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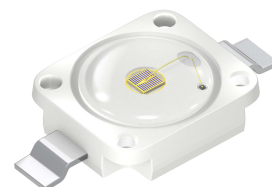
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# High Power Infrared Emitter (850 nm) Version 1.8

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## SFH 4232A



### Features:

- IR lightsource with high efficiency
- Low thermal resistance (Max. 10 K/W)
- Centroid wavelength 850 nm
- Superior Corrosion Robustness (see chapter package outlines)

### Applications

- Infrared Illumination for cameras
- Surveillance systems
- Machine vision 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:	Total Radiant Flux $\Phi_e$ [mW] $I_F = 1 \text{ A}, t_p = 10 \text{ ms}$	Ordering Code
SFH 4232A	650 ( $\geq 400$ )	Q65111A3235
SFH 4232A-DB	500 ... 800	Q65111A5199

Note: Measured with integrating sphere.

**Maximum Ratings** ( $T_A = 25\text{ °C}$ )

Parameter	Symbol	Values	Unit
Operation and storage temperature range	$T_{op}; T_{stg}$	-40 ... 100	°C
Junction temperature	$T_j$	125	°C
Reverse voltage	$V_R$	1	V
Forward current	$I_F$	1000	mA
Surge current ( $t_p \leq 1.5\text{ ms}$ , $D = 0$ )	$I_{FSM}$	2	A
Power consumption	$P_{tot}$	2100	mW
ESD withstand voltage (acc. to ANSI/ ESDA/ JEDEC JS-001 - HBM)	$V_{ESD}$	2	kV
Thermal resistance junction - soldering point	$R_{thJS}$	10	K / W

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

**Characteristics** ( $T_A = 25\text{ °C}$ )

Parameter	Symbol	Values	Unit
Peak wavelength ( $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$ )	(typ) $\lambda_{peak}$	860	nm
Centroid wavelength ( $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$ )	(typ) $\lambda_{centroid}$	850	nm
Spectral bandwidth at 50% of $I_{max}$ ( $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$ )	(typ) $\Delta\lambda$	30	nm
Half angle	(typ) $\varphi$	$\pm 60$	°
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 $I_{e,max}$ ) ( $I_F = 2\text{ A}$ , $R_L = 50\ \Omega$ )	(typ) $t_r / t_f$	11 / 14	ns
Forward voltage ( $I_F = 1\text{ A}$ , $t_p = 20\text{ ms}$ )	(typ (max)) $V_F$	1.65 ( $\leq 2.1$ )	V
Forward voltage ( $I_F = 2\text{ A}$ , $t_p = 100\ \mu\text{s}$ )	(typ (max)) $V_F$	1.9 ( $\leq 2.5$ )	V
Radiant intensity ( $I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$ )	$I_{e, typ}$	205	mW/sr

Parameter		Symbol	Values	Unit
Temperature coefficient of $I_e$ or $\Phi_e$ ( $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$ )	(typ)	$TC_I$	-0.3	% / K
Temperature coefficient of $V_F$ ( $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$ )	(typ)	$TC_V$	-1	mV / K
Temperature coefficient of wavelength ( $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$ )	(typ)	$TC_{\lambda, \text{centroid}}$	0.3	nm / K

### Grouping ( $T_A = 25\text{ }^\circ\text{C}$ )

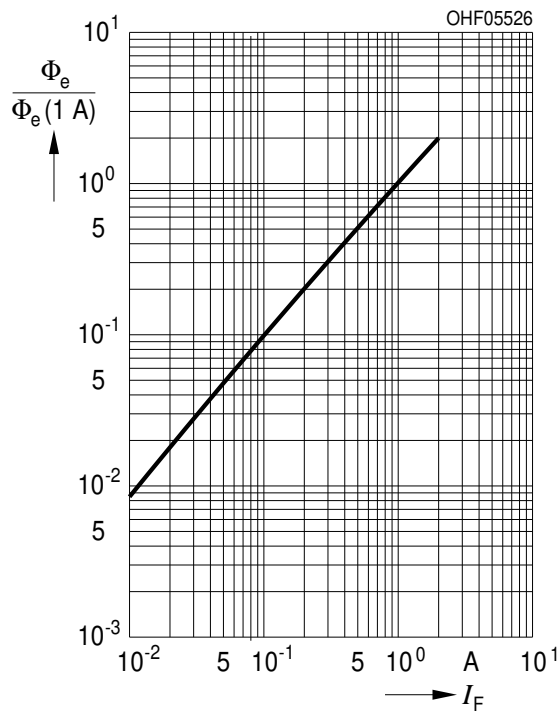
Group	Min Total Radiant Flux $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$ $\Phi_{e \text{ min}}$ [mW]	Max Total Radiant Flux $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$ $\Phi_{e \text{ max}}$ [mW]
SFH 4232A - DA	400	630
SFH 4232A - DB	500	800
SFH 4232A - EA	630	1000

Note: Measured with integrating sphere.

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

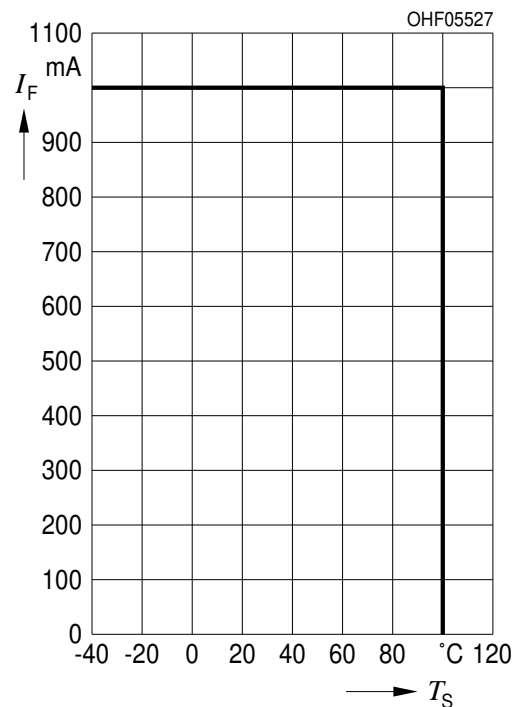
### Relative Total Radiant Flux <sup>1) page 11</sup>

$\Phi_e / \Phi_e(1\text{ A}) = f(I_F)$ ,  $T_A = 25\text{ }^\circ\text{C}$ , Single pulse,  
 $t_p = 100\text{ }\mu\text{s}$



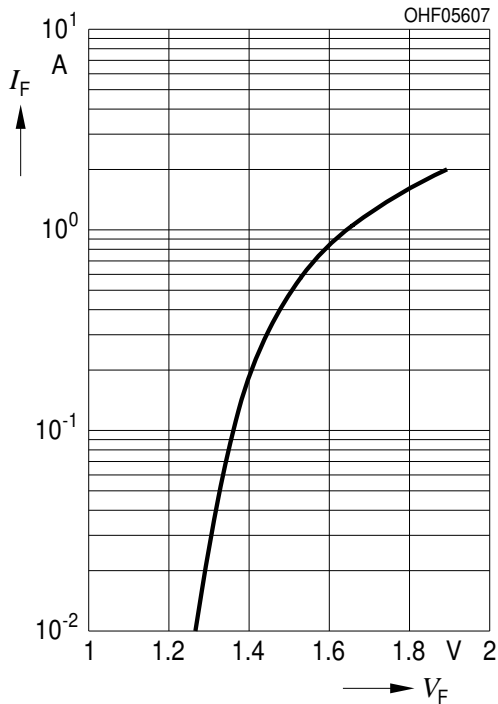
### Max. Permissible Forward Current

$I_F = f(T_S)$ ,  $R_{thJS} = 10\text{ K/W}$



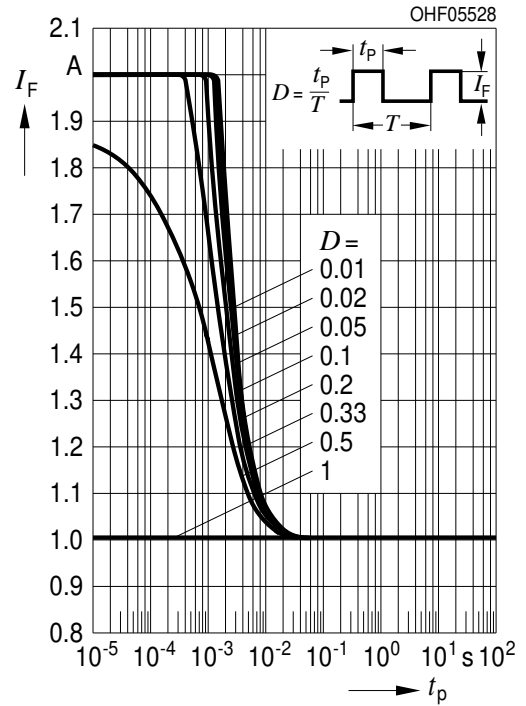
**Forward Current** <sup>1) page 11</sup>

$I_F = f(V_F)$ , single pulse,  $t_p = 100 \mu s$ ,  $T_A = 25^\circ C$



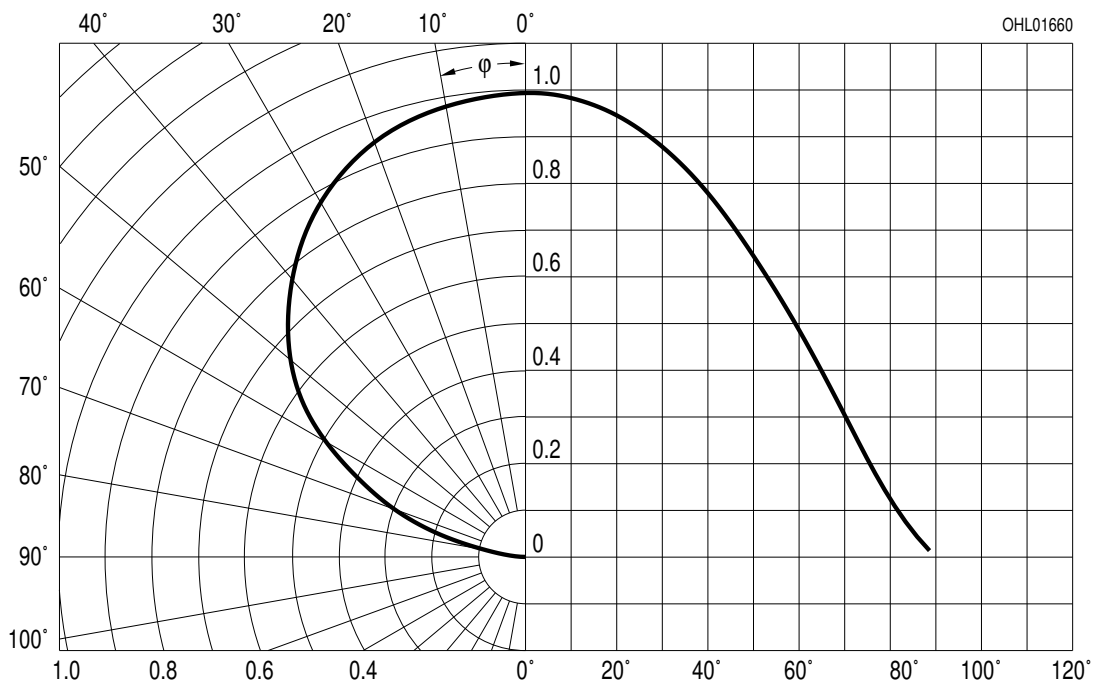
**Permissible Pulse Handling Capability**

$I_F = f(t_p)$ ,  $T_S = 85^\circ C$ , duty cycle  $D = \text{parameter}$

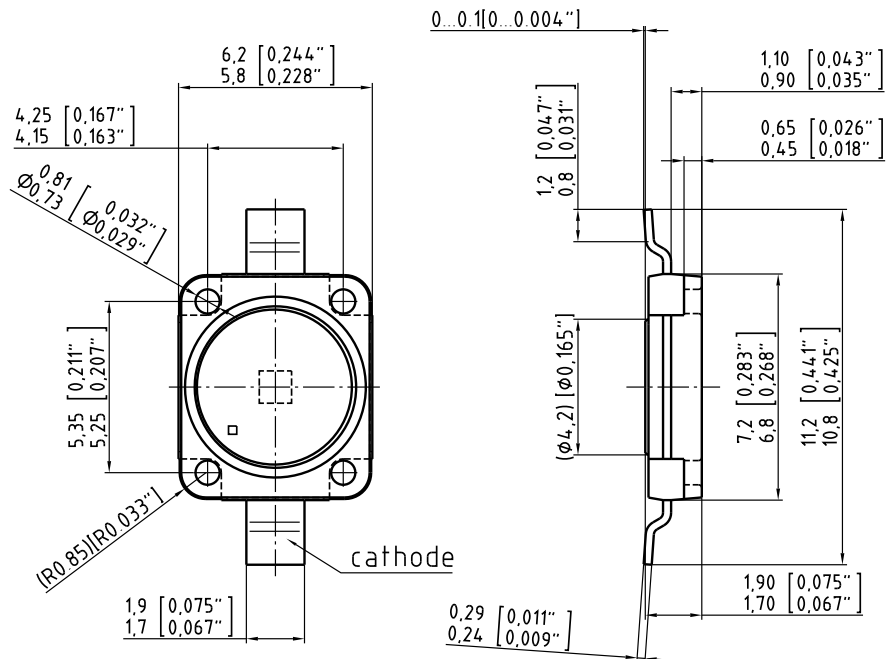


**Radiation Characteristics** <sup>1) page 11</sup>

$I_{rel} = f(\phi)$ ,  $T_A = 25^\circ C$



## Package Outline



C63062-A3904-A1..-05

*Dimensions in mm (inch).*

**Note:**

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

**Type:**

SFH 4232A

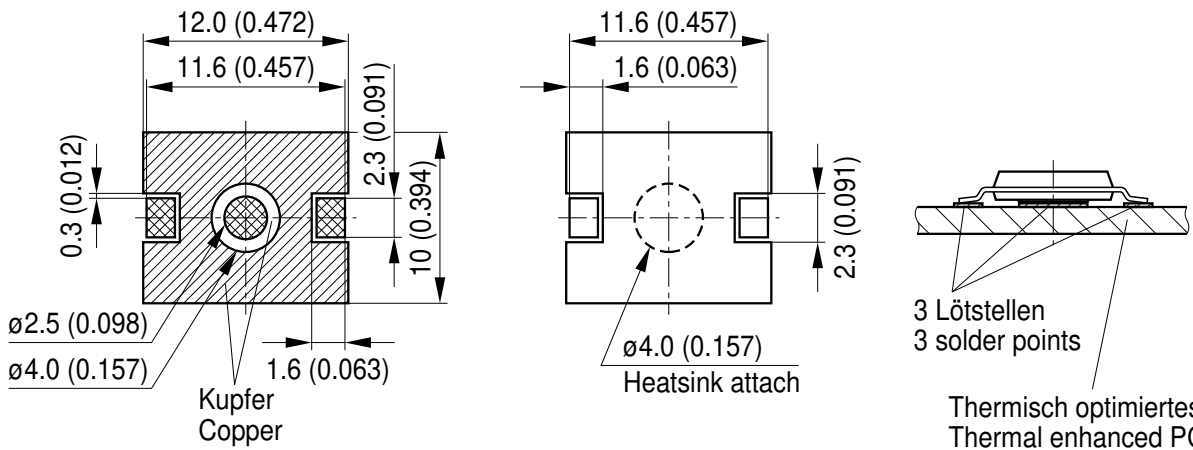
**Package**




Golden Dragon

**Approximate Weight:**

0.2 g

**Recommended Solder Pad**



-  Lötstopplack  
Solder resist
-  Lötpasten Schablone  
Solder paste stencil
-  Bare Copper  
Freies Kupfer

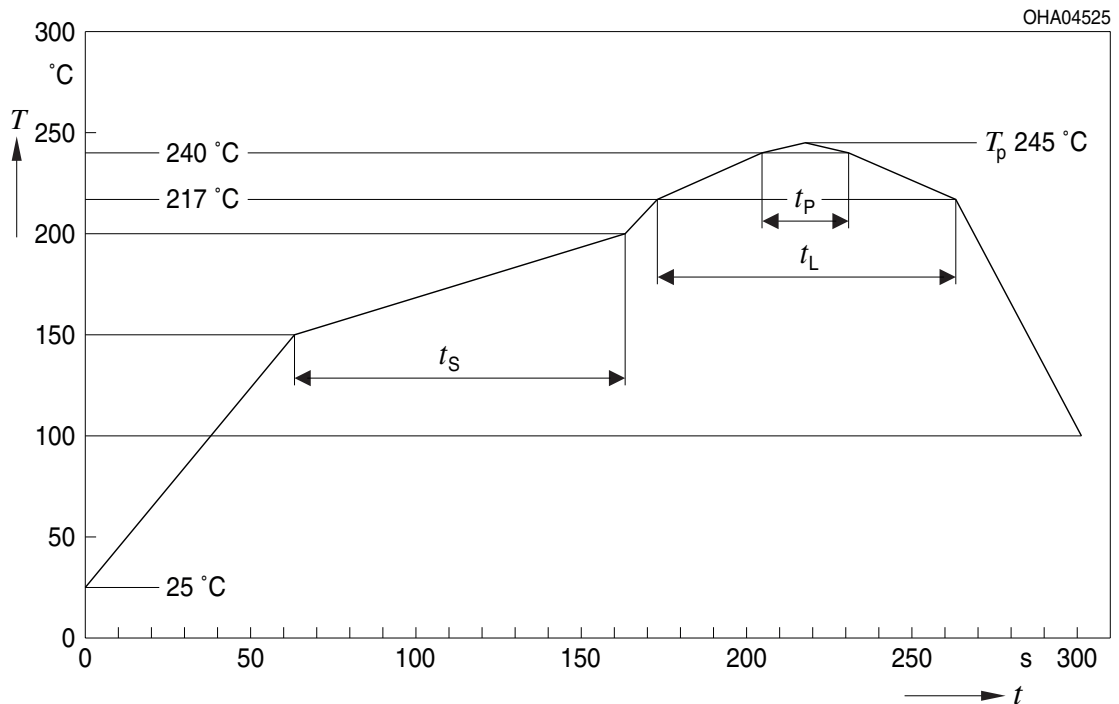
Dimensions in mm (inch).

**Attention**

Anode and Heatsink are electrically connected

**Reflow Soldering Profile**

Product complies to MSL Level 2 acc. to JEDEC J-STD-020D.01



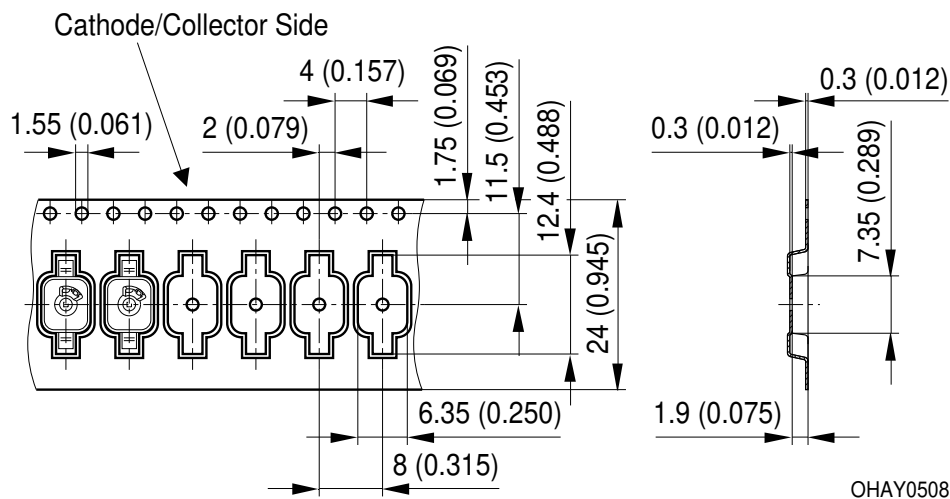
OHA04612

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

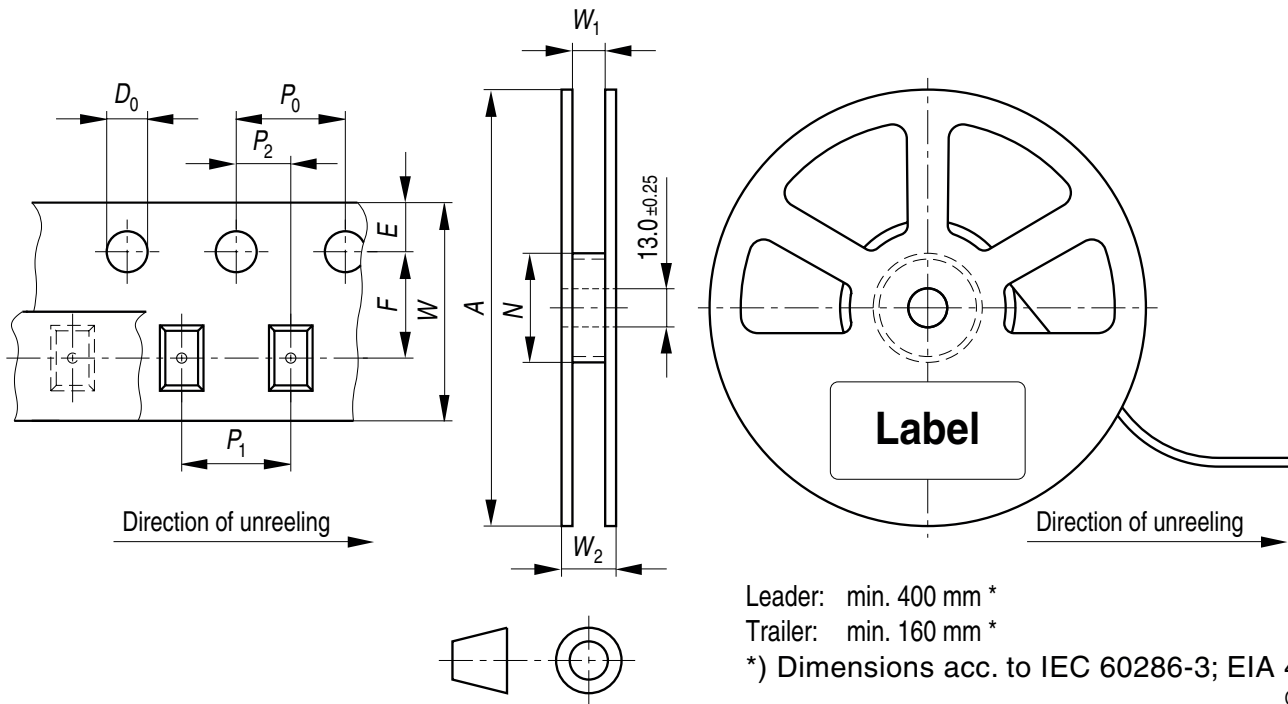


*Dimensions in mm (inch).*



**Tape and Reel**

24 mm tape with 800 pcs. on  $\varnothing$  180 mm reel



Leader: min. 400 mm \*

Trailer: min. 160 mm \*

\*) Dimensions acc. to IEC 60286-3; EIA 481-D

OHAY0324

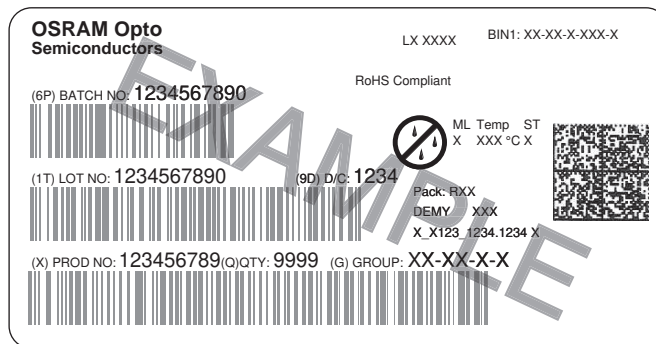
**Tape dimensions [mm]**

W	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	D <sub>0</sub>	E	F
24 + 0.3 / - 0.1	4 ± 0.1	8 ± 0.1 or 12 ± 0.1	2 ± 0.1	1.5 ± 0.1	1.75 ± 0.1	11.5 ± 0.05

**Reel dimensions [mm]**

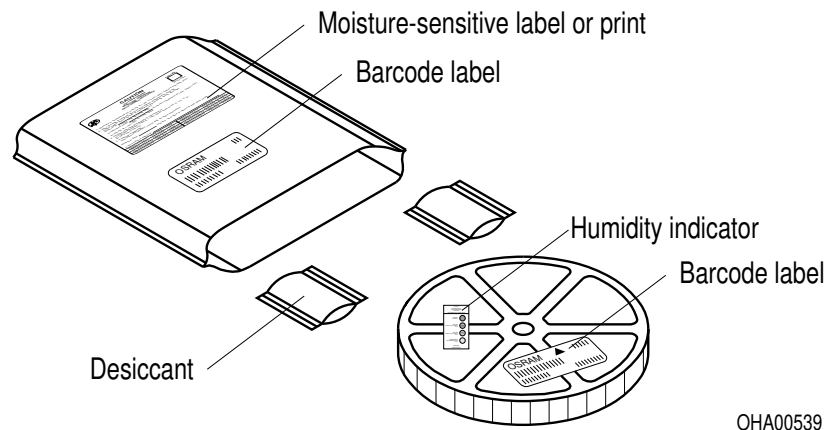
A	W	N <sub>min</sub>	W <sub>1</sub>	W <sub>2max</sub>
180	24	60 / 100	24.4 + 2	30.4

**Barcode-Product-Label (BPL)**



OHA04563

**Dry Packing Process and Materials**

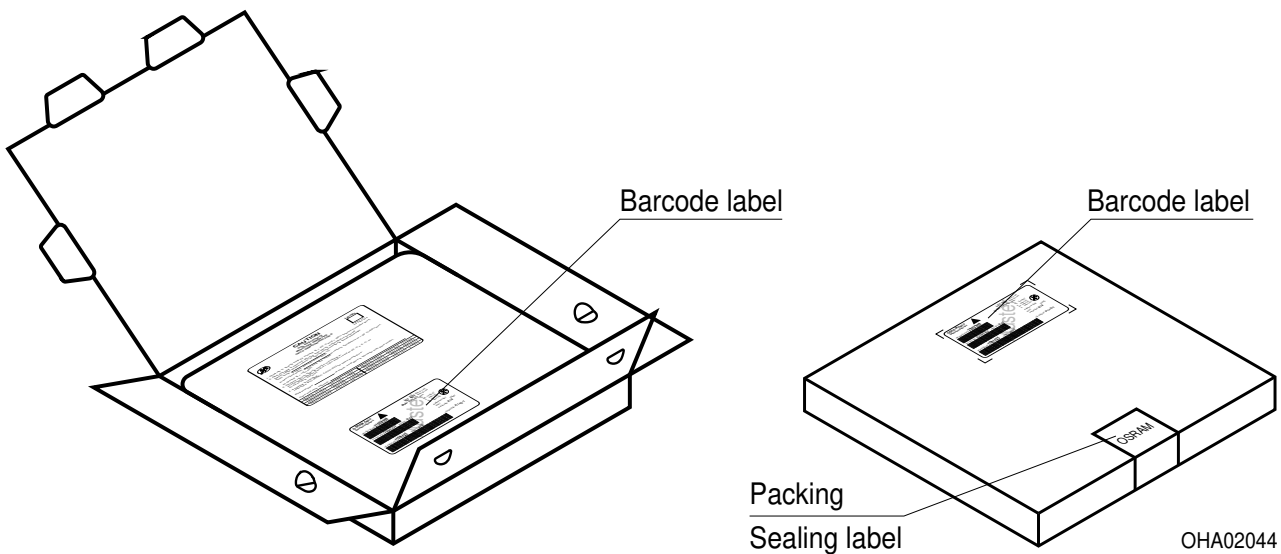


OHA00539

**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**



OHA02044

**Dimensions of transportation box in mm**

Width	Length	Height
195 ± 5	195 ± 5	42 ± 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**

- <sup>1)</sup> **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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