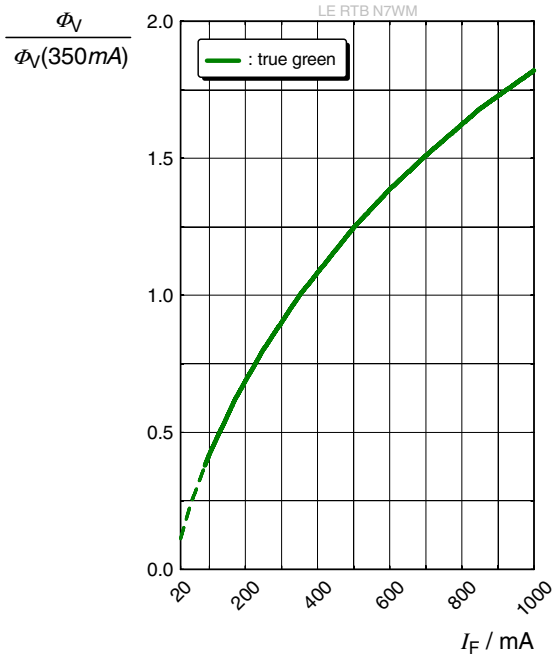
Relative Luminous Flux 4), 6)

$\Phi_v/\Phi_v(350\ mA) = f(I_F);\ T_J = 25\ °C$



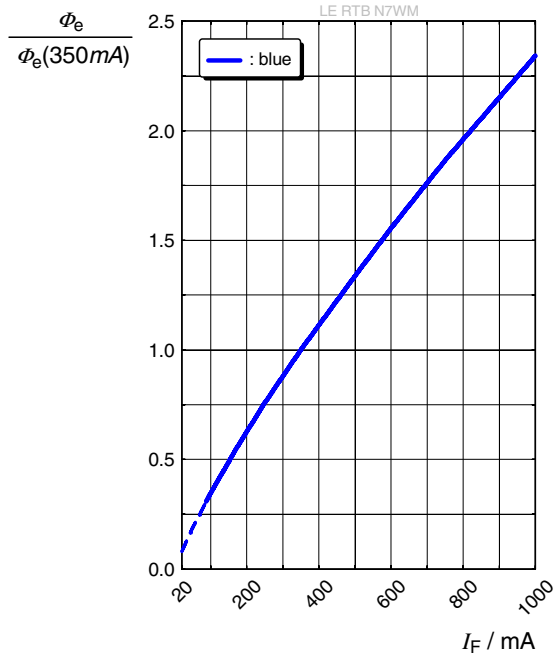
Relative Luminous Flux 4), 6)

$\Phi_v/\Phi_v(350\ mA) = f(I_F);\ T_J = 25\ °C$



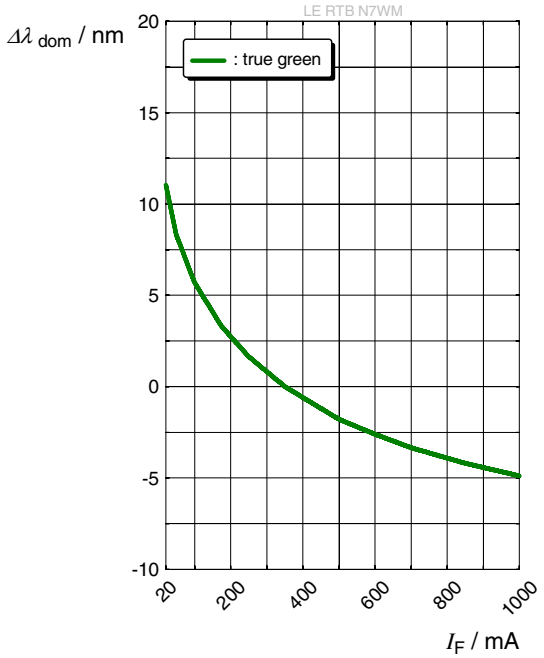
Relative Radiant Power 4), 6)

$\Phi_E/\Phi_E(350\ mA) = f(I_F);\ T_J = 25\ °C$



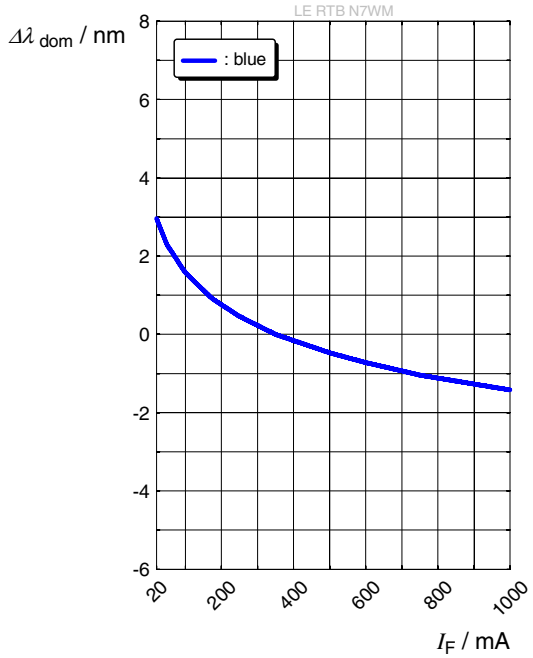
Dominant Wavelength [4)]

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



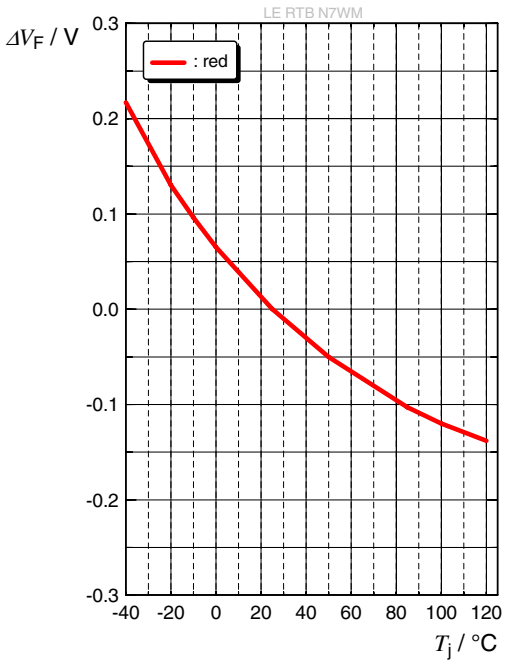
Dominant Wavelength [4)]

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



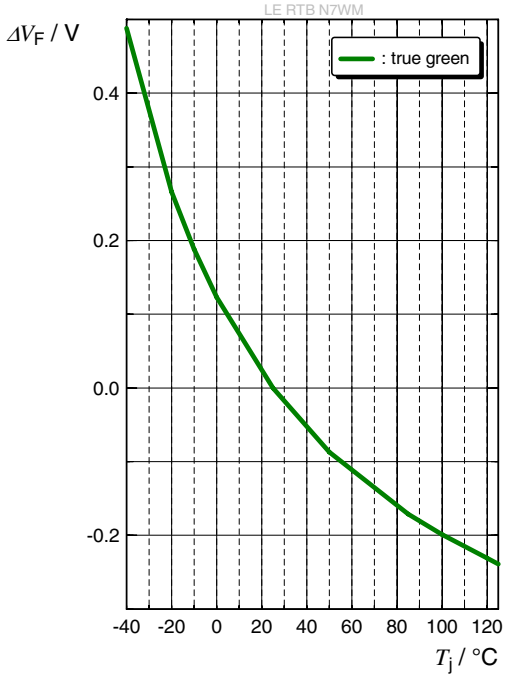
Forward Voltage [4)]

$\Delta V_F = V_F - V_F(25\ °C) = f(T_j)$; $I_F = 350$ mA



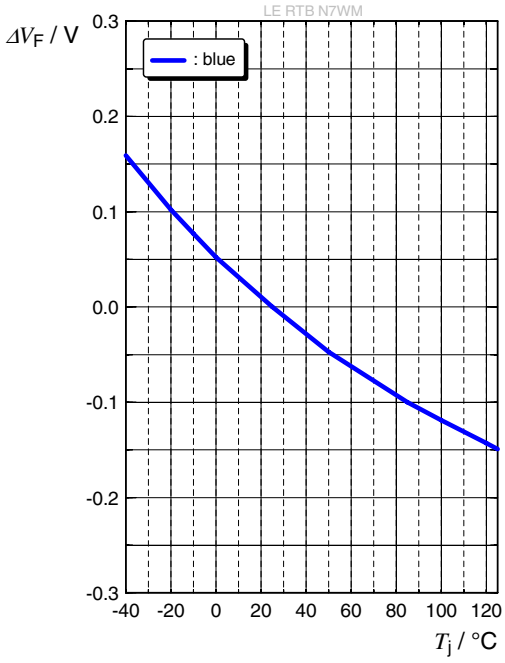
Forward Voltage [4)]

$\Delta V_F = V_F - V_F(25\ °C) = f(T_j)$; $I_F = 350$ mA



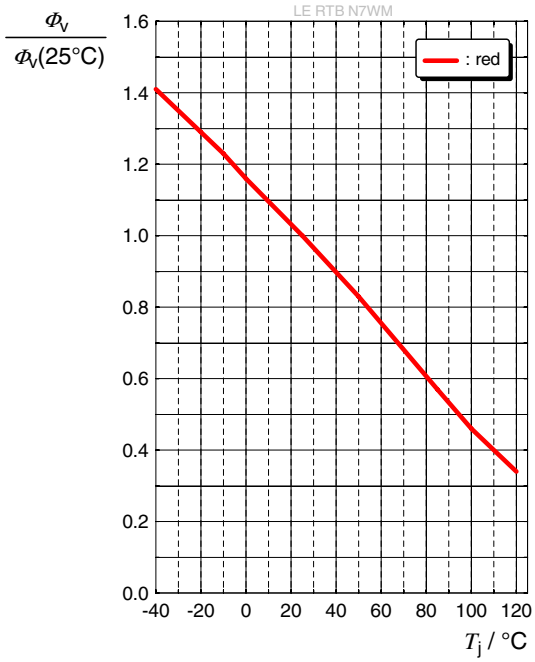
Forward Voltage [4)]

$\Delta V_F = V_F - V_F(25\ °C) = f(T_j)$; $I_F = 350$ mA



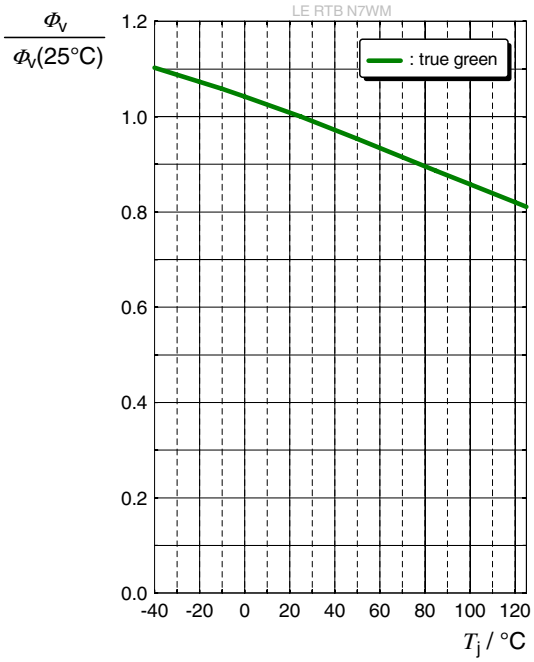
Relative Luminous Flux [4)]

$\Phi_v/\Phi_v(25\ °C) = f(T_j);\ I_F = 350\ mA$



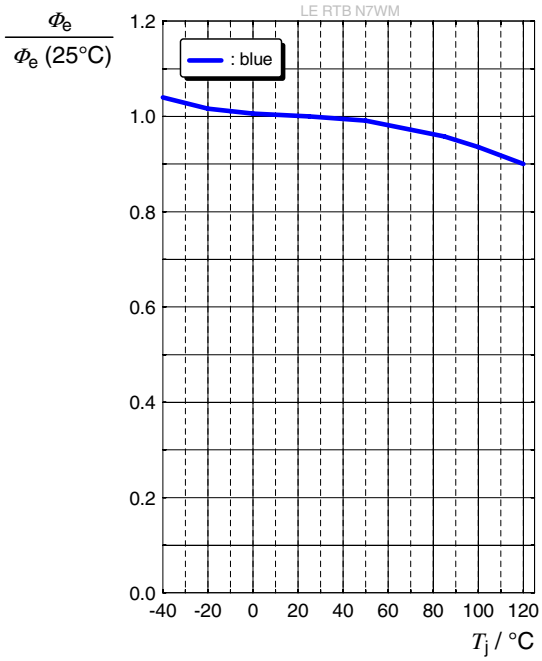
Relative Luminous Flux [4)]

$\Phi_v/\Phi_v(25\ °C) = f(T_j);\ I_F = 350\ mA$



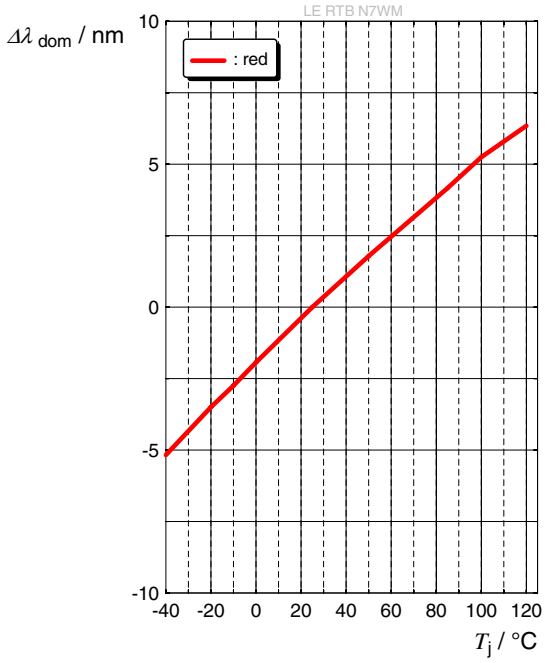
Relative Radiant Power [4)]

$\Phi_E/\Phi_E(25\ °C) = f(T_j);\ I_F = 350\ mA$



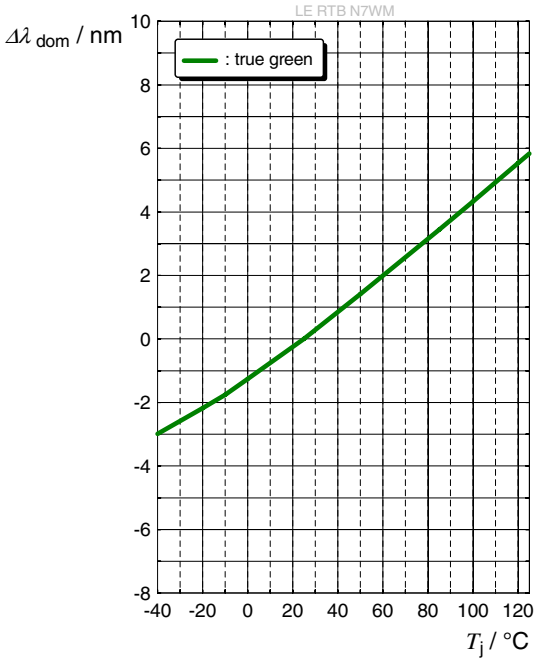
Dominant Wavelength [4)]

$\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\ °C) = f(T_j);\ I_F = 350\ mA$



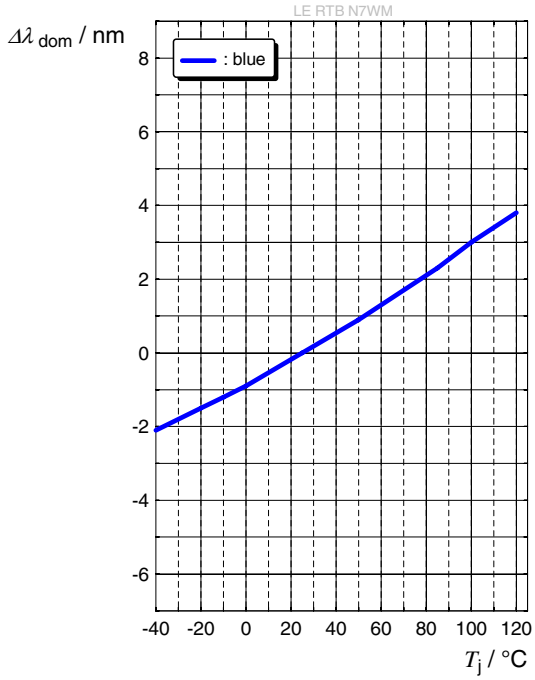
Dominant Wavelength [4)]

$\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\ °C) = f(T_j);\ I_F = 350\ mA$

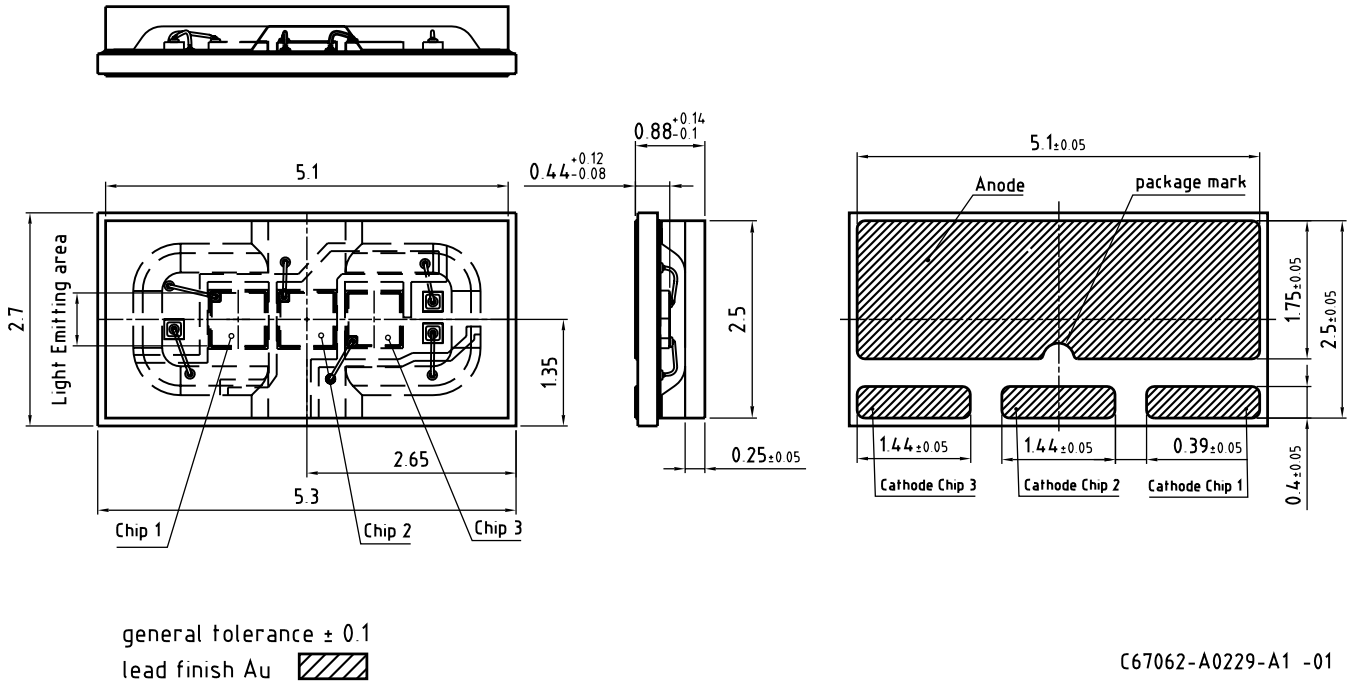


Dominant Wavelength [4)]

$\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\ °C) = f(T_j);\ I_F = 350\ mA$



Dimensional Drawing [7)]



general tolerance ± 0.1
lead finish Au

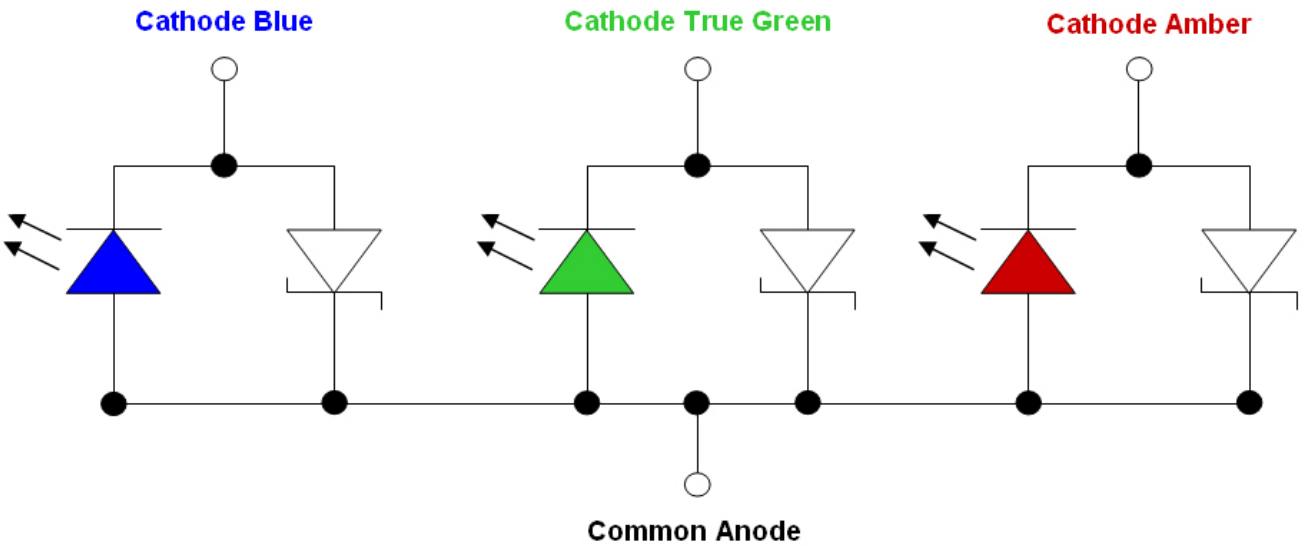
C67062-A0229-A1 -01

Further Information:

Approximate Weight: 60.0 mg

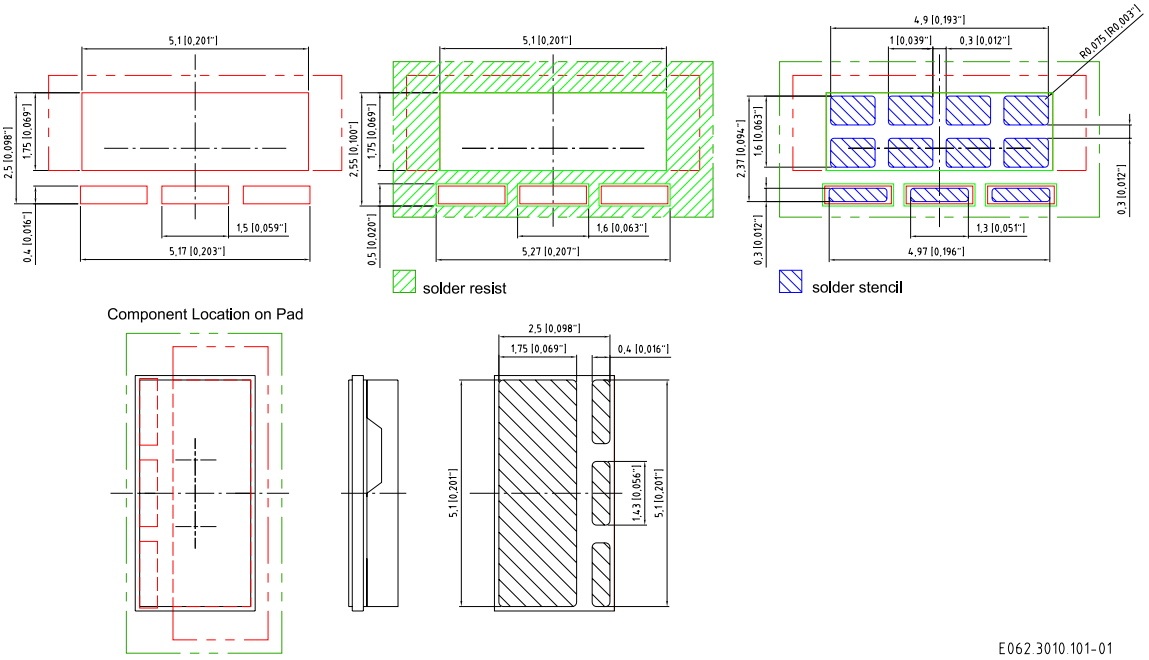
ESD advice: The device is protected by ESD device which is connected in parallel to the Chip.

Electrical Internal Circuit



Pin	Description
Chip 1	blue
Chip 2	true green
Chip 3	red

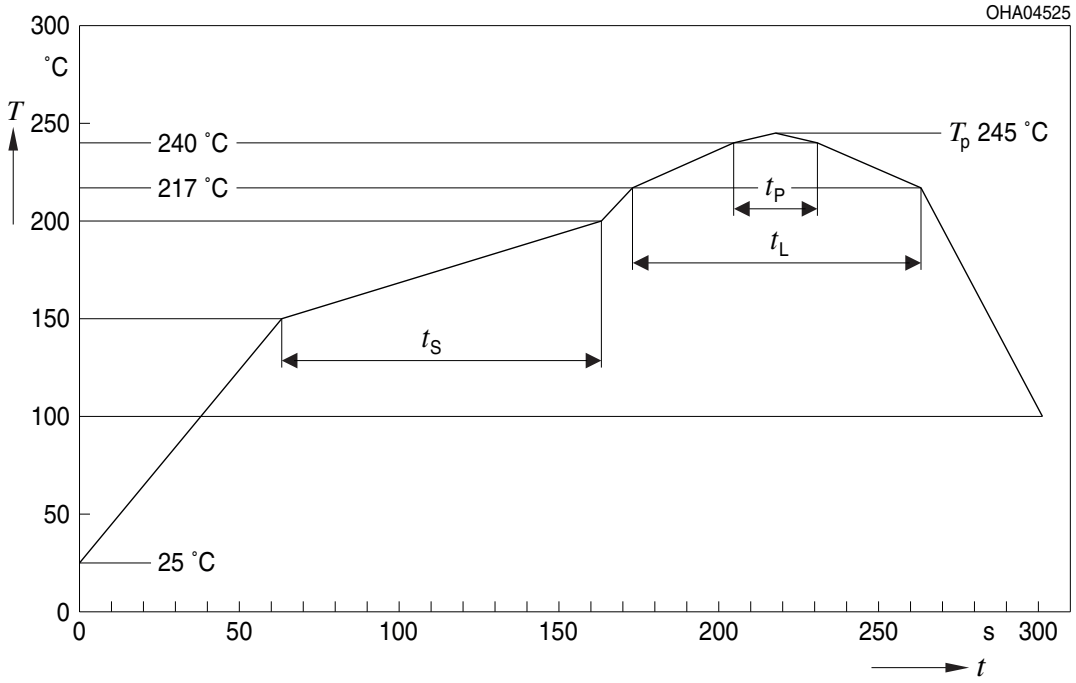
Recommended Solder Pad [7)]



Do not use exposed copper MCPCB technology. 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.

Reflow Soldering Profile

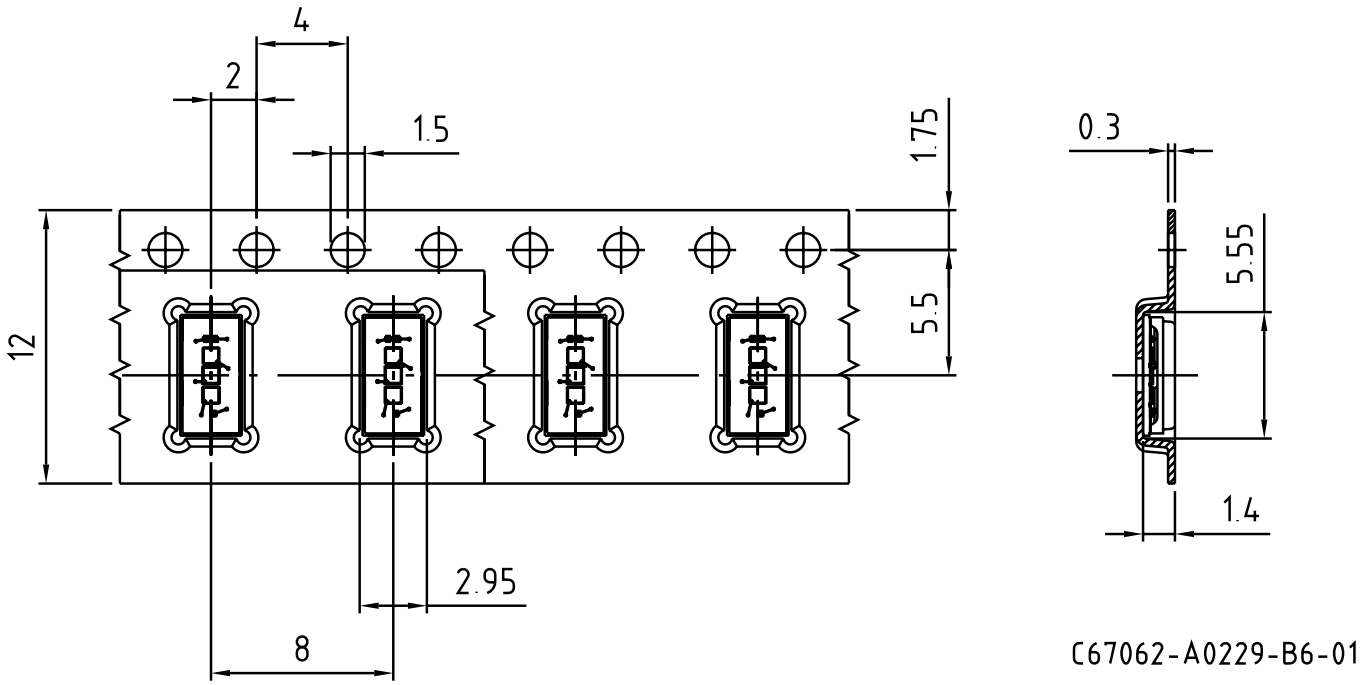
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



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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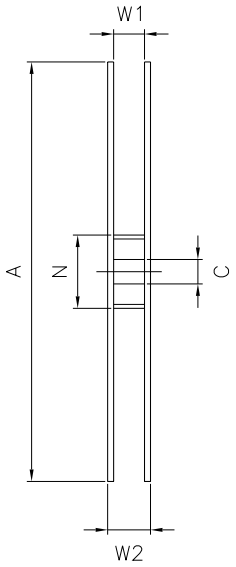
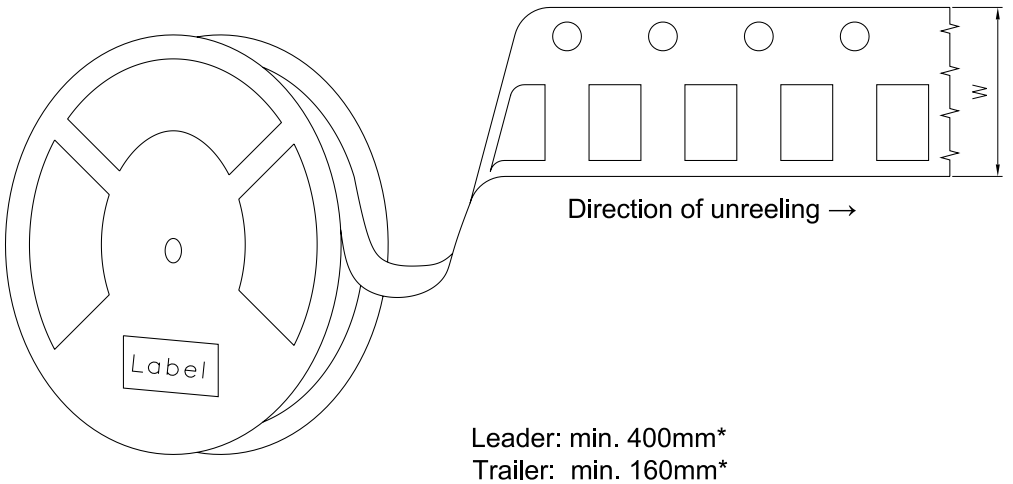
Tape and Reel [8)]



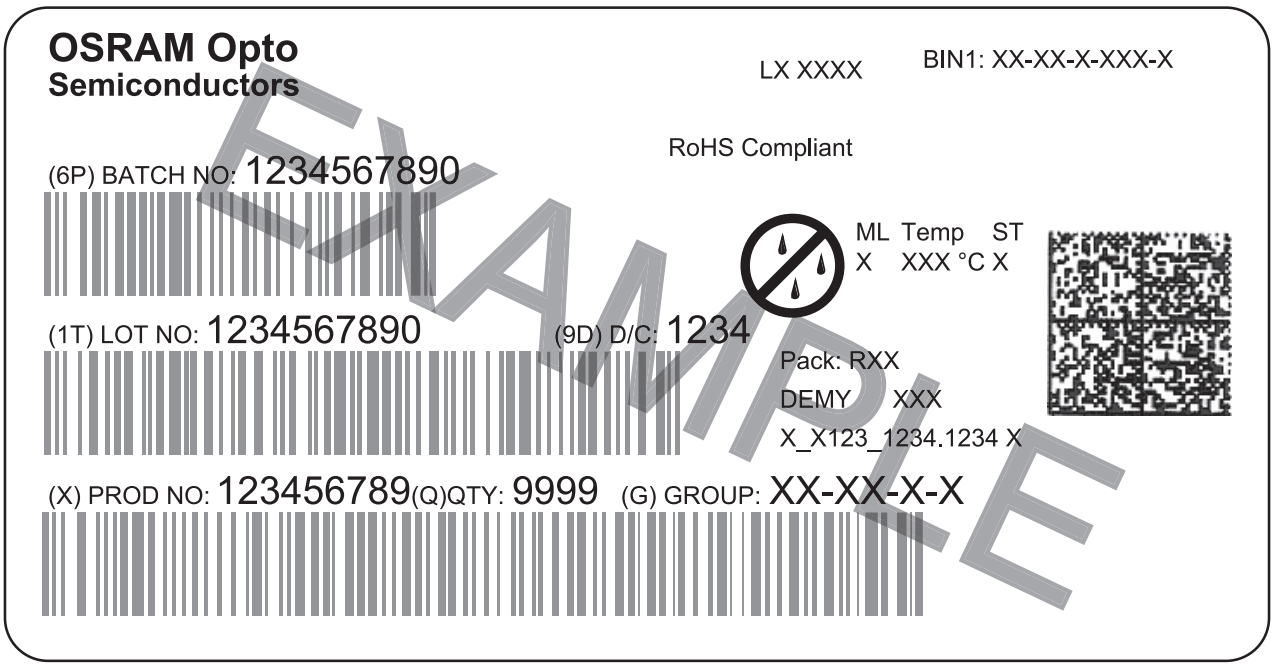


Leader: min. 400mm*
Trailer: min. 160mm*
*)Dimensions acc. to IEC 60286-3; EIA 481-E

Reel Dimensions

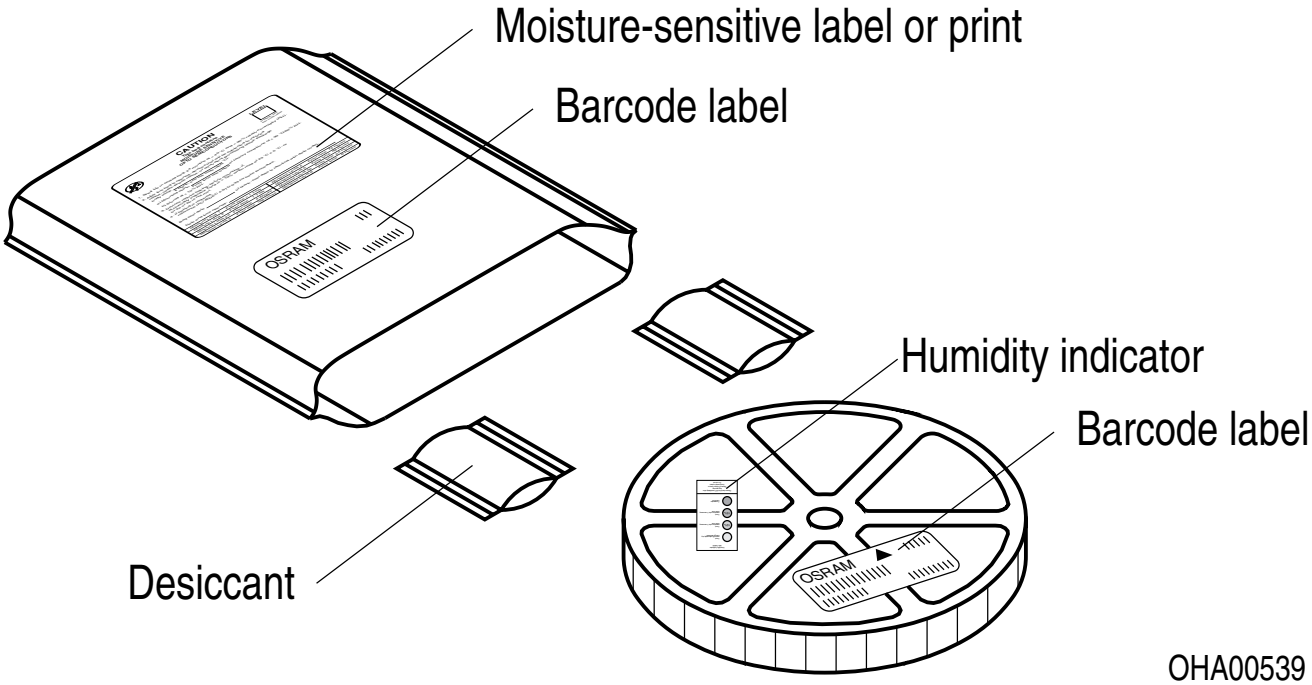
A	W	N_{min}	W_1	$W_{2\,max}$	Pieces per PU
180 mm	12 + 0.3 / - 0.1 mm	60 mm	12.4 + 2 mm	18.4 mm	500

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 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.

Product and functional 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.
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 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) **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
1.2	2018-11-29	Characteristics
1.4	2019-07-31	Wavelength Groups
1.6	2019-12-10	Further Information
1.6	2019-12-10	Further Information
1.7	2020-06-03	Schematic Transportation Box Dimensions of Transportation Box
1.8	2020-11-20	Product Image Characteristics
1.9	2020-12-16	Characteristics
1.10	2021-04-12	Ordering Information Brightness Groups

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EU RoHS and China RoHS compliant product

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按照中国的相关法规和标准，不含有毒有害物质或元素。