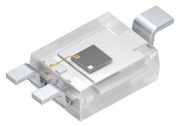
SFH 3410R



Smart DIL

Silicon NPN Phototransistor with Vλ Characteristics

Applications

- Access Control / Biometrics (IRIS, Scan, Vein scan)
- Mood Lighting
- Remote Control, Proximity, Ambient Light Sensing
- Smartphone, Tablet (Backlighting)

Features:

- Package: clear epoxy
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- Especially suitable for applications from 350 nm to 970 nm
- Adapted to human eye sensitivity (V_λ)
- SMT package without base connection, suitable for IR reflow soldering
- Only available on tape and reel

Ordering Information

Type	Photocurrent V_{CE} = 5 V; Std. Light A; E_v = 20 lx I_{PCE}	Ordering Code
SFH 3410R	3.2 ... 16.0 µA	Q65111A9395

Maximum Ratings

T_A = 25 °C

Parameter	Symbol		Values
Operating temperature	T_{op}	min. max.	-40 °C 100 °C
Storage temperature	T_{stg}	min. max.	-40 °C 100 °C
Collector-emitter voltage	V_{CE}	max.	5.5 V
Collector current	I_C	max.	20 mA
Emitter-collector voltage	V_{EC}	max.	0.5 V
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}	max.	2 kV

Characteristics

T_A = 25 °C

Parameter	Symbol		Values
Wavelength of max sensitivity	$\lambda_{S\ max}$	typ.	570 nm
Chip dimensions	L x W	typ.	0.75 x 0.75 mm x mm
Radiant sensitive area	A	typ.	0.29 mm²
Half angle	φ	typ.	60 °
Dark current V_{CE} = 5 V; E = 0	I_{CE0}	typ. max.	3 nA 50 nA
Collector-emitter saturation voltage [1)] $I_C = I_{PCE,min}$ X 0.3; E_v = 20 lx	V_{CEsat}	typ.	100 mV
Capacitance V_{CE} = 0 V; f = 1 MHz; E = 0	C_{CE}	typ.	3.9 pF

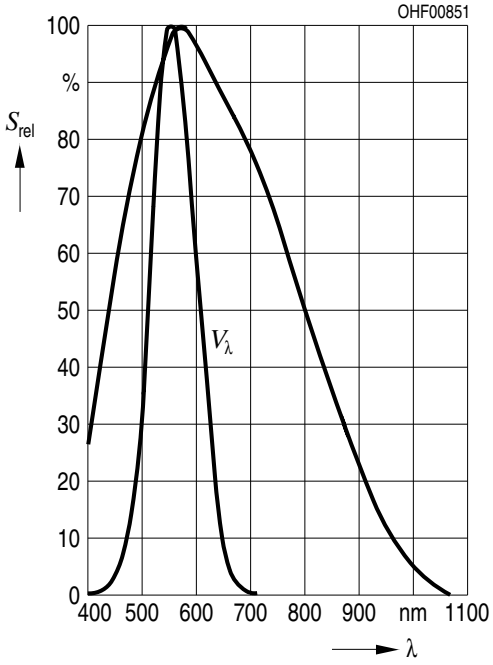
Grouping

T_A = 25 °C

Group	Photocurrent V_{CE} = 5 V; Std. Light A; E_v = 20 lx min. I_{PCE}	Photocurrent V_{CE} = 5 V; Std. Light A; E_v = 20 lx max. I_{PCE}
1	3.2 µA	6.3 µA
2	5.0 µA	10.0 µA
3	8.0 µA	16.0 µA

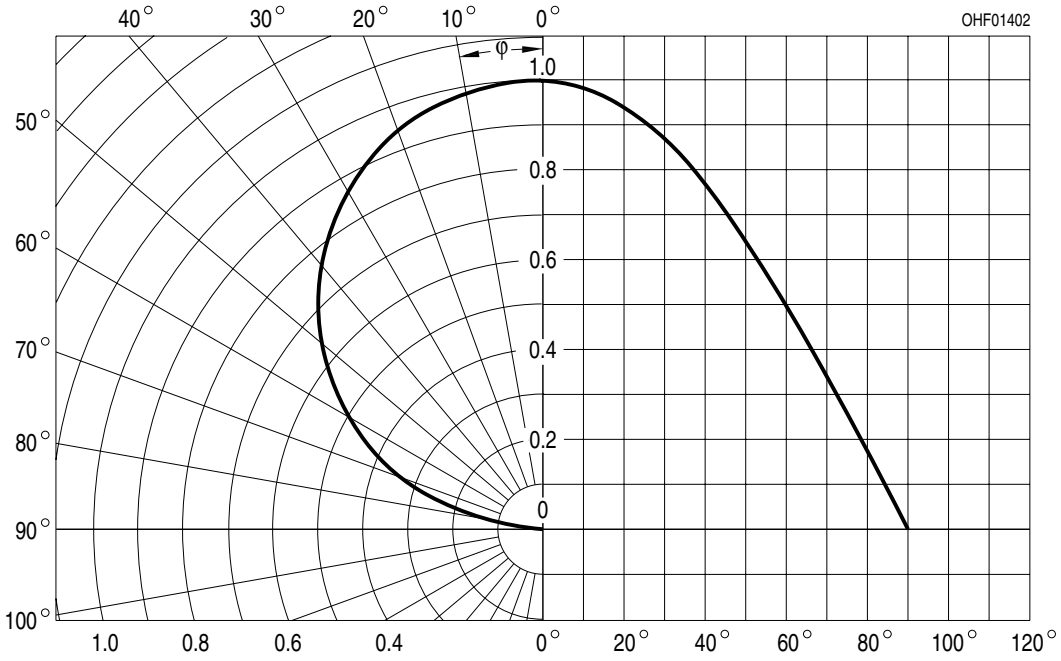
Relative Spectral Sensitivity [2), 3)]

S_{rel} = f (λ)



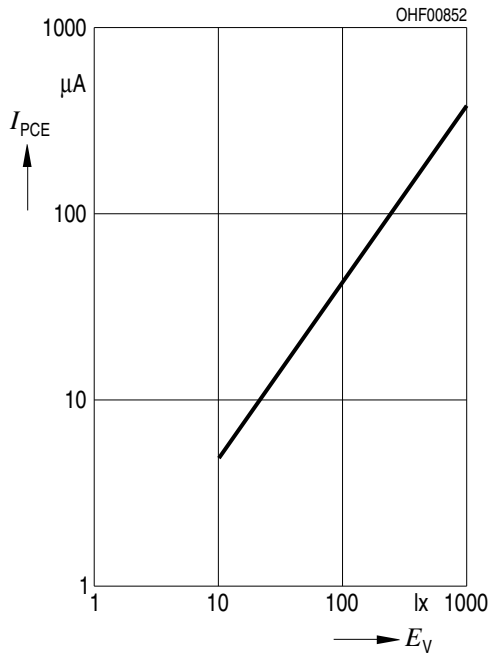
Directional Characteristics [2), 3)]

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



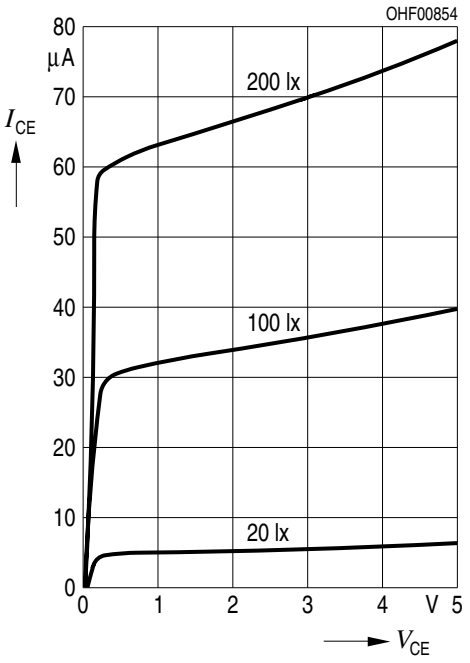
Photocurrent [2), 3)]

$I_{PCE} = f(E_v)$; $V_{CE} = 5$ V



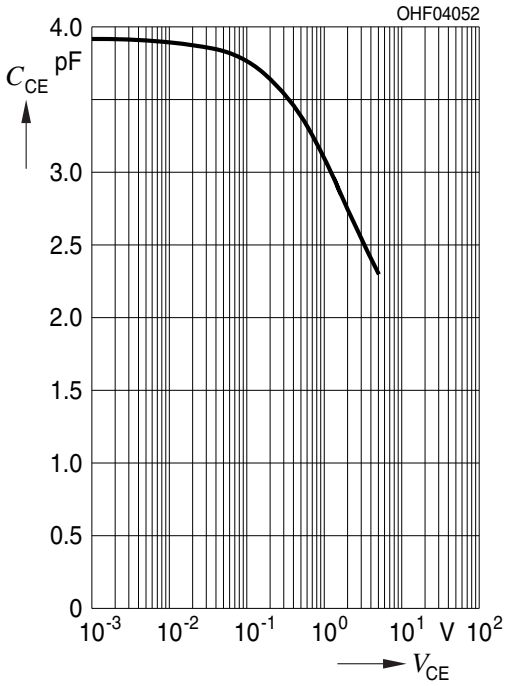
Collector-Emitter Current [2), 3)]

$I_{CE} = f(V_{CE}, E_v)$;



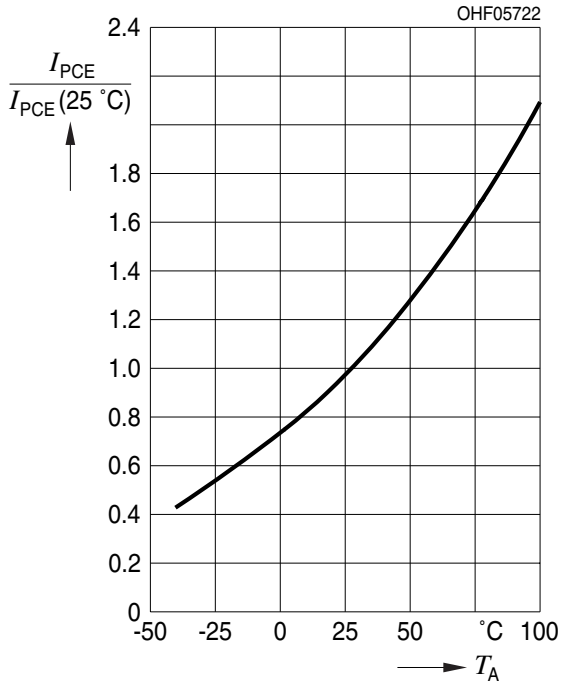
Collector-Emitter Capacitance [2), 3)]

$C_{CE} = f(V_{CE})$; f = 1 MHz; E = 0 ;

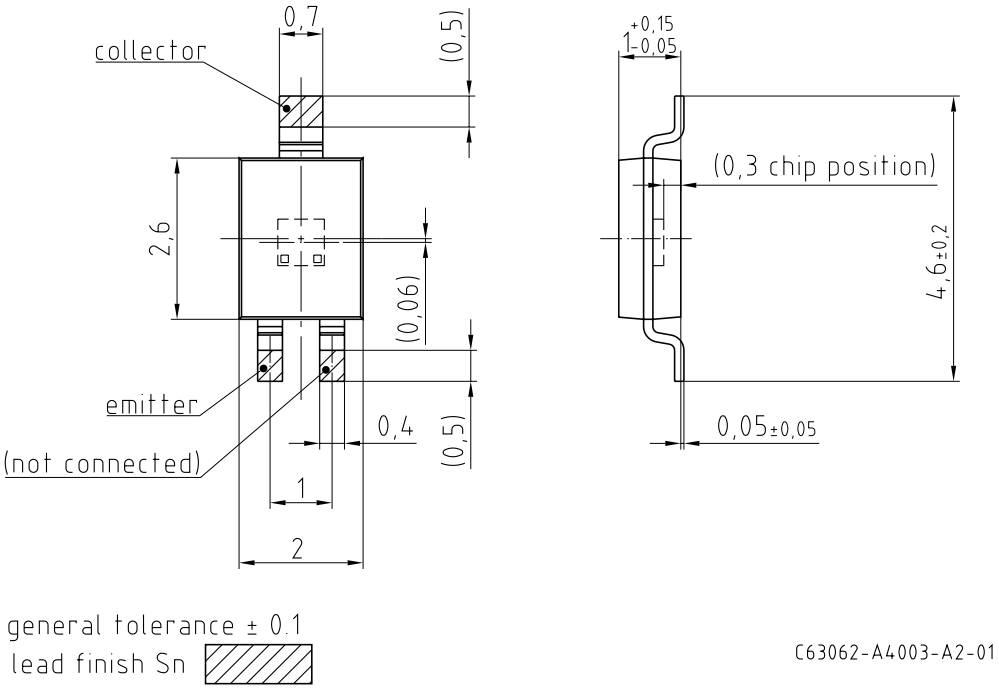


Photocurrent [2)]

$I_{PCE,rel} = f(T_A)$; V_{CE} = 5 V; E_v = 20 lx



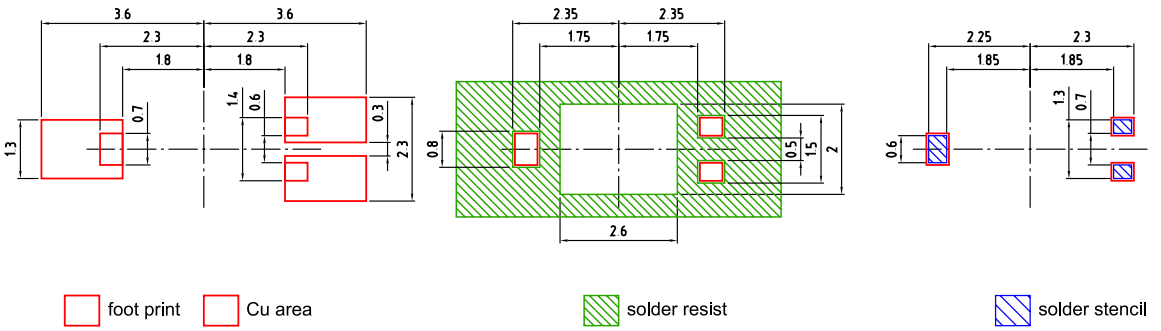
Dimensional Drawing [4)]

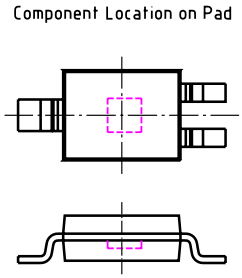


Approximate Weight: 12.0 mg

Package marking: Collector

Recommended Solder Pad [4)]





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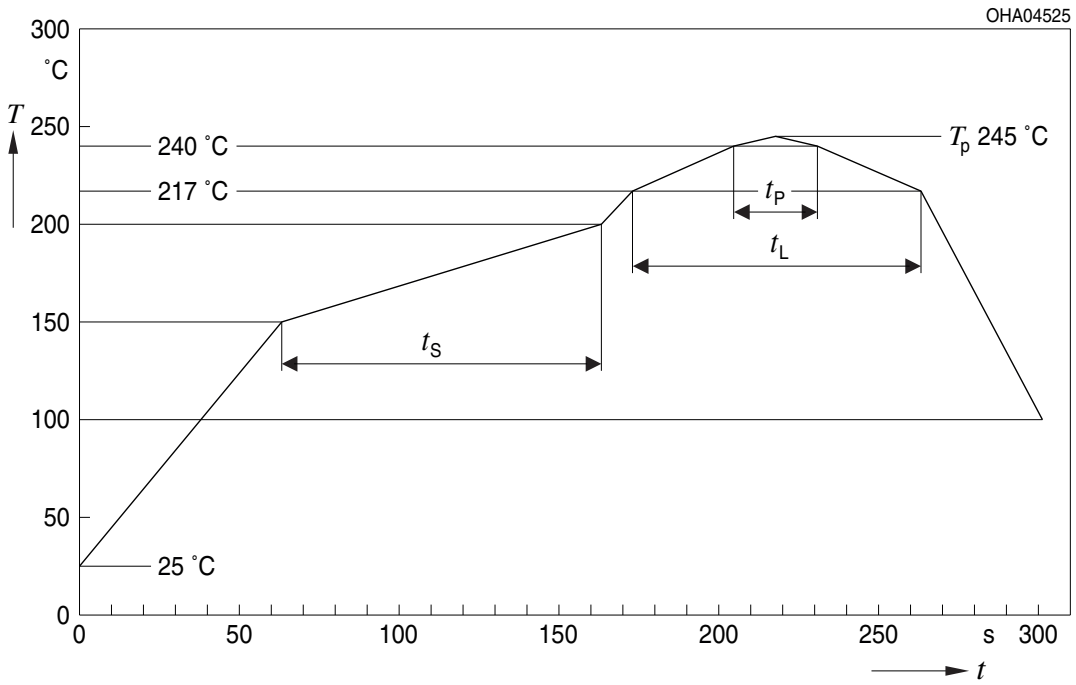
Reflow Soldering Profile

Product complies to MSL Level 4 acc. to JEDEC J-STD-020E



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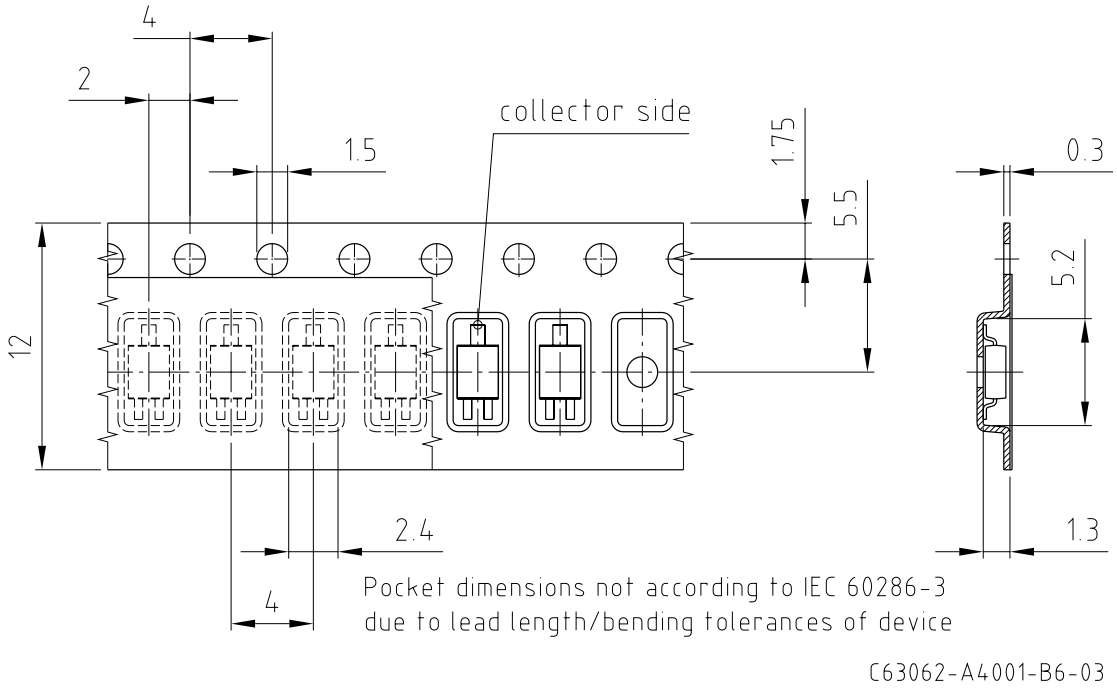
Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	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 [4)]



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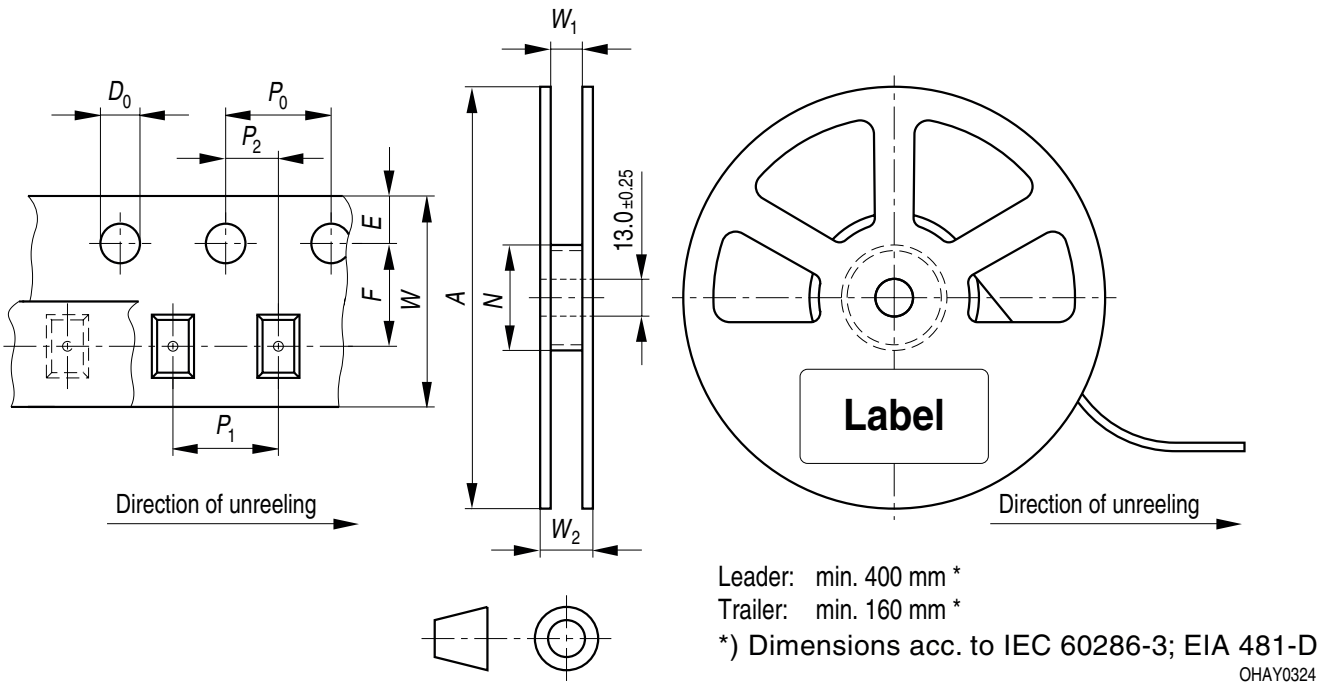
Tape and Reel [5)]

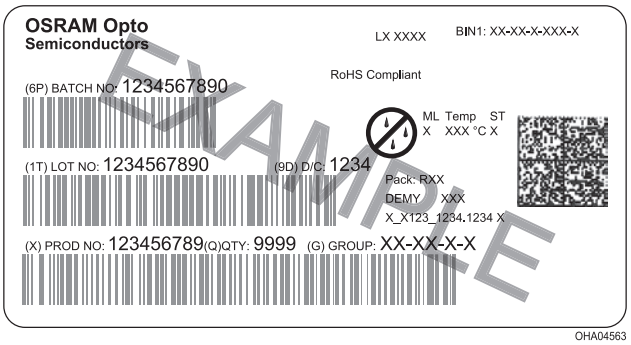


Leader: min. 400 mm *
Trailer: min. 160 mm *
*) Dimensions acc. to IEC 60286-3; EIA 481-D
OHAY0324

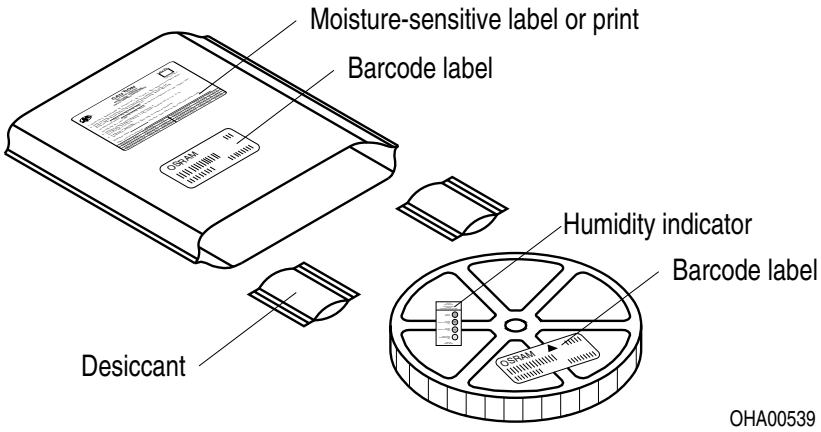
Reel dimensions [mm]

A	W	N_{min}	W_1	$W_{2\ max}$	Pieces per PU
180 mm	12 + 0.3 / - 0.1	60	12.4 + 2	18.4	2000

Barcode-Product-Label (BPL)

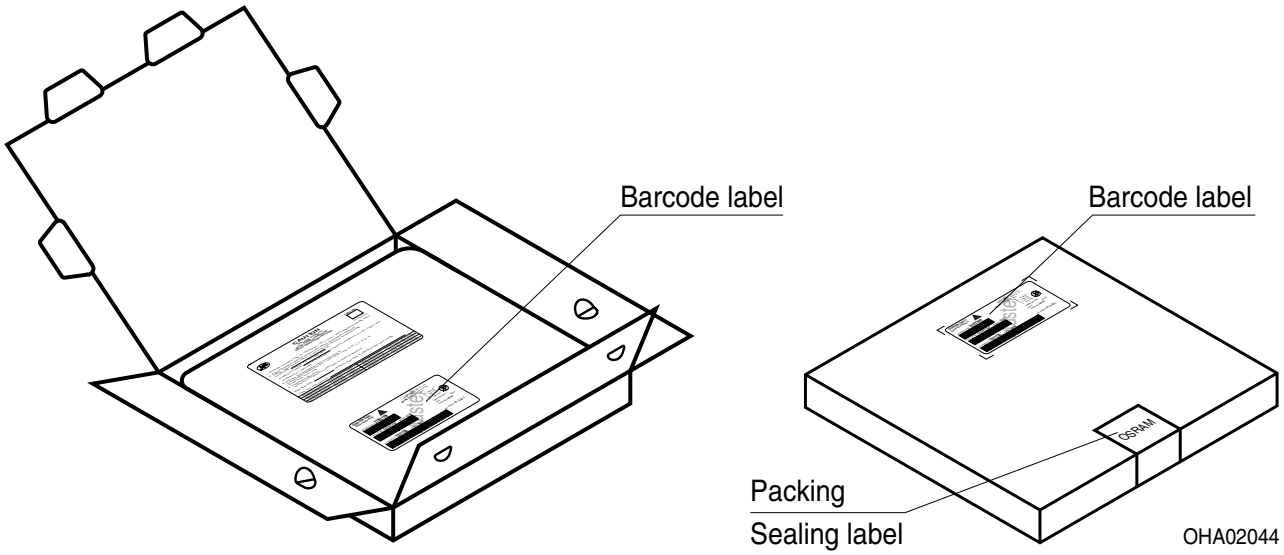


Dry Packing Process and Materials [4)]



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

Transportation Packing and Materials [4)]



Dimensions of transportation box in mm

Width	Length	Height
195 ± 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 LED specified in this data sheet falls into the class **exempt group (exposure time 10000 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.

For further application related informations please visit www.osram-os.com/appnotes

Disclaimer

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.
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Packing
Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office.
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Glossary

1) **IPCEmin**: I_{PCEmin} is the min. photocurrent of the specified group.

2) **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.

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

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

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

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