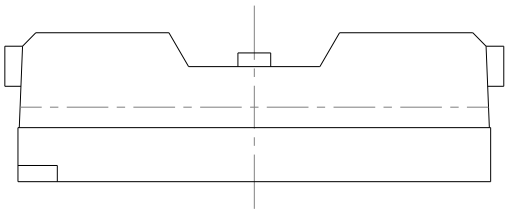
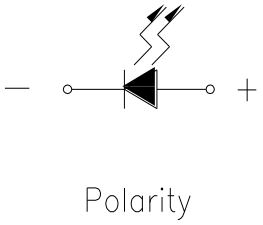
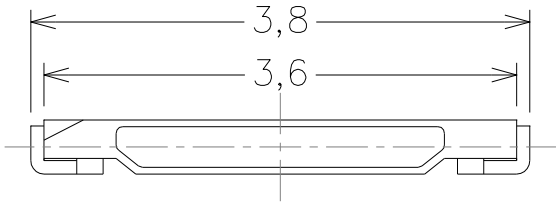
Technical Data Sheet

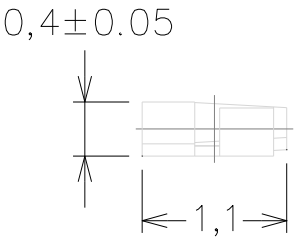
Side View LEDs (Height 0.4 mm)

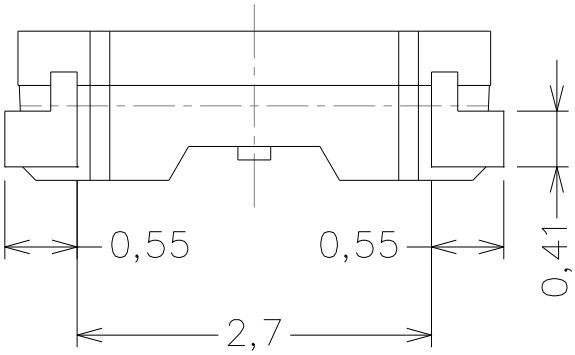
99-218UM2C/3438S97/TR8-T

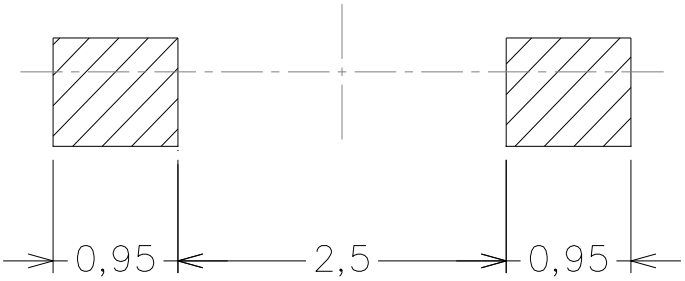












Note:

The tolerances unless mentioned is ±0.1mm,Unit = mm.

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Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	30	mA
Peak Forward Current (Duty 1/10 @10ms)	I_{FP}	100	mA
Power Dissipation	Pd	110	mW
Operating Temperature	Topr	-40 ~ +85	℃
Storage Temperature	Tstg	-40 ~ +90	℃
Soldering Temperature	Tsol	Reflow Soldering : 260 ℃ for 10 sec. Hand Soldering : 350 ℃ for 3 sec.	

Note: 1.The products are sensitive to static electricity and must be carefully taken when handling products.

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I_V	1800	-----	2050	mcd	I_F=20mA
Viewing Angle	2θ1/2	-----	120	-----	deg	
Forward Voltage	V_F	2.95	-----	3.25	V	
Reverse Current	I_R	-----	-----	50	μA	V_R=5V

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Bin Range of Luminous Intensity

Bin Code	Mcd(Min.)	Mcd(Max.)	Unit	Condition
34	1800	1850	mcd	I_F=20mA
35	1850	1900		
36	1900	1950		
37	1950	2000		
38	2000	2050		

Note: Tolerance of Luminous Intensity : ±7%

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Bin Range of Forward Voltage

Group	Bin Code	Min.	Max.	Unit	Condition
7	6-1	2.95	3.05	V	I_F=20mA
	6-2	3.05	3.15		
	7-1	3.15	3.25		

Note: Tolerance of Forward Voltage: ±0.05V

Chromaticity Coordinates of Bin Code

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
NB5-3-1	0.2935	0.2815	NB5-3-2	0.2975	0.2885
	0.2910	0.2870		0.2950	0.2940
	0.2950	0.2940		0.2990	0.3010
	0.2975	0.2885		0.3015	0.2955
NB5-3-3	0.2960	0.2760	NB5-3-4	0.3000	0.2830
	0.2935	0.2815		0.2975	0.2885
	0.2975	0.2885		0.3015	0.2955
	0.3000	0.2830		0.3040	0.2900
NB5-4-1	0.3015	0.2955	NB5-4-2	0.3055	0.3025
	0.2990	0.3010		0.3030	0.3080
	0.3030	0.3080		0.3070	0.3150
	0.3055	0.3025		0.3095	0.3095
NB5-4-3	0.3040	0.2900	NB5-4-4	0.3080	0.2970
	0.3015	0.2955		0.3055	0.3025
	0.3055	0.3025		0.3095	0.3095
	0.3080	0.2970		0.3120	0.3040

Note: Tolerance of Chromaticity Coordinates: ±0.01

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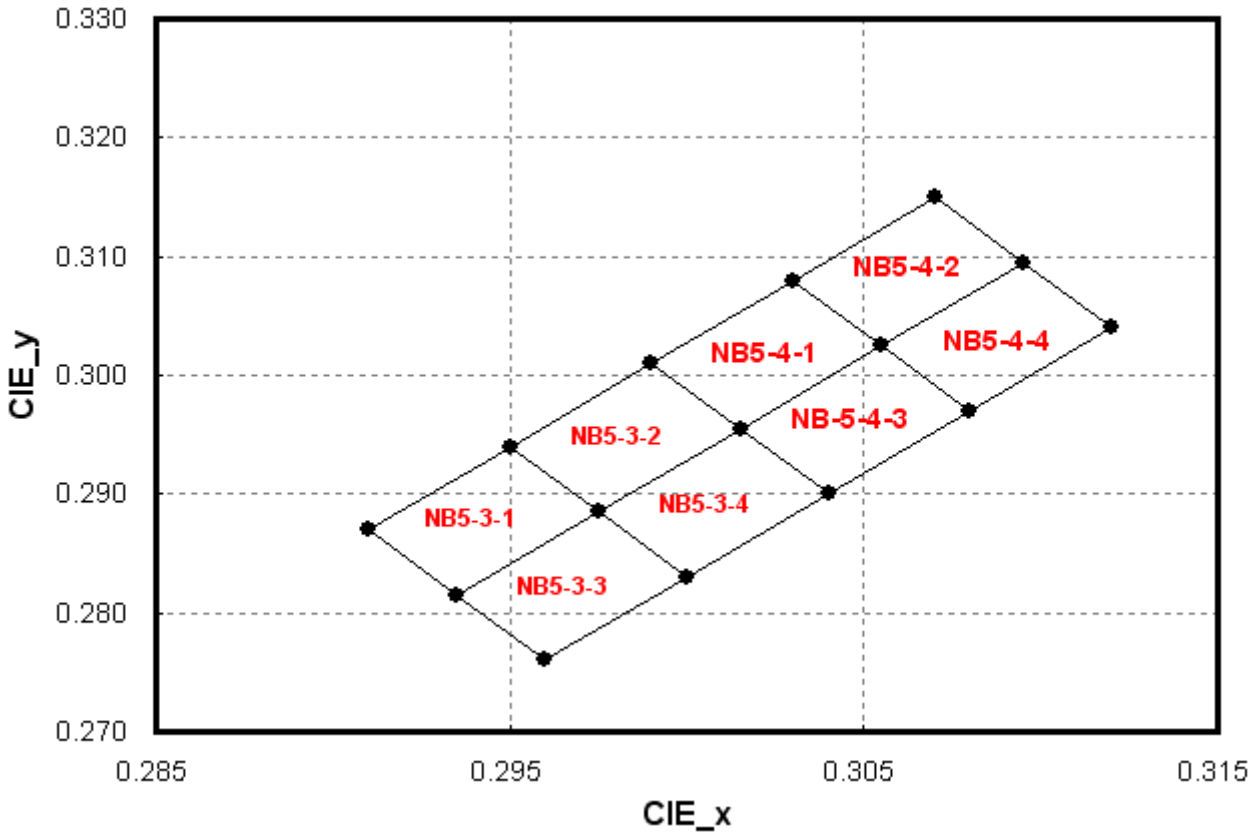
The C.I.E. 1931 Chromaticity Diagram



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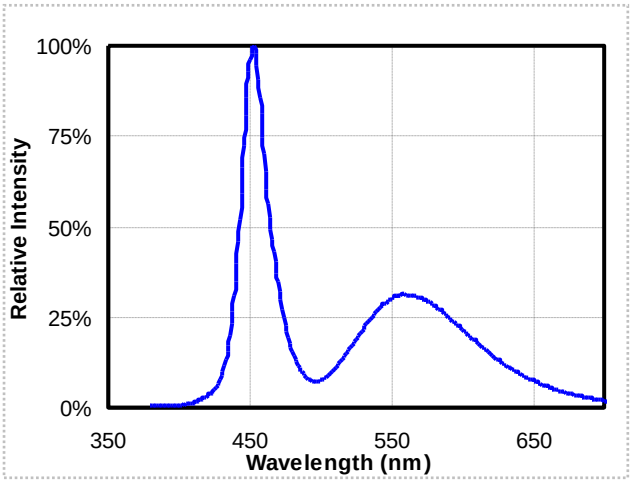
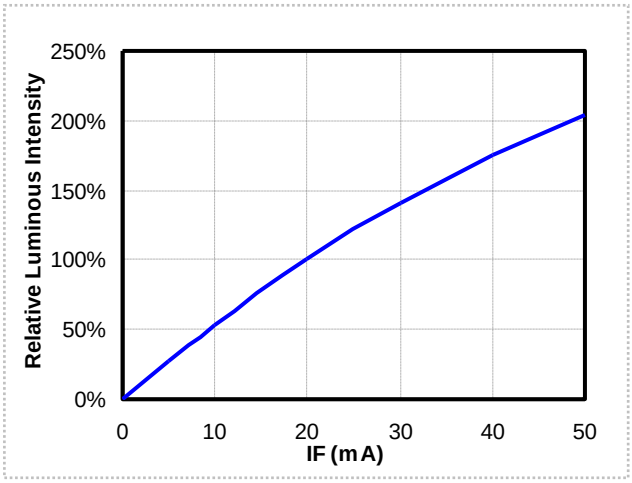
Typical Electro-Optical-Thermal Characteristics Curves

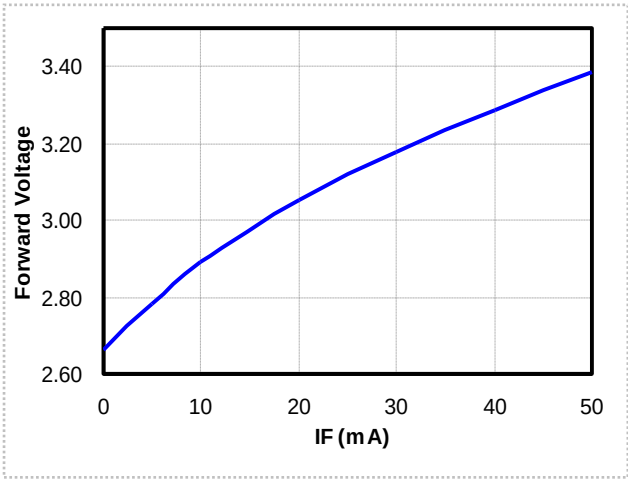
1. Spectrum Distribution
(T_A=25℃, I_F=20mA)



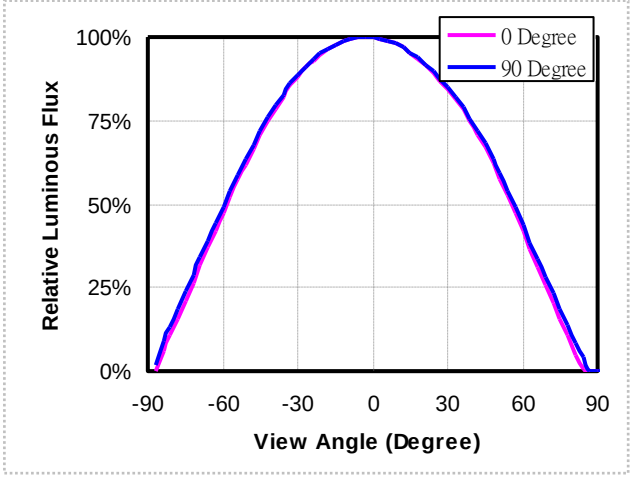
2. Relative Luminous Flux vs. Forward Current
(T_A=25℃)



3. Relative Forward Voltage vs. Forward Current
(T_A=25℃)



4. Radiation Diagram
(T_A=25℃, I_F=20mA)



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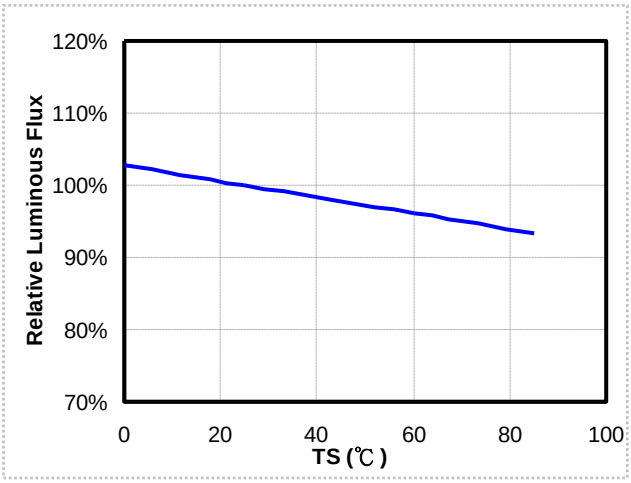
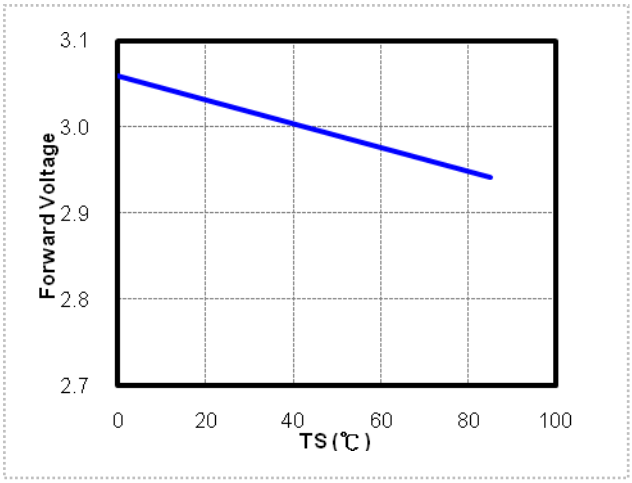
Typical Electro-Optical-Thermal Characteristics Curves

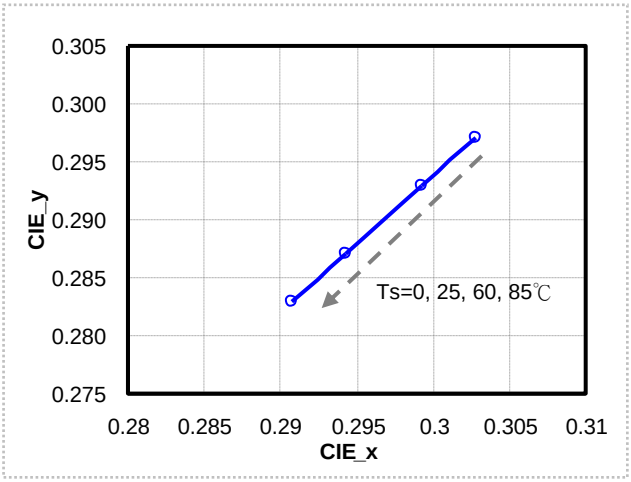
5. Relative Luminous Flux vs. Solder Temperature (I_F=20mA)



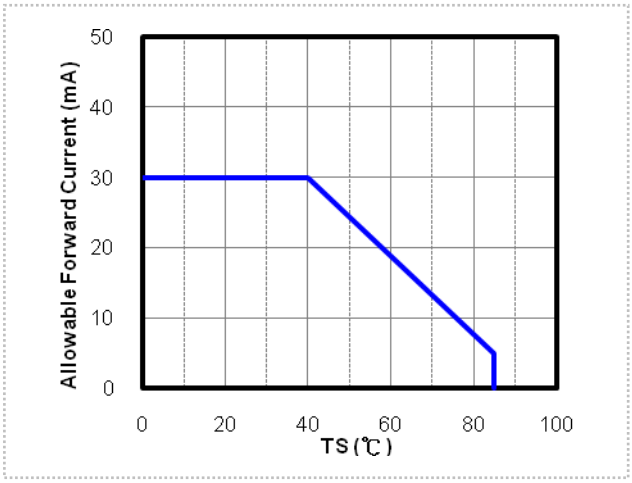
6. Forward Voltage vs. Solder Temperature (I_F=20mA)



7. Chromaticity Coordinates vs. Solder Temperature (I_F=20mA)



8. Forward Current De-rating Curve



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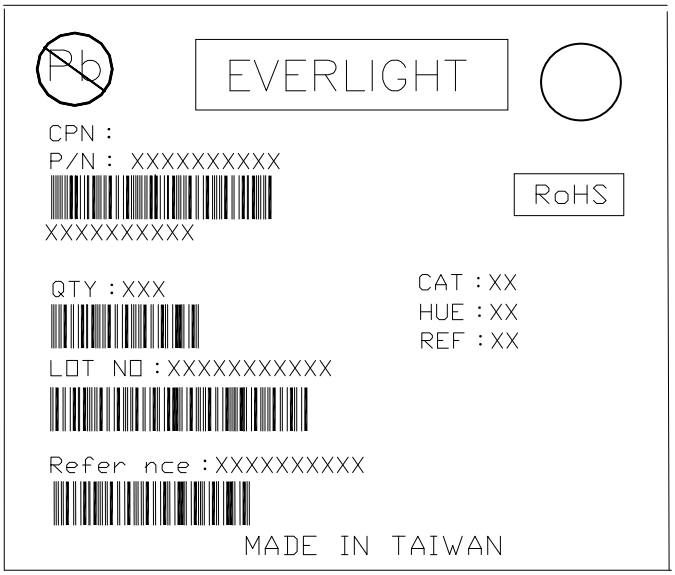
Label Explanation

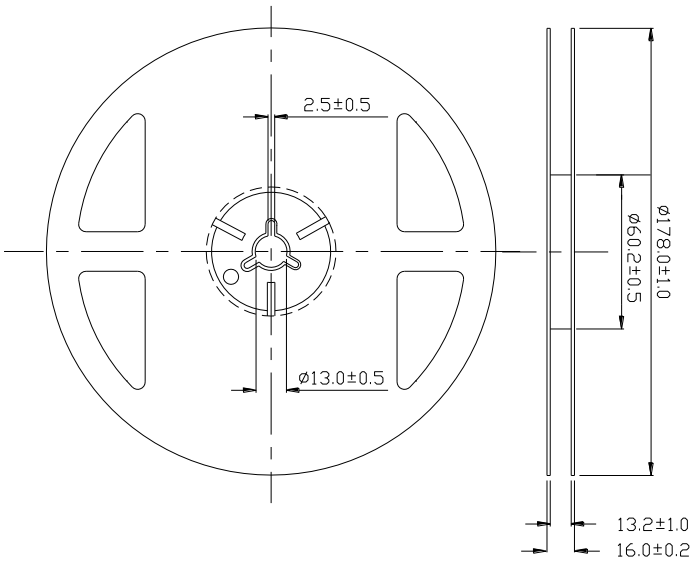
CAT: Luminous Intensity Rank

HUE: Chromaticity Coordinates

REF: Forward Voltage Rank



Reel Dimensions



Note:

The tolerances unless mentioned is ±0.1mm,Unit = mm.

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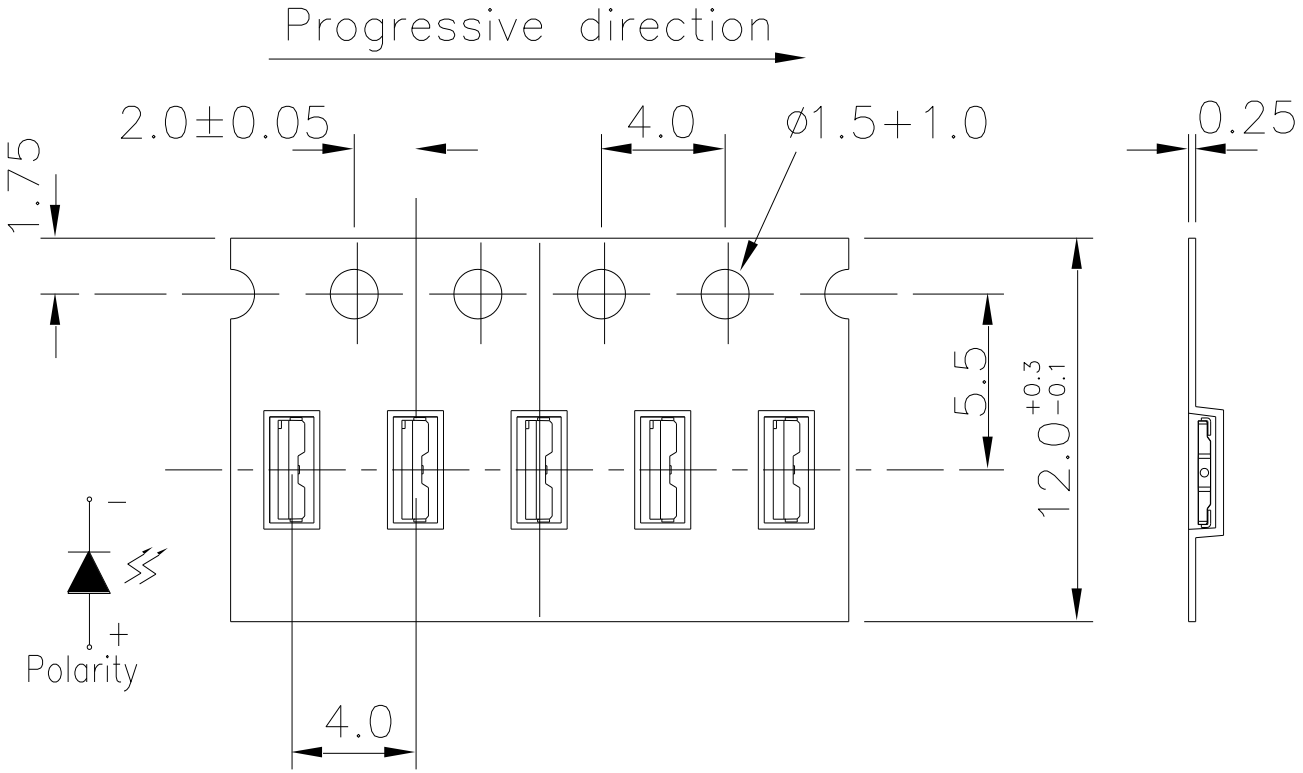
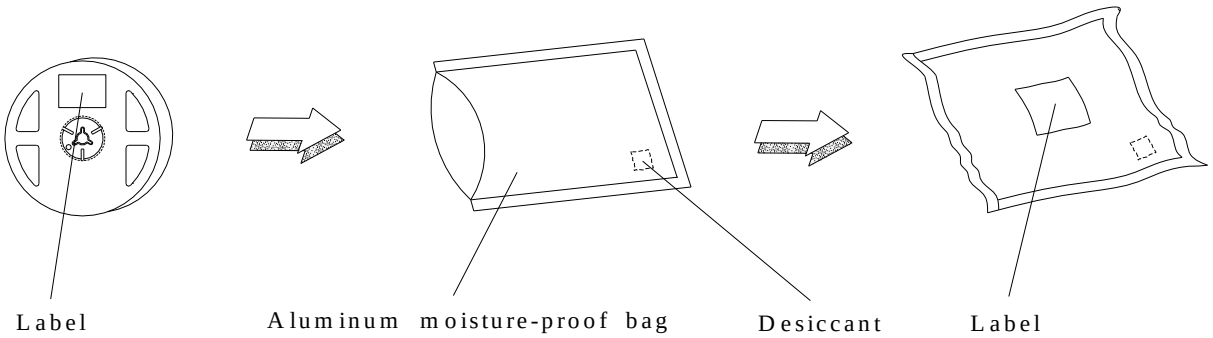
Carrier Tape Dimensions: Loaded Quantity 250 up/500/1000/2000 pcs. Per Reel



Note: The tolerances unless mentioned is ±0.1mm,Unit = 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)		Iv @ 20mA	V_F @ 20mA
1	Reflow Soldering	TSld = 260℃, Max. 10sec.		2 times	<±5%	<±5%
2	Thermal Cycle	-40℃ ~ 100℃ 30min. (5min.) 30min.		200 cycles	Iv > 70%, VF < 110%,	
3	Thermal Shock	-10℃ ~ 100℃ 20min. (<15sec.) 20min.		200 cycles		
4	Low Temp. Storage	Ta= -40℃	--	1000 hrs		
5	High Temp. Storage	Ta= 100℃	--	1000 hrs		
6	Temp. Humidity Storage	Ta= 60℃/ 90%RH	--	1000 hrs		
7	Steady State Operating Life of Low Temp.	Ta= -40℃	20	1000 hrs		
8	Steady State Operating Life Condition 1	Ta= 25℃/ Room Humidity	20	1000 hrs		
9	Steady State Operating Life Condition 2	Ta= 60℃	20	1000 hrs		
10	Steady State Operating Life of High Temp.	Ta= 85℃	5	1000 hrs		
11	Steady State Operating Life of High Humidity Heat	Ta= 60℃/ 90%RH	20	1000 hrs		

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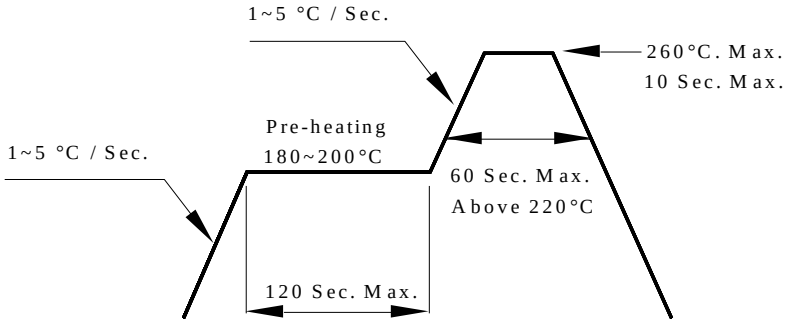
Precautions for Use

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.

3. Soldering Iron
   Each terminal is to go to the tip of soldering iron temperature less than 350℃ 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.

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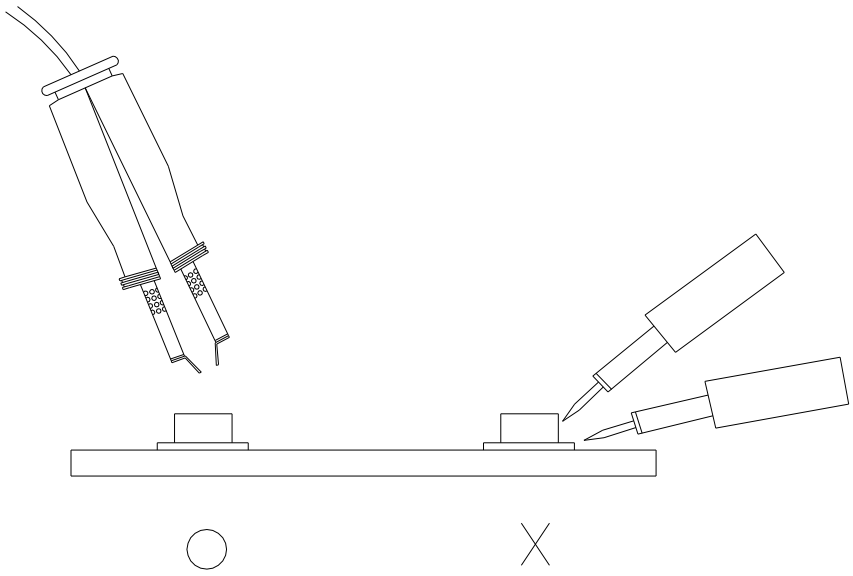
5. Storage

5.1 Do not open moisture proof bag before the products are ready to use.

5.2 Before opening the package: The LEDs should be used within one year and kept at 30℃ or less and 70%RH or less.

5.3 After opening the package: We recommend that the LED should be soldered quickly (within 3 days). The soldering condition is 30℃ or less and 60%RH or less. If unused LEDs remain, it should be stored in moisture proof.

5.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.
Baking treatment: 60±5℃ for 24 hours. (One time only)



6. 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

EVERLIGHT ELECTRONICS CO., LTD.
Office: No.6-8, Zhonghua Rd., Shulin Dist
New Taipei City 236, Taiwan, R.O.C
Tel: 886-2-2685-6688
Fax: 886-2-2685-6880
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