SFH 4776

SYNIOS® P2720

IR broad band emitter

Applications

- Infrared Spectroscopy

Features:

- Package: clear silicone
- Corrosion Robustness Class: 3B
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- Spectral range of emission: (typ) 650 ... 1050 nm
- Wide viewing angle of 120°
- Small outline dimensions
- Low thermal resistance (Max. 9 K/W)

Ordering Information

Type	Total radiant flux [1] typ. I_F = 350 mA; λ = 600nm - 1050nm; t_p = 20ms Φ_e	Ordering Code
SFH 4776	24 mW	Q65112A4886

Preliminary datasheet version

Maximum Ratings

T_A = 25 °C

Parameter	Symbol		Values
Operating temperature	T_{op}	min. max.	-40 °C 85 °C
Storage temperature	T_{stg}	min. max.	-40 °C 85 °C
Junction temperature	T_j	max.	125 °C
Forward current	I_F	max.	500 mA
Surge current $t_p \leq 2$ ms; D = 0.005	I_{FSM}	max.	1 A
Reverse current [2]	I_R	max.	200 mA
Power consumption	P_{tot}	max.	1900 mW
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}	max.	2 kV

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

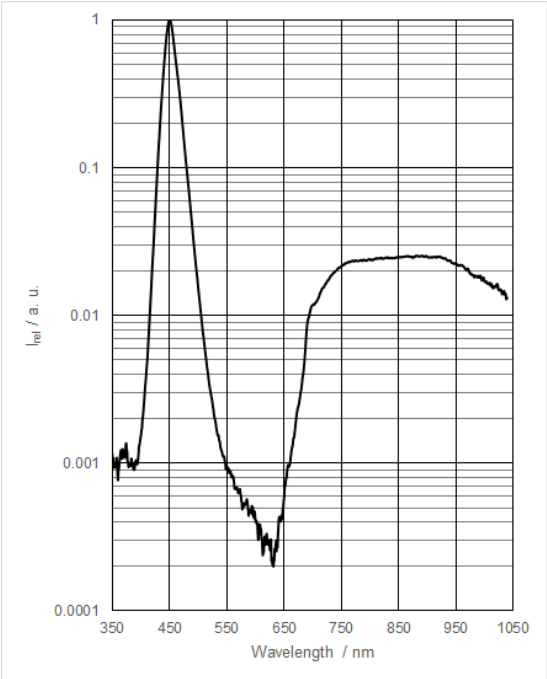
Characteristics

I_F = 350 mA; t_p = 20 ms; T_A = 25 °C

Parameter	Symbol		Values
Half angle	φ	typ.	60 °
Forward voltage	V_F	typ. max.	2.95 V 3.5 V
Forward voltage I_F = 500 mA; t_p = 100 µs	V_F	typ. max.	3 V 3.8 V
Reverse voltage [2] I_R = 20 mA	V_R	max.	1.2 V
Reverse voltage (ESD device) [2]	$V_{R\ ESD}$	min.	45 V
Radiant intensity λ = 350 - 600 nm	I_e	typ.	29 mW/sr
Radiant intensity λ = 600 - 1050 nm	I_e	typ.	8 mW/sr
Total radiant flux [1] λ = 350 - 600 nm	Φ_e	typ.	90 mW
Total radiant flux [1] λ = 600 - 1050 nm	Φ_e	typ.	24 mW
Spectral flux λ = 750 nm	$\Phi_{e,\lambda}$	typ.	70 µW/nm
Spectral flux λ = 850 nm	$\Phi_{e,\lambda}$	typ.	75 µW/nm
Spectral flux λ = 950 nm	$\Phi_{e,\lambda}$	typ.	60 µW/nm
Thermal resistance junction solder point real [3]	R_{thJS}	max.	9.0 K / W

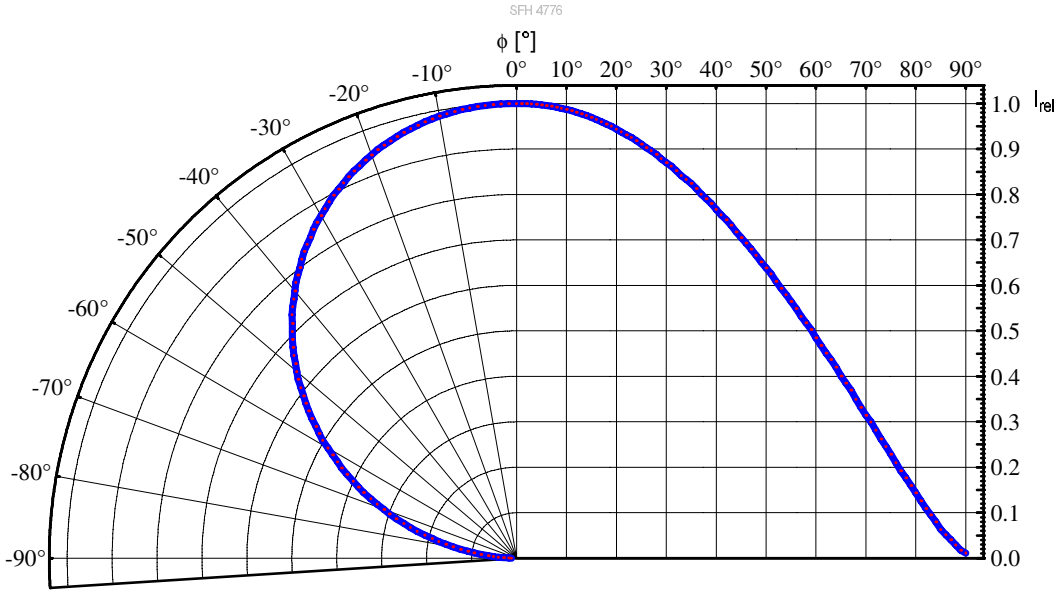
Relative Spectral Emission [4), 5)]

$I_{rel} = f(\lambda)$; I_F = 350 mA; t_p = 10 ms



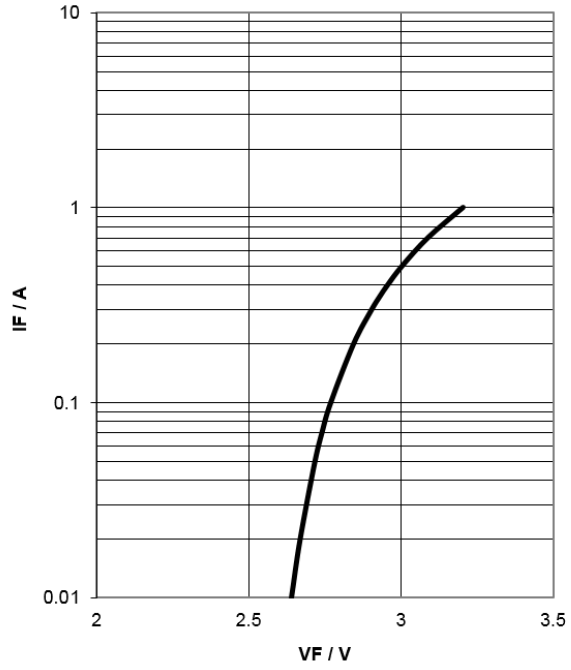
Radiation Characteristics [4), 5)]

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



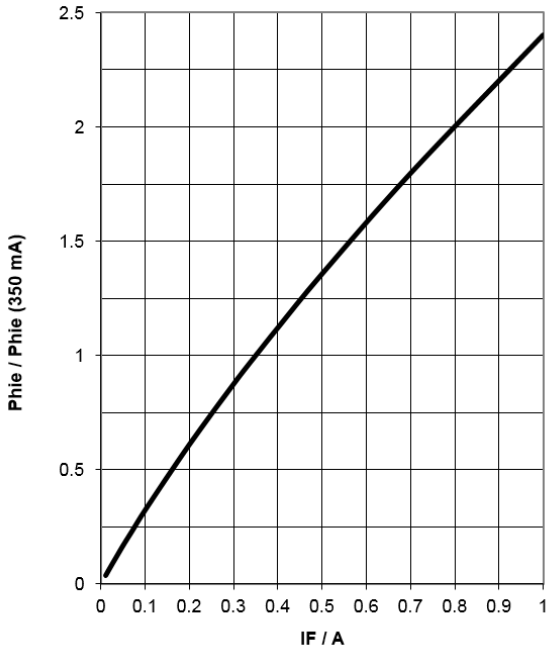
Forward current [4), 5)]

$I_F = f(V_F)$; single pulse; $t_p = 100\ \mu s$



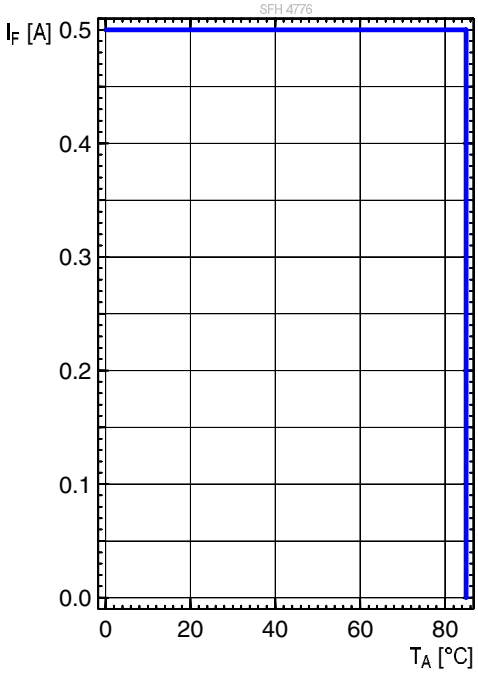
Relative Total Radiant Flux [4), 5)]

$\Phi_e/\Phi_e(350mA) = f(I_F)$; single pulse; $t_p = 100\ \mu s$



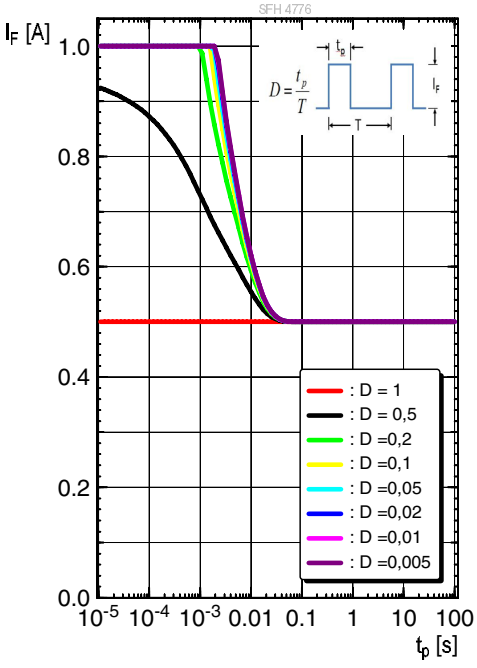
Max. Permissible Forward Current

$I_{F,max} = f(T_S)$; $R_{thJS} = 9.0\ K/W$

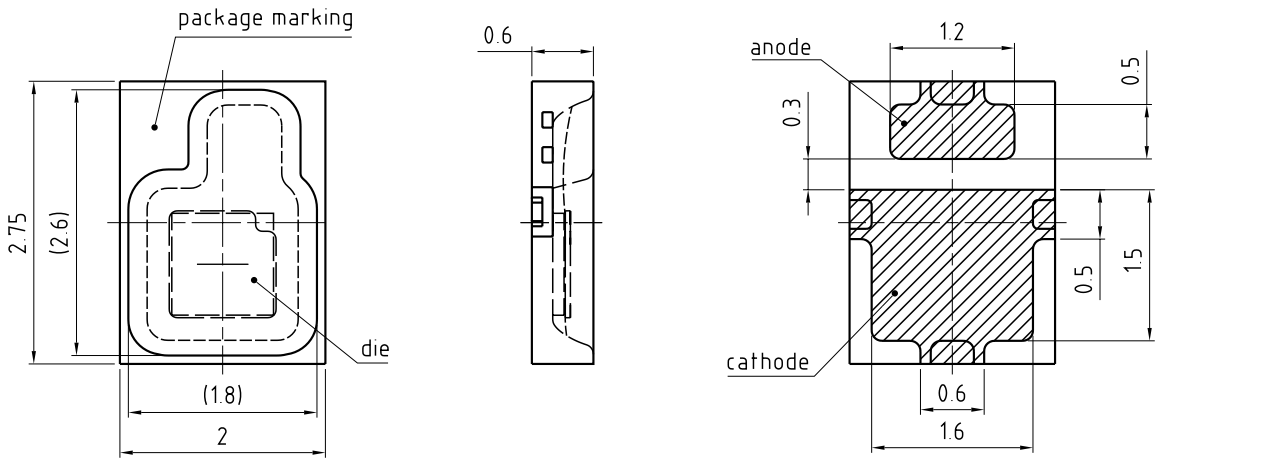


Permissible Pulse Handling Capability

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



Dimensional Drawing [6)]



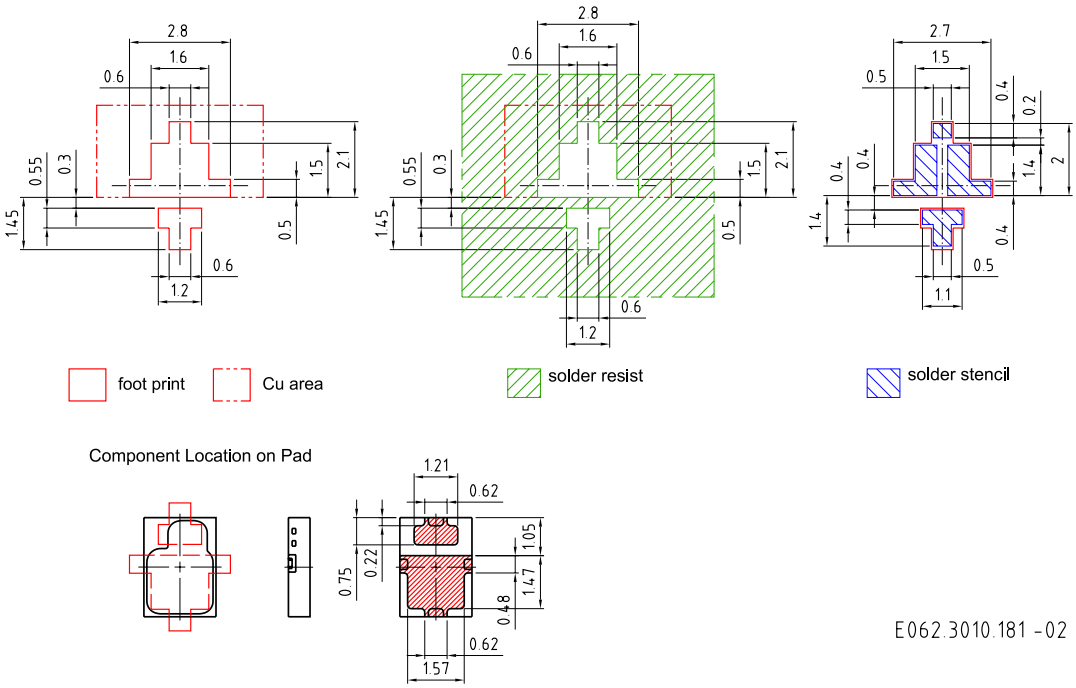
General tolerance ±0.1

Lead finish Au

C67062-A0116-A11-04

Approximate Weight:	12.0 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)
ESD advice:	The device is protected by ESD device which is connected in parallel to the Chip.

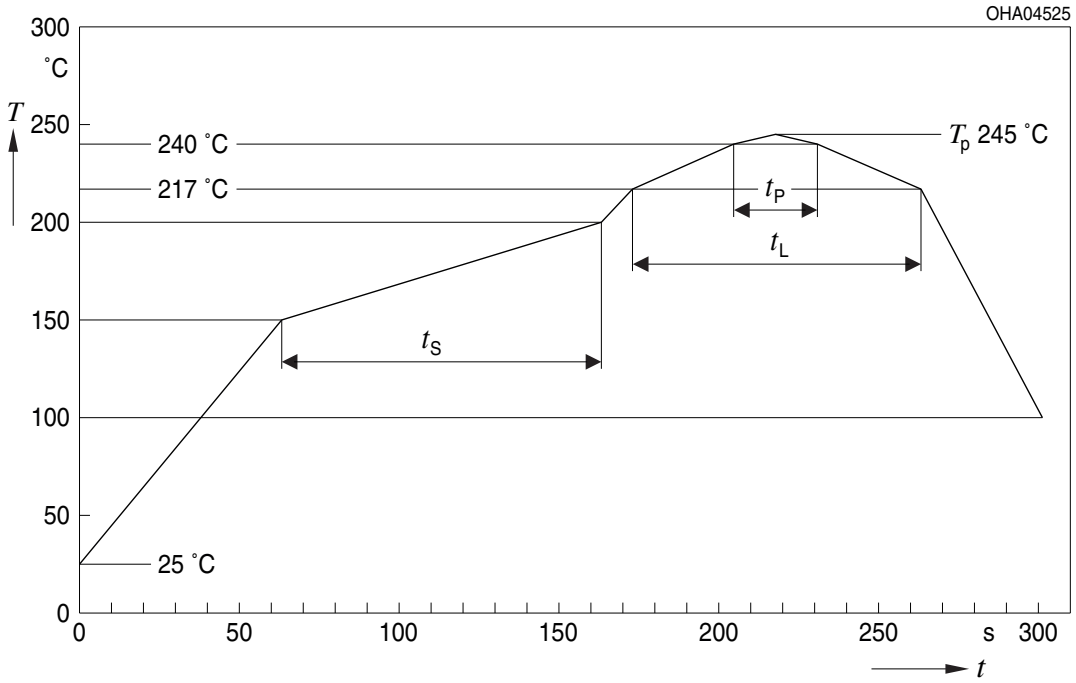
Recommended Solder Pad [6)]



Dimensions in mm (inch).

Reflow Soldering Profile

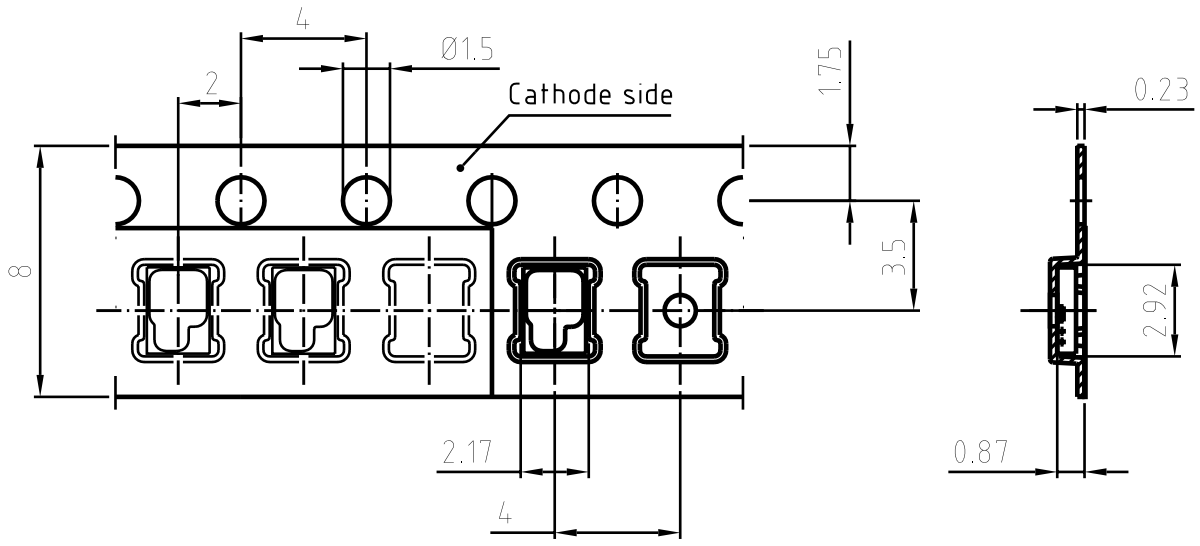
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



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

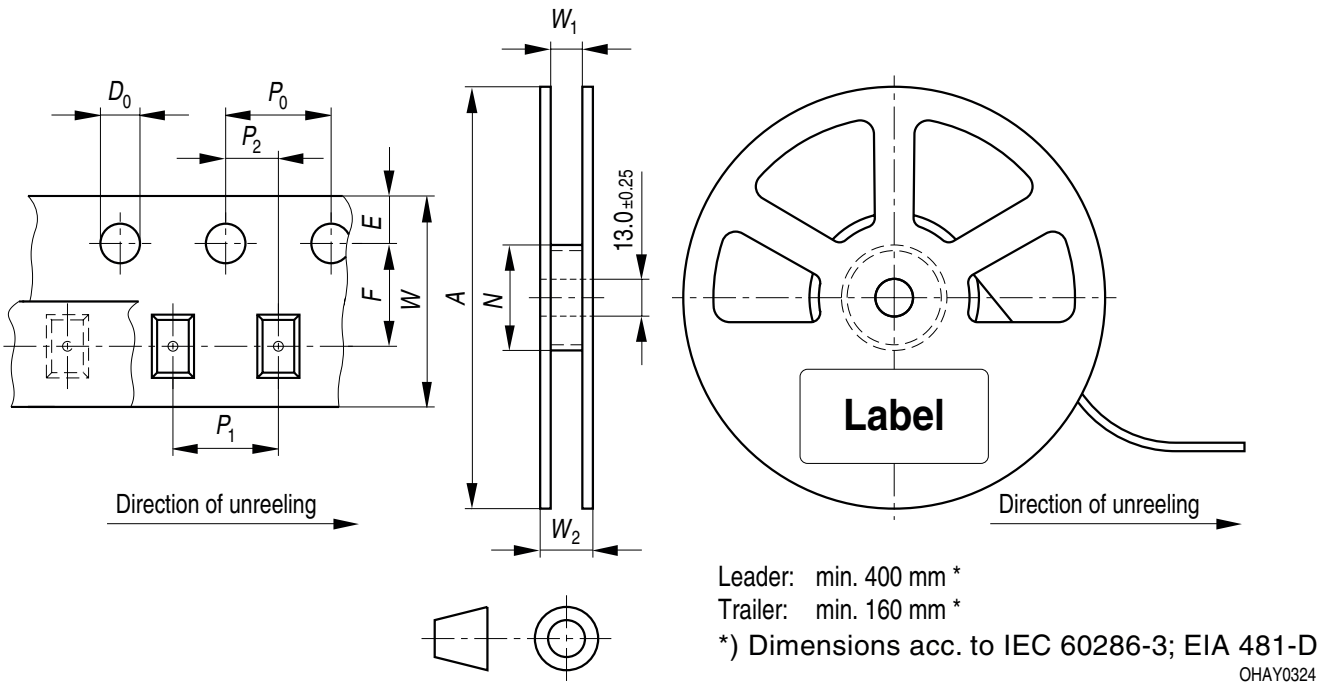
All temperatures refer to the center of the package, measured on the top of the component
* slope calculation DT/Dt: Dt max. 5 s; fulfillment for the whole T-range

Taping [6)]



C67062-A0116-B9-04

Tape and Reel [7)]

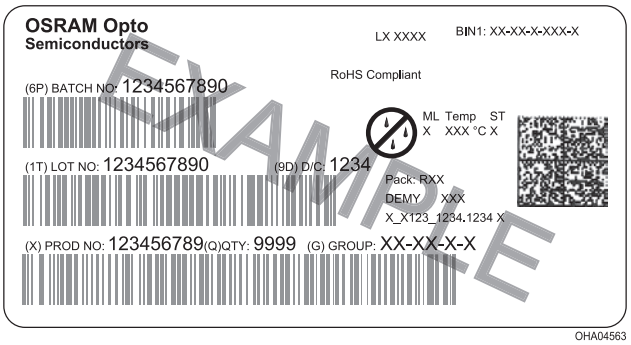


Leader: min. 400 mm *
Trailer: min. 160 mm *
*) Dimensions acc. to IEC 60286-3; EIA 481-D
OHAY0324

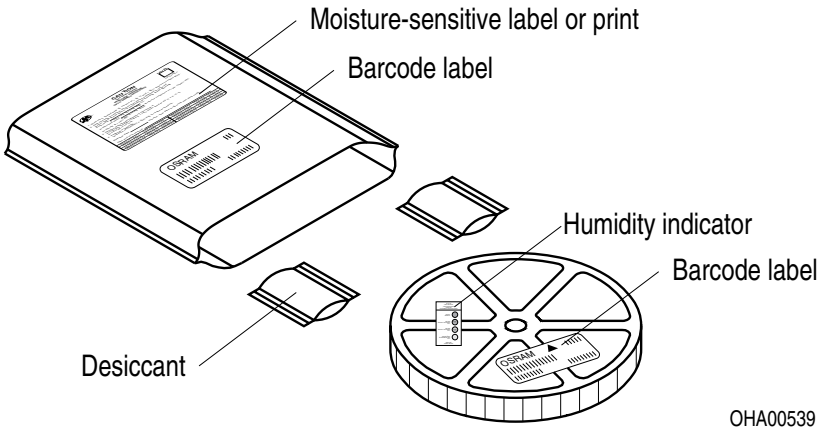
Reel dimensions [mm]

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

Barcode-Product-Label (BPL)

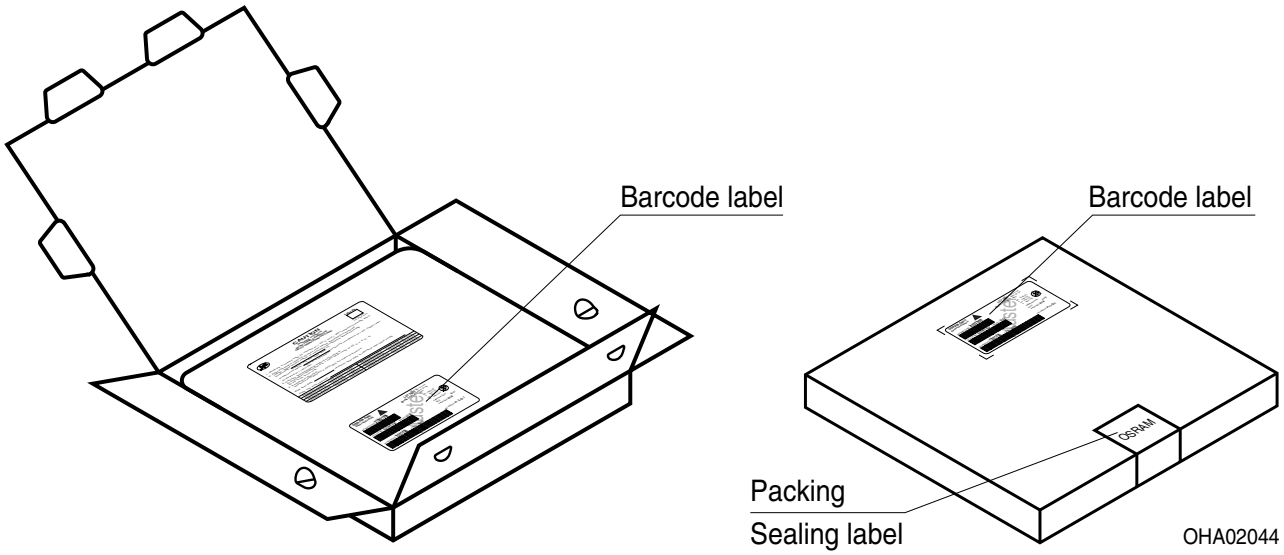


Dry Packing Process and Materials [6)]



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

Transportation Packing and Materials [6)]



Dimensions of transportation box in mm

Width	Length	Height
200 ± 5 mm	195 ± 5 mm	30 ± 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 **moderate risk (exposure time 0.25 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 informations please visit www.osram-os.com/appnotes

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Glossary

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

2) **Reverse Operation**: Reverse Operation of 10 hours is permissible in total. Continuous reverse operation is not allowed.

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

4) **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.

5) **Testing temperature**: T_A = 25°C

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

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

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