Ordering Information

Type	Luminous Intensity [1] I_F = 30 mA I_v	Ordering Code
LW E67C-T1V2-5K8L-1	280 ... 1120 mcd	Q65110A1932

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.	110 °C
Forward Current T_S = 25 °C	I_F	max.	30 mA
Surge Current t ≤ 10 µs; D = 0.005 ; T_S = 25 °C	I_{FS}	max.	300 mA
Reverse voltage [2)] T_S = 25 °C	V_R	max.	5 V
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}		2 kV

Characteristics

I_F = 30 mA; T_S = 25 °C

Parameter	Symbol		Values
Chromaticity Coordinate [3]	Cx	typ.	0.33
	Cy	typ.	0.33
Viewing angle at 50 % I_V	2φ	typ.	120 °
Forward Voltage [4]	V_F	min.	2.90 V
I_F = 30 mA		typ.	3.40 V
		max.	4.35 V
Reverse current [2]	I_R	typ.	0.01 µA
V_R = 5 V		max.	10 µA
Real thermal resistance junction/ambient [5], [6]	$R_{thJA\ real}$	max.	350 K / W
Real thermal resistance junction/solderpoint [5]	$R_{thJS\ real}$	max.	180 K / W

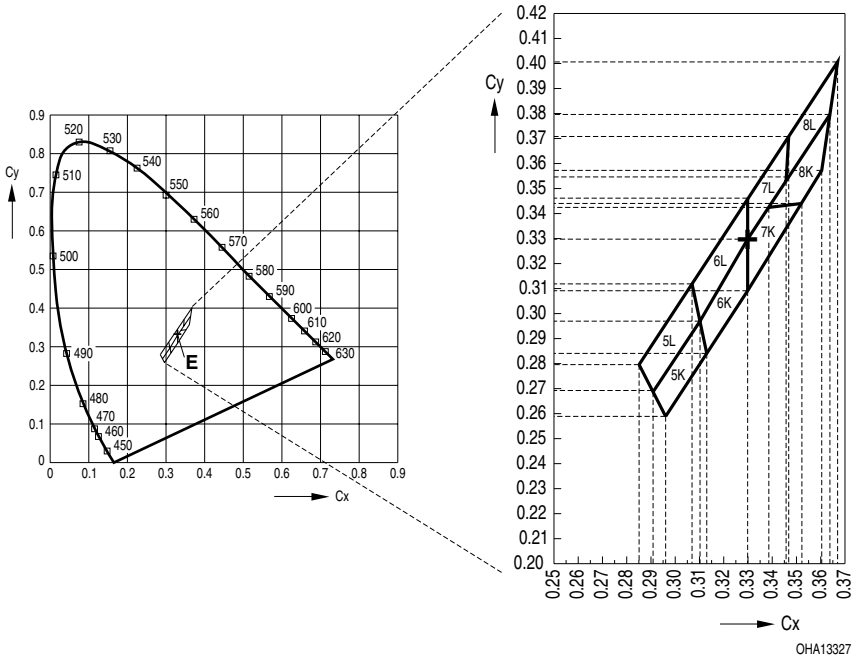
Brightness Groups

Group	Luminous Intensity [1] I_F = 30 mA min. I_v	Luminous Intensity [1] I_F = 30 mA max. I_v	Luminous Flux [7] I_F = 30 mA typ. Φ_V
T1	280 mcd	355 mcd	950 mlm
T2	355 mcd	450 mcd	1210 mlm
U1	450 mcd	560 mcd	1520 mlm
U2	560 mcd	710 mcd	1910 mlm
V1	710 mcd	900 mcd	2420 mlm
V2	900 mcd	1120 mcd	3030 mlm

Forward Voltage Groups

Group	Forward Voltage [4] I_F = 30 mA min. V_F	Forward Voltage [4] I_F = 30 mA max. V_F
2	2.90 V	3.25 V
3	3.25 V	3.80 V
4	3.80 V	4.35 V

Chromaticity Coordinate Groups [3)]



Color Chromaticity Groups [3)]

Group	Cx	Cy
5K	0.2960	0.2590
	0.2910	0.2680
	0.3100	0.2970
	0.3130	0.2840
5L	0.2910	0.2680
	0.2850	0.2790
	0.3070	0.3120
	0.3100	0.2970
6K	0.3130	0.2840
	0.3100	0.2970
	0.3300	0.3300
	0.3300	0.3100

Group	Cx	Cy
6L	0.3100	0.2970
	0.3070	0.3120
	0.3300	0.3470
	0.3300	0.3300
7K	0.3300	0.3100
	0.3300	0.3300
	0.3380	0.3420
	0.3520	0.3440
7L	0.3300	0.3300
	0.3300	0.3470
	0.3470	0.3710
	0.3450	0.3520

Group	Cx	Cy
8K	0.3520	0.3440
	0.3380	0.3420
	0.3640	0.3800
	0.3600	0.3570
8L	0.3450	0.3520
	0.3470	0.3710
	0.3670	0.4010
	0.3640	0.3800

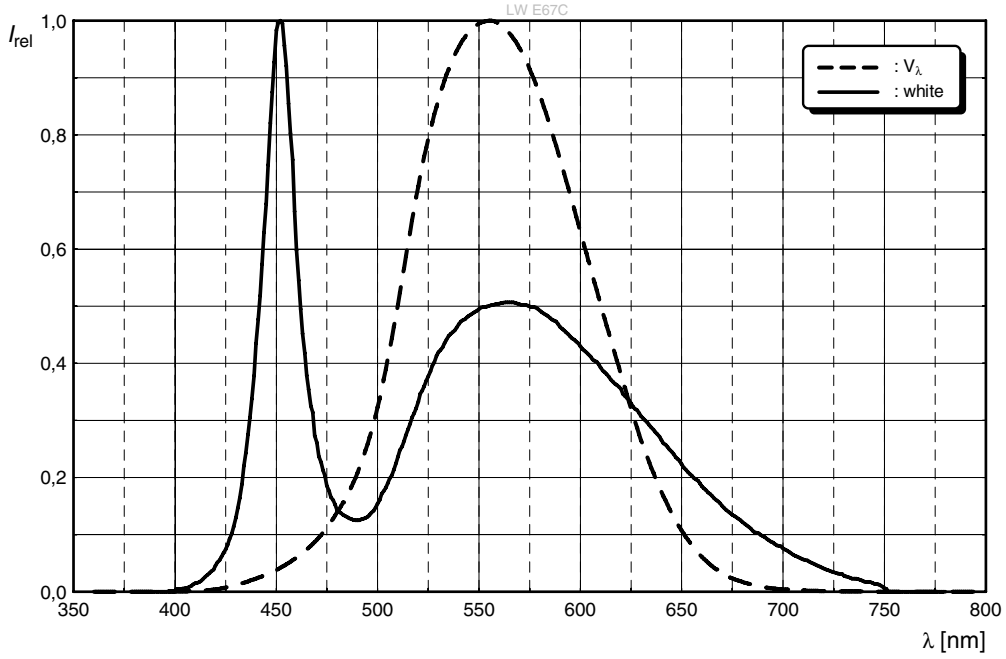
Group Name on Label

Example: T1-5K-2

Brightness	Color chromaticity	Forward Voltage
T1	5K	2

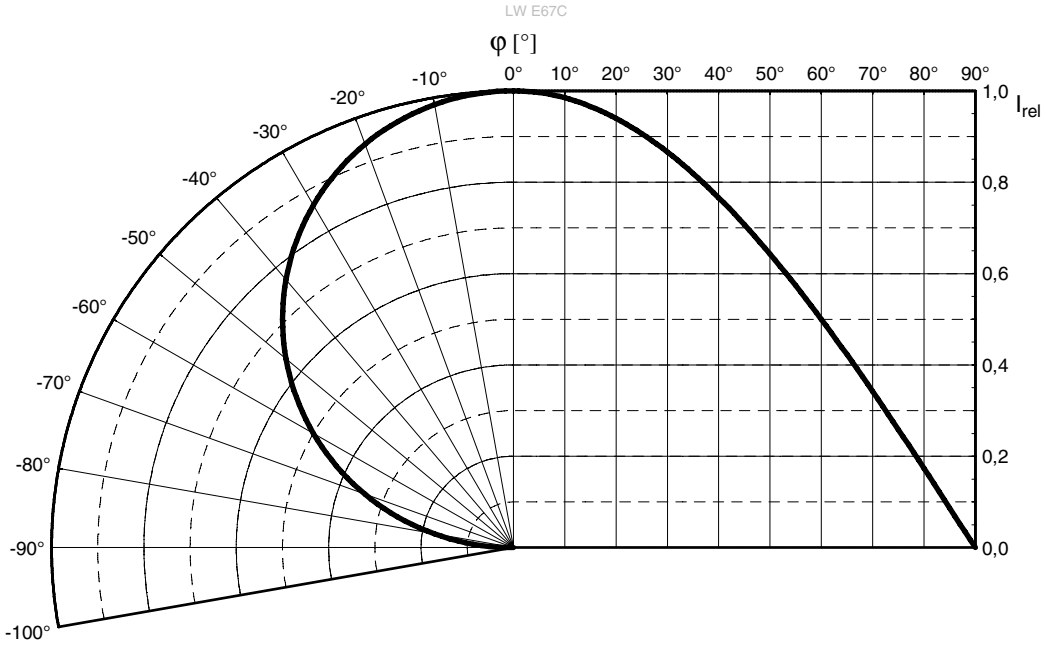
Relative Spectral Emission [7)]

$I_{rel} = f(\lambda)$; $I_F = 30$ mA; $T_S = 25$ °C



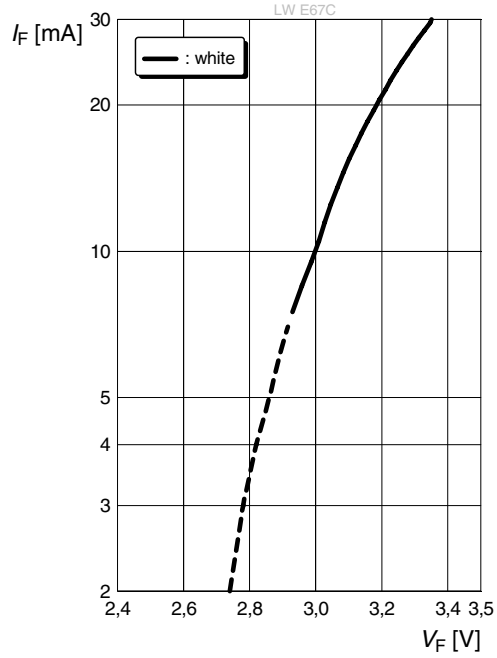
Radiation Characteristics [7)]

$I_{rel} = f(\phi)$; $T_S = 25$ °C



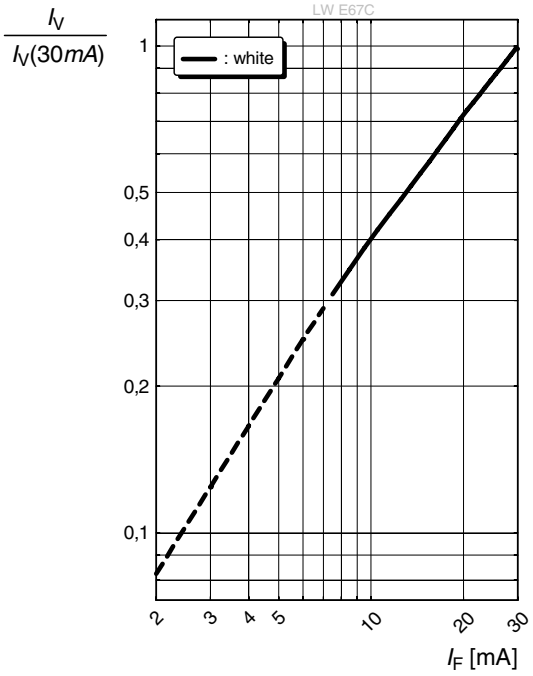
Forward current [7), 8)]

$I_F = f(V_F)$; T_S = 25 °C



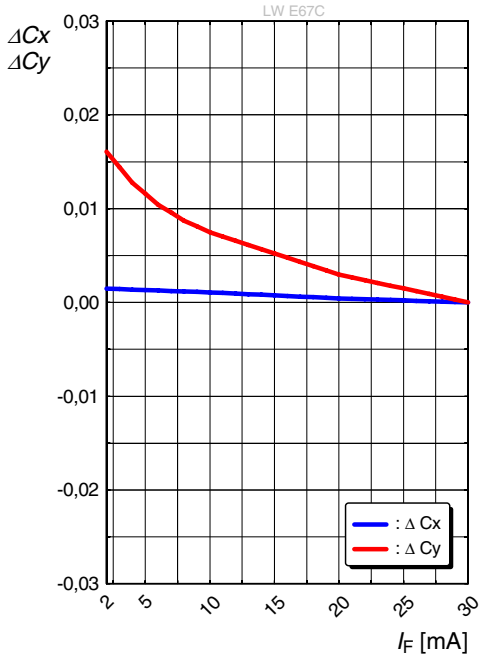
Relative Luminous Intensity [7), 8)]

$I_v/I_v(30\ mA) = f(I_F)$; T_S = 25 °C



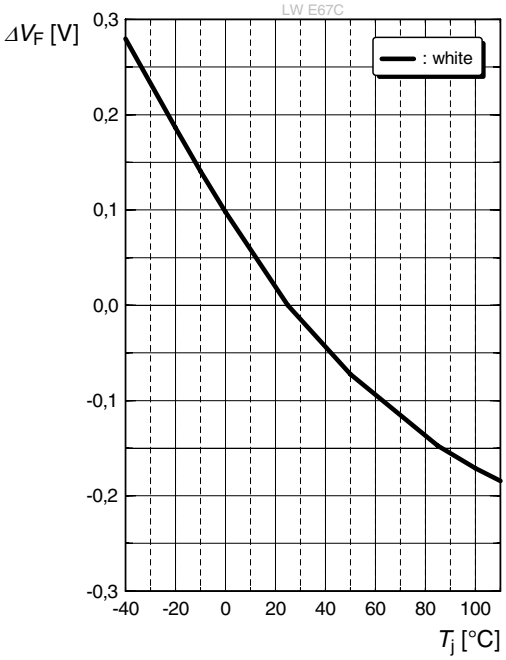
Chromaticity Coordinate Shift [7)]

$\Delta Cx, \Delta Cy = f(I_F)$; T_S = 25 °C



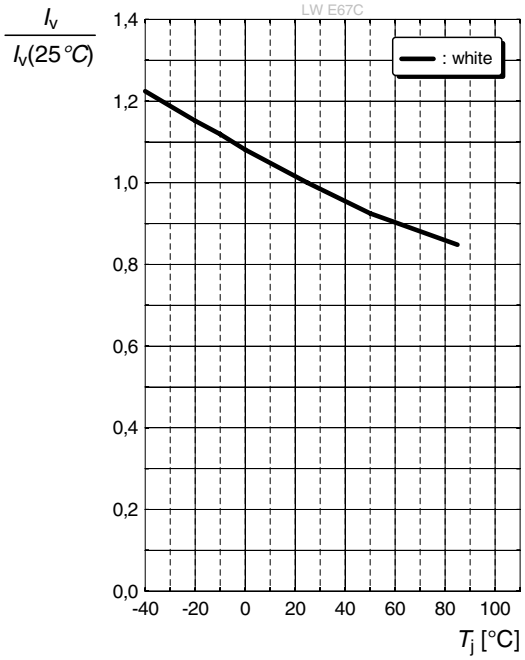
Forward Voltage [7)]

$\Delta V_F = V_F - V_F(25\ °C) = f(T_j);\ I_F = 30\ mA$



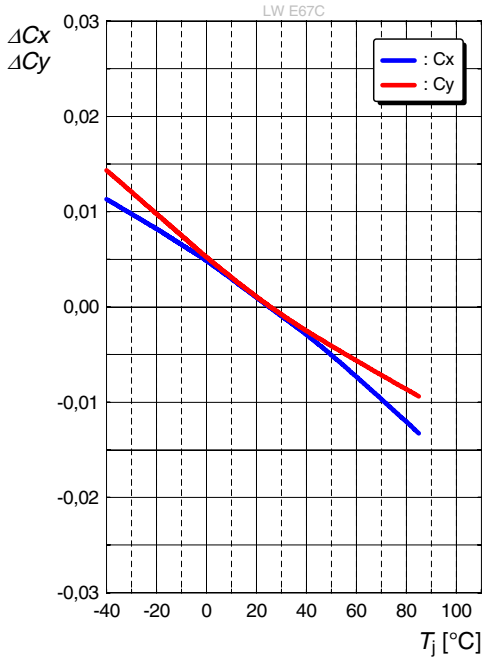
Relative Luminous Intensity [7)]

$I_v/I_v(25\ °C) = f(T_j);\ I_F = 30\ mA$



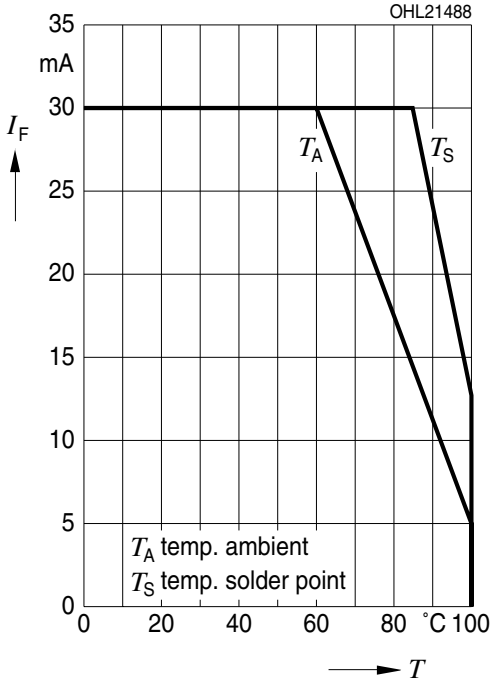
Chromaticity Coordinate Shift [7)]

$\Delta Cx, \Delta Cy = f(T_j);\ I_F = 30\ mA$



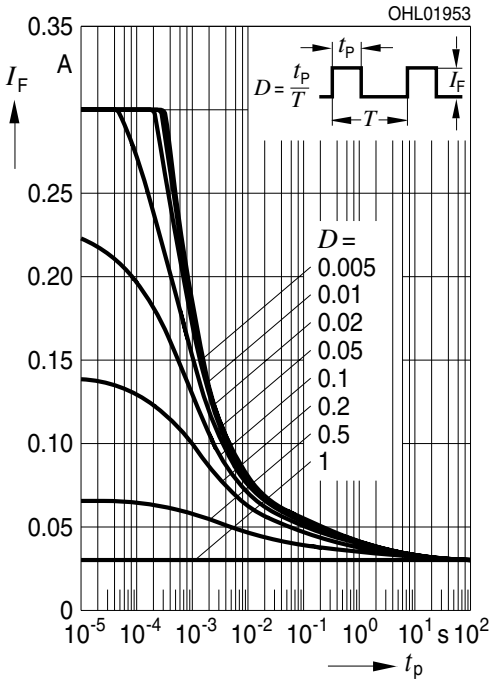
Max. Permissible Forward Current

$I_F = f(T)$



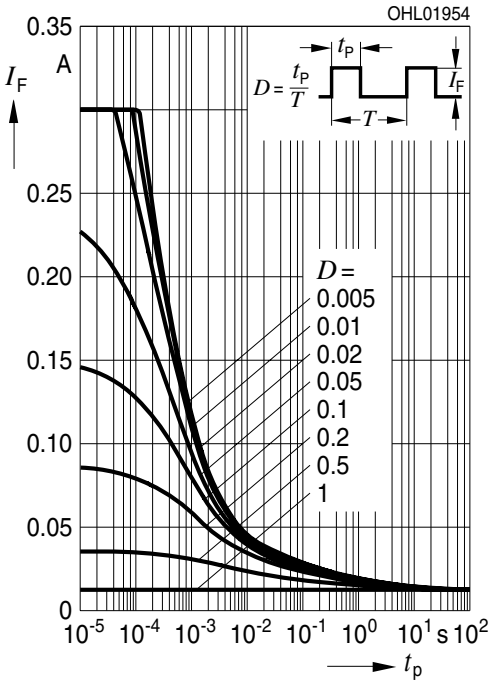
Permissible Pulse Handling Capability

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

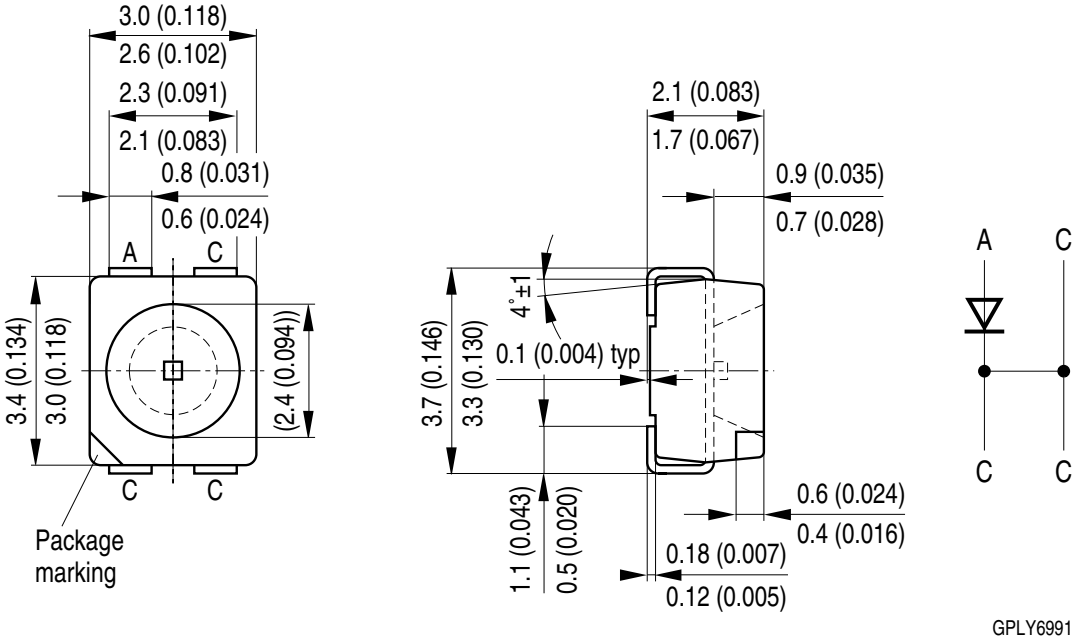


Permissible Pulse Handling Capability

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



Dimensional Drawing [9)]

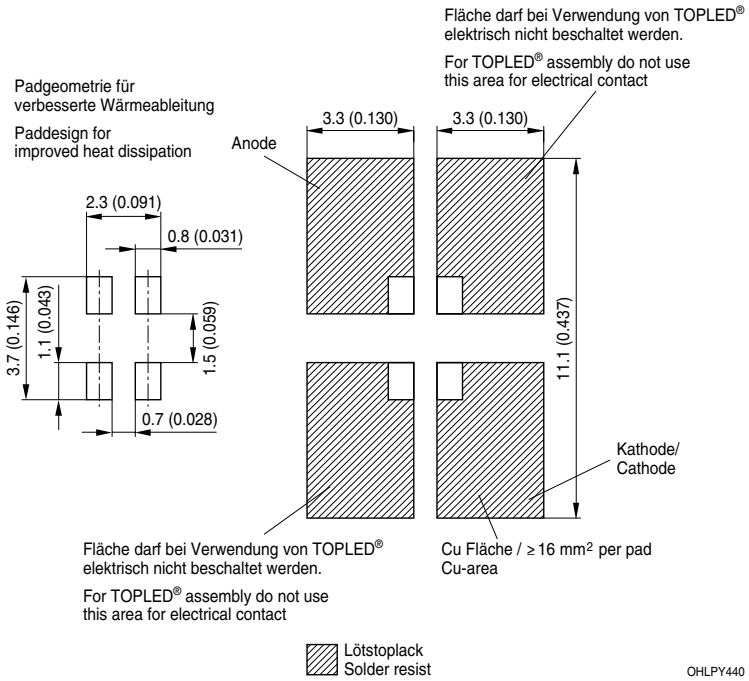


Approximate Weight: 30.0 mg

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)

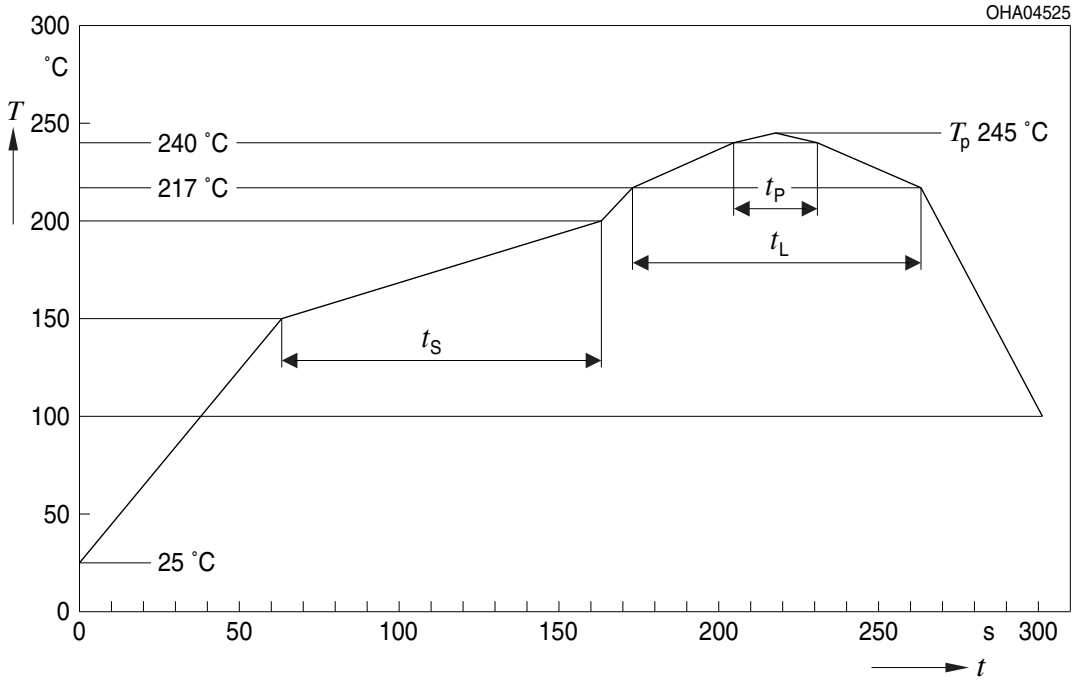
Recommended Solder Pad [9)]



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

Reflow Soldering Profile

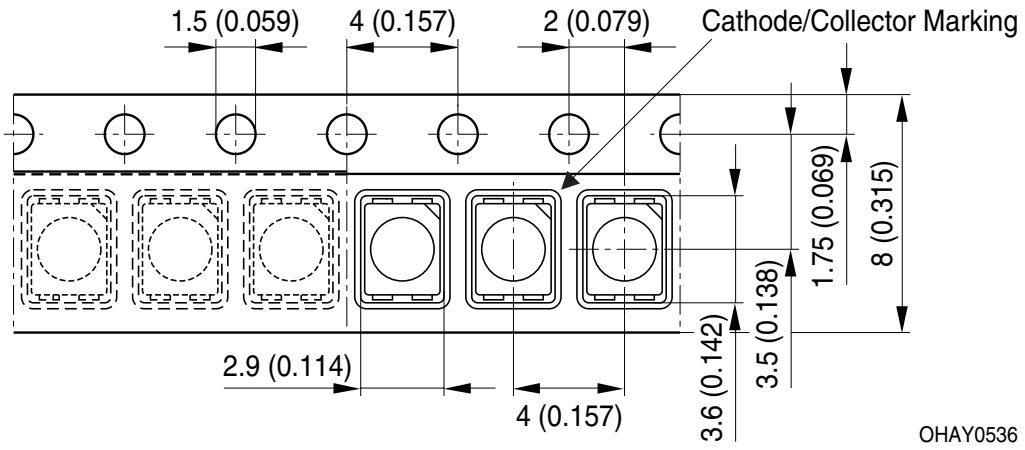
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



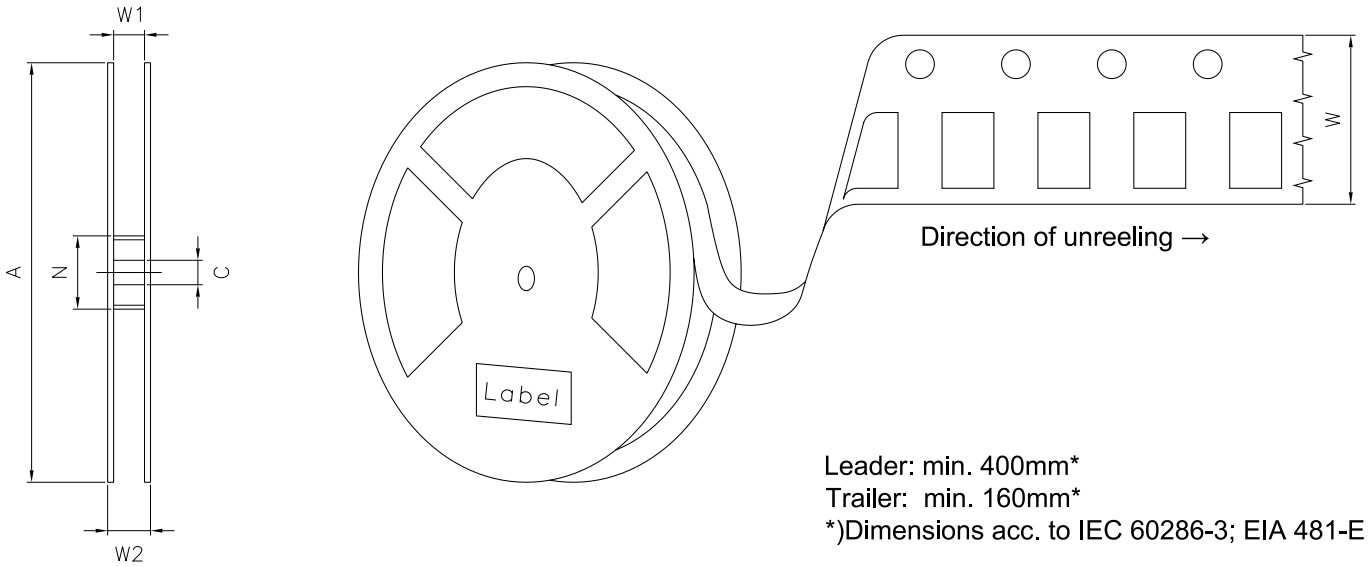
Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	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)]



Tape and Reel [10)]

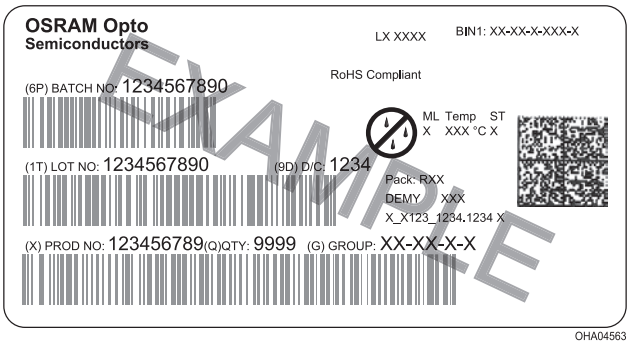


Leader: min. 400mm*
Trailer: min. 160mm*
*)Dimensions acc. to IEC 60286-3; EIA 481-E

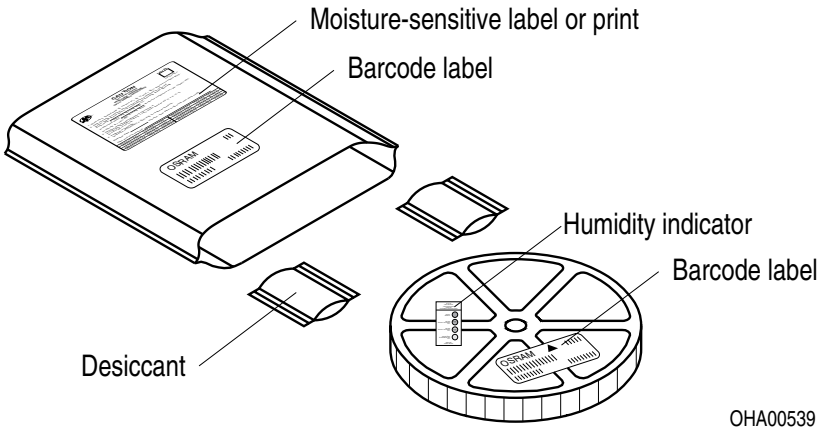
Reel dimensions [mm]

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	2000
330 mm	8 + 0.3 / - 0.1	60	8.4 + 2	14.4	8000

Barcode-Product-Label (BPL)

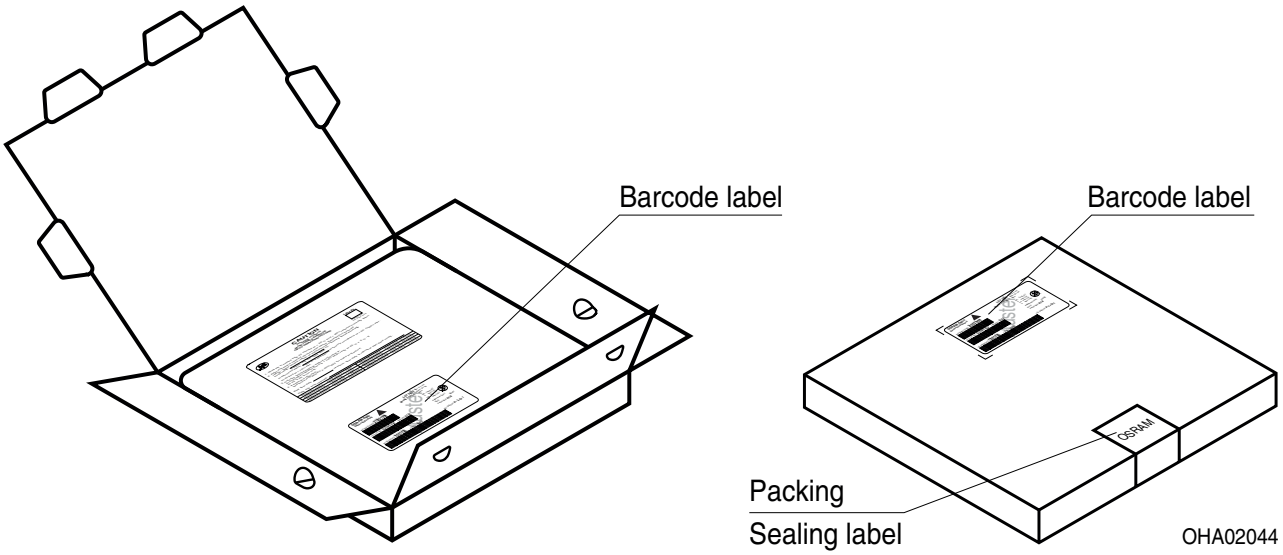


Dry Packing Process and Materials [9)]



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
352 ± 5 mm	352 ± 5 mm	33 ± 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 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!
The information describes the type of component and shall not be considered as assured characteristics.
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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) **Chromaticity coordinate groups**: Chromaticity coordinates are measured during a current pulse of typically 25 ms, with an internal reproducibility of ±0.005 and an expanded uncertainty of ±0.01 (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 16 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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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。

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