DATASHEET

Luminosity Full Color LED
5050ST/GRBC33-PU5/1T

Features

- Super-luminosity chip LED.
- White SMT package.
- Built in Red, Green, and Blue chips.
- Lead frame package with individual 6 pins.
- Wide viewing angle.
- Soldering methods: IR reflow soldering.
- 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

- Due to the package design, 61-136 has wide viewing angle , low power consumption and adjusting each color is possible thanks to serial connection by 6 terminal connection (Individual driving by each terminal) in case of using several number of LED. And makes it ideal for light pipe application.

Applications

- Amusement equipment.
- Information boards.
- Flashlight for digital camera of cellular phone.

Device Selection Guide

Type	Chip Materials	Emitted Color	Resin Color
R	GaInAlP	Red	Water Clear
G	InGaN	Green	Water Clear
B	InGaN	Blue	Water Clear

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Type	Rating	Unit
Forward Current	I_F	R	150	mA
		G	150	
		B	150	
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	R	200	mA
		G	200	
		B	200	
Power Dissipation	Pd	R	420	mW
		G	555	
		B	555	
Junction Temperature	T_j		115	℃
Operating Temperature	T_{opr}		-40 ~ +85	℃
Storage Temperature	Tstg		-40 ~ +100	℃
Soldering Temperature	T_{sol}		Reflow Soldering : 260 ℃ for 10 sec. Hand Soldering : 350 ℃ for 3 sec.	

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol	Type	Min.	Typ.	Max.	Unit	Condition
Luminous Flux	Iv	R	13.9	25	39.8	lm	
		G	13.9	40	51.7		
		B	4.9	8.5	18.1		
Luminous Intensity	Iv	R	-----	7550	-----	mcd	
		G	-----	12100	-----		
		B	-----	2550	-----		
Viewing Angle	$2\theta_{1/2}$		110	120	130	deg	R:I_F=150mA G:I_F=150mA B:I_F=150mA
Dominant Wavelength	λd	R	617	622	629	nm	
		G	518	525	530		
		B	455	457	470		
Forward Voltage	V_F	R	1.8	2.3	2.8	V	
		G	2.7	3.4	3.7		
		B	2.7	3.2	3.7		
Reverse Current	I_R		0	1	10	μA	V_R=5V

Notes:
1. Tolerance of Luminous Flux: ±11%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

Bin Range of Luminous Flux

Type	Bin Code	Min.	Max.	Unit	Condition
R	R1	13.9	18.1	lm	I_F=150mA
	R2	18.1	23.5		
	R3	23.5	30.6		
	R4	30.6	39.8		
G	G1	13.9	18.1		
	G2	18.1	23.5		
	G3	23.5	30.6		
	G4	30.6	39.8		
	G5	39.8	51.7		
B	B1	4.9	6.3		
	B2	6.3	8.2		
	B3	8.2	10.7		
	B4	10.7	13.9		
	B5	13.9	18.1		

Note:
Tolerance of Luminous Flux: ±11%

Bin Range of Forward Voltage

Type	Bin Code	Min.	Max.	Unit	Condition
R	1828	1.8	2.8	V	I_F=150mA
G	2737	2.7	3.7		
B	2737	2.7	3.7		

Note:
Tolerance of Forward Voltage: ±0.1V.

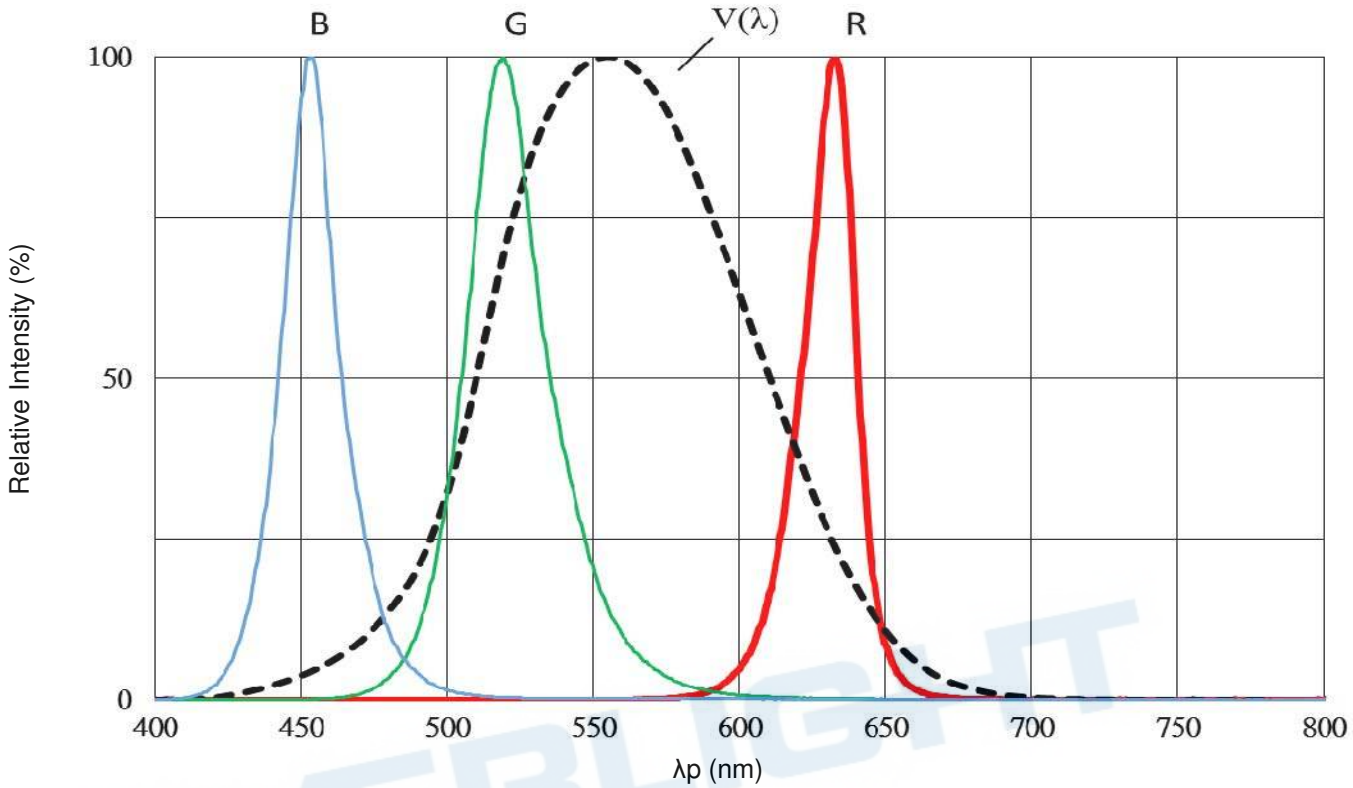
Bin Range of Dominant Wavelength

Type	Bin Code	Min.	Max.	Unit	Condition
R	RA	617	621	nm	I_F=150mA
	RB	621	625		
	RC	625	629		
G	GA	518	521		
	GB	521	524		
	GC	524	527		
	GD	527	530		
B	BA	455	458		
	BB	458	461		
	BC	461	464		
	BD	464	467		
	BE	467	470		

Note:
Tolerance of Dominant Wavelength: ±1nm

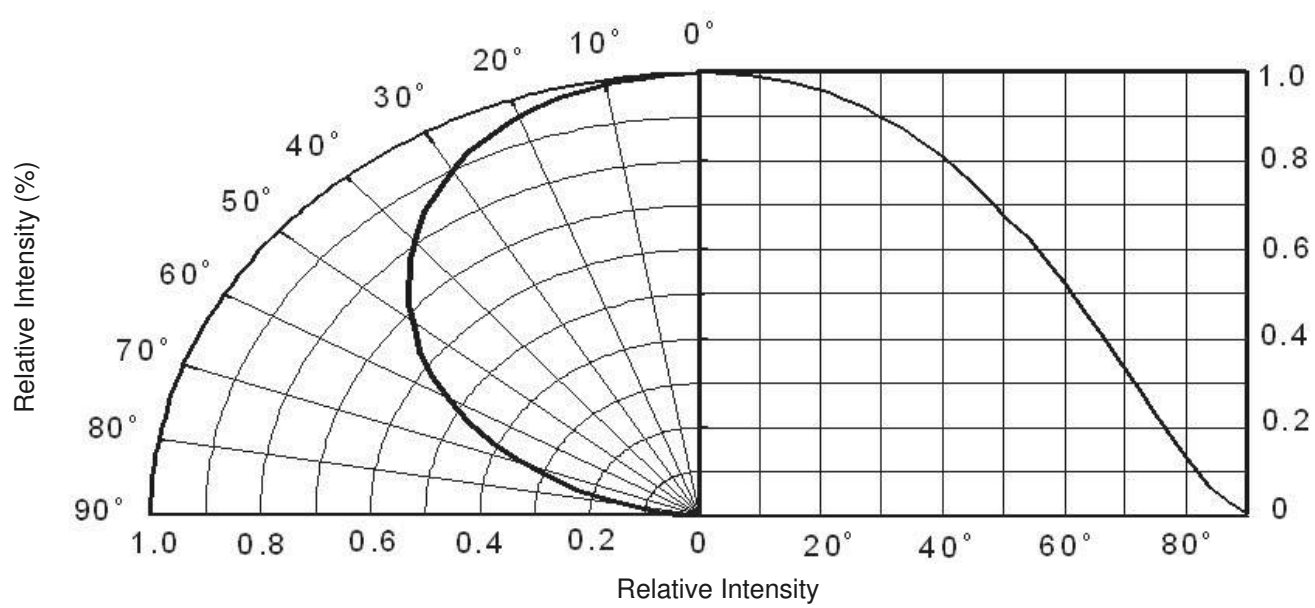
Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distribution



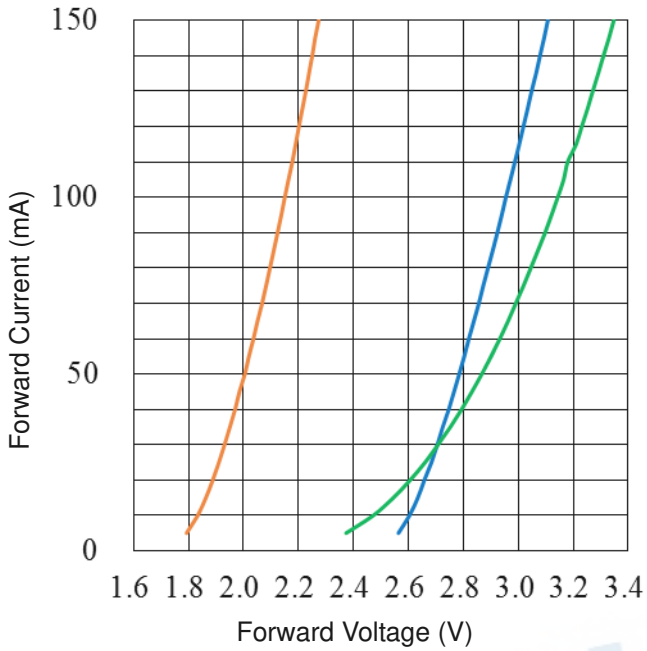
Note: V(λ)=Standard eye response curve;

Diagram Characteristics of Radiation

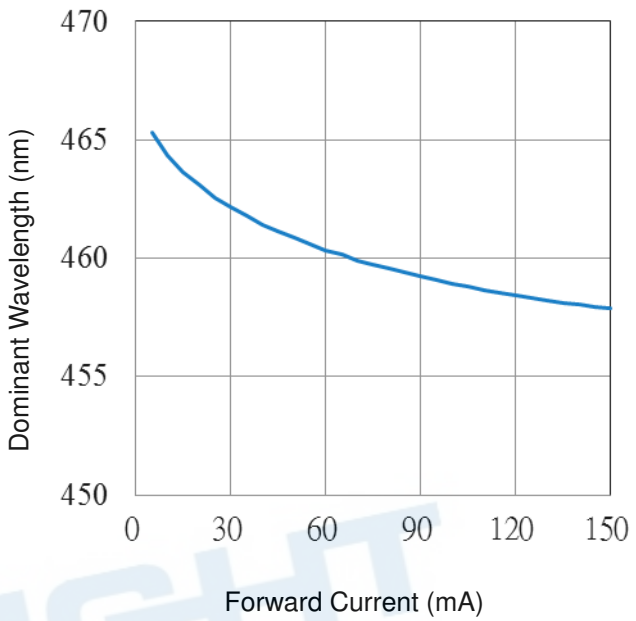


Typical Electro-Optical Characteristics Curves

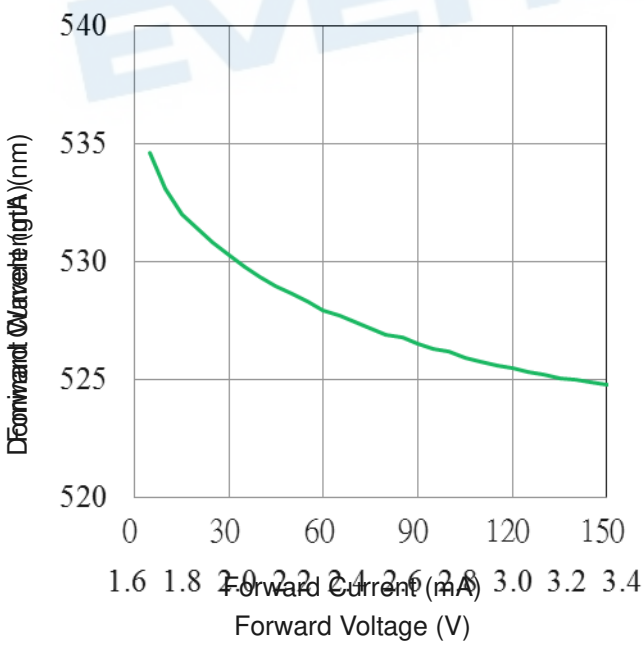
Forward Current vs. Forward Voltage (Ta=25℃)



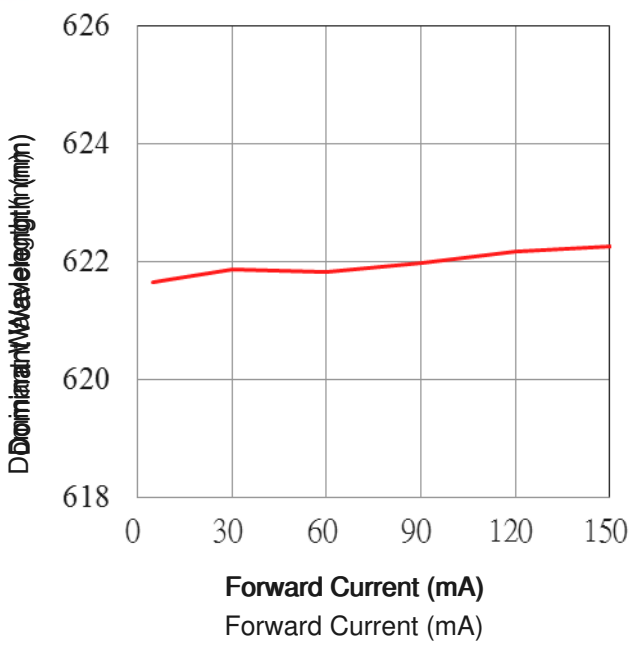
Dominant Wavelength vs. Forward Current (Ta=25℃) (Blue)



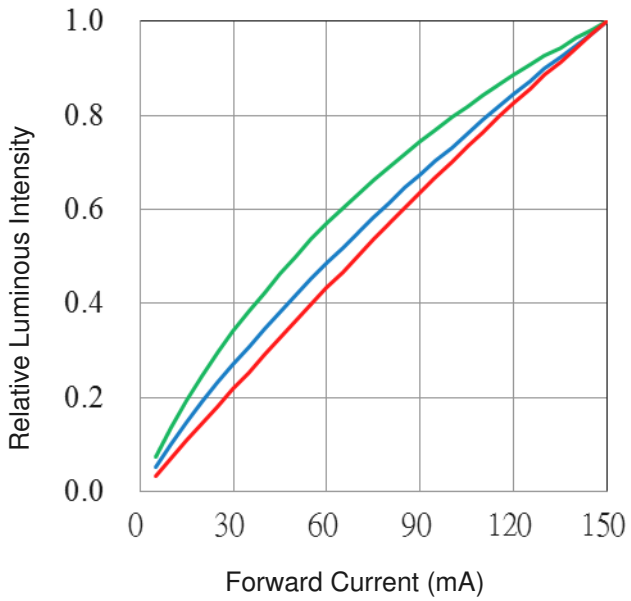
Dominant Wavelength vs. Forward Current (Ta=25℃) (Green)



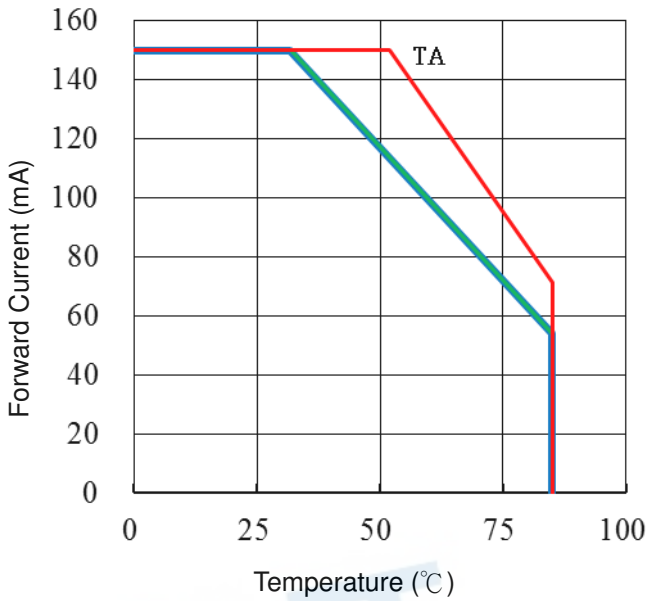
Dominant Wavelength vs. Forward Current (Ta=25℃) (Red)



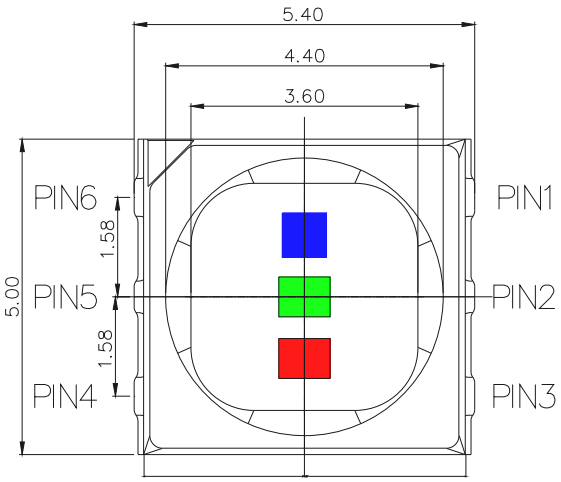
Relative Luminous Intensity vs. Forward Current (Ta=25℃)

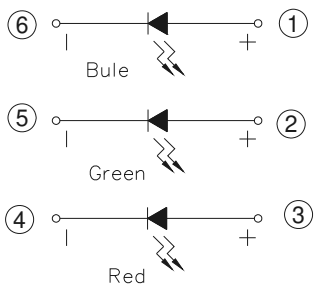


Max. Permissible Forwarded Current (Ta=25℃)

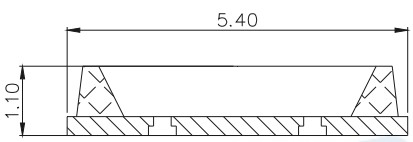


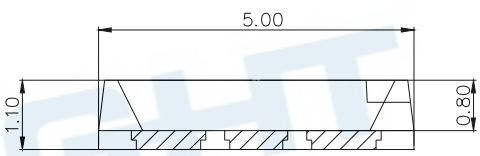
Package Dimension



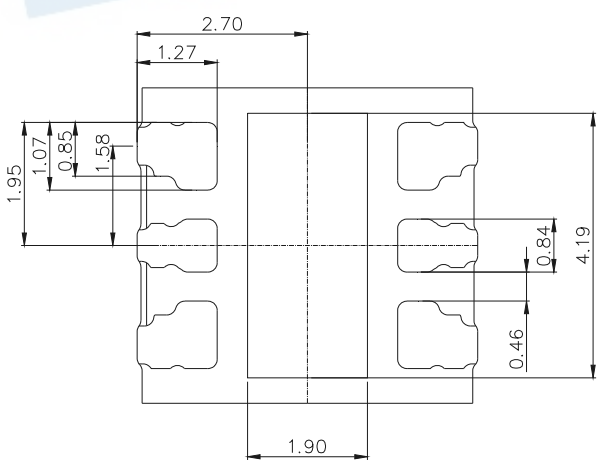


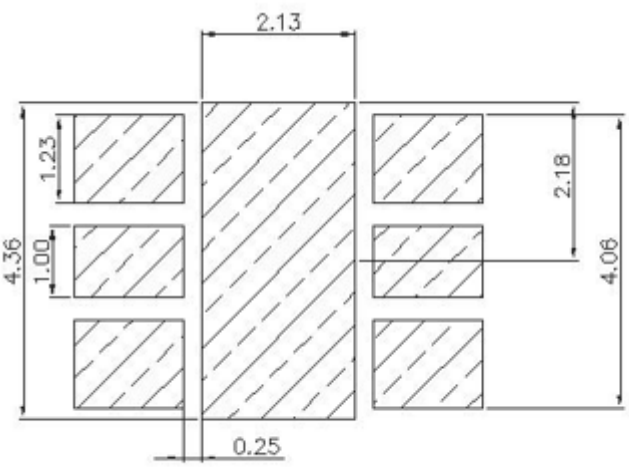
Polarity





Recommend Soldering Pad



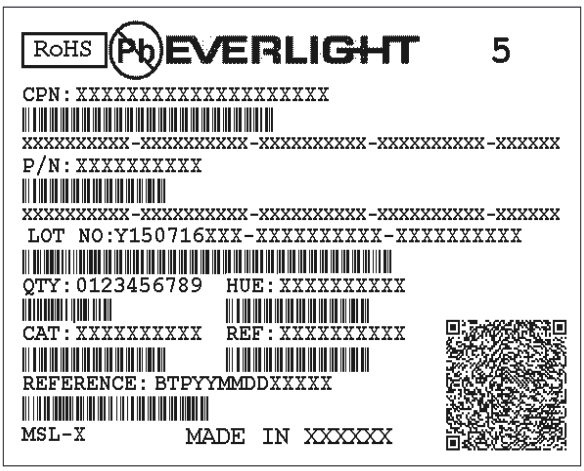


Suggested pad dimension is just for reference only.
Please modify the pad dimension based on individual need.

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

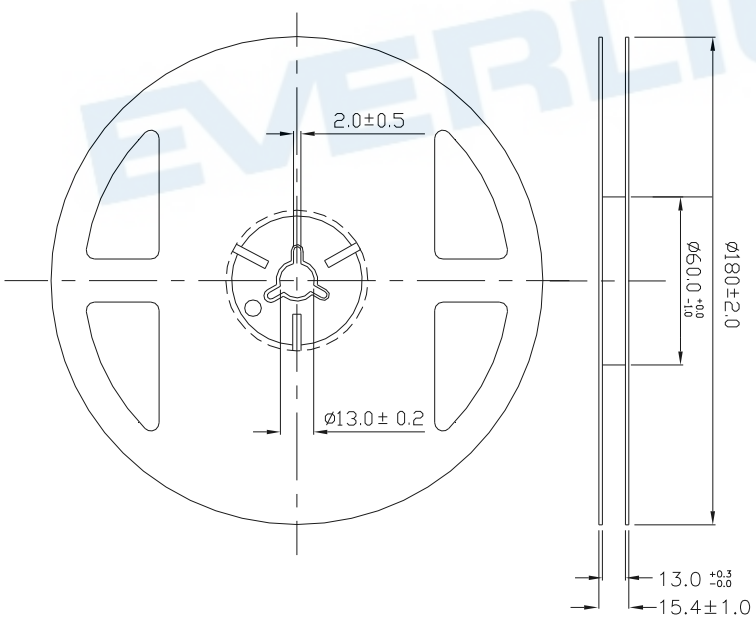
Moisture Resistant Packing Materials

Label Explanation



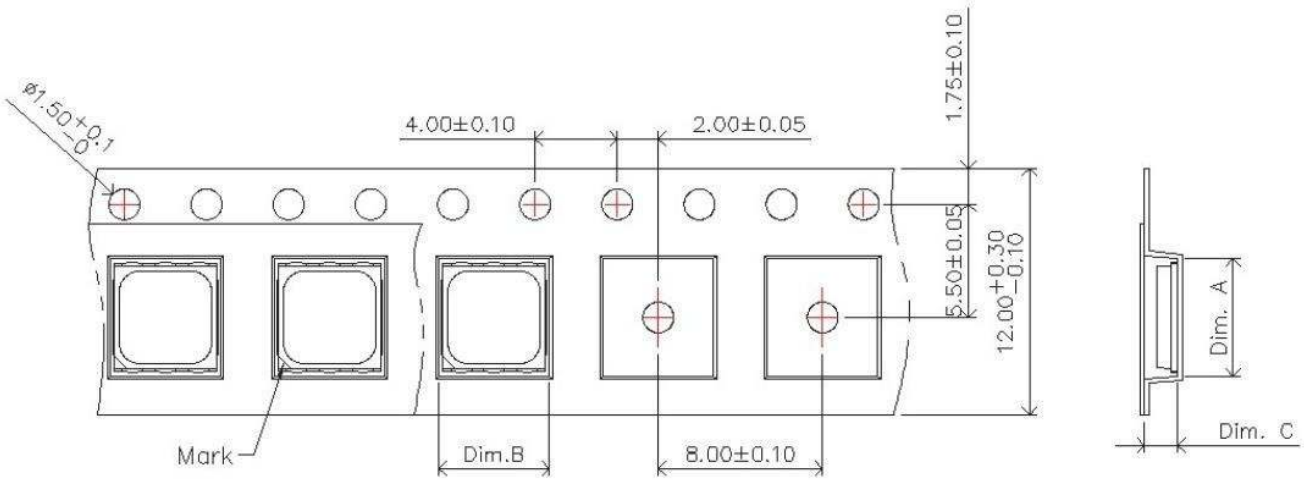
- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions

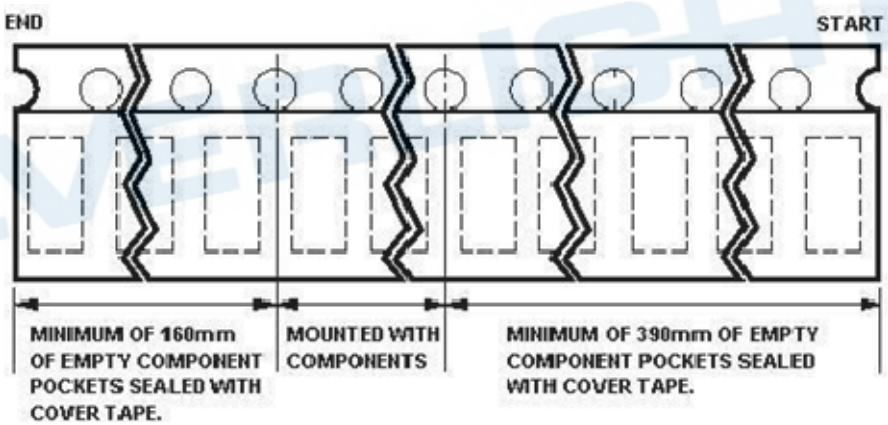


Note:
Tolerances unless mentioned ±0.1mm. Unit = mm

Carrier Tape Dimensions: Loaded Quantity 1000 pcs Per Reel

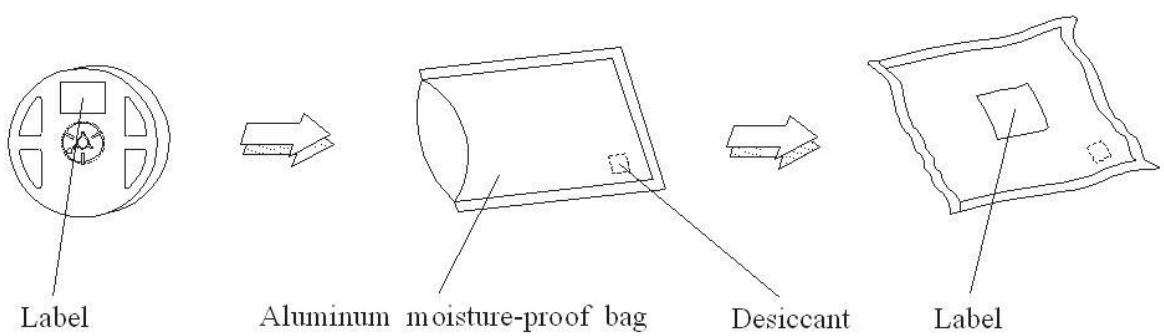


Dim. A	Dim. B	Dim. C	Q'ty/Reel
5.70±0.10	5.38±0.10	1.60±0.10	1K



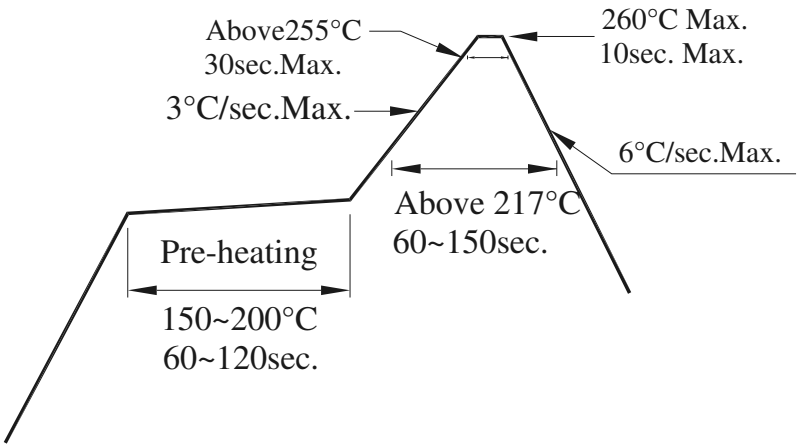
Notes:
1. Tolerances unless mentioned ±0.1mm. Unit = mm
2.Minimum packing amount is 250/500 pcs per reel

Moisture Resistant Packing Process

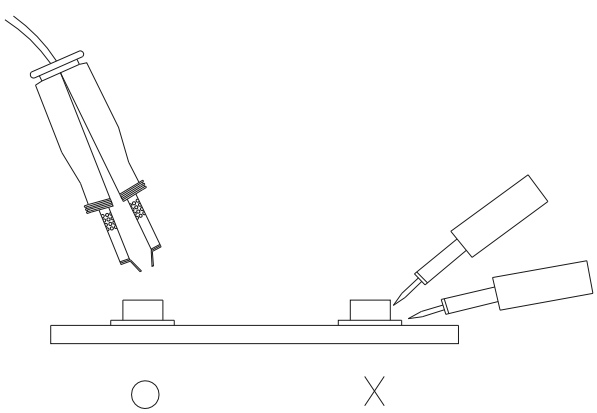


Precautions for Use

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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