

Top View LEDs

C3227TDWN3S1-GRBC0112-2T



Features

- P-LCC-4 package.
- Inner reflector and white package.
- 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)
- **MSL Level 3**

Description

The C3227 is a 3-channels LED driver with 8 bit PWM linear control. The C3227 uses a single communication wire to identify LED PWM signal and in total 24-bit RGB display. This is a very simple and cost effective for any LED model design.

Applications

- Amusement equipment
- Information boards
- Gaming machine

Device Selection Guide

Type	Chip Materials	Emitted Color
R	AlGaInP	Brilliant Red
G	InGaN	Brilliant Green
B	InGaN	Brilliant Blue

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Power supply voltage	VDD	6.0	V
Operating Temperature	T _{opr}	-25 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +90	°C
ESD	ESD	2000	V
Soldering Temperature	T _{sol}	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.	

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Type	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v	R	224	---	560	mcd	V _{DD} =5V
		G	710	---	1800		
		B	180	---	450		
Viewing Angle	2θ _{1/2}		---	120	---	deg	
Dominant Wavelength	λ _d	R	617.5	---	629.5	nm	
		G	519.5	---	531.5		
		B	464.5	---	476.5		

Notes:

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

Electrical Characteristics

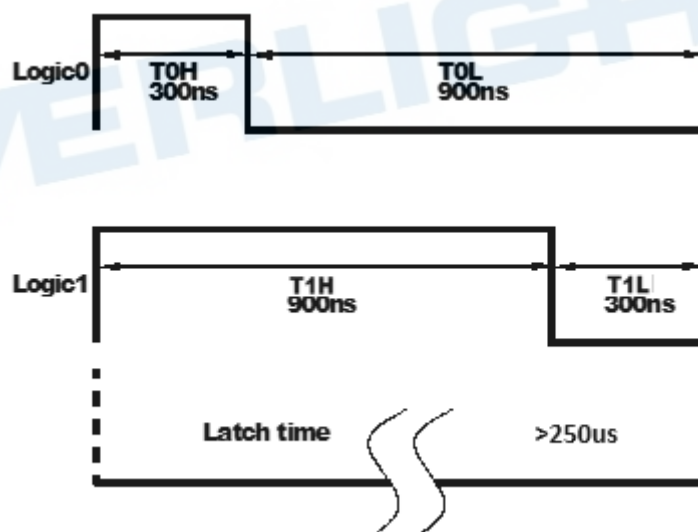
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Output Current	IOL	---	12	---	mA	Per Chip
Supply Voltage	Vdd	4.5	5	5.5	V	---
Input leakage	Ileak	---	---	1	μA	DI=0
Input Voltage	V _{IH}	3	---	VDD	V	DIN, SET
	V _{IL}	---	---	1.0	V	DIN, SET
Dynamic Current Dissipation	IDD _{dyn}	---	1.0	--	mA	

Note: Please keep DI at low state while VDD=0V, otherwise, there will be leakage current from DI to VDD path in the chip, and there may happen incomplete power on reset issue while Power-on again.

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 250μs	---

Timing Wave Form :



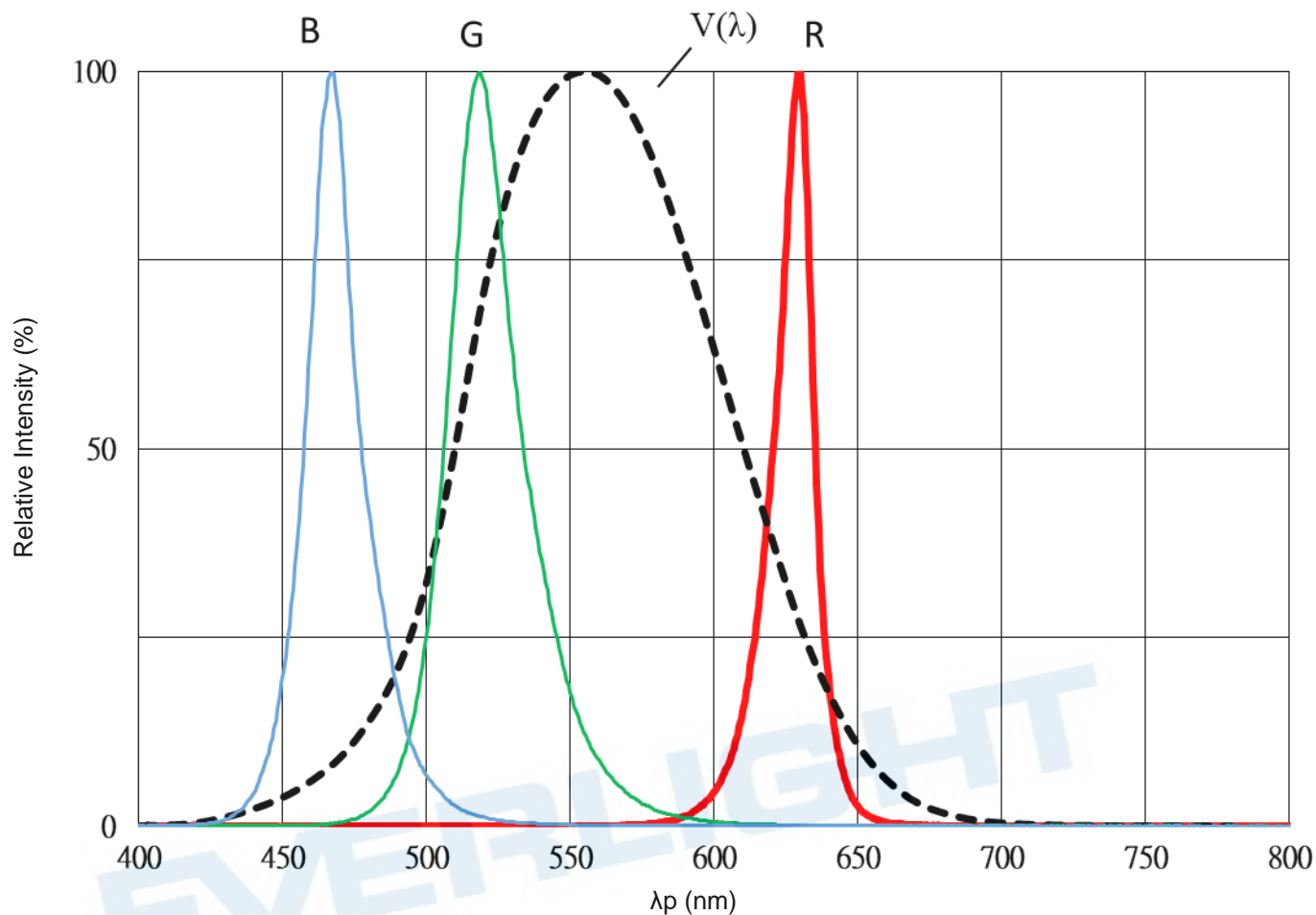
Timing diagram for the 3rd 24-bit data word (D3). The diagram shows two methods of latching the data. In the left method, the 3rd 24-bit word is latched at a time greater than 250 μs. In the right method, the 1st and 2nd 24-bit words are latched earlier, and the 3rd 24-bit word is latched at a time greater than 250 μs.

The diagram illustrates a 3-stage pipeline with 8 registers per stage. The stages are color-coded: Stage 1 (green), Stage 2 (red), and Stage 3 (blue). Each stage has an output register labeled OUT G[i], OUT R[i], and OUT B[i] respectively, where i ranges from 0 to 7. Arrows indicate the data flow from right to left between the stages.

The diagram illustrates a power supply system for an MCU or Controller. It features an RC Filter connected to the Vdd rail. The system includes three DC-DC converters, each with Vss and Do inputs, and Di and Vdd outputs. The first two converters are labeled 'Reserved design' and are enclosed in red dashed boxes. The third converter is labeled 'Vss Do' and 'Di Vdd'. The diagram shows the connection of Vdd and GND rails, and the placement of capacitors and resistors.

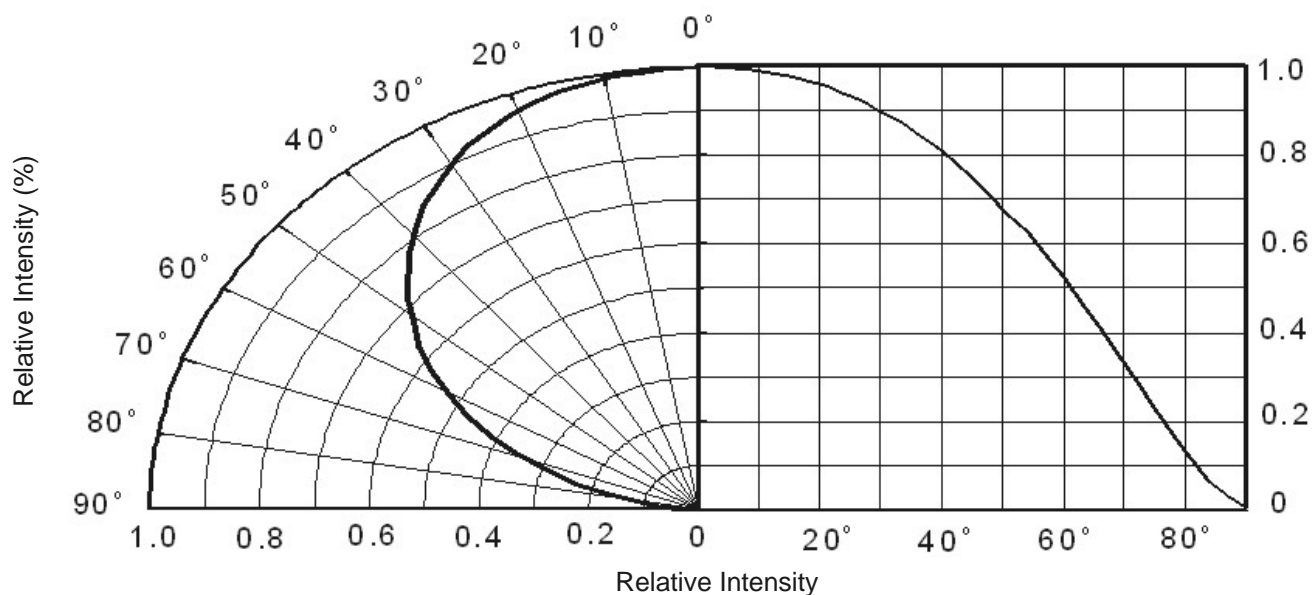
Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distribution

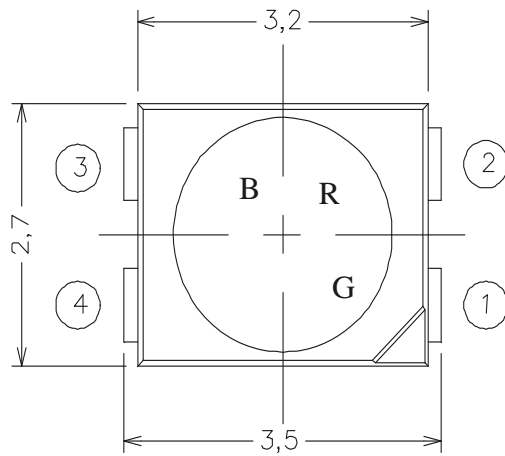


Note: $V(\lambda)$ =Standard eye response curve;

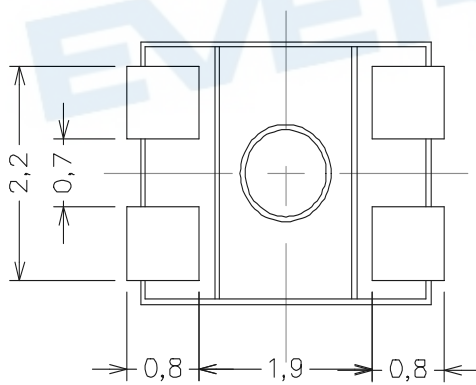
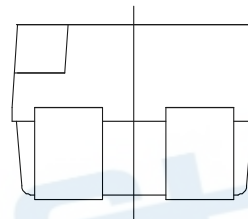
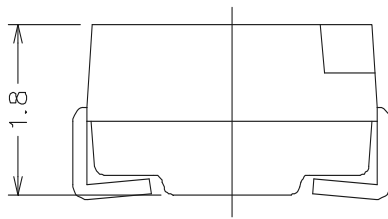
Diagram Characteristics of Radiation



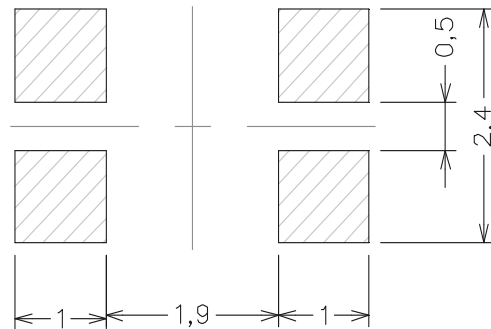
Package Dimension



1. DI
2. VDD
3. DO
4. VSS



Bot. view



Soldering patterns

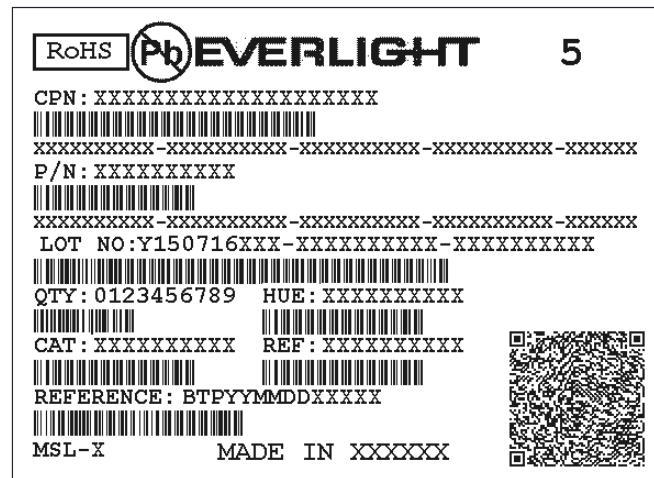
PIN Configuration

NO.	Symbol	Function description
1	DI	Control data signal input
2	VDD	Power supply control circuit
3	DO	Control data signal output
4	VSS	Ground

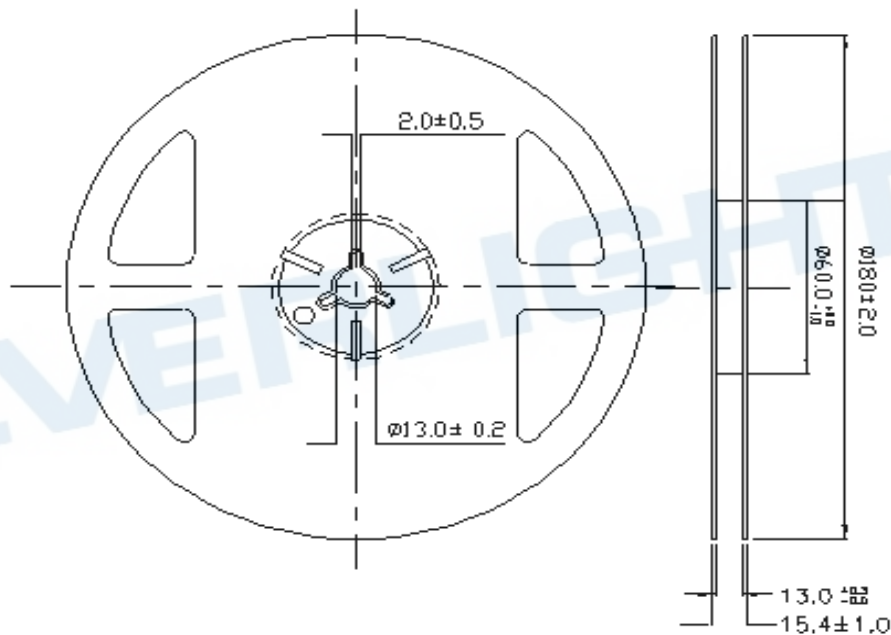
Note: Tolerances unless mentioned ± 0.1 mm. Unit = mm

Moisture Resistant Packing Materials

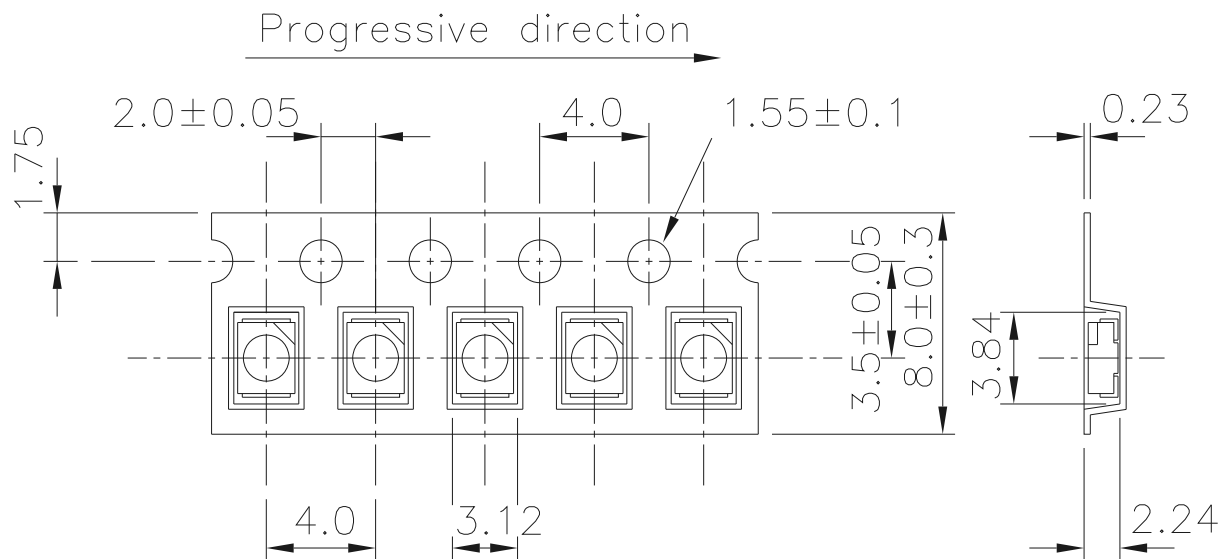
- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dominant Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number



Reel Dimensions

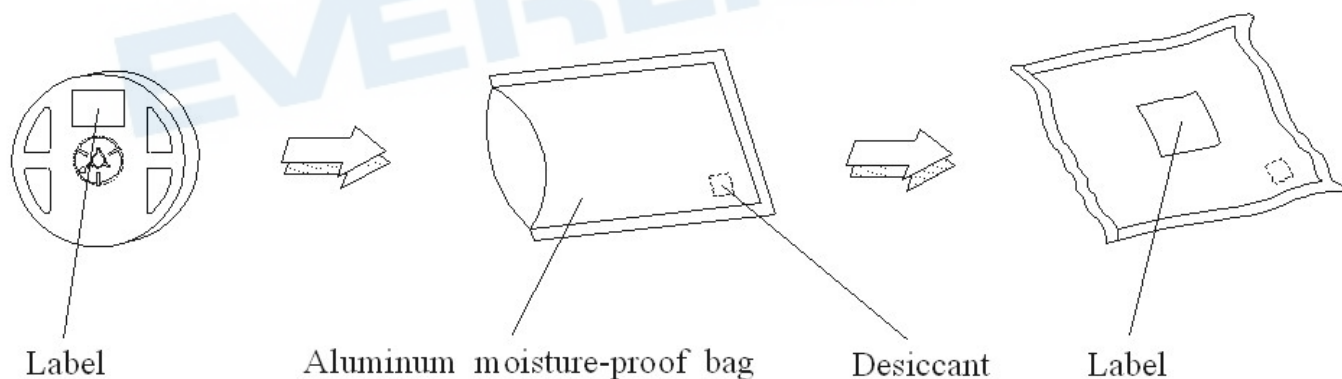


Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel



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

Moisture Resistant Packing Process

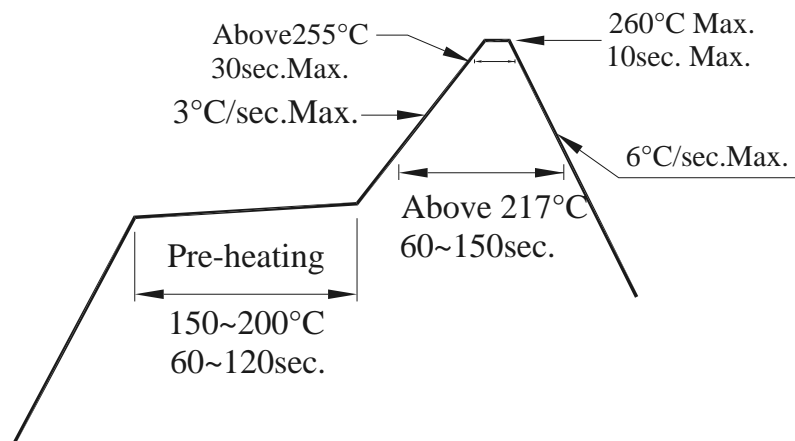


Note: Tolerances unless mentioned ± 0.1 mm. Unit = mm

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°C 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°C 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 168 hours after opening the package.

If baking is required, A baking treatment should be performed as follows:

60°C±5°C 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.

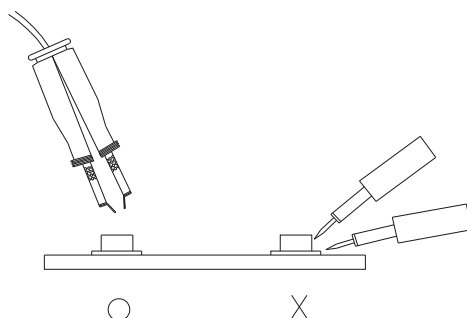
3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C 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

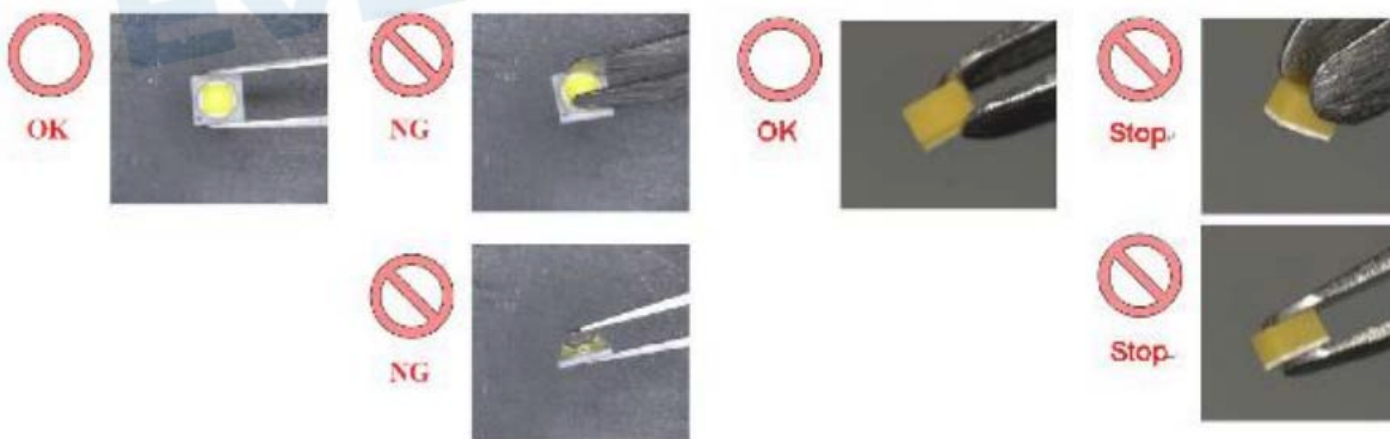
1. When handling the product, do not touch the LED with bare hands, since it may contaminate the emitting surface and may affect the optical characteristics, Excessive force on the LED may result in the deformation and/or wire breakage, leading to no light emission



2. When the encapsulate contains silicone resin, the emitting surface is relatively soft; it can be damaged, chipped, and detached from 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 from 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 than 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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