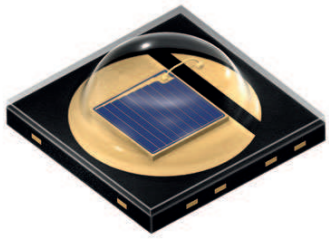
OSLON Black Series (850 nm) - 150°
Version 1.6

SFH 4716AS



Features:

- IR lightsource with high efficiency
- Double Stack emitter
- Low thermal resistance (Max. 9 K/W)
- Centroid wavelength 850 nm
- Superior Corrosion Robustness (see chapter package outlines)
- The product qualification test plan is based on the guidelines of AEC-Q101-REV-C, Stress Test Qualification for Automotive Grade Discrete Semiconductors.

Applications

- Infrared Illumination for cameras
- Surveillance systems
- Machine vision systems
- Gesture recognition systems
- Eye tracking systems

Notes

Depending on the mode of operation, these devices emit highly concentrated non visible infrared light which can be hazardous to the human eye. Products which incorporate these devices have to follow the safety precautions given in IEC 60825-1 and IEC 62471.

Ordering Information

Type:	Radiant Intensity I_e [mW/sr] **I_F = 1 A, t_p = 10 ms**	Ordering Code
SFH 4716AS	300 (≥ 200)	Q65111A6856
SFH 4716AS-BBCA	200 ... 400	Q65111A8237

Note: measured at a solid angle of Ω = 0.01 sr

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Maximum Ratings (T_A = 25 °C)

Parameter	Symbol	Values	Unit
Operating temperature range	T_{op}	-40 ... 125	°C
Storage temperature range	T_{stg}	-40 ... 125	°C
Junction temperature	T_j	145	°C
Reverse voltage	V_R	1	V
Forward current	I_F	1500	mA
Surge current (t_p = 2 ms, D = 0)	I_{FSM}	3	A
Power consumption	P_{tot}	5.8	W
Thermal resistance junction - solder point	R_{thJS}	9	K / W
ESD withstand voltage (acc. to ANSI/ ESDA/ JEDEC JS-001 - HBM)	V_{ESD}	2	kV

Note: *For the forward current and power consumption please see "maximum permissible forward current" diagram*

Characteristics (T_A = 25 °C)

Parameter		Symbol	Values	Unit
Peak wavelength (I_F = 1 A, t_p = 10 ms)	(typ)	λ_{peak}	860	nm
Centroid wavelength (I_F = 1 A, t_p = 10 ms)	(typ)	$\lambda_{centroid}$	850	nm
Spectral bandwidth at 50% of I_{max} (I_F = 1 A, t_p = 10 ms)	(typ)	$\Delta\lambda$	30	nm
Half angle	(typ)	φ	± 75	°
Dimensions of active chip area	(typ)	L x W	1 x 1	mm x mm
Rise and fall times of I_e (10% and 90% of $I_{e\,max}$) (I_F = 3 A, R_L = 50 Ω)	(typ)	t_r / t_f	11/ 14	ns
Forward voltage (I_F = 1 A, t_p = 10 ms)	(typ (max))	V_F	3.2 (≤ 3.6)	V
Forward voltage (I_F = 1.5A, t_p = 100 µs)	(typ (max))	V_F	3.35 (≤ 3.85)	V
Forward voltage (I_F = 3 A, t_p = 100 µs)	(typ)	V_F	3.8 (≤ 4.7)	V
Reverse current (V_R = 5 V)		I_R	not designed for reverse operation	µA

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Parameter		Symbol	Values	Unit
Total radiant flux (I_F = 1.5 A, t_p = 100 µs)	(typ)	Φ_e	1900	mW
Total radiant flux (I_F = 1 A, t_p = 10 ms)	(typ)	Φ_e	1270	mW
Temperature coefficient of I_e or Φ_e (I_F = 1 A, t_p = 10 ms)	(typ)	TC_I	-0.3	% / K
Temperature coefficient of V_F (I_F = 1 A, t_p = 10 ms)	(typ)	TC_V	-2	mV / K
Temperature coefficient of wavelength (I_F = 1 A, t_p = 10 ms)	(typ)	TC_λ	0.3	nm / K

Grouping (T_A = 25 °C)

Group	Min Radiant Intensity I_F = 1 A, t_p = 10 ms $I_{e, min}$ [mW / sr]	Max Radiant Intensity I_F = 1 A, t_p = 10 ms $I_{e, max}$ [mW / sr]
SFH 4716AS -BB	200	320
SFH 4716AS -CA	250	400
SFH 4716AS -CB	320	500

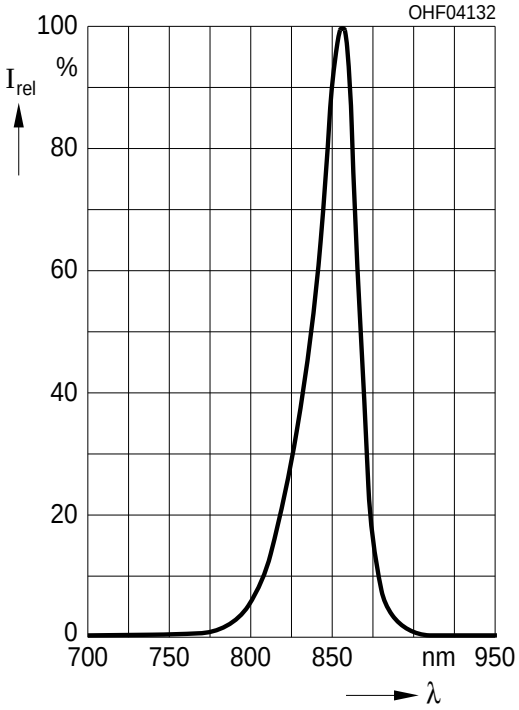
Note: measured at a solid angle of Ω = 0.01 sr

Only one group in one packing unit (variation lower 1.6:1).

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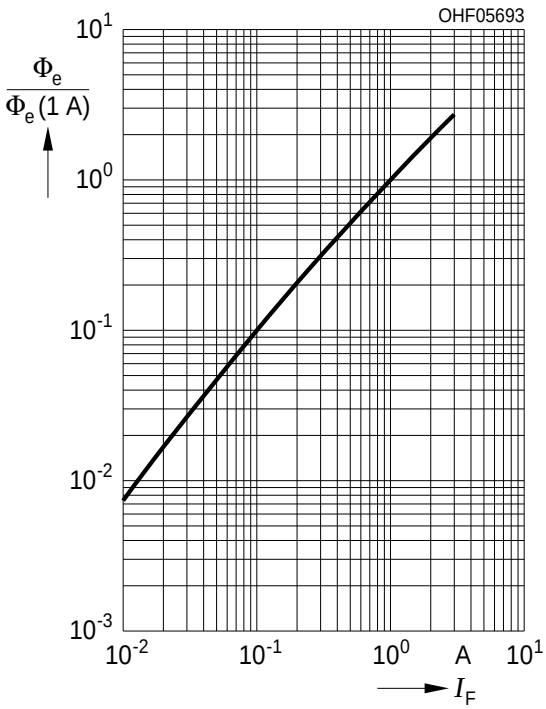
Relative Spectral Emission [1] *page 13*

$I_{rel} = f(\lambda)$, $T_A = 25$ °C, $I_F = 1$A, $t_p = 10$ ms



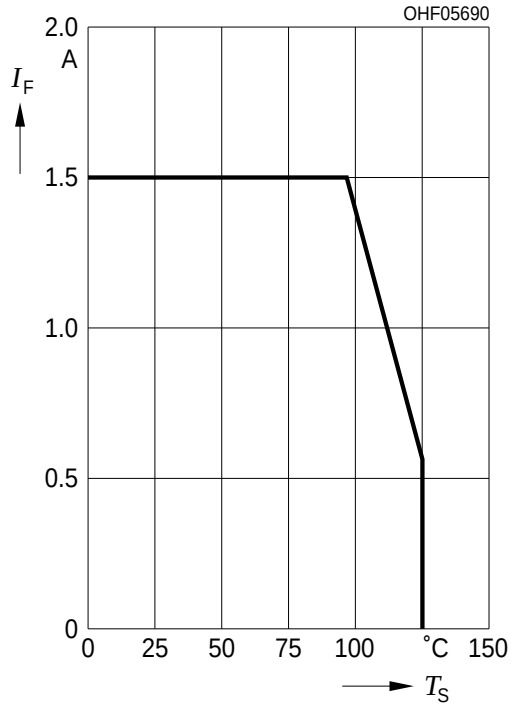
Relative Total Radiant Flux [1] *page 13*

$\Phi_e/\Phi_e(1A) = f(I_F)$, $T_A = 25$ °C, Single pulse, $t_p = 100$ µs



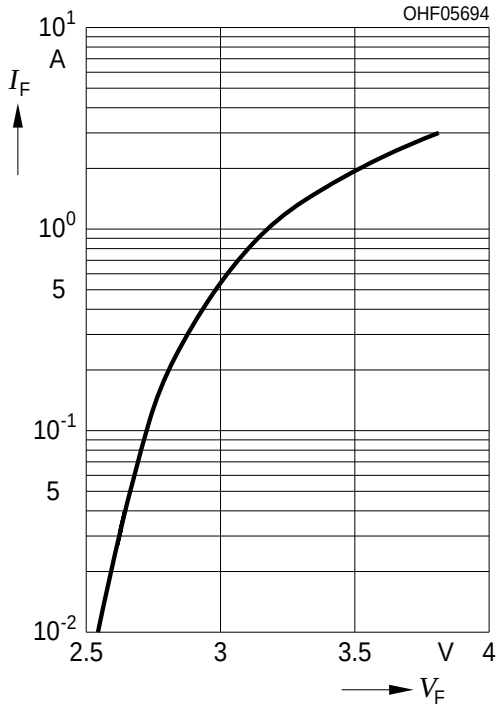
Max. Permissible Forward Current

$I_F = f(T_S)$, $R_{thJS} = 9$ K/W



Forward Current [1] *page 13*

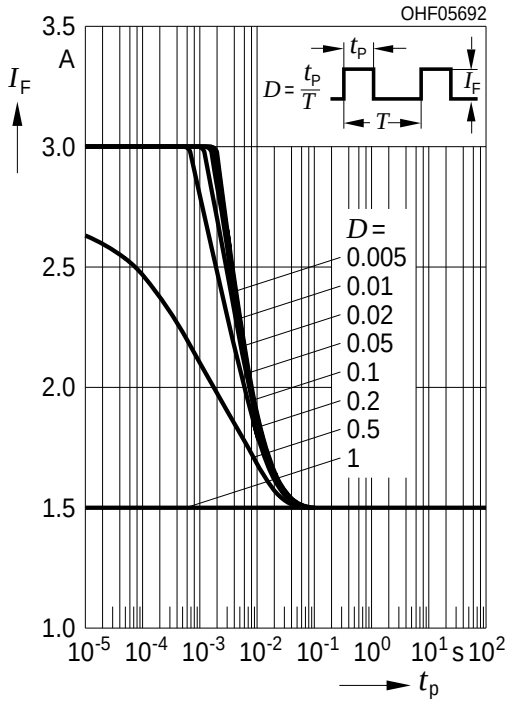
$I_F = f(V_F)$, single pulse, $t_p = 100$ µs, $T_A = 25$°C



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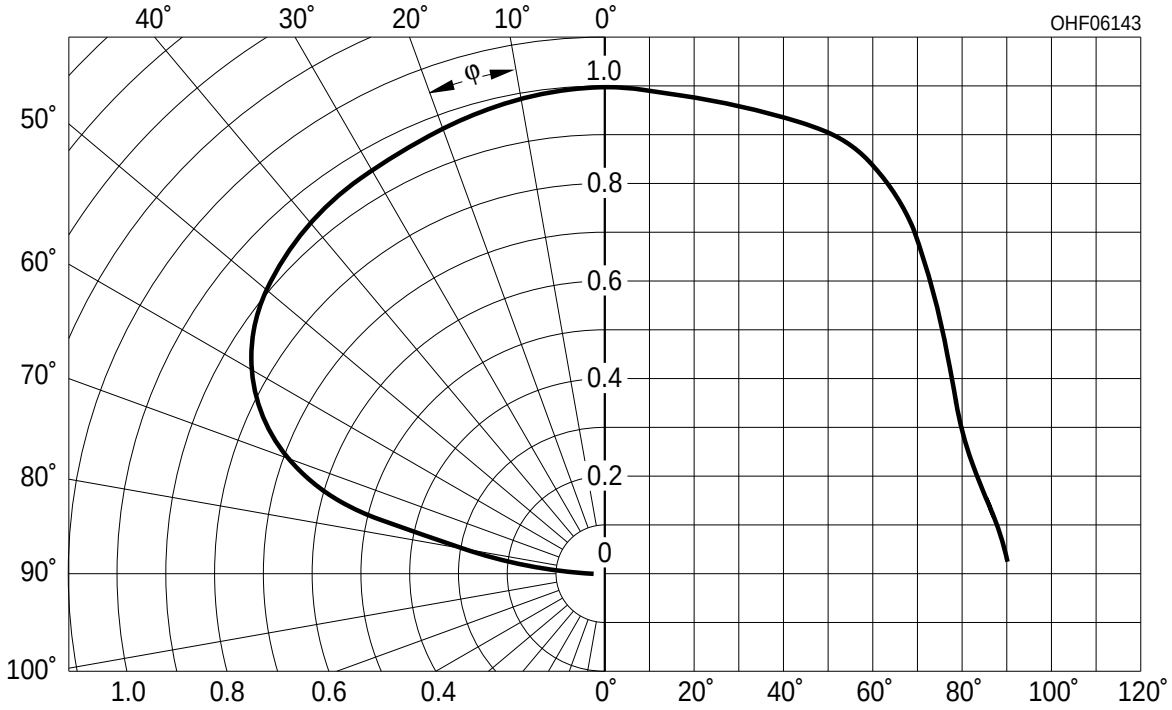
Permissible Pulse Handling Capability

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



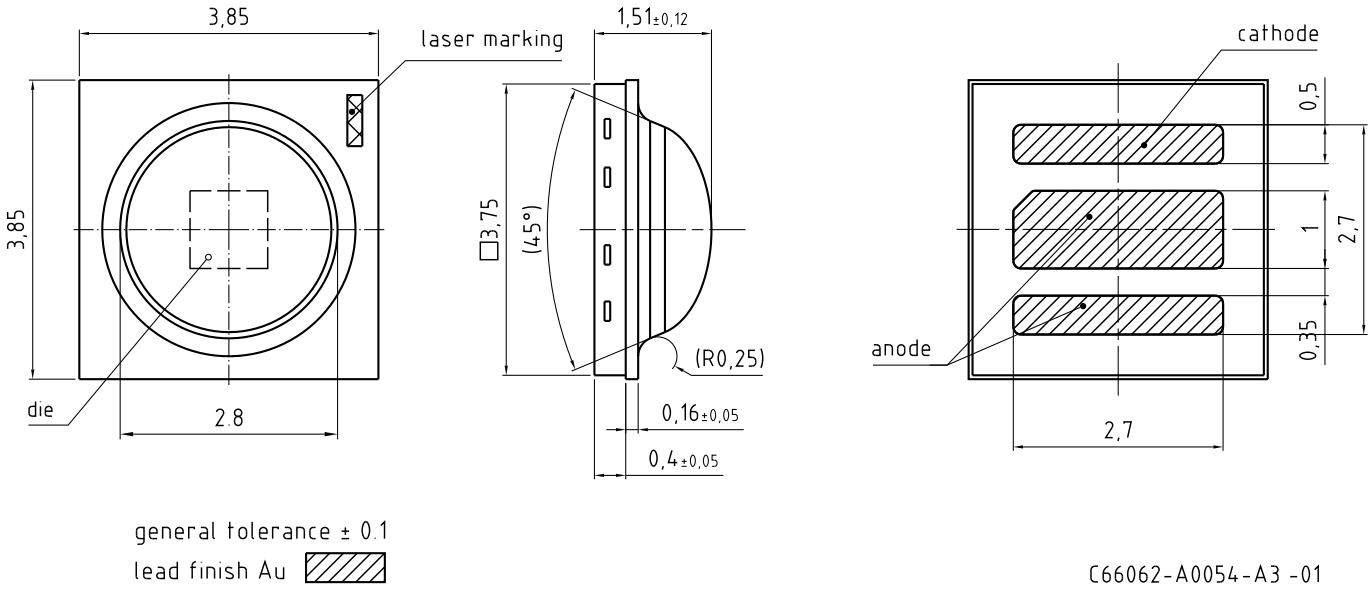
Radiation Characteristics [1] *page 13*

$I_{rel} = f(\phi)$, T_A= 25°C



OSRAM Opto Semiconductors

Package Outline



Dimensions in mm.

Package
OSLON Black Series

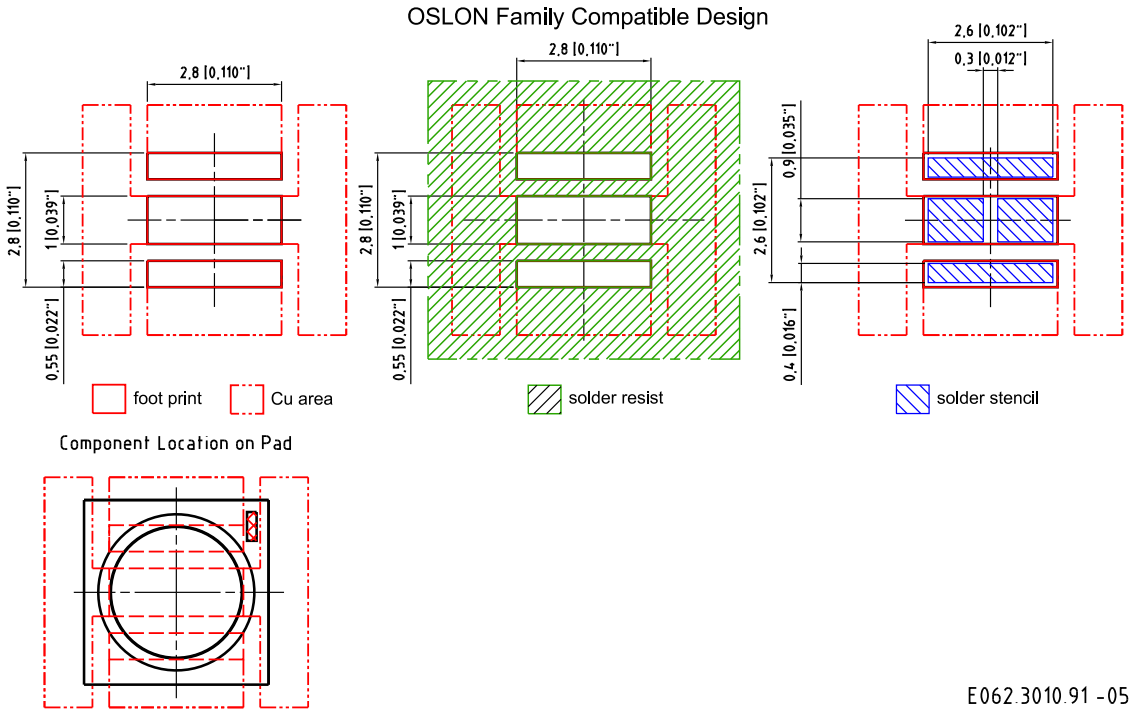
Approximate Weight:
31 mg

Note:
Package is not suitable for ultra sonic cleaning.

Note:
Corrosion robustness better than EN 60068-2-60 (method 4): with enhanced corrosion test: 40°C / 90%rh / 15ppm H2S / 336h

Note:
Anode mark: the chamfered edge of the center pad points to the cathode

Recommended Solder Pad



Dimensions in mm [inch].

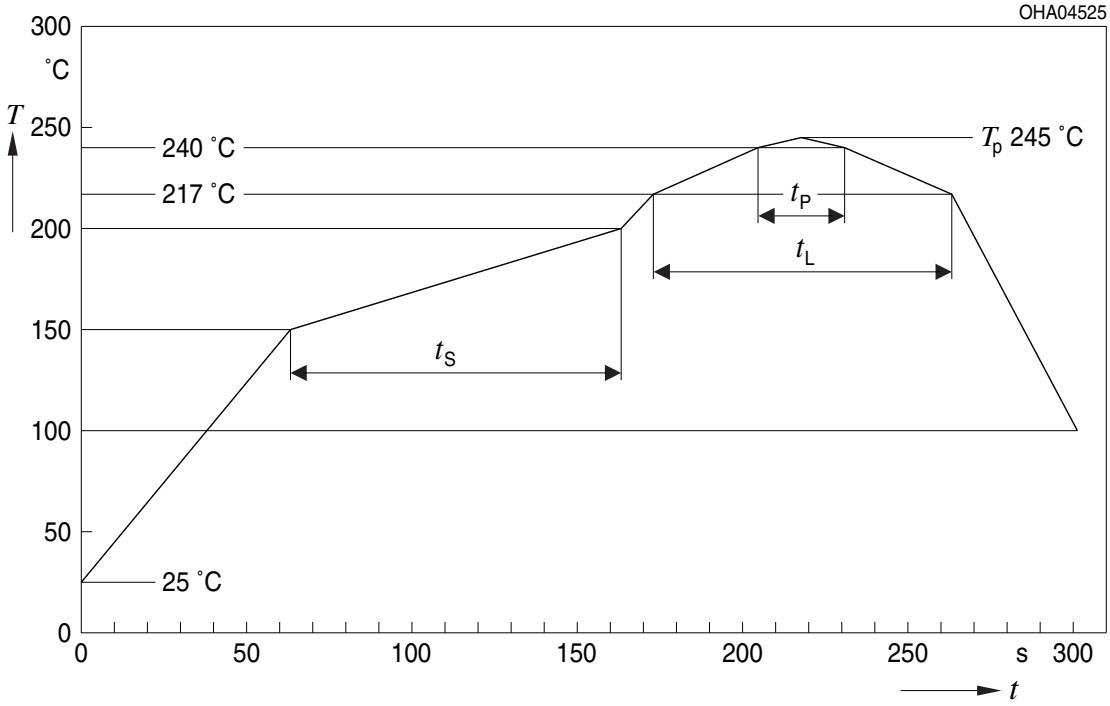
Note:

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



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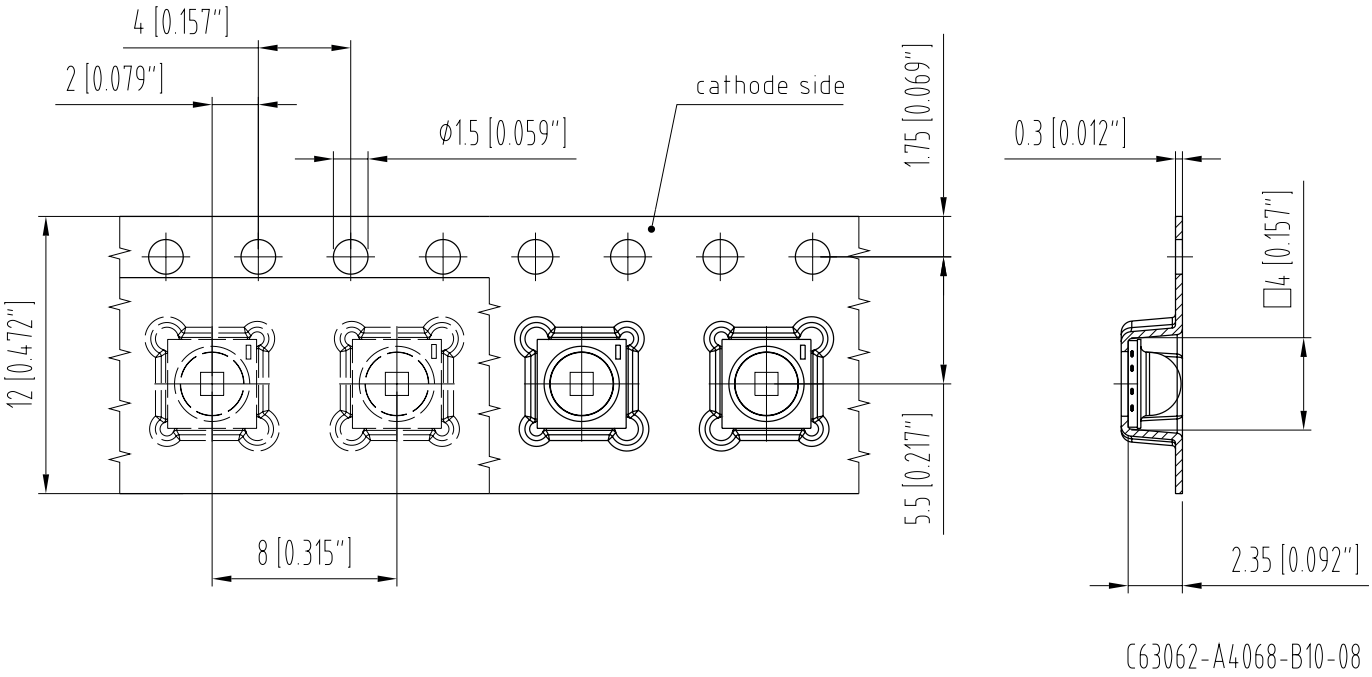
Profile Feature Profil-Charakteristik	Symbol Symbol	Pb-Free (SnAgCu) Assembly			Unit Einheit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L	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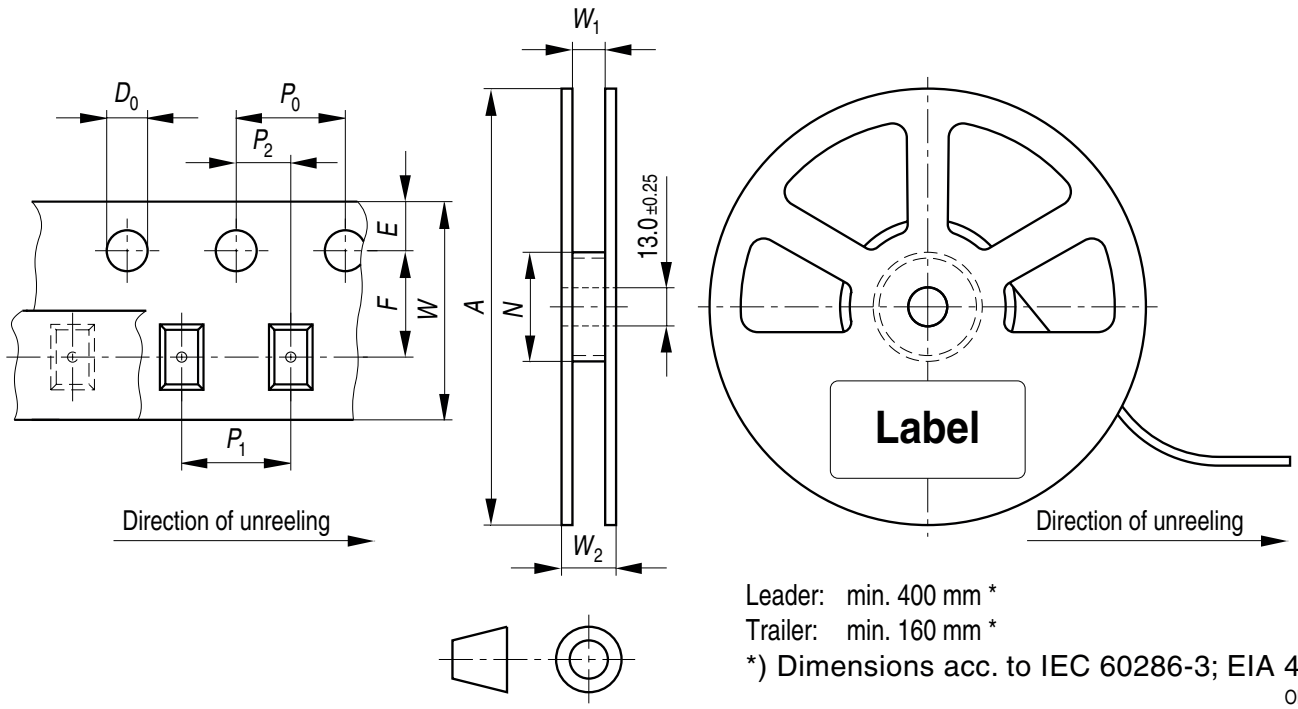
Taping



Dimensions in mm [inch].

Tape and Reel

12 mm tape with 600 pcs. on ∅ 180 mm reel



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

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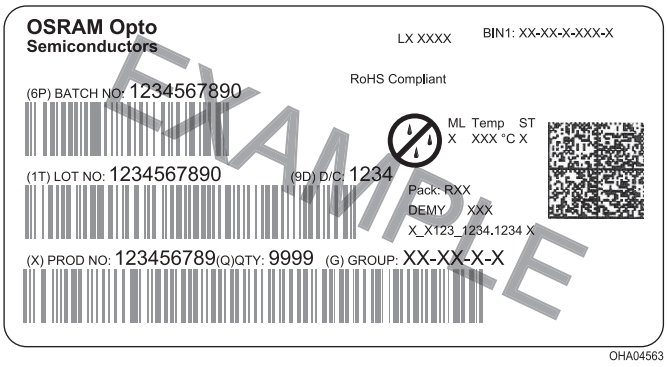
Tape dimensions [mm]

W	P_0	P_1	P_2	D_0	E	F
12 + 0.3 / - 0.1	4 ± 0.1	4 ± 0.1 or 8 ± 0.1	2 ± 0.05	1.5 ± 0.1	1.75 ± 0.1	5.5 ± 0.05

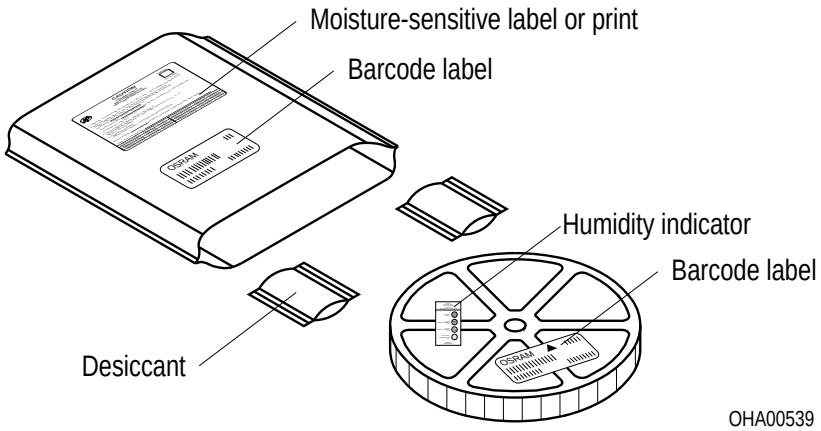
Reel dimensions [mm]

A	W	N_{min}	W_1	W_{2max}
180	12	60	12.4 + 2	18.4

Barcode-Product-Label (BPL)

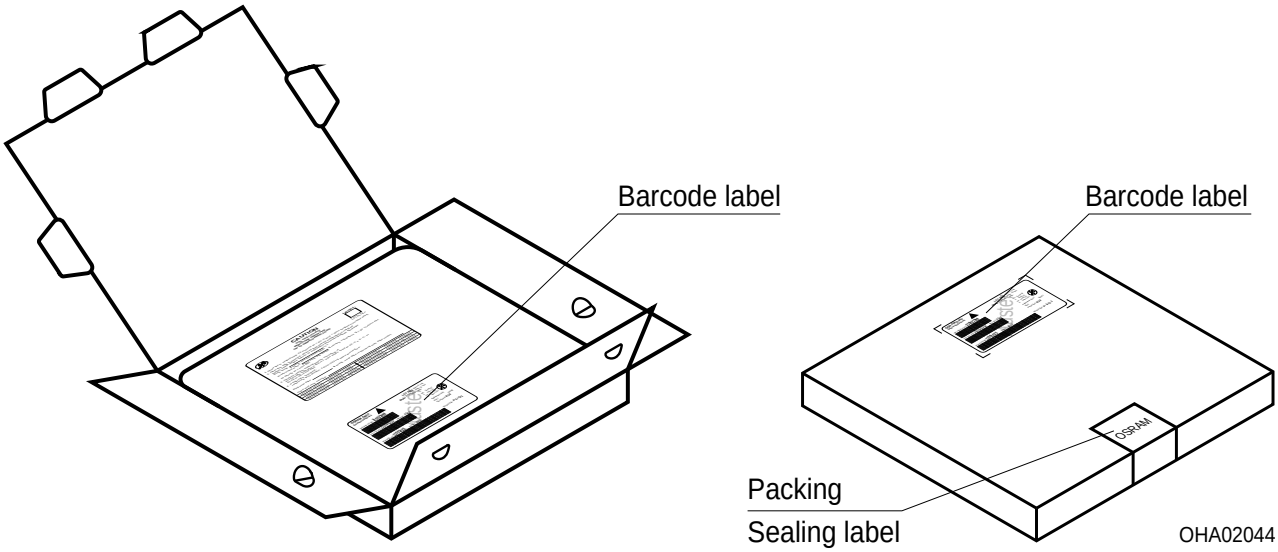


Dry Packing Process and Materials



Note:
Moisture-sensitive product is packed in a dry bag containing desiccant and a humidity card.
Regarding dry pack you will find further information in the internet. Here you will also find the normative references like JEDEC.

Transportation Packing and Materials



Dimensions of transportation box in mm

Width	Length	Height
195 ± 5	195 ± 5	30 ± 5

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.
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 in the Internet.
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.
Components used in life-support devices or systems must be expressly authorized for such purpose!
Critical components* may only be used in life-support devices** or systems with the express written approval of OSRAM OS.

*) A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.
**) Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health and the life of the user may be endangered.

Glossary

[1] **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.

Published by OSRAM Opto Semiconductors GmbH
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