

Technical Data Sheet

Top View White LEDs

45-21SCUMR2C/L1519K6L9AE/TR8-T

Features

- Top View White LEDs
- Wide viewing angle
- Soldering methods: IR reflow soldering
- Pb-free
- The product itself will remain within RoHS compliant version.



Descriptions

- Due to the package design, 45-21SC has wide viewing angle, low power consumption and white LEDs are devices which are materialized by combing blue chips and special phosphor. This feature makes the LED ideal for light guide application.

Applications

- Backlight for LCD Monitor/TV
- Light pipe application
- Indicator and backlight in office and family equipment
- General use

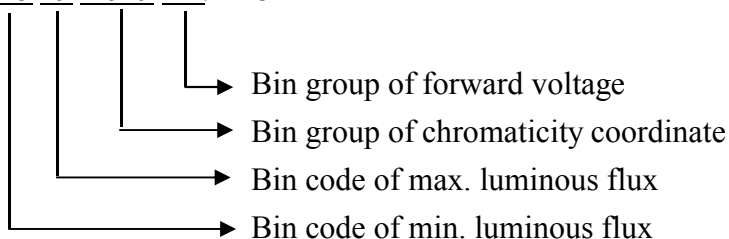
Device Selection Guide

Chip				Emitted Color	Resin Color
Material	Factory	Dimension	Wavelength(nm)		
InGaN	Epistar	20 x 20	450~455	White	Water Clear

Note: 晶片、螢光粉、支架等關鍵部件更換時需知會客戶並提供樣品重新認定

Coding

45-21SCUMR2C/L15 19 K6L9 AE/TR8-T

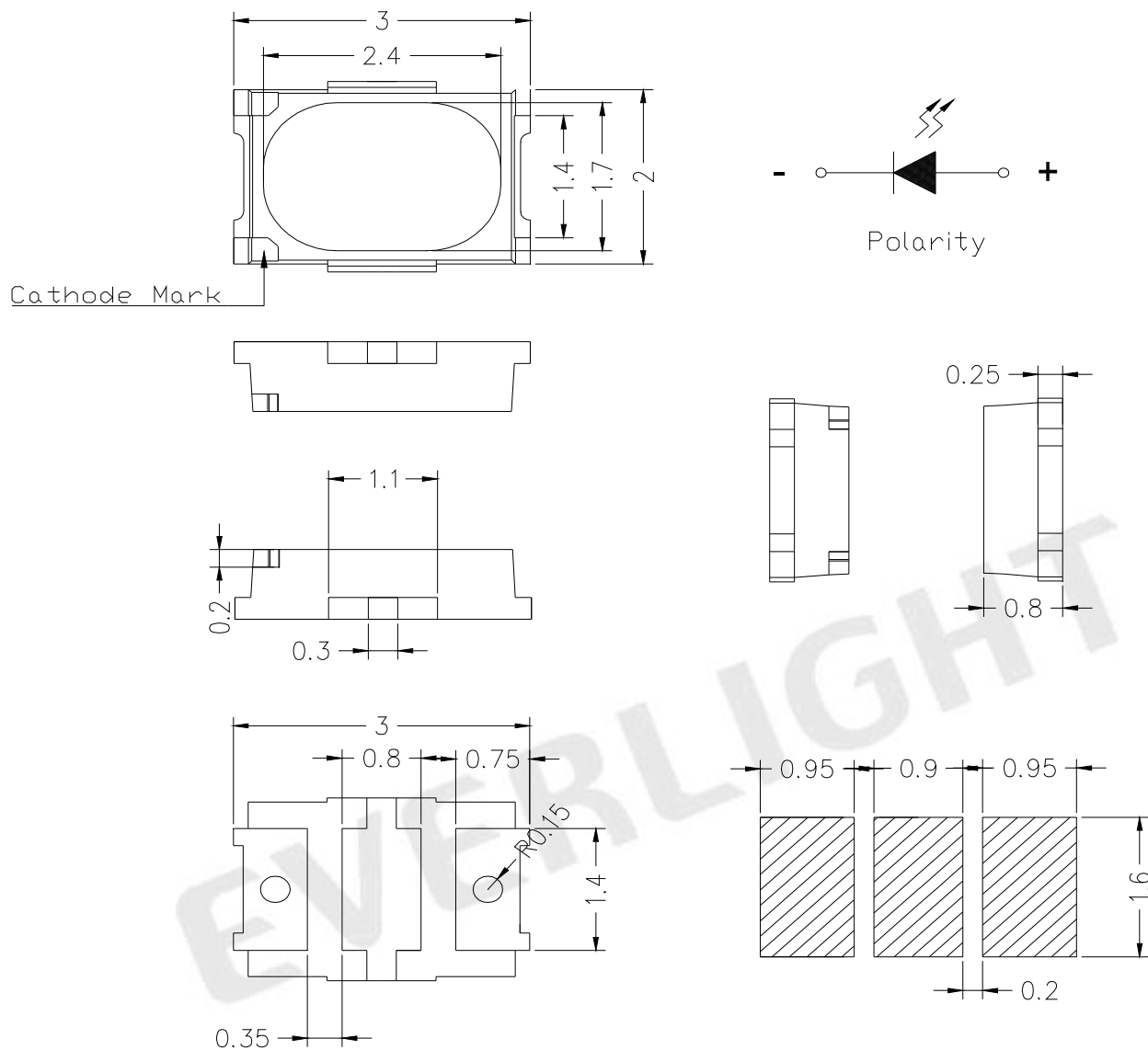


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Package Outline Dimensions



Note: Tolerances unless dimension are $\pm 0.1\text{mm}$, unit = mm.

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Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	80	mA
Peak Forward Current (Duty 1/10 @10ms)	I_{FP}	240	mA
Power Dissipation	P_d	280	mW
Electrostatic Discharge(HBM)	ESD	2000	V
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +90	°C
Thermal Resistance* Junction/ambient	R_{thj-A}	81.0	°C/W
Thermal Resistance* Junction/slug	R_{thj-S}	33.0	°C/W
Soldering Temperature	T_{sol}	Reflow Soldering: 260 °C for 10 sec. Hand Soldering: 350 °C for 3 sec.	

Notes:

1. Thermal resistance was measured on MCPCB, which dimension is 15(L) x 15(W) x 1.5(T) mm.
2. Actual photo of LED mounted on MCPCB



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Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Flux	Φ	15.0	---	20.0	lm	$I_F=60\text{mA}$
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	
Forward Voltage	V_F	2.9	---	3.4	V	
Reverse Current	I_R	---	---	50	μA	$V_R=5\text{V}$
Estimated Lifetime ^{*3}	---	30000	---	---	hrs	$T_j \leq 70^\circ\text{C}$

Notes:

1. Tolerance of Luminous Intensity: $\pm 7\%$
2. Tolerance of Forward Voltage: $\pm 0.05\text{V}$
3. Estimated lifetime, I_v decay ratio reaches 50% comparing to initial luminous intensity, is based on Everlight internal test result.

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Bin Range of Luminous Flux

Bin Code	Min.	Max.	Unit	Condition
L15	15	16	lm	I _F =60mA
L16	16	17		
L17	17	18		
L18	18	19		
L19	19	20		

Note: Tolerance of Luminous Intensity: $\pm 7\%$

Bin Range of Forward Voltage

Bin Code	Min.	Max.	Unit	Condition
A	2.90	3.00	volt	I _F =60mA
B	3.00	3.10		
C	3.10	3.20		
D	3.20	3.30		
E	3.30	3.40		

Note: Tolerance of Forward Voltage: $\pm 0.05V$

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Chromaticity Coordinates of Bin Code

Bin code	CIE_x	CIE_y	Bin code	CIE_x	CIE_y	Condition
K6	0.2451	0.2504	K7	0.2492	0.2588	I _F =60mA
	0.2410	0.2419		0.2451	0.2504	
	0.2497	0.2371		0.2538	0.2456	
	0.2538	0.2456		0.2579	0.2540	
K8	0.2533	0.2672	K9	0.2574	0.2757	
	0.2492	0.2588		0.2533	0.2672	
	0.2579	0.2540		0.2620	0.2624	
	0.2620	0.2624		0.2661	0.2709	
L6	0.2538	0.2456	L7	0.2579	0.2540	
	0.2497	0.2371		0.2538	0.2456	
	0.2584	0.2323		0.2625	0.2408	
	0.2625	0.2408		0.2666	0.2492	
L8	0.2620	0.2624	L9	0.2661	0.2709	
	0.2579	0.2540		0.2620	0.2624	
	0.2666	0.2492		0.2707	0.2576	
	0.2707	0.2576		0.2748	0.2661	

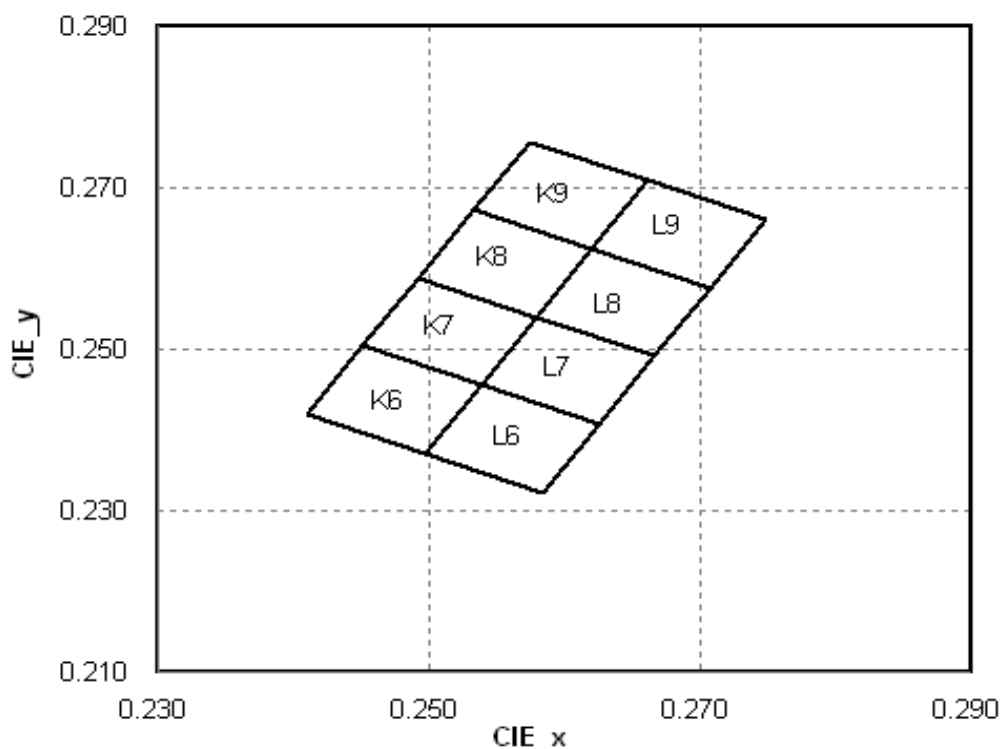
Note: Tolerance of Chromaticity Coordinates: ± 0.01

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The C.I.E. 1931 Chromaticity Diagram



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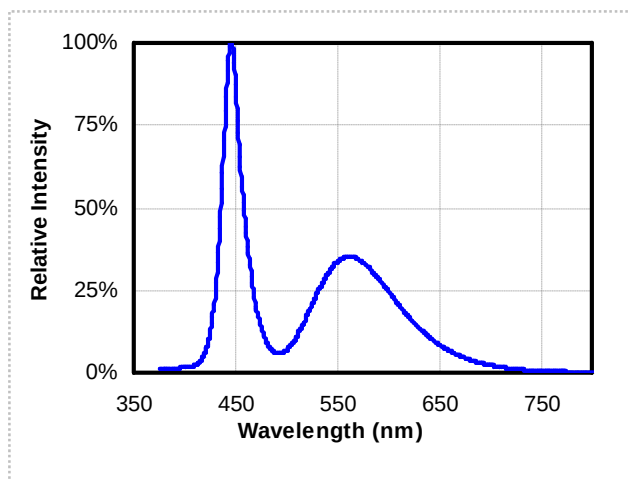
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Typical Electro-Optical-Thermal Characteristics Curves

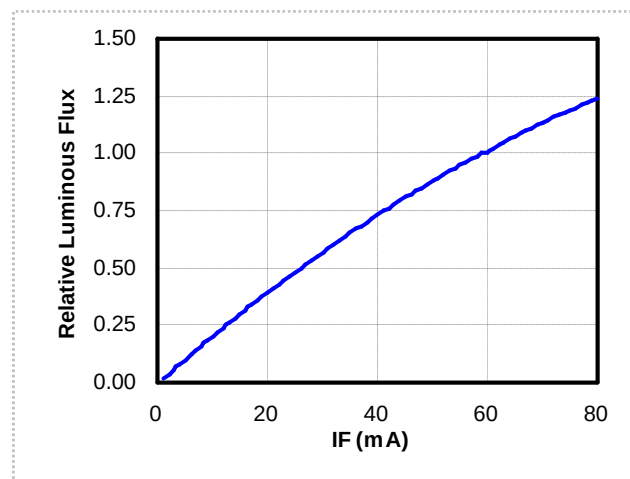
1. Spectrum Distribution

($T_A=25^{\circ}\text{C}$, $I_F=60\text{mA}$)



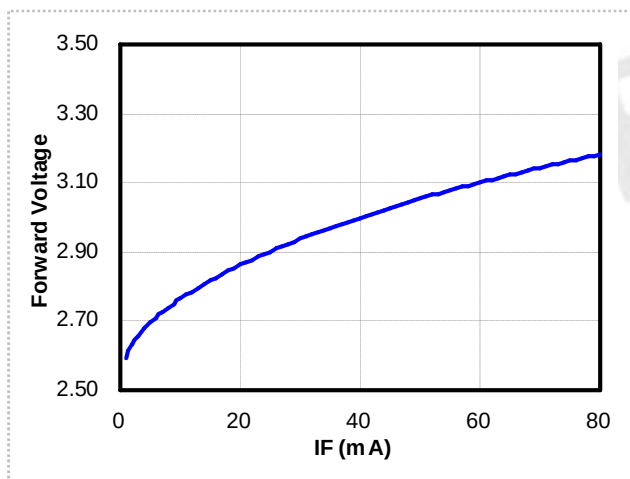
2. Relative Luminous Flux vs. Forward Current

($T_A=25^{\circ}\text{C}$)



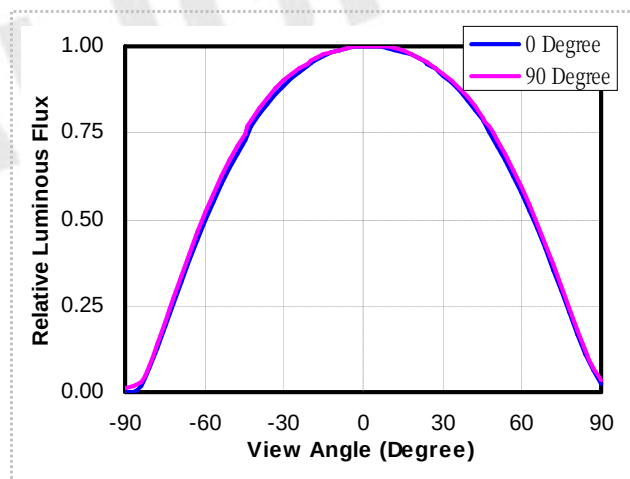
3. Relative Forward Voltage vs. Forward Current

($T_A=25^{\circ}\text{C}$)



4. Radiation Diagram

($T_A=25^{\circ}\text{C}$, $I_F=60\text{mA}$)



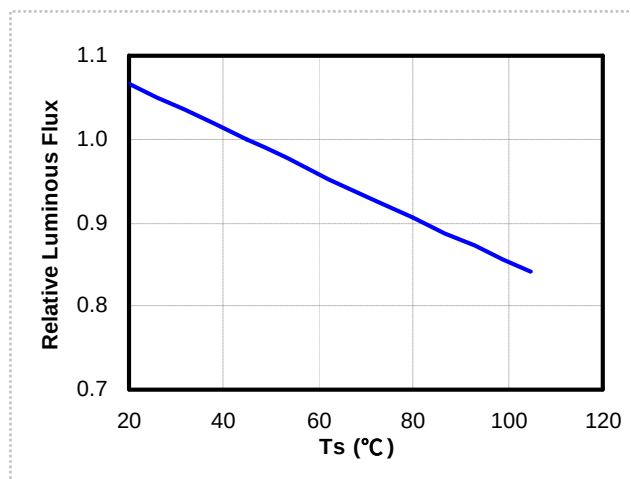
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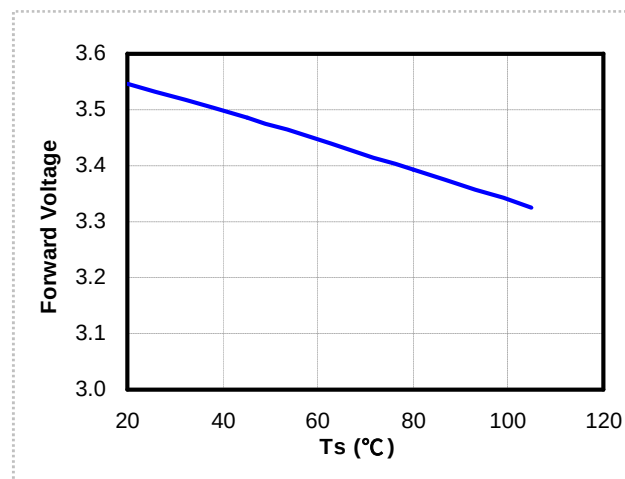
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Typical Electro-Optical-Thermal Characteristics Curves

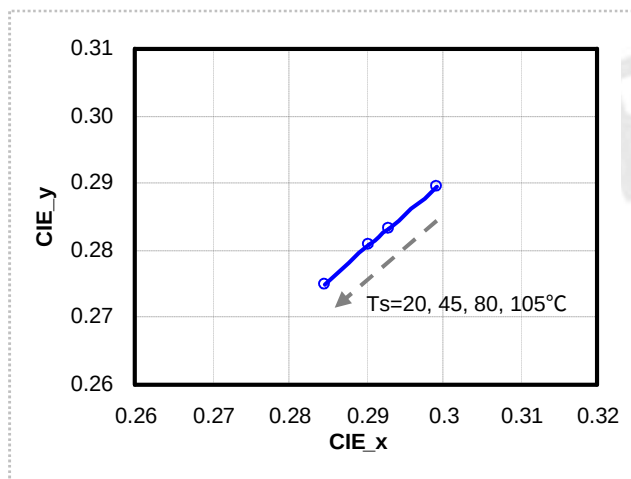
5. Relative Luminous Flux vs. Ambient Temperature
($I_F=60\text{mA}$)



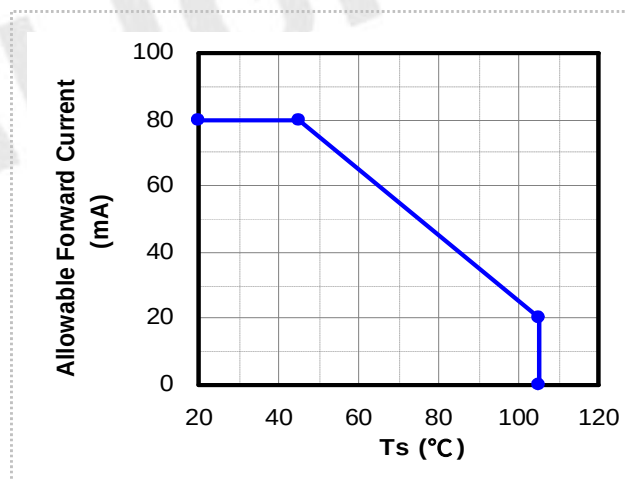
6. Forward Voltage vs. Ambient Temperature
($I_F=60\text{mA}$)



7. Chromaticity Coordinates vs. Ambient Temperature
($I_F=60\text{mA}$)



8. Forward Current De-rating Curve



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Label Explanation

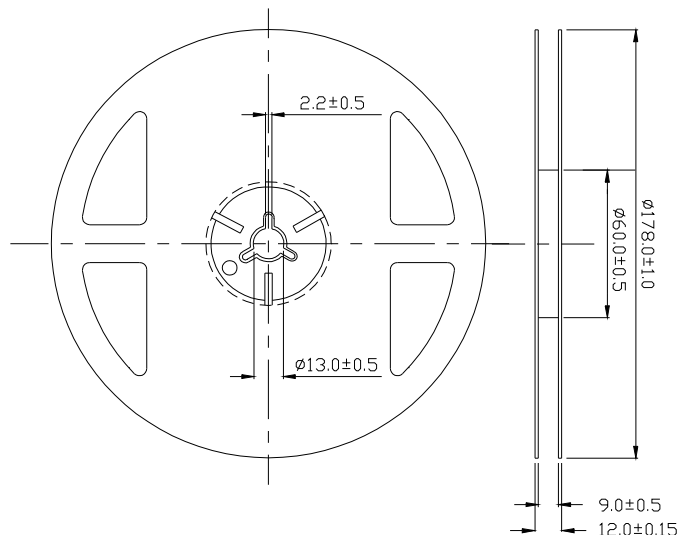
CAT: Luminous Intensity Rank

HUE: Chromaticity Coordinates

REF: Forward Voltage Rank

	EVERLIGHT	
CPN :		
P/N : XXXXXXXXXX		
		
XXXXXXXXXX		
		RoHS
QTY : XXX	CAT : XX	
	HUE : XX	
LOT NO : XXXXXXXXXXXX	REF : XX	
		
Reference : XXXXXXXXXXXX		
		
MADE IN TAIWAN		

Reel Dimensions



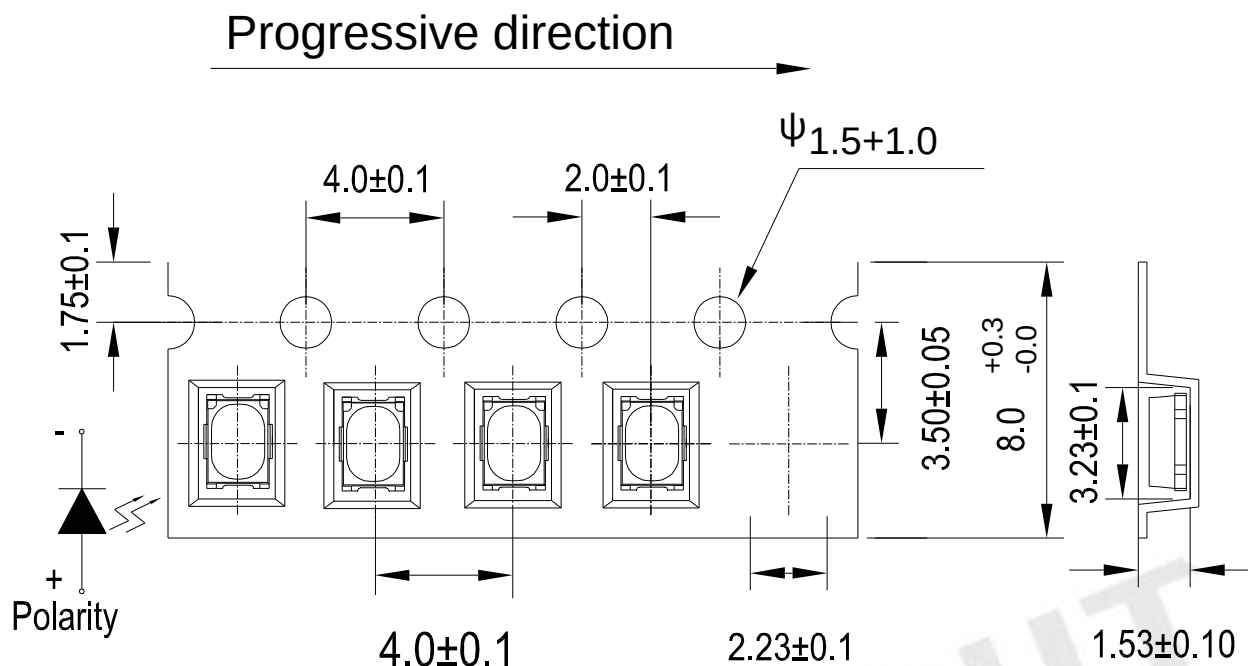
Note: The tolerances unless dimensions are $\pm 0.1\text{mm}$.

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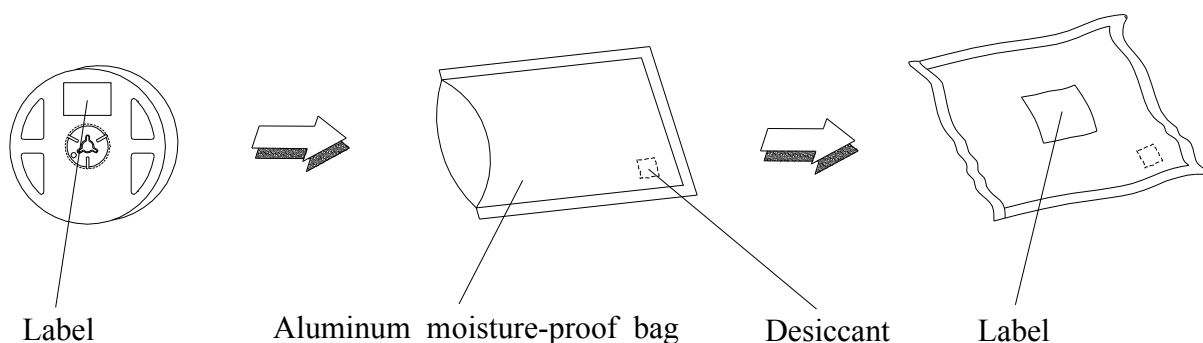
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Carrier Tape Dimensions: Loaded Quantity 2K pcs. Per Reel



Note: The tolerances unless dimensions are $\pm 0.1\text{ mm}$.

Moisture Resistant Packaging



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Reliability Test Items and Conditions

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD : 10%

NO	Item	Test Condition		Test Hours / Times	Criteria	
		Temp./ Humidity	I _F (mA)		I _V @ 60mA	V _F @ 60mA
1	Reflow Soldering	TSld = 260°C, Max. 10sec.		2 time	<±5%	<±5%
2	Thermal Cycle	-40°C ~ 100°C 30min. (5min.) 30min.		200 cycles	I _V > 70%, V _F < 110%,	
3	Thermal Shock	-10°C ~ 100°C 20min. (<15sec.) 20min.		200 cycles		
4	Low Temp. Storage	Ta= -40°C	--	1000 hrs		
5	High Temp. Storage	Ta= 100°C	--	1000 hrs		
6	Temp. Humidity Storage	Ta= 60°C/ 90%RH	--	1000 hrs		
7	Steady State Operating Life of Low Temp.	Ta= -40°C	60	1000 hrs		
8	Steady State Operating Life Condition 1	Ta= 25°C/ Room Humidity	60	1000 hrs		
9	Steady State Operating Life Condition 2	Ta= 60°C	60	1000 hrs		
10	Steady State Operating Life of High Temp.	Ta= 85°C	20	1000 hrs		
11	Steady State Operating Life of High Humidity Heat	Ta= 60°C/ 90%RH	60	1000 hrs		

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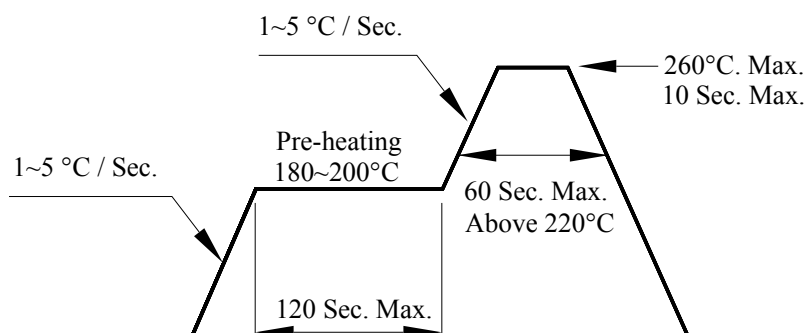
Precautions for Use

1. Over-current-proof

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

2. Soldering Condition

2.1 Pb-free solder temperature profile



2.2 Reflow soldering should not be done more than two times.

2.3 When soldering, do not put stress on the LEDs during heating.

2.4 After soldering, do not warp the circuit board.

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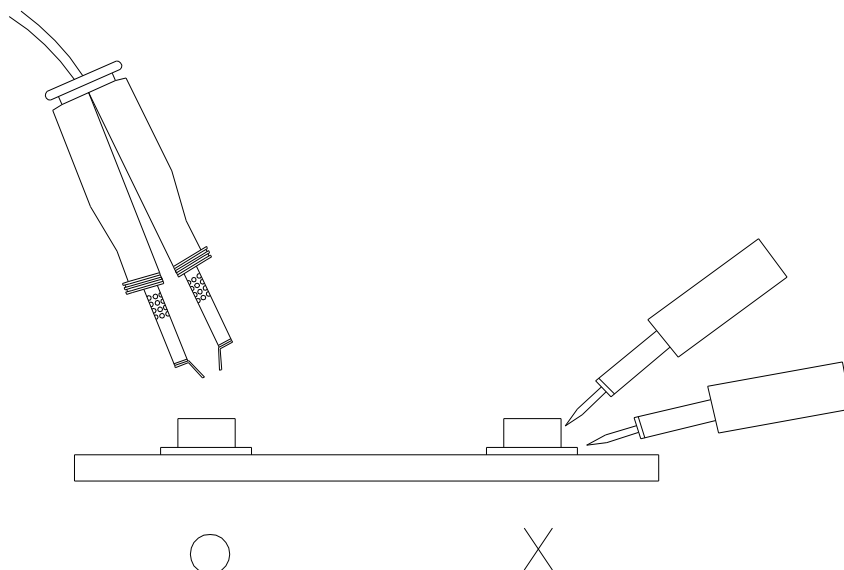
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3. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

4. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



5. Handling Indications

During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be used to pierce the sealing compound

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