KW DCLMS1.PC

TOPLED® E3014

The TOPLED Compact 3014 has a wide beam angle with a compact format (3.0 mm x 1.4 mm) and is one of the smallest LED for screen backlighting. It is therefore ideal for injecting in light guides for homogeneous illumination applications where the TOPLED Compact 3014 never fails to impress with its performance on system level.

Applications

- Electronic Equipment
- White Goods

Features:

- Package: white SMT package, colored silicone resin
- Chip technology: InGaN on Sapphire
- Typ. Radiation: 120°
- Color: Cx = 0.35, Cy = 0.35 acc. to CIE 1931 (• white)
- Corrosion Robustness Class: 1B
- Color temperature: 4500K - 8000K
- CRI: 70 (min.)
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)

Not for new design

Ordering Information

Type	Luminous Intensity [1] I_F = 20 mA I_v	Color temperature	Ordering Code
KW DCLMS1.PC-BYCX-5J7K-1	2100 ... 3300 mcd	4500 K	Q65111A4105
KW DCLMS1.PC-BYCX-5H7I-1	2100 ... 3300 mcd	5000 K	Q65111A4104
KW DCLMS1.PC-BYCX-4A7D-1	2100 ... 3300 mcd	8000 K	Q65111A4103

Not for new design

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.	110 °C
Forward current T_S = 25 °C	I_F	max.	30 mA
Surge Current t ≤ 10000 µs; D = 0.1 ; T_S = 25 °C	I_{FS}	max.	100 mA
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}		2 kV
Reverse voltage [2)]	V_R		Not designed for reverse operation

Not for new design

Characteristics

I_F = 20 mA; T_S = 25 °C

Parameter	Symbol		Values
Chromaticity Coordinate [3]	Cx Cy	typ. typ.	0.35 0.35
Viewing angle at 50 % I_V	2φ	typ.	110 °
Forward Voltage [4] I_F = 20 mA	V_F	min. typ. max.	2.80 V 3.05 V 3.40 V
Reverse current [2]	I_R		Not designed for reverse operation
Color Rendering Index	CRI	min.	70
Real thermal resistance junction/solderpoint [5]	$R_{thJS\ real}$	typ. max.	130 K / W 160 K / W

Not for new design

Brightness Groups

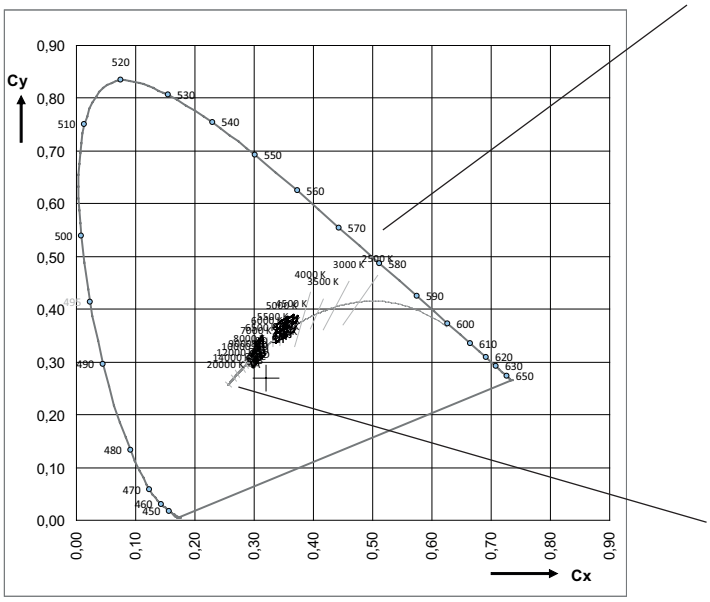
Group	Luminous Intensity [1] I_F = 20 mA min. I_v	Luminous Intensity. [1] I_F = 20 mA max. I_v	Luminous Flux [6] I_F = 20 mA typ. Φ_V
BY	2100 mcd	2400 mcd	6750 mlm
BZ	2400 mcd	2800 mcd	7800 mlm
CX	2800 mcd	3300 mcd	9150 mlm

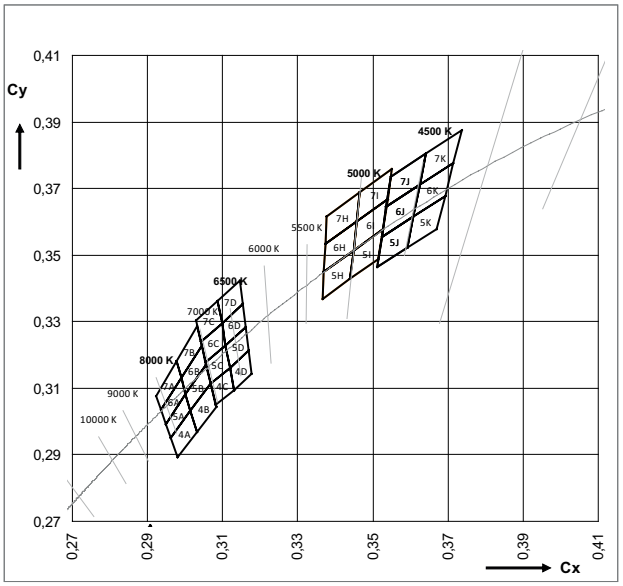
Forward Voltage Groups

Group	Forward Voltage [4] I_F = 20 mA min. V_F	Forward Voltage [4] I_F = 20 mA max. V_F
24	2.80 V	3.00 V
64	3.00 V	3.20 V
A4	3.20 V	3.40 V

Not for new design

Chromaticity Coordinate Groups





Color Chromaticity Groups [3)]

Group	Cx	Cy	CCT
5J	0.3512	0.3465	4500
	0.3524	0.3555	4500
	0.3608	0.3616	4500
	0.3591	0.3522	4500
5K	0.3591	0.3522	4500
	0.3608	0.3616	4500
	0.3692	0.3677	4500
	0.3670	0.3578	4500
6J	0.3524	0.3555	4500
	0.3536	0.3646	4500
	0.3625	0.3711	4500
	0.3608	0.3616	4500
6K	0.3608	0.3616	4500
	0.3625	0.3711	4500
	0.3714	0.3775	4500
	0.3692	0.3677	4500

Group	Cx	Cy	CCT
7J	0.3536	0.3646	4500
	0.3548	0.3736	4500
	0.3642	0.3805	4500
	0.3625	0.3711	4500
7K	0.3625	0.3711	4500
	0.3642	0.3805	4500
	0.3736	0.3874	4500
	0.3714	0.3775	4500
5H	0.3366	0.3369	5000
	0.3369	0.3451	5000
	0.3448	0.3515	5000
	0.3441	0.3428	5000
5I	0.3441	0.3428	5000
	0.3448	0.3515	5000
	0.3527	0.3578	5000
	0.3515	0.3487	5000

Group	Cx	Cy	CCT
6H	0.3369	0.3451	5000
	0.3373	0.3534	5000
	0.3456	0.3601	5000
	0.3448	0.3515	5000
6I	0.3448	0.3515	5000
	0.3456	0.3601	5000
	0.3539	0.3669	5000
	0.3527	0.3578	5000
7H	0.3373	0.3534	5000
	0.3376	0.3616	5000
	0.3464	0.3688	5000
	0.3456	0.3601	5000
7I	0.3456	0.3601	5000
	0.3464	0.3688	5000
	0.3551	0.3760	5000
	0.3539	0.3669	5000

Not for new design

Group	Cx	Cy	CCT
4A	0.2981	0.2892	8000
	0.2961	0.2952	8000
	0.3015	0.3033	8000
	0.3032	0.2968	8000
4B	0.3032	0.2968	8000
	0.3015	0.3033	8000
	0.3068	0.3113	8000
	0.3083	0.3044	8000
4C	0.3081	0.3049	8000
	0.3068	0.3113	8000
	0.3119	0.3162	8000
	0.3130	0.3095	8000
4D	0.3130	0.3095	8000
	0.3119	0.3162	8000
	0.3170	0.3212	8000
	0.3178	0.3142	8000
5A	0.2961	0.2952	8000
	0.2949	0.2993	8000
	0.3002	0.3082	8000
	0.3015	0.3033	8000
5B	0.3015	0.3033	8000
	0.3002	0.3082	8000
	0.3056	0.3171	8000
	0.3068	0.3113	8000

Group	Cx	Cy	CCT
5C	0.3068	0.3113	8000
	0.3055	0.3177	8000
	0.3108	0.3229	8000
	0.3119	0.3162	8000
5D	0.3119	0.3162	8000
	0.3108	0.3229	8000
	0.3162	0.3282	8000
	0.3170	0.3212	8000
6A	0.2949	0.2993	8000
	0.2936	0.3034	8000
	0.2990	0.3131	8000
	0.3002	0.3082	8000
6B	0.3002	0.3082	8000
	0.2990	0.3131	8000
	0.3044	0.3228	8000
	0.3056	0.3171	8000
6C	0.3055	0.3177	8000
	0.3041	0.3240	8000
	0.3098	0.3296	8000
	0.3108	0.3229	8000
6D	0.3108	0.3229	8000
	0.3098	0.3296	8000
	0.3154	0.3352	8000
	0.3162	0.3282	8000

Group	Cx	Cy	CCT
7A	0.2936	0.3034	8000
	0.2924	0.3076	8000
	0.2978	0.3181	8000
	0.2990	0.3131	8000
7B	0.2990	0.3131	8000
	0.2978	0.3181	8000
	0.3032	0.3286	8000
	0.3044	0.3228	8000
7C	0.3041	0.3240	8000
	0.3028	0.3304	8000
	0.3087	0.3363	8000
	0.3098	0.3296	8000
7D	0.3098	0.3296	8000
	0.3087	0.3363	8000
	0.3146	0.3422	8000
	0.3154	0.3352	8000

Not for new design

Group Name on Label

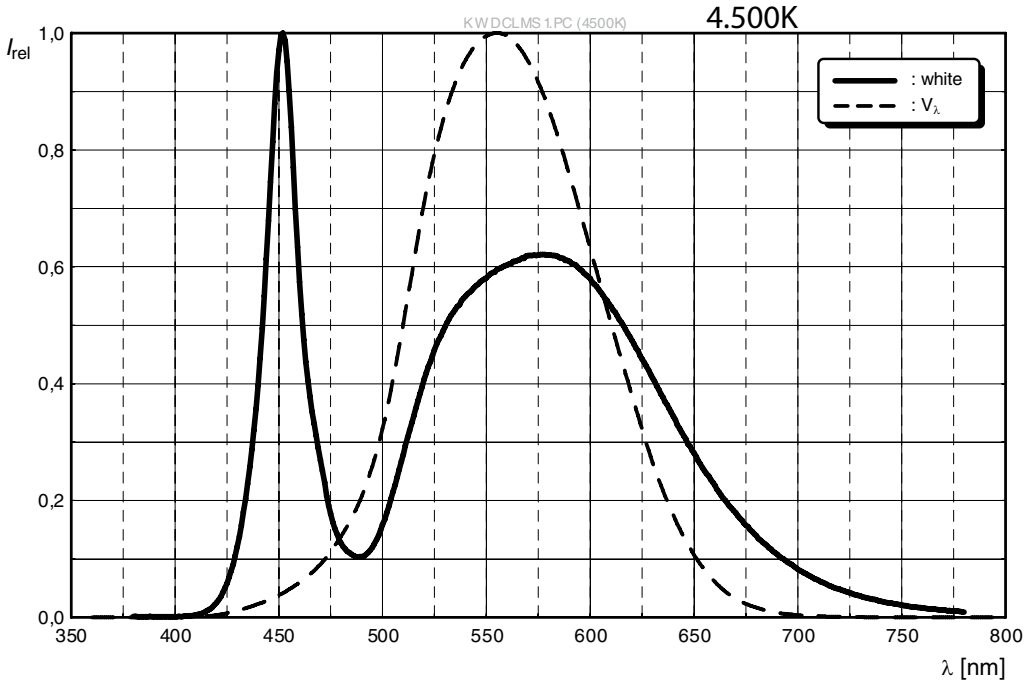
Example: BY-4A-24

Brightness	Color Chromaticity	Forward Voltage
BY	4A	24

Not for new design

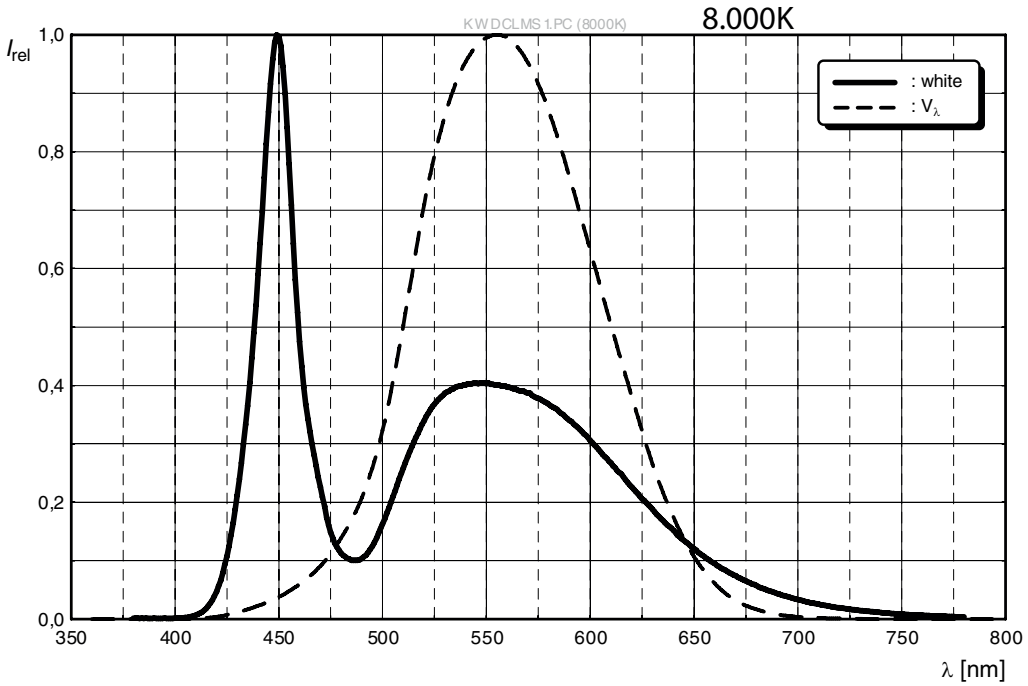
Relative Spectral Emission [6)]

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



Relative Spectral Emission [6)]

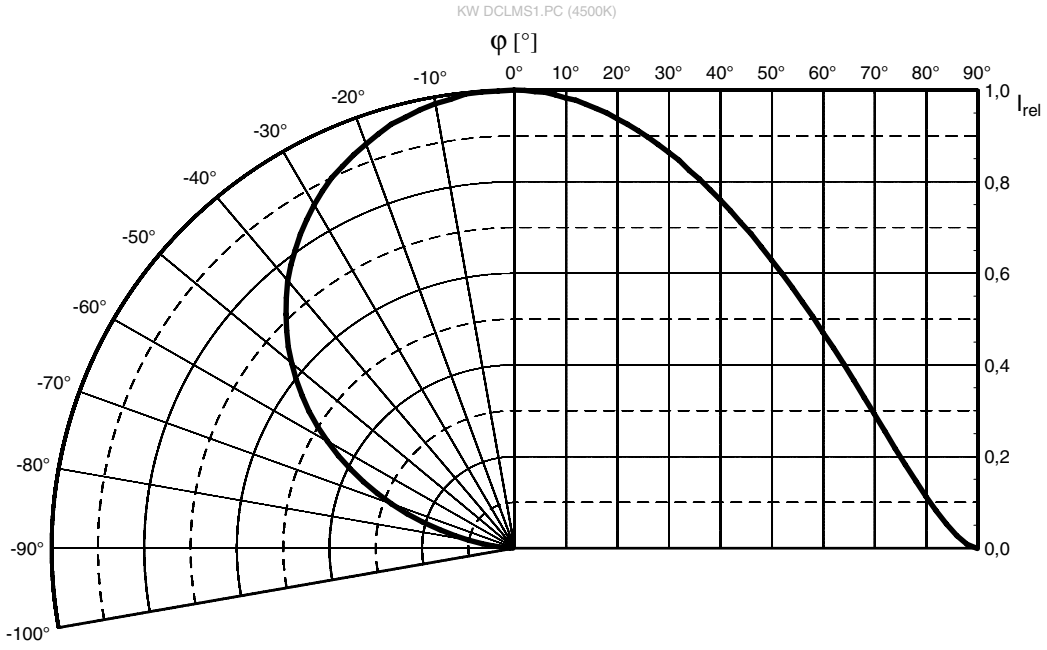
$I_{rel} = f(\lambda)$; $I_F = 20$ mA; $T_S = 25$ °C



Not for new design

Radiation Characteristics [6)]

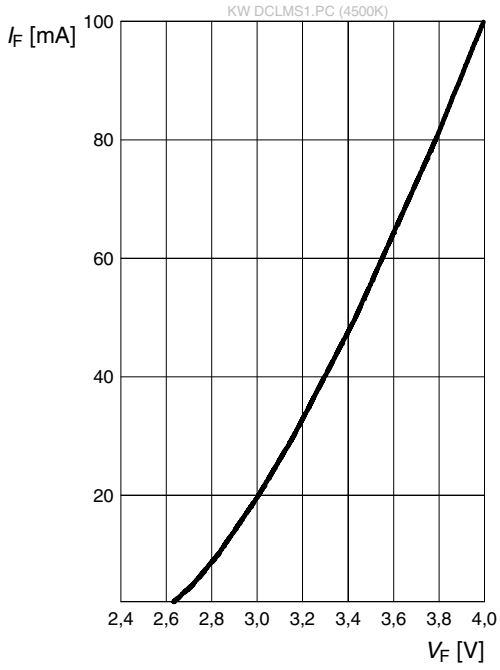
$I_{rel} = f(\phi)$; $T_S = 25$ °C



Not for new design

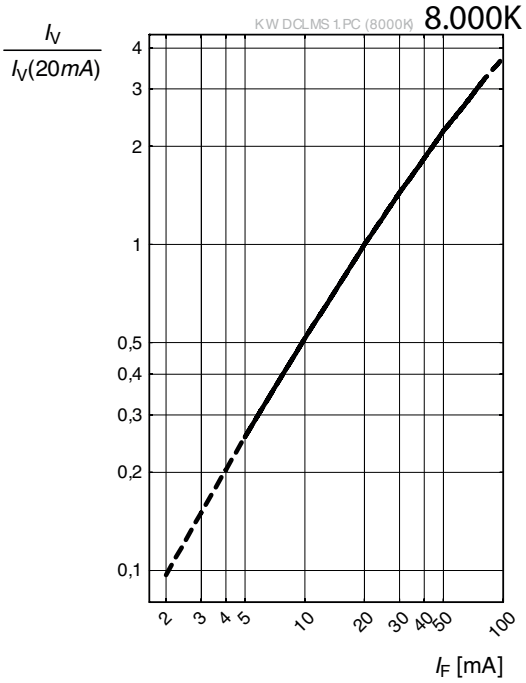
Forward current 6), 7)

$I_F = f(V_F)$; T_S = 25 °C



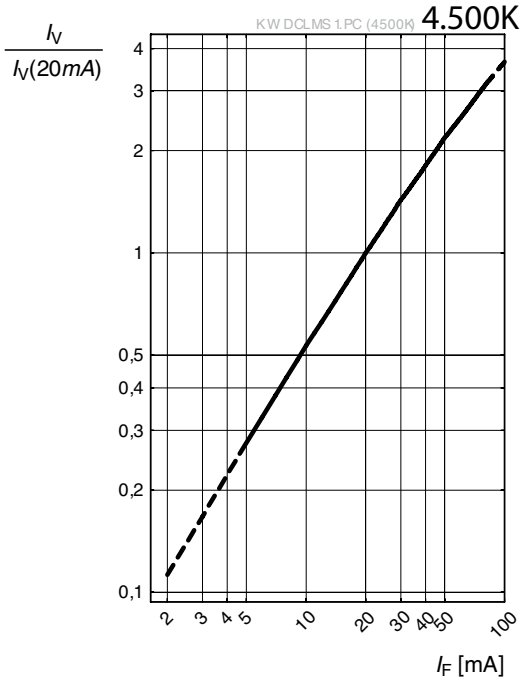
Relative Luminous Intensity 6), 7)

$I_v/I_v(20\ mA) = f(I_F)$; T_S = 25 °C



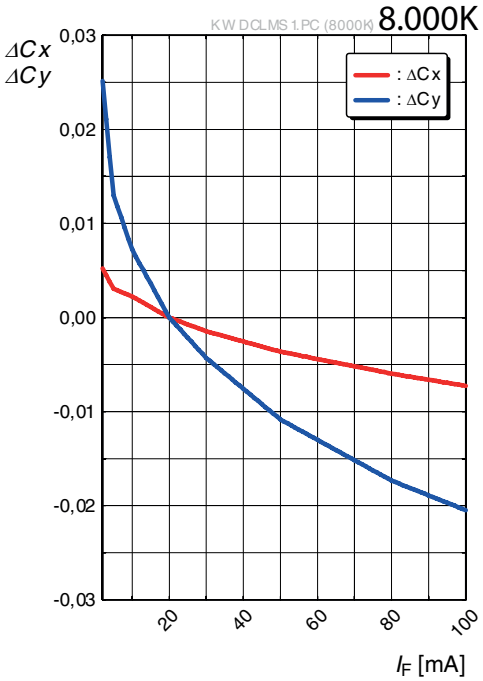
Relative Luminous Intensity 6), 7)

$I_v/I_v(20\ mA) = f(I_F)$; T_S = 25 °C



Chromaticity Coordinate Shift 6)

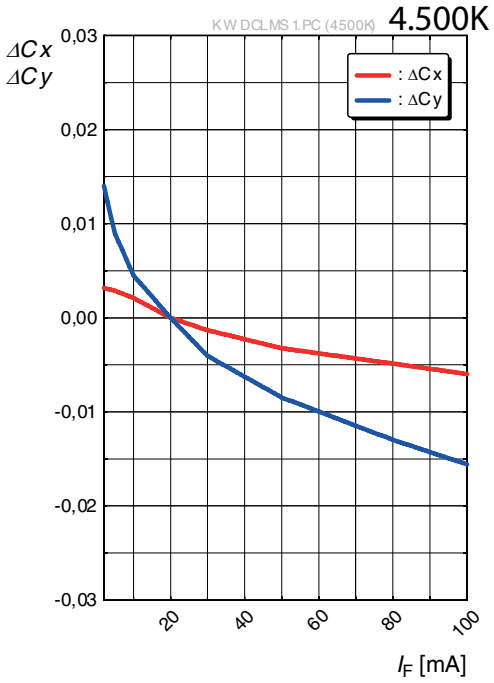
$\Delta Cx, \Delta Cy = f(I_F)$; T_S = 25 °C



Not for new design

Chromaticity Coordinate Shift [6)]

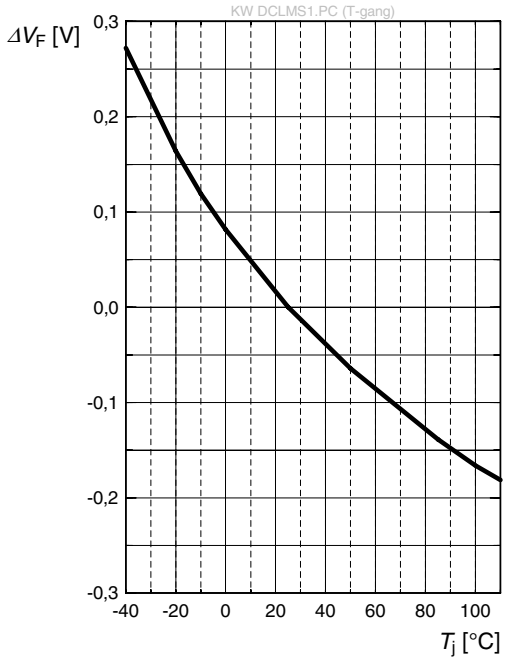
ΔCx,ΔCy = f(I_F); T_S = 25 °C



Not for new design

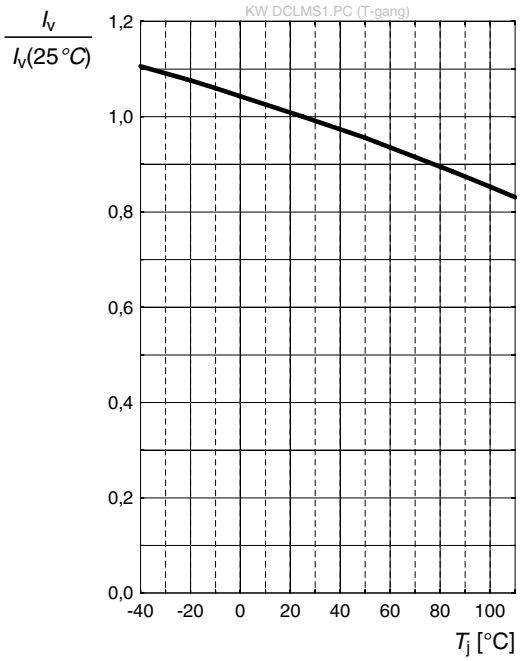
Forward Voltage [6]

$\Delta V_F = V_F - V_F(25\ °C) = f(T_j);\ I_F = 20\ mA$



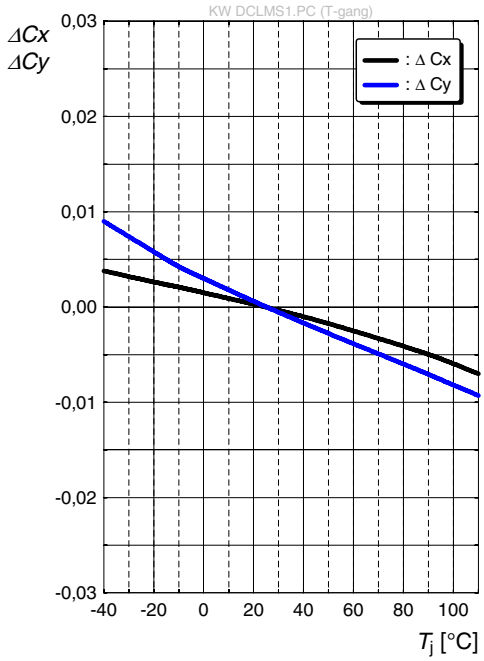
Relative Luminous Intensity [6]

$I_v/I_v(25\ °C) = f(T_j);\ I_F = 20\ mA$



Chromaticity Coordinate Shift [6]

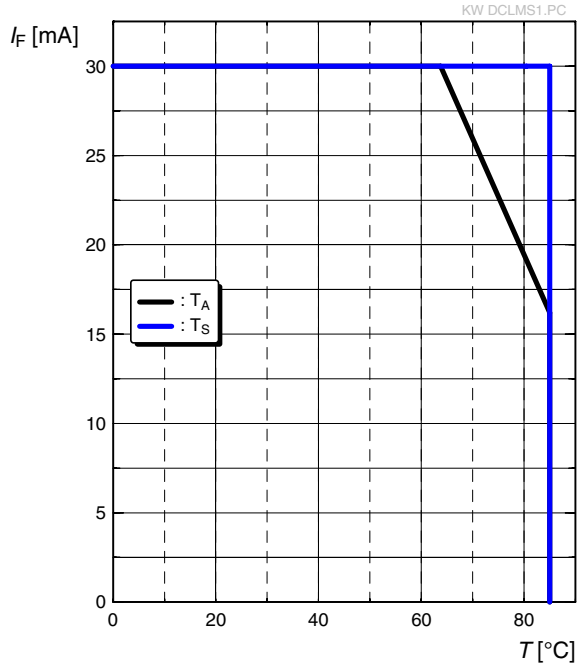
$\Delta Cx, \Delta Cy = f(T_j);\ I_F = 20\ mA$



Not for new design

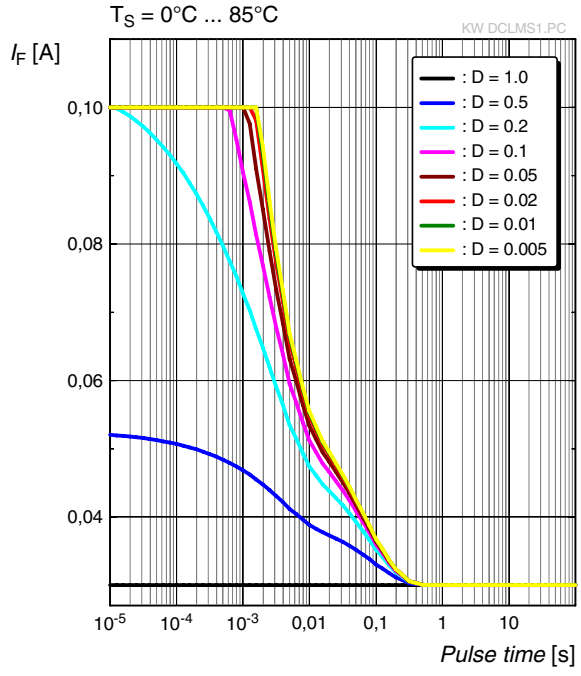
Max. Permissible Forward Current

$I_F = f(T)$



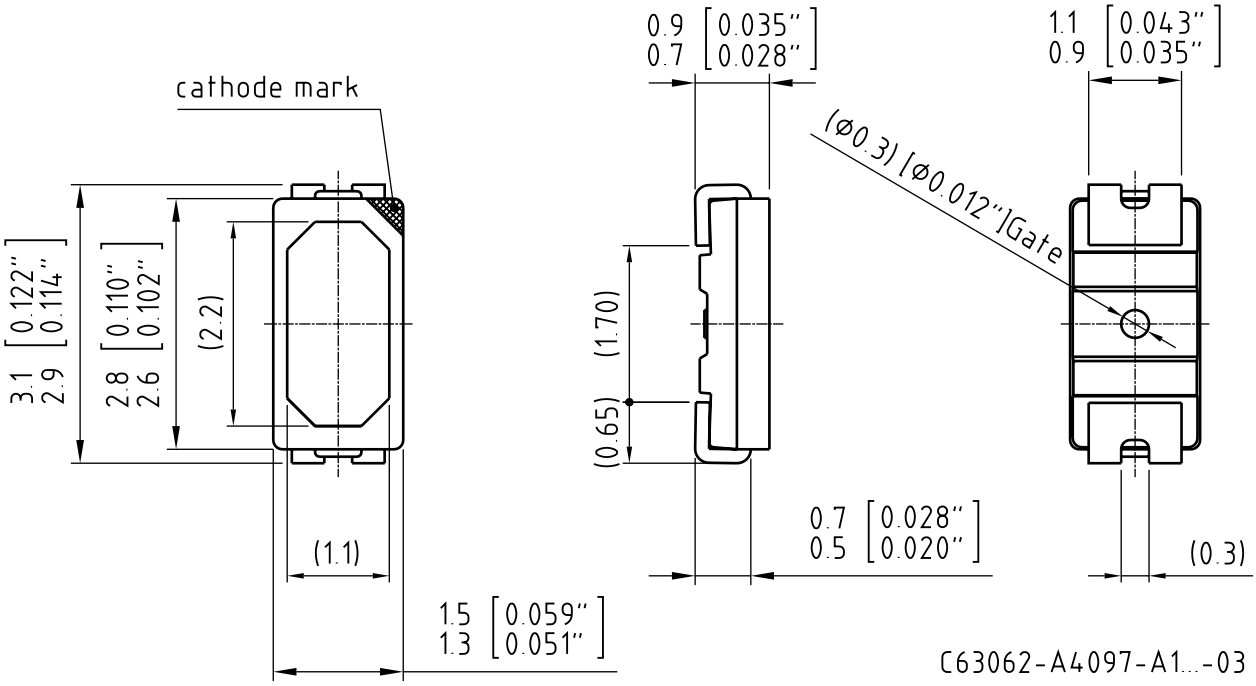
Permissible Pulse Handling Capability

$I_F = f(t_p)$; D: Duty cycle



Not for new design

Dimensional Drawing [8)]

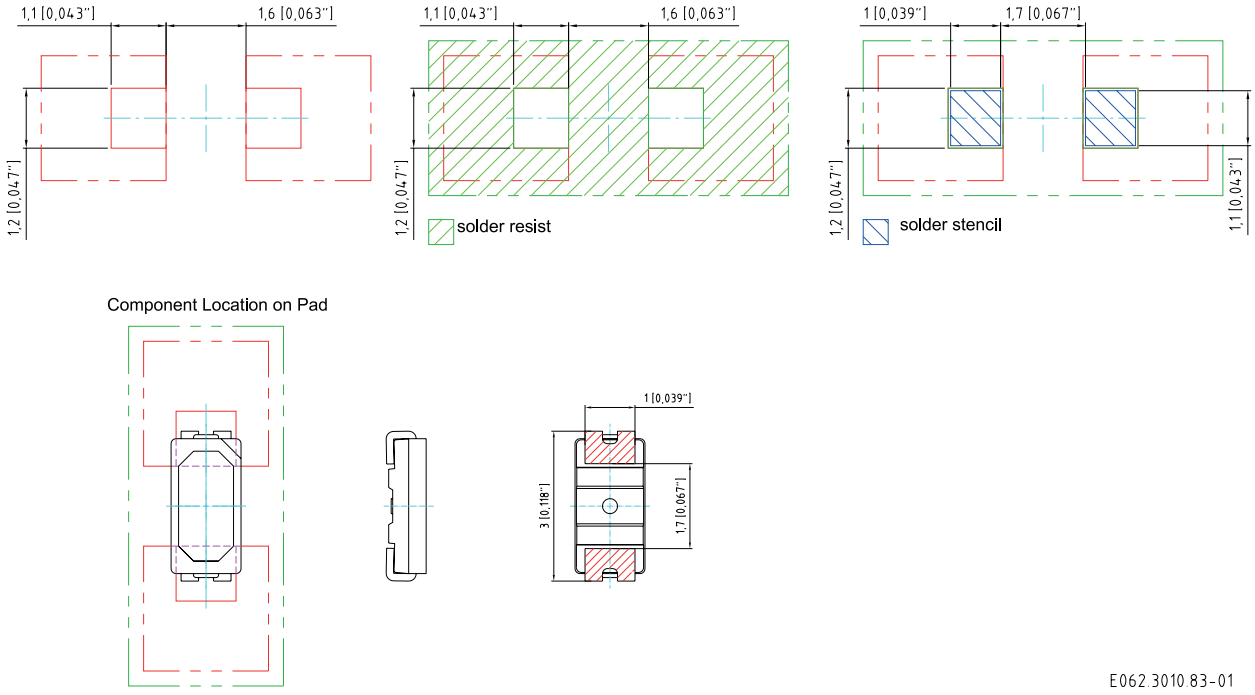


Approximate Weight: 10.0 mg

Corrosion test: Class: 1B
Test condition: 25°C / 75 % RH / 200ppb SO_2, 200ppb NO_2, 10ppb H_2S, 10ppb Cl_2 / 21 days (EN 60068-2-60 (Method 4))

Not for new design

Recommended Solder Pad [8)]

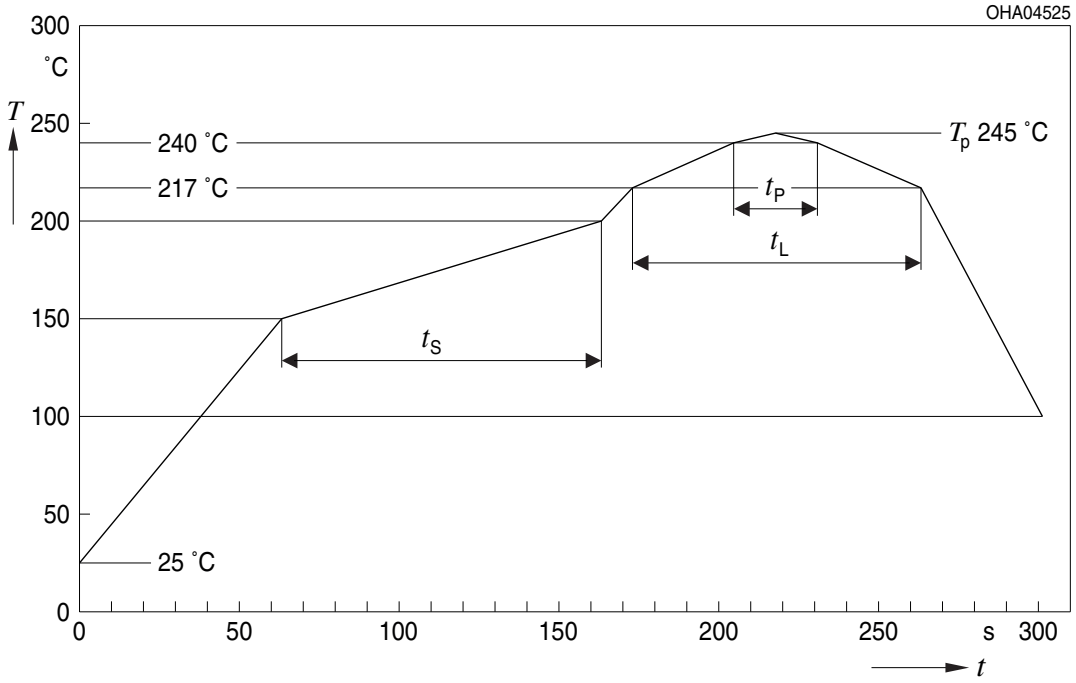


For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere. Package not suitable for ultra sonic cleaning.

Not for new design

Reflow Soldering Profile

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

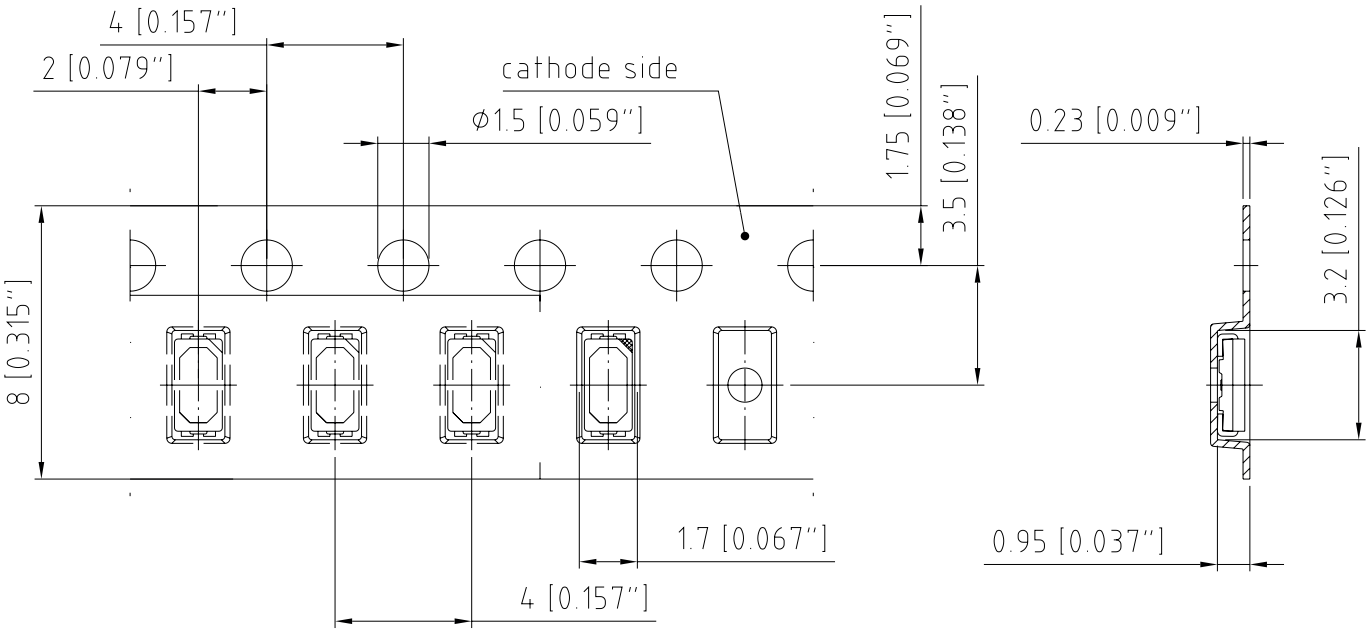


Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_S T_{Smin} to T_{Smax}	t_S	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature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

Not for new design

Taping [8)]



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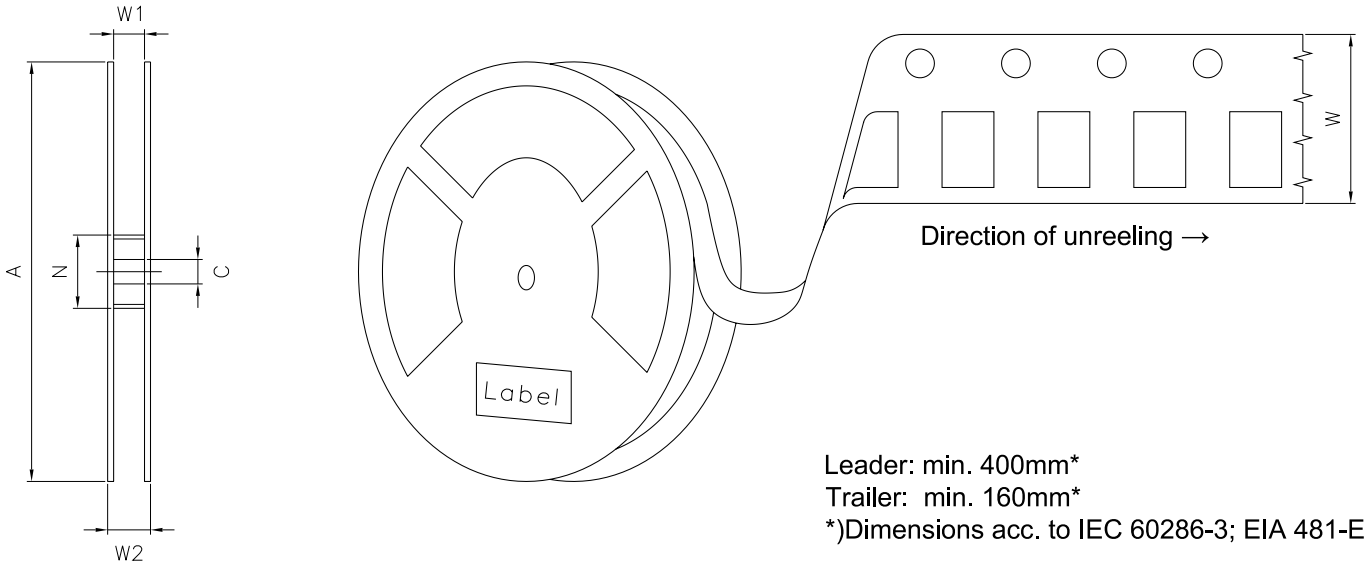
Not for new design

Tape and Reel [9)]



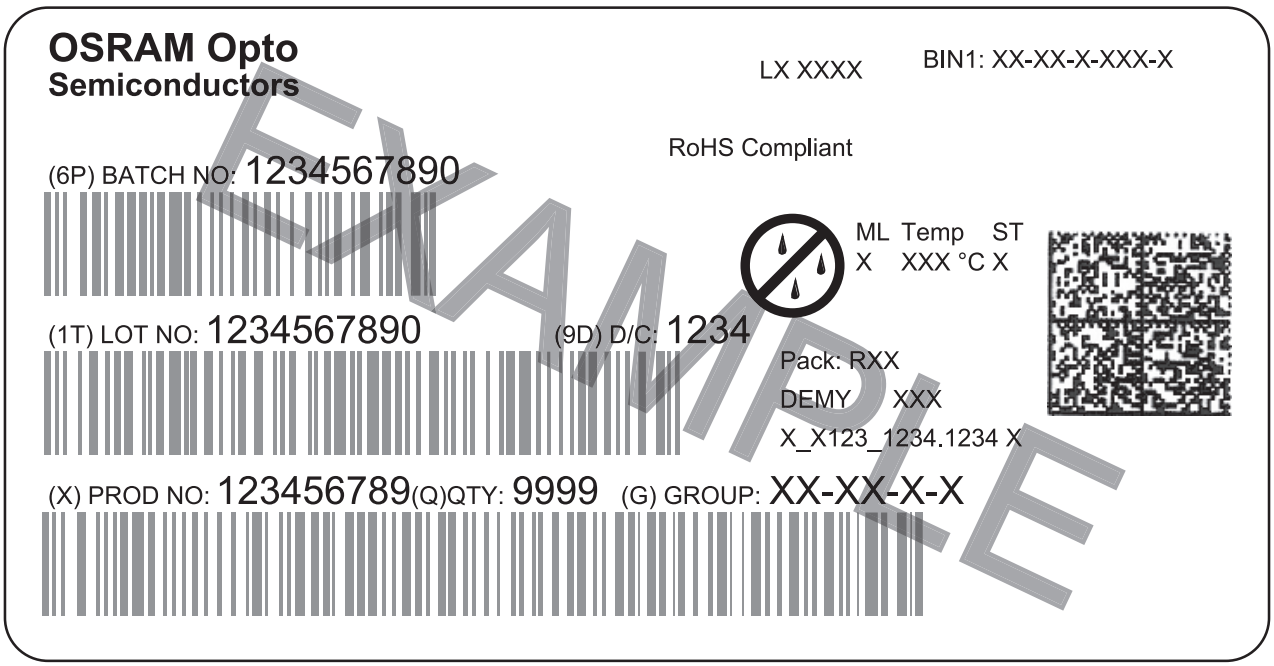
Leader: min. 400mm*
Trailer: min. 160mm*
*)Dimensions acc. to IEC 60286-3; EIA 481-E

Reel dimensions [mm]

A	W	N_{min}	W_1	$W_{2\,max}$	Pieces per PU
180 mm	8 + 0.3 / - 0.1	60	8.4 + 2	14.4	2000

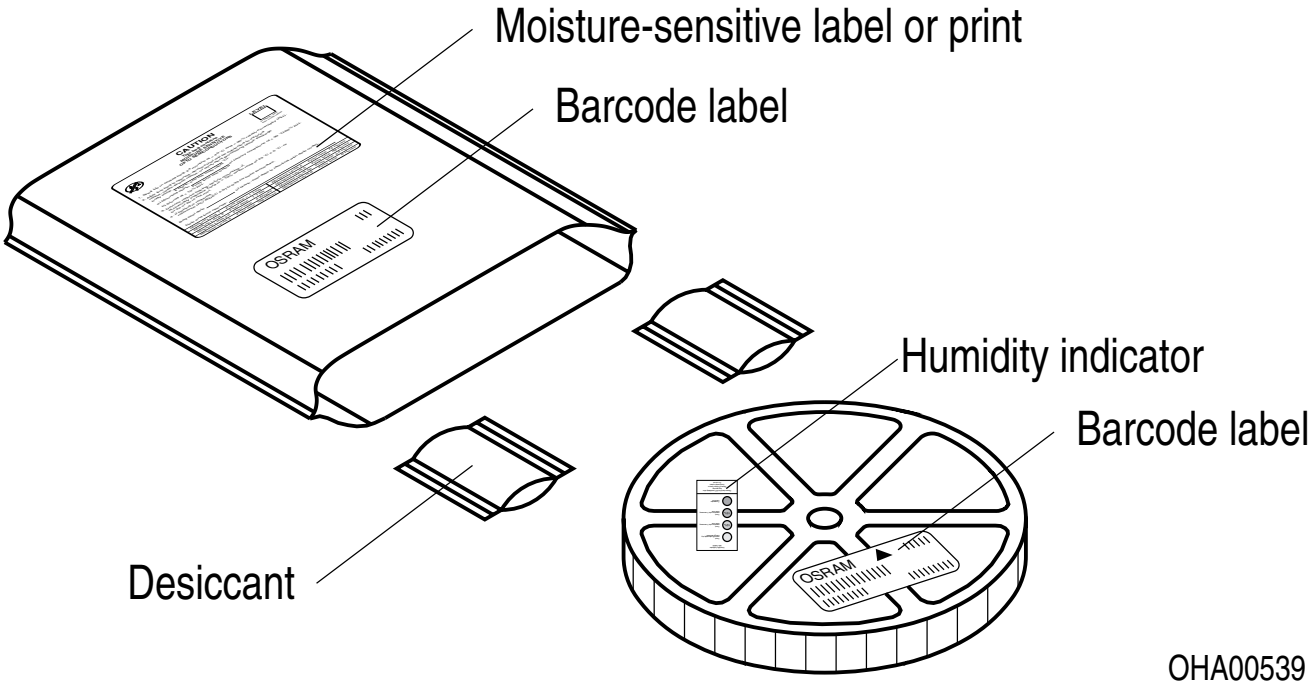
Not for new design

Barcode-Product-Label (BPL)



OHA04563

Dry Packing Process and Materials [8)]

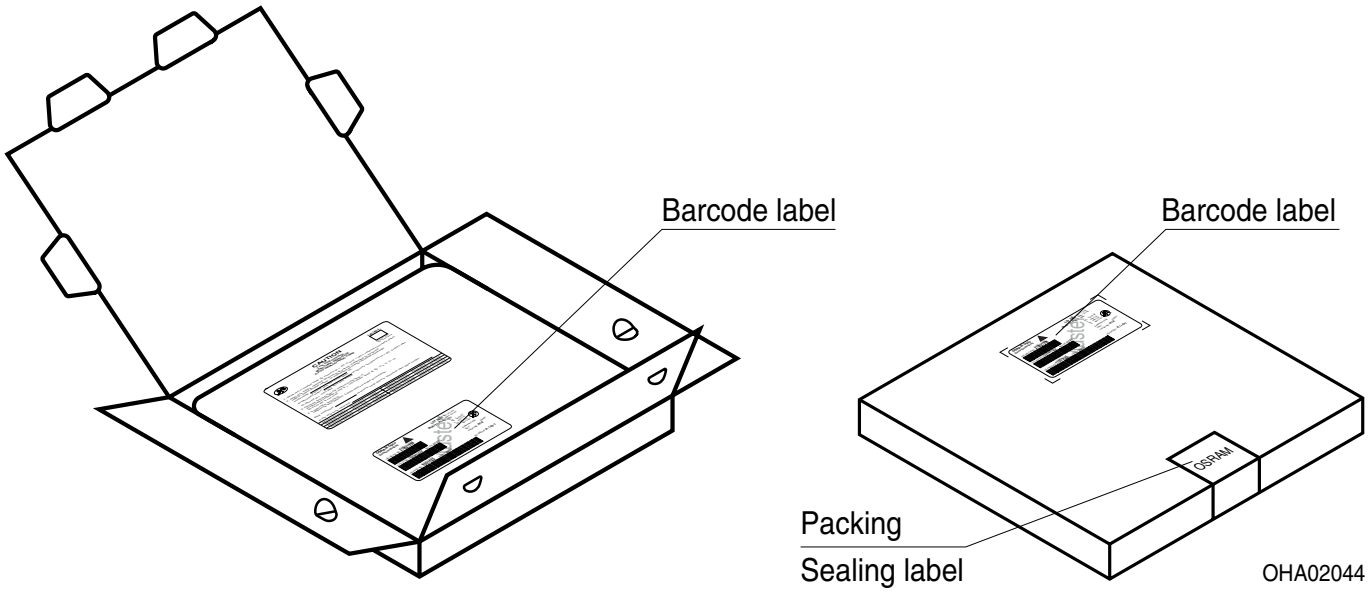


OHA00539

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

Not for new design

Transportation Packing and Materials [8)]

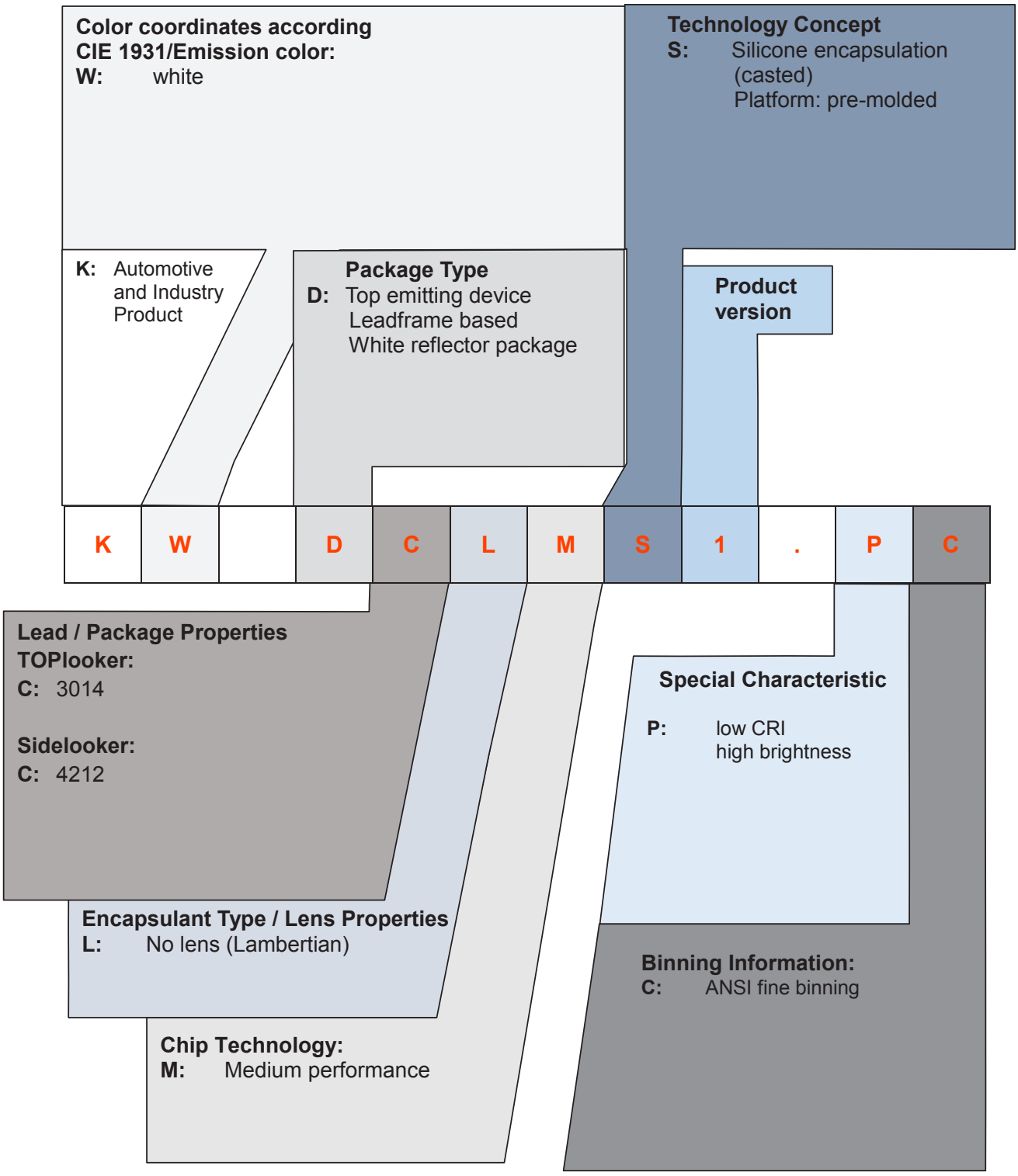


Dimensions of transportation box in mm

Width	Length	Height
200 ± 5 mm	195 ± 5 mm	30 ± 5 mm

Not for new design

Type Designation System



Not for new design

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 informations please visit www.osram-os.com/appnotes

Not for new design

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.
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 webside.

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.

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

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.

Not for new design

Glossary

1) **Brightness:** Brightness groups are tested at a current pulse duration of 25 ms and a tolerance of ±11 %.

2) **Reverse Operation:** Not designed for reverse operation. Continuous reverse operation can cause migration and damage of the device.

3) **Chromaticity coordinate groups:** Chromaticity coordinate groups are tested at a current pulse duration of 25 ms and a tolerance of ±0.01.

4) **Forward Voltage:** Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of ±0.1 V.

5) **Thermal Resistance:** Rth max is based on statistic values (6σ).

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 ±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.

Not for new design

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