IR SYNIOS P2720 (940 nm) - 120°
Preliminary Version 0.0

SFH 4775S

Features:
- IR lightsource with high efficiency
- Double Stack emitter
- Low thermal resistance (Max. 9 K/W)
- Centroid wavelength 940 nm
- Superior Corrosion Robustness (see chapter package outlines)

Applications
- Infrared Illumination for cameras
- Eye tracking systems
- Not released for automotive applications

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:	**Total Radiant Flux** Φ_e [mW] **I_F = 1A, t_p = 10 ms**	**Ordering Code**
SFH 4775S	1150 (≥ 800)	Q65112A4691

Note: Measured with integrating sphere.

Preliminary – For Reference only.
Subject to change.

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Maximum Ratings (T_A = 25 °C)

Parameter	Symbol	Values	Unit
Operating temperature range	T_{op}	-40 ... 100	°C
Storage temperature range	T_{stg}	-40 ... 100	°C
Junction temperature	T_j	145	°C
Forward current	I_F	1500	mA
Surge current ($t_p \leq 1.5$ ms, D = 0.005)	I_{FSM}	3	A
Power consumption	P_{tot}	5800	mW
ESD withstand voltage (acc. to ANSI/ ESDA/ JEDEC JS-001 - HBM)	V_{ESD}	2	kV
Thermal resistance junction - solder point	R_{thJS}	9	K / W

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}	950	nm
Centroid wavelength (I_F = 1 A, t_p = 10 ms)	(typ)	$\lambda_{centroid}$	940	nm
Spectral bandwidth at 50% of I_{max} (I_F = 1 A, t_p = 10 ms)	(typ)	$\Delta\lambda$	37	nm
Half angle	(typ)	φ	± 60	°
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	2.8 (≤ 3.6)	V
Forward voltage (I_F = 1.5 A, t_p = 100 µs)	(typ (max))	V_F	2.95 (≤ 3.85)	V
Forward voltage (I_F = 3 A, t_p = 100 µs)	(typ)	V_F	3.3 (≤ 4.7)	V
Reverse current (V_R = 5 V)		I_R	not designed for reverse operation	µA
Radiant intensity (I_F = 1 A, t_p = 10 ms)		$I_{e,\,typ}$	360	mW/sr

Parameter		Symbol	Values	Unit
Radiant intensity (I_F = 1.5 A, t_p = 100 µs)		$I_{e, typ}$	545	mW/sr
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)	$TC_{\lambda,\ centroid}$	0.3	nm / K

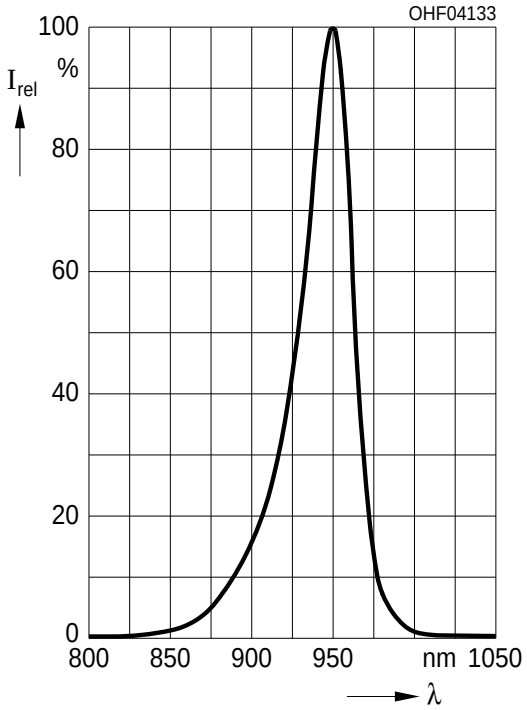
Grouping (T_A = 25 °C)

Group	Min Total Radiant Flux I_F = 1A, t_p = 10 ms $\Phi_{e\ min}$ [mW]	Max Total Radiant Flux I_F = 1A, t_p = 10 ms $\Phi_{e\ max}$ [mW]
SFH 4775S - EB1	800	1120
SFH 4775S - EB2	900	1250
SFH 4775S - FA1	1000	1400
SFH 4775S - FA2	1120	1600

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

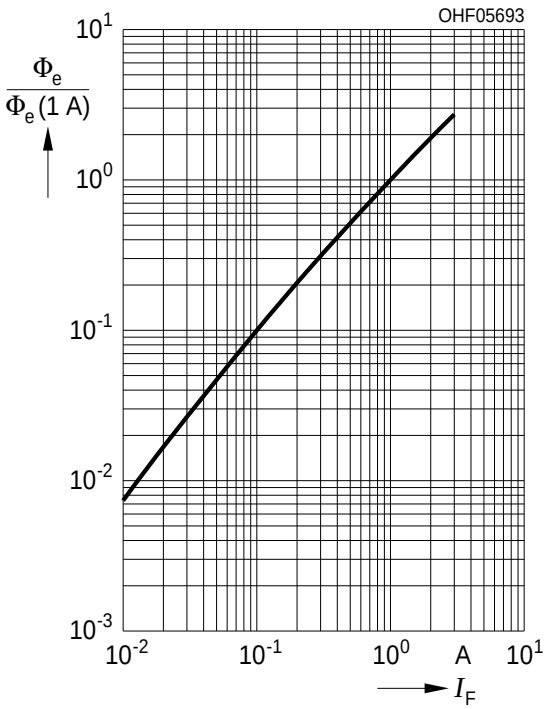
Relative Spectral Emission [1] *page 12*

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



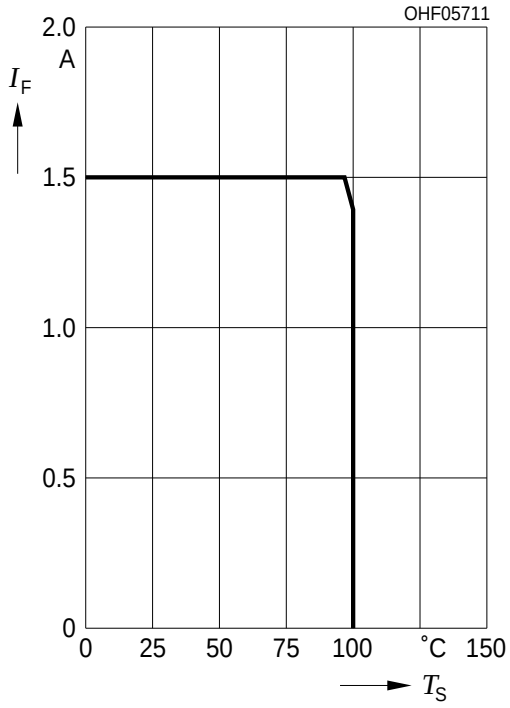
Relative Total Radiant Flux [1] *page 12*

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



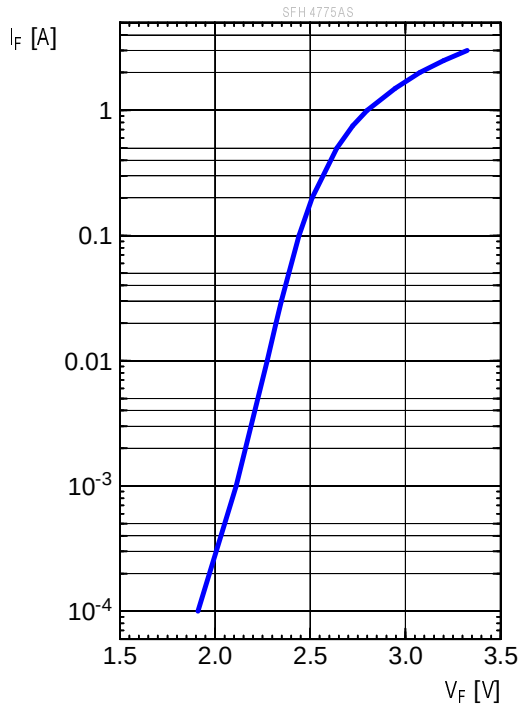
Max. Permissible Forward Current

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



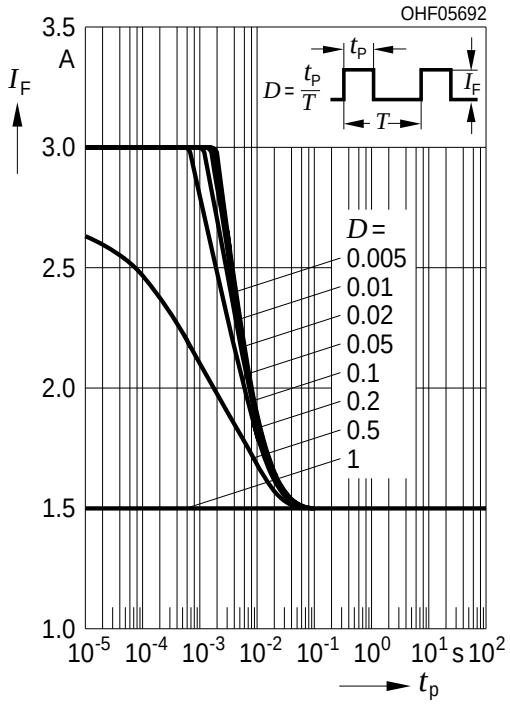
Forward Current [1] *page 12*

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



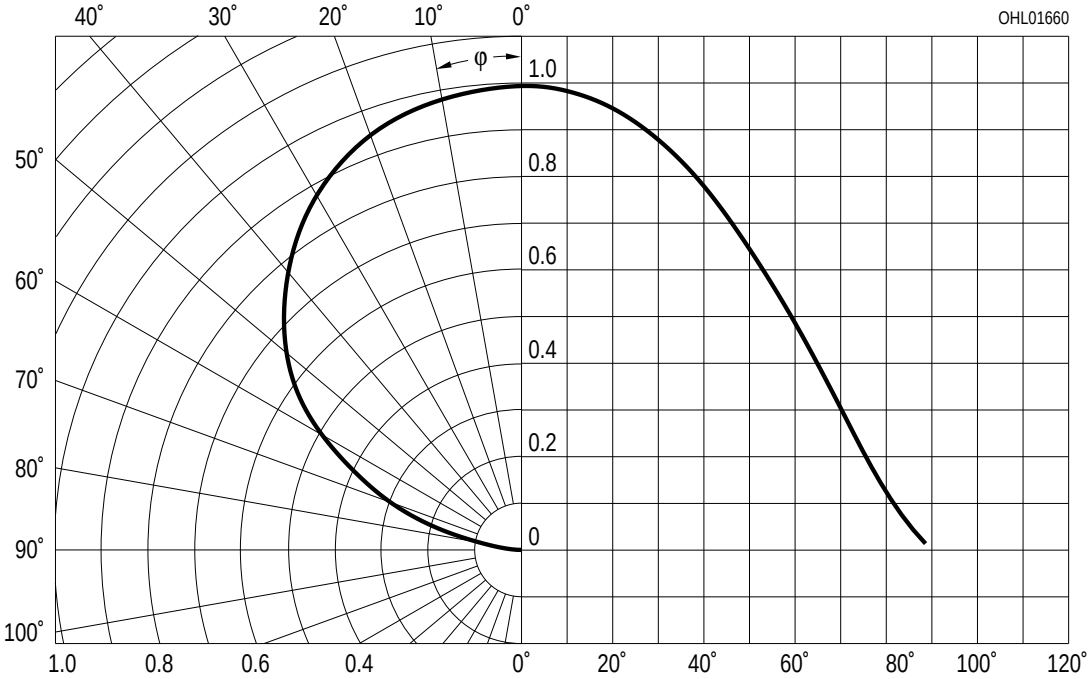
Permissible Pulse Handling Capability

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

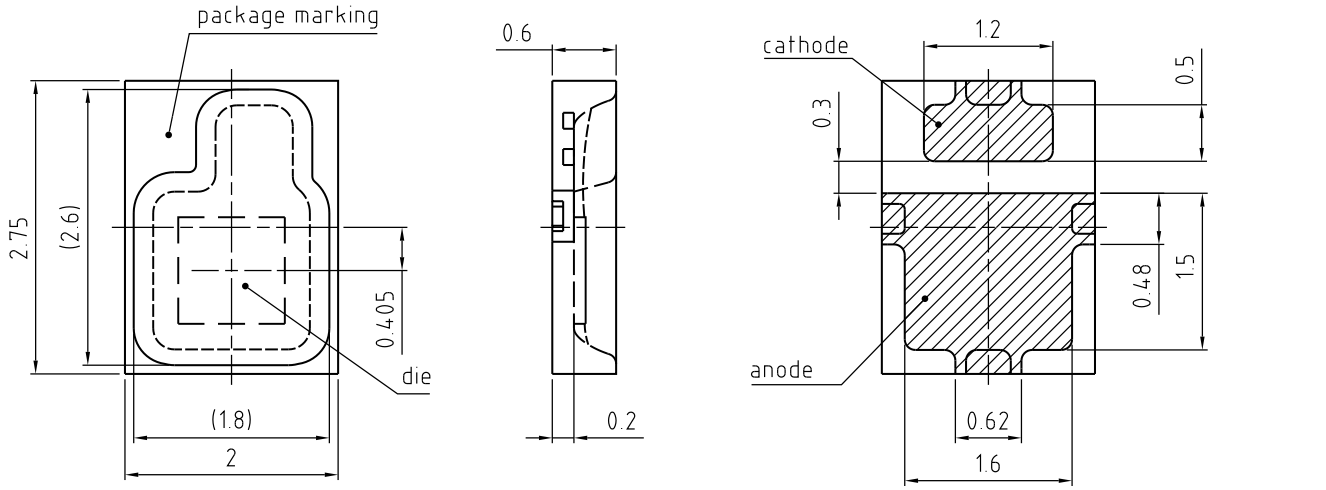


Radiation Characteristics [1] *page 12*

$I_{rel} = f(\phi)$, T_A= 25°C



Package Outline



General tolerance ±0.1

Lead finish Au

C67062-A0183-A1-02

Dimensions in mm.

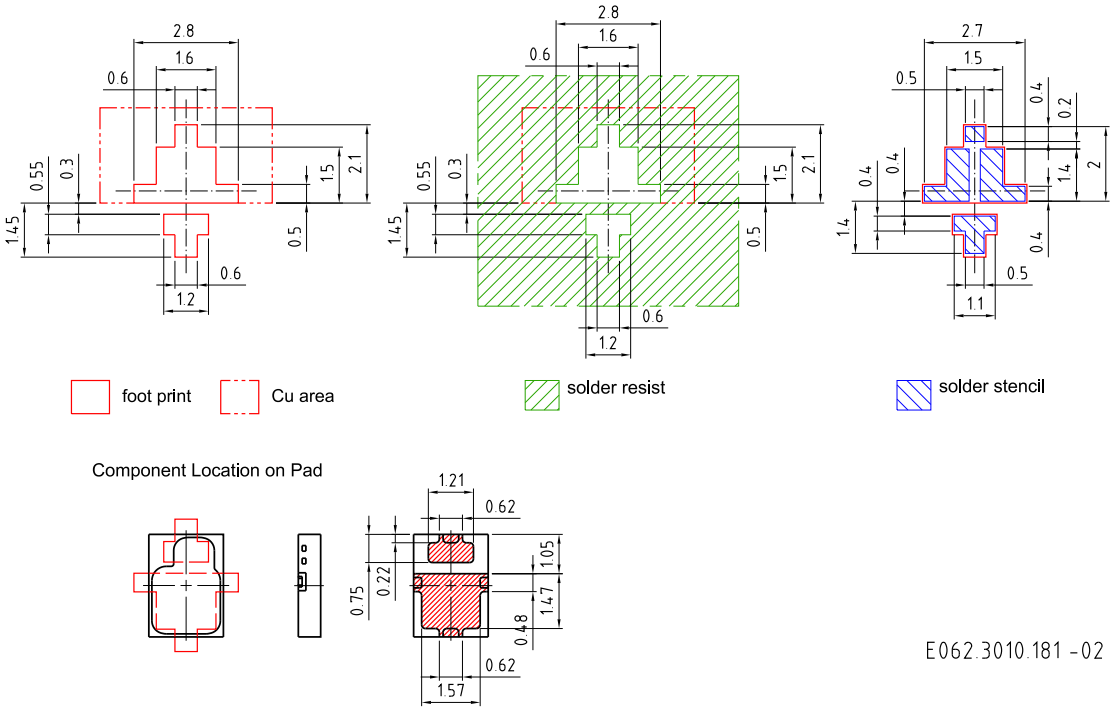
Type:
SFH 4775S

Package
IR SYNIOS P2720

Approximate Weight:
12 mg

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

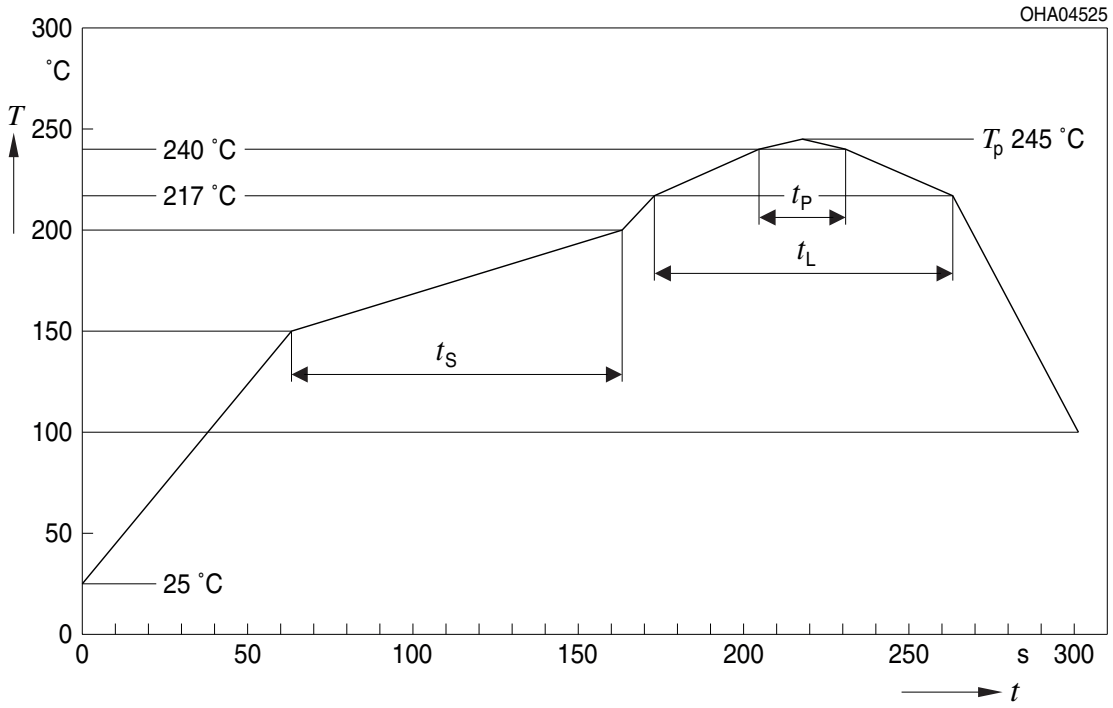
Recommended Solder Pad



Dimensions in mm.

Reflow Soldering Profile

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



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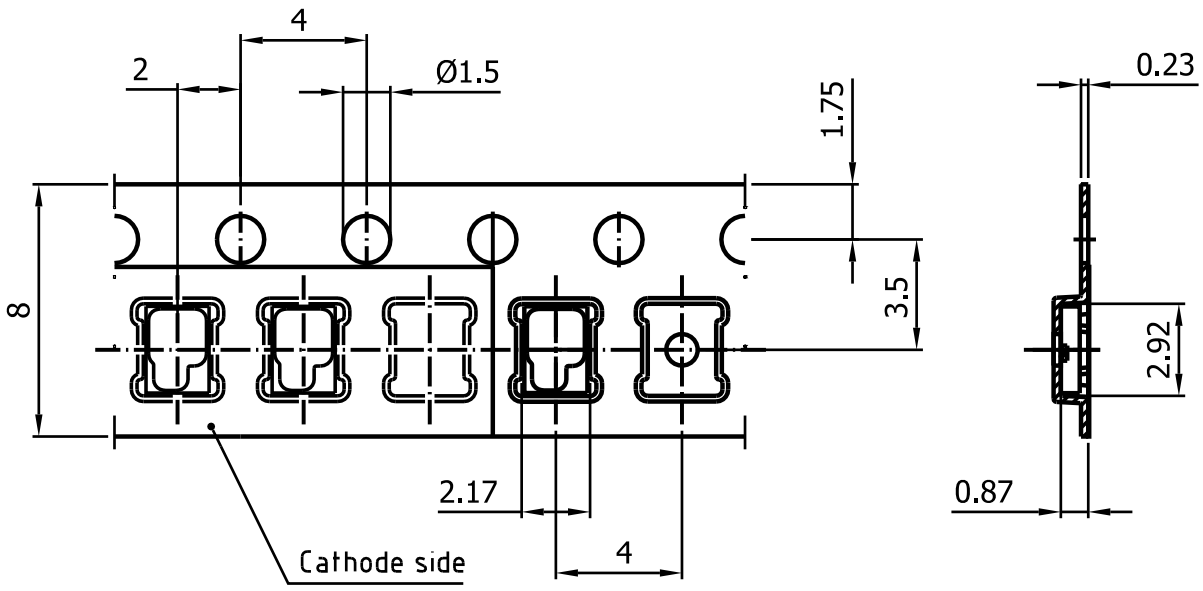
Profile Feature Profil-Charakteristik	Symbol Symbol	Pb-Free (SnAgCu) Assembly			Unit Einheit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L	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

Taping



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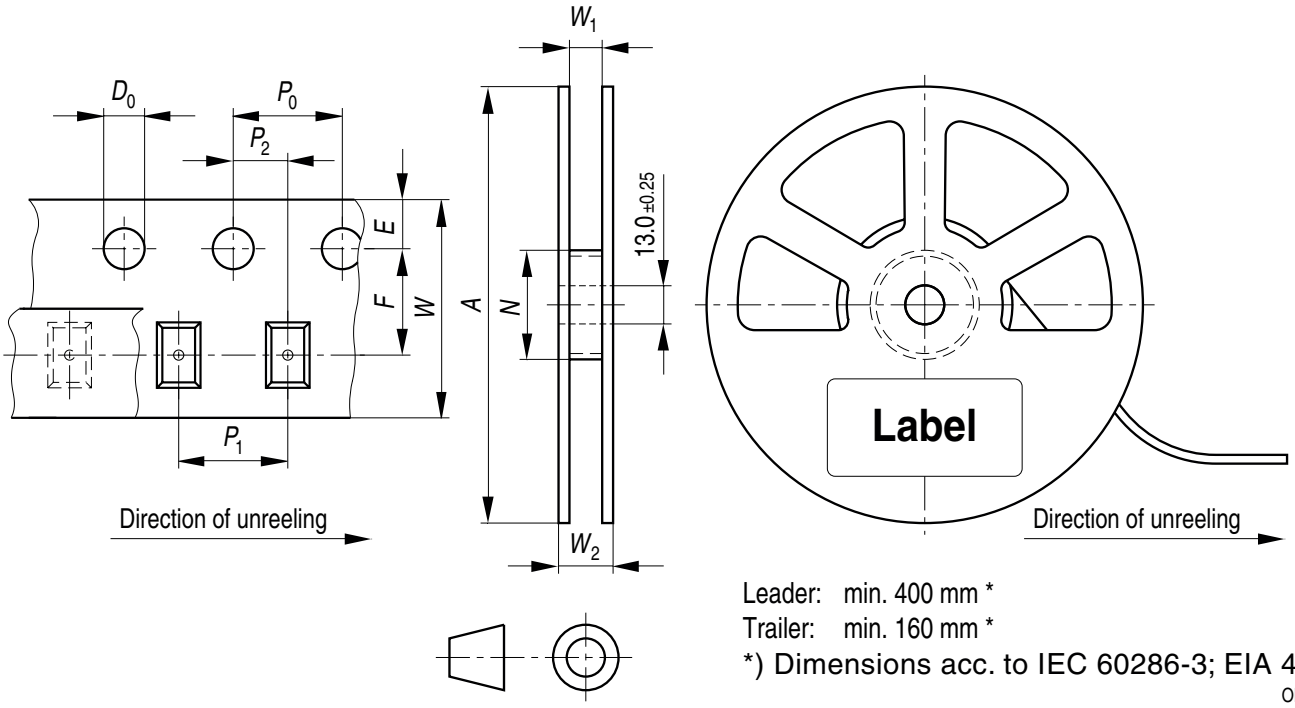
Dimensions in mm.

Tape and Reel

8 mm tape with 2000 pcs. on ∅ 180 mm reel



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

OHAY0324

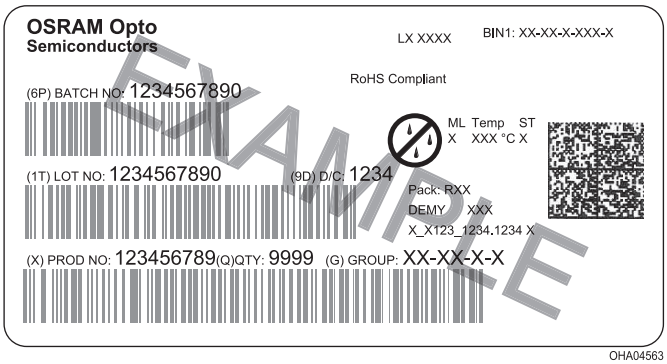
Tape dimensions [mm]

W	P_0	P_1	P_2	D_0	E	F
8 + 0.3 / -0.1	4 ± 0.1	2 ± 0.05 or 4 ± 0.1	2 ± 0.05	1.5 ± 0.1	1.75 ± 0.1	3.5 ± 0.05

Reel dimensions [mm]

A	W	N_{min}	W_1	W_{2max}
180	8	60	8.4 + 2	14.4

Barcode-Product-Label (BPL)



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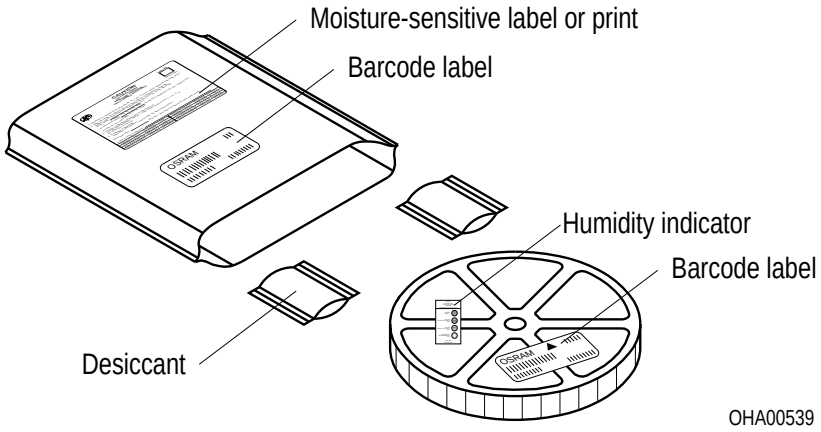
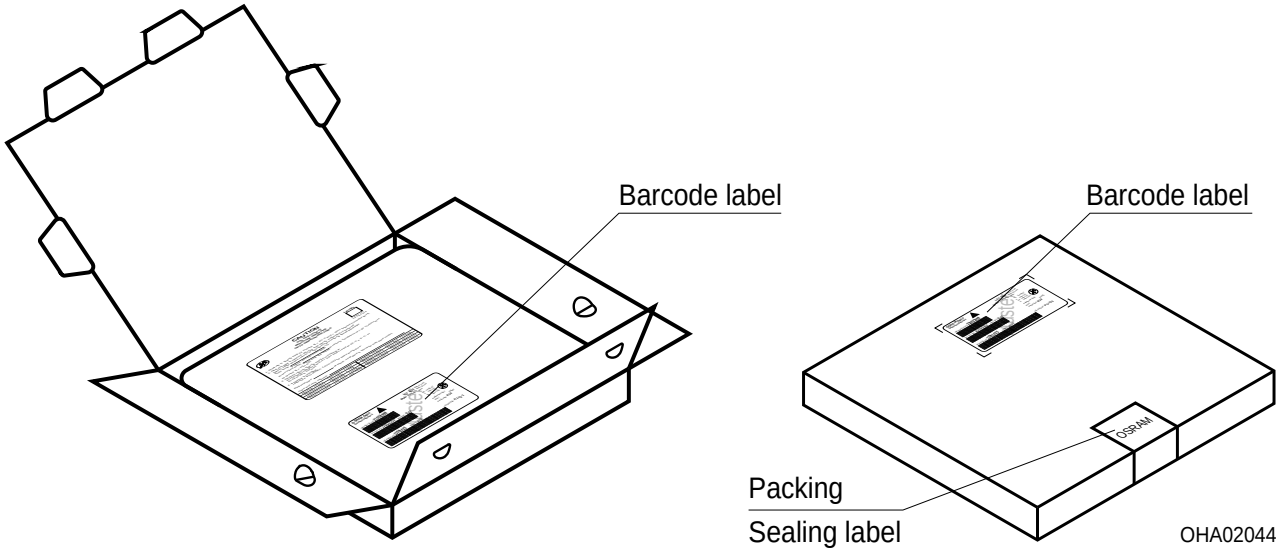
Dry Packing Process and Materials



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
200 ± 5	195 ± 5	30 ± 5

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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.

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