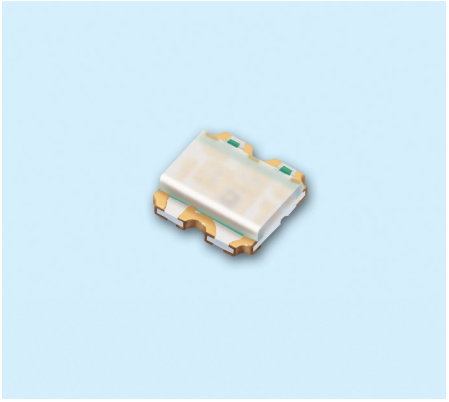
Technical Data Sheet

0.35mm Height Chip LED with Full Color

19-337/R6GHBHC-M01/2T

Features

- Package in 8mm tape on 7″ diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Full-color type.
- Pb-free
- The product itself will remain within RoHS compliant version.



Descriptions

- The 19-337 SMD LED is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Besides, lightweight makes them ideal for miniature applications. etc.

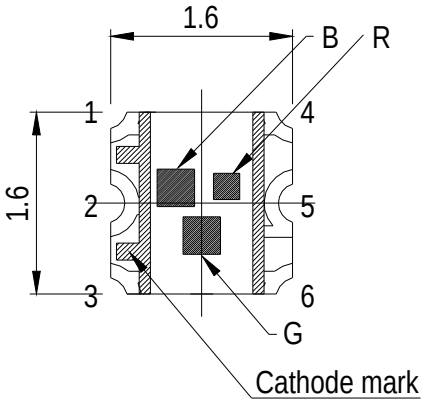
Applications

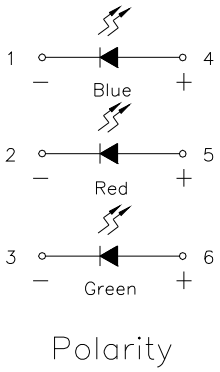
- Backlighting in dashboard and switch.
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- General use.

Device Selection Guide

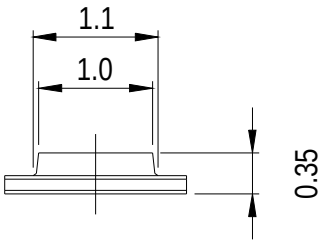
Chip			Resin Color
Type	**Material**	**Emitted Color**	
R6	AlInGaN	Brilliant Red	Water Clear
GH	InGaN	Brilliant Green	
BH	InGaN	Blue	

Package Outline Dimensions

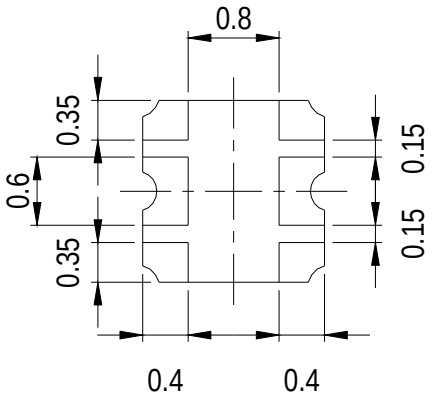


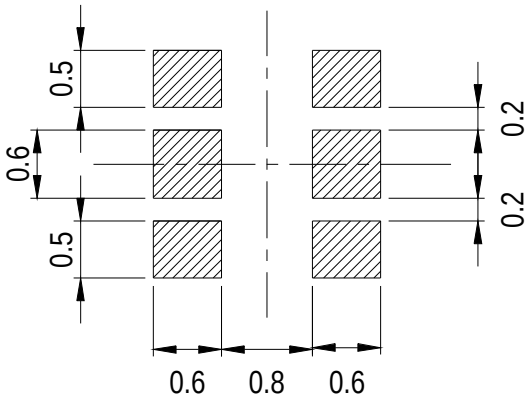


Polarity



Recommend soldering pad





Note: The tolerances unless mentioned is ±0.1mm,Unit = mm

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	R6:25 GH:25 BH:25	mA
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	R6:60 GH:100 BH:100	mA
Power Dissipation	Pd	R6:60 GH:95 BH:95	mW
Electrostatic Discharge(HBM)	ESD	R6:2000 GH:150 BH:150	V
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.	

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol		Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv		57.0		140	mcd	R6：IF=5.1mA GH：IF=3.5mA BH：IF=2.45mA
Viewing Angle	2θ1/2		-----	120	-----	deg	
Peak Wavelength	λp	R6	-----	632	-----	nm	
		GH		518			
		BH		468			
Dominant Wavelength	λd	R6	-----	624	-----	nm	
		GH		525			
		BH		470			
Spectrum Radiation Bandwidth	△λ	R6	-----	20	-----	nm	
		GH		35			
		BH		35			
Forward Voltage	VF	R6	1.6		2.1	V	
		GH	2.6	-----	3.1		
		BH	2.6		3.0		
Reverse Current	IR	R6	-----	-----	10	μA	VR=5V
		GH			50		
		BH			50		

*When three LED dies are operated simultaneously.

Notes:

1.Tolerance of Luminous Intensity ±11%

2.Tolerance of Forward Voltage ±0.1V

Bin Range Of Luminous Intensity

Bin	Min	Max	Unit	Condition
P1	45.0	57.0	mcd	R6：IF=5.1mA GH：IF=3.5mA BH：IF=2.45mA
P2	57.0	72.0		
Q1	72.0	90.0		
Q2	90.0	112		

*When three LED dies are operated simultaneously.

Notes:

1.Tolerance of Luminous Intensity ±11%

Chromaticity Coordinates Specifications for Bin Grading

Bin Code	CIE_x	CIE_y	Condition
180	0.257	0.220	R6：IF=5.1mA GH：IF=3.5mA BH：IF=2.45mA
	0.257	0.245	
	0.282	0.255	
	0.282	0.230	
181	0.282	0.230	
	0.282	0.255	
	0.307	0.265	
	0.307	0.240	
182	0.307	0.240	
	0.307	0.265	
	0.332	0.275	
	0.332	0.250	
183	0.332	0.250	
	0.332	0.275	
	0.357	0.285	
	0.357	0.260	
PW 01	0.257	0.245	
	0.257	0.270	
	0.282	0.280	
	0.282	0.255	
PW 02	0.282	0.255	
	0.282	0.280	
	0.307	0.290	
	0.307	0.265	

Bin Code	CIE_x	CIE_y	Condition
PW 03	0.307	0.265	R6：IF=5.1mA GH：IF=3.5mA BH：IF=2.45mA
	0.307	0.290	
	0.332	0.300	
	0.332	0.275	
PW 04	0.332	0.275	
	0.332	0.300	
	0.357	0.310	
	0.357	0.285	
PW 05	0.257	0.270	
	0.257	0.295	
	0.282	0.305	
	0.282	0.280	
PW 06	0.282	0.280	
	0.282	0.305	
	0.307	0.315	
	0.307	0.290	
PW 07	0.307	0.290	
	0.307	0.315	
	0.332	0.325	
	0.332	0.300	
PW 08	0.332	0.300	
	0.332	0.325	
	0.357	0.335	
	0.357	0.310	

Bin Code	CIE_x	CIE_y	Condition
Pw09	0.257	0.295	R6：IF=5.1mA GH：IF=3.5mA BH：IF=2.45mA
	0.257	0.320	
	0.282	0.330	
	0.282	0.305	
PW 10	0.282	0.305	
	0.282	0.330	
	0.307	0.340	
	0.307	0.315	
PW 11	0.307	0.315	
	0.307	0.340	
	0.332	0.350	
	0.332	0.325	
PW 12	0.332	0.325	
	0.332	0.350	
	0.357	0.360	
	0.357	0.335	

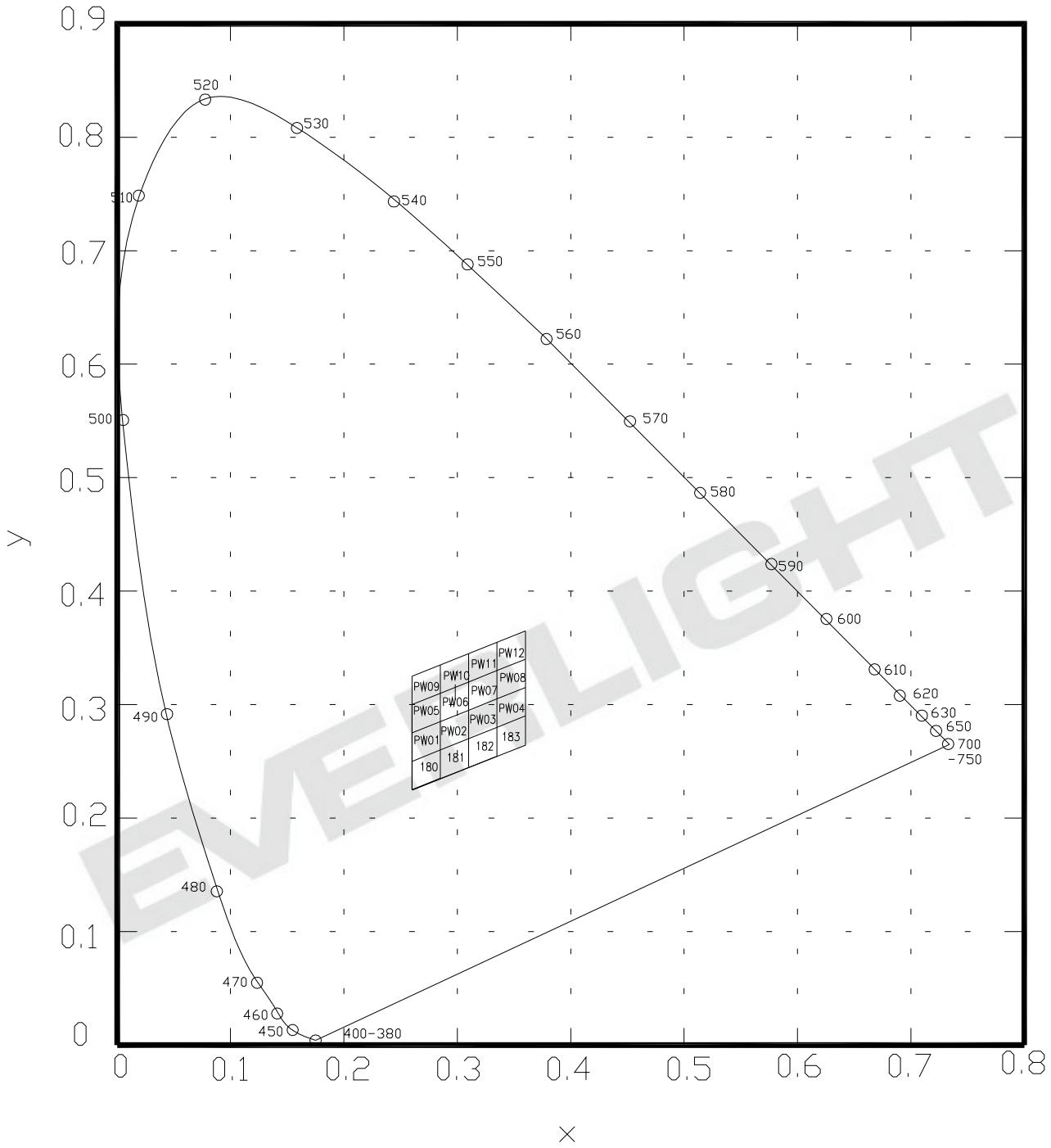
***When three LED dies are operated simultaneously.**

Notes:

1.The C.I.E. 1931 chromaticity diagram (Tolerance ±0.01).

2.The products are sensitive to static electricity and care must be fully taken when handling products

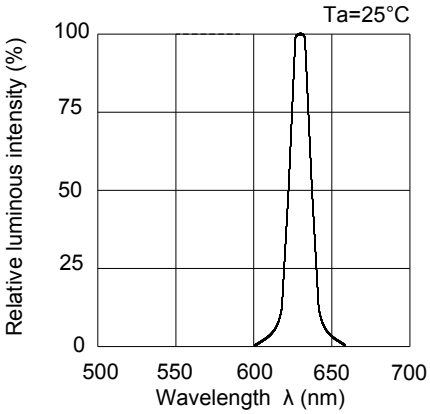
CIE Chromaticity Diagram



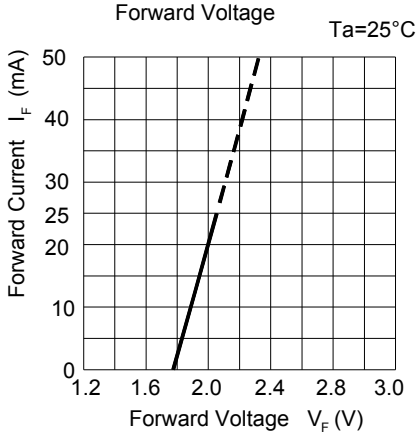
Typical Electro-Optical Characteristics Curves

R6

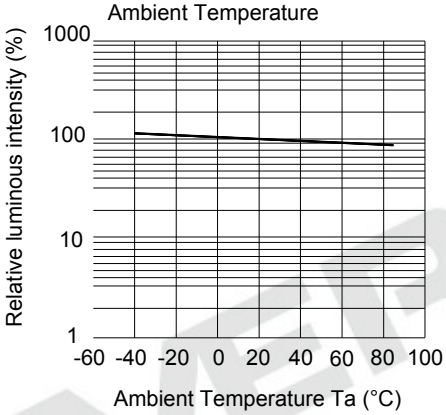
Spectrum Distribution



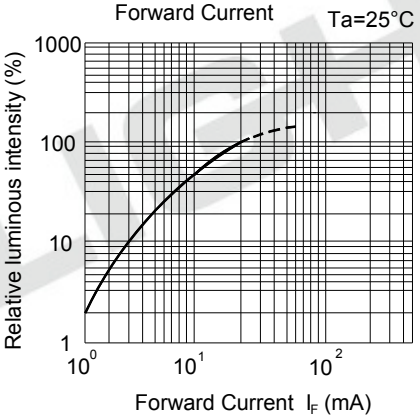
Forward Current vs. Forward Voltage



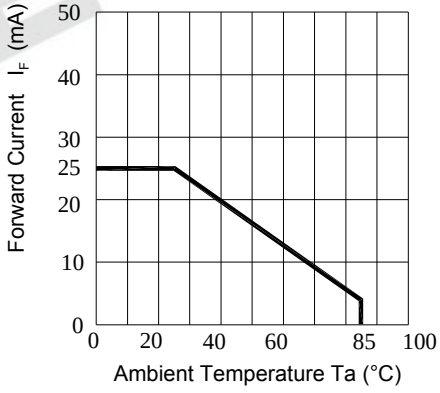
Luminous Intensity vs. Ambient Temperature



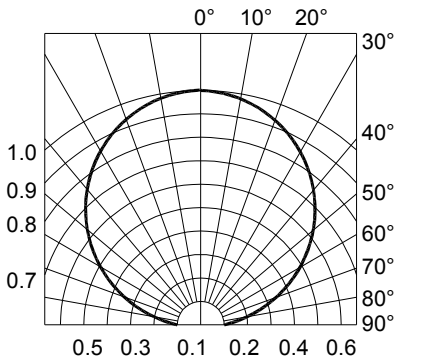
Luminous Intensity vs. Forward Current



Forward Current Derating Curve

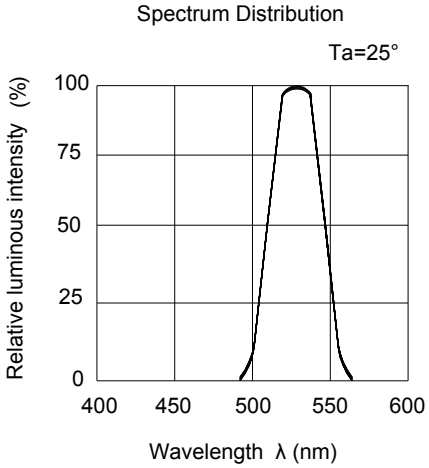


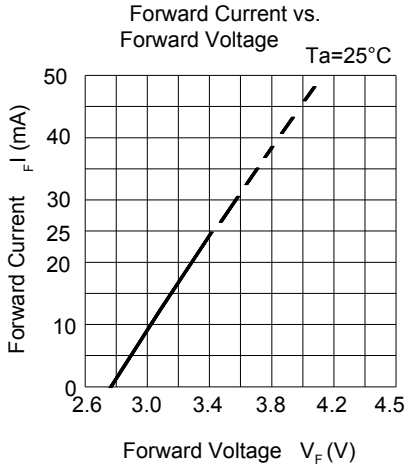
Radiation Diagram

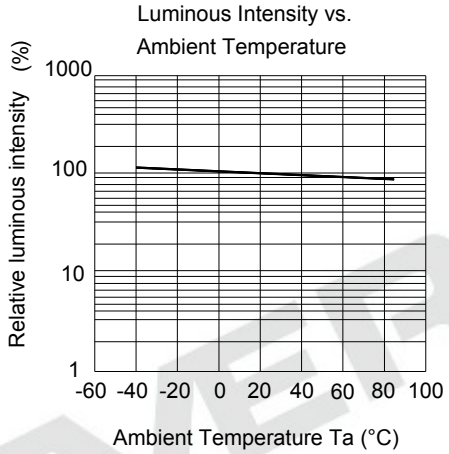


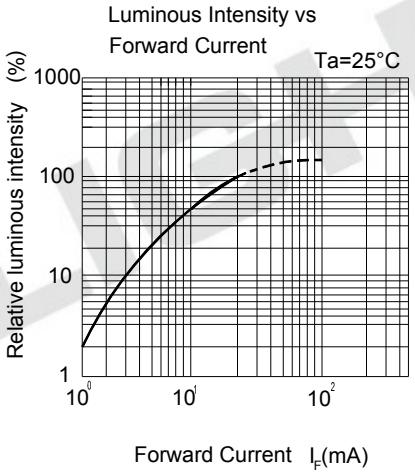
Typical Electro-Optical Characteristics Curves

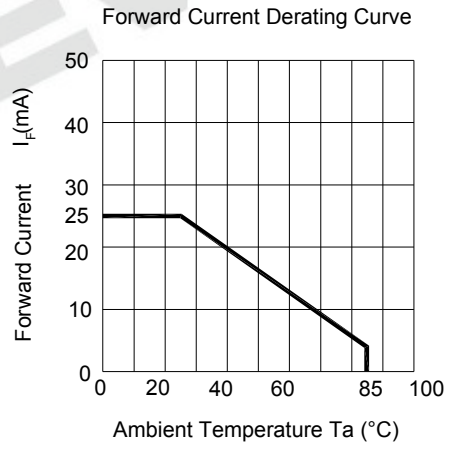
GH

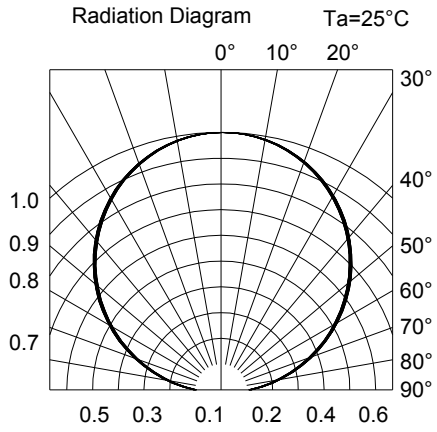








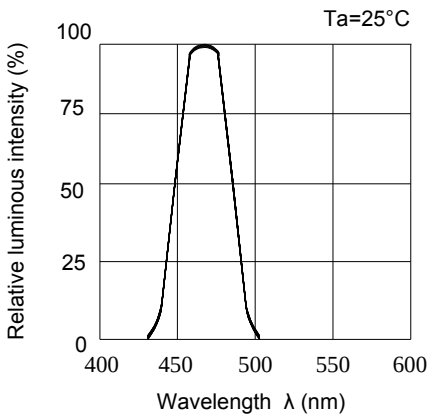




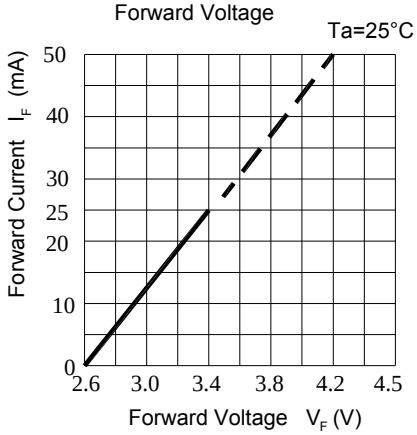
Typical Electro-Optical Characteristics Curves

BH

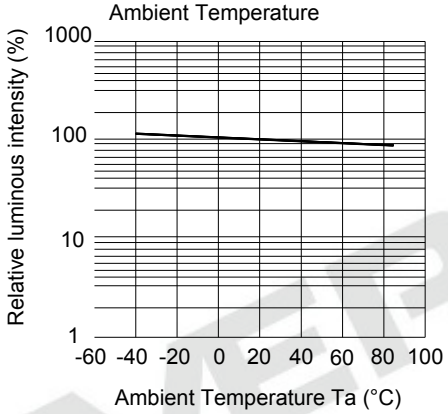
Spectrum Distribution



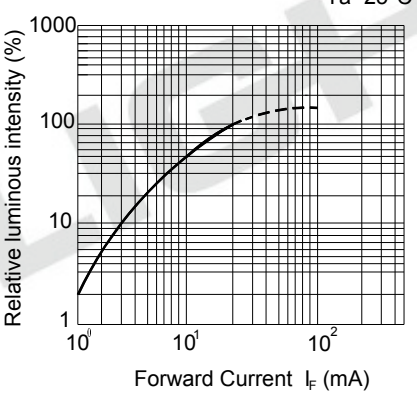
Forward Current vs. Forward Voltage



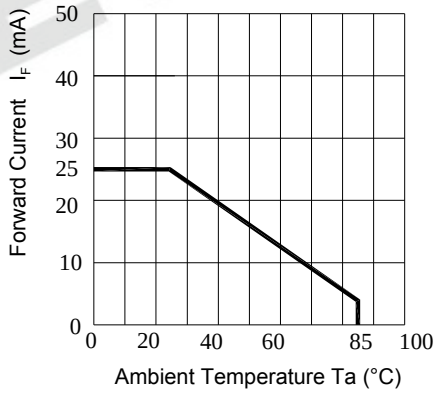
Luminous Intensity vs. Ambient Temperature



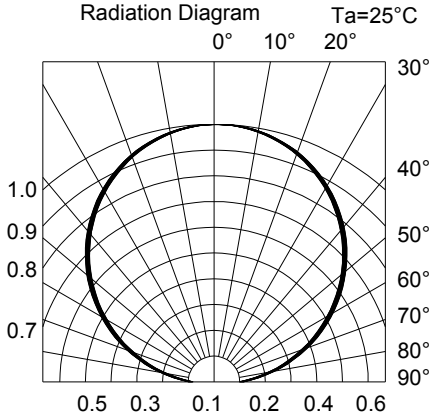
Luminous Intensity vs. Forward Current



Forward Current Derating Curve



Radiation Diagram

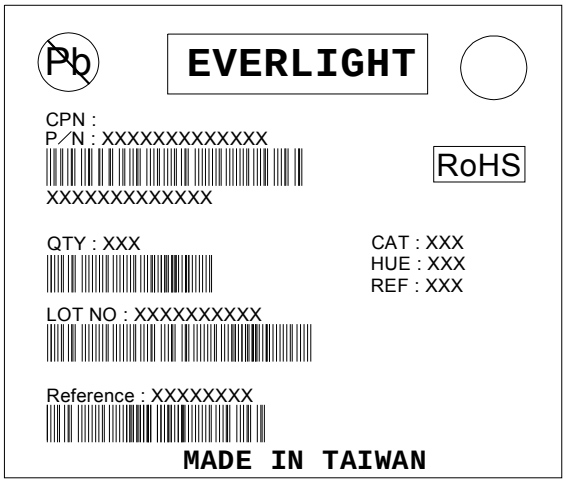


Label Explanation

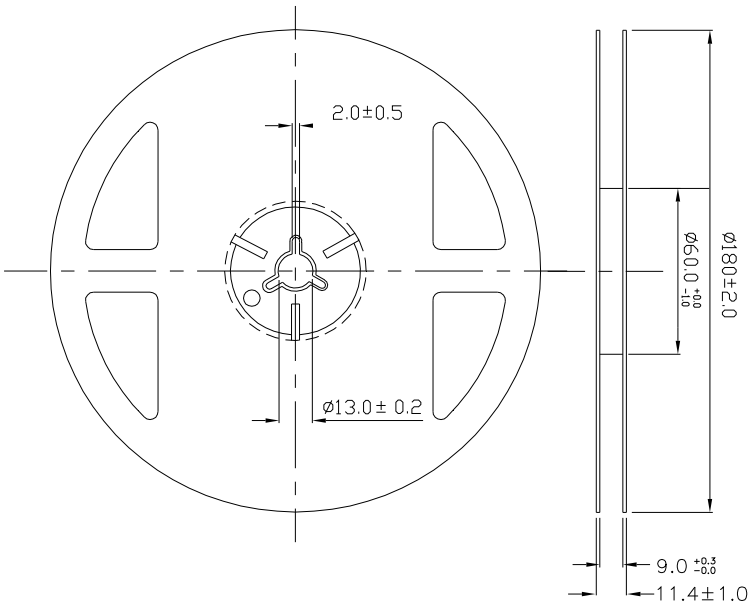
CAT: Luminous Intensity Rank

HUE: Chromaticity Coordinates

REF: Forward Voltage Rank

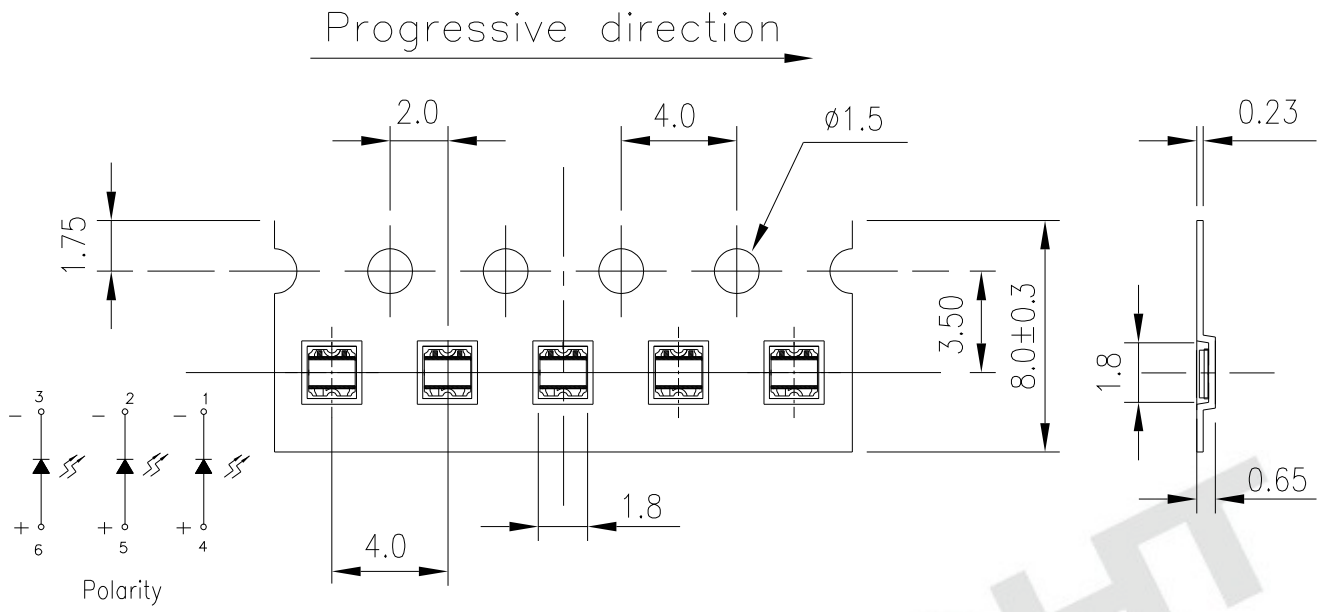


Reel Dimensions



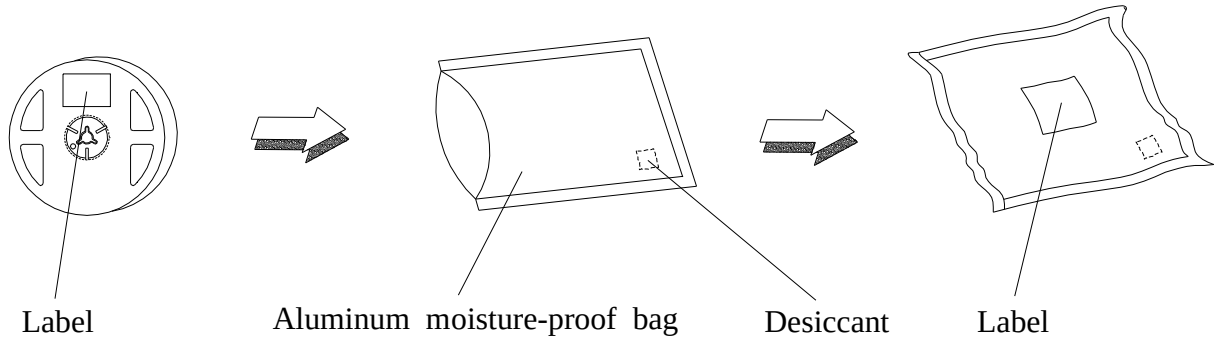
Note: The tolerances unless mentioned is ±0.1mm ,Unit = mm

Carrier Tape Dimensions: Loaded quantity 2000 PCS per reel



Note: The tolerances unless mentioned is ±0.1mm ,Unit = mm

Moisture Resistant Packaging



Reliability Test Items And Conditions

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

Confidence level：90%

LTPD：10%

No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Reflow Soldering	Temp. : 260℃±5℃ Max. 10sec.	6 Min.	22 PCS.	0/1
2	Temperature Cycle	H : +100℃ 15min ∫ 5 min L : -40℃ 15min	300 Cycles	22 PCS.	0/1
3	Thermal Shock	H : +100℃ 5min ∫ 10 sec L : -10℃ 5min	300 Cycles	22 PCS.	0/1
4	High Temperature Storage	Temp. : 100℃	1000 Hrs.	22 PCS.	0/1
5	Low Temperature Storage	Temp. : -40℃	1000 Hrs.	22 PCS.	0/1
6	DC Operating Life	I_F = 20 mA	1000 Hrs.	22 PCS.	0/1
7	High Temperature / High Humidity	85℃/ 85%RH	1000 Hrs.	22 PCS.	0/1

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. Storage

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

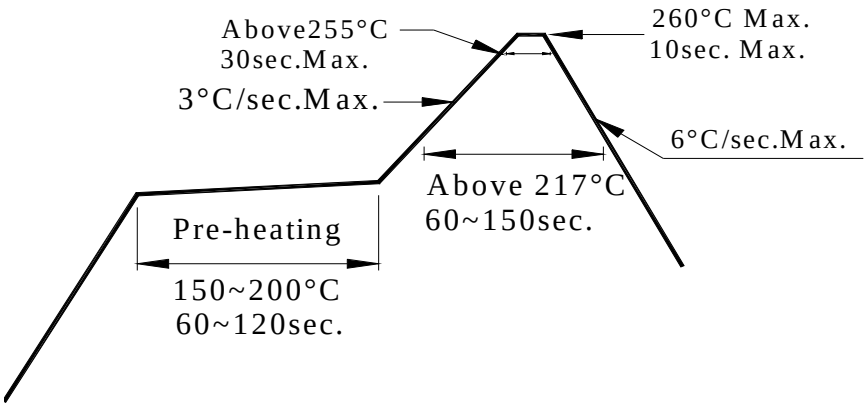
   2.2 Before opening the package: The LEDs should be kept at 30℃ or less and 90%RH or less.

   2.3 After opening the package: The LED's floor life is 1 year under 30℃ or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

   2.4 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.

3. Soldering Condition

   3.1 Pb-free solder temperature profile



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

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

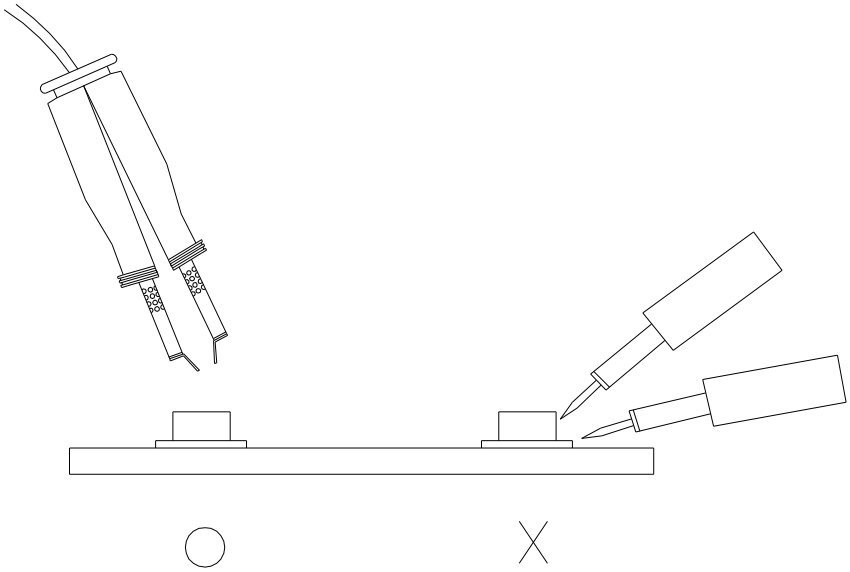
   3.4 After soldering, do not warp the circuit board.

4.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.

5.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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