DATASHEET

Full Color Side View LEDs (Height 0.8mm)
99-235RGBW/S3127/TR8

Features

- Optical indicator
- Colorless clear window
- Ideal for backlight and light pipe application.
- Inter reflector
- Wide viewing angle
- Suitable for vapor-phase reflow, Infrared reflow and wave solder processes
- Computable with automatic placement equipment.
- Available on tape and reel (12mm Tape)
- Pb-free
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH.
- Compliance Halogen Free .(Br<900ppm,Cl<900ppm,Br+Cl<1500ppm).
- Precondition: Bases on JEDEC J-STD 020D Level 3

Descriptions

- The 99-235 series is available in soft red, green and blue. Due to the package design, the LED has wide viewing angle and optimized light coupling by inter reflector. This feature makes the ideal for light pipe application. The low current requirement makes this device ideal for portable equipment or any other application where power is at a premium.

Applications

- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD's, switches and symbols.
- Light pipe application.
- General use

Device Selection Guide

Group	Chip Materials	Emitted Color	Resin Color
R	AlGaInP	Brilliant Red	White Diffuse
G	InGaN	Brilliant Green	White Diffuse
B	InGaN	Blue	White Diffuse

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol		Rating	Unit
Reverse Voltage	V_R		5	V
Forward Current	I_F	R	50	mA
		G	30	
		B	30	
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	R	100	mA
		G	100	
		B	100	
Power Dissipation	Pd	R	120	mW
		G	110	
		B	110	
Junction Temperature	T_j		115	℃
Operating Temperature	T_{opr}		-40 ~ +85	℃
Storage Temperature	Tstg		-40 ~ +90	℃
ESD	ESD_{HBM}	R	1000	V
		G	1000	
		B	1000	
Soldering Temperature	T_{sol}		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		180	-----	360	mcd	
Viewing Angle	$2\theta_{1/2}$		-----	120	-----	deg	
Peak Wavelength	λp	R	-----	632	-----	nm	
		G	-----	518	-----		
		B	-----	468	-----		
Dominant Wavelength	λd	R	-----	624	-----	nm	R：I_F=2.35mA G：I_F=2.25mA B：I_F=4.75mA
		G	-----	525	-----		
		B	-----	470	-----		
Spectrum Radiation Bandwidth	△λ	R	-----	20	-----	nm	
		G	-----	35	-----		
		B	-----	25	-----		
Forward Voltage	V_F	R	1.70	-----	1.90	V	
		G	2.45	-----	2.80		
		B	2.6	-----	2.80		
Reverse Current	I_R	R	-----	-----	10	μA	V_R=5V
		G	-----	-----	50		
		B	-----	-----	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 Code	Min.	Max.	Unit	Condition
S1	180	225	mcd	R：I_F=2.35mA G：I_F=2.25mA B：I_F=4.75mA
S2	225	285		
T1	285	360		

*When three LED dies are operated simultaneously

Notes:
Tolerance of Luminous Intensity ±11%

Bin Range of Forward Voltage

Chip	Bin Code	Min.	Max.	Unit	Condition
R	1	1.70	1.75	V	R：I_F=2.35mA G：I_F=2.25mA B：I_F=4.75mA
	2	1.75	1.80		
	3	1.80	1.85		
	4	1.85	1.90		
G	0-1	2.45	2.50		
	0-2	2.50	2.55		
	0-3	2.55	2.60		
	1	2.60	2.65		
	2	2.65	2.70		
	3	2.70	2.75		
	4	2.75	2.80		
B	1	2.60	2.65		
	2	2.65	2.70		
	3	2.70	2.75		
	4	2.75	2.80		

Note:
1. Tolerance of Forward Voltage ±0.05V.

Chromaticity Coordinates Specifications for Bin Grading*

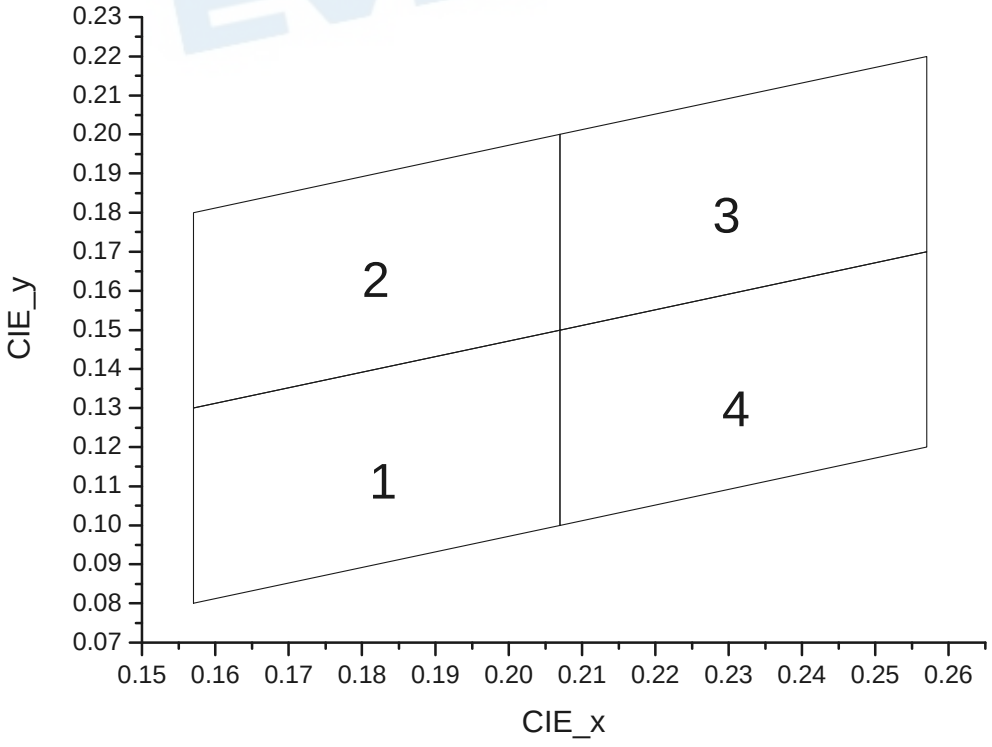
Bin Code	Min.	Max.	Condition
1	0.157	0.080	R：I_F=2.35mA G：I_F=2.25mA B：I_F=4.75mA
	0.157	0.130	
	0.207	0.150	
	0.207	0.100	
2	0.157	0.130	
	0.157	0.180	
	0.207	0.200	
	0.207	0.150	
3	0.207	0.150	
	0.207	0.200	
	0.257	0.220	
	0.257	0.170	
4	0.207	0.100	
	0.207	0.150	
	0.257	0.170	
	0.257	0.120	

*When three LED dies are operated simultaneously.

Note:

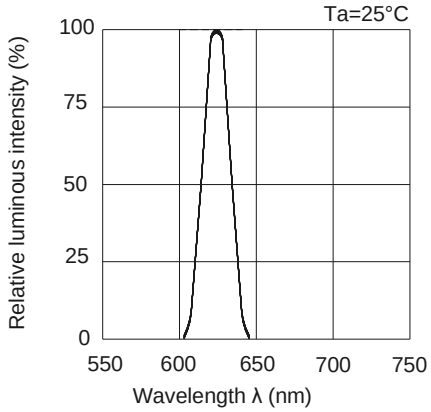
1. The C.I.E. 1931 chromaticity diagram (Tolerance ±0.01)
2. The products are sensitive to static electricity and care must be fully taken when handling products

CIE Chromaticity Diagram

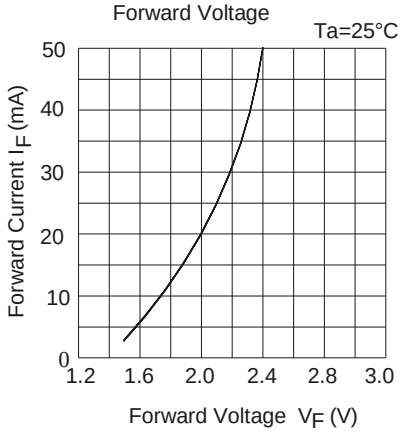


Typical Electro-Optical Characteristics Curves(R)

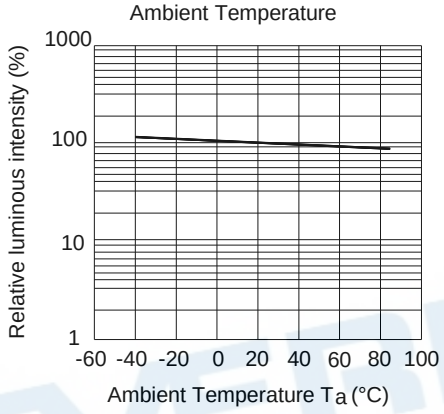
Spectrum Distribution



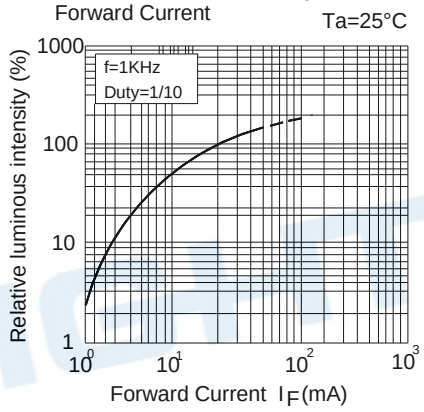
Forward Current vs. Forward Voltage



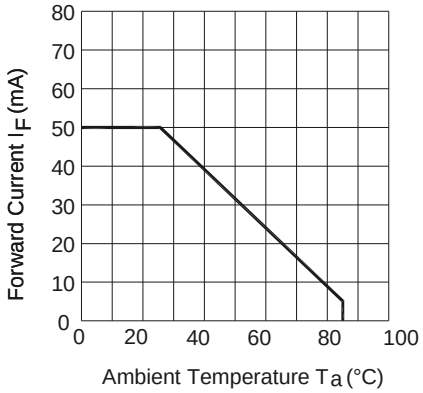
Relative Luminous Intensity vs. Ambient Temperature



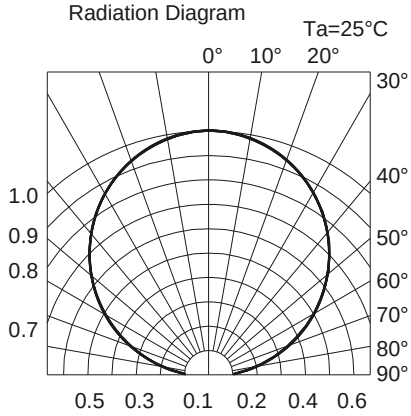
Relative Luminous Intensity vs. Forward Current



Forward Current Derating Curve

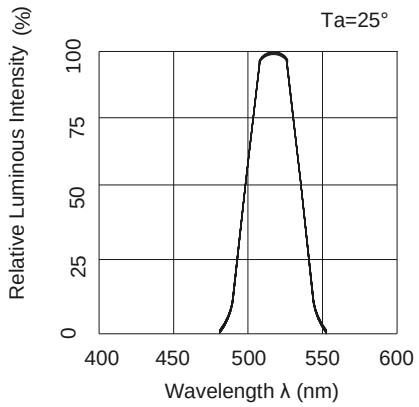


Radiation Diagram

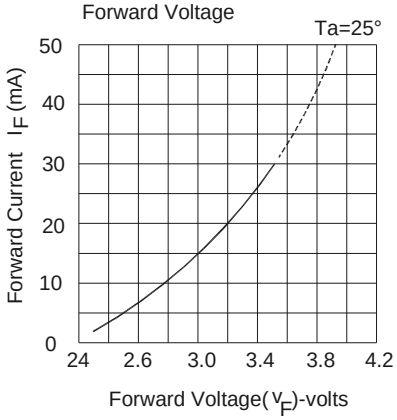


Typical Electro-Optical Characteristics Curves(G)

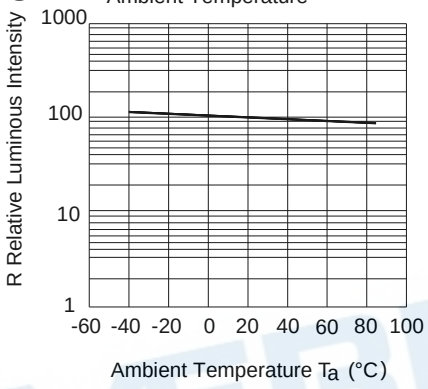
Spectrum Distribution



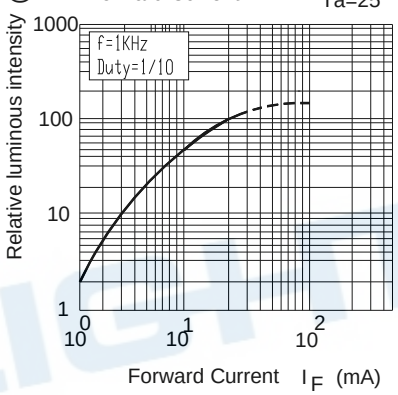
Forward Voltage



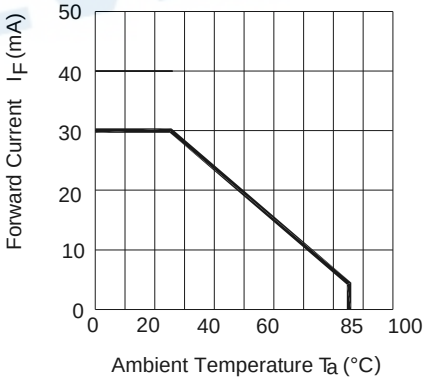
Relative Luminous Intensity vs.
Ambient Temperature



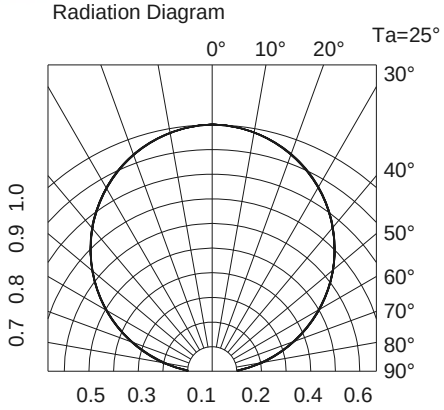
Relative Luminous Intensity vs
Forward Current



Forward Current Derating Curve

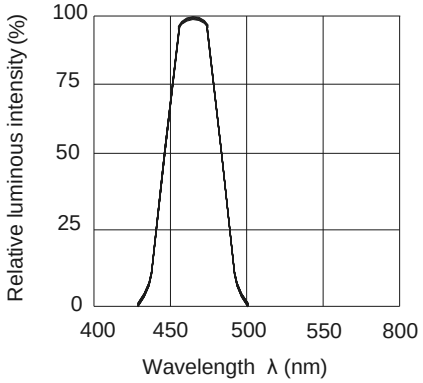


Radiation Diagram

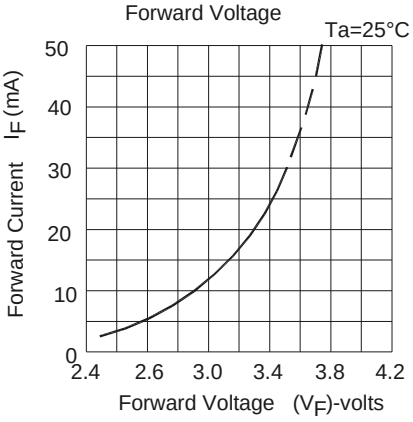


Typical Electro-Optical Characteristics Curves(B)

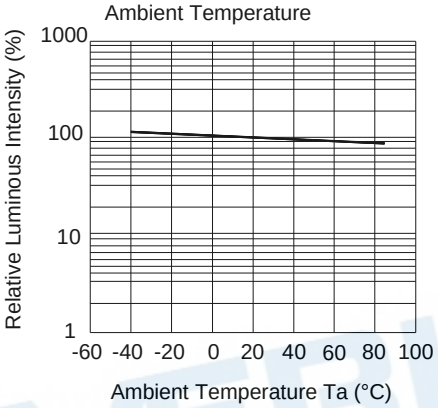
Spectrum Distribution



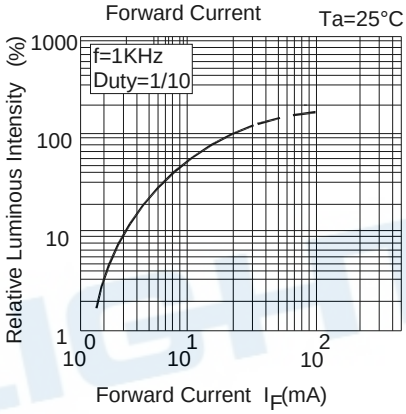
Forward Current vs. Forward Voltage



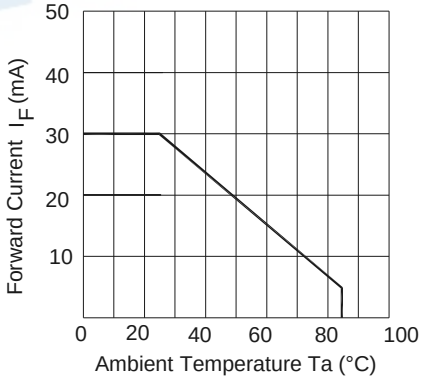
Relative Luminous Intensity vs. Ambient Temperature



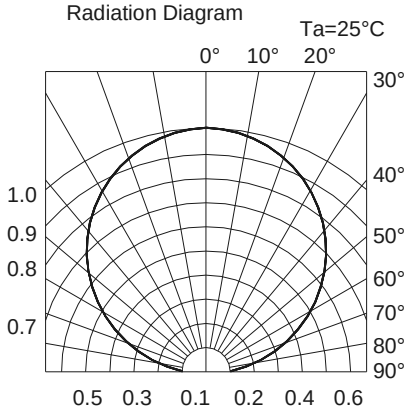
Rel. Luminous Intensity vs Forward Current



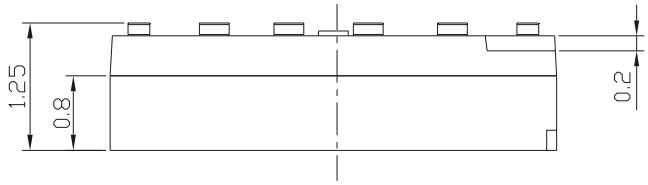
Forward Current Derating Curve

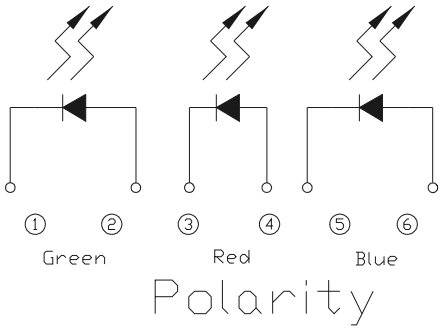


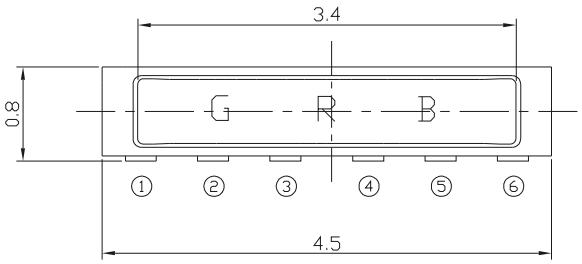
Radiation Diagram

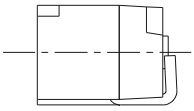


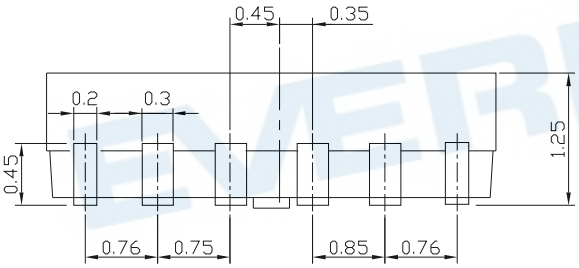
Package Dimension

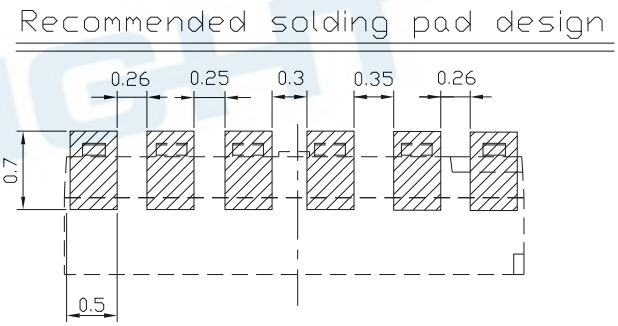








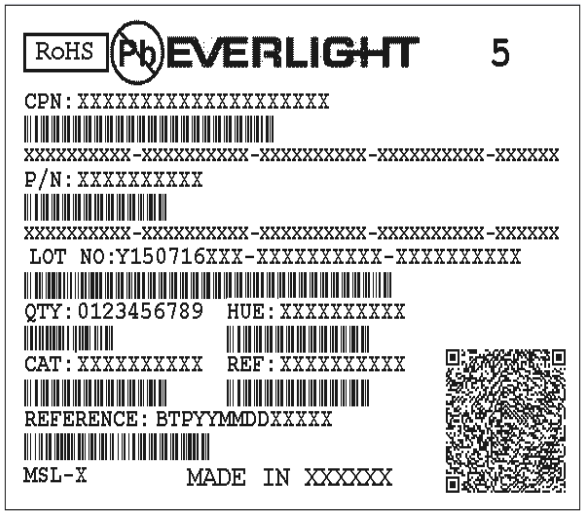




Note: Tolerances unless mentioned ±0.1mm. Unit = mm

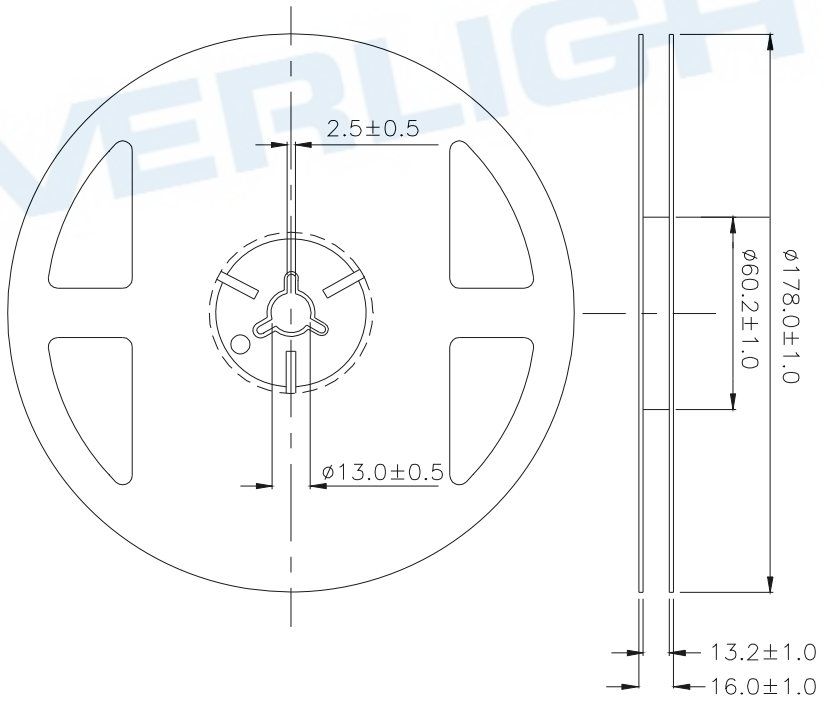
Moisture Resistant Packing Materials

Label Explanation



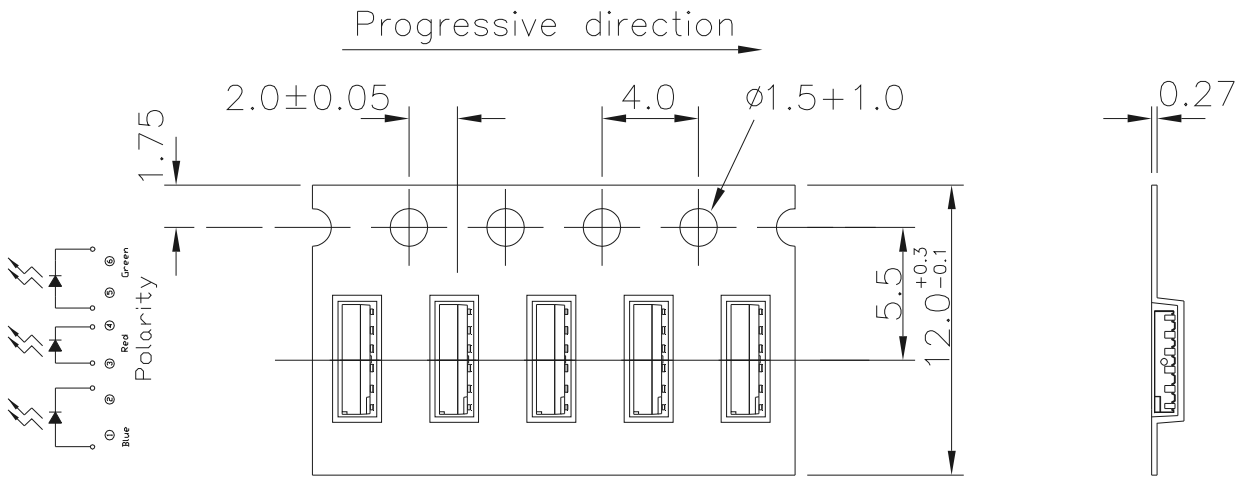
- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions



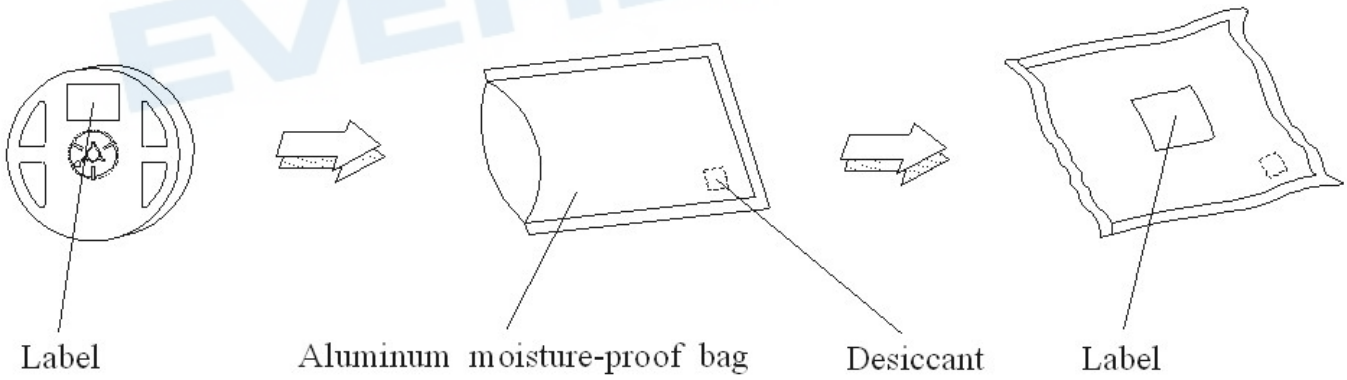
Note: Tolerances Unless Dimension ±0.1mm ,Unit = mm

Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel



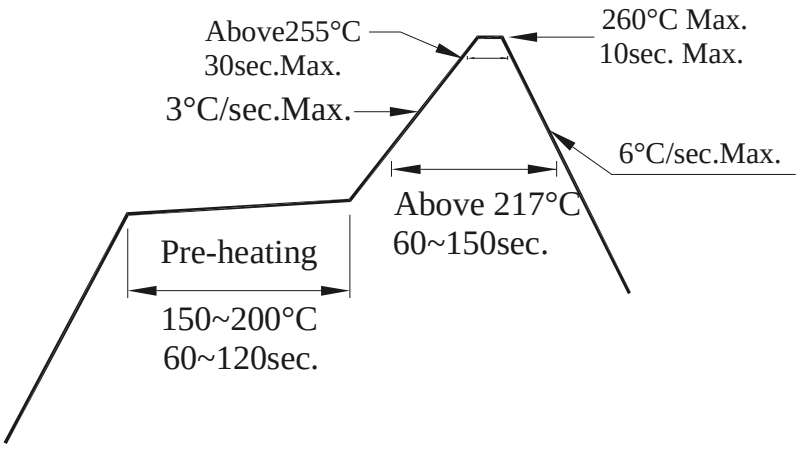
Note:
Tolerances unless mentioned ±0.1mm. Unit = mm

Moisture Resistant Packing Process

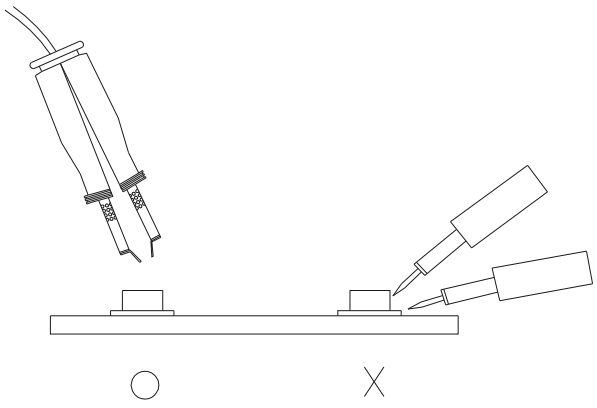


Precautions for Use

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



2. Storage
   2.1 Moisture proof bag should only be opened immediately prior to usage.
   2.2 Environment should be less than 30℃ and 60% RH when moisture proof bag is opened.
   2.3 After opening the package MSL Conditions stated on page 1 of this spec should not be exceeded.
   2.4 If the moisture sensitivity card indicates higher than acceptable moisture, the component should be baked at min. 60deg +/-5deg 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.



Application Restrictions

High reliability applications such as military/aerospace, automotive safety/security systems, and medical equipment may require different product. If you have any concerns, please contact Everlight before using this product in your application. This specification guarantees the quality and performance of the product as an individual component. Do not use this product beyond the specification described in this document.

DISCLAIMER

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
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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