LO P47K





PointLED®

With a diameter of just 2 mm, the PointLED is one of the smallest packages in its class and achieves high luminous efficacies.
Due to its round and flat package, measuring only 0.775 mm high, it is ideal for application where space is a sensitive issue.

Applications

- Cluster, Button Backlighting
- Electronic Equipment
- Gaming, Amusement, Gambling
- Transportation, Plane, Ship
- White Goods

Features:

- Package: white SMT package, colorless clear resin
- Chip technology: InGaAlP
- Typ. Radiation: 120° (Lambertian emitter)
- Color: λ_{dom} = 606 nm (● orange)
- Corrosion Robustness Class: 3B
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM)

Ordering Information

Type	Luminous Intensity [1] I_F = 2 mA I_v	Mounting methode	Ordering Code
LO P47K-K2M1-24	9 ... 22.4 mcd	Reverse	Q65111A7175
LO P47K-K2M1-24-F	9 ... 22.4 mcd	Top	Q65111A7405

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	max.	20 mA
Surge Current t ≤ 10 µs; D = 0.005 ; T_S = 25 °C	I_{FS}	max.	100 mA
Reverse voltage [2)] T_S = 25 °C	V_R	max.	12 V
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM)	V_{ESD}		2 kV

Characteristics

I_F = 2 mA; T_S = 25 °C

Parameter	Symbol		Values
Peak Wavelength	λ_{peak}	typ.	610 nm
Dominant Wavelength [3] I_F = 2 mA	λ_{dom}	min. typ. max.	600 nm 606 nm 609 nm
Spectral Bandwidth at 50% $I_{rel,max}$	$\Delta\lambda$	typ.	16 nm
Viewing angle at 50 % I_V	2φ	typ.	120 °
Forward Voltage [4] I_F = 2 mA	V_F	min. typ. max.	1.70 V 1.81 V 2.20 V
Reverse current [2] V_R = 12 V	I_R	typ. max.	0.01 µA 10 µA
Temperature Coefficient of Peak Wavelength -10°C ≤ T ≤ 100°C	$TC_{\lambda peak}$	typ.	0.14 nm / K
Temperature Coefficient of Dominant Wavelength -10°C ≤ T ≤ 100°C	$TC_{\lambda dom}$	typ.	0.09 nm / K
Temperature Coefficient of Forward Voltage -10°C ≤ T ≤ 100°C	TC_{VF}	typ.	-1.5 mV / K
Real thermal resistance junction/ambient [5], [6]	$R_{thJA\ real}$	max.	530 K / W
Real thermal resistance junction/solderpoint [5]	$R_{thJS\ real}$	max.	280 K / W

Brightness Groups

Group	Luminous Intensity [1] I_F = 2 mA min. I_v	Luminous Intensity. [1] I_F = 2 mA max. I_v	Luminous Flux [7] I_F = 2 mA typ. Φ_V
K2	9.0 mcd	11.2 mcd	30.3 mlm
L1	11.2 mcd	14.0 mcd	37.8 mlm
L2	14.0 mcd	18.0 mcd	48.0 mlm
M1	18.0 mcd	22.4 mcd	60.6 mlm

Wavelength Groups

Group	Dominant Wavelength [3] I_F = 2 mA min. λ_{dom}	Dominant Wavelength [3] I_F = 2 mA max. λ_{dom}
2	600 nm	603 nm
3	603 nm	606 nm
4	606 nm	609 nm

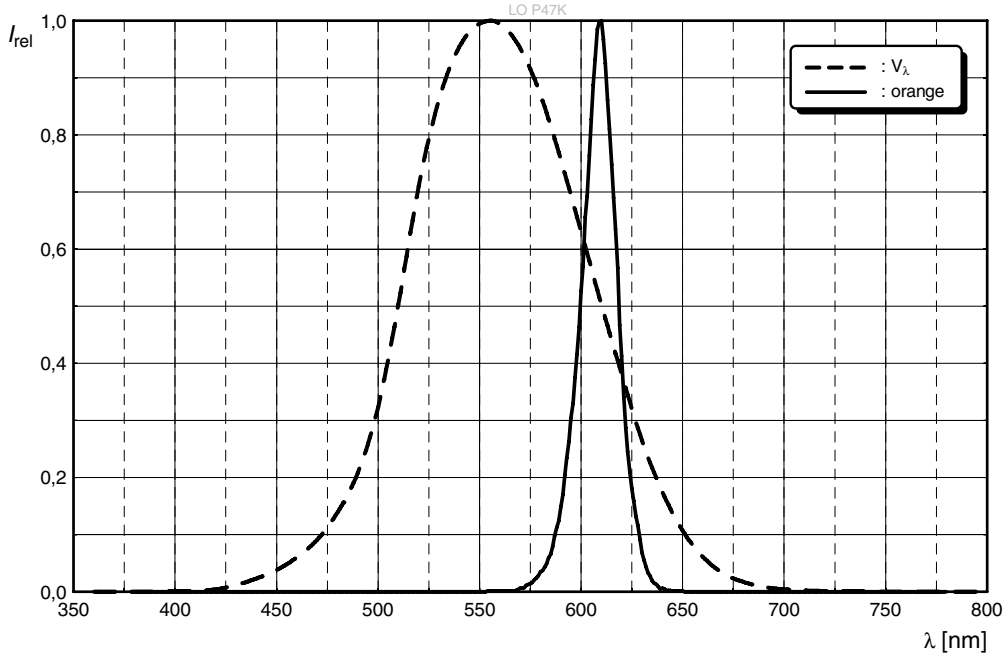
Group Name on Label

Example: K2-2

Brightness	Wavelength
K2	2

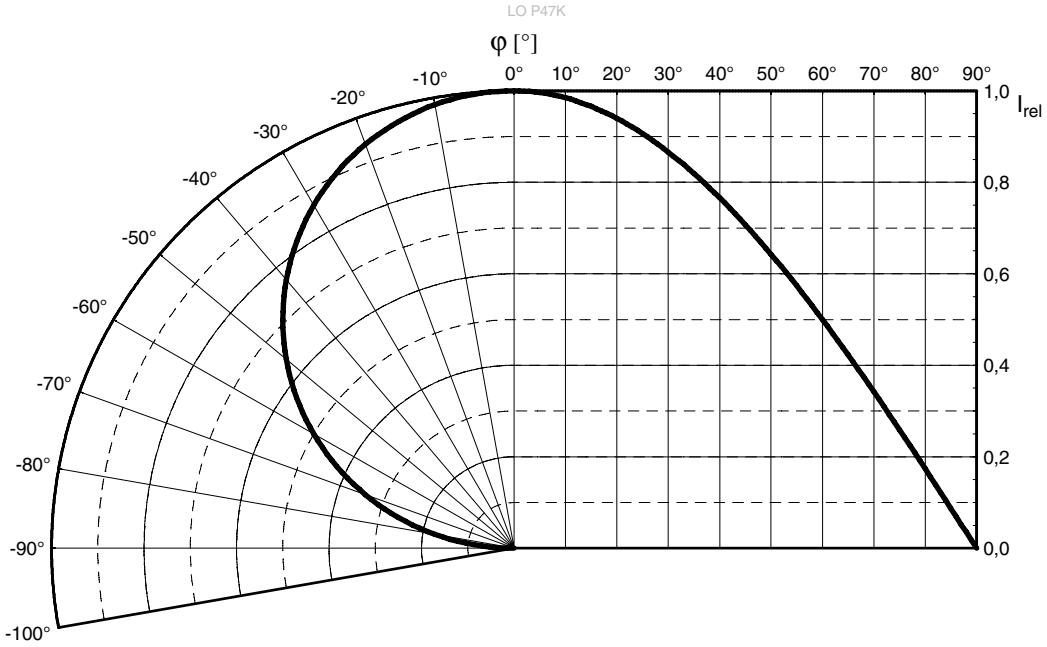
Relative Spectral Emission [7)]

$I_{rel} = f(\lambda)$; I_F = 2 mA; T_S = 25 °C



Radiation Characteristics [7)]

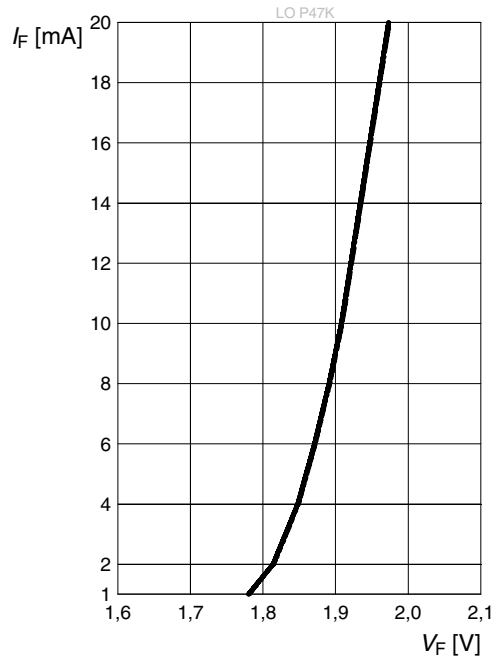
$I_{rel} = f(\phi)$; T_S = 25 °C



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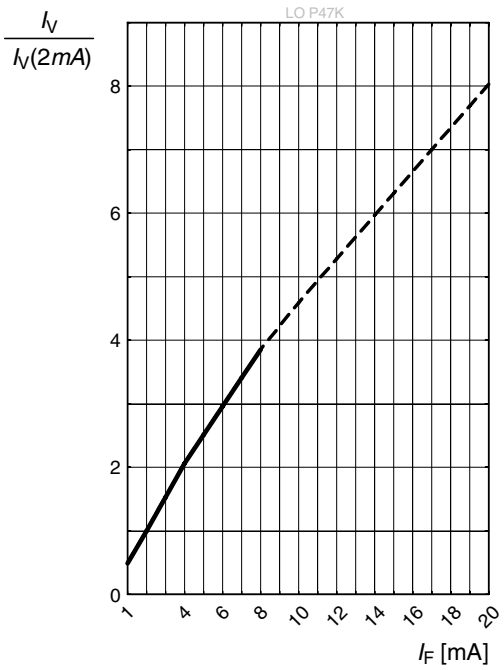
Forward current [7), 8)]

$I_F = f(V_F)$; T_S = 25 °C



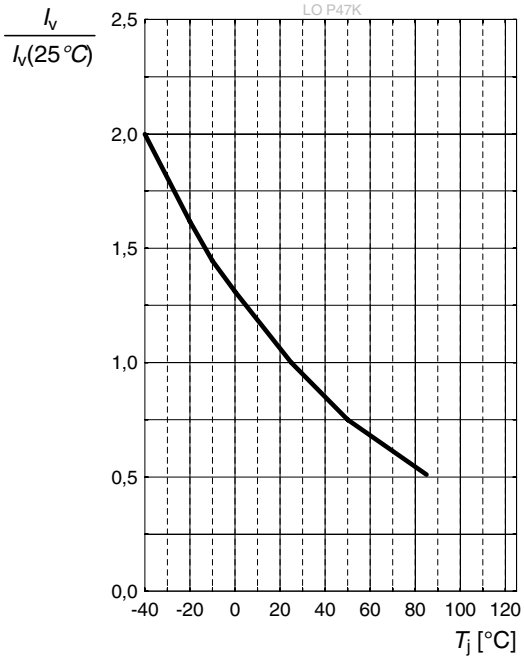
Relative Luminous Intensity [7), 8)]

$I_v/I_v(2\ mA) = f(I_F)$; T_S = 25 °C



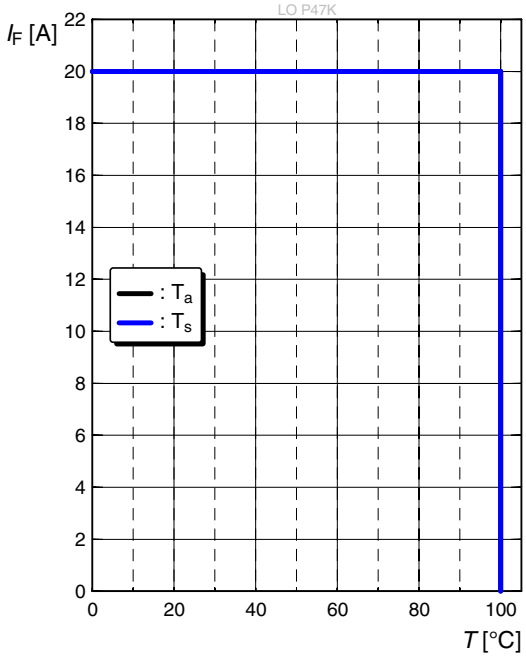
Relative Luminous Intensity [7)]

$I_v/I_v(25\ °C) = f(T_j)$; I_F = 2 mA



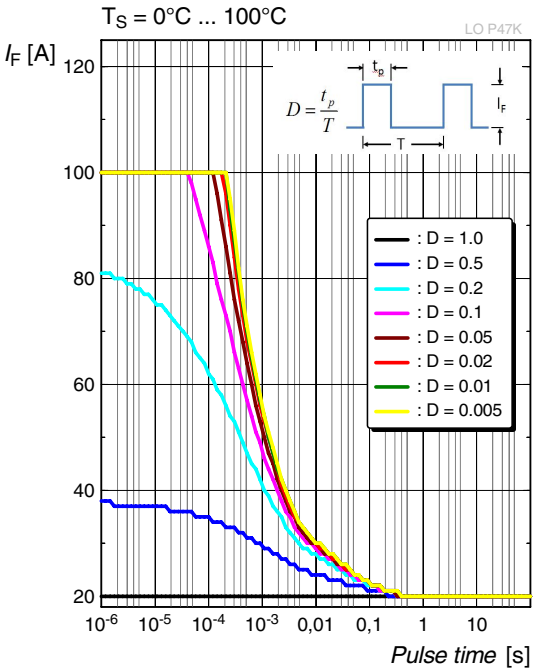
Max. Permissible Forward Current

$I_F = f(T)$

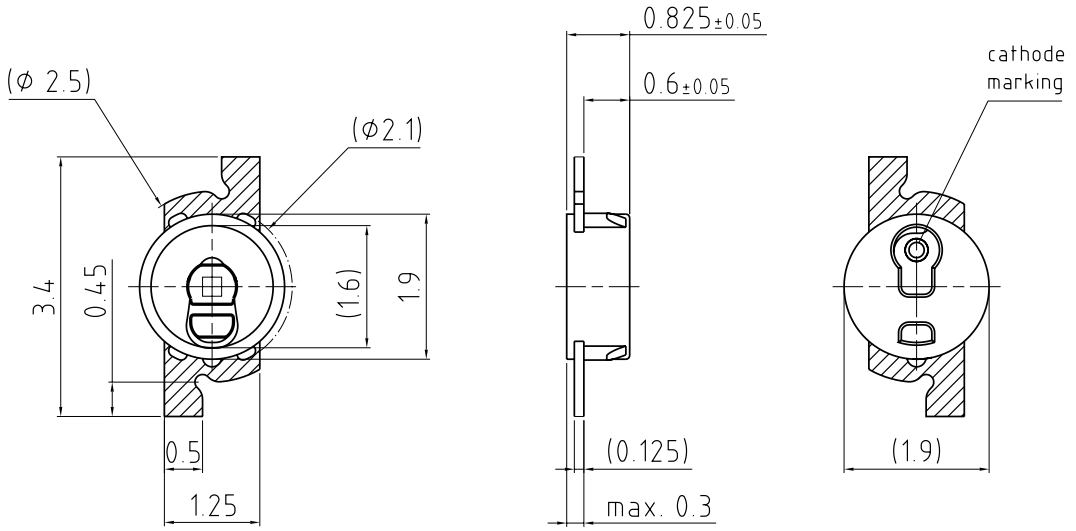


Permissible Pulse Handling Capability

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



Dimensional Drawing [9)]



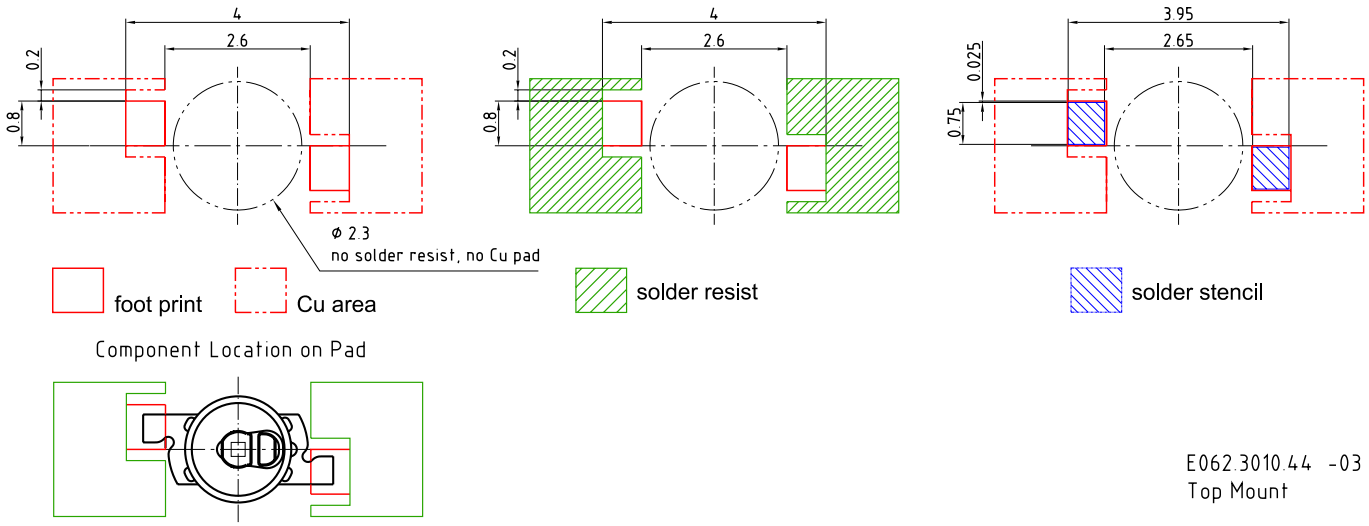
general tolerance ± 0.1
lead finish Sn

C63062-A3773-A10.. -06

Approximate Weight: 6.0 mg

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

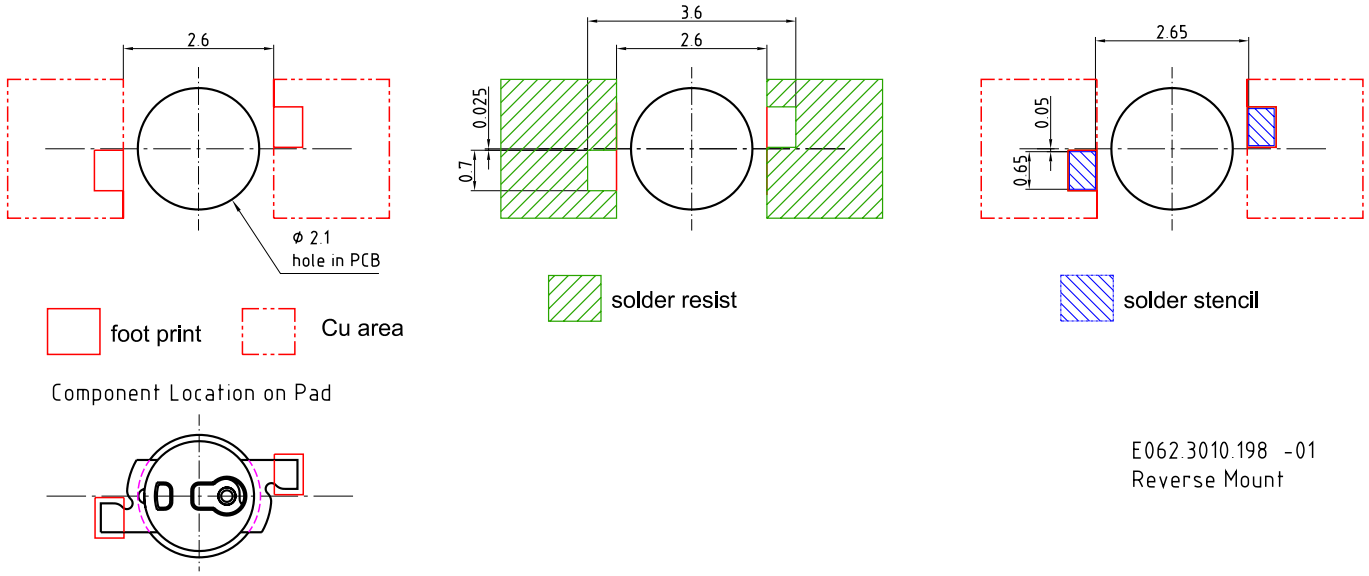
Recommended Solder Pad [9)]



E062.3010.44 -03
Top Mount

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

Recommended Solder Pad [9)]

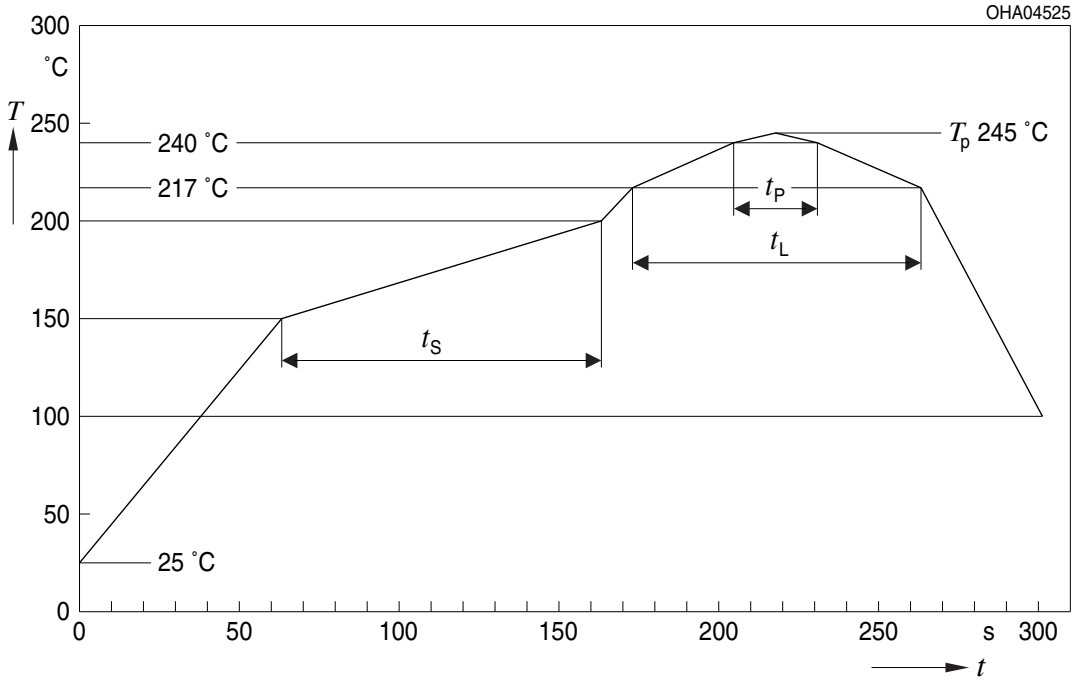


E062.3010.198 -01
Reverse Mount

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

Reflow Soldering Profile

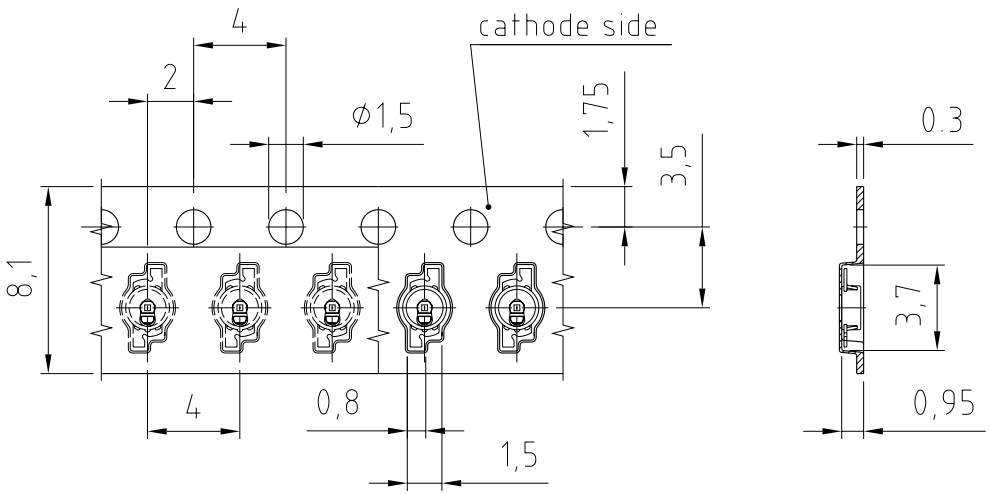
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



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

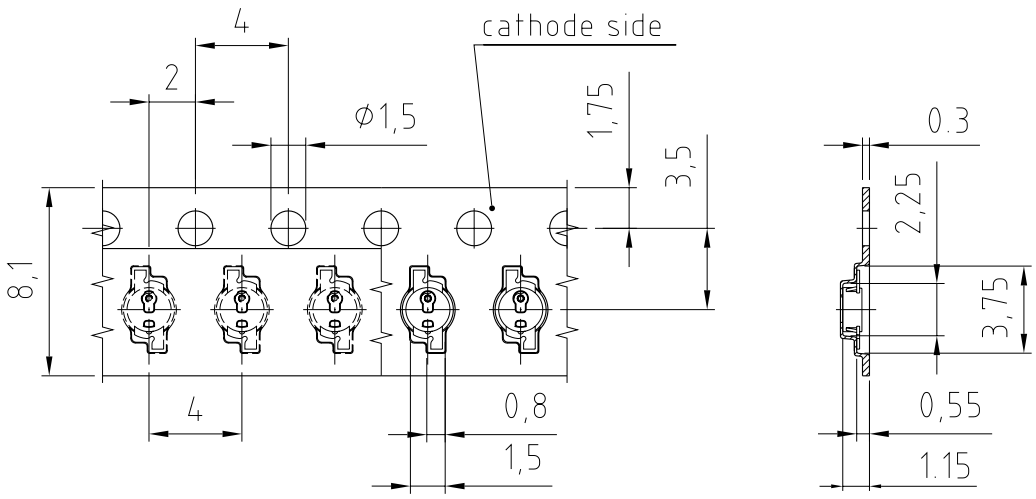
All temperatures refer to the center of the package, measured on the top of the component
* slope calculation DT/Dt: Dt max. 5 s; fulfillment for the whole T-range

Taping [9)]



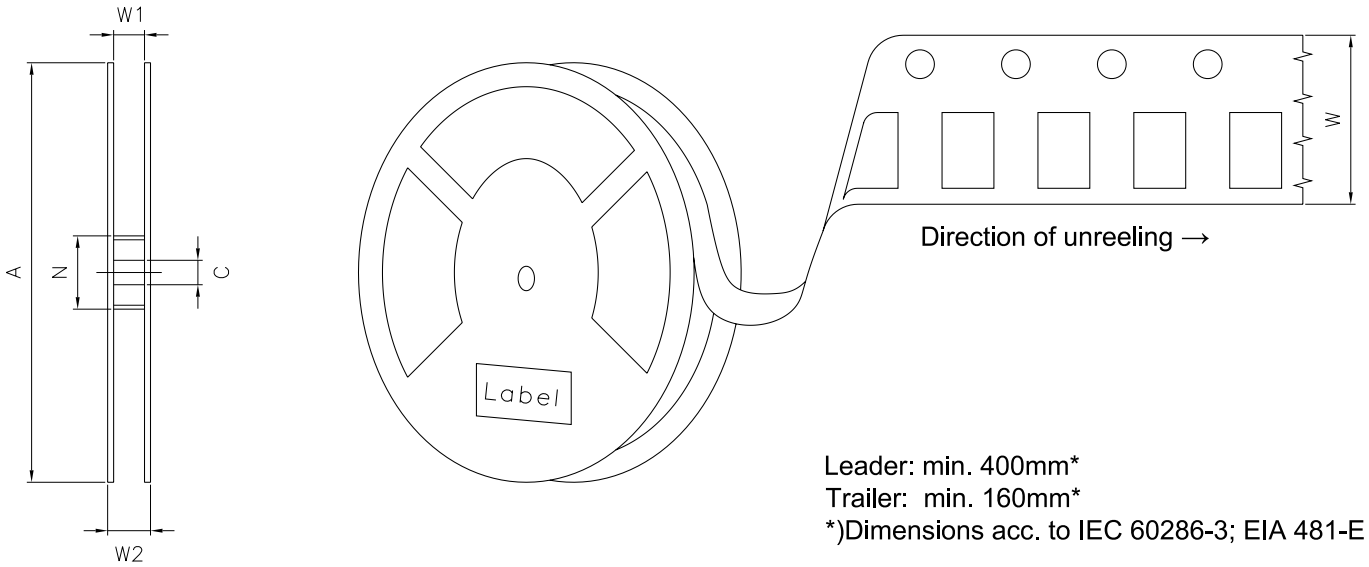
C63062-A3773-B8 -05
Top Mount

Taping [9)]



C63062-A3773-B4 -05
Reverse Mount

Tape and Reel [10)]

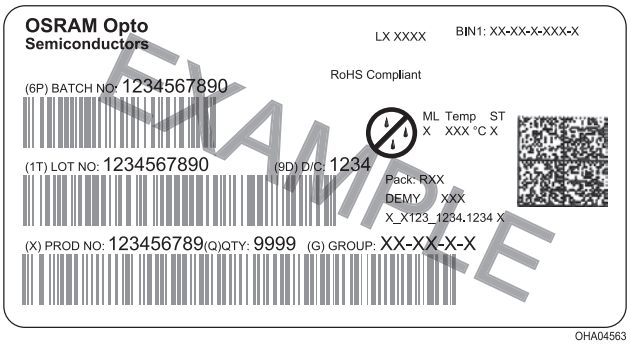


Leader: min. 400mm*
Trailer: min. 160mm*
*)Dimensions acc. to IEC 60286-3; EIA 481-E

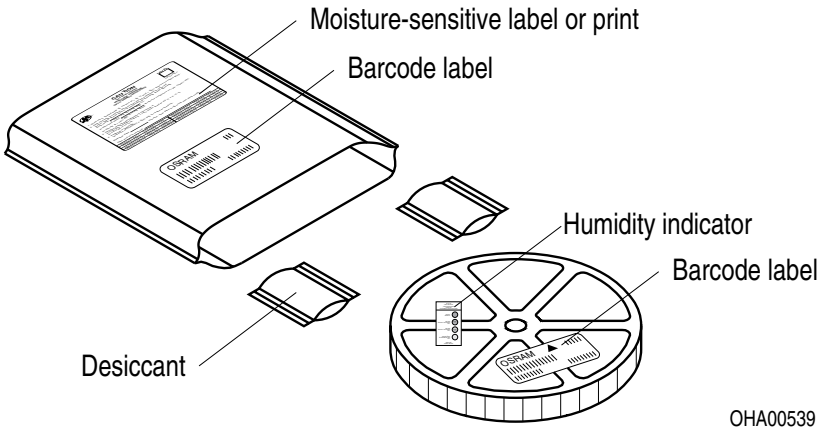
Reel dimensions [mm]

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	3000

Barcode-Product-Label (BPL)

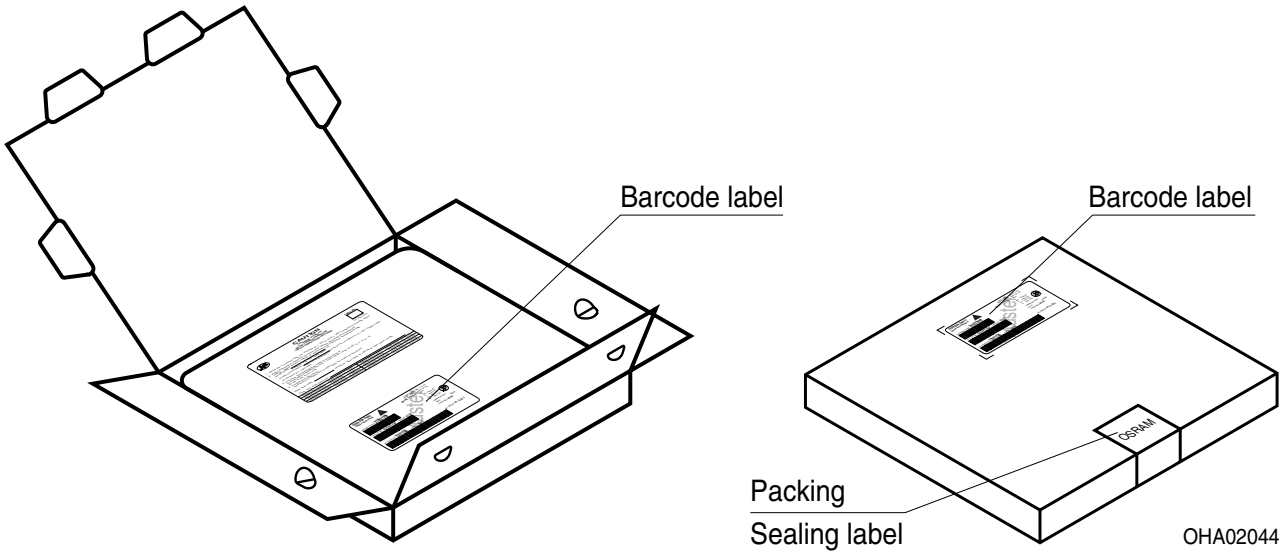


Dry Packing Process and Materials [9)]



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

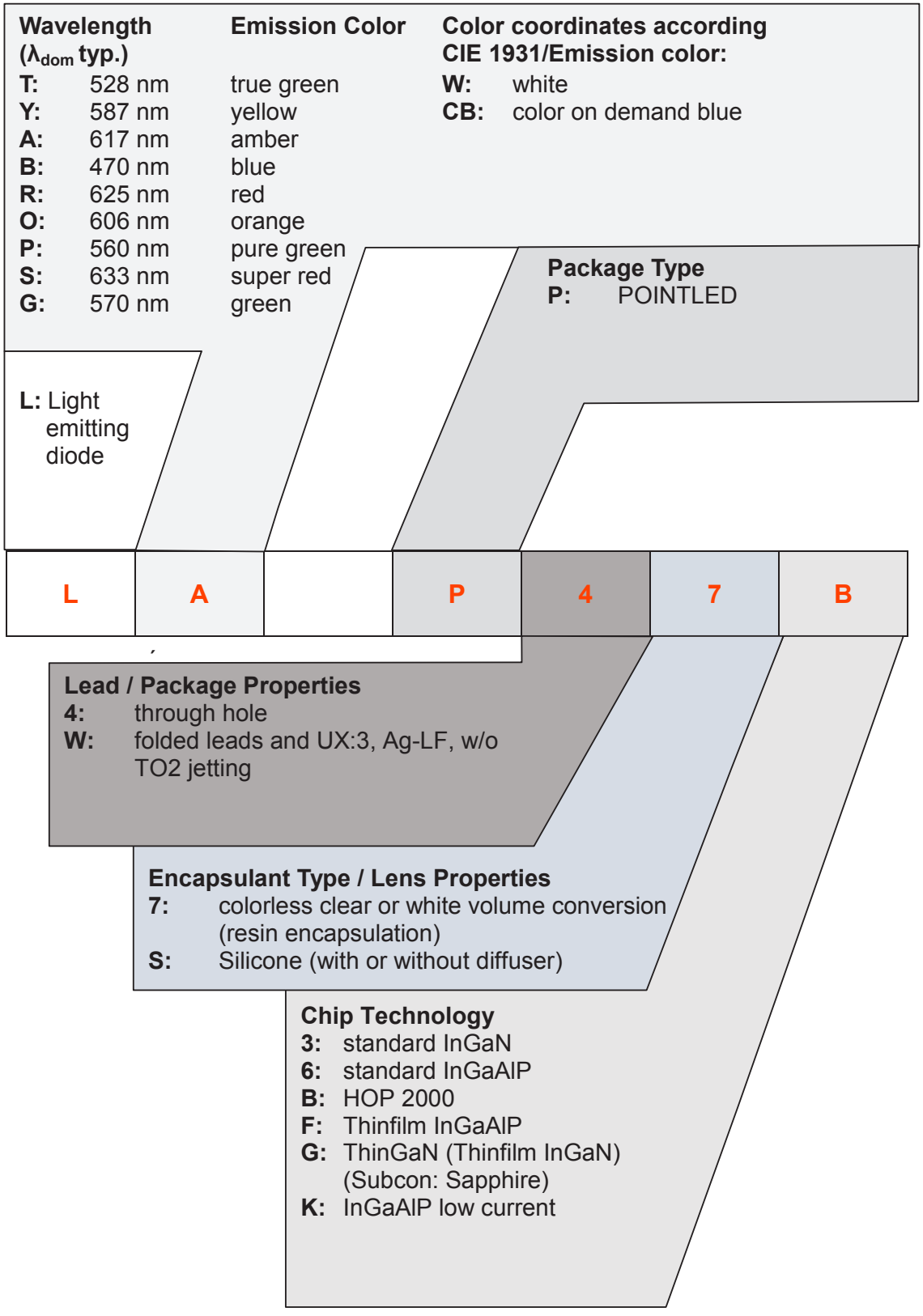
Transportation Packing and Materials [9)]



Dimensions of transportation box in mm

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

Type Designation System



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 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 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

Disclaimer

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

Attention please!
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Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office.
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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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