KR DMLN31.23 - Dual Binning

SYNIOS® P2720

This compact LED device is part of the SYNIOS P2720 family. Given the scalability of this product family, it provides full performance and flexibility with just one footprint.
The KR DMLN31.23 product is meant to provide superior light quality in ¼ mm² chip size class.

Applications

- Signalling

Features:

- Package: SMD epoxy package
- Chip technology: Thinfilm
- Typ. Radiation: 120° (Lambertian emitter)
- Color: λ_{dom} = 621 nm (● red)
- Corrosion Robustness Class: 3B
- Qualifications: The product qualification test plan is based on the guidelines of IEC60810, Lamps for road vehicles – Performance requirements – Requirements and test conditions for LED packages.
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)

Ordering Information

Type	Luminous Flux [1] I_F = 10 mA Φ_V	Luminous Flux [1] I_F = 200 mA Φ_V	Ordering Code
KR DMLN31.23-AACA-1-1+GZJX-26-1	1.12 ... 3.55 lm	24.0 ... 52.0 lm	Q65112A4894

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.	150 °C
Junction Temperature for short time applications*	T_j	max.	175 °C
Forward current T_S = 25 °C	I_F	min. max.	5 mA 250 mA
Surge Current t ≤ 10 µs; D = 0.005 ; T_S = 25 °C	I_{FS}	max.	1000 mA
Reverse voltage [2] T_S = 25 °C	V_R	max.	12 V
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}		2 kV

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

Characteristics

I_F = 200 mA; T_S = 25 °C

Parameter	Symbol		Values
Peak Wavelength [3]	λ_{peak}	typ.	630 nm
Dominant Wavelength [3] I_F = 200 mA	λ_{dom}	min. typ. max.	612 nm 621 nm 630 nm
Spectral Bandwidth at 50% $I_{rel,max}$	$\Delta\lambda$	typ.	18 nm
Viewing angle at 50 % I_V	2φ	typ.	120 °
Forward Voltage [4] I_F = 200 mA	V_F	min. typ. max.	2.00 V 2.27 V 2.60 V
Reverse current [2] V_R = 12 V	I_R	typ. max.	0.2 µA 10 µA
Real thermal resistance junction/solderpoint [5]	$R_{thJS\ real}$	typ. max.	17 K / W 23 K / W
Electrical thermal resistance junction/solderpoint [5] with efficiency η_e = 40 %	$R_{thJS\ elec.}$	typ. max.	10 K / W 14 K / W

Brightness Groups

Group	Luminous Flux [1] I_F = 10 mA min. Φ_V	Luminous Flux [1] I_F = 10 mA max. Φ_V	Luminous Intensity [6] I_F = 10 mA typ. I_v
AA	1.12 lm	1.40 lm	0.40 cd
AB	1.40 lm	1.80 lm	0.50 cd
BA	1.80 lm	2.24 lm	0.70 cd
BB	2.24 lm	2.80 lm	0.80 cd
CA	2.80 lm	3.55 lm	1.00 cd

Brightness Groups

Group	Luminous Flux [1] I_F = 200 mA min. Φ_V	Luminous Flux [1] I_F = 200 mA max. Φ_V	Luminous Intensity [6] I_F = 200 mA typ. I_v
GZ	24.0 lm	28.0 lm	8.6 cd
HX	28.0 lm	33.0 lm	10.1 cd
HY	33.0 lm	39.0 lm	11.9 cd
HZ	39.0 lm	45.0 lm	13.9 cd
JX	45.0 lm	52.0 lm	16.0 cd

Forward Voltage Groups

Group	Forward Voltage [4] I_F = 10 mA min. V_F	Forward Voltage [4] I_F = 10 mA max. V_F
A3	1.60 V	1.75 V
D3	1.75 V	1.90 V

Forward Voltage Groups

Group	Forward Voltage [4] I_F = 200 mA min. V_F	Forward Voltage [4] I_F = 200 mA max. V_F
J3	2.00 V	2.15 V
M3	2.15 V	2.30 V
Q3	2.30 V	2.45 V
T3	2.45 V	2.60 V

Wavelength Groups

Group	Dominant Wavelength [3] I_F = 10 mA min. λ_{dom}	Dominant Wavelength [3] I_F = 10 mA max. λ_{dom}
1	611 nm	630 nm

Wavelength Groups

Group	Dominant Wavelength [3] I_F = 200 mA min. λ_{dom}	Dominant Wavelength [3] I_F = 200 mA max. λ_{dom}
2	612 nm	616 nm
3	616 nm	620 nm
4	620 nm	624 nm
5	624 nm	627 nm
6	627 nm	630 nm

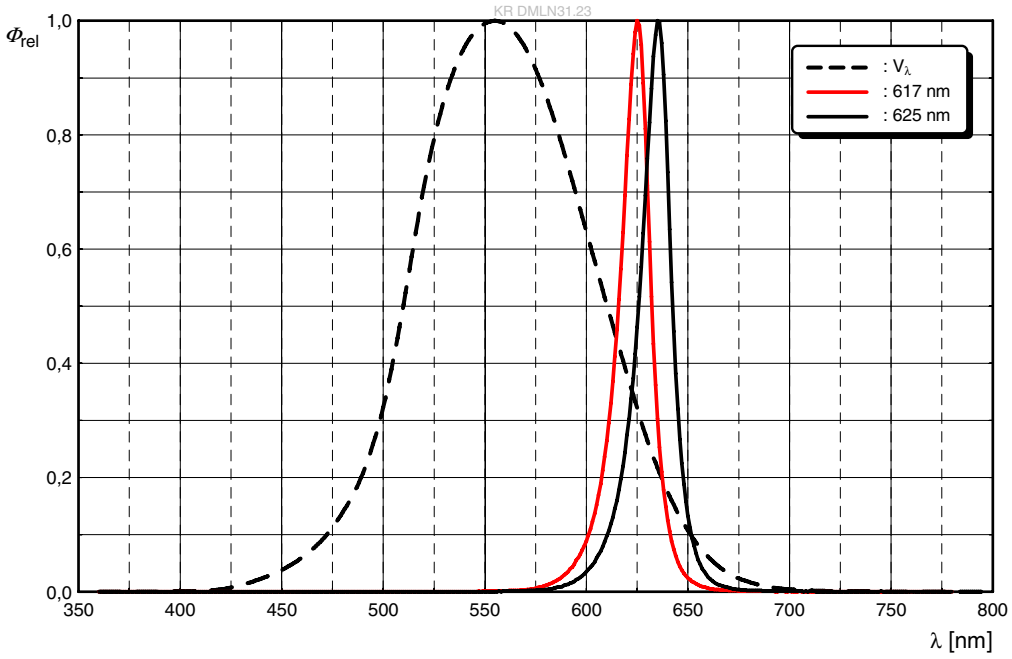
Group Name on Label

Example: AA-1-A3

Brightness	Wavelength	Forward Voltage
AA	1	A3

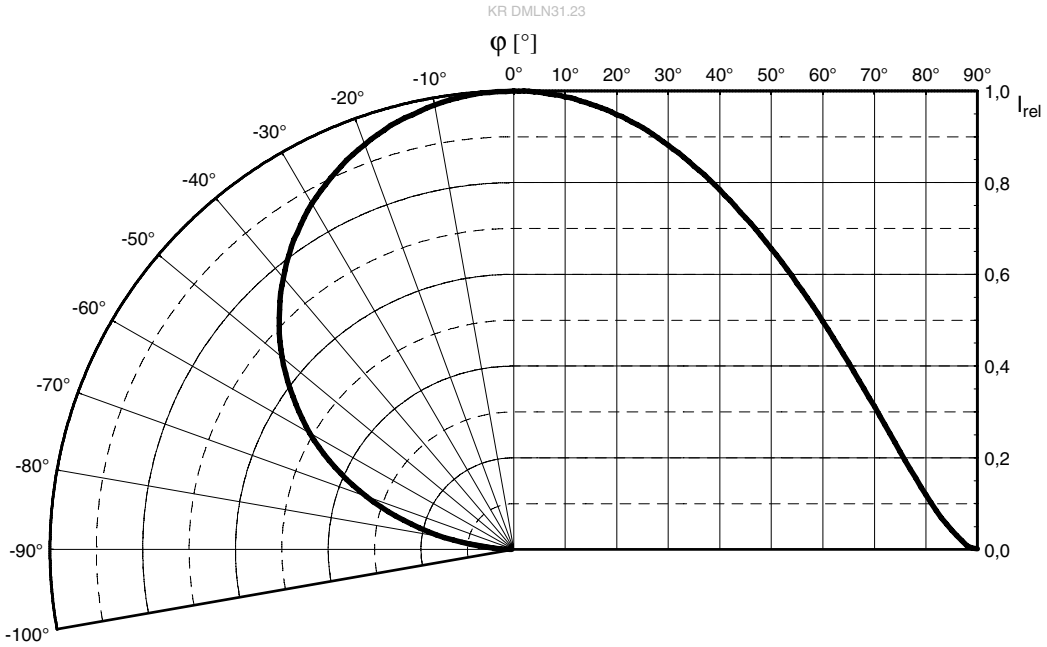
Relative Spectral Emission [6]

$\Phi_{rel} = f(\lambda)$; $I_F = 200$ mA; $T_S = 25$ °C



Radiation Characteristics [6]

$I_{rel} = f(\phi)$; $T_S = 25$ °C



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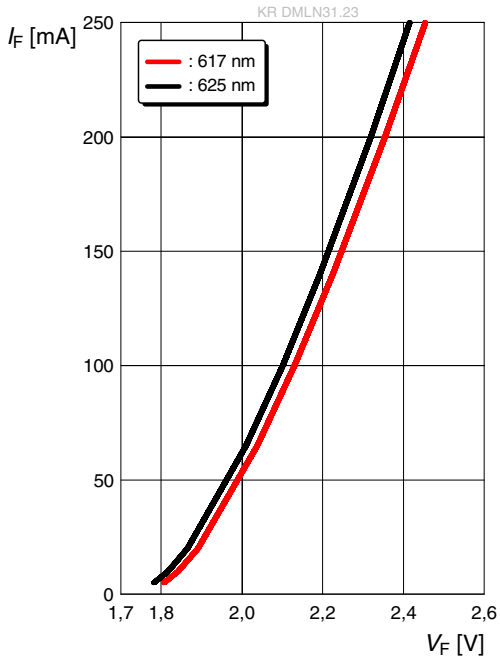
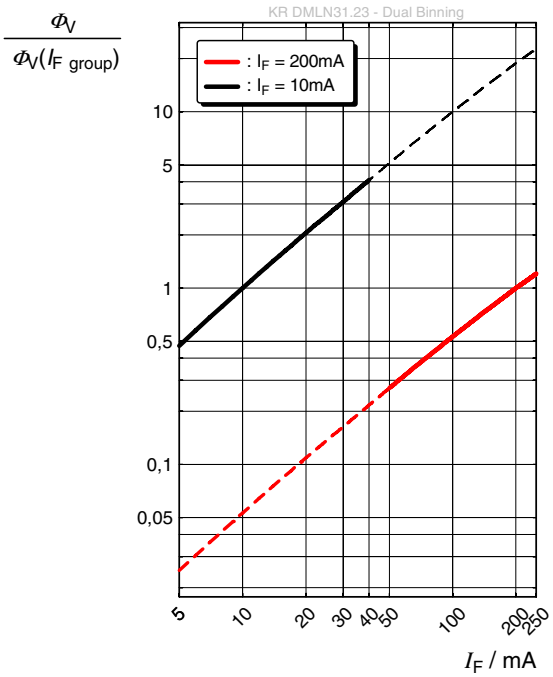
Forward current [6), 7)]

$I_F = f(V_F)$; T_S = 25 °C



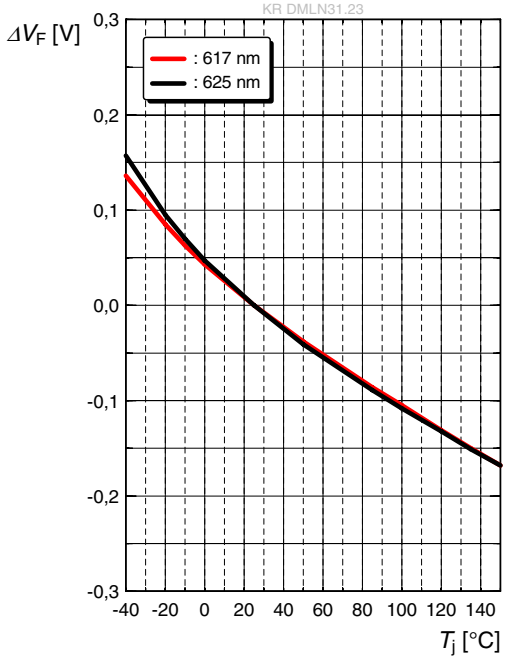
Relative Luminous Flux [6), 7)]

$\Phi_v/\Phi_v(I_{F\ group}) = f(I_F)$; T_S = 25 °C



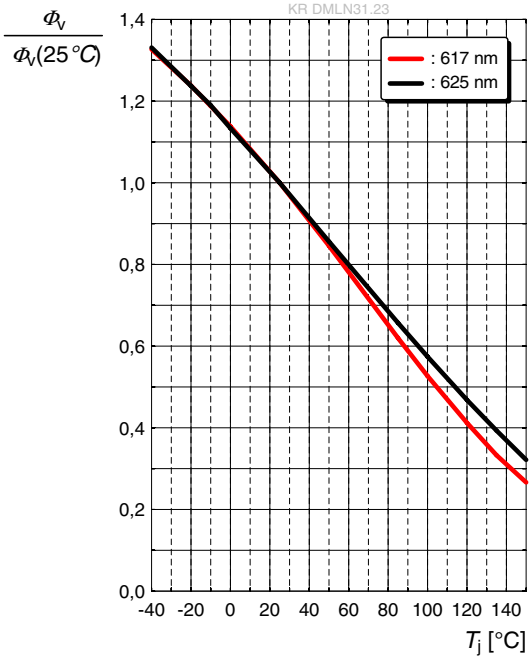
Forward Voltage [6]

$\Delta V_F = V_F - V_F(25\ °C) = f(T_j);\ I_F = 200\ mA$



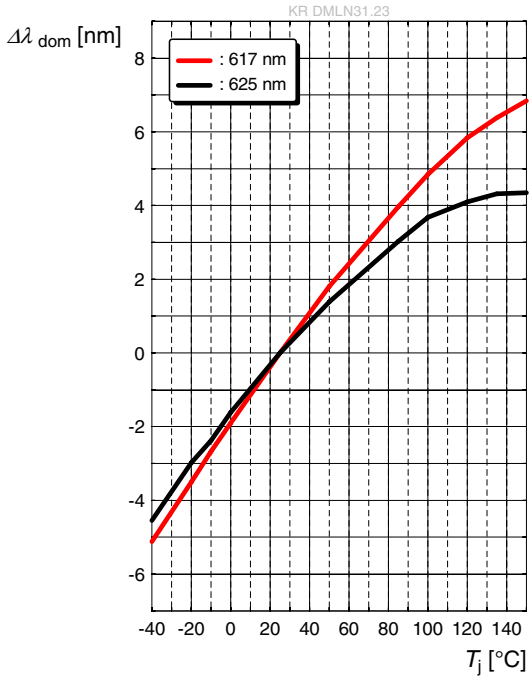
Relative Luminous Flux [6]

$\Phi_v/\Phi_v(25\ °C) = f(T_j);\ I_F = 200\ mA$



Dominant Wavelength [6]

$\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\ °C) = f(T_j);\ I_F = 200\ mA$



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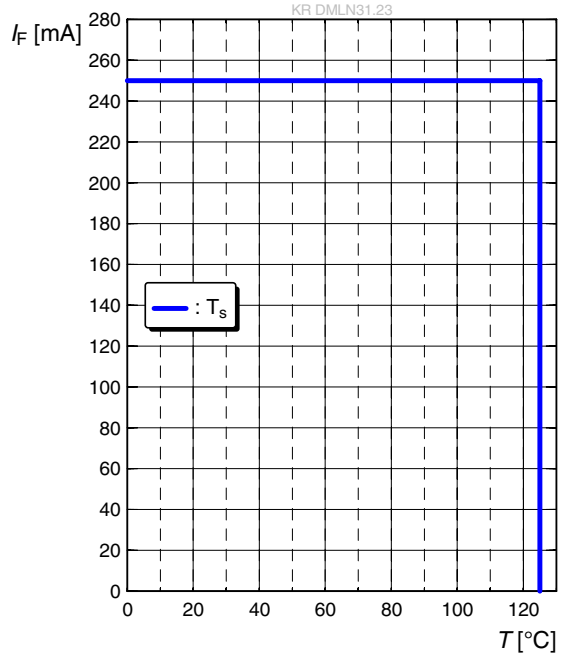
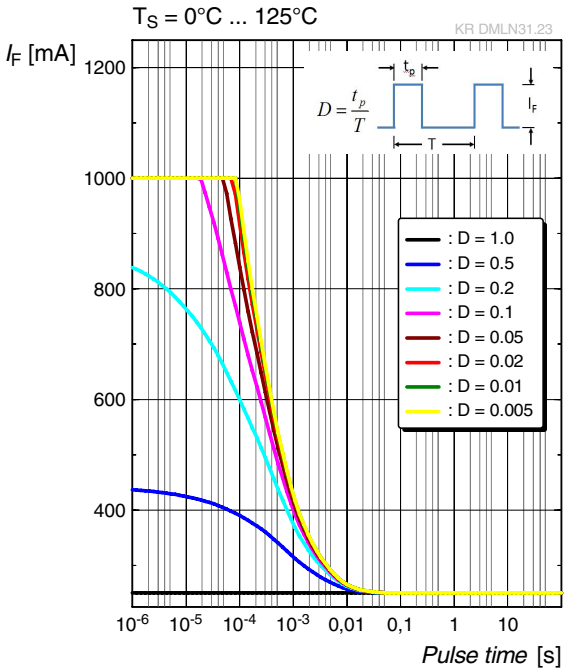
Max. Permissible Forward Current

$I_F = f(T)$

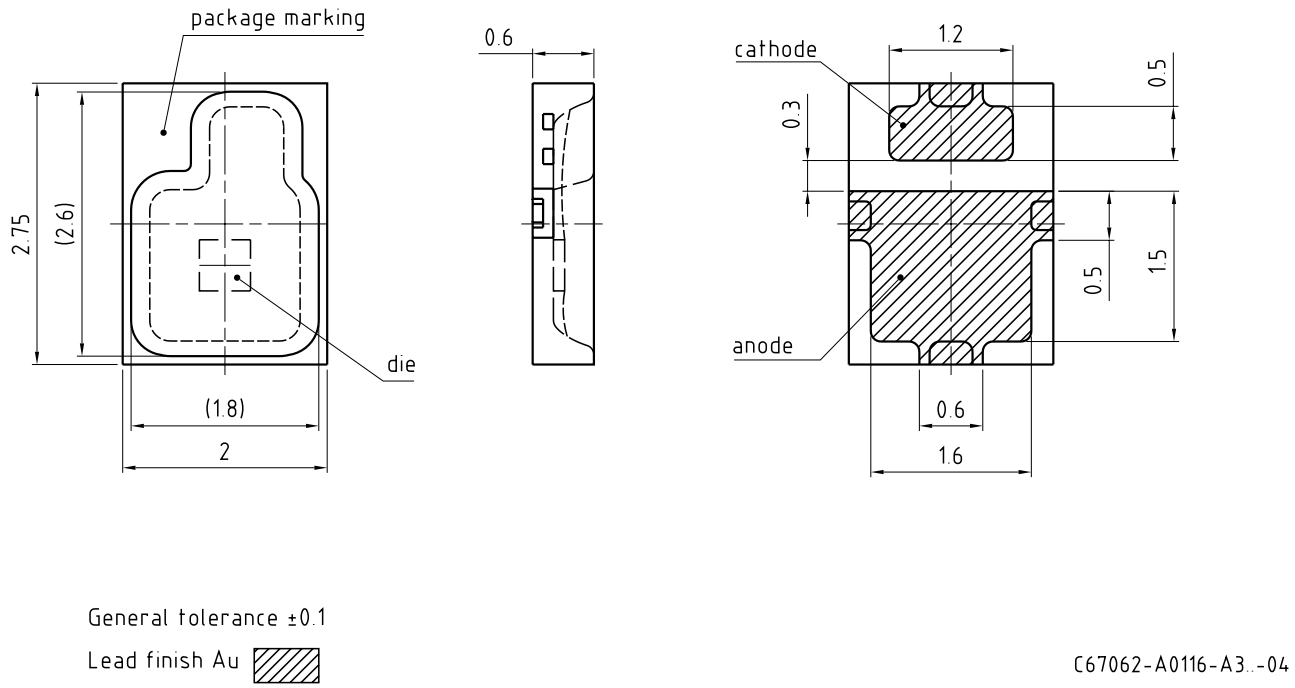


Permissible Pulse Handling Capability

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



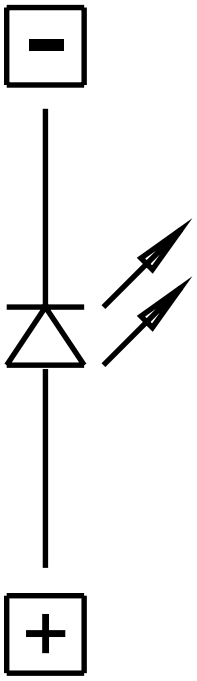
Dimensional Drawing [8)]



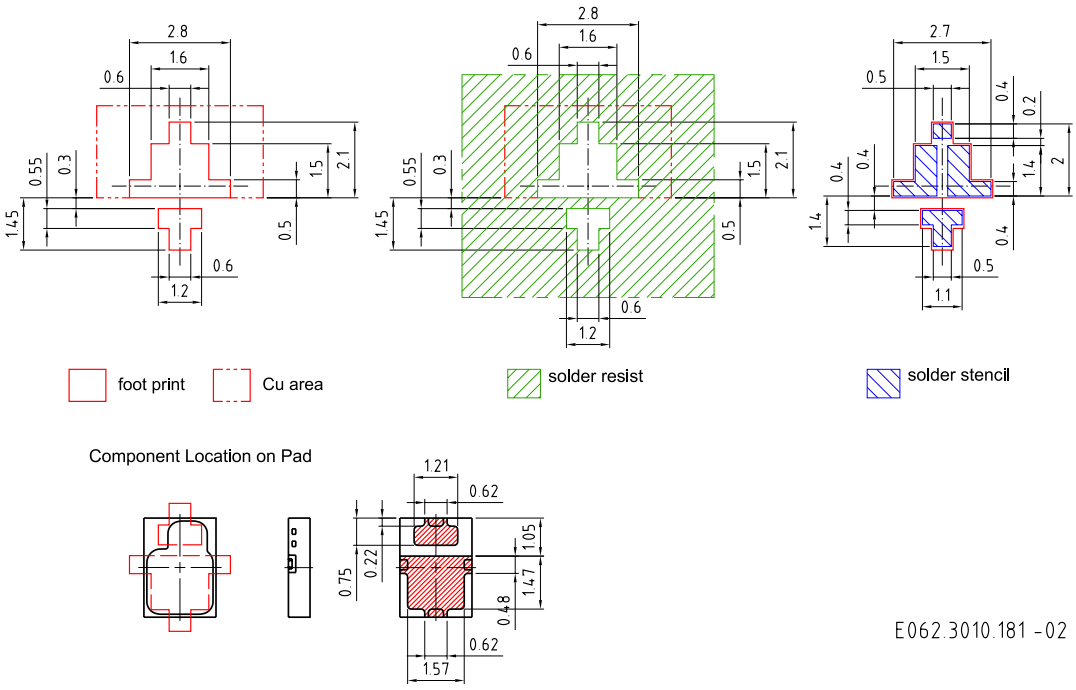
Approximate Weight: 12.0 mg

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

Electrical internal circuit



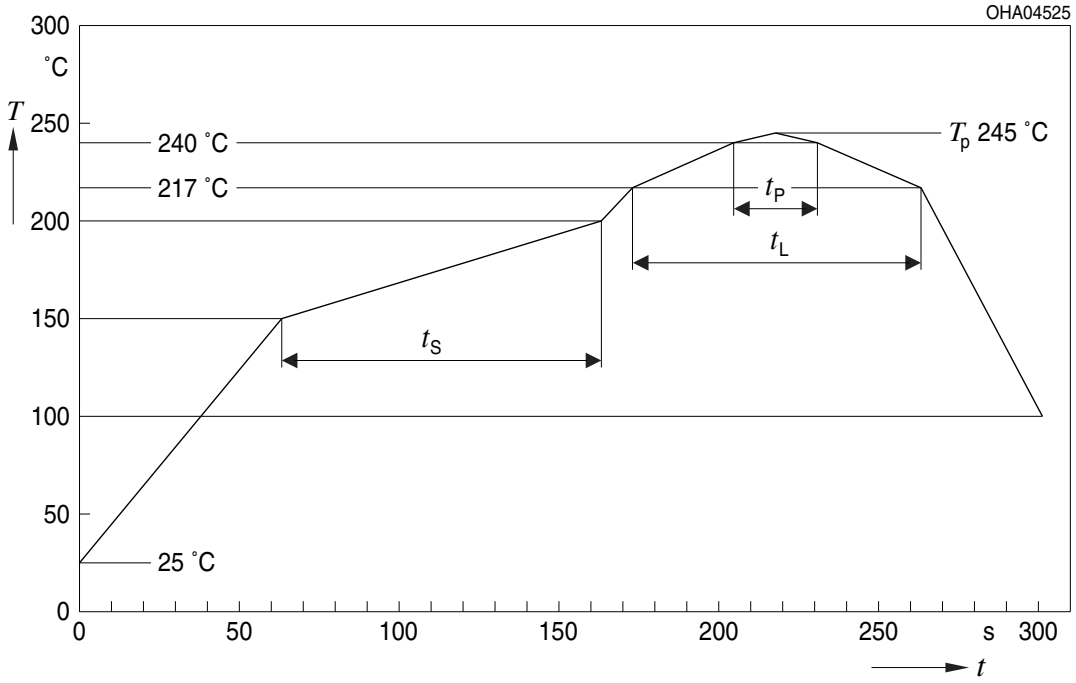
Recommended Solder Pad [8)]



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

Reflow Soldering Profile

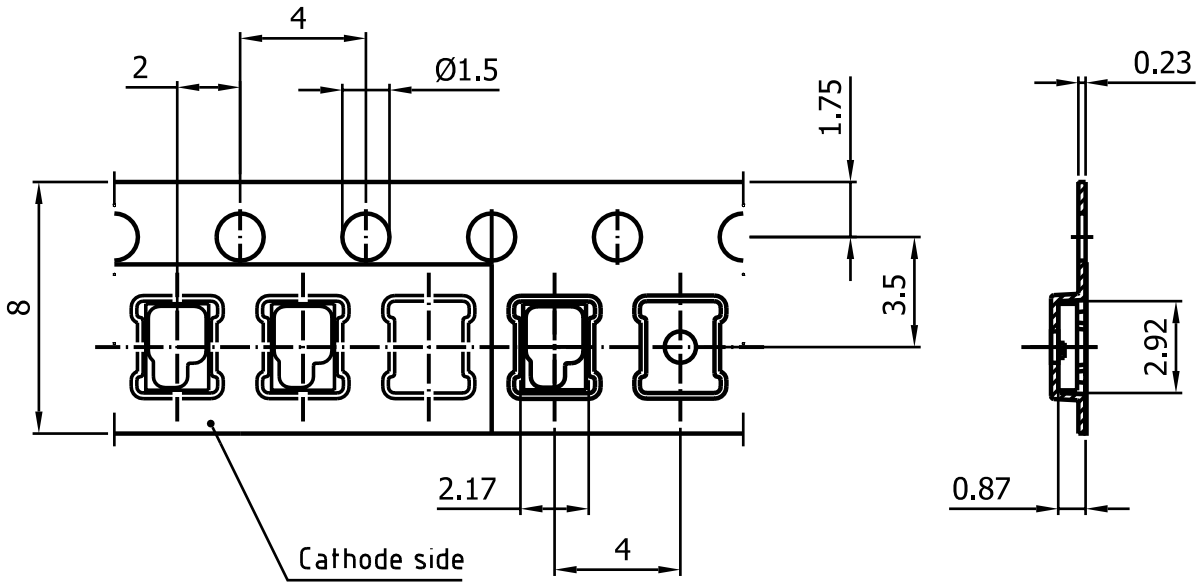
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



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 [8)]



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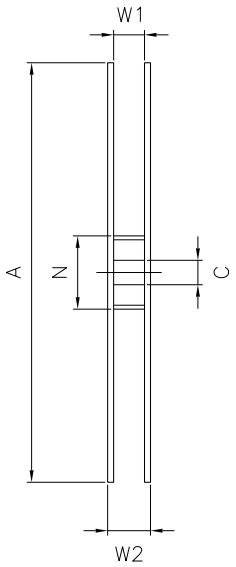
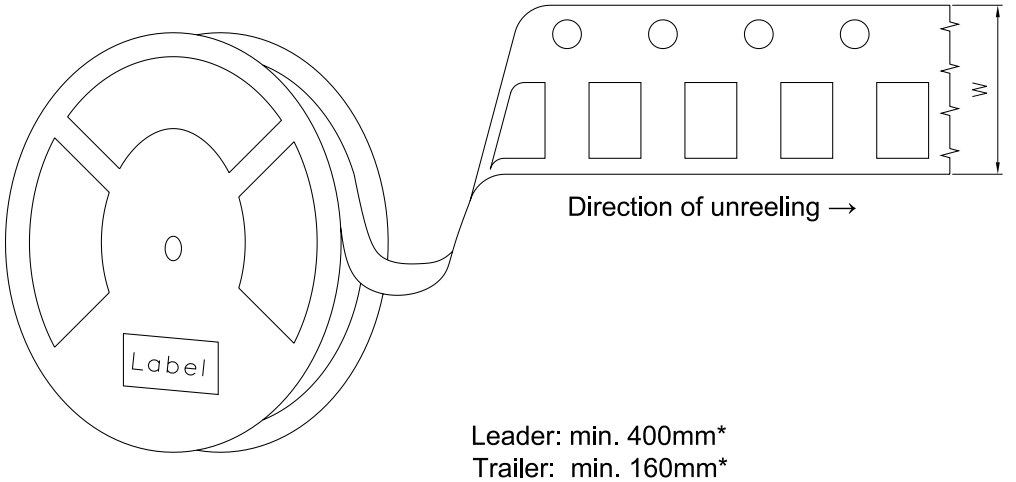
Tape and Reel [9)]



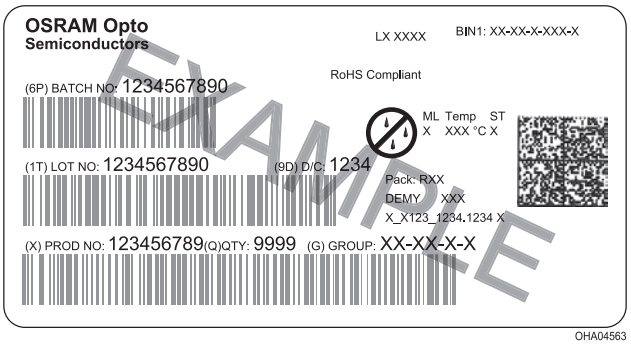


Leader: min. 400mm*
Trailer: min. 160mm*
*)Dimensions acc. to IEC 60286-3; EIA 481-E

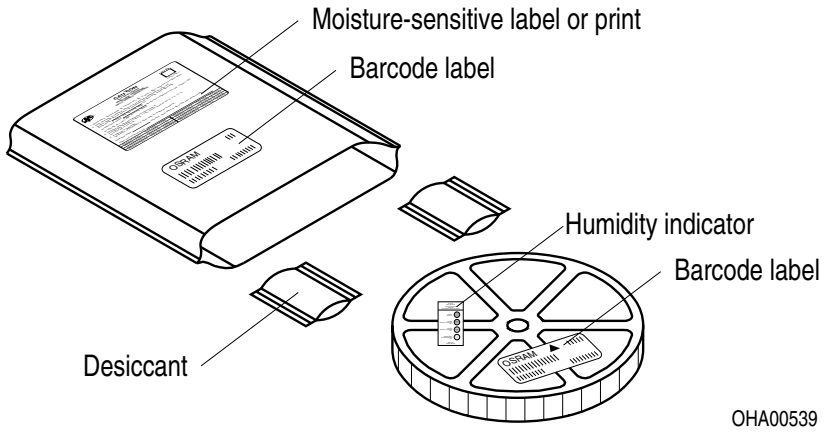
Reel dimensions [mm]

A	W	N_{min}	W_1	$W_{2\,max}$	Pieces per PU
180 mm	8 + 0.3 / - 0.1	60	8.4 + 2	14.4	2000

Barcode-Product-Label (BPL)

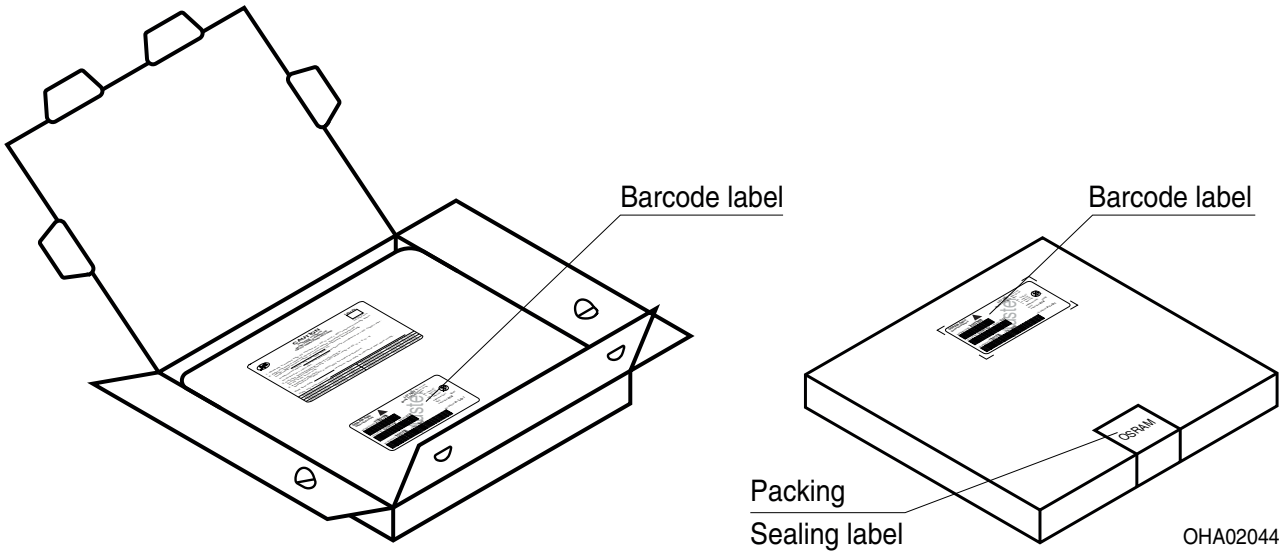


Dry Packing Process and Materials [8)]



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

Transportation Packing and Materials [8)]



Dimensions of transportation box in mm

Width	Length	Height
200 ± 5 mm	195 ± 5 mm	30 ± 5 mm

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 **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 informations please visit www.osram-os.com/appnotes

Disclaimer

Disclaimer
Language english will prevail in case of any discrepancies or deviations between the two language wordings.

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

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).

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.

Published by OSRAM Opto Semiconductors GmbH
Leibnizstraße 4, D-93055 Regensburg

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。