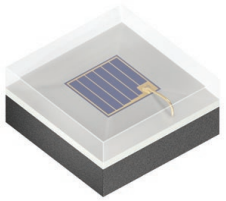
SFH 4180S A01



OSLON® Piccolo

High Power Infrared Emitter (940 nm)

Applications

- Access Control (IRIS/Vein Scan, Face Recognition)
- CCTV Surveillance
- Driver Monitoring / Seat Occupancy Detection
- Eye Tracking
- Gesture Recognition
- Safety and Security, CCTV

Features:

- Package: clear silicone
- Corrosion Robustness Class: 3B
- Qualifications: AEC-Q102 Qualified
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM)
- IR lightsource with high efficiency
- Double stack emitter
- Centroid wavelength 940 nm

Ordering Information

Type	Total radiant flux [1)2)] I_F = 1000 mA; t_p = 10 ms Φ_e	Total radiant flux [1)] typ. I_F = 1000 mA; t_p = 10 ms Φ_e	Ordering Code
SFH 4180S A01	1000 ... 1400 mW	1.15 W	Q65112A9067

Maximum Ratings

T_A = 25 °C

Parameter	Symbol		Values
Operating temperature	T_{op}	min. max.	-40 °C 105 °C
Storage temperature	T_{stg}	min. max.	-40 °C 105 °C
Junction temperature	T_j	max.	145 °C
Forward current	I_F	max.	1000 mA
Surge current $t_p \leq 10$ ms	I_{FSM}	max.	2 A
Reverse voltage [3)]	V_R	max.	5 V
Power consumption	P_{tot}	max.	3300 mW
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM)	V_{ESD}	max.	2 kV

Note: For the forward current and power consumption please see “maximum permissible forward current” diagram.

Characteristics

I_F = 1000 mA; t_p = 10 ms; T_A = 25 °C

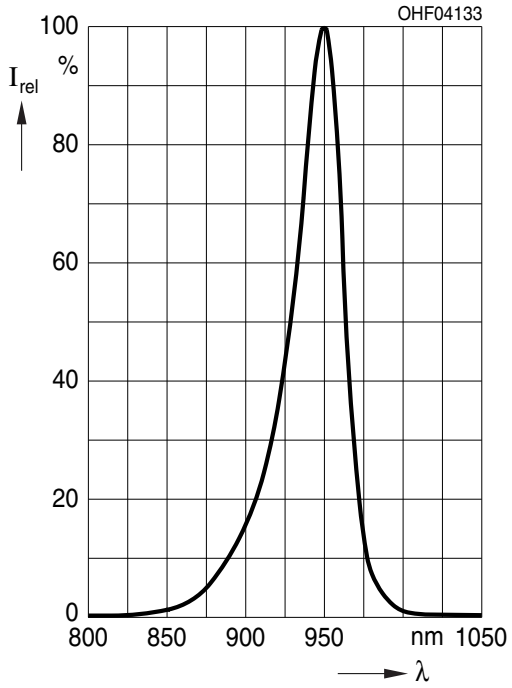
Parameter	Symbol		Values
Peak wavelength	λ_{peak}	typ.	950 nm
Centroid wavelength	$\lambda_{centroid}$	typ.	940 nm
Spectral bandwidth at 50% $I_{rel,max}$ (FWHM)	$\Delta\lambda$	typ.	37 nm
Half angle	φ	typ.	65 °
Dimensions of chip area	L x W	typ.	0.75 x 0.75 mm x mm
Rise time (10% / 90%) I_F = 1000 mA	t_r	typ.	9 ns
Fall time (10% / 90%) I_F = 1000 mA	t_f	typ.	16 ns
Forward voltage [4]	V_F	typ. max.	2.95 V 3.2 V
Forward voltage [4] I_F = 2 A; t_p = 100 µs	V_F	typ. max.	3.4 V 3.7 V
Reverse current [3] V_R = 5 V	I_R	typ. max.	0.01 µA 10 µA
Radiant intensity [5] I_F = 1000 mA; t_p = 10 ms	I_e	typ.	280 mW/sr
Temperature coefficient of voltage	TC_V	typ.	-2 mV / K
Temperature coefficient of wavelength	TC_λ	typ.	0.3 nm / K
Thermal resistance junction solder point electrical [6] with efficiency η_e = 38 %	$R_{thJS\ elec.}$	typ. max.	6.8 K / W 8.1 K / W
Thermal resistance junction solder point real [6]	$R_{thJS\ real}$	typ. max.	11.0 K / W 13.0 K / W

Brightness Groups

Group	Total radiant flux [1)2)] I_F = 1000 mA; t_p = 10 ms min. Φ_e	Total radiant flux [1)2)] I_F = 1000 mA; t_p = 10 ms max. Φ_e
EB2	1000 mW	1120 mW
FA1	1120 mW	1250 mW
FA2	1250 mW	1400 mW

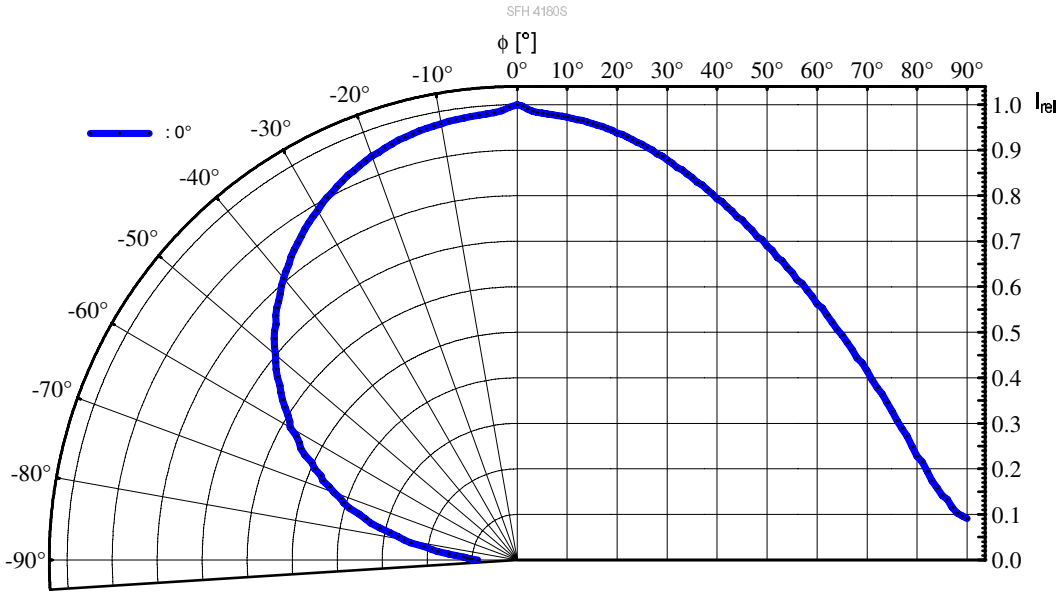
Relative Spectral Emission [7), 8)]

$I_{e,rel} = f(\lambda)$; I_F = 1000 mA; t_p = 10 ms



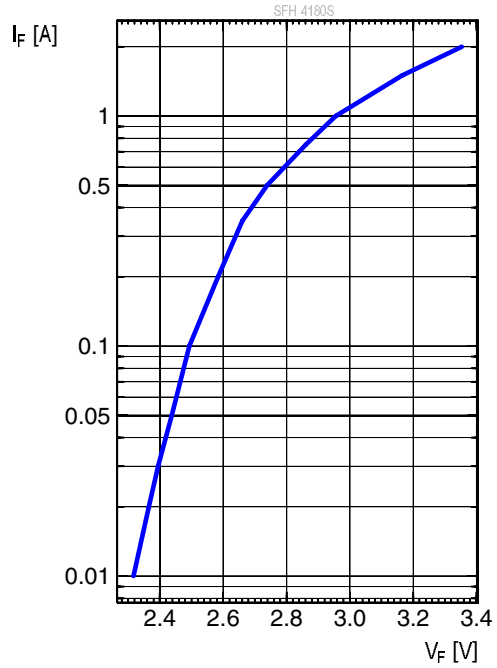
Radiation Characteristics 7), 8)

$I_{e,rel} = f(\varphi)$



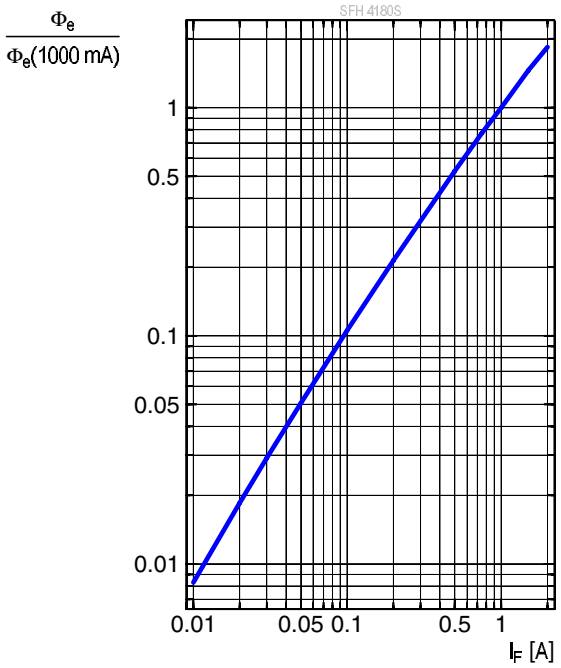
Forward current 7), 8)

$I_F = f(V_F)$; t_p = 100 µs



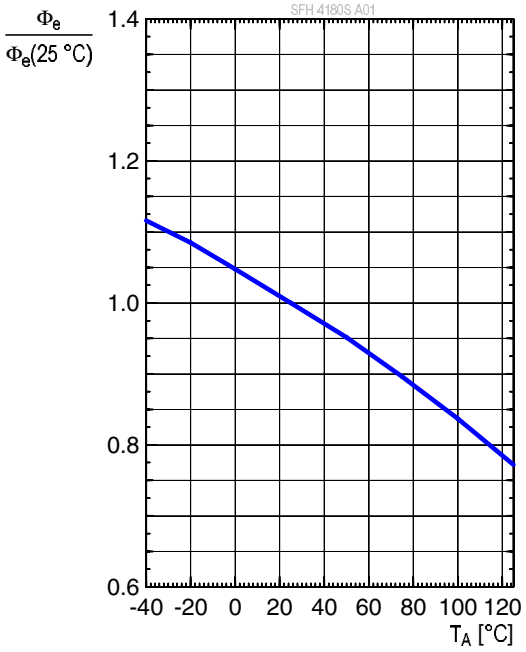
Relative Total Radiant Flux 7), 8)

$\Phi_e/\Phi_e(1000mA) = f(I_F)$; t_p = 100 µs



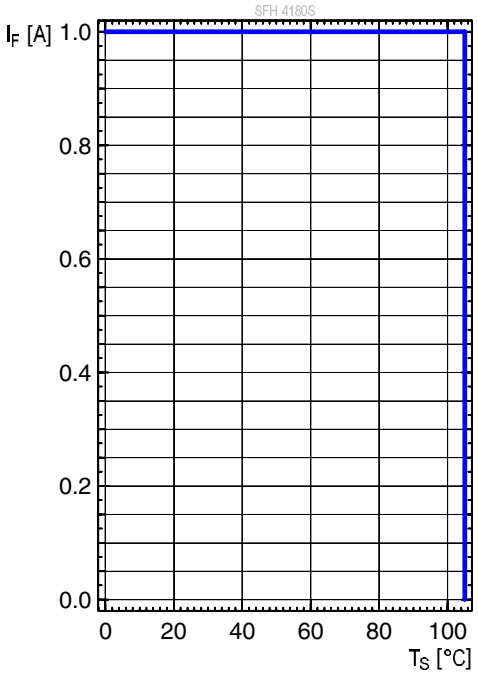
Relative Total Radiant Flux [7)]

$\Phi_e = f(TA)$; $t_p = 100\ \mu s$; $I_F = 1000\ mA$



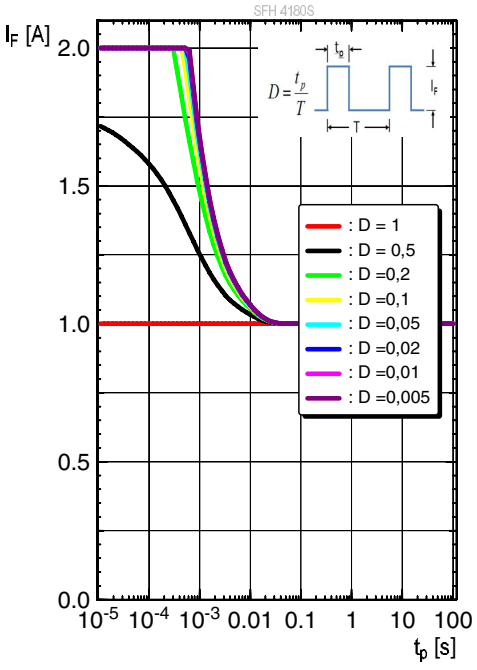
Max. Permissible Forward Current

$I_{F,max} = f(T_A)$;

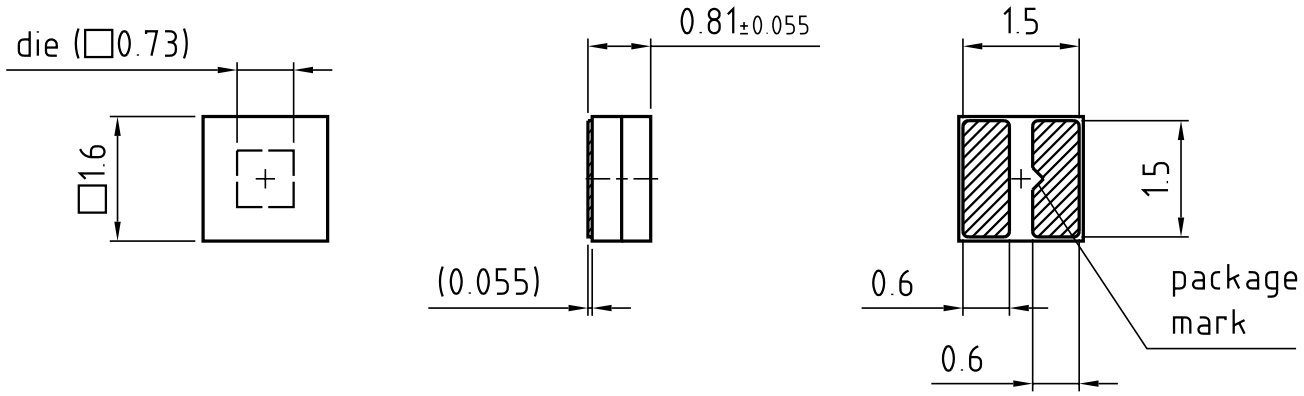


Permissible Pulse Handling Capability

$I_F = f(t_p)$; duty cycle D = parameter; $T_S = 85°C$



Dimensional Drawing [9)]



general tolerance ± 0.05
lead finish Au

C63062-A4399-A1-04

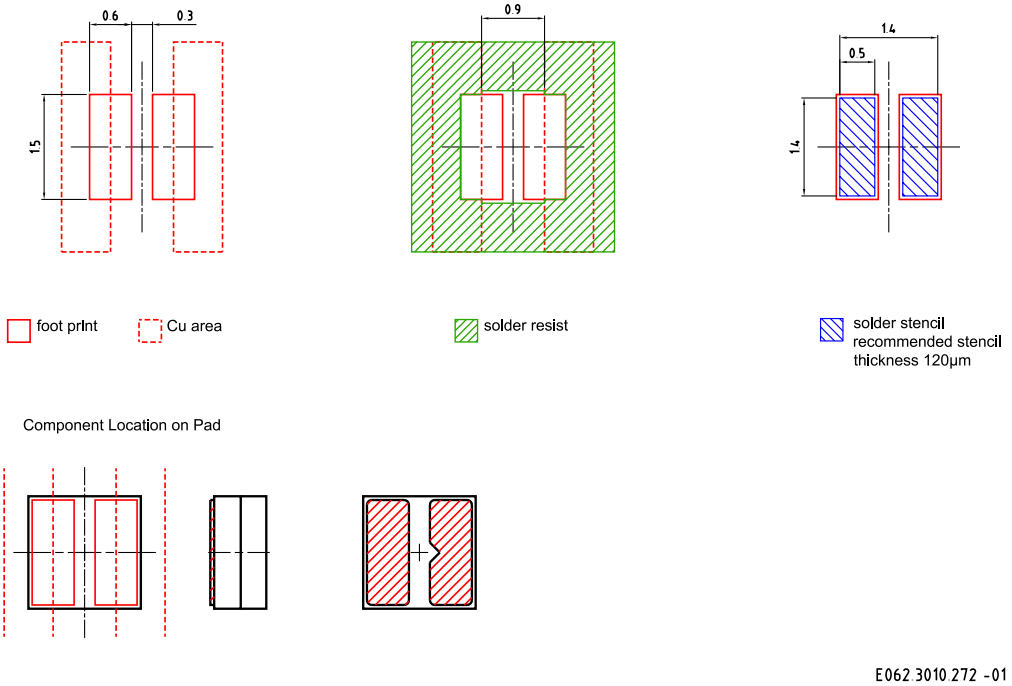
Further Information:

Approximate Weight: 6.2 mg

Package marking: Cathode

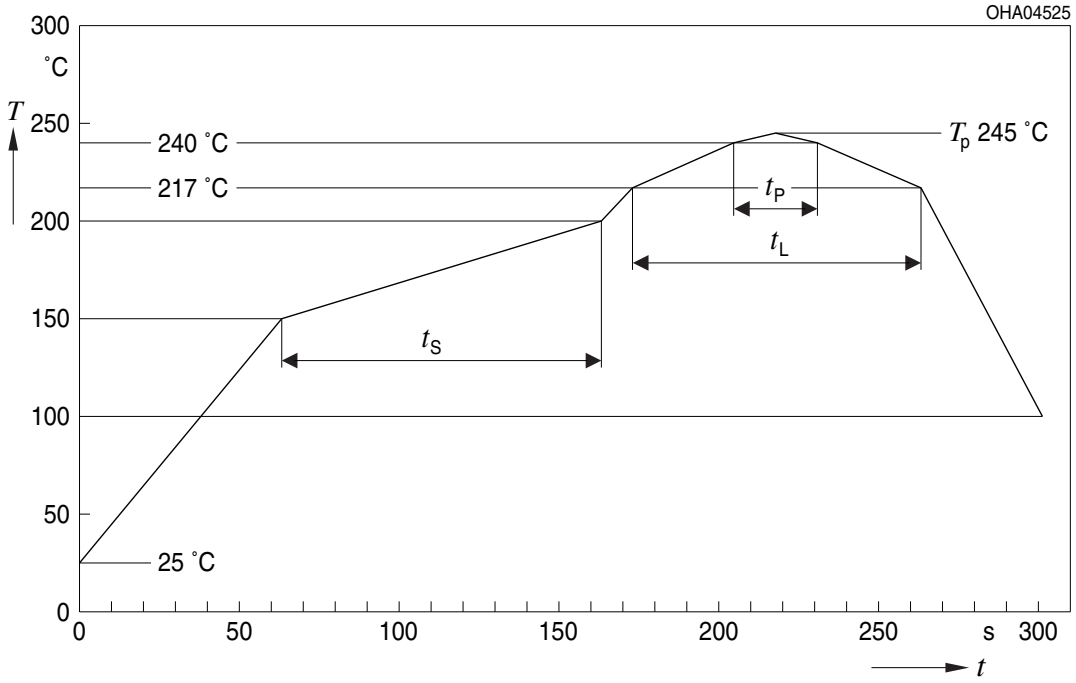
Corrosion test: Class: 3B
Test condition: 40°C / 90 % RH / 15 ppm H_2S / 14 days (stricter than IEC 60068-2-43)

Recommended Solder Pad 9)



Reflow Soldering Profile

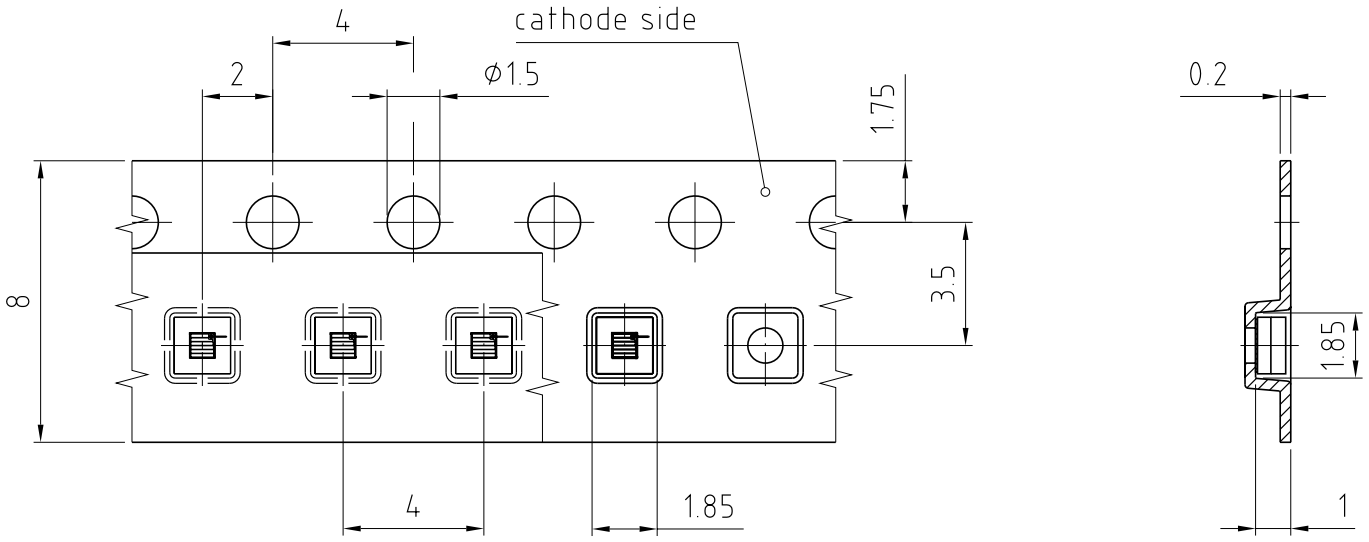
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



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)]



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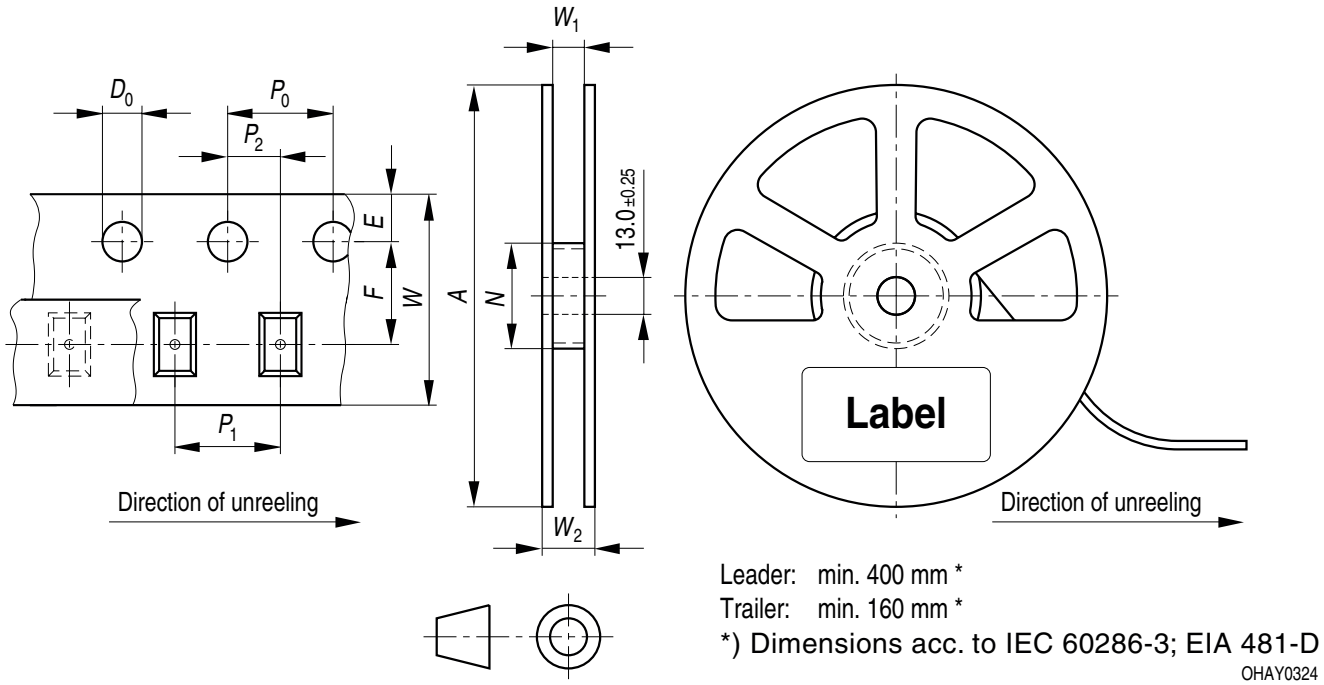
Tape and Reel [10)]



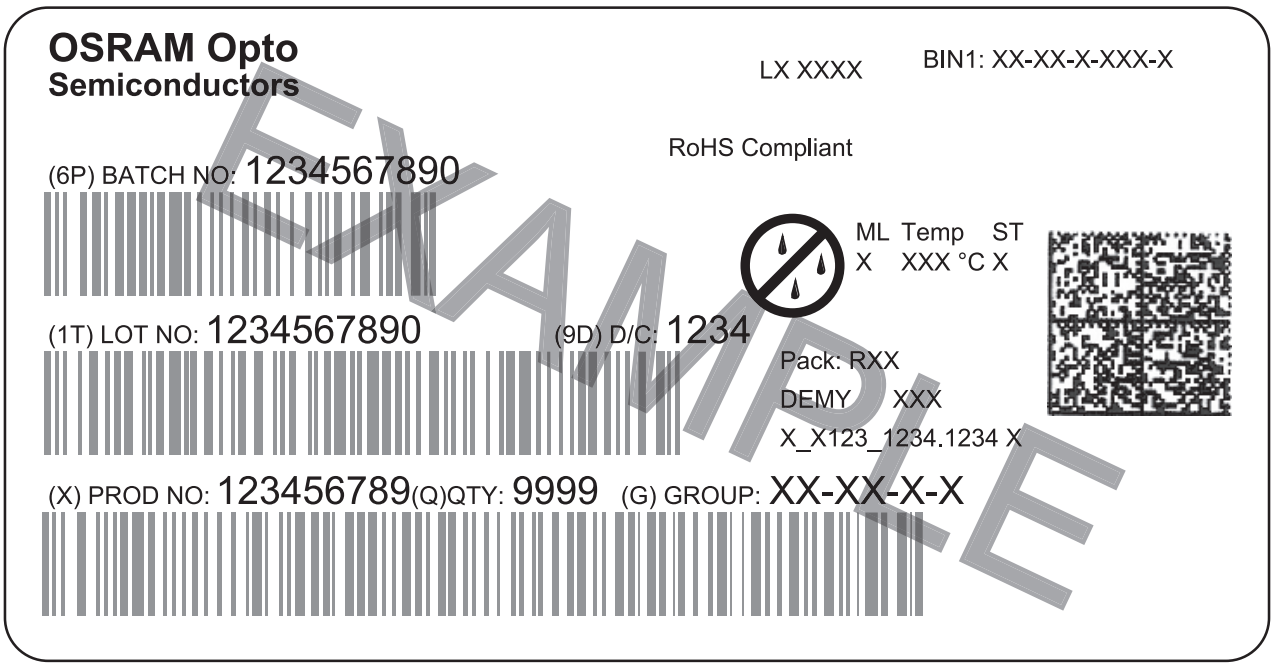
Leader: min. 400 mm *
Trailer: min. 160 mm *
*) Dimensions acc. to IEC 60286-3; EIA 481-D

OHAY0324

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	4000

Barcode-Product-Label (BPL)



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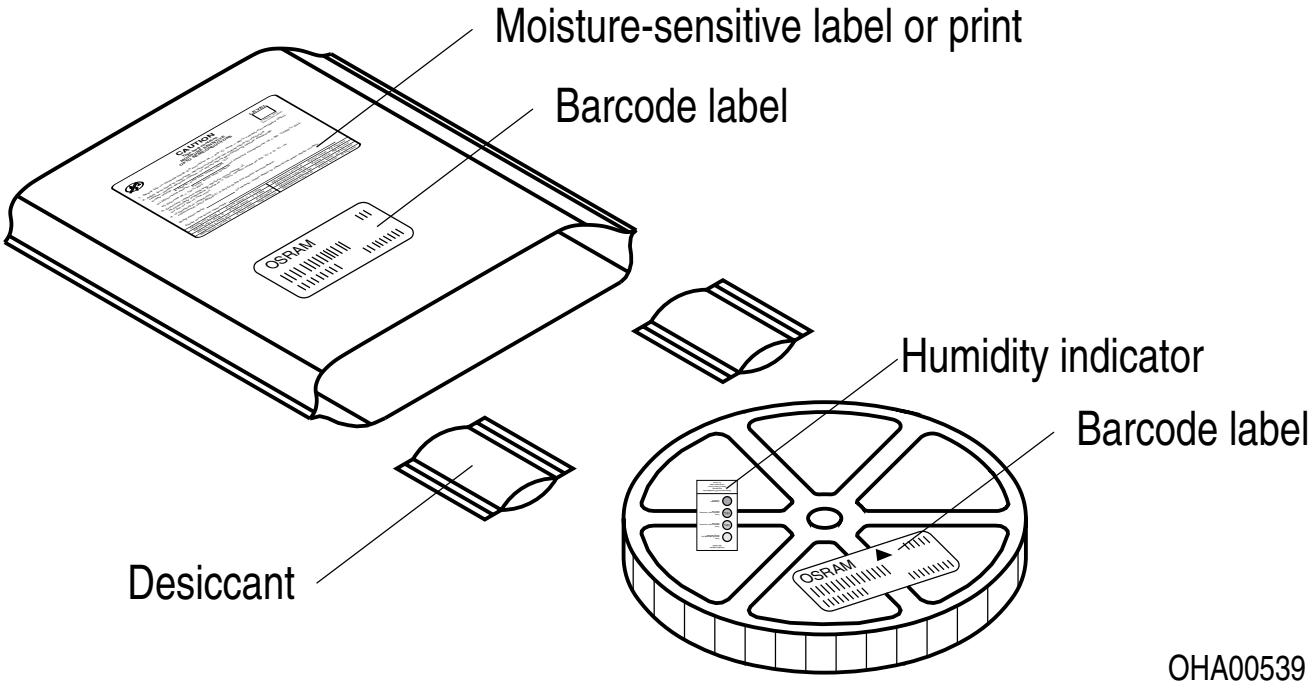
Dry Packing Process and Materials



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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 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.

Handling:
Solvents, water, liquids, non-conductive plastics and glues are not allowed near the device, because solvents and other liquids could emerge and damage the product.

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.
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.
If printed or downloaded, please find the latest version on the OSRAM OS website.

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.

Product and functional safety devices/applications or medical devices/applications
OSRAM OS components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.
OSRAM OS products are not qualified at module and system level for such application.

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.

Glossary

1) **Total radiant flux:** Measured with integrating sphere.

2) **Brightness:** The brightness values are measured with a tolerance of ±11%.

3) **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.

4) **Forward Voltage:** The forward voltages are measured with a tolerance of ±0.1 V.

5) **Radiant intensity:** Measured at a solid angle of Ω = 0.01 sr

6) **Thermal resistance:** junction - soldering point, of the device only, mounted on an ideal heatsink (e.g. metal block)

7) **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.

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

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.

Revision History

Version	Date	Change
1.0	2020-05-14	Initial Version

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。