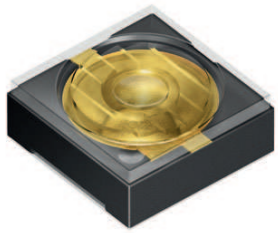
IR OSLUX (810nm) - 26° / 8° tilted
Draft Version α.2

SFH 4786S



Features:

- IR lightsource with high efficiency
- Double stack emitter
- Low thermal resistance (Max. 25 K/W)
- Centroid wavelength 810 nm
- Small package dimensions (LxWxH): 3.5mm x 3.5mm x 1.6mm
- Narrow half angle (+/- 13°) / 8° tilted

Applications

- Infrared Illumination

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 4786S	1750 (≥ 1250)	Q65111A8571

Note: measured at a solid angle of Ω = 0.001 sr / the optical axis is tilted by 8°

Maximum Ratings (T_A = 25 °C)

Parameter	Symbol	Values	Unit
Operation and storage temperature range	T_{op}; T_{stg}	-40 ... 85	°C
Junction temperature	T_j	145	°C
Reverse voltage	V_R	1	V
Forward current	I_F	500	mA
Surge current ($t_p \leq 200$ µs, D = 0)	I_{FSM}	2	A
Power consumption	P_{tot}	1.8	W
ESD withstand voltage (acc. to ANSI/ ESDA/ JEDEC JS-001 - HBM)	V_{ESD}	2	kV
Thermal resistance junction - soldering point	R_{thJS}	25	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}	820	nm
Centroid wavelength (I_F = 1 A, t_p = 10 ms)	(typ)	$\lambda_{centroid}$	810	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	± 13	°
Dimensions of active chip area	(typ)	L x W	0.75 x 0.75	mm x mm
Rise and fall times of I_e (10% and 90% of $I_{e\,max}$) (I_F = 1 A, R_L = 50 Ω)	(typ)	t_r / t_f	8/ 14	ns
Forward voltage (I_F = 0.5 A, t_p = 100 µs)	(typ (max))	V_F	3.3 (≤ 3.6)	V
Forward voltage (I_F = 1 A, t_p = 100 µs)	(typ (max))	V_F	3.55 (≤ 4)	V
Total radiant flux (I_F = 1 A, t_p = 100 µs)	(typ)	Φ_e	680	mW
Total radiant flux (I_F = 1 A, t_p= 10 ms)	(typ)	Φ_e	600	mW

Parameter		Symbol	Values	Unit
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)

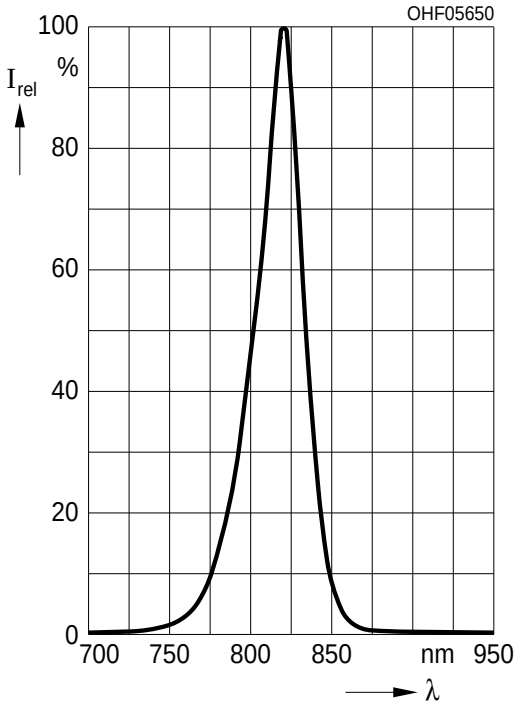
Group	Min Radiant Intensity I_F = 1 A, t_p= 10 ms $I_{e, min}$ [mW / sr]	Max Radiant Intensity I_F = 1 A, t_p= 10 ms $I_{e, max}$ [mW / sr]	Typ Radiant Intensity I_F = 1 A, t_p= 10 ms $I_{e, typ}$ [mW / sr]
SFH 4786S	1250	2500	1750

Note: measured at a solid angle of Ω = 0.001 sr / the optical axis is tilted by 8°

Only one group in one packing unit (variation lower 2:1).

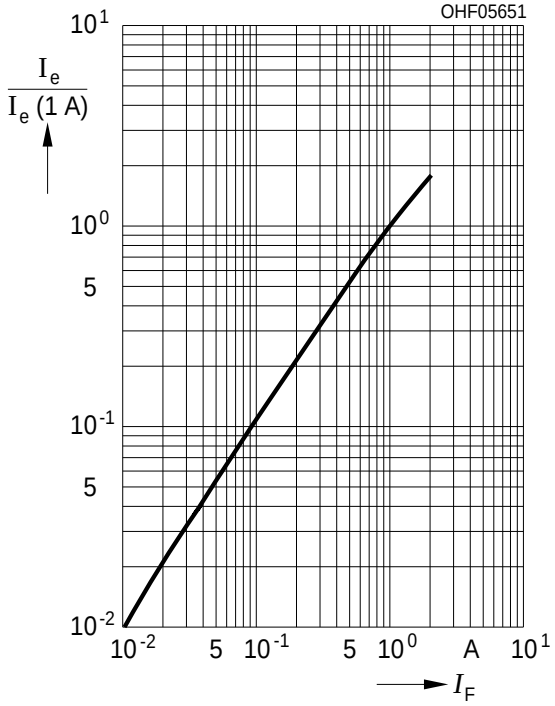
Relative Spectral Emission [1] *page 11*

I_{rel} = f (λ), T_A = 25 °C, I_F =1A, Single pulse, t_p = 10 ms



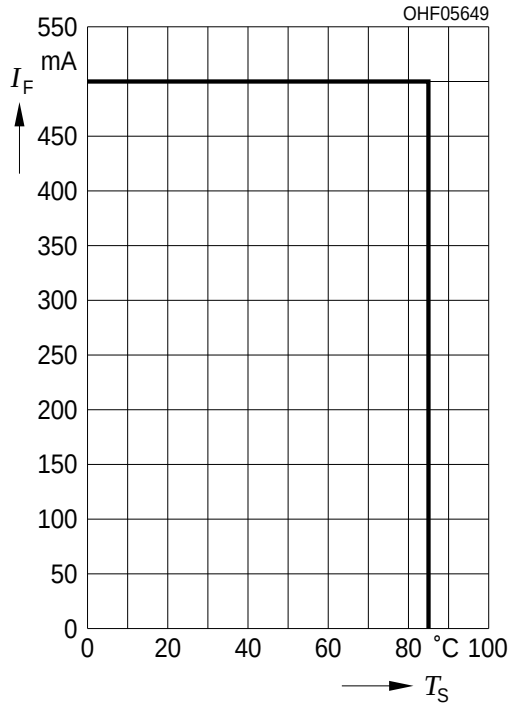
Radiant Intensity [1] *page 11*

I_e / I_e(1 A) = f(I_F), single pulse, t_p = 100 µs, T_A= 25°C



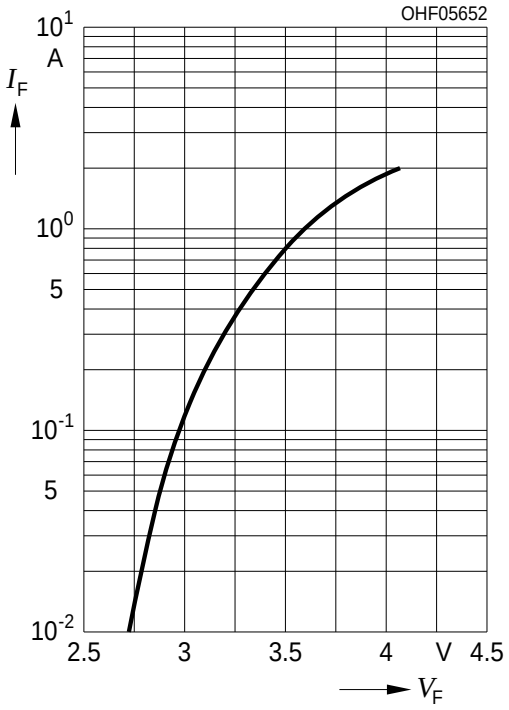
Max. Permissible Forward Current

$I_F = f(T_S)$, R_{thJS} = 25 K/W



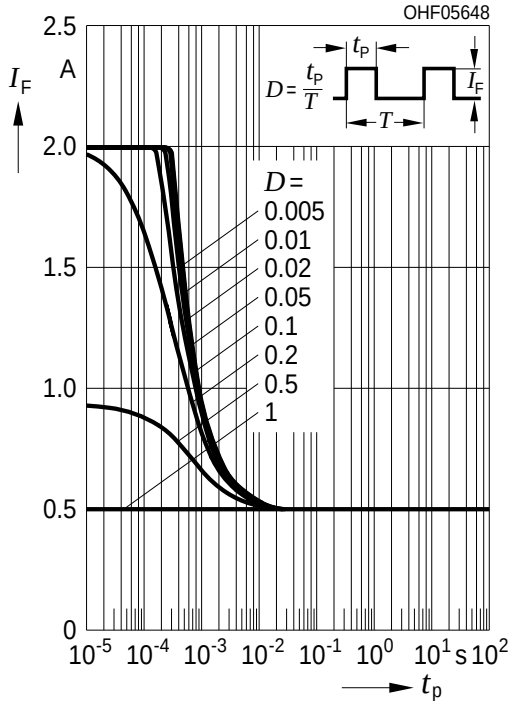
Forward Current [1] *page 11*

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



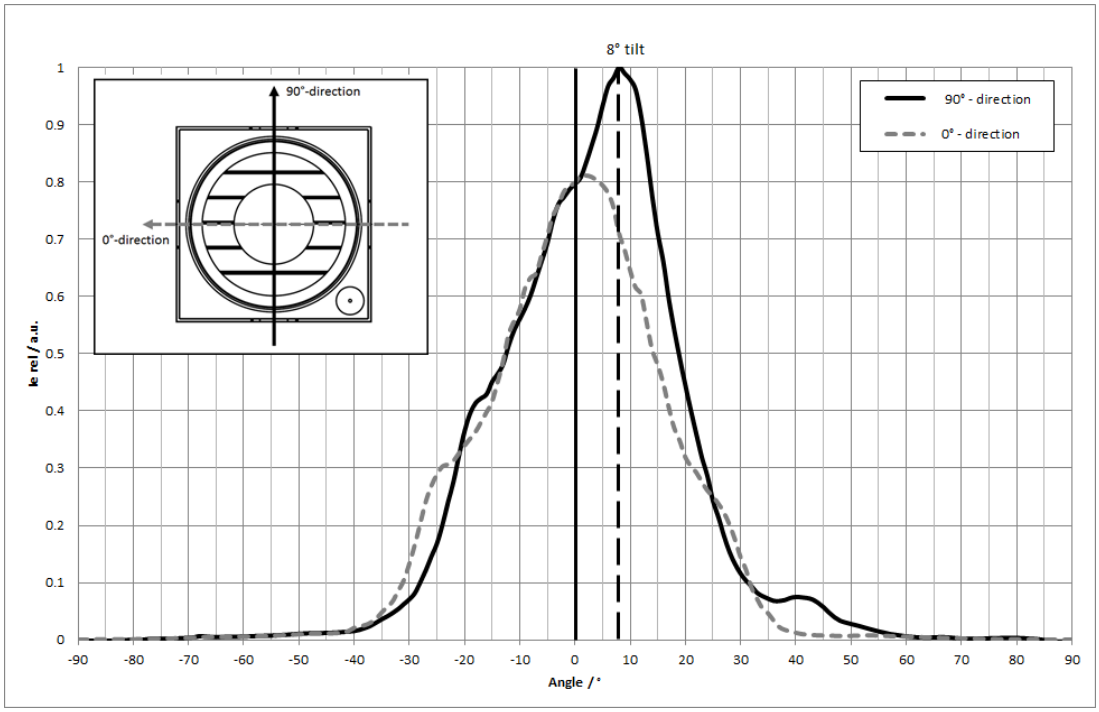
Permissible Pulse Handling Capability

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

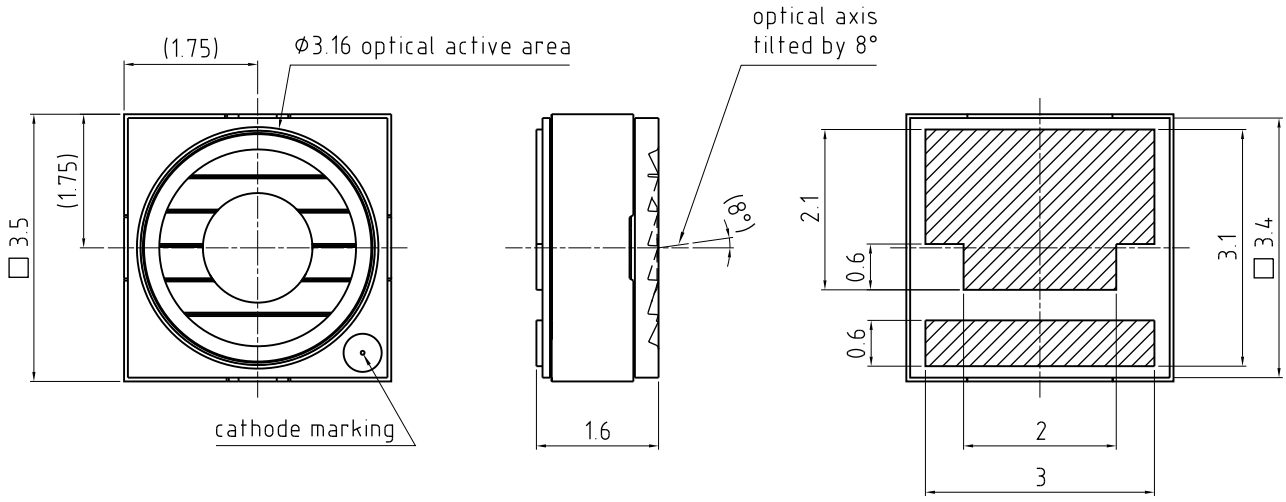


Radiation Characteristics [1] *page 11*

$I_{rel} = f(\phi)$, $T_A = 25°C$



Package Outline



general tolerance ±0.1

lead finish Au

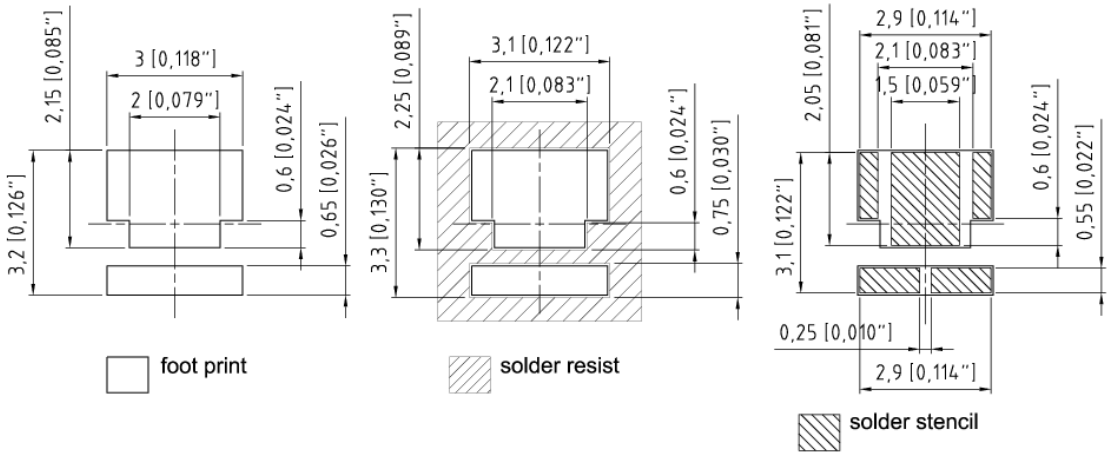
C63062-A4304-A1-02

Dimensions in mm.

Approximate Weight:

20 mg

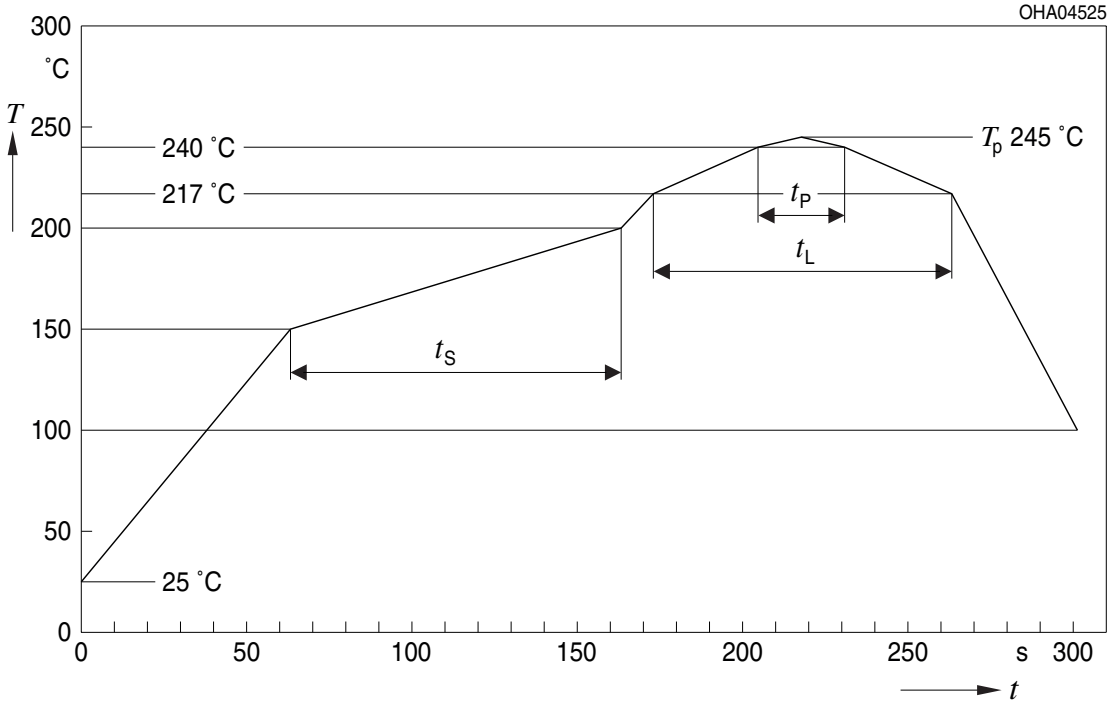
Recommended Solder Pad



Dimensions in mm [inch].

Reflow Soldering Profile

Product complies to MSL Level 3 acc. to JEDEC J-STD-020D.01



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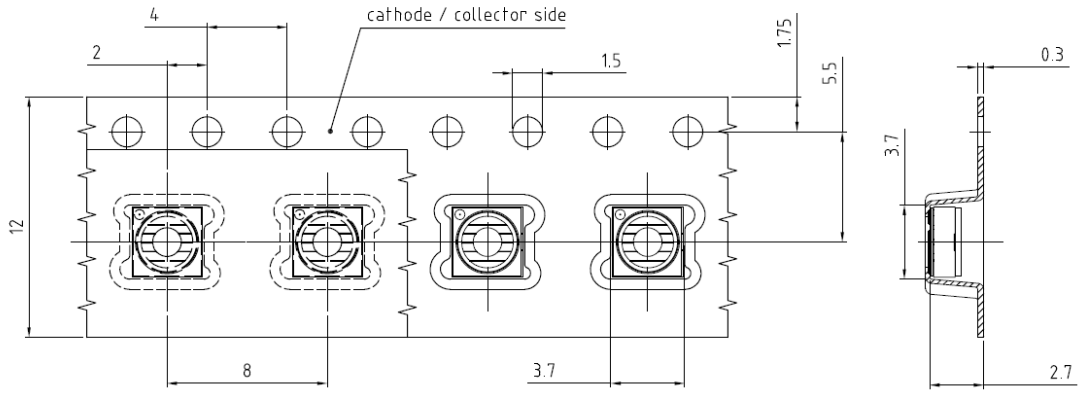
Profile Feature Profil-Charakteristik	Symbol Symbol	Pb-Free (SnAgCu) Assembly			Unit Einheit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L	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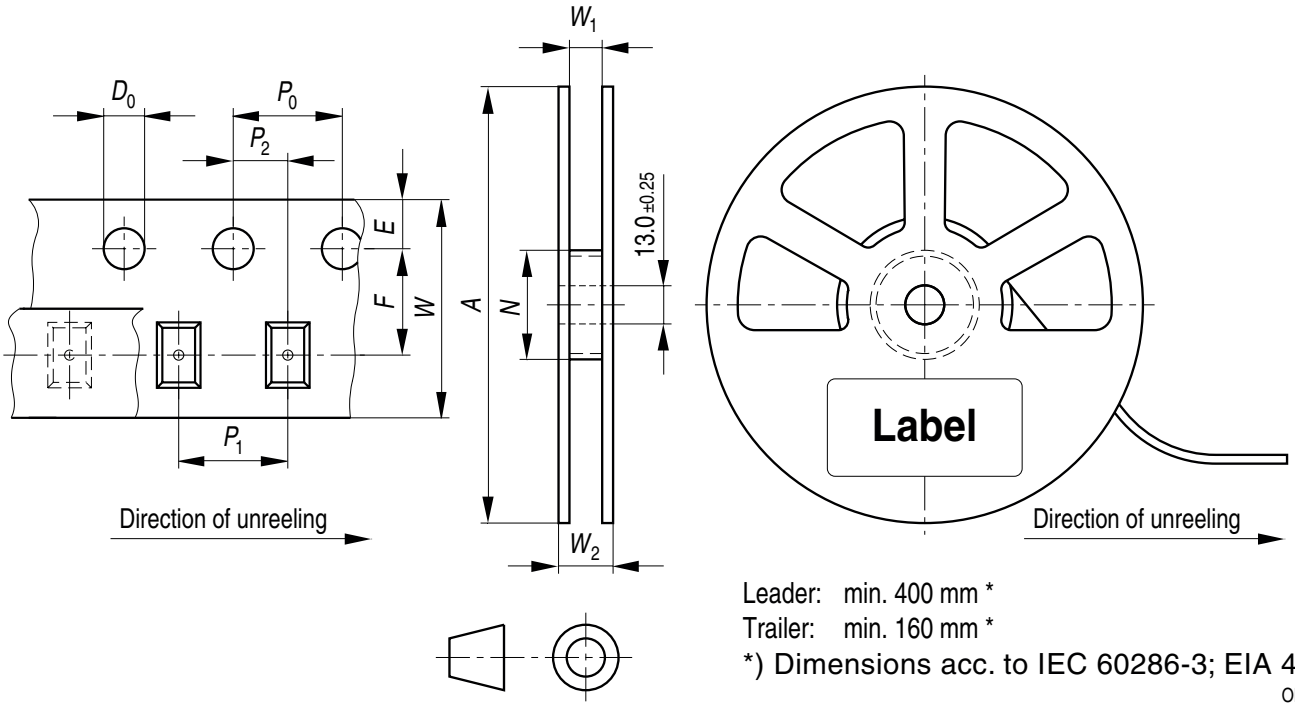
Dimensions in mm.

Tape and Reel

12 mm tape with 2500 pcs. on ∅ 330 mm reel



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

OHAY0324

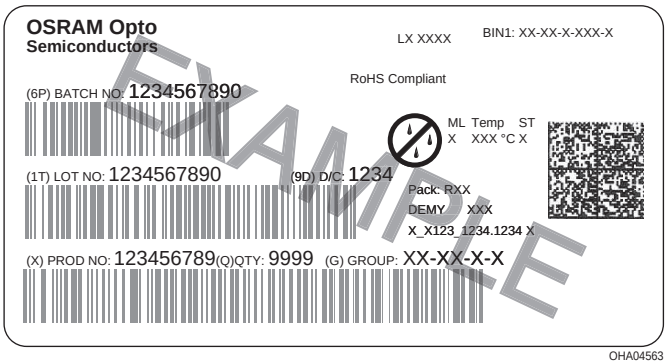
Tape dimensions [mm]

W	P_0	P_1	P_2	D_0	E	F
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}
330	12	60	12.4 + 2	18.4

Barcode-Product-Label (BPL)



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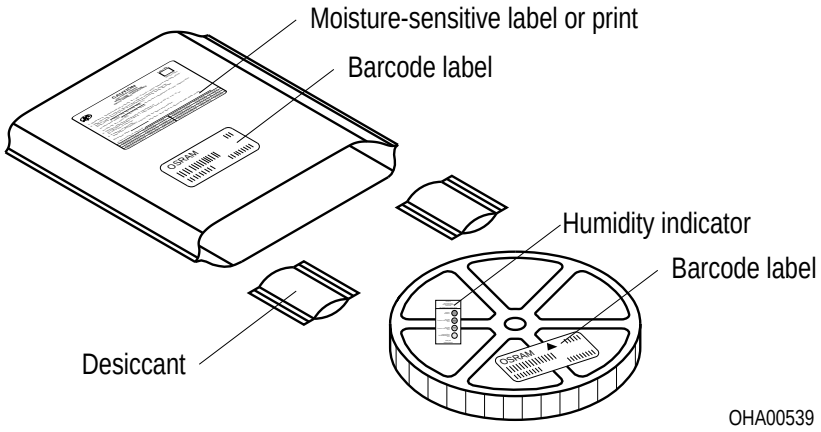
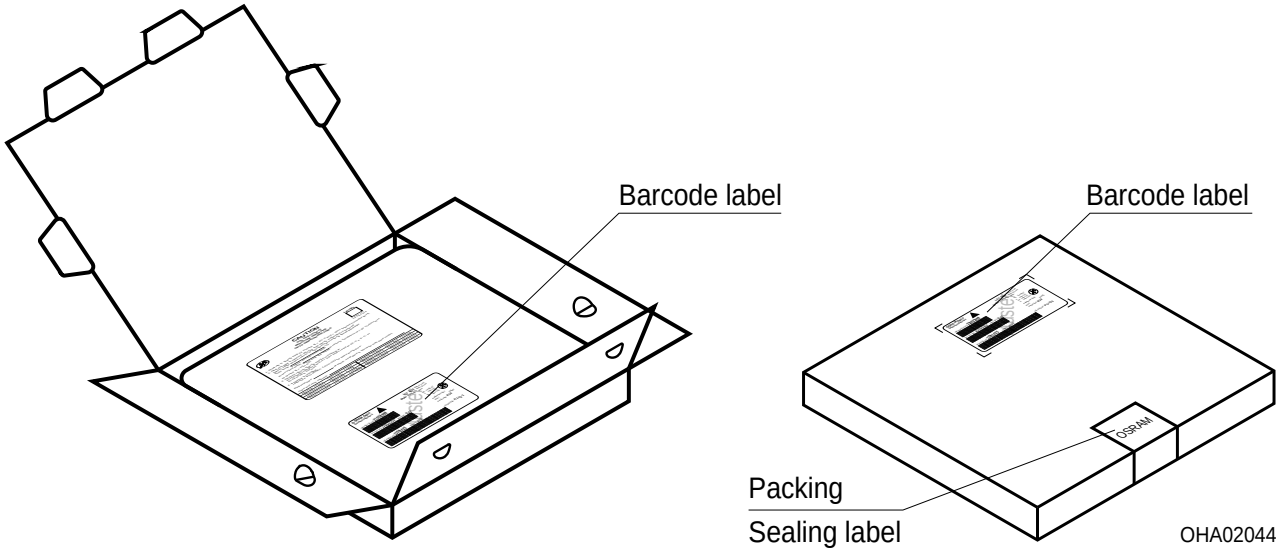
Dry Packing Process and Materials



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
349 ± 5	349 ± 5	33 ± 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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