SFH 7251

Multi TOPLED®

Infrared Emitter (850 nm) and green GaP-LED (570 nm)

Applications

- Electronic Equipment
- Smart Home, Metering
- White Goods

Features:

- Package: clear epoxy
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- SMT package with IR emitter (850 nm) and green emitter (570 nm)
- Suitable for SMT assembly
- Available on tape and reel
- Emitter and detector can be controlled separately

Ordering Information

Type	Ordering Code
SFH 7251	Q65111A5040)
● green	I_F = 20 mA (Q65111A5040)
● infrared (850 nm)	I_F = 70 mA (Q65111A5040)

Maximum Ratings

T_A = 25 °C

Parameter	Symbol		Values ● green	Values ● infrared (850 nm)
Operating temperature	T_{op}	min. max.	-40 °C 100 °C	-40 °C 100 °C
Storage temperature	T_{stg}	min. max.	-40 °C 100 °C	-40 °C 100 °C
Forward current	I_F	max.	50 mA	70 mA
Surge current $t_p \leq 10$ µs; D = 0	I_{FSM}	max.	0.1 A	0.7 A
Reverse voltage [1)]	V_R	max.	5 V	5 V
Power consumption	P_{tot}	max.	135 mW	140 mW
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}	max.	2 kV	2 kV

Characteristics

T_A = 25 °C

Parameter	Symbol		Values
Green Emitter			
Peak wavelength I_F = 20 mA, t_p = 20 ms	λ_{peak}	typ.	572 nm
Centroid wavelength I_F = 20 mA, t_p = 20 ms	$\lambda_{centroid}$	typ.	570 nm
Spectral bandwidth at 50% $I_{rel,max}$ (FWHM) I_F = 20 mA, t_p = 20 ms	$\Delta\lambda$	typ.	14 nm
Half angle	φ	typ.	± 60 °
Dimensions of chip area	L x W	typ.	0.3 x 0.3 mm x mm
Rise time (10% / 90%) I_F = 20 mA, R_L = 50 Ω	t_r	typ.	400 ns
Fall time (10% / 90%) I_F = 20 mA, R_L = 50 Ω	t_f	typ.	400 ns
Forward voltage I_F = 20 mA, t_p = 20 ms	V_F	typ. max.	2.1 V 2.5 V
Reverse current V_R = 12 V	I_R	typ. max.	0.2 µA 10 µA
Luminous intensity	I_v	min.	63 mcd
Temperature coefficient of brightness I_F = 20 mA, t_p = 20 ms	TC_I	typ.	-0.5 % / K
Temperature coefficient of voltage I_F = 20 mA, t_p = 20 ms	TC_V	typ.	-0.7 mV / K
Temperature coefficient of wavelength I_F = 20 mA, t_p = 20 ms	TC_λ	typ.	0.3 nm / K
Temperature coefficient of wavelength domination I_F = 20 mA, t_p = 20 ms	$TC_{\lambda\ dom}$	typ.	0.11 nm / K

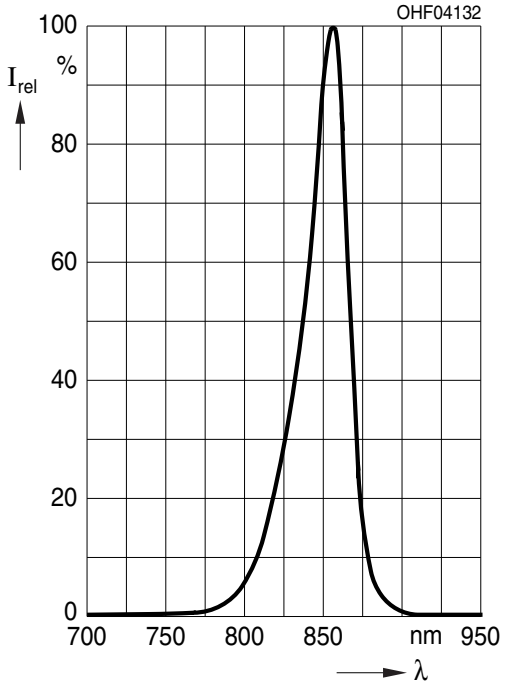
Characteristics

T_A = 25 °C

Parameter	Symbol		Values
Infrared Emitter			
Peak wavelength I_F = 70 mA, t_p = 20 ms	λ_{peak}	typ.	860 nm
Centroid wavelength I_F = 70 mA, t_p = 20 ms	$\lambda_{centroid}$	typ.	850 nm
Spectral bandwidth at 50% $I_{rel,max}$ (FWHM) I_F = 70 mA, t_p = 20 ms	$\Delta\lambda$	typ.	30 nm
Half angle	φ	typ.	± 60 °
Dimensions of chip area	L x W	typ.	0.2 x 0.2 mm x mm
Rise time (10% / 90%) I_F = 70 mA, R_L = 50 Ω	t_r	typ.	12 ns
Fall time (10% / 90%) I_F = 70 mA, R_L = 50 Ω	t_f	typ.	12 ns
Forward voltage I_F = 70 mA, t_p = 20 ms	V_F	typ. max.	1.6 V 2 V
Forward voltage I_F = 500 mA, t_p = 100 µs	V_F	typ. max.	2.4 V 3 V
Reverse current V_R = 5 V	I_R	typ. max.	not designed for reverse operation
Total radiant flux I_F = 70 mA, t_p = 20 ms	Φ_e	typ.	40 mW
Radiant intensity I_F = 70 mA, t_p = 20 ms	I_e	min. typ.	6.3 mW / sr 12 mW / sr
Temperature coefficient of brightness I_F = 70 mA, t_p = 20 ms	TC_I	typ.	-0.5 % / K
Temperature coefficient of voltage I_F = 70 mA, t_p = 20 ms	TC_V	typ.	-0.7 mV / K
Temperature coefficient of wavelength I_F = 70 mA, t_p = 20 ms	TC_λ	typ.	0.3 nm / K

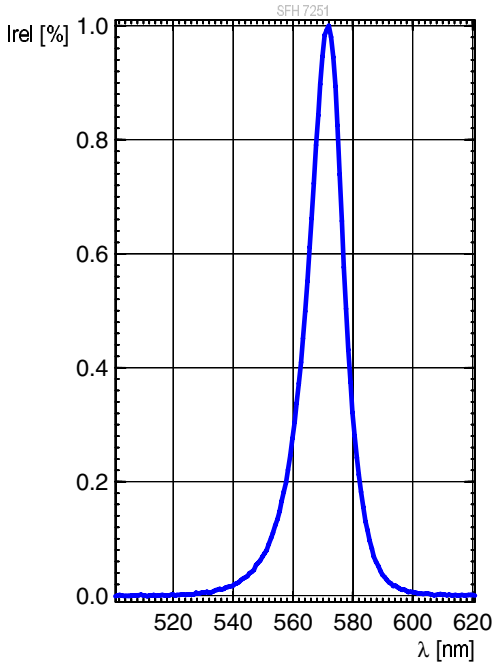
Relative Spectral Emission [2)]

- infrared (850 nm): $I_{e,rel} = f(\lambda)$; I_F = 70 mA; t_p = 20 ms



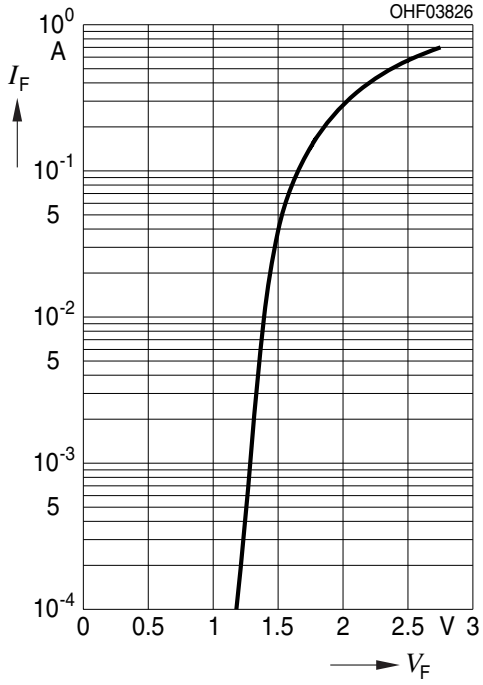
Relative Spectral Emission [2), 3)]

- green: $I_{e,rel} = f(\lambda)$; I_F = 20 mA; t_p = 20 ms



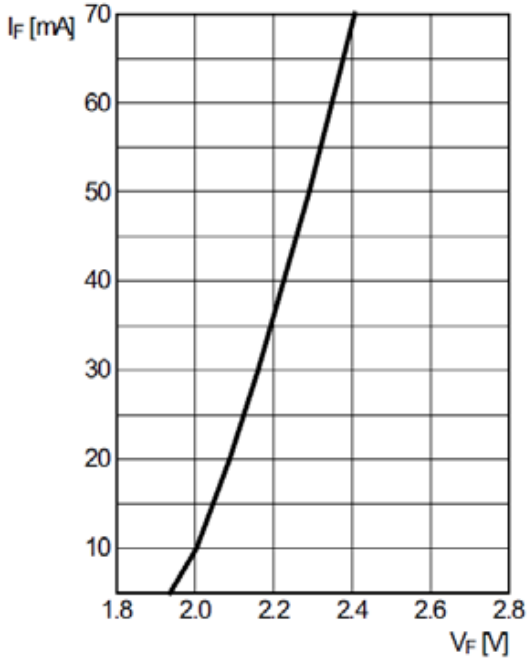
Forward current [2]

- infrared (850 nm): $I_F = f(V_F)$; single pulse; $t_p = 20$ ms



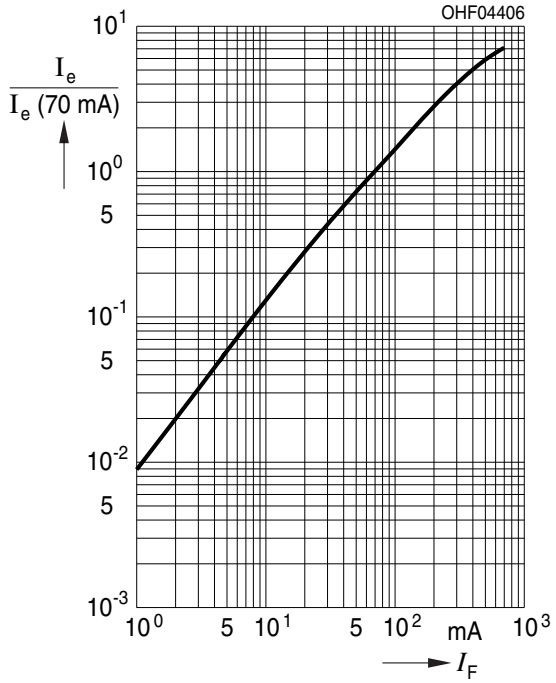
Forward current [2]

- green: $I_F = f(V_F)$; single pulse; $t_p = 20$ ms



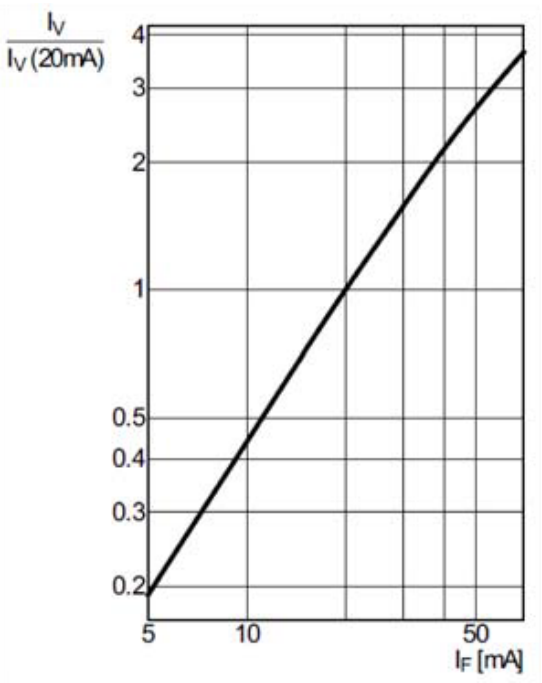
Relative Radiant Intensity [2], [3]

- infrared (850 nm): $I_E/I_E(70\ mA) = f(I_F)$; $T_A = 25$ °C



Relative Luminous Intensity [2], [3]

- green: $I_E/I_E(20\ mA) = f(I_F)$; $T_A = 25$ °C



Max. Permissible Forward Current

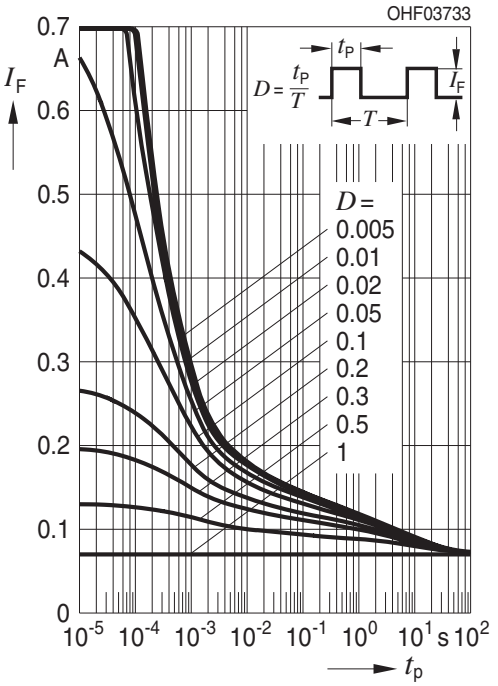
● infrared (850 nm): $I_{F,max} = f(T_A)$; single pulse

Max. Permissible Forward Current

● green: $I_{F,max} = f(T_A)$; single pulse

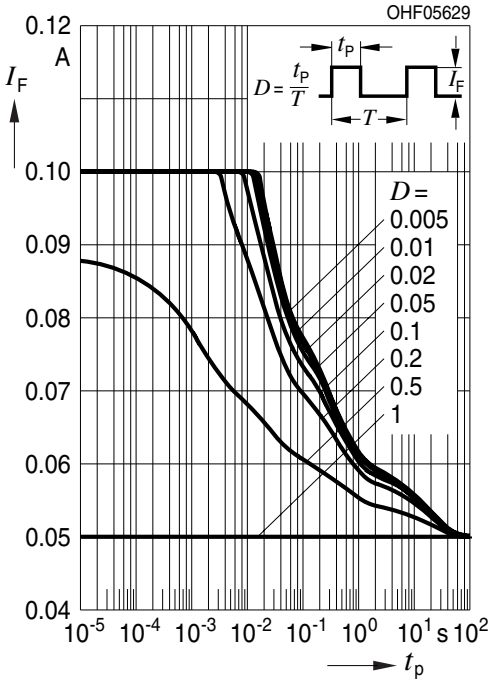
Permissible Pulse Handling Capability

● infrared (850 nm): $I_F = f(t_p)$; D = parameter; T_A = 25°C

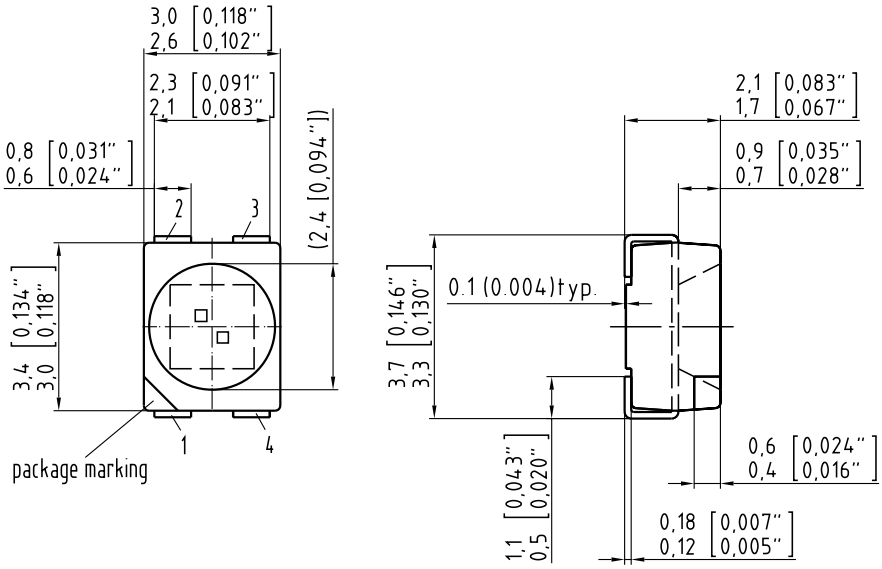


Permissible Pulse Handling Capability

● green: $I_F = f(t_p)$; D = parameter; T_A = 85°C



Dimensional Drawing [4)]



C63062-A4175-A1-02

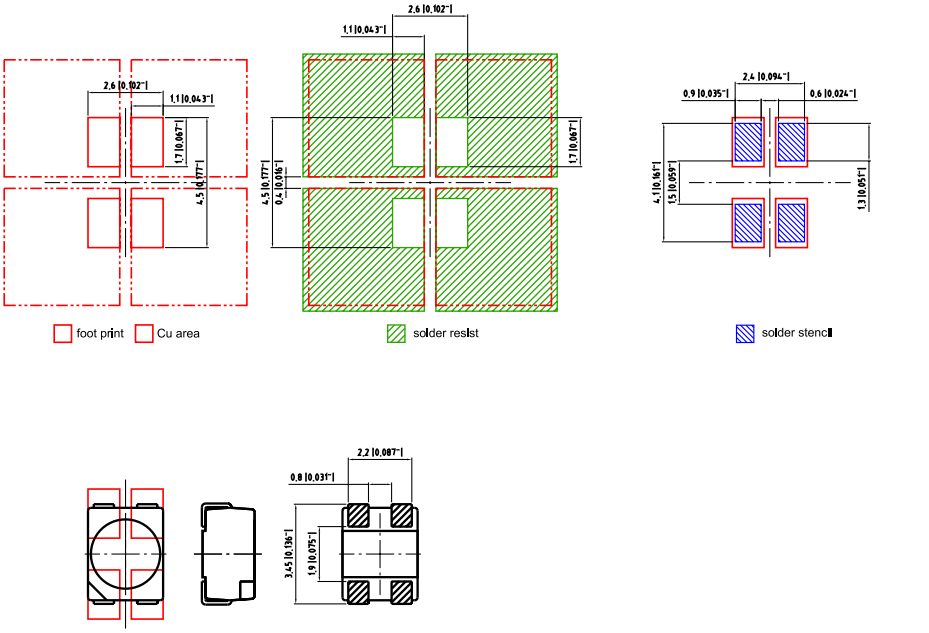
Further Information:

Approximate Weight: 34.0 mg

Package marking: Cathode

Pin	Description
1	Cathode Emitter 1 (850 nm)
2	Anode Emitter 1 (850 nm)
3	Cathode Emitter 2 (570 nm)
4	Anode Emitter 2 (570 nm)

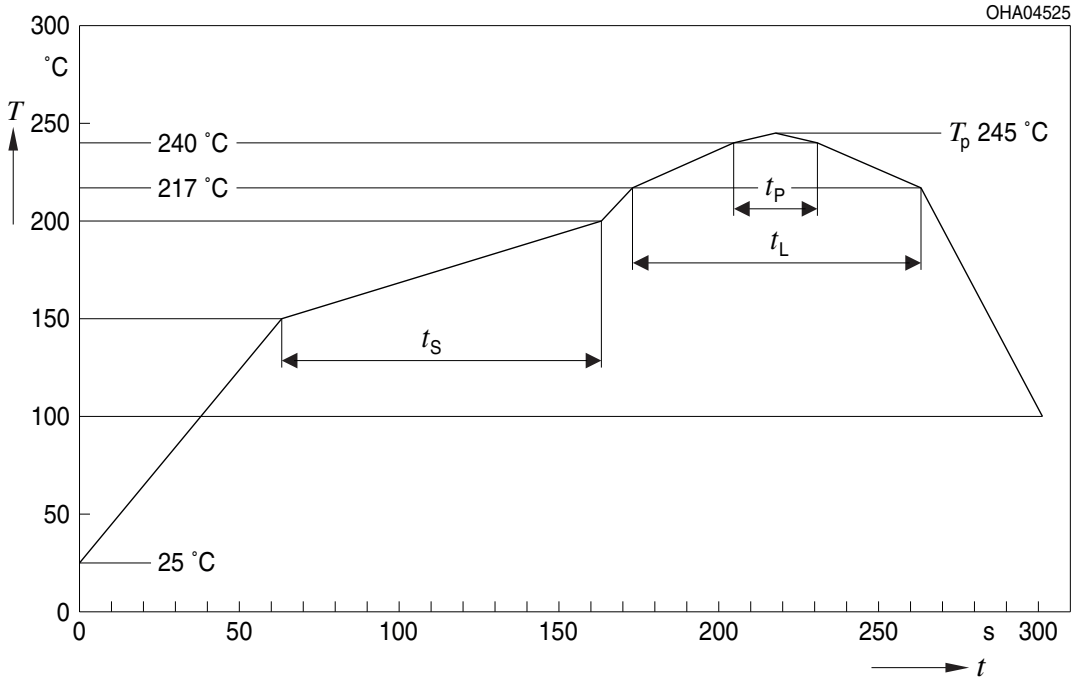
Recommended Solder Pad [4)]



E062.3010.148 -01

Reflow Soldering Profile

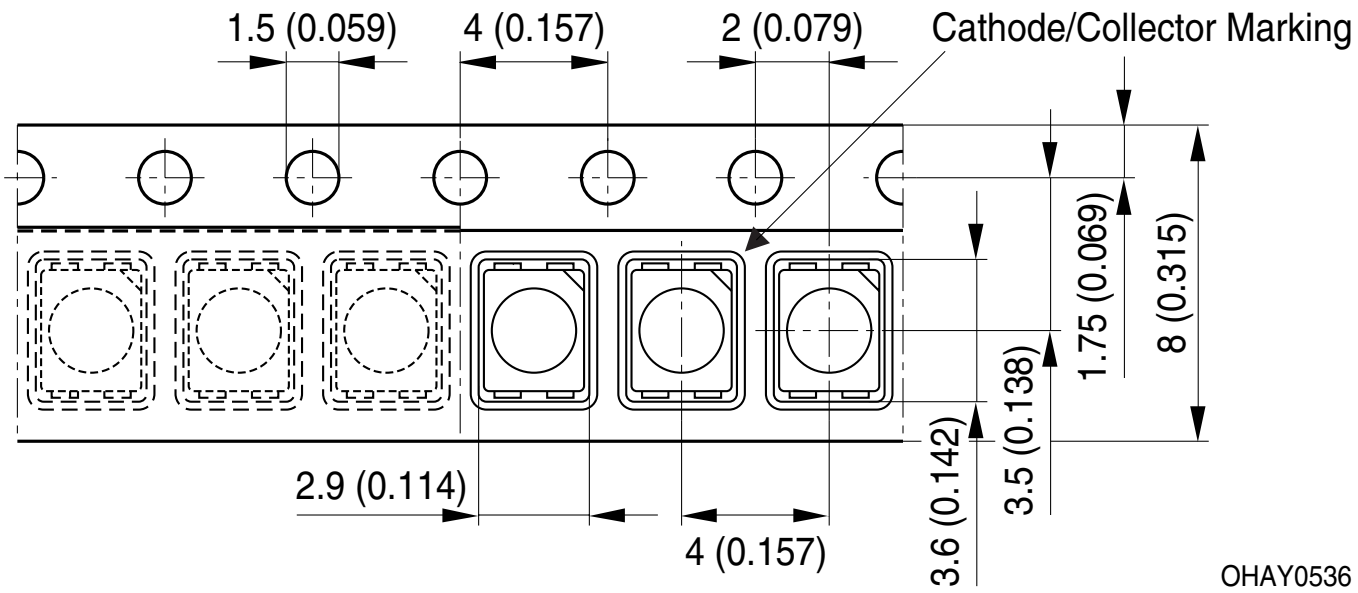
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



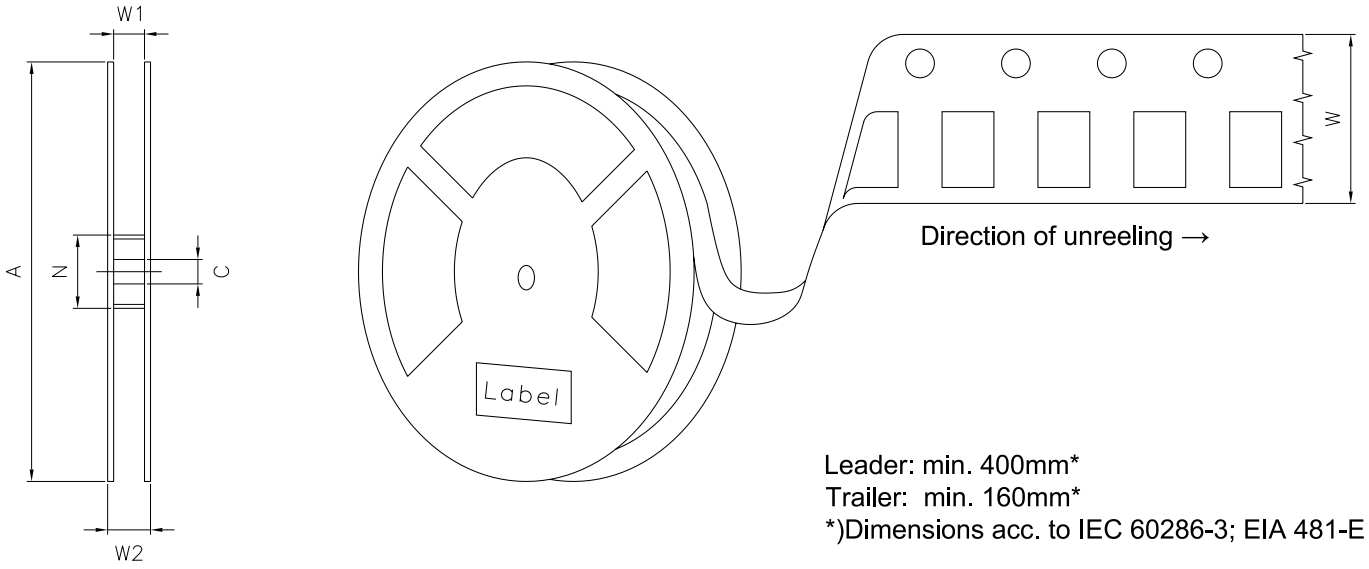
Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	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 [4)]


1.5 (0.059)
4 (0.157)
2 (0.079)
Cathode/Collector Marking
1.75 (0.069)
8 (0.315)
3.5 (0.138)
3.6 (0.142)
2.9 (0.114)
4 (0.157)
OHAY0536

Tape and Reel [5)]

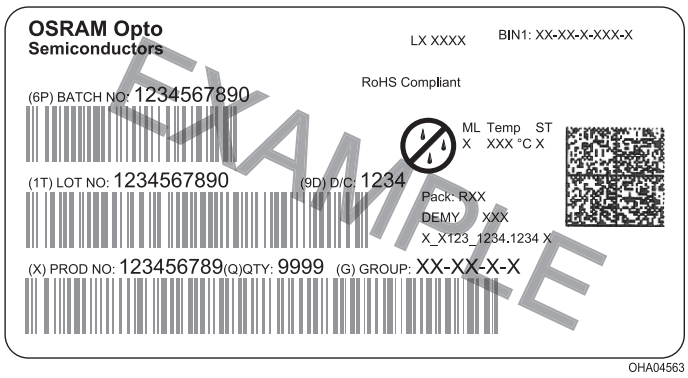


Leader: min. 400mm*
Trailer: min. 160mm*
*)Dimensions acc. to IEC 60286-3; EIA 481-E

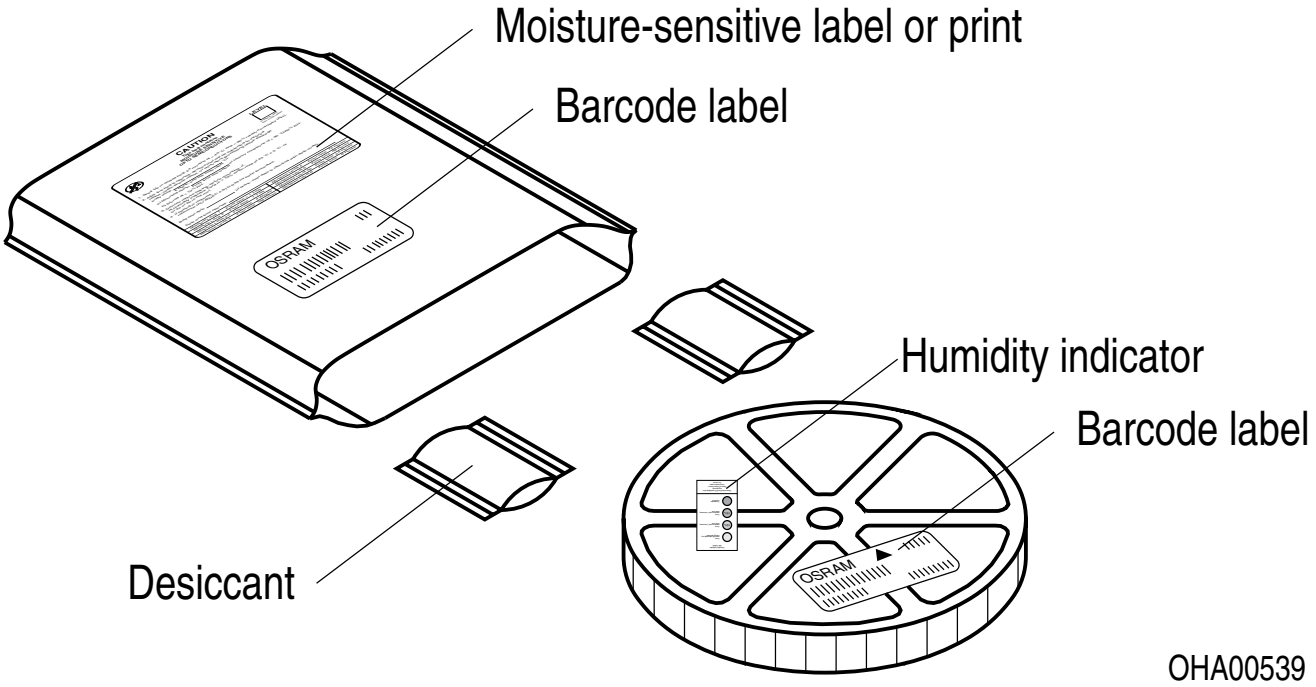
Reel Dimensions

A	W	N_{min}	W_1	$W_{2\,max}$	Pieces per PU
180 mm	8 + 0.3 / - 0.1 mm	60 mm	8.4 + 2 mm	14.4 mm	2000
330 mm	8 + 0.3 / - 0.1 mm	60 mm	8.4 + 2 mm	14.4 mm	8000

Barcode-Product-Label (BPL)



Dry Packing Process and Materials [4)]



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 **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 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.
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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.
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Glossary

1) **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.

2) **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.

3) **Testing temperature:** TA = 25°C (unless otherwise specified)

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

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

Revision History

Version	Date	Change
1.4	2021-08-26	Schematic Transportation Box Dimensions of Transportation Box New Layout

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

EU RoHS and China RoHS compliant product

此产品符合欧盟 RoHS 指令的要求；
按照中国的相关法规和标准，不含有毒有害物质或元素。