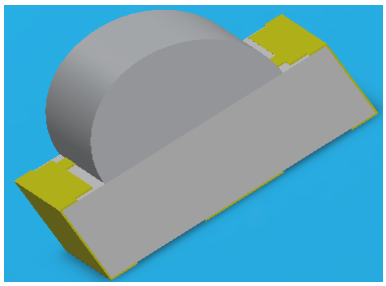
DATASHEET

SMD ▪ B
12-21/R6C-AP1Q2L/2C



Features

- Package in 8mm tape on 7″ diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Mono-color type.
- Pb-free.
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH.
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm)

Description

- The 12-21 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.

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Device Selection Guide

Chip Materials	Emitted Color	Resin Color
AlGaInP	Brilliant Red	Water Clear

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	25	mA
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	60	mA
Power Dissipation	Pd	60	mW
Electrostatic Discharge	ESD_{HBM}	2000	V
Operating Temperature	T_{opr}	-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	45	-----	112	mcd	I_F=20mA
Viewing Angle	$2\theta_{1/2}$	-----	120	-----	deg	
Peak Wavelength	λp	-----	632	-----	nm	
Dominant Wavelength	λd	617.5	-----	633.5	nm	
Spectrum Radiation Bandwidth	△λ	-----	20	-----	nm	
Forward Voltage	V_F	1.7	----	2.3	V	
Reverse Current	I_R	-----	-----	10	μA	V_R=5V

Note:
1.Tolerance of Luminous Intensity: ±11%
2.Tolerance of Dominant Wavelength ±1nm
3. Tolerance of Forward Voltage: ±0.05V
4. RA test @5mA.

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Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
P1	45.0	57.0	mcd	I_F =20mA
P2	57.0	72.0		
Q1	72.0	90.0		
Q2	90.0	112.0		

Bin Range Of Dom. Wavelength

Bin Code	Min.	Max.	Unit	Condition
E4	617.5	621.5	nm	I_F =20mA
E5	621.5	625.5		
E6	625.5	629.5		
E7	629.5	633.5		

Bin Range Of Forward Voltage

Bin Code	Min.	Max.	Unit	Condition
19	1.7	1.8	V	I_F =20mA
20	1.8	1.9		
21	1.9	2.0		
22	2.0	2.1		
23	2.1	2.2		
24	2.2	2.3		

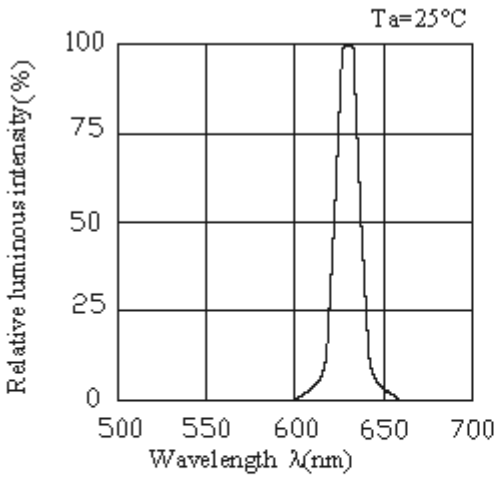
Note:
1.Tolerance of Luminous Intensity: ±11%
2.Tolerance of Dominant Wavelength ±1nm
3. Tolerance of Forward Voltage: ±0.05V

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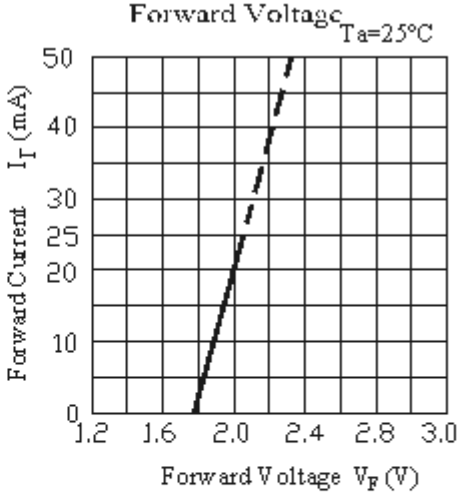
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Typical Electro-Optical Characteristics Curves

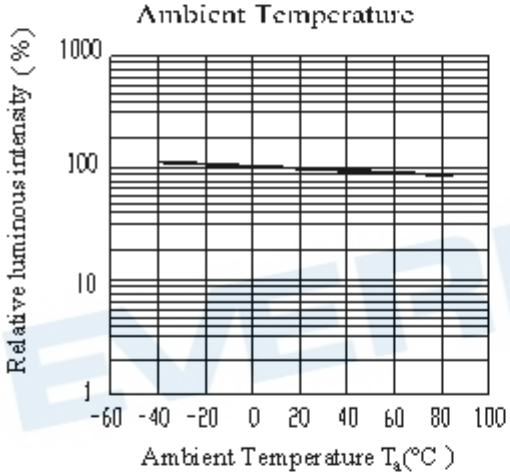
Spectrum Distribution



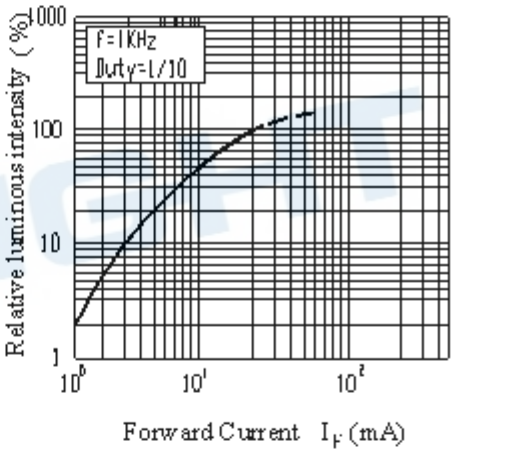
Forward Current vs. Forward Voltage



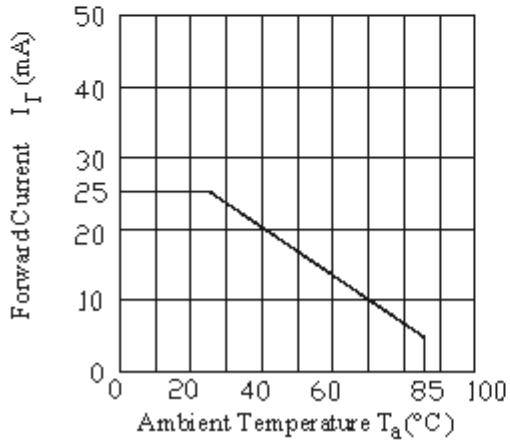
Luminous Intensity vs. Ambient Temperature



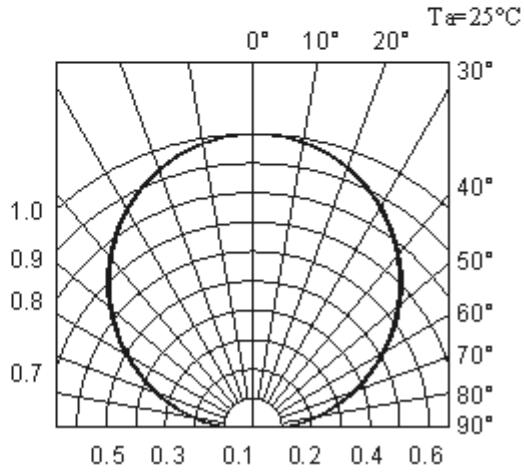
Luminous Intensity vs Forward Current



Forward Current Derating Curve



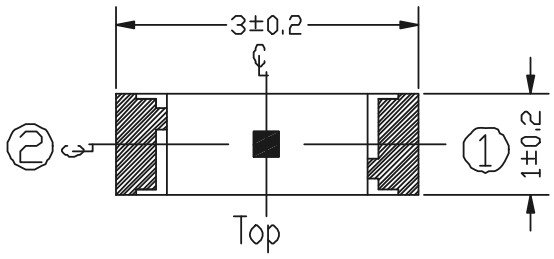
Radiation Diagram

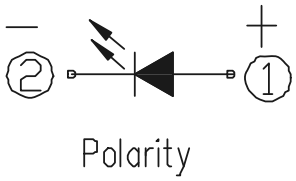


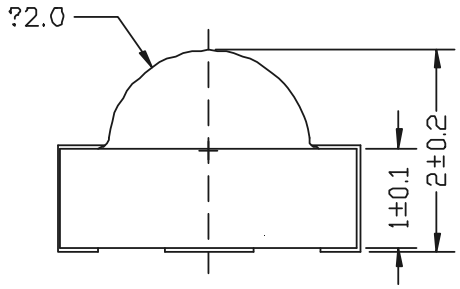
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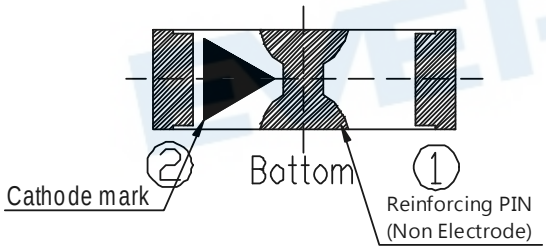
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Package Dimension

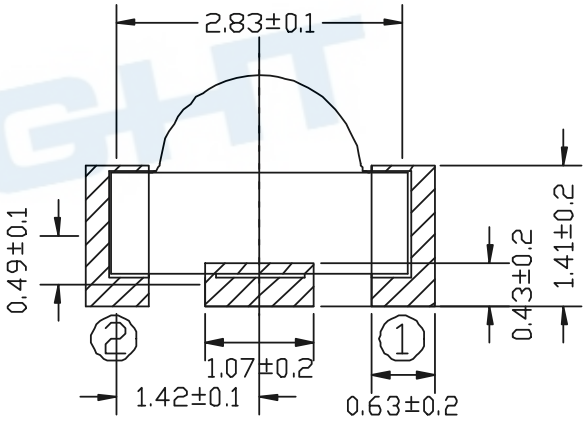








Recommend Soldering Pad

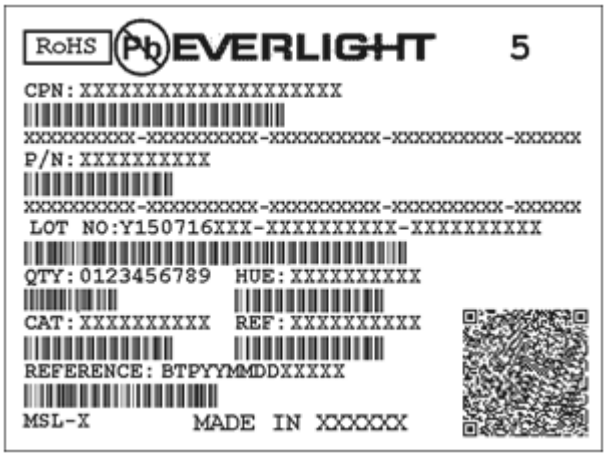


Suggested pad dimension is just for reference only.
Please modify the pad dimension based on individual need.

Note: Tolerances unless mentioned ±0.1mm. Unit = mm

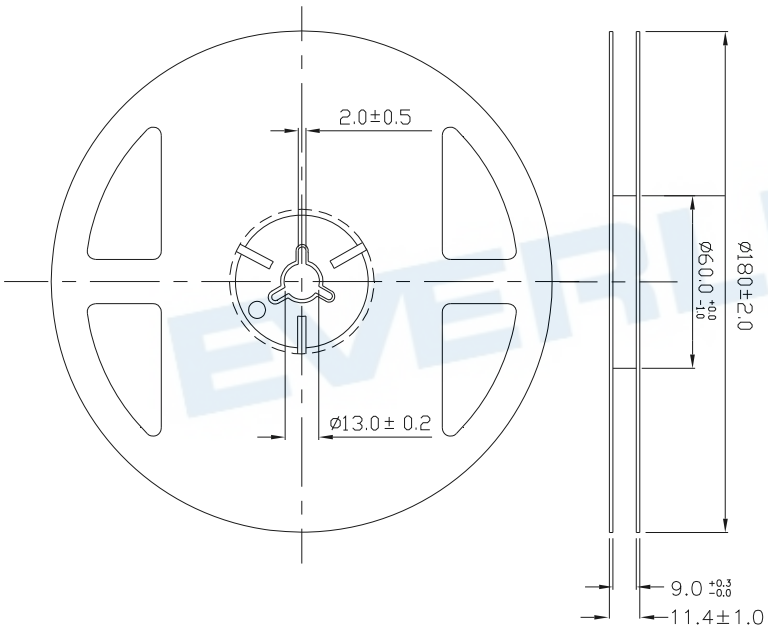
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Moisture Resistant Packing Materials
Label Explanation



- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Chromaticity Coordinates & Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

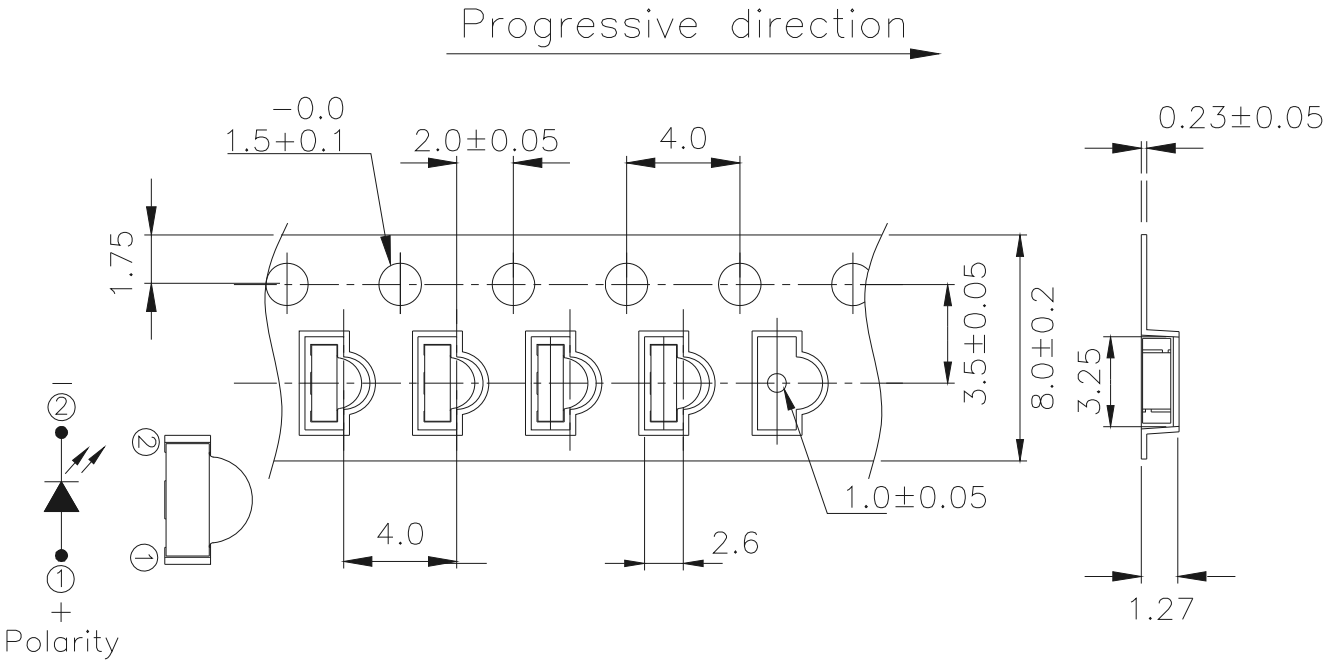
Reel Dimensions



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

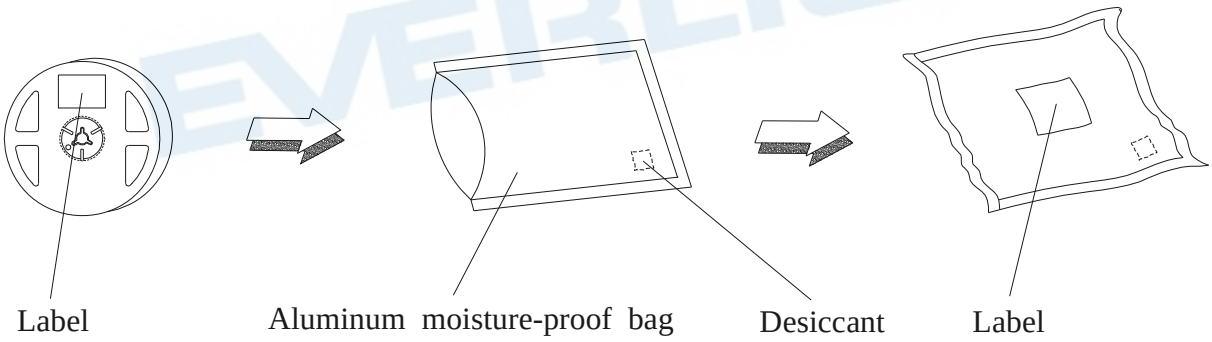
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Carrier Tape Dimensions: Loaded quantity 2000 PCS per reel



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

Moisture Resistant Packaging



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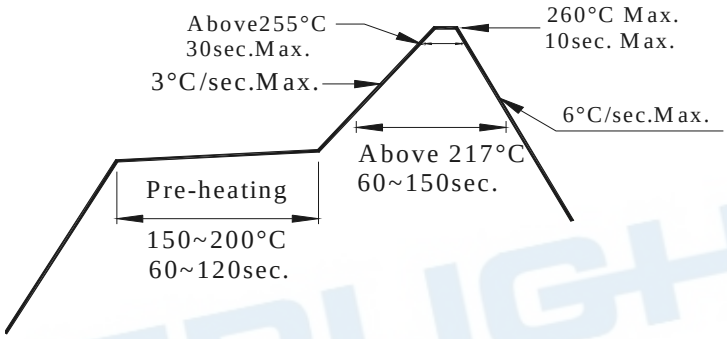
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Precautions For Use

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

2. Storage
   2.1 Do not open moisture proof bag before the products are ready to use.
   2.2 After opening the package: The LEDs should be kept at 30℃ or less and 60%RH or less.
   2.3 The LEDs should be used within 168 hours (7days) after opening the package
   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.

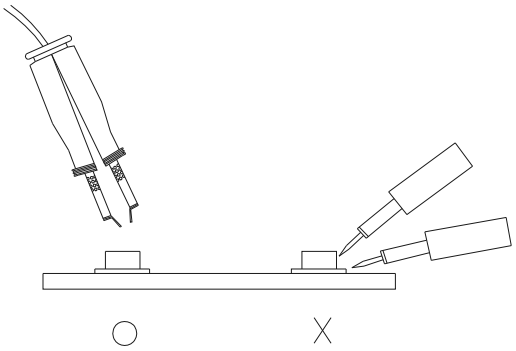
3. Soldering Condition
   3.1 Pb-free solder temperature profile



   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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Application Restrictions

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DISCLAIMER

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2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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