

# CUW Y3SH.B1

## Micro SIDELED® 3806

Micro SIDELED is a SMT LED with side emission. Due to its low package height it is ideal for applications in limited space environments.



## Applications

- TV, Monitor (Backlighting)

## Features:

- Package: white SMT package, colored diffused silicone resin
- Chip technology: InGaN on Sapphire
- Typ. Radiation: 120° (Lambertian emitter)
- Color: Cx = 0.29, Cy = 0.275 acc. to CIE 1931 (● ultra white)
- Optical efficacy: 155 lm/W
- Corrosion Robustness Class: 1B
- ESD: 1 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM)

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## Ordering Information

Type	Luminous Flux <sup>1)</sup> $I_F = 20 \text{ mA}$ $\Phi_V$	Ordering Code
CUW Y3SH.B1-ECJE-4A7V-Z282	7000 ... 11750 mlm	Q65112A6147
CUW Y3SH.B1-FCJF-4N7V-Z282	8000 ... 12000 mlm	Q65112A6994

## Maximum Ratings

Parameter	Symbol		Values
Operating Temperature	$T_{op}$	min. max.	-40 °C 85 °C
Storage Temperature	$T_{stg}$	min. max.	-40 °C 100 °C
Junction Temperature	$T_j$	max.	105 °C
Forward current $T_s = 25\text{ °C}$	$I_F$	max.	40 mA
Surge Current $t \leq 10\text{ }\mu\text{s}$ ; $D = 0.005$ ; $T_s = 25\text{ °C}$	$I_{FS}$	max.	100 mA
Reverse voltage <sup>2)</sup> $T_s = 25\text{ °C}$	$V_R$	max.	5 V
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM)	$V_{ESD}$		1 kV

## Characteristics

$I_F = 20 \text{ mA}$ ;  $T_s = 25 \text{ °C}$

Parameter	Symbol		Values
Chromaticity Coordinate <sup>3)</sup>	$C_x$	typ.	0.29
	$C_y$	typ.	0.275
Viewing angle at 50% $I_V$	$2\phi$	typ.	120 °
Forward Voltage <sup>4)</sup> $I_F = 20 \text{ mA}$	$V_F$	min.	2.70 V
		typ.	2.85 V
		max.	3.20 V
Reverse current <sup>2)</sup> $V_R = 5 \text{ V}$	$I_R$	typ.	0.01 $\mu\text{A}$
		max.	10 $\mu\text{A}$
Real thermal resistance junction/solderpoint <sup>5)</sup>	$R_{\text{thJS real}}$	typ.	107 K / W
		max.	132 K / W
Electrical thermal resistance junction/solderpoint <sup>5)</sup> with efficiency $\eta_e = 53 \%$	$R_{\text{thJS elec.}}$	typ.	50 K / W
		max.	62 K / W

## Brightness Groups

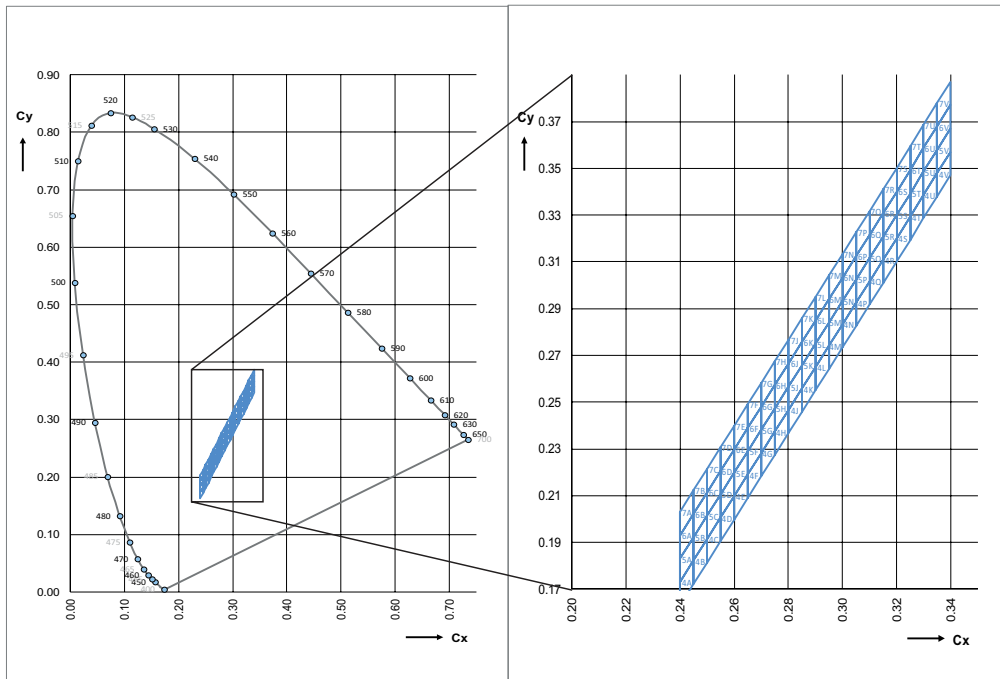
Group	Luminous Flux <sup>1)</sup> $I_F = 20 \text{ mA}$ min. $\Phi_V$	Luminous Flux <sup>1)</sup> $I_F = 20 \text{ mA}$ max. $\Phi_V$	Luminous Intensity <sup>6)</sup> $I_F = 20 \text{ mA}$ typ. $I_V$
EC	7000 mlm	7250 mlm	2350 mcd
ED	7250 mlm	7500 mlm	2430 mcd
EE	7500 mlm	7750 mlm	2520 mcd
EF	7750 mlm	8000 mlm	2600 mcd
FC	8000 mlm	8250 mlm	2680 mcd
FD	8250 mlm	8500 mlm	2760 mcd
FE	8500 mlm	8750 mlm	2850 mcd
FF	8750 mlm	9000 mlm	2930 mcd
GC	9000 mlm	9250 mlm	3010 mcd
GD	9250 mlm	9500 mlm	3090 mcd
GE	9500 mlm	9750 mlm	3180 mcd
GF	9750 mlm	10000 mlm	3260 mcd
HC	10000 mlm	10250 mlm	3340 mcd
HD	10250 mlm	10500 mlm	3420 mcd
HE	10500 mlm	10750 mlm	3510 mcd
HF	10750 mlm	11000 mlm	3590 mcd
JC	11000 mlm	11250 mlm	3670 mcd
JD	11250 mlm	11500 mlm	3750 mcd
JE	11500 mlm	11750 mlm	3840 mcd
JF	11750 mlm	12000 mlm	3920 mcd

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## Forward Voltage Groups

Group	Forward Voltage <sup>4)</sup> $I_F = 20 \text{ mA}$ min. $V_F$	Forward Voltage <sup>4)</sup> $I_F = 20 \text{ mA}$ max. $V_F$
Z2	2.70 V	2.80 V
22	2.80 V	2.90 V
42	2.90 V	3.00 V
62	3.00 V	3.10 V
82	3.10 V	3.20 V

### Chromaticity Coordinate Groups <sup>3)</sup>



### Chromaticity Coordinate Groups <sup>3)</sup>

Group	Cx	Cy	Group	Cx	Cy	Group	Cx	Cy
4A	0.2450	0.1822	4E	0.2650	0.2190	4J	0.2850	0.2558
	0.2450	0.1722		0.2650	0.2090		0.2850	0.2458
	0.2400	0.1630		0.2600	0.1998		0.2800	0.2366
	0.2400	0.1730		0.2600	0.2098		0.2800	0.2466
4B	0.2500	0.1914	4F	0.2700	0.2282	4K	0.2900	0.2650
	0.2500	0.1814		0.2700	0.2182		0.2900	0.2550
	0.2450	0.1722		0.2650	0.2090		0.2850	0.2458
	0.2450	0.1822		0.2650	0.2190		0.2850	0.2558
4C	0.2550	0.2006	4G	0.2750	0.2374	4L	0.2950	0.2742
	0.2550	0.1906		0.2750	0.2274		0.2950	0.2642
	0.2500	0.1814		0.2700	0.2182		0.2900	0.2550
	0.2500	0.1914		0.2700	0.2282		0.2900	0.2650
4D	0.2600	0.2098	4H	0.2800	0.2466	4M	0.3000	0.2834
	0.2600	0.1998		0.2800	0.2366		0.3000	0.2734
	0.2550	0.1906		0.2750	0.2274		0.2950	0.2642
	0.2550	0.2006		0.2750	0.2374		0.2950	0.2742

Group	Cx	Cy	Group	Cx	Cy	Group	Cx	Cy
4N	0.3050	0.2926	5A	0.2450	0.1922	5J	0.2850	0.2658
	0.3050	0.2826		0.2450	0.1822		0.2850	0.2558
	0.3000	0.2734		0.2400	0.1730		0.2800	0.2466
	0.3000	0.2834		0.2400	0.1830		0.2800	0.2566
4P	0.3100	0.3018	5B	0.2500	0.2014	5K	0.2900	0.2750
	0.3100	0.2918		0.2500	0.1914		0.2900	0.2650
	0.3050	0.2826		0.2450	0.1822		0.2850	0.2558
	0.3050	0.2926		0.2450	0.1922		0.2850	0.2658
4Q	0.3150	0.3110	5C	0.2550	0.2106	5L	0.2950	0.2842
	0.3150	0.3010		0.2550	0.2006		0.2950	0.2742
	0.3100	0.2918		0.2500	0.1914		0.2900	0.2650
	0.3100	0.3018		0.2500	0.2014		0.2900	0.2750
4R	0.3200	0.3202	5D	0.2600	0.2198	5M	0.3000	0.2934
	0.3200	0.3102		0.2600	0.2098		0.3000	0.2834
	0.3150	0.3010		0.2550	0.2006		0.2950	0.2742
	0.3150	0.3110		0.2550	0.2106		0.2950	0.2842
4S	0.3250	0.3294	5E	0.2650	0.2290	5N	0.3050	0.3026
	0.3250	0.3194		0.2650	0.2190		0.3050	0.2926
	0.3200	0.3102		0.2600	0.2098		0.3000	0.2834
	0.3200	0.3202		0.2600	0.2198		0.3000	0.2934
4T	0.3300	0.3386	5F	0.2700	0.2382	5P	0.3100	0.3118
	0.3300	0.3286		0.2700	0.2282		0.3100	0.3018
	0.3250	0.3194		0.2650	0.2190		0.3050	0.2926
	0.3250	0.3294		0.2650	0.2290		0.3050	0.3026
4U	0.3350	0.3478	5G	0.2750	0.2474	5Q	0.3150	0.3210
	0.3350	0.3378		0.2750	0.2374		0.3150	0.3110
	0.3300	0.3286		0.2700	0.2282		0.3100	0.3018
	0.3300	0.3386		0.2700	0.2382		0.3100	0.3118
4V	0.3400	0.3570	5H	0.2800	0.2566	5R	0.3200	0.3302
	0.3400	0.3470		0.2800	0.2466		0.3200	0.3202
	0.3350	0.3378		0.2750	0.2374		0.3150	0.3110
	0.3350	0.3478		0.2750	0.2474		0.3150	0.3210



Group	Cx	Cy	Group	Cx	Cy	Group	Cx	Cy
5S	0.3250	0.3394	6E	0.2650	0.2390	6N	0.3050	0.3126
	0.3250	0.3294		0.2650	0.2290		0.3050	0.3026
	0.3200	0.3202		0.2600	0.2198		0.3000	0.2934
	0.3200	0.3302		0.2600	0.2298		0.3000	0.3034
5T	0.3300	0.3486	6F	0.2700	0.2482	6P	0.3100	0.3218
	0.3300	0.3386		0.2700	0.2382		0.3100	0.3118
	0.3250	0.3294		0.2650	0.2290		0.3050	0.3026
	0.3250	0.3394		0.2650	0.2390		0.3050	0.3126
5U	0.3350	0.3578	6G	0.2750	0.2574	6Q	0.3150	0.3310
	0.3350	0.3478		0.2750	0.2474		0.3150	0.3210
	0.3300	0.3386		0.2700	0.2382		0.3100	0.3118
	0.3300	0.3486		0.2700	0.2482		0.3100	0.3218
5V	0.3400	0.3670	6H	0.2800	0.2666	6R	0.3200	0.3402
	0.3400	0.3570		0.2800	0.2566		0.3200	0.3302
	0.3350	0.3478		0.2750	0.2474		0.3150	0.3210
	0.3350	0.3578		0.2750	0.2574		0.3150	0.3310
6A	0.2450	0.2022	6J	0.2850	0.2758	6S	0.3250	0.3494
	0.2450	0.1922		0.2850	0.2658		0.3250	0.3394
	0.2400	0.1830		0.2800	0.2566		0.3200	0.3302
	0.2400	0.1930		0.2800	0.2666		0.3200	0.3402
6B	0.2500	0.2114	6K	0.2900	0.2850	6T	0.3300	0.3586
	0.2500	0.2014		0.2900	0.2750		0.3300	0.3486
	0.2450	0.1922		0.2850	0.2658		0.3250	0.3394
	0.2450	0.2022		0.2850	0.2758		0.3250	0.3494
6C	0.2550	0.2206	6L	0.2950	0.2942	6U	0.3350	0.3678
	0.2550	0.2106		0.2950	0.2842		0.3350	0.3578
	0.2500	0.2014		0.2900	0.2750		0.3300	0.3486
	0.2500	0.2114		0.2900	0.2850		0.3300	0.3586
6D	0.2600	0.2298	6M	0.3000	0.3034	6V	0.3400	0.3770
	0.2600	0.2198		0.3000	0.2934		0.3400	0.3670
	0.2550	0.2106		0.2950	0.2842		0.3350	0.3578
	0.2550	0.2206		0.2950	0.2942		0.3350	0.3678

Group	Cx	Cy	Group	Cx	Cy	Group	Cx	Cy
7A	0.2450	0.2122	7H	0.2800	0.2766	7Q	0.3150	0.3410
	0.2450	0.2022		0.2800	0.2666		0.3150	0.3310
	0.2400	0.1930		0.2750	0.2574		0.3100	0.3218
	0.2400	0.2030		0.2750	0.2674		0.3100	0.3318
7B	0.2500	0.2214	7J	0.2850	0.2858	7R	0.3200	0.3502
	0.2500	0.2114		0.2850	0.2758		0.3200	0.3402
	0.2450	0.2022		0.2800	0.2666		0.3150	0.3310
	0.2450	0.2122		0.2800	0.2766		0.3150	0.3410
7C	0.2550	0.2306	7K	0.2900	0.2950	7S	0.3250	0.3594
	0.2550	0.2206		0.2900	0.2850		0.3250	0.3494
	0.2500	0.2114		0.2850	0.2758		0.3200	0.3402
	0.2500	0.2214		0.2850	0.2858		0.3200	0.3502
7D	0.2600	0.2398	7L	0.2950	0.3042	7T	0.3300	0.3686
	0.2600	0.2298		0.2950	0.2942		0.3300	0.3586
	0.2550	0.2206		0.2900	0.2850		0.3250	0.3494
	0.2550	0.2306		0.2900	0.2950		0.3250	0.3594
7E	0.2650	0.2490	7M	0.3000	0.3134	7U	0.3350	0.3778
	0.2650	0.2390		0.3000	0.3034		0.3350	0.3678
	0.2600	0.2298		0.2950	0.2942		0.3300	0.3586
	0.2600	0.2398		0.2950	0.3042		0.3300	0.3686
7F	0.2700	0.2582	7N	0.3050	0.3226	7V	0.3400	0.3870
	0.2700	0.2482		0.3050	0.3126		0.3400	0.3770
	0.2650	0.2390		0.3000	0.3034		0.3350	0.3678
	0.2650	0.2490		0.3000	0.3134		0.3350	0.3778
7G	0.2750	0.2674	7P	0.3100	0.3318			
	0.2750	0.2574		0.3100	0.3218			
	0.2700	0.2482		0.3050	0.3126			
	0.2700	0.2582		0.3050	0.3226			

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## Group Name on Label

**Example: EC-4A-22**

Brightness

Color Chromaticity

Forward Voltage

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EC

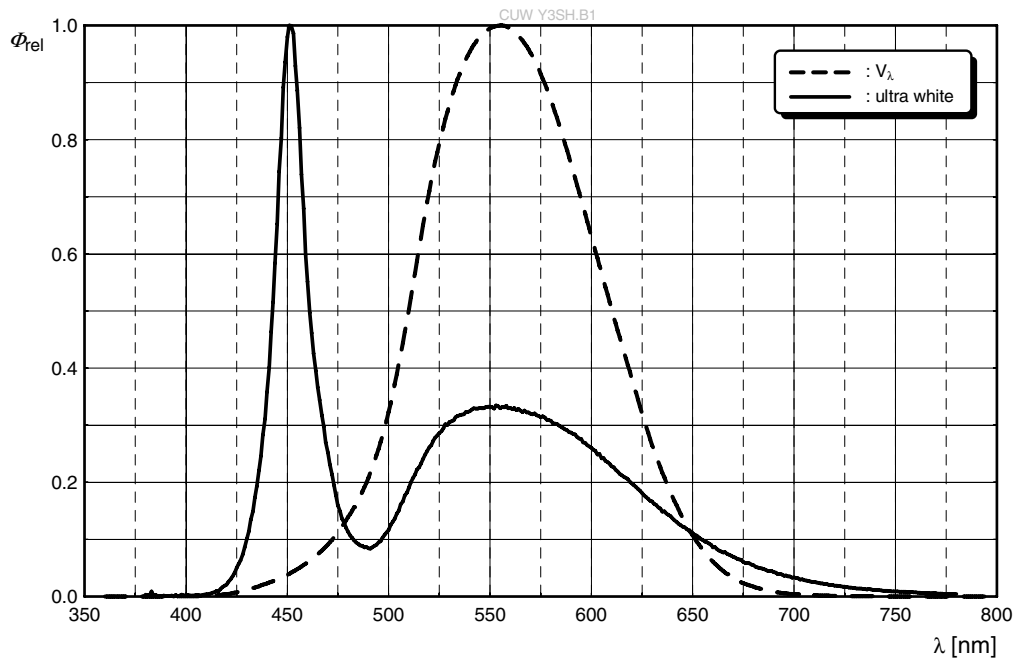
4A

22

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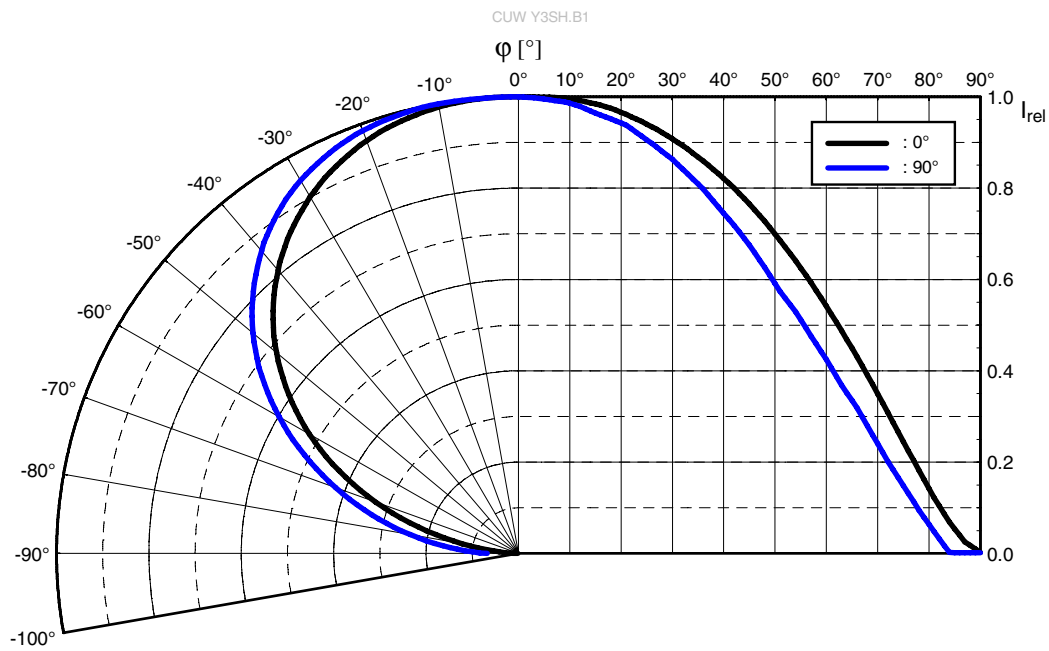
### Relative Spectral Emission <sup>6)</sup>

$I_{rel} = f(\lambda); I_F = 20 \text{ mA}; T_S = 25 \text{ }^\circ\text{C}$



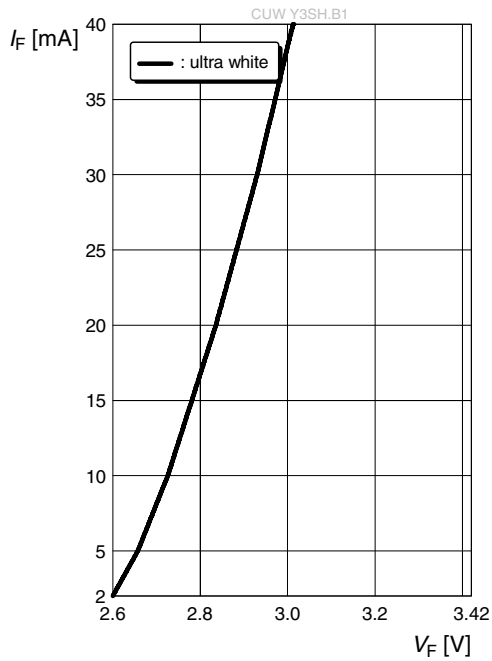
### Radiation Characteristics <sup>6)</sup>

$I_{rel} = f(\phi); T_S = 25 \text{ }^\circ\text{C}$



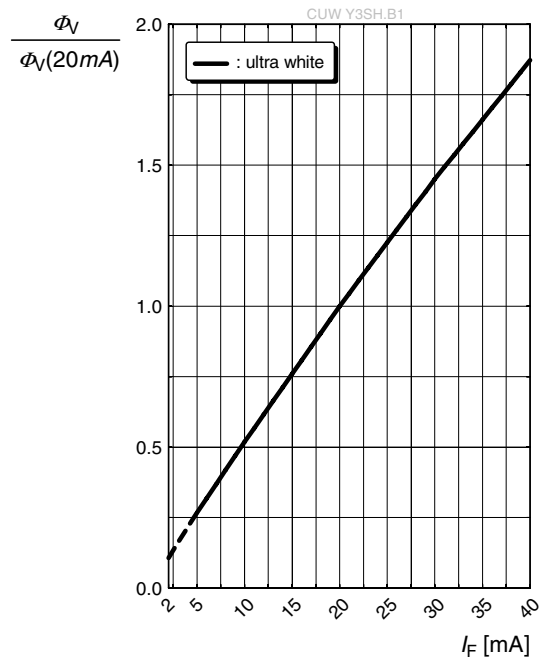
**Forward current** 6), 7)

$I_F = f(V_F); T_S = 25\text{ °C}$



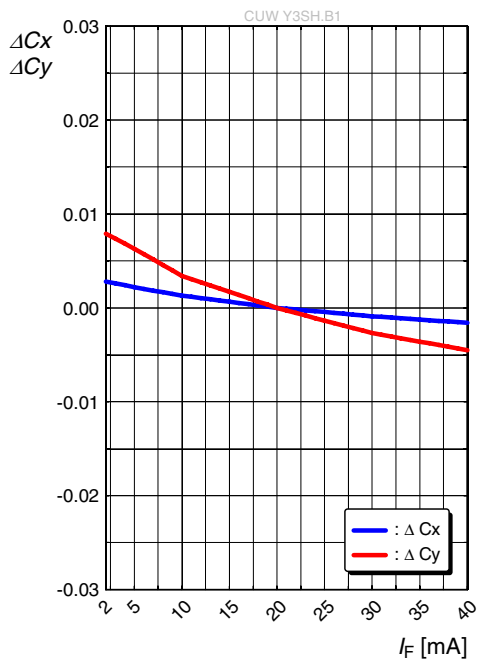
**Relative Luminous Flux** 6), 7)

$\Phi_V / \Phi_V(20\text{ mA}) = f(I_F); T_S = 25\text{ °C}$



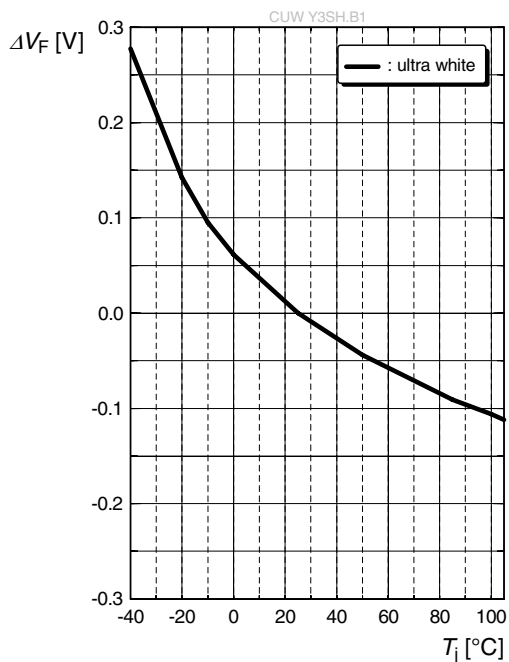
**Chromaticity Coordinate Shift** 6)

$\Delta C_x, \Delta C_y = f(I_F); T_S = 25\text{ °C}$



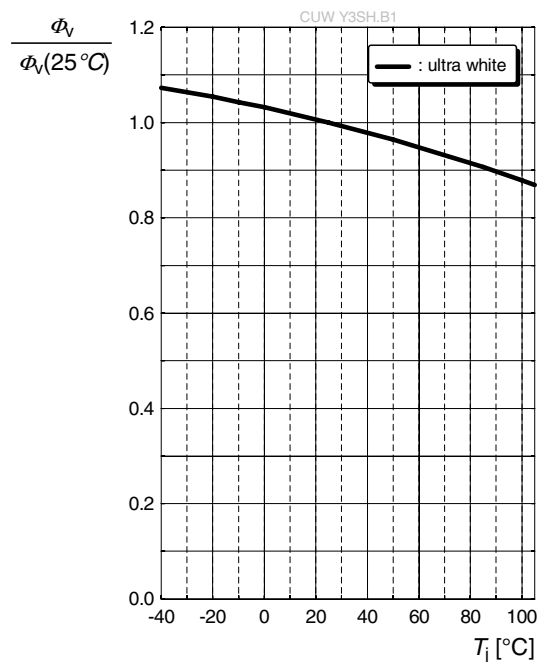
### Forward Voltage <sup>6)</sup>

$$\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j); I_F = 20\text{ mA}$$



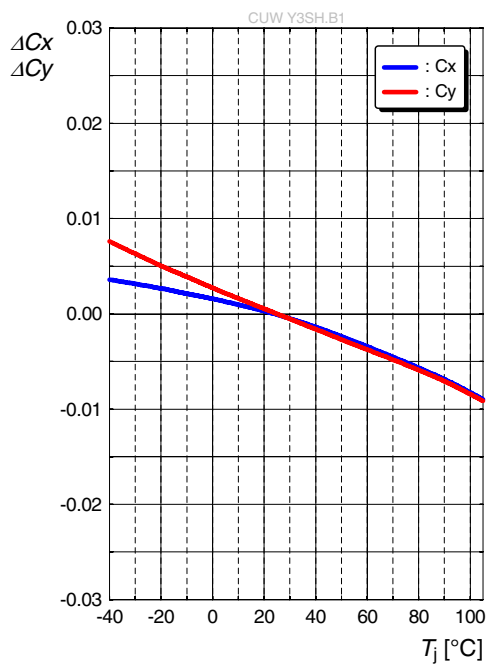
### Relative Luminous Flux <sup>6)</sup>

$$\Phi_V / \Phi_V(25^\circ\text{C}) = f(T_j); I_F = 20\text{ mA}$$



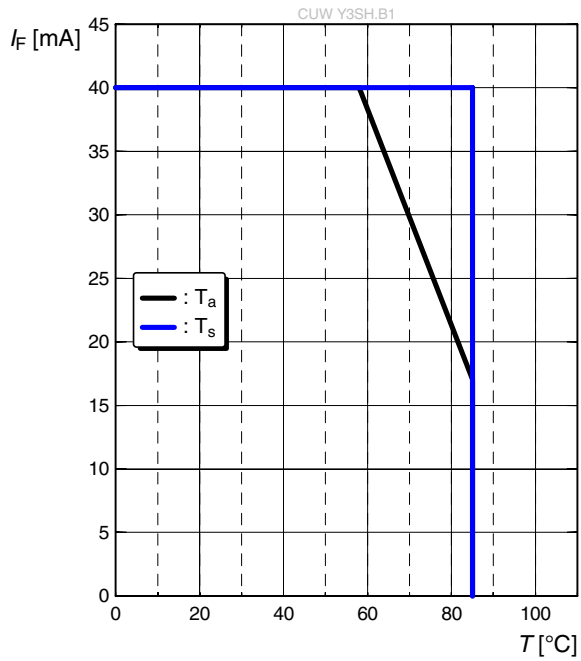
### Chromaticity Coordinate Shift <sup>6)</sup>

$$\Delta C_x, \Delta C_y = f(T_j); I_F = 20\text{ mA}$$



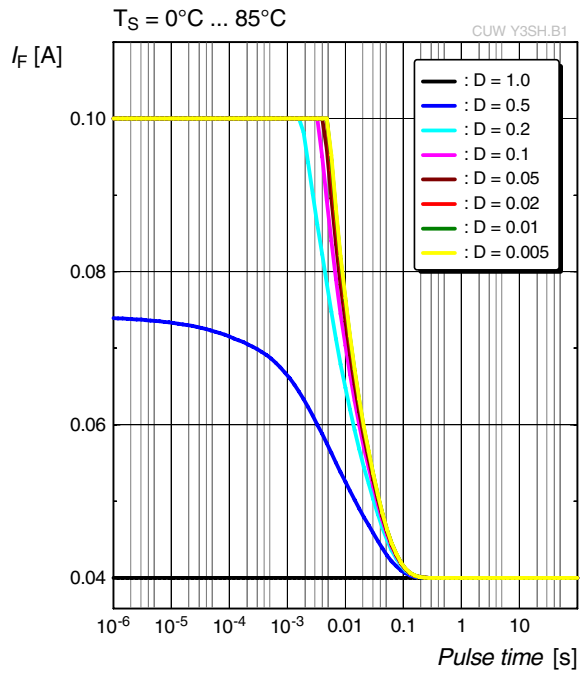
## Max. Permissible Forward Current

$$I_F = f(T)$$

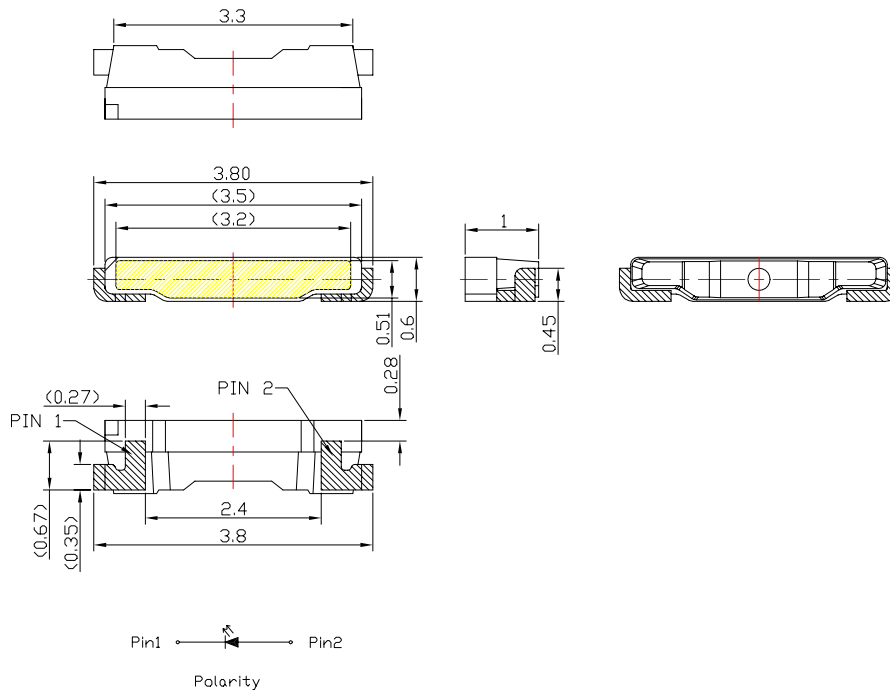


## Permissible Pulse Handling Capability

$$I_F = f(t_p); D: \text{Duty cycle}$$



## Dimensional Drawing <sup>8)</sup>



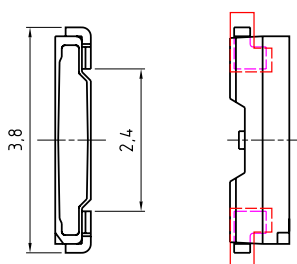
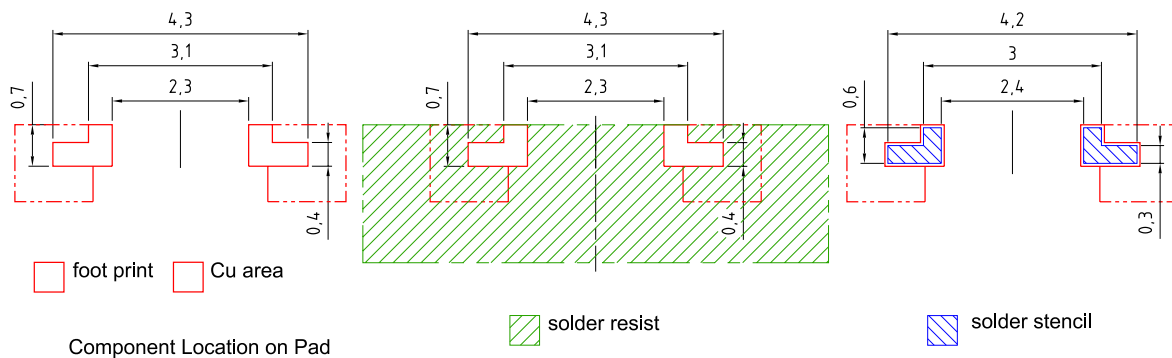
## Further Information:

**Approximate Weight:** 4.0 mg

**Corrosion test:** Class: 1B  
 Test condition: 25°C / 75 % RH / 200ppb SO<sub>2</sub>, 200ppb NO<sub>2</sub>, 10ppb H<sub>2</sub>S,  
 10ppb Cl<sub>2</sub> / 21 days (EN 60068-2-60 (Method 4))



**Recommended Solder Pad** <sup>8)</sup>

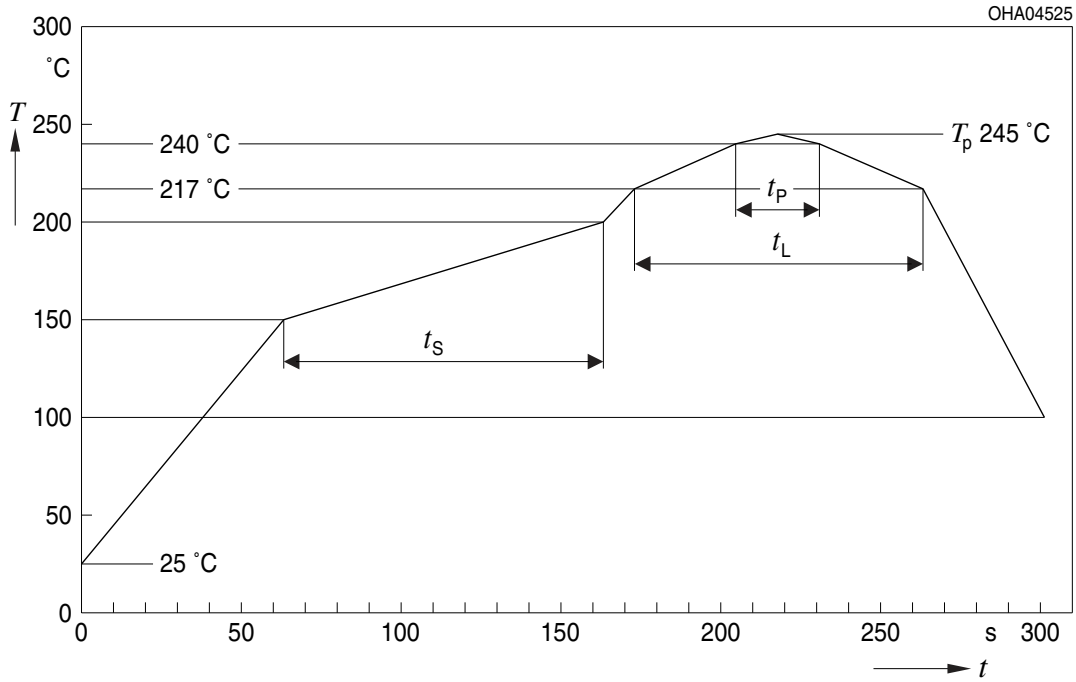


E062.3010.183 -01

For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere. Package not suitable for ultra sonic cleaning.

## Reflow Soldering Profile

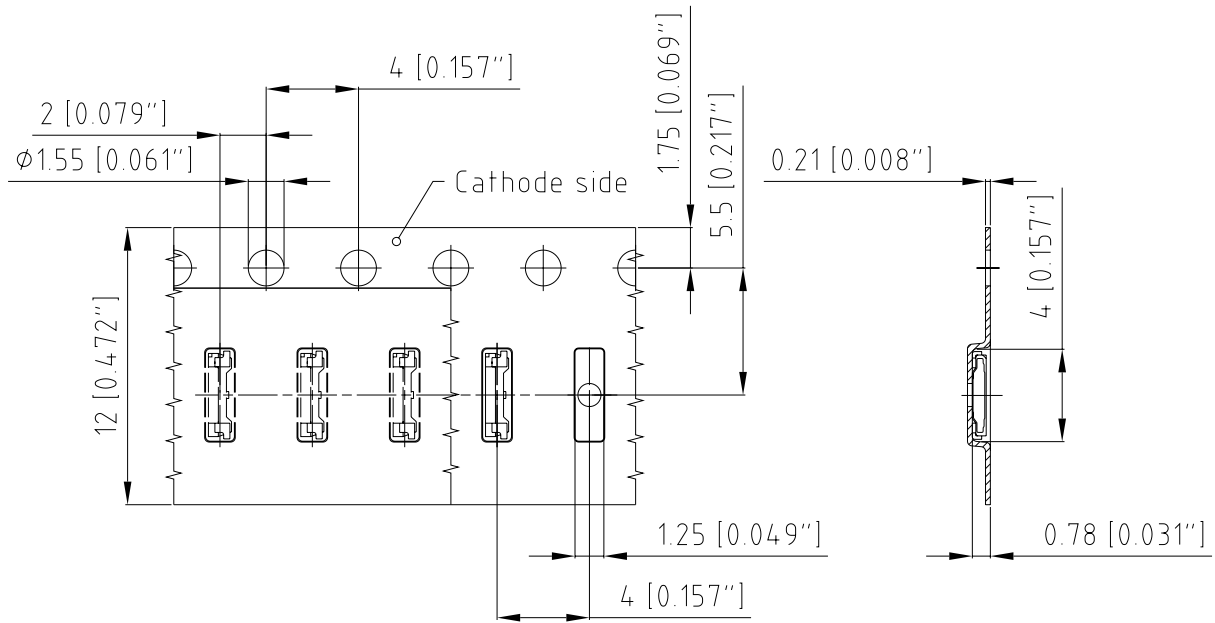
Product complies to MSL Level 3 acc. to JEDEC J-STD-020E



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat <sup>*)</sup> 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 <sup>*)</sup> $T_{Smax}$ 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

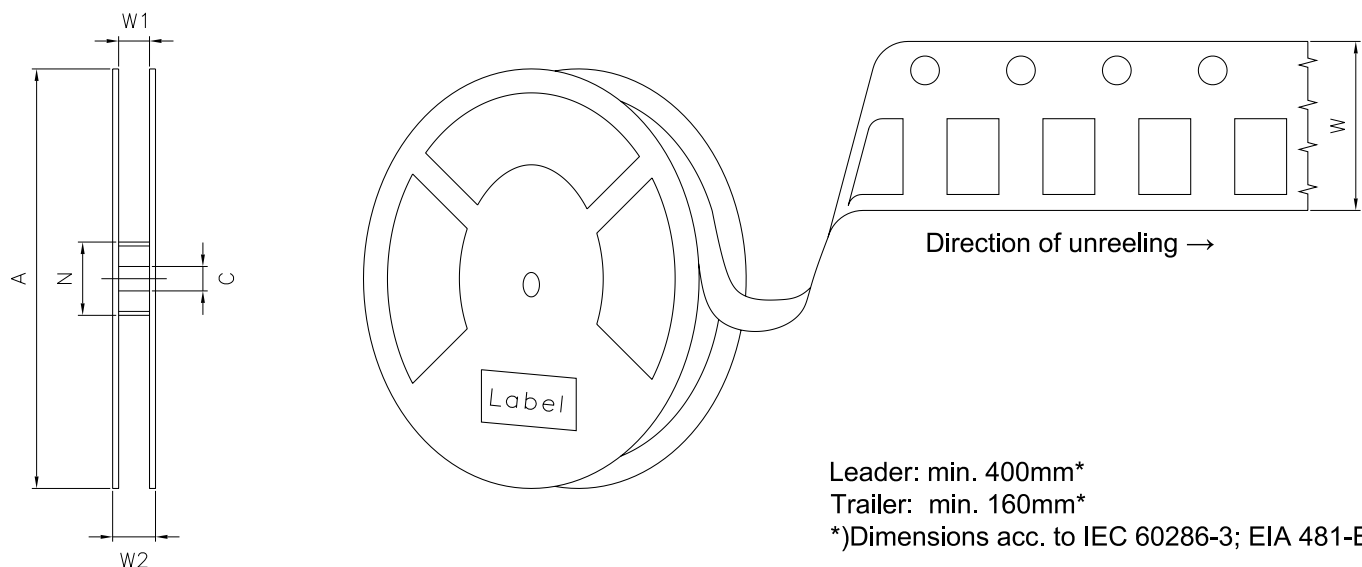
All temperatures refer to the center of the package, measured on the top of the component  
 \*) slope calculation  $DT/Dt$ :  $Dt$  max. 5 s; fulfillment for the whole T-range

**Taping** <sup>8)</sup>



C67062-A0037-B1-03

**Tape and Reel** <sup>9)</sup>



**Reel Dimensions**

A	W	N <sub>min</sub>	W <sub>1</sub>	W <sub>2max</sub>	Pieces per PU
180 mm	12 + 0.3 / - 0.1 mm	60 mm	12.4 + 2 mm	18.4 mm	2000

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

**OSRAM Opto Semiconductors** LX XXXX    BIN1: XX-XX-X-XXX-X

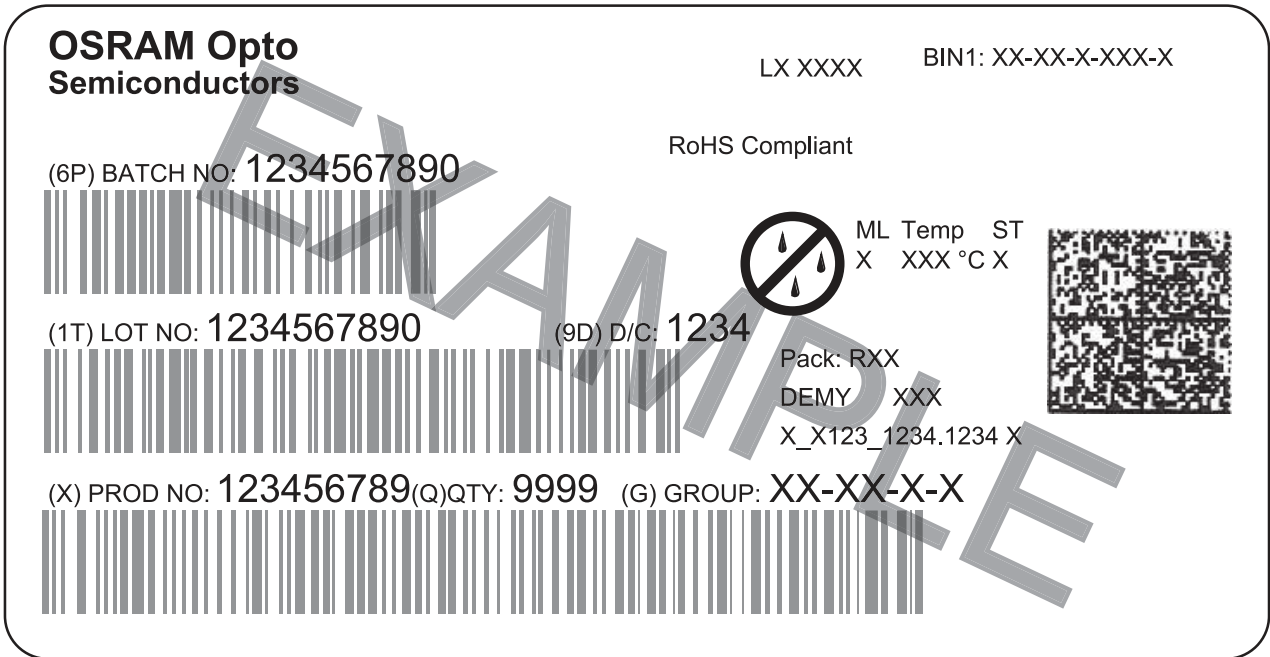
RoHS Compliant

(6P) BATCH NO: 1234567890 ML Temp    ST  
X    XXX °C X

(1T) LOT NO: 1234567890 (9D) D/C: 1234

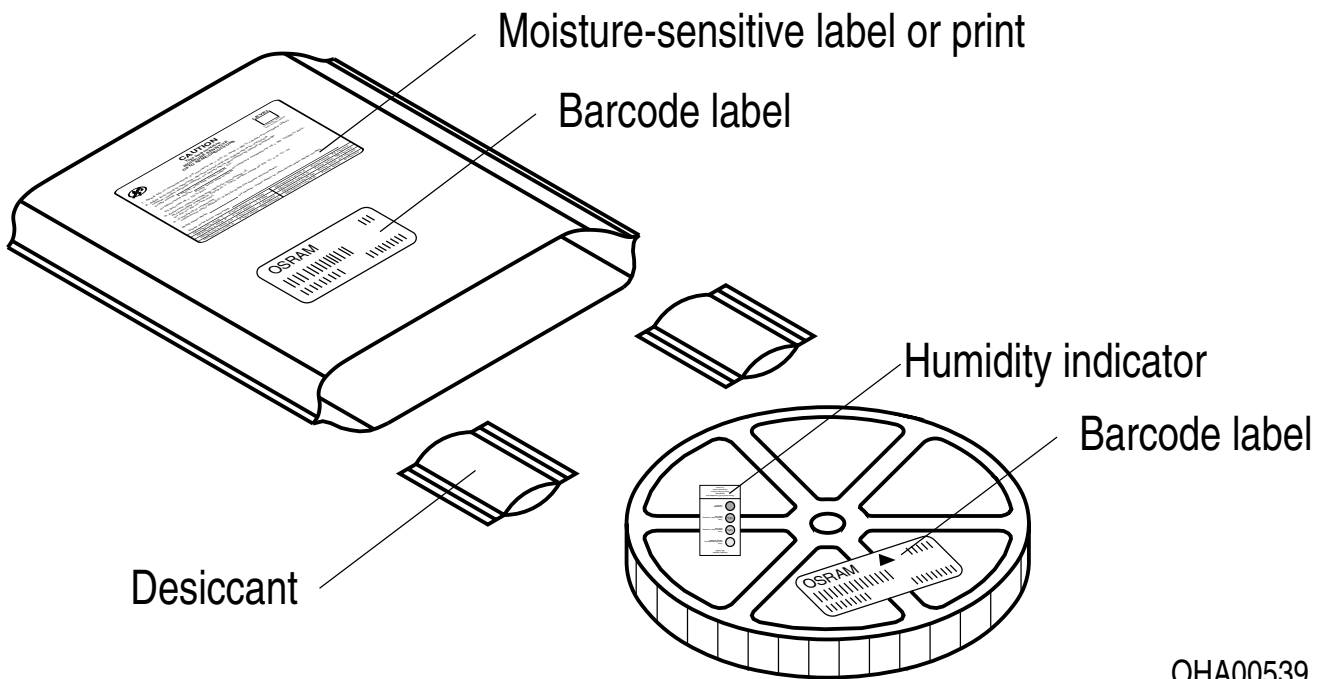
(X) PROD NO: 123456789(Q)QTY: 9999 (G) GROUP: XX-XX-X-X

Pack: RXX  
DEMY    XXX  
X\_X123\_1234.1234 X



OHA04563

**Dry Packing Process and Materials** <sup>8)</sup>



OHA00539

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

## 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 device 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.

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 [www.osram-os.com/appnotes](http://www.osram-os.com/appnotes)

## 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 the OSRAM OS 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**

OSRAM OS components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.

OSRAM OS products are not qualified at module and system level for such application.

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

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## Glossary

- 1) **Brightness:** Brightness groups are tested at a current pulse duration of 25 ms and a tolerance of  $\pm 11\%$ .
- 2) **Reverse Operation:** This product is intended to be operated applying a forward current within the specified range. Applying any continuous reverse bias or forward bias below the voltage range of light emission shall be avoided because it may cause migration which can change the electro-optical characteristics or damage the LED.
- 3) **Chromaticity coordinate groups:** Chromaticity coordinate groups are tested at a current pulse duration of 25 ms and a tolerance of  $\pm 0.01$ .
- 4) **Forward Voltage:** Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of  $\pm 0.1\text{ V}$ .
- 5) **Thermal Resistance:**  $R_{th\ max}$  is based on statistic values ( $6\sigma$ ).
- 6) **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.
- 7) **Characteristic curve:** In the range where the line of the graph is broken, you must expect higher differences between single devices within one packing unit.
- 8) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with  $\pm 0.1$  and dimensions are specified in mm.
- 9) **Tape and Reel:** All dimensions and tolerances are specified acc. IEC 60286-3 and specified in mm.



## Revision History

Version	Date	Change
1.5	2020-06-04	Schematic Transportation Box Dimensions of Transportation Box

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