DATASHEET

Top View LEDs
61-236-ICRQHGRBYC-A05-ET-CS

Features

- P-LCC-6 package.
- Inner reflector and white package.
- Colorless clear resin
- Wide viewing angle 120°.
- White SMT package.
- 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).

Description

The 61-236-IC is a 3-channels LED driver with 8 bit PWM linear control. The 61-236-IC uses a single communication wire to identify LED PWM signal and in total 24bit RGB display. This is a very simple and cost effective for any LED model design.
Due to the package design, 61-236 has wide viewing angle, and low power consumption. The mixture of blue LEDs, green LEDs and red LEDs results in a white emission. And makes it ideal for light pipe application.
The LED PWM output controlled by duty ration which depends on the 24 bit data each package. All package will latch new data when DIN port received the reset signal. (>50us low-level signal)

Applications

- Indoor / Outdoor LED video display
- Full color LED light strip
- LED decorative lighting
- Gaming Exterior

Device Selection Guide

Type	Chip Materials	Emitted Color	Resin Color
RQH	AlGaInP	Brilliant Red	Water Clear
GR	InGaN	Brilliant Green	Water Clear
BY	InGaN	Brilliant Blue	Water Clear

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Power supply voltage	Vdd	6.0	V
Output Voltage	Vout	17	V
Input voltage	Vin	-0.5~Vdd+0.5	V
LED Output Current	Iout	5	mA
Operating Temperature	T_{opr}	-25 ~ +85	℃
Storage Temperature	Tstg	-40 ~ +90	℃
ESD	ESD	2000	V
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 Intensity	Iv	RQH	90	-----	280	mcd	
		GR	224	-----	900		
		BY	56	-----	224		
Viewing Angle	$2\theta_{1/2}$		-----	120	-----	deg	I_F=5mA
Dominant Wavelength	λd	RQH	617.5	-----	629.5	nm	
		GR	518	-----	533		
		BY	460	-----	475		

Notes:
1. Tolerance of Luminous Intensity: ±11%
2. Tolerance of Dominant Wavelength: ±1nm

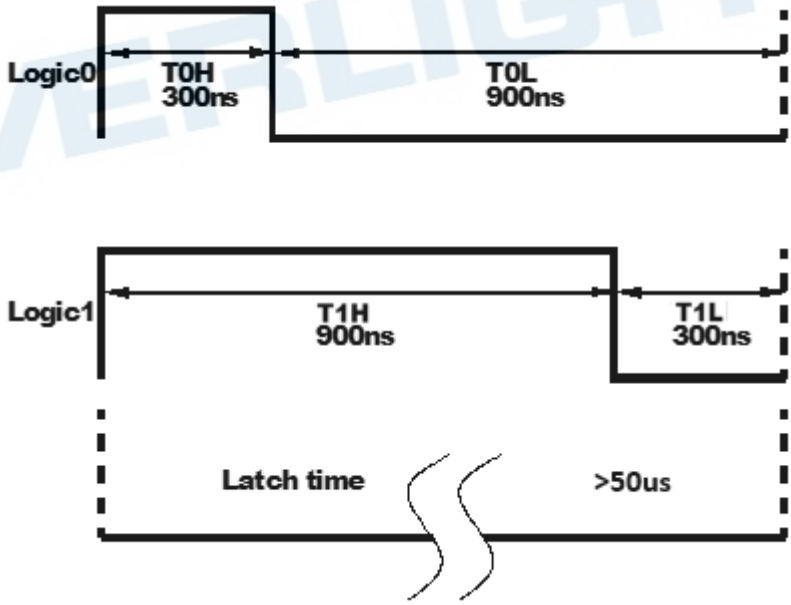
Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Output Current	IOL	---	5	---	mA	---
Supply Voltage	Vdd	4.5	5	5.5	V	---
Input current	I_I	---	---	±1	μA	VI=Vdd/Vss
Input Voltage	V_{IH}	3.3	---	---	V	Din, SET
	V_{IL}	---	---	0.3Vdd	V	Din, SET
Dynamic Current Dissipation	IDD_{dyn}	---	2.5	--	mA	

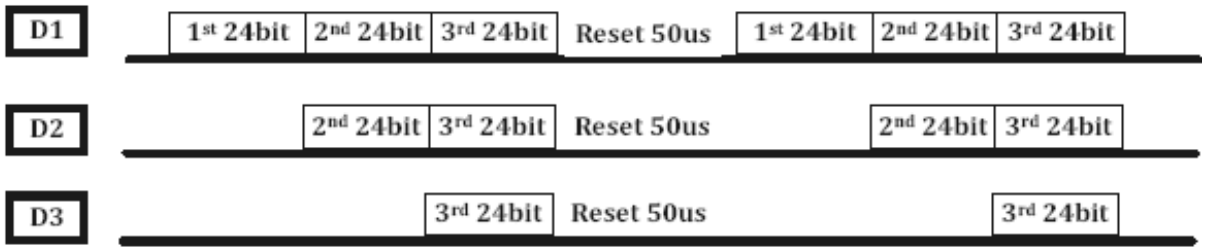
Data transfer time

T0H	0 code, high voltage time	0.30 μs	±80ns
T1H	1 code, high voltage time	0.90 μs	±80ns
T0L	0 code, low voltage time	0.90 μs	±80ns
T1L	1 code, low voltage time	0.30 μs	±80ns
RES	Low voltage time	Above 50μs	---

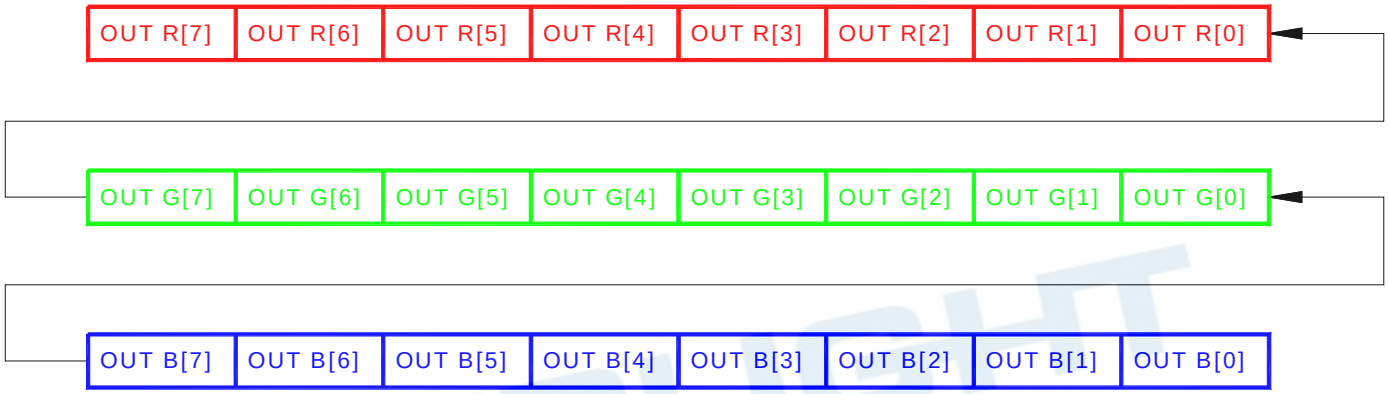
Timing Wave Form：



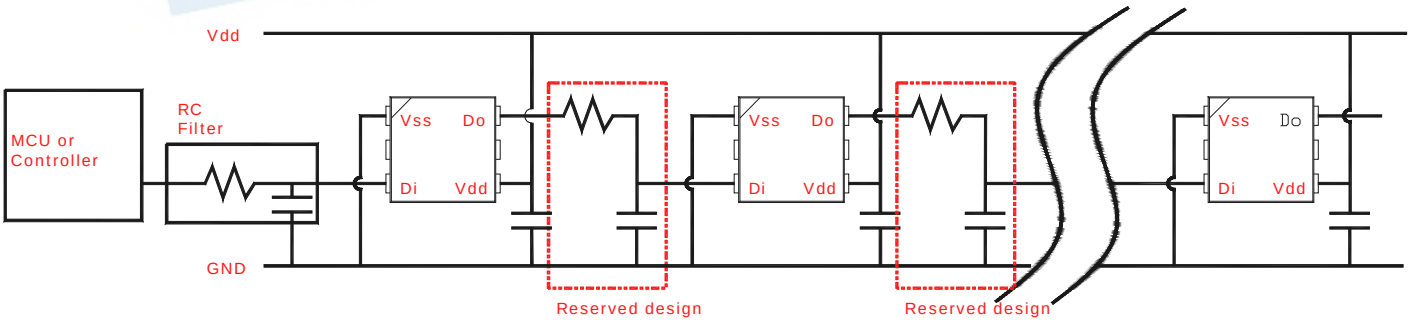
Data Communication：



Single Data in 24bit for RGB：

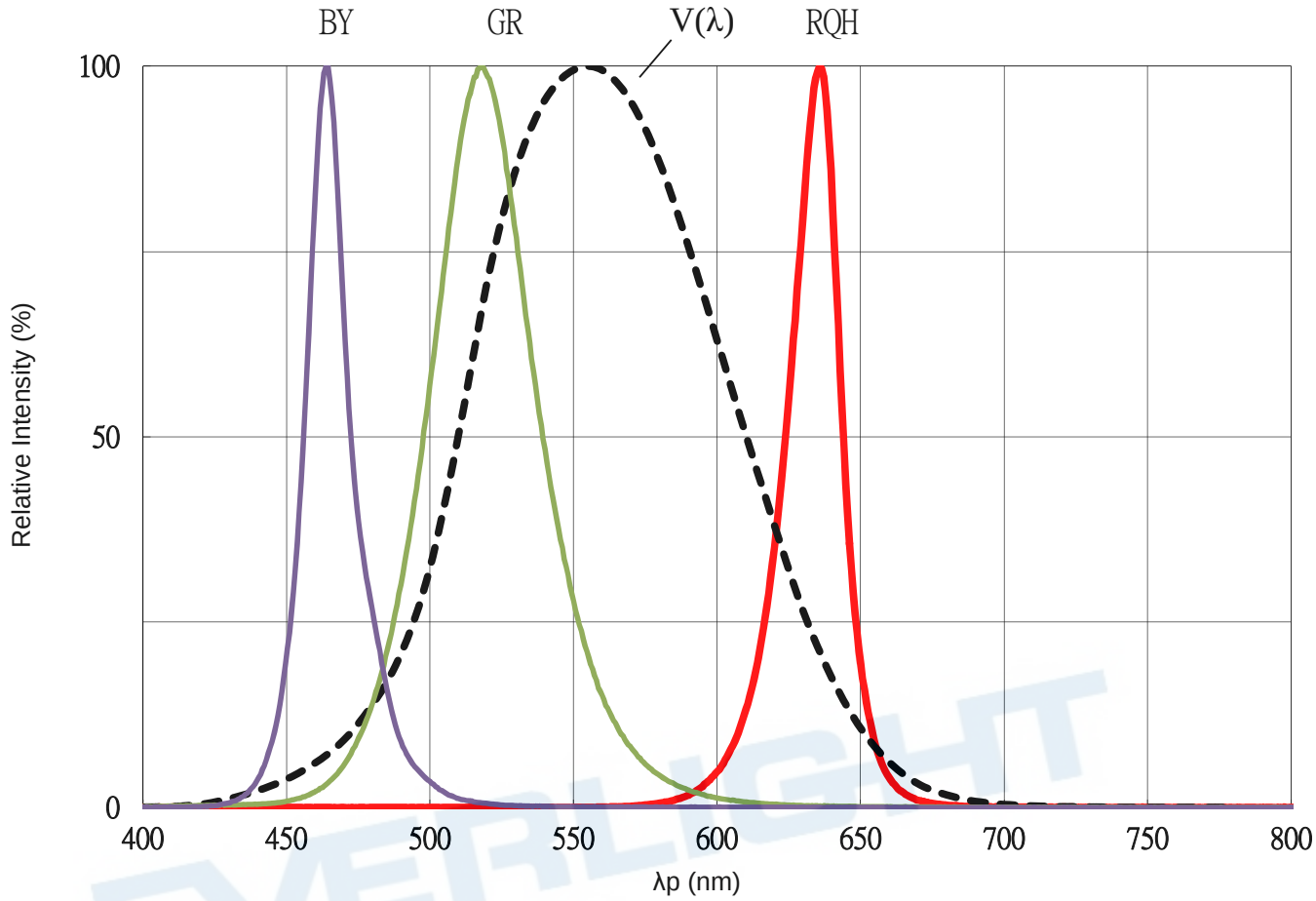


5V Application circuit：



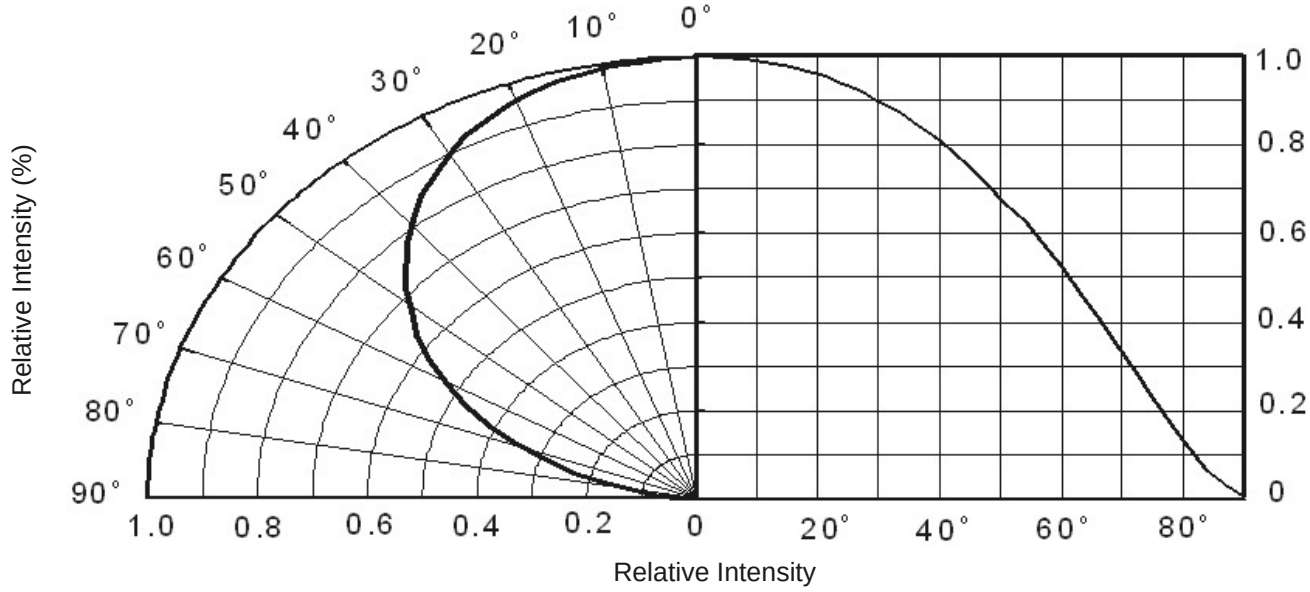
Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distribution

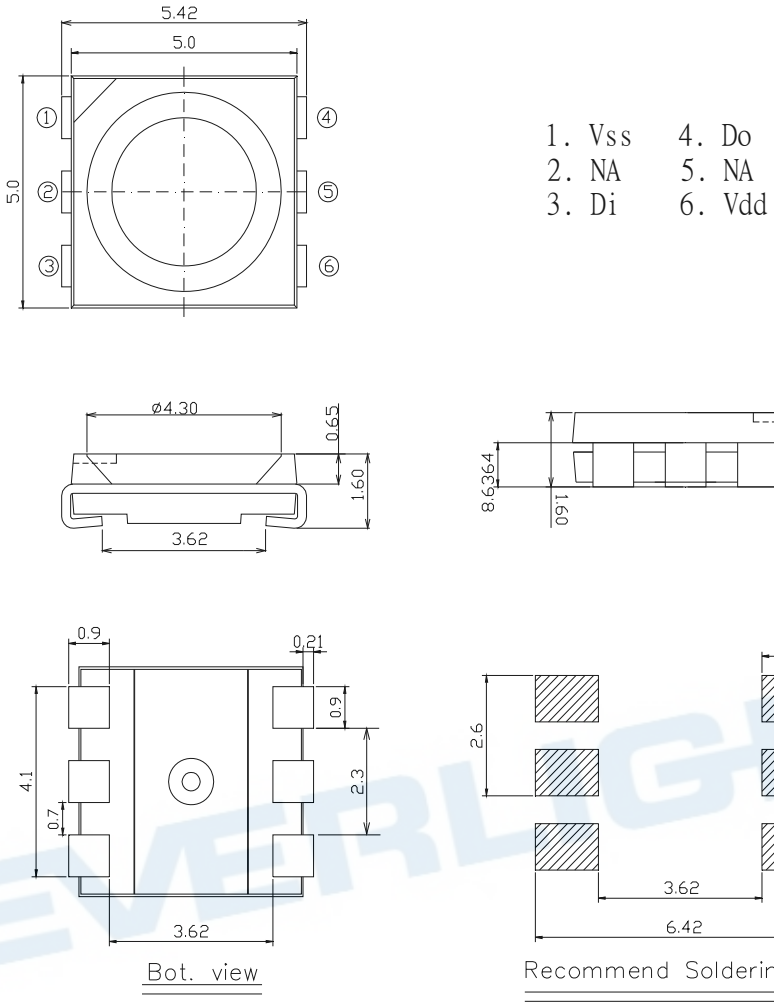


Note: V(λ)=Standard eye response curve;

Diagram Characteristics of Radiation



Package Dimension



1. Vss 4. Do
2. NA 5. NA
3. Di 6. Vdd

Suggested pad dimension is just reference only.

Please modify the pad dimension based on individual need.

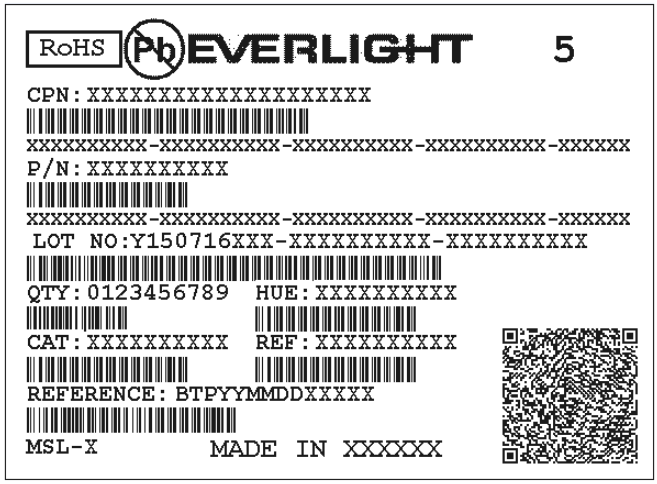
PIN Configuration

NO.	Symbol	Function description
1	Vss	Ground
2	NA	NA
3	Di	Control data signal input
4	Do	Control data signal output
5	NA	NA
6	Vdd	Power supply control circuit

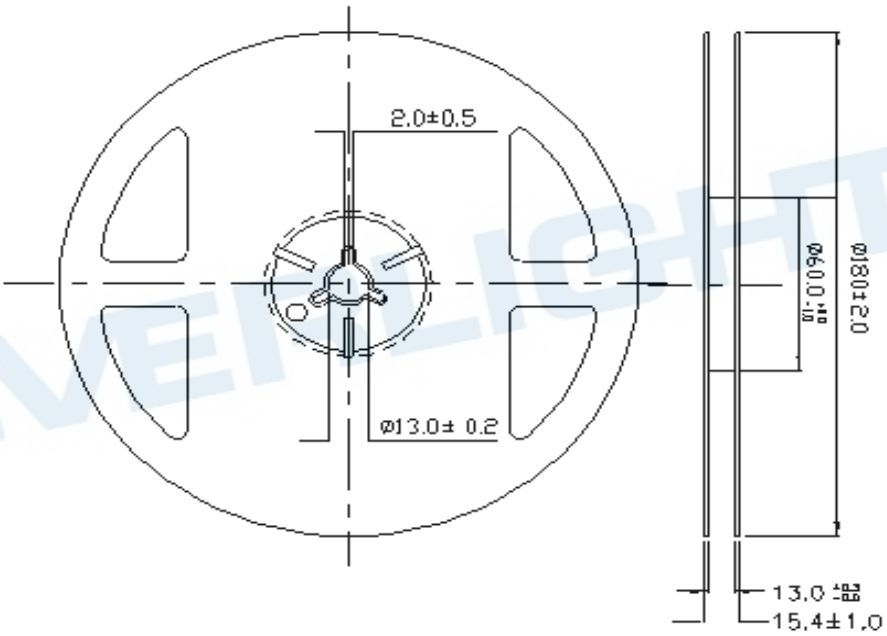
Note: Tolerances unless mentioned ±0.1mm. Unit = mm

Moisture Resistant Packing Materials

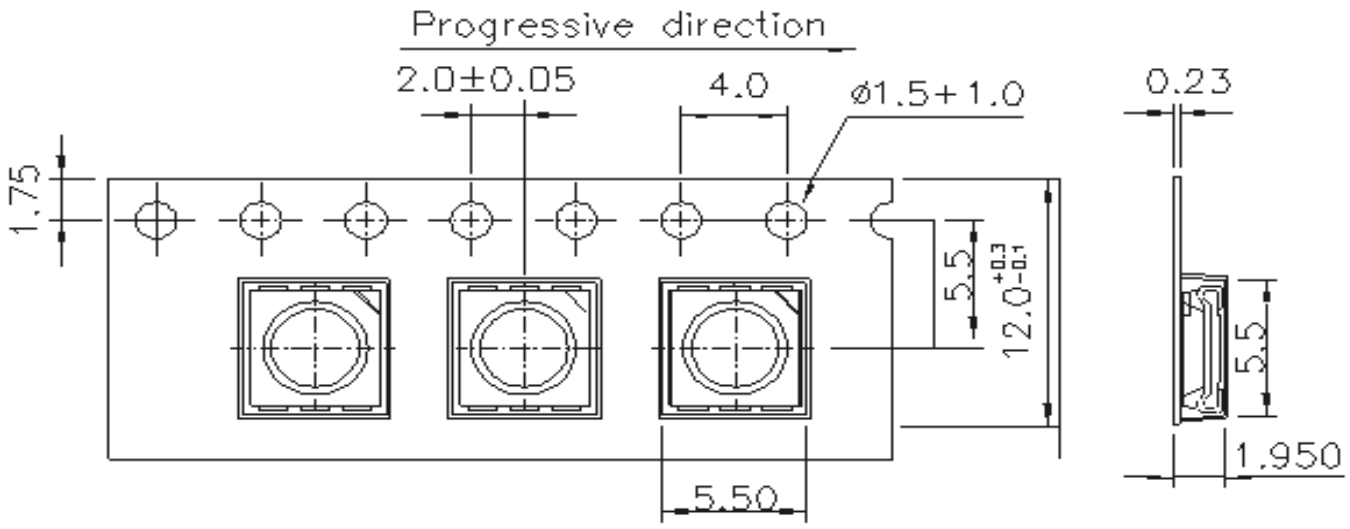
- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dominant Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number



Reel Dimensions

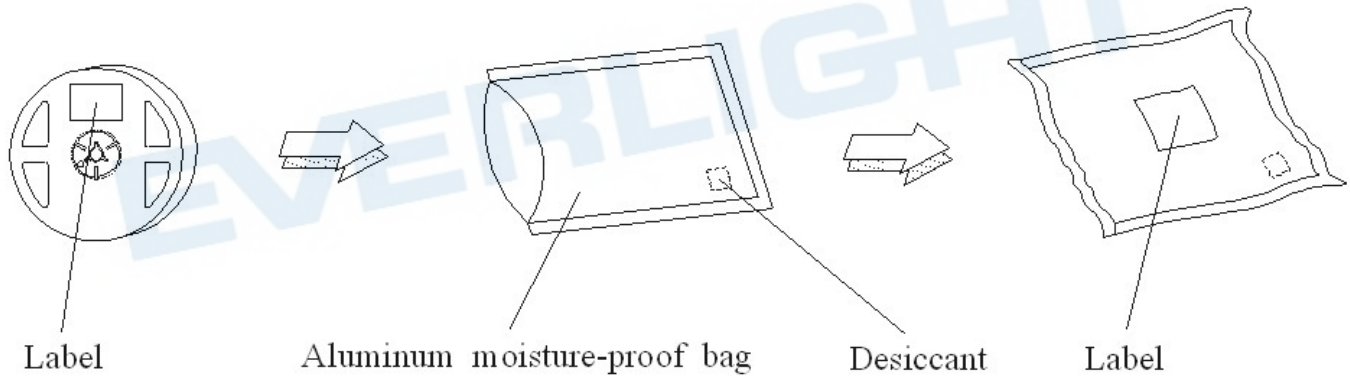


Carrier Tape Dimensions: Loaded Quantity 800 pcs Per Reel



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

Moisture Resistant Packing Process

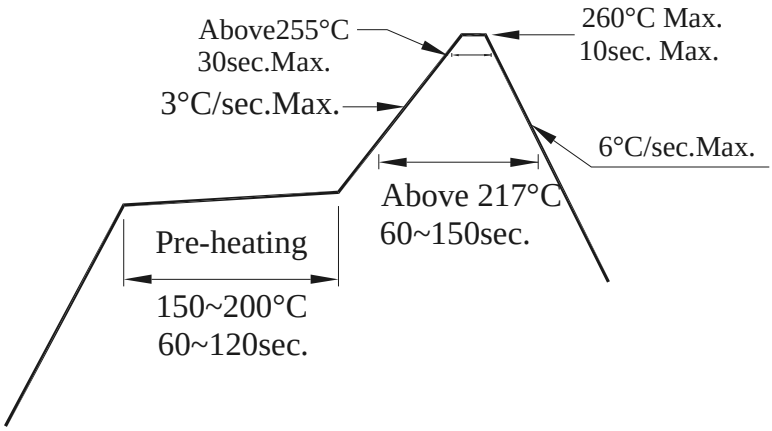


Note: Tolerances unless mentioned ±0.1mm. Unit = mm

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 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 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.
2.4 It is recommended to solder the LED as soon as possible after unpacking the aluminum envelop, But in case that the LED have to be left unused after unpacking envelop again is requested.
The LED should be soldering within 24 hours after opening the package.
If baking is required, A baking treatment should be performed as follows:
60℃±5℃ for more than 24 hours.

3. Soldering Condition

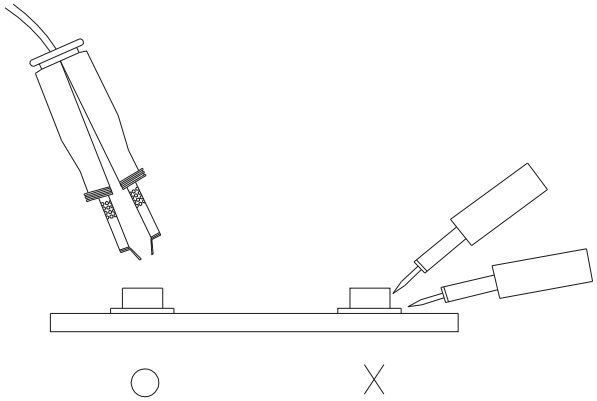
3.1 Pb-free solder temperature profile
3.2 Reflow soldering should not be done more than two times.
3.3 When soldering, do not put stress on the LEDs during heating.
3.4 After soldering, do not warp the circuit board.

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.

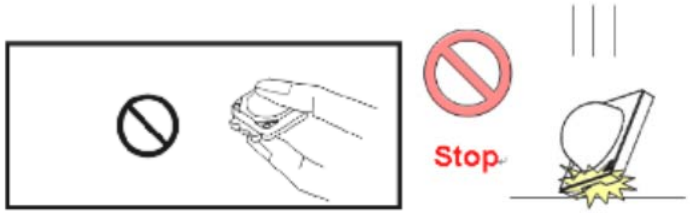
5. Repairing

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.



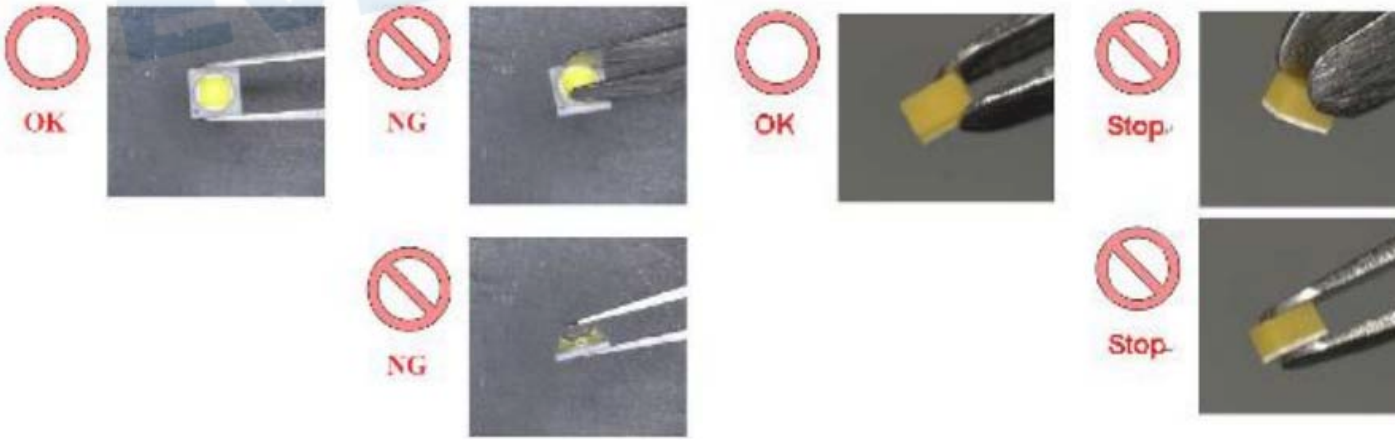
Directions for Use

1. When handling the product, do not touch the LED with bare hands, since it may contaminate the emitting surface and may affect the optical characteristics, Excessive force on the LED may result in the deformation and/or wire breakage, leading to no light emission



2. When the encapsulate contains silicone resin, the emitting surface is relatively soft; it can be damaged, chipped, and detached form the package due to excessive force and the LED package can be deformed. What is worse, the bonding wire can break up, resulting in degradation of the reliability performance. Customers should take care not to apply stress to the emitting surface. It is advised that the nozzle size should be larger than the surface of the silicone resin.

3. When using tweezers, prevent excessive stress form being applied to the LEDs; otherwise, the resin surfaces might be damaged, chipped, detached from the packages and the LED packages might be deformed. What is worse, the bonding wires might break up, resulting in no light emission. If necessary pick up by the package so as not to touch the encapsulating resin surface.



4. When you use an automatic assembly machine, select the pick-and-place nozzle not to damage the encapsulating resin.
   If a pick-and-place nozzle has a smaller diameter then the LED`s emitting surface, it can damage the emitting surface when collecting the LED, resulting in its emission failure. The suitable nozzle should be installed into the assembly machine.
   The LED`s placing location can vary, when the rotary head mounting machine is used. Customers should evaluate the mounting performance in advance

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.

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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.
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