OSRAM BPW 34 FASR

Datasheet

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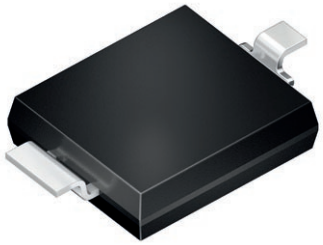
Tobelbader Strasse 30, 8141 Premstaetten, Austria
Phone +43 3136 500-0
ams-osram.com

DIL SMT

BPW 34 FASR

Silicon PIN Photodiode with Daylight Filter; in SMT as Reverse Gullwing



Applications

- In-Cabin Sensing
- Rain light tunnel sensing

Features

- Package: black epoxy
- Qualifications: The product qualification test plan is based on the guidelines of AEC-Q101-REV-C, Stress Test Qualification for Automotive Grade Discrete Semiconductors.
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- Especially suitable for applications from 730 nm to 1100 nm
- Short switching time (typ. 20 ns)
- DIL plastic package with high packing density
- Suitable for reflow soldering

Ordering Information

Type	Photocurrent [1]	Photocurrent	Ordering Code
		typ.	
	E_e = 1 mW/cm²; λ = 870 nm; V_R = 5 V	E_e = 1 mW/cm²; λ = 870 nm; V_R = 5 V	
	I_P	I_P	
BPW 34 FASR-Z	≥ 44 µA	50 µA	Q65110A2699

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
Reverse voltage	V_R	max.	16 V
Reverse voltage t ≤ 2 min; T_A = 0 °C	V_R	max.	32 V
Total power dissipation	P_{tot}	max.	150 mW
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}	max.	2 kV

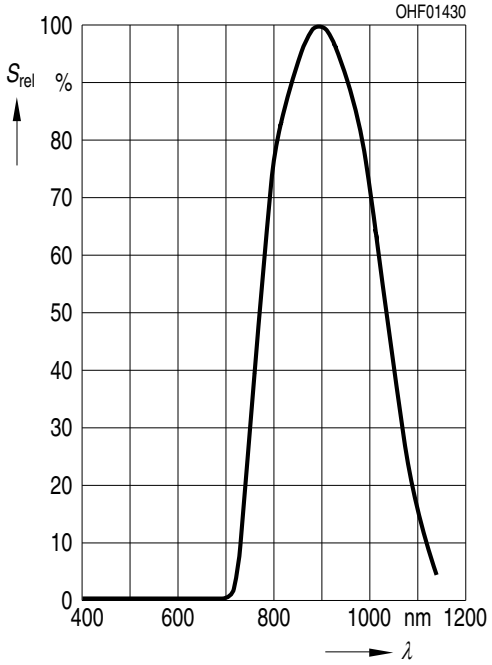
Characteristics

T_A = 25 °C

Parameter	Symbol		Values
Wavelength of max sensitivity	$\lambda_{S\ max}$	typ.	880 nm
Spectral range of sensitivity	$\lambda_{10\%}$	typ.	730 ... 1100 nm
Radiant sensitive area	A	typ.	7.02 mm²
Dimensions of active chip area	L x W	typ.	2.65 x 2.65 mm x mm
Half angle	φ	typ.	60 °
Dark current V_R = 10 V	I_R	typ. max.	2 nA 30 nA
Spectral sensitivity of the chip λ = 870 nm	S_λ	typ.	0.65 A / W
Quantum yield of the chip λ = 870 nm	η	typ.	0.93 Electrons / Photon
Open-circuit voltage E_e = 0.5 mW/cm²; λ = 870 nm	V_O	min. typ.	250 mV 320 mV
Short-circuit current E_e = 0.5 mW/cm²; λ = 870 nm	I_{SC}	typ.	23 µA
Rise time V_R = 5 V; R_L = 50 Ω; λ = 850 nm	t_r	typ.	0.02 µs
Fall time V_R = 5 V; R_L = 50 Ω; λ = 850 nm	t_f	typ.	0.02 µs
Forward voltage I_F = 100 mA; E = 0	V_F	typ.	1.3 V
Capacitance V_R = 0 V; f = 1 MHz; E = 0	C_0	typ.	72 pF
Temperature coefficient of voltage	TC_V	typ.	-2.6 mV / K
Temperature coefficient of short-circuit current λ = 870 nm	TC_I	typ.	0.03 % / K
Noise equivalent power V_R = 10 V; λ = 870 nm	NEP	typ.	0.039 pW / $Hz^{1/2}$
Detection limit V_R = 5 V; λ = 870 nm	D*	typ.	6.8e12 cm x $Hz^{1/2}$ / W

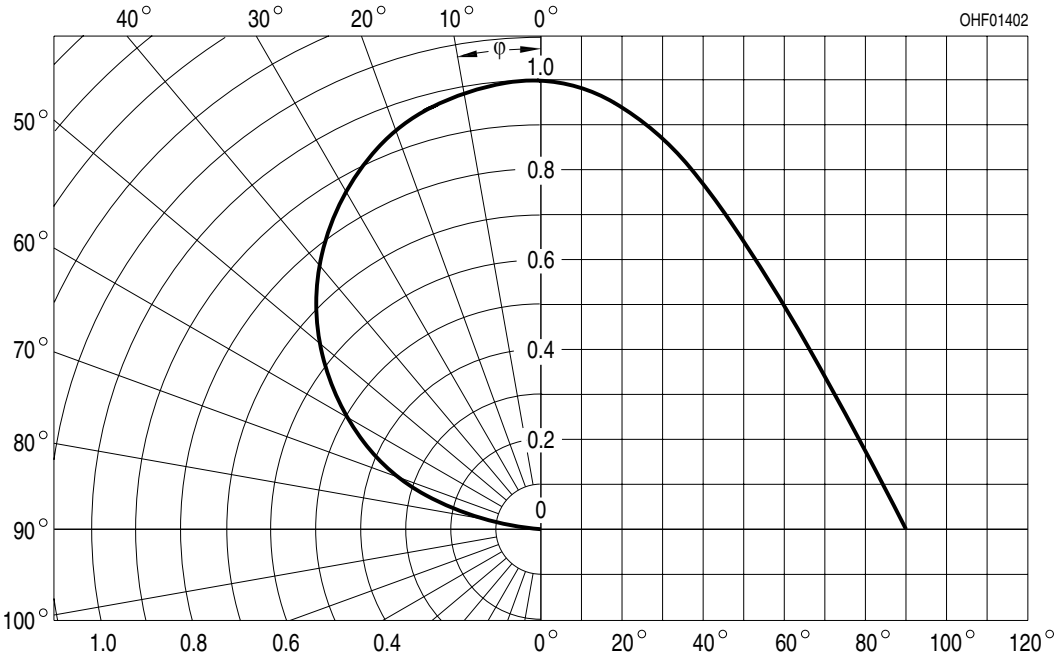
Relative Spectral Sensitivity 2), 3)

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



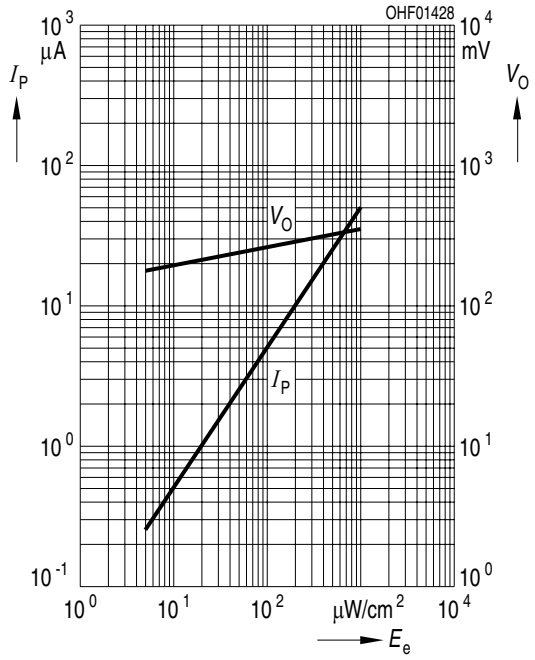
Directional Characteristics 2), 3)

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



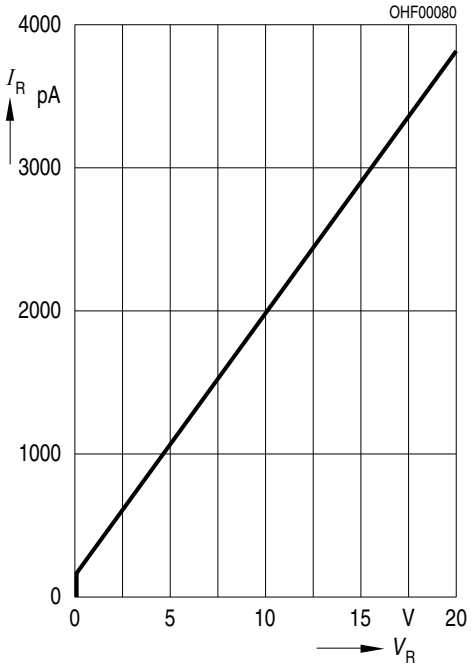
Photocurrent/Open-Circuit Voltage [2], [3]

I_P (V_R = 5 V) / V_O = f (E_e)



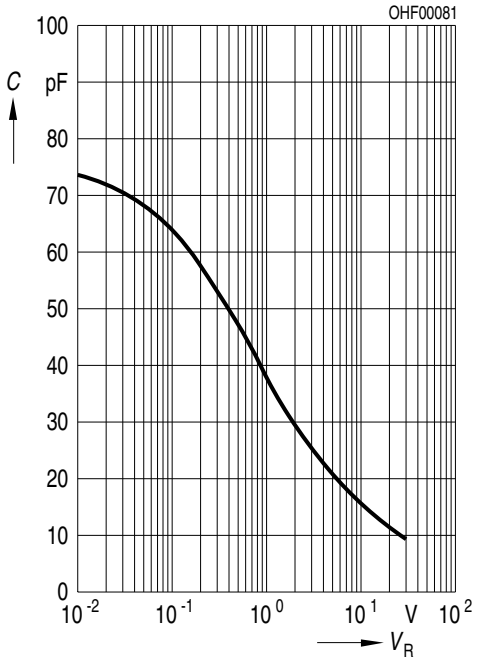
Dark Current [2], [3]

I_R = f (V_R); E = 0



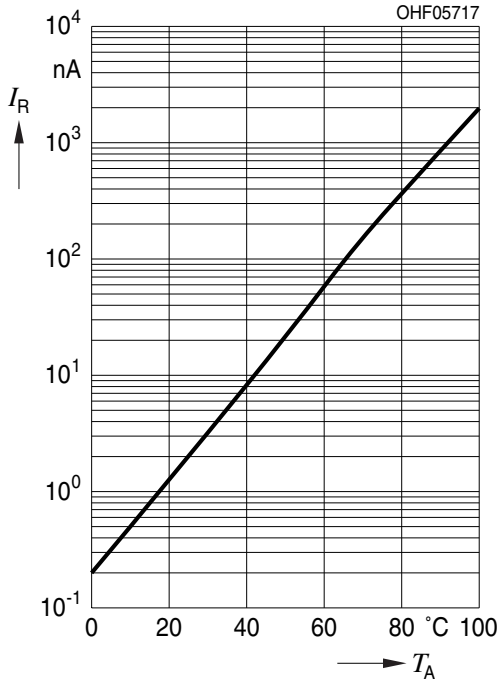
Capacitance [2], [3]

C = f (V_R); f = 1MHz; E = 0; T_A = 25°C

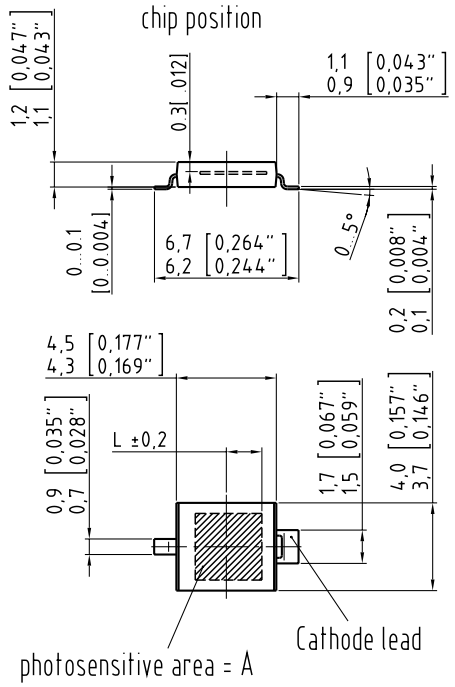


Dark Current [2)]

$I_R = f(T_A)$; E = 0; V_R = 10 V



Dimensional Drawing [4)]

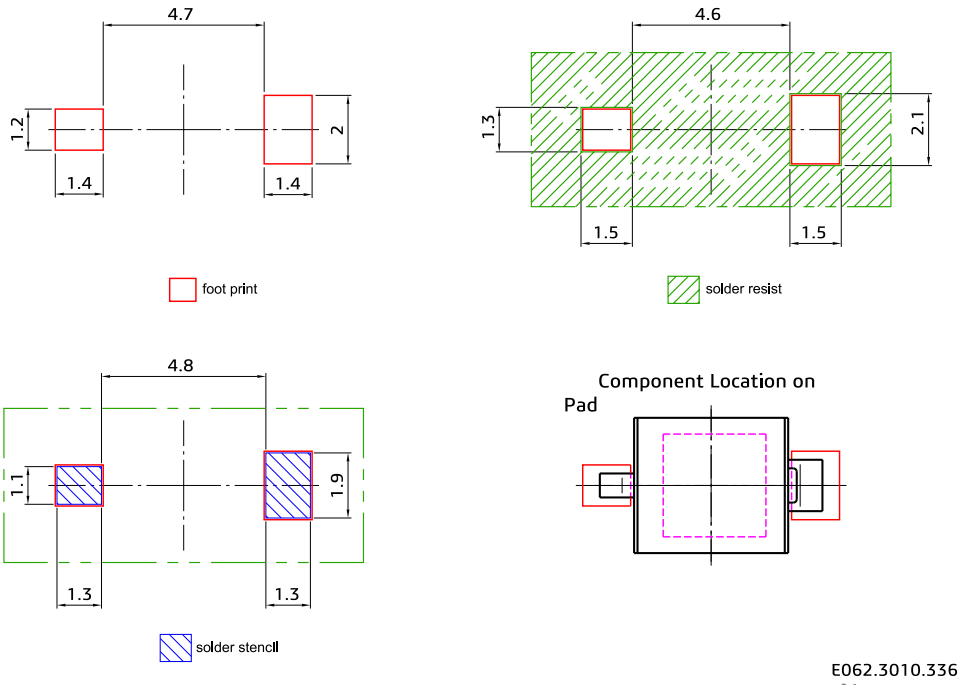


Further Information:

Approximate Weight: 43.0 mg

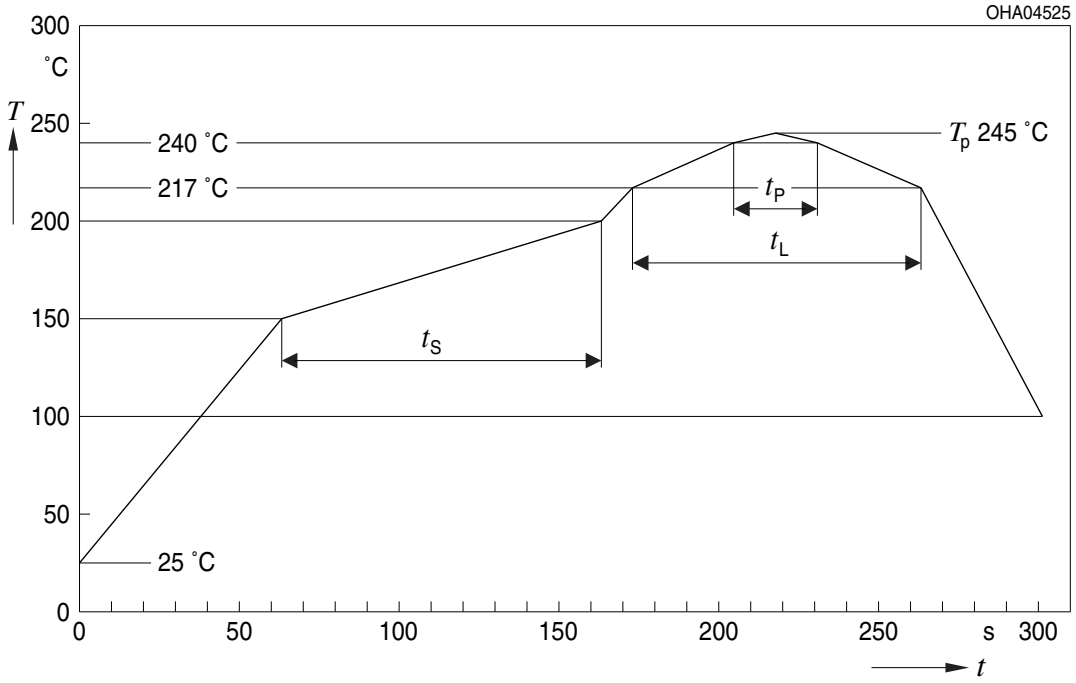
Package marking: Cathode

Recommended Solder Pad [4)]



Reflow Soldering Profile

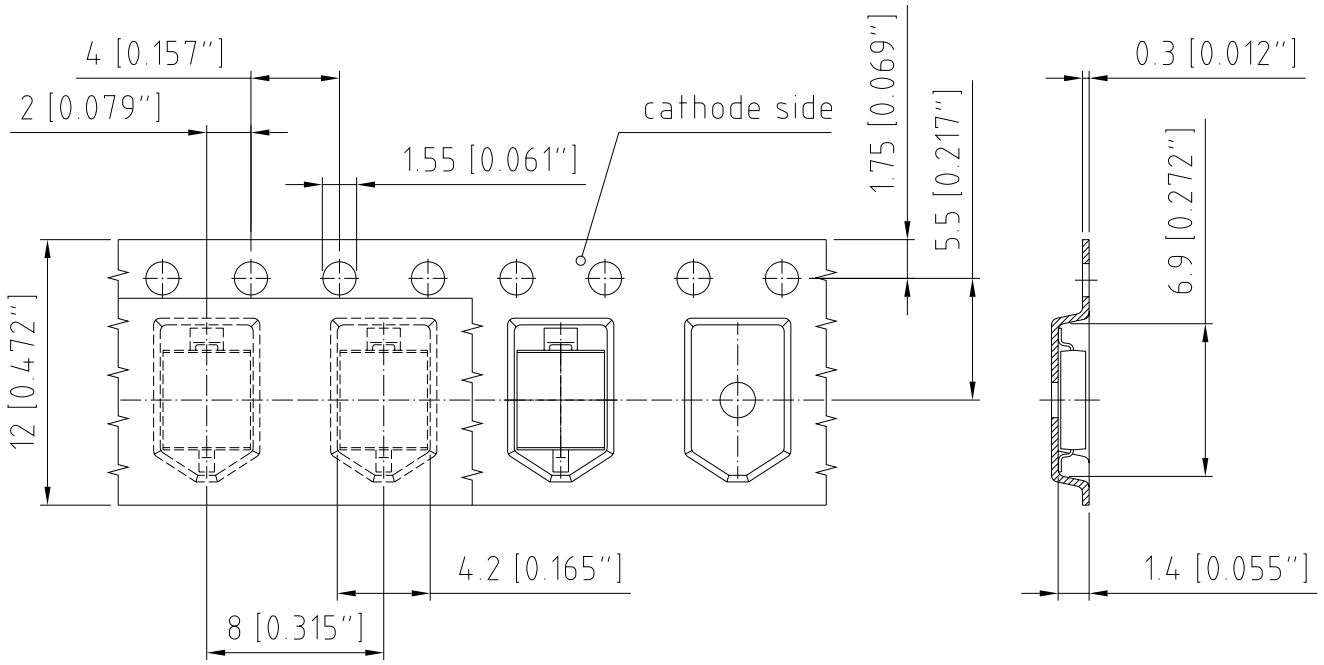
Product complies to MSL Level 4 acc. to JEDEC J-STD-020E



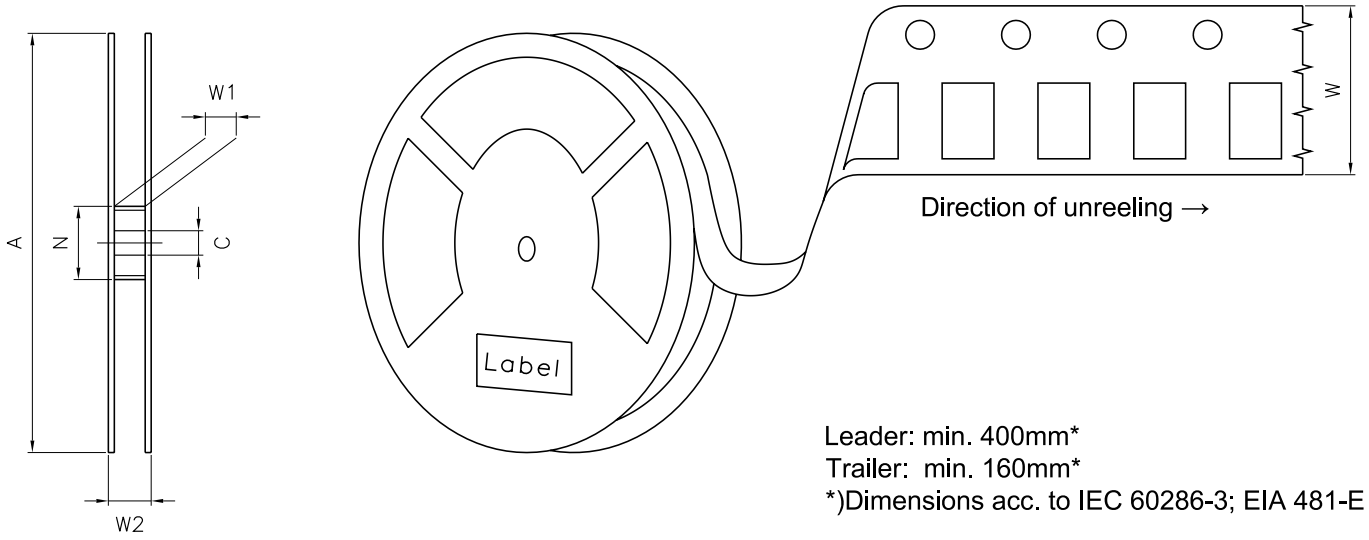
Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature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


4 [0.157"]
2 [0.079"]
1.55 [0.061"]
cathode side
1.75 [0.069"]
5.5 [0.217"]
12 [0.472"]
4.2 [0.165"]
8 [0.315"]
0.3 [0.012"]
6.9 [0.272"]
1.4 [0.055"]
C63062-A3092-B7-05

Tape and Reel [5)]

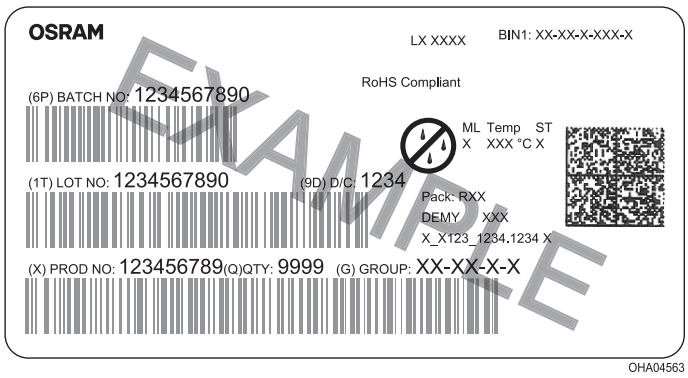


Leader: min. 400mm*
Trailer: min. 160mm*
*)Dimensions acc. to IEC 60286-3; EIA 481-E

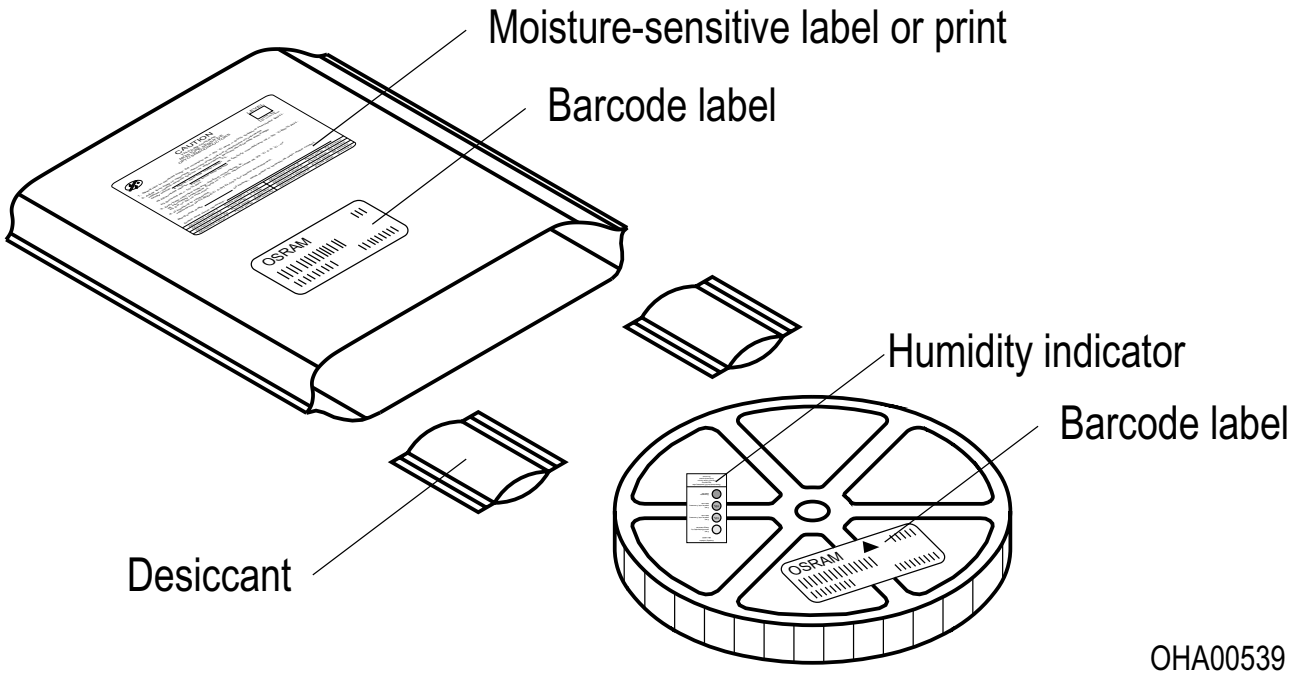
Reel Dimensions

A	W	N_{min}	W_1	$W_{2\,max}$	Pieces per PU
180 mm	12 + 0.3 / - 0.1 mm	60 mm	12.4 + 2 mm	18.4 mm	1500

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.

Notes

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 information please visit https://ams-osram.com/support/application-notes

Disclaimer

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 on our website.

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.

Product and functional safety devices/applications or medical devices/applications

Our components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.
Our products are not qualified at module and system level for such application.

In case buyer – or customer supplied by buyer – considers using our components in product safety devices/ applications or medical devices/applications, buyer and/or customer has to inform our local sales partner immediately and we and buyer and /or customer will analyze and coordinate the customer-specific request between us and buyer and/or customer.

Glossary

1) **Photocurrent:** The photocurrent values are measured (by irradiating the devices with a homogenous light source and applying a voltage to the device) with a tolerance of ±11 %.

2) **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.

3) **Testing temperature:** TA = 25°C (unless otherwise specified)

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.

Revision History

Version	Date	Change
1.6	2020-10-01	Schematic Transportation Box Dimensions of Transportation Box Taping
1.7	2025-06-04	Dimensional Drawing New Layout Recommended Solder Pad

EU RoHS and China RoHS compliant product
此产品符合欧盟 RoHS 指令的要求；
按照中国的相关法规和标准，
不含有毒有害物质或元素。

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