LT L29S

SMARTLED® 0603

The innovative SMARTLED 0603 joins the successful family of TOPLED. Invested with the same high quality, its unique features are due to set new standards in product development and design, opening up new applications on a new scale.

Applications

- Electronic Equipment
- White Goods

Features:

- Package: SMT package 0603, colorless diffused resin
- Chip technology: InGaN
- Typ. Radiation: 155° (horizontal), 135° (vertical)
- Color: λ_{dom} = 528 nm (● true green)
- Optical efficacy: 7 lm/W
- Corrosion Robustness Class: 3B
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)

Not for new design

Ordering Information

Type	Luminous Intensity [1] I_F = 10 mA I_v	Ordering Code
LT L29S-N1R2-25	28 ... 180.0 mcd	Q65110A3218
LT L29S-N2Q1-25	35.5 ... 90.0 mcd	Q65110A3219
LT L29S-P2R1-25	56 ... 140.0 mcd	Q65110A3220

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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.	100 °C
Forward current T_A = 25 °C	I_F	max.	15 mA
Surge Current t ≤ 10 µs; D = 0.005 ; T_A = 25 °C	I_{FS}	max.	150 mA
Reverse voltage [2)] T_A = 25 °C	V_R	max.	5 V
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}		2 kV

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Characteristics

I_F = 10 mA; T_A = 25 °C

Parameter	Symbol		Values
Peak Wavelength	λ_{peak}	typ.	523 nm
Dominant Wavelength [3] I_F = 10 mA	λ_{dom}	min. typ. max.	517 nm 528 nm 541 nm
Spectral Bandwidth at 50% $I_{rel,max}$	$\Delta\lambda$	typ.	33 nm
Viewing angle at 50 % I_V values for 0°, 90°	2φ	typ. typ.	155 ° 135 °
Forward Voltage [4] I_F = 10 mA	V_F	typ. max.	3.40 V 3.80 V
Reverse current [2] V_R = 5 V	I_R	typ. max.	0.01 µA 10 µA
Temperature Coefficient of Peak Wavelength -10°C ≤ T ≤ 100°C	$TC_{\lambda peak}$	typ.	0.04 nm / K
Temperature Coefficient of Dominant Wavelength -10°C ≤ T ≤ 100°C	$TC_{\lambda dom}$	typ.	0.04 nm / K
Temperature Coefficient of Forward Voltage -10°C ≤ T ≤ 100°C	TC_{VF}	typ.	-3.6 mV / K
Real thermal resistance junction/ambient [5), 6)]	$R_{thJA\ real}$	max.	450 K / W
Real thermal resistance junction/solderpoint [5)]	$R_{thJS\ real}$	max.	260 K / W

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Brightness Groups

Group	Luminous Intensity [1] I_F = 10 mA min. I_v	Luminous Intensity. [1] I_F = 10 mA max. I_v	Luminous Flux [7] I_F = 10 mA typ. Φ_V
N1	28.0 mcd	35.5 mcd	127.0 mlm
N2	35.5 mcd	45.0 mcd	161.0 mlm
P1	45.0 mcd	56.0 mcd	202.0 mlm
P2	56.0 mcd	71.0 mcd	254.0 mlm
Q1	71.0 mcd	90.0 mcd	322.0 mlm
Q2	90.0 mcd	112.0 mcd	404.0 mlm
R1	112.0 mcd	140.0 mcd	504.0 mlm
R2	140.0 mcd	180.0 mcd	640.0 mlm

Wavelength Groups

Group	Dominant Wavelength [3] I_F = 10 mA min. λ_{dom}	Dominant Wavelength [3] I_F = 10 mA max. λ_{dom}
2	517 nm	523 nm
3	523 nm	529 nm
4	529 nm	535 nm
5	535 nm	541 nm

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Group Name on Label

Example: N1-2

Brightness	Wavelength
N1	2

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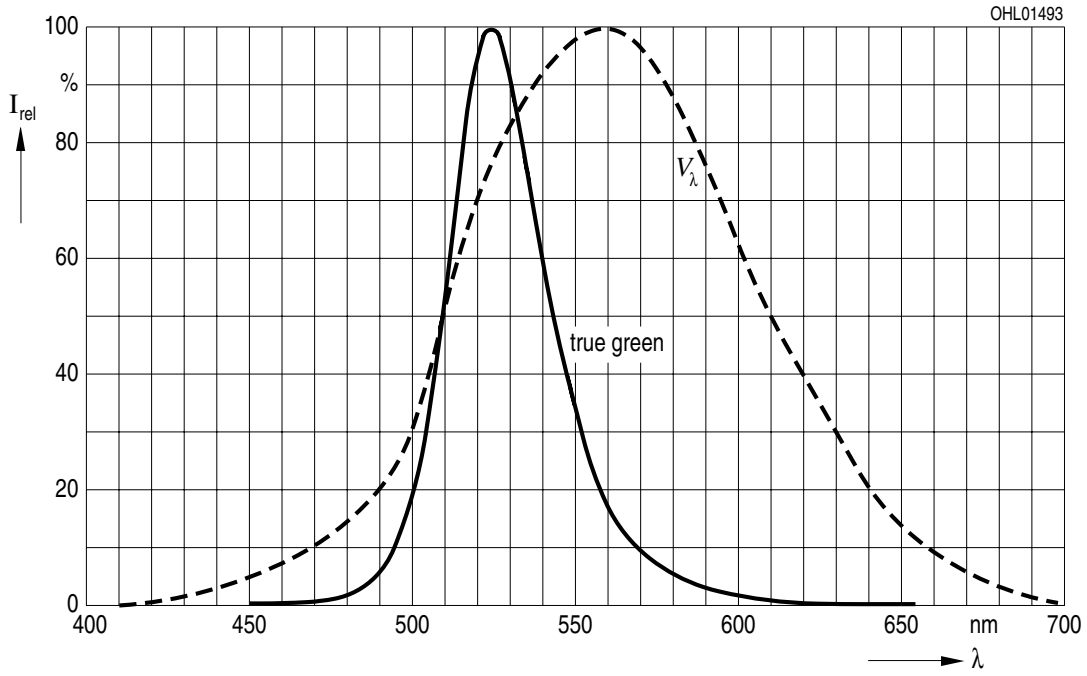
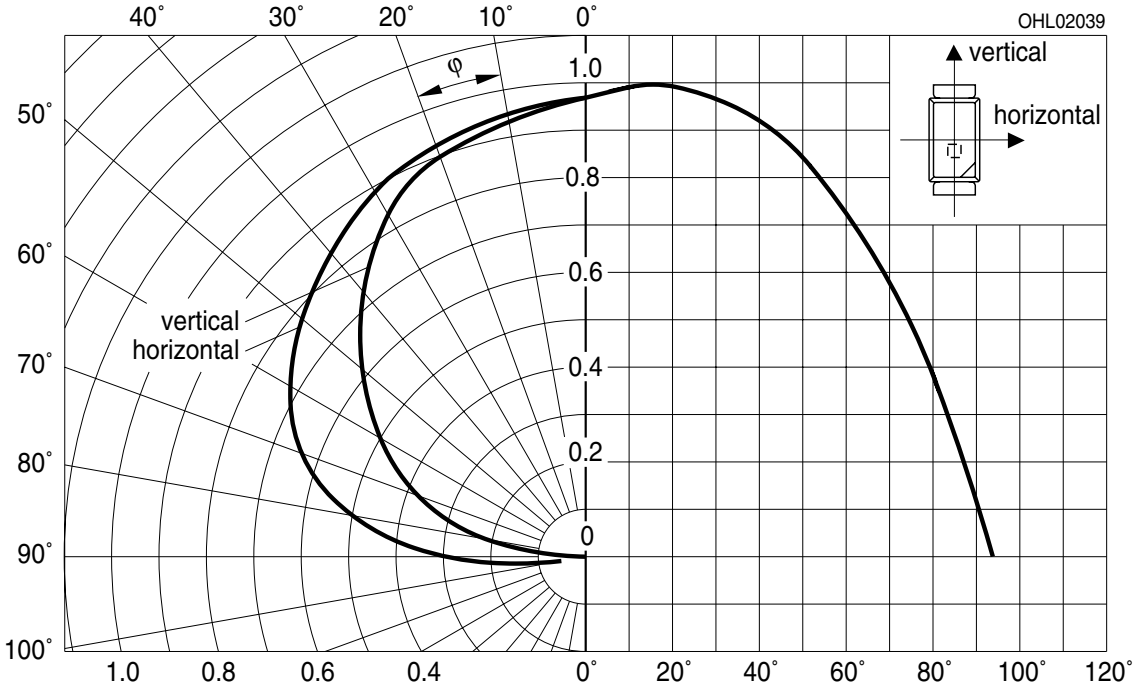
Relative Spectral Emission [7)]

$I_{rel} = f(\lambda)$; I_F = 10 mA; T_A = 25 °C



Radiation Characteristics [7)]

$I_{rel} = f(\phi)$; T_A = 25 °C



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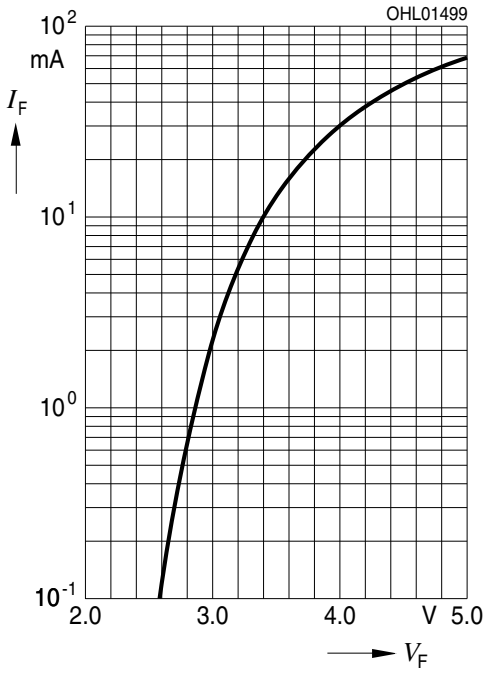
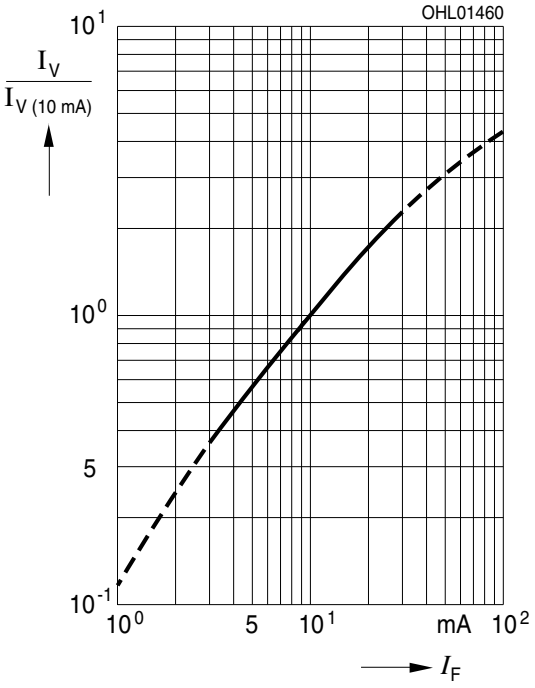
Forward current [7)]

$I_F = f(V_F)$; $T_A = 25$ °C



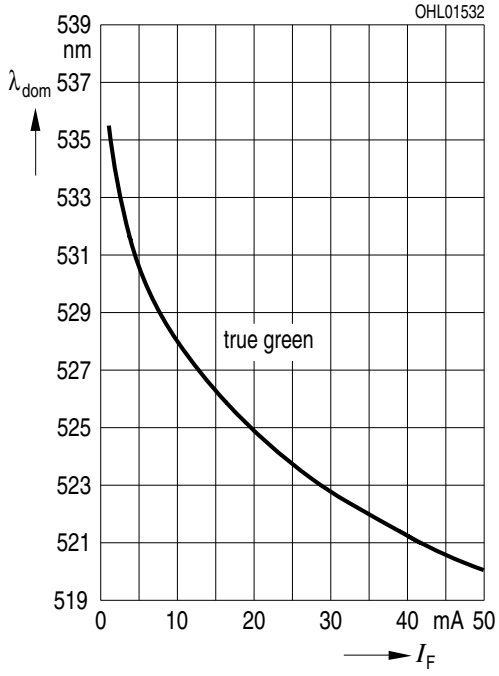
Relative Luminous Intensity [7), 8)]

$I_v/I_v(10\ mA) = f(I_F)$; $T_A = 25$ °C



Dominant Wavelength [7)]

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



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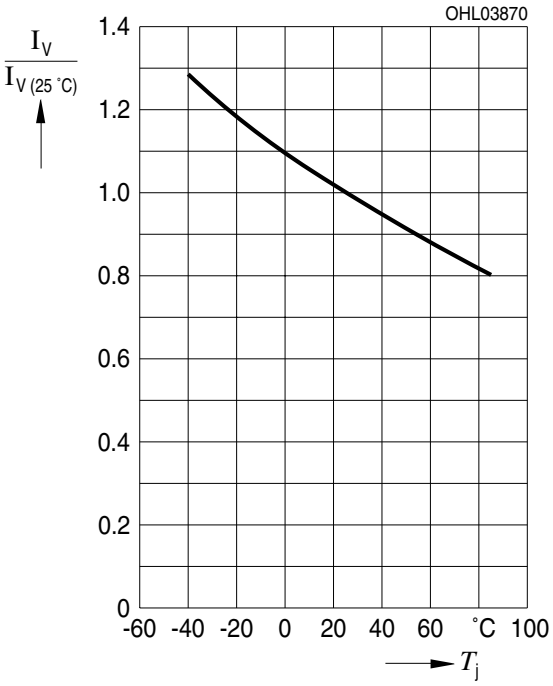
Relative Luminous Intensity [7)]

$I_v/I_v(25\ °C) = f(T_j)$; I_F = 10 mA



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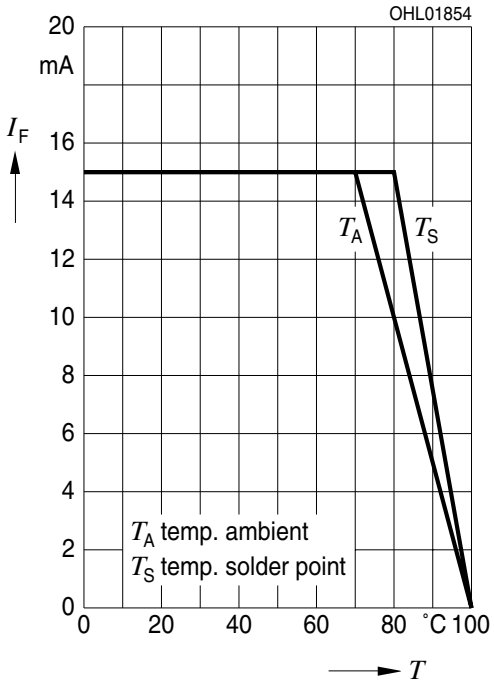
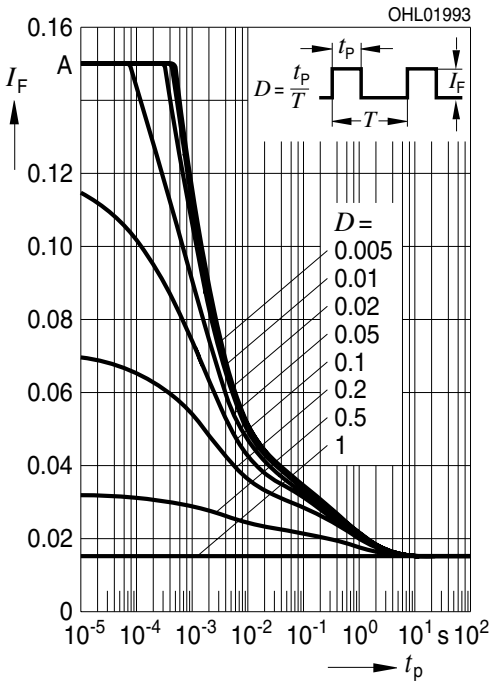
Max. Permissible Forward Current

$I_F = f(T)$



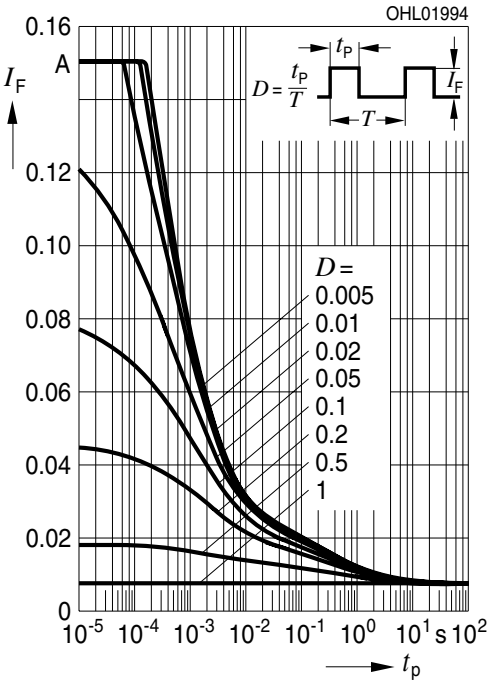
Permissible Pulse Handling Capability

$I_F = f(t_p)$; D: Duty cycle; T_A = 25 °C



Permissible Pulse Handling Capability

$I_F = f(t_p)$; D: Duty cycle; T_A = 85 °C



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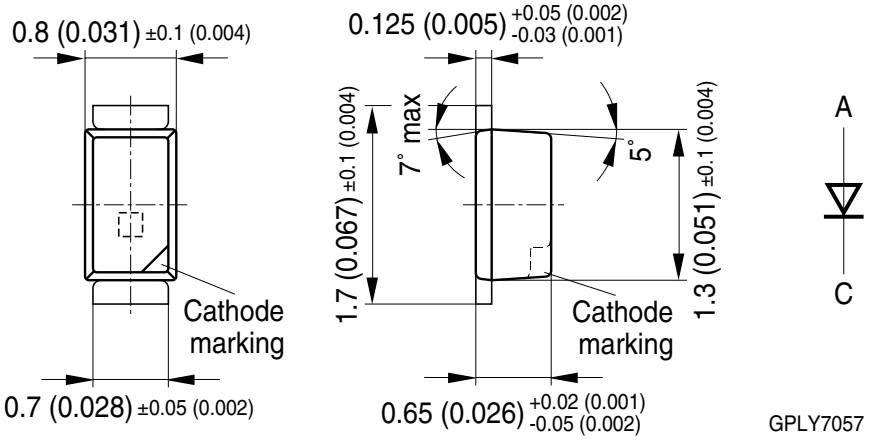
Dimensional Drawing [9)]



Approximate Weight: 1.6 mg

Package marking: Cathode

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

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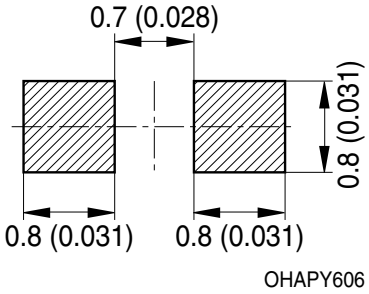
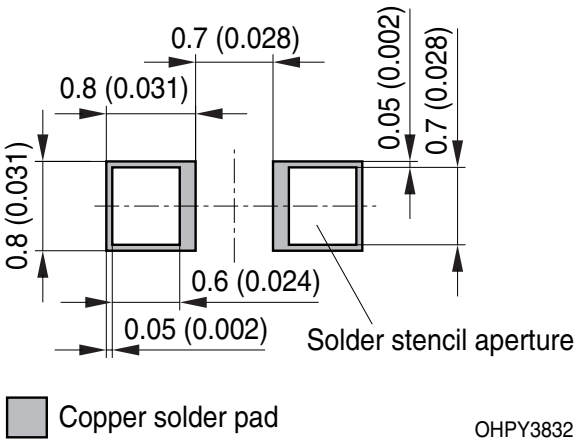
Recommended Solder Pad [9)]



For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere.

Recommended Solder Pad [9)]



For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere.

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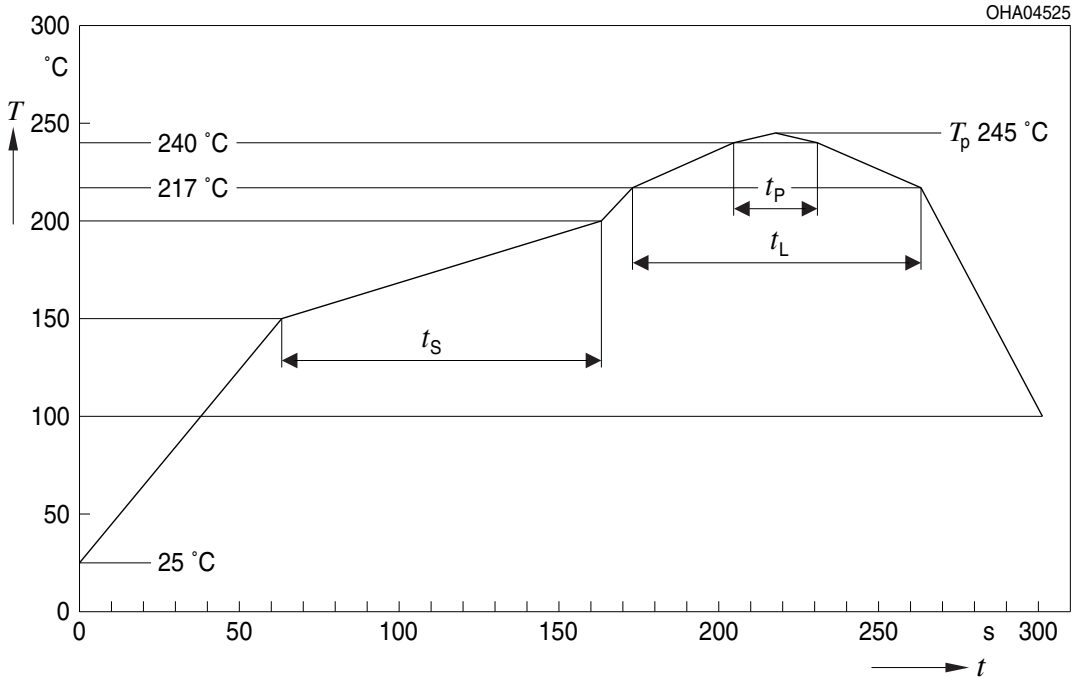
Reflow Soldering Profile

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

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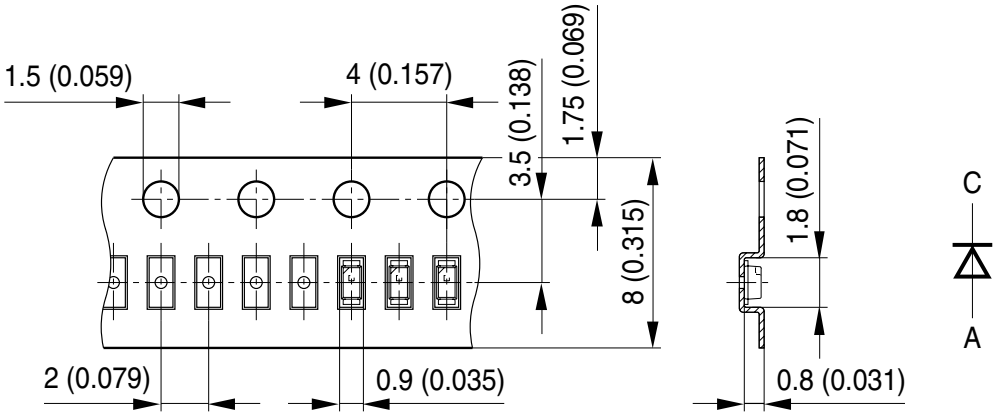
Taping [9)]



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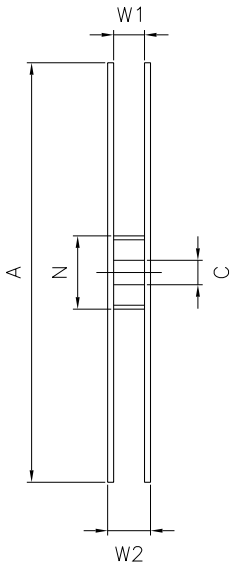
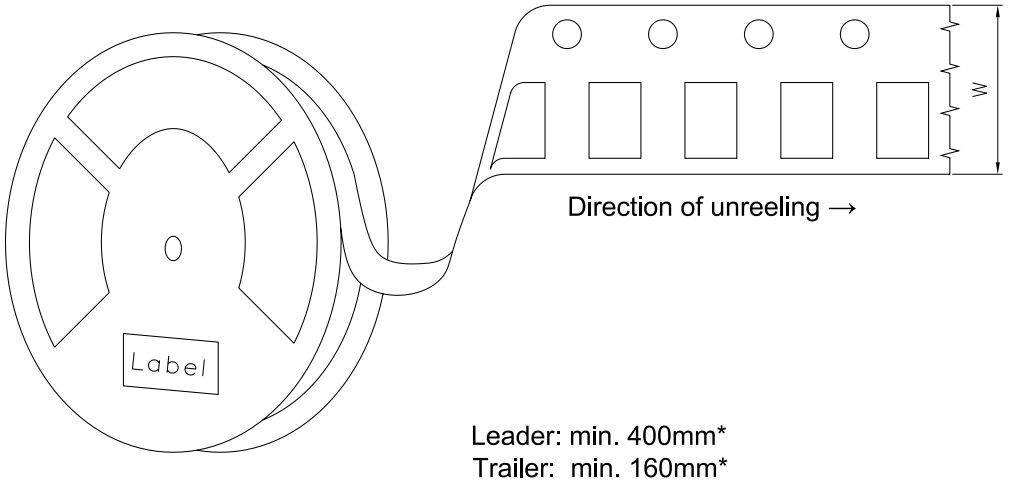
Tape and Reel [10)]





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	5000

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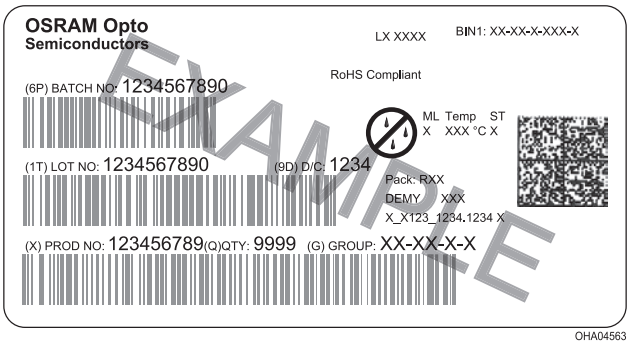
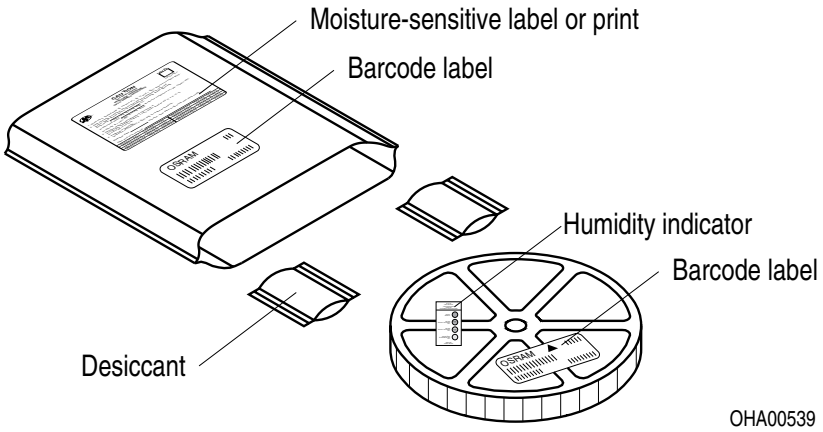
Barcode-Product-Label (BPL)



Dry Packing Process and Materials [9)]



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

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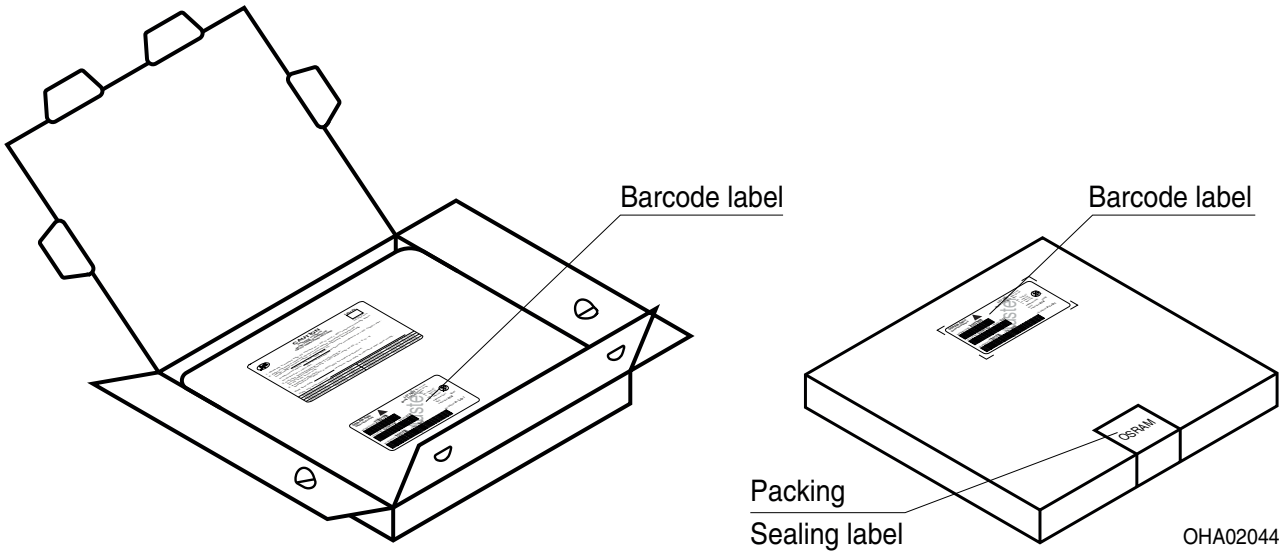
Transportation Packing and Materials [9)]



Dimensions of transportation box in mm

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

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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 LED 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 LED 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 LED exposure to aggressive substances during storage, production, and use. LEDs 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

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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.
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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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OSRAM OS components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.

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.

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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) **Thermal Resistance**: RthJA results from mounting on PC board FR 4 (pad size ≥ 5 mm² per pad)

7) **Typical Values**: Due to the special conditions of the manufacturing processes of LED, 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.

8) **Characteristic curve**: In the range where the line of the graph is broken, you must expect higher differences between single LEDs within one packing unit.

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

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

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