

V51519WW0WNZ2 Datasheet

1519 Series (L* W*H): 1.5*1.9*1.0mm



Applications

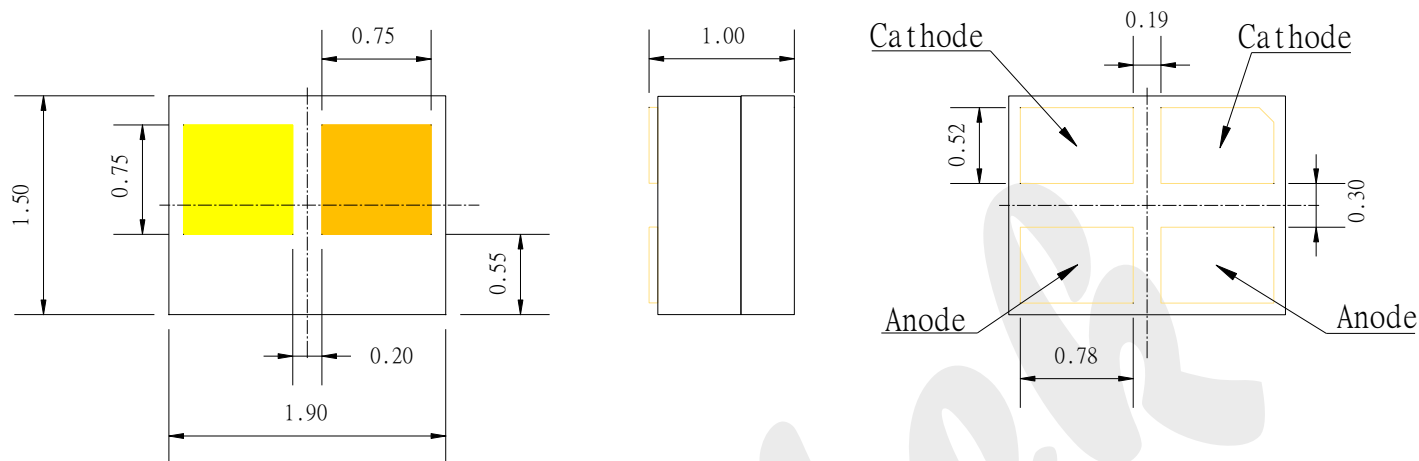
-  Automotive electronics
-  Others applications

Features

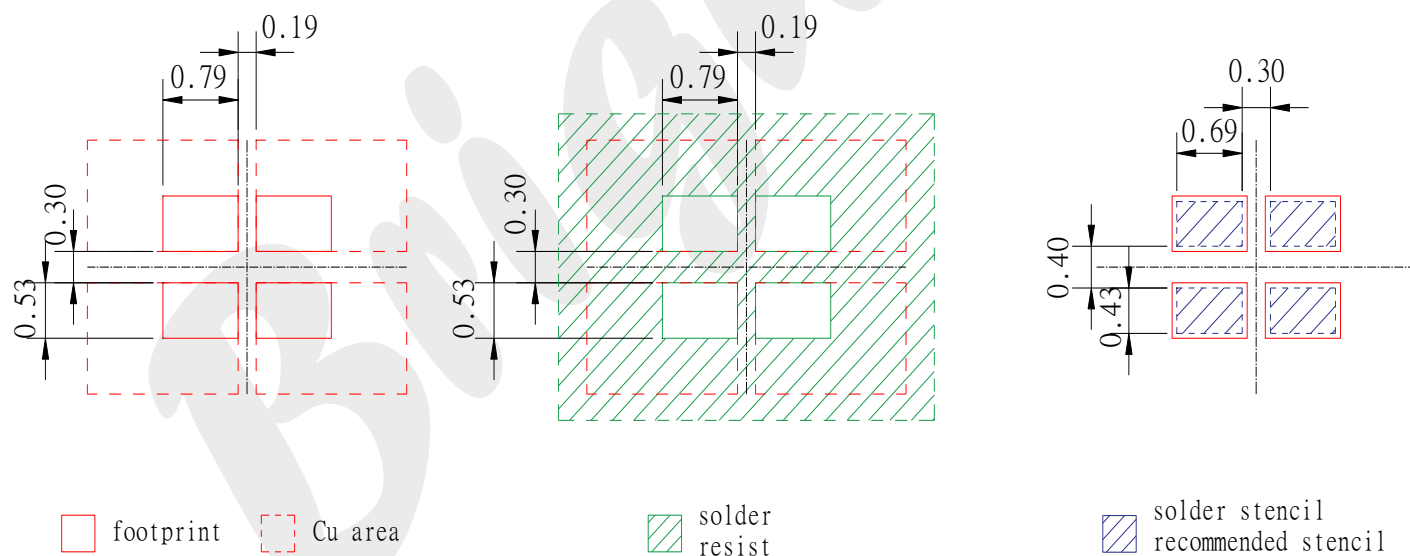
-  Forward current: $\leq 500\text{mA}$
-  Typical view angle: 120°
-  Color: Cx = 0.3250, Cy = 0.3400 acc. to CIE 6000K (● white) ;
Cx = 0.5700, Cy = 0.4155 acc. to CIE 1700K (● Amber) ;
-  RoHS2.0 and REACH-compliant
-  ESD level 8kV(HBM)
-  Reliability test: AEC-Q102 qualified
-  Qualified according to JEDEC moisture sensitivity Level 2a

V51519WW0WNZ2

Dimensional Drawing



Recommend Pad layout



1. Dimensions are in millimeters.
2. General tolerance is ± 0.1 mm.

Maximum Ratings

T_A : 25 °C

Parameter	Symbol		Values ● White	Values ● Amber	Unit
Forward Current	I _F	max.	500	500	mA
Pulse Forward Current	I _{FP}	max.	700	700	mA
ESD Withstand Voltage (HBM)	V _{ESD}	max.	8	8	kV
Power Dissipation	P _D	max.	1800	1800	mW
Reverse Voltage	V _R	max.	5	5	V
Junction Temperature	T _j	max.	150	150	°C
Operating Temperature	T _{op}	min.	-40	-40	°C
		max.	125	125	
Storage Temperature	T _{stg}	min.	-40	-40	°C
		max.	125	125	
Soldering Temperature	T _{SD}	max.	260	260	°C
Thermal Resistance Junction / Solder Point	R _{THJ-S}	max.	5	5	°C /W

1. I_{FP} conditions with pulse width ≤ 10ms and duty cycle ≤ 10%.
2. HBM ESD Component Classification Level of the LEDs : Class 3B
For more details, see ANSI/ESDA/JEDEC JS-001.

V51519WW0WNZ2

Characteristics

I_F : 200mA | t_p : 22ms | $t_p T_A$: 25 °C

Parameter	Symbol		Values ● White	Values ● Amber	Unit
Color Coordinate	Cx/Cy	typ.	0.3250 0.3400	0.5700 0.4155	-
View Angle	$2\theta_{1/2}$	typ.	120	120	°
Luminous Flux		min.	66	44	lm
		typ.	85	52	
		max.	100	66	
Forward Voltage	V_F	min.	2.8	2.8	V
		typ.	3.2	3.2	
		max.	3.4	3.4	
Reverse Current ($V_R=5V$)	I_R	max.	10	10	μA

1. Measurement Tolerances:

Forward Voltage: $\pm 0.1V$, Luminous Flux: $\pm 10\%Lm$, Color Coordinate ± 0.005

Brightness Groups

1. Luminous Flux $I_F=200\text{mA}$ | $t_p: 22\text{ms}$ | $T_A: 25^\circ\text{C}$

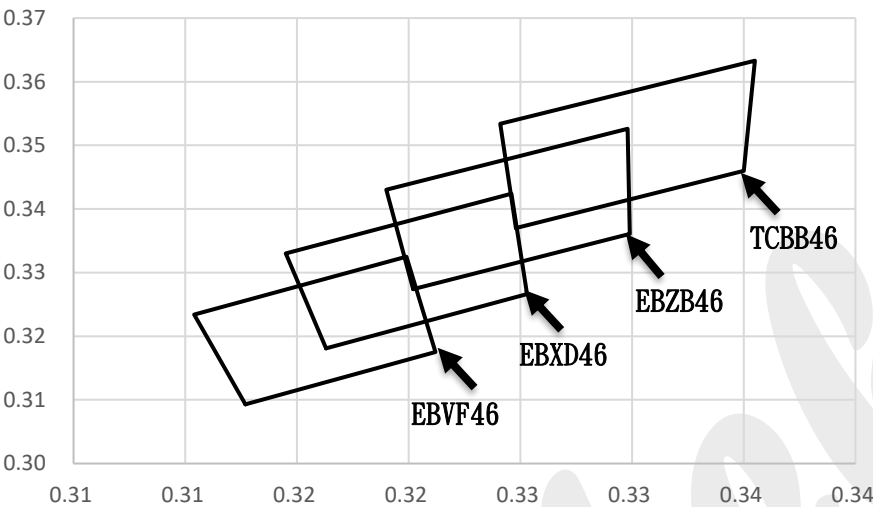
Color of Emission	Group	min.	max.	Unit
● White	23	66	76	lm
	24	76	87	
	25	87	100	
● Amber	20	44	50	
	21	50	58	
	22	58	66	

2. Forward Voltage $I_F=200\text{mA}$ | $t_p: 22\text{ms}$ | $T_A: 25^\circ\text{C}$

Color of Emission	Group	min.	max.	Unit
● White	K	2.8	3.0	V
	L	3.0	3.2	
	M	3.2	3.4	
● Amber	K	2.8	3.0	
	L	3.0	3.2	
	M	3.2	3.4	

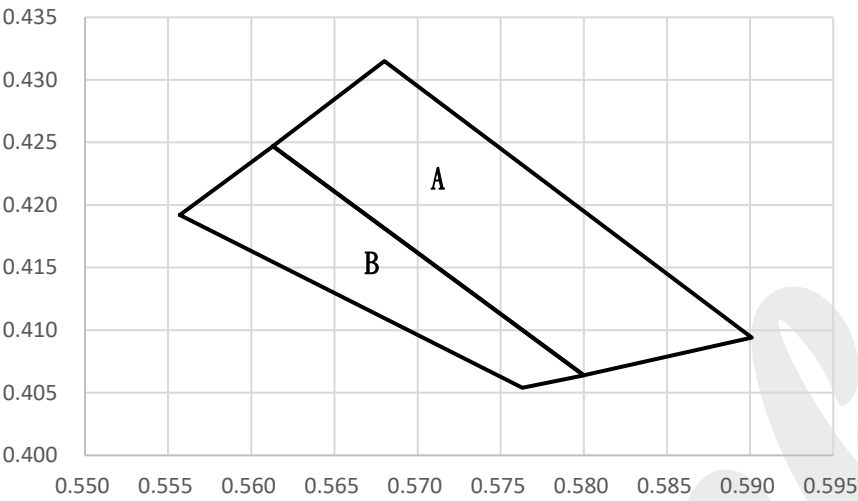
V51519WW0WNZ2

3. Chromaticity Coordinate Groups $I_F=200\text{mA}$ | $t_p: 22\text{ms}$ | $T_A: 25^\circ\text{C}$



Color of Emission	Group	Cx	Cy
● White	EBVF46	0.3127	0.3093
		0.3212	0.3175
		0.3199	0.3325
		0.3104	0.3234
	EBZB46	0.3202	0.3274
		0.3299	0.3361
		0.3298	0.3526
		0.3190	0.3430
	EBXD46	0.3163	0.3181
		0.3253	0.3266
		0.3246	0.3424
		0.3145	0.3330
	TCBB46	0.3248	0.3370
		0.3350	0.3460
		0.3355	0.3633
		0.3241	0.3534

V51519WW0WNZ2

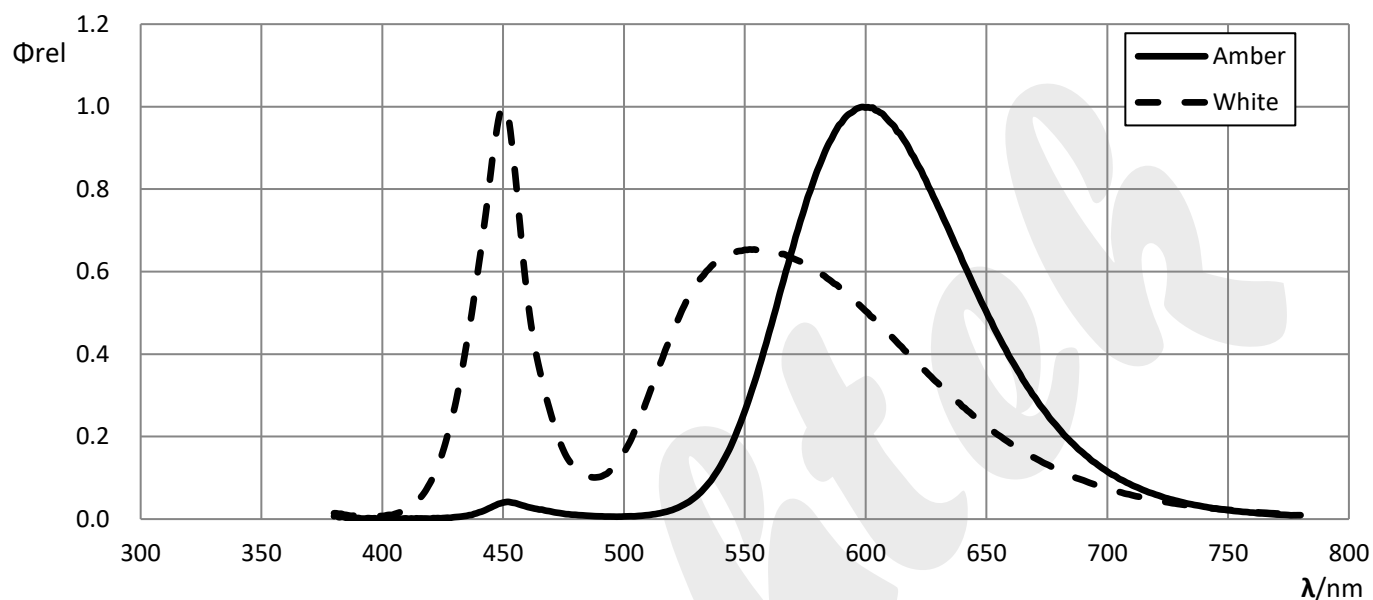


Color of Emission	Group	Cx	Cy
● Amber	A	0.5613	0.4247
		0.5901	0.4094
		0.5800	0.4064
		0.5680	0.4315
		0.5557	0.4192
	B	0.5763	0.4054
		0.5800	0.4064
		0.5613	0.4247

Typical Electrical Optical Characteristics Curves

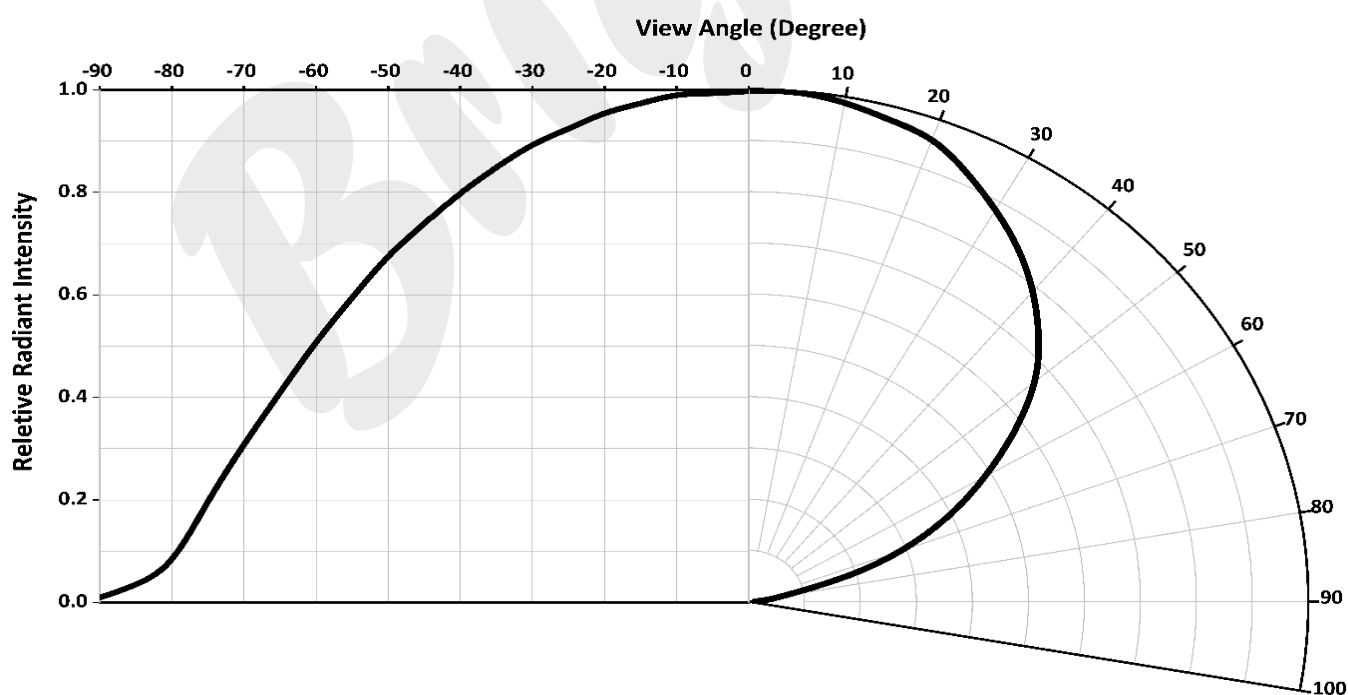
Relative Spectral Emission

$\Phi_{rel} = f(\lambda)$; $I_F = 200 \text{ mA}$; $t_p = 29 \text{ ms}$; $T_s = 25 \text{ }^\circ\text{C}$



Radiation Characteristics

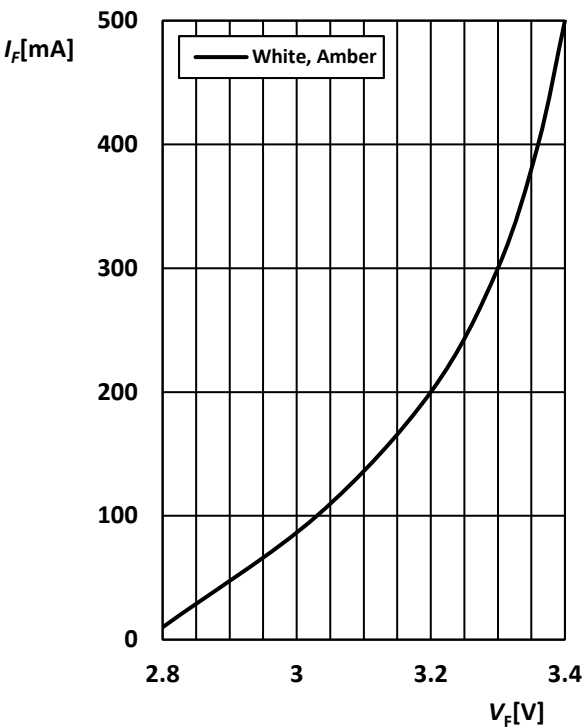
$I_{rel} = f(\Phi)$; $t_p = 29 \text{ ms}$; $T_s = 25 \text{ }^\circ\text{C}$



V51519WW0WNZ2

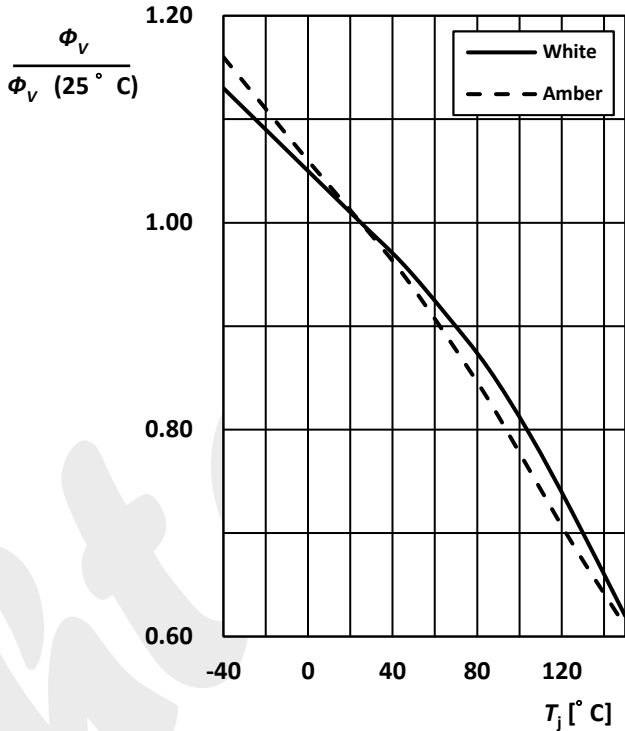
Forward Voltage

$I_F = f(V_F) ; T_S = 25\text{ }^{\circ}\text{C}$



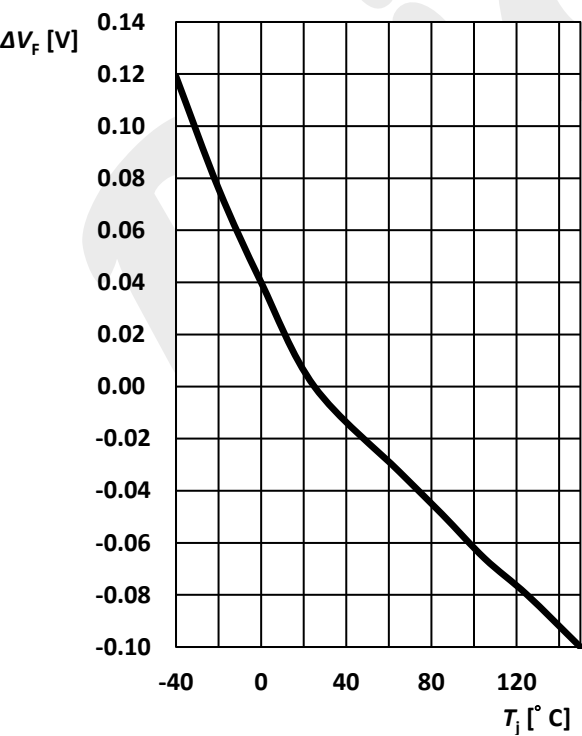
Relative Luminous Intensity

$\Phi_V/\Phi_V(25^{\circ}\text{C}) = f(I_F) ; T_S = 25\text{ }^{\circ}\text{C} ; I_F = 200\text{ mA}$



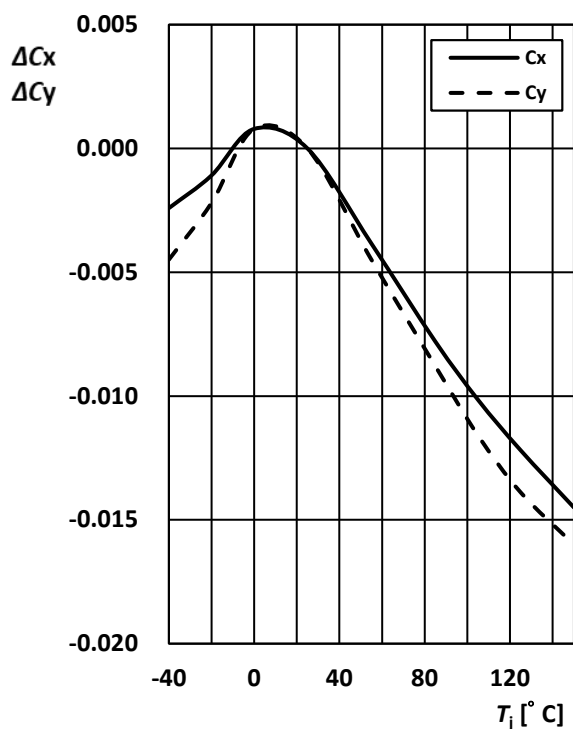
Forward Voltage

$\Delta V_F = V_F - V_F(25\text{ }^{\circ}\text{C}) = f(T_j) ; I_F = 200\text{ mA}$



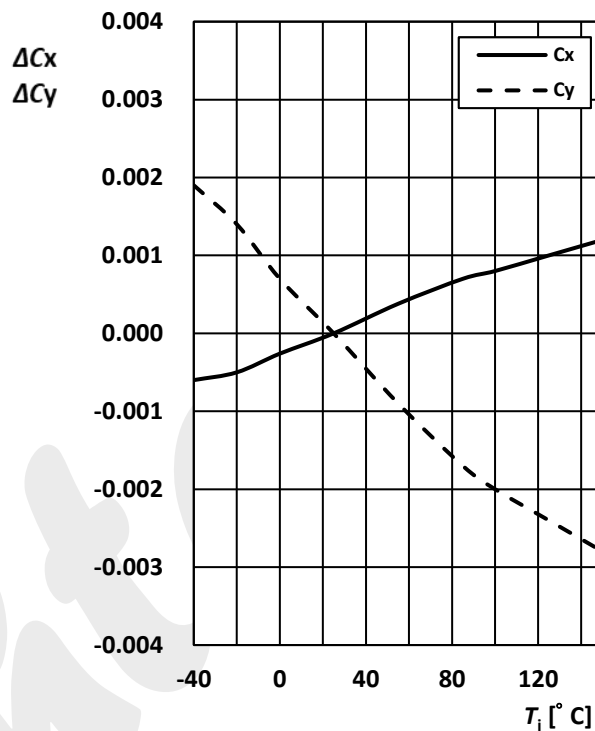
Chromaticity Coordinate Shift (● White)

$$\Delta C_x \Delta C_y = f(T_j) ; I_F = 200 \text{ mA}$$



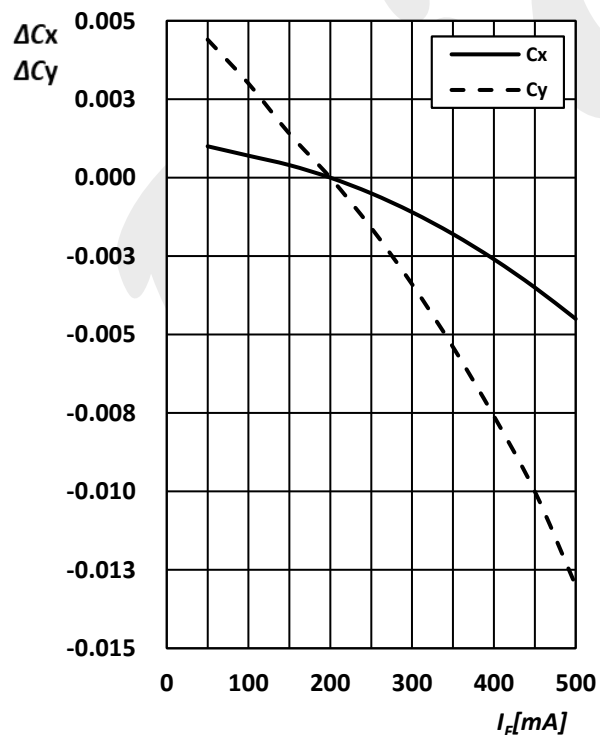
Chromaticity Coordinate Shift (● Amber)

$$\Delta C_x \Delta C_y = f(T_j) ; I_F = 200 \text{ mA}$$



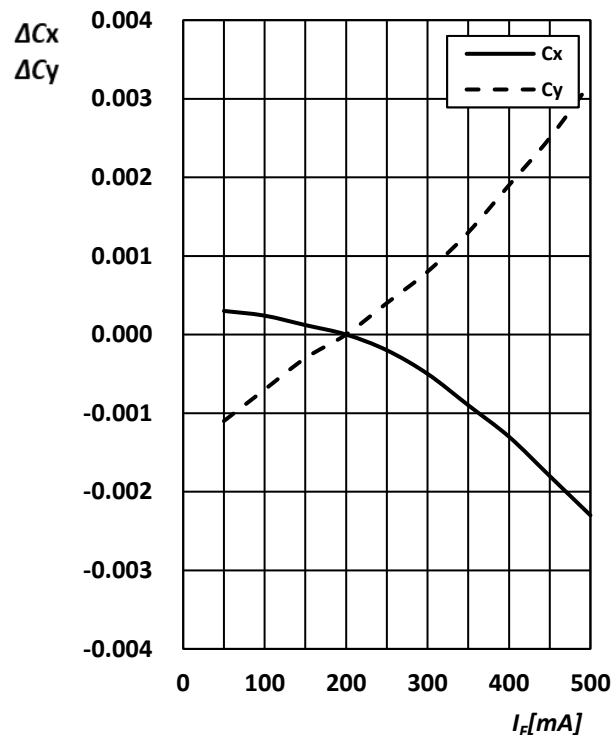
Chromaticity Coordinate Shift (● White)

$$\Delta C_x \Delta C_y = f(I_F) ; I_F = 200 \text{ mA}$$



Chromaticity Coordinate Shift (● Amber)

$$\Delta C_x \Delta C_y = f(I_F) ; I_F = 200 \text{ mA}$$



Max. Permissible Forward Current

$$I_F = f(T_S)$$

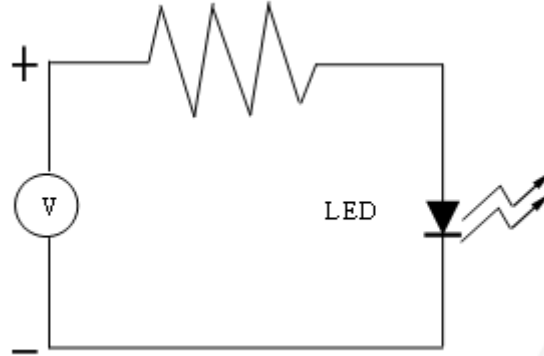


Note.

T_S : Soldering temperature.

Test Circuit and Handling Precautions

1. Test circuit



2. Handling precautions

2.1 Over-current-proof

Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).

2.2 Storage

- ① It is recommended to store the products in the following conditions:
 - Humidity: 60% R.H. Max.
- ② Temperature : 5°C~30°C(41°F~86°F)
- ③ Shelf life in sealed bag: 12 month at < 5 °C ~30 °C and < 60%R.H. after the package is Opened, the products should be used within 4 weeks or they should be keeping to storage at $\leq 20\%$ R.H. with zip-lock sealed.

2.3 Baking

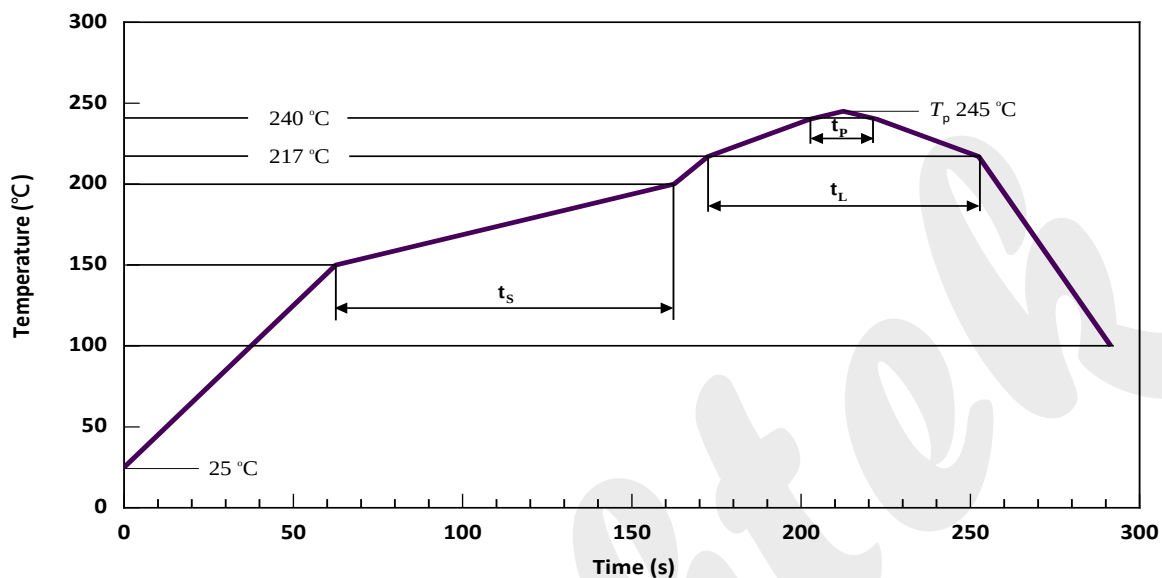
Suggest packing open after 4 weeks, before use baking products, conditions as follows:

- ① 60 $\pm$ 3°C X 6hrs and < 5%RH, for reel
- ② 125 $\pm$ 3°C X 2hrs, for single LED

It shall be normal to see slight color fading of carrier (light yellow) after baking in process.

Reflow Soldering Profile

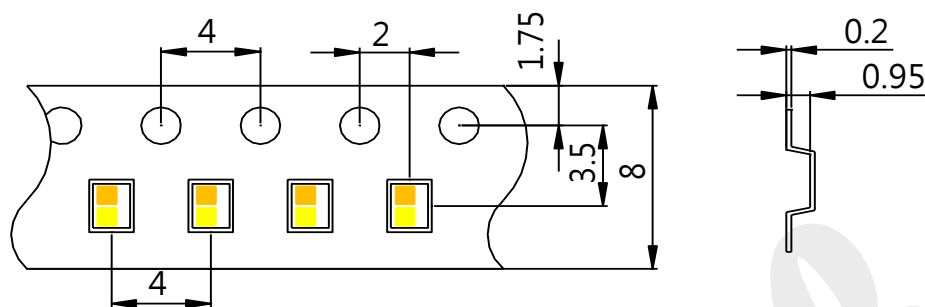
Product complies to MSL Level 2a acc. to JEDEC J-STD-020E



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 ts 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	s
Ramp-down rate T _P to 100 °C			3	4	K/s
Time 25 °C to T _P				480	s

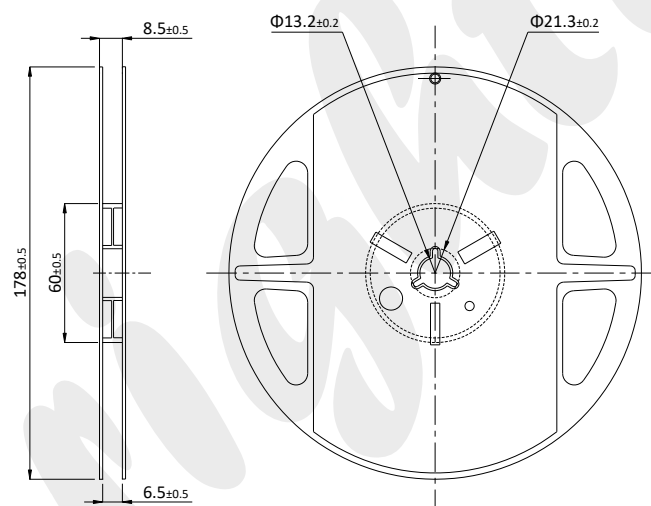
1. Do not stress the silicone resin while it is exposed to high temperature.
2. The reflow process should not exceed 2 times.

Dimensions of Tape



1. Dimensions are in millimeters.
2. General tolerance is $\pm 0.1\text{mm}$.

Dimensions of Reel



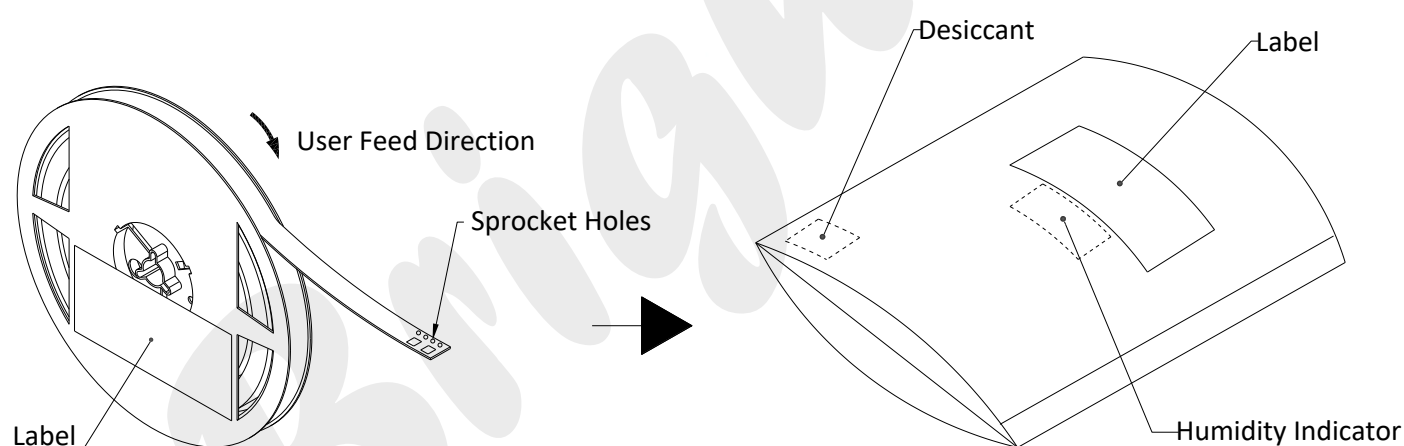
1. Empty component pockets are sealed with top cover tape.
2. The maximum allowable SMD loss is 2 pieces.
3. Dimensions acc. to EIA 481-E.
4. 2,000 pieces per reel.
5. Packing in multiples of 500pcs for the remaining units.

Barcode-Product-Label (BPL)

		MSL
Part No:		
O Item:		
N Item:		
Q'TY:		
VF:	(	mA)
IV:	(	mA)
WL:	(	mA)
Lot No:		
XXXX-XXXX XXXX / PLSTXXXX		RoHS PASS

- Part No : Product Number
- O Item : Customer's Product Number
- N Item : Product Name
- Q'TY : Packing Quantity
- VF : Voltage Rank
- IV : Luminous Intensity Rank
- WL : Wavelength Rank
- Lot No : Lot Number
- MSL : MSL Level
- XXXX-XXXX XXXX / PLSTXXXX : Identify Label Number

Dry Packing Process and Materials



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

Precautions

1. Choosing the right nozzle for ensuring product quality

Incorrect nozzle settings can potentially lead to abnormalities.

Please follow the instructions below during operation:

- **Nozzle lowering height**

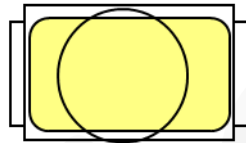
Incorrect height setting of the pick-and-place nozzle could result in over-pressure on the LED surface, further damaging the gold wire inside the LED during the SMT process.

- **Proper nozzle selection**

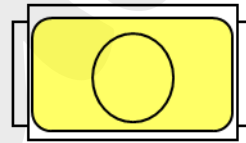
Please choose a nozzle with an outer diameter larger than the optical window of the LED to avoid the directly touching or pressing on the encapsulant resin of function area.

Please refer to the images below:

Outer diameter of the nozzle must be larger than the optical window



Picture 1 (✓)



Picture 2 (X)

2. Do not apply pressure to the reflector and the encapsulant resin of the LED under high temperature.
3. Avoid scratching or wiping the LED surfaces to cause damages.
4. LEDs should be used immediately after taken out of the original packaging. We strongly recommend to seal and store the rest LEDs in the moisture-proof and anti-static packaging.

Disclaimer

1. Brightek reserves the right to adjust the material composition of the product to meet specification.
2. Within one year from the date of shipment, this product is guaranteed to comply with its specification published by Brightek.
3. The characterization figures shown in this data sheet are based on typical performance, which is not a guarantee to every piece of the products.
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