

### 3mm Advanced Super Flux LEDs 31-01-Y5C-ARTC-AM

**Lead (Pb) Free Product - RoHS Compliant**



#### Features

- Piranha package.
- Colorless clear resin.
- Low thermal resistance.
- Packaged in tubes for Automatic Insertion Equipment.
- Luminous Intensity: 4500 to 6000mlm at70mA..
- Qualification according to AEC-Q101
- Compliance with EU REACH.
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm)

#### Applications

- Electronic signs and signals
- General lighting application
- Automotive Application for Tail light

#### Device Selection Guide

LED Part No.	Chip	Emitted Color	Resin Color
	Material		
31-01-Y5C-ARTC-AM	AlGaInP	Brilliant Yellow	Water Clear

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## Product Nomenclature

31	-	01	-	Y5	C	-	A	RT	C	-	AM
1		2		3	4		5	6	7		8

The product name is designated as below:

1.	Product type
2.	Lead-frame type
3.	Chip code
4.	Resin color
5.	Dominant Wavelength
6.	Power & Luminous Intensity
7.	Range of Forward Voltage specification
8.	Application

**Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating	Unit
Reverse Voltage	$V_R$	5	V
Continuous Forward Current	$I_F$	70	mA
Power Dissipation	$P_d$	220	mW
LED Junction Temperature	$T_j$	115	°C
Operating Temperature	$T_{opr}$	-40 ~ +100	°C
Storage Temperature	$T_{stg}$	-40 ~ +100	°C
Electrostatic Discharge	$R_{th\ J-A}$	150	K/W
ESD	$ESD_{HBM}$	2000	V
	$ESD_{MM}$	200	V
Soldering Temperature(T=5 sec)	$T_{sol}$	DIP Soldering : 260 °C for 5 sec. Hand Soldering : 350°C for 3 sec.	

**Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Total Flux	$\Phi_v$	4500	6000	9000	mlm	$I_F = 70\text{mA}$
Peak Wavelength	$\lambda_p$	-----	591	-----	nm	$I_F = 70\text{mA}$
Dominant Wavelength	$\lambda_d$	586	589	594	nm	$I_F = 70\text{mA}$
Spectrum Radiation Bandwidth	$\Delta\lambda$	-----	15	-----	nm	$I_F = 70\text{mA}$
Viewing Angle	$2\theta_{1/2}$	-----	55	-----	deg	$I_F = 70\text{mA}$
Forward Voltage	$V_F$	2.1	2.6	3.1	V	$I_F = 70\text{mA}$
Reverse Current	$I_R$	-----	-----	10	$\mu\text{A}$	$V_R = 5\text{V}$

Note:

1. Tolerance of Total Flux:  $\pm 11\%$
2. Tolerance of Dominant Wavelength:  $\pm 1\text{nm}$
3. Tolerance of Forward Voltage:  $\pm 0.1\text{V}$

**Bin Range of Dominant Wavelength (Ta=25°C)**

Bin	Min.	Max.	Unit	Condition
0	586	590	nm	I <sub>F</sub> =70mA
1	590	594		

Note:

Tolerance of Dominant Wavelength: ±1nm

**Bin Range of Forward Voltage (Ta=25°C)**

Bin	Min.	Max.	Unit	Condition
3	2.1	2.3	V	I <sub>F</sub> =70mA
4	2.3	2.5		
5	2.5	2.7		
6	2.7	2.9		
7	2.9	3.1		

Note:

Tolerance of Forward Voltage: ±0.1V

**Bin Range of Total Flux (Ta=25°C)**

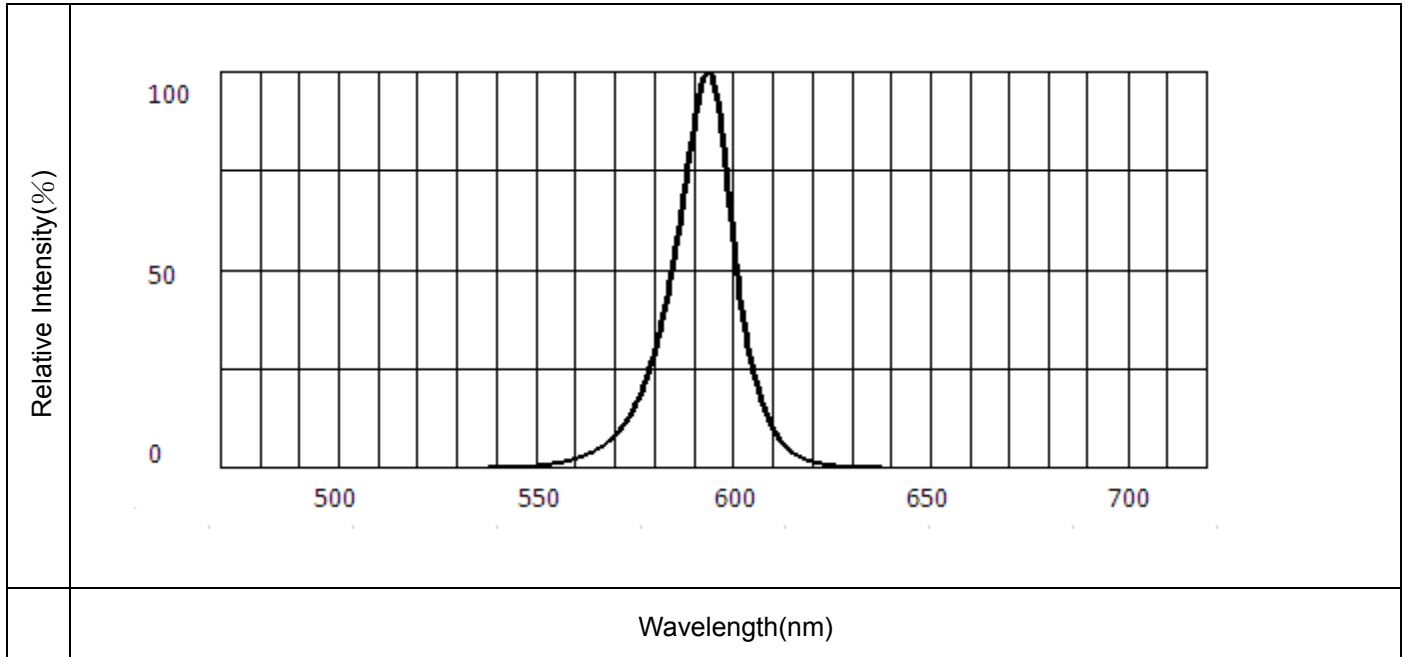
Bin	Min.	Max.	Unit	Condition
R	4500	5650		
S	5650	7150	mlm	I <sub>F</sub> =70mA
T	7150	9000		

Note:  
Tolerance of Total Flux: ±11%



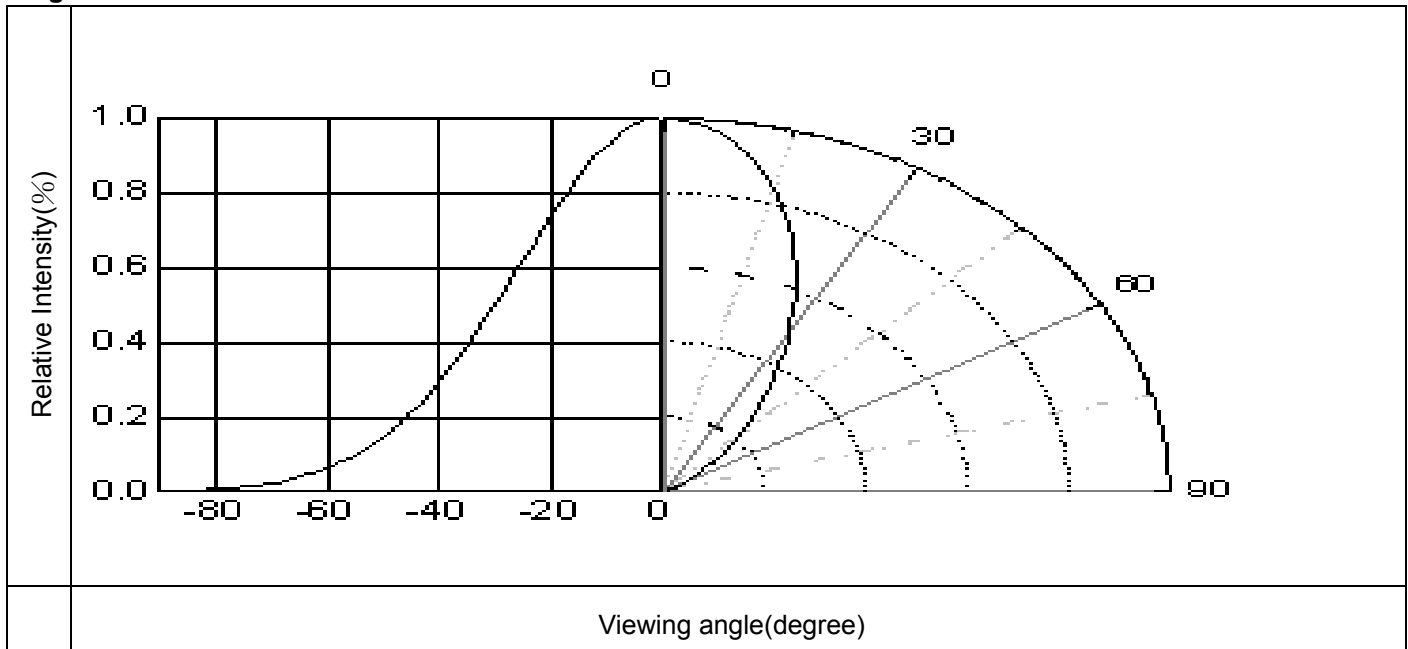
Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distribution

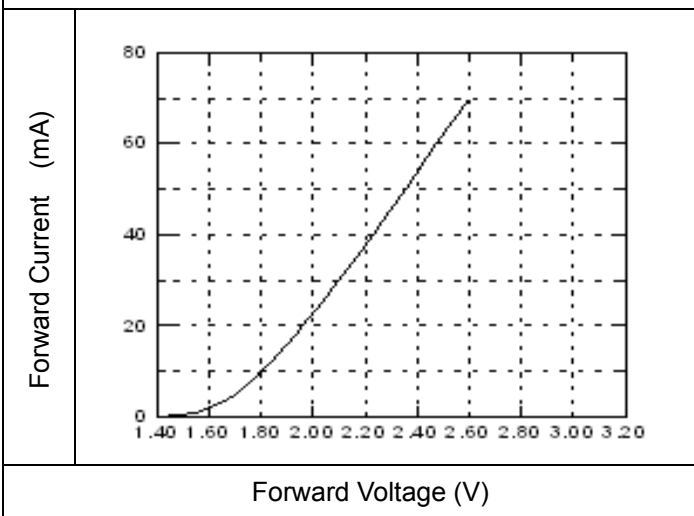


Note:  $V(\lambda)$ =Standard eye response curve;  $I_F = 70\text{mA}$

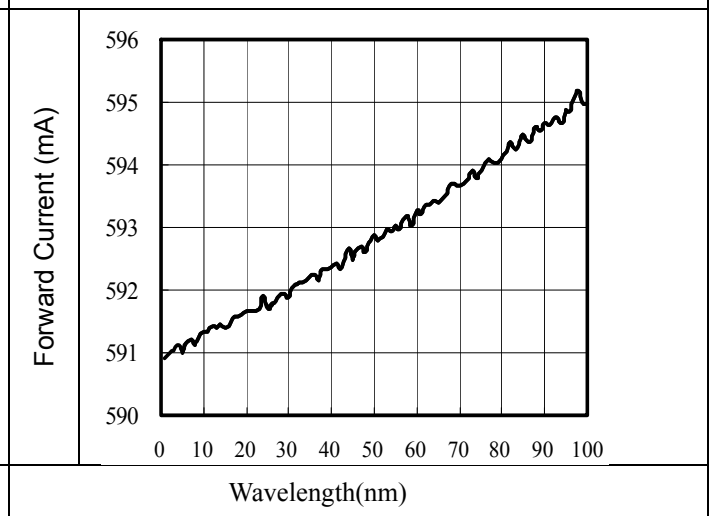
Diagram Characteristics of Radiation



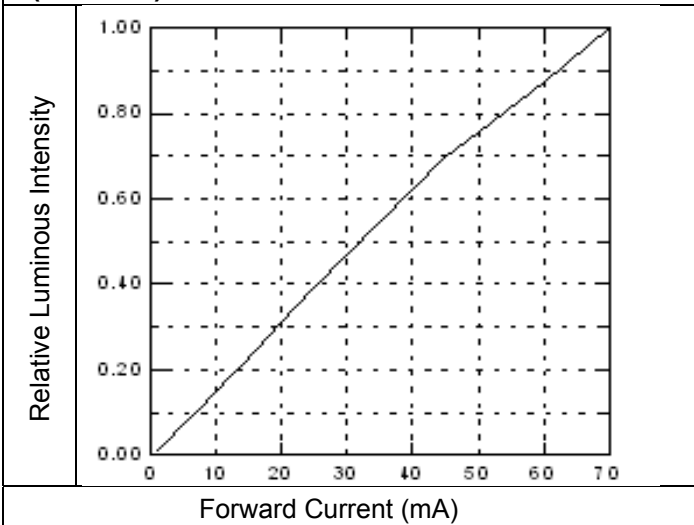
**Forward Current vs. Forward Voltage**  
(Ta=25°C)



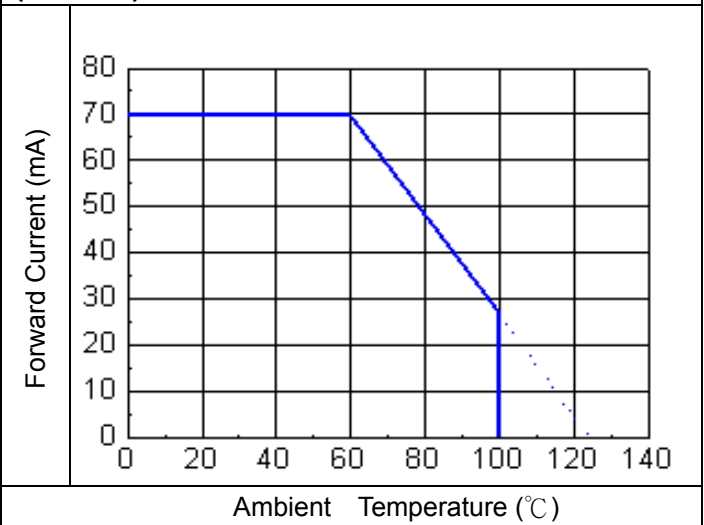
**Dominant Wavelength vs. Wavelength**  
(Ta=25°C)



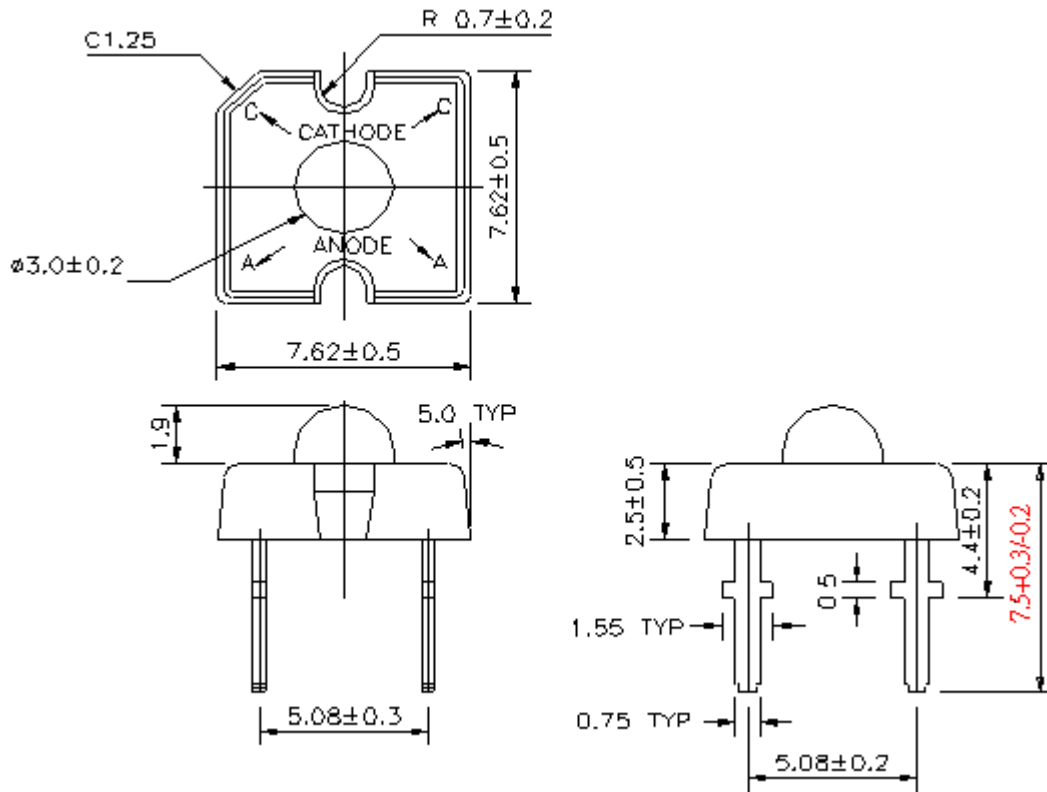
**Relative Luminous Intensity vs. Forward Current**  
(Ta=25 °C)



**Forward Current vs Ambient Temperature**  
(Ta=25 °C)



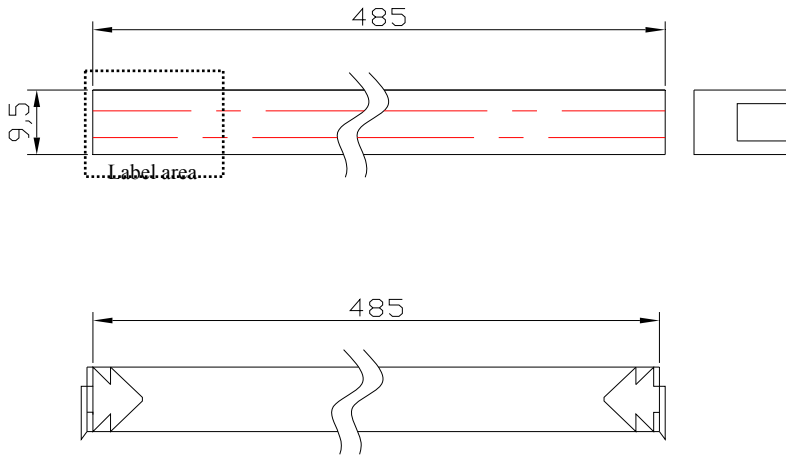
## Package Dimension



### Note:

1. All dimensions are in millimeters
2. Tolerances unless dimensions  $\pm 0.25$ mm
3. An epoxy meniscus may extend about 1.5mm(0.059") down the leads

**Antistatic Packing Materials Tube**  
**Tube**



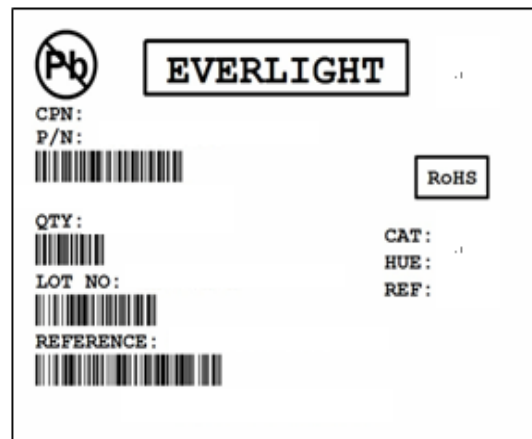
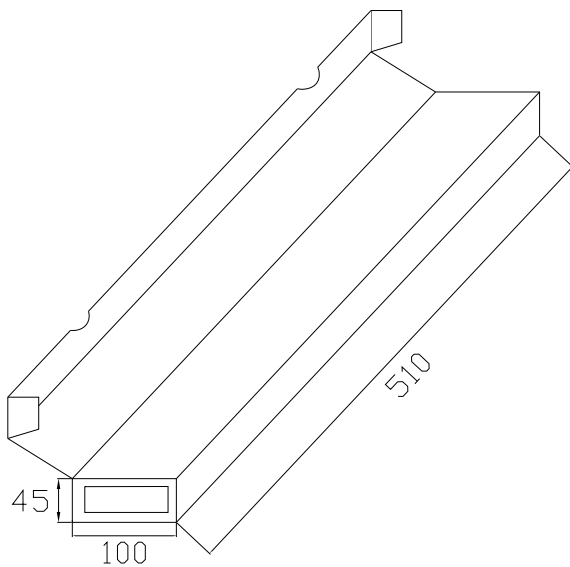
EVERLIGHT	PART NO:	CAT:
	LOT NO:	QTY:

**Tube Label Explanation**

- QTY: Packing Quantity
- LOT No: Lot Number
- CAT: Rank of (VF)(Note\*)(ΦV)  
Note:  $\lambda_d$ /CIE/Color temperature

Note: Tolerances unless mentioned  $\pm 2.0$ mm. Unit = mm

**Standard Box**



**Outer Label Explanation**

- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Rank of (Note\*)  
Note:  $\lambda_d$ /CIE/Color temperature
- Luminous Flux(Intensity)
- HUE/REF: Reference
- LOT No: Lot Number

Note: Tolerances unless mentioned  $\pm 3.0$ mm. Unit = mm

**Packing Quantity**

Packing material	Length × Width × height (mm)	Tube Quantity (Pcs)	LED Quantity (Pcs)
Tube	485 x 9.5 x 12	1	60
Standard box	510 x 100 x 45	30	1800
Large box	510 x 150 x 90	105	6300

Note:

1. Normal packing specification is use standard box, unless already defined initially.
2. Vacuum packing with anti-static bag after packing in standard box.
3. Specifications are subject to change without prior notice.

**Precautions for use**

**1. Lead Forming**

- During lead formation, the leads should be bent at a point at least 3mm from the base of the epoxy bulb.
- Lead forming should be done before soldering.
- Avoid stressing the LED package during leads forming. The stress to the base may damage the LED's characteristics or it may break the LEDs.
- Cut the LED leadframes at room temperature. Cutting the leadframes at high temperatures may cause failure of the LEDs.
- When mounting the LEDs onto a PCB, the PCB holes must be aligned exactly with the lead position of the LED. If the LEDs are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the LEDs.

**2. Storage**

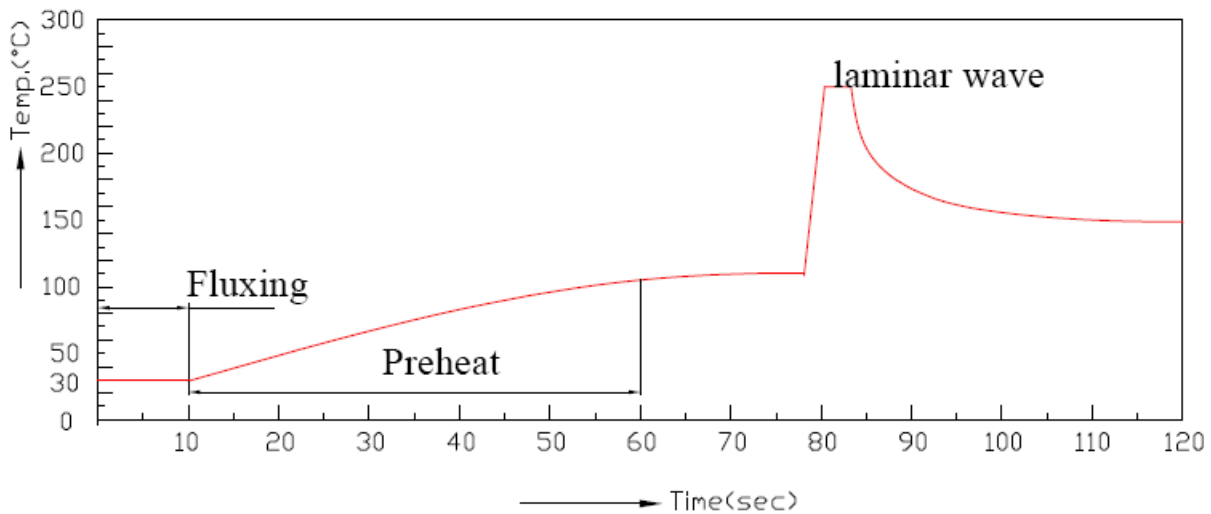
- The LEDs should be stored at 30°C or less and 60%RH or less after being shipped from Everlight and the storage life limits are 3 months. If the LEDs are stored for 3 months or more, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material.
- Please avoid rapid transitions in ambient temperature, especially, in high humidity environments where condensation can occur.

**3. Soldering**

- Careful attention should be paid during soldering. Solder the LED no lower than 1.6mm from the base of stopper is recommended.
- Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.
- Recommended soldering conditions:

Hand Soldering		DIP Soldering	
Temp. at tip of iron	300°C Max. (30W Max.)	Preheat temp.	100°C Max. (60 sec Max.)
Soldering time	3 sec Max.	Bath temp.	260 Max.
Distance	No lower than 1.6mm from the base of stopper	Bath time.	5 sec Max.
		Distance	No lower than 1.6mm from the base of stopper

■ Recommended soldering profile



- To avoid any stress to the lead frame while the LEDs are at high temperature particularly when soldering.
- Dip or hand soldering should not be done more than one time.
- The len of LEDs should be protected from mechanical shock or vibration until return to room temperature after soldering.
- Cooling rapidly is not recommended after cold down from peak temperature.
- Dipping parameters must be set and maintain according to recommended range.

4. Cleaning

- Cleaning with isopropyl alcohol should not more than one minute and dry it in room temperature.
- Ultrasonic cleaning is prohibited which may damage the LEDs.

5. Thermal Management

Sufficient thermal management must be implemented. Otherwise, the junction temperature of the die might be over the limit at high current driving condition and LEDs' lifetime might be decreases dramatically.

6. ESD (Electrostatic Discharge)

- The products are sensitive to static electricity or surge voltage. ESD can damage a die and its reliability. When handling the products, the following measures against electrostatic discharge are strongly recommended:
  - Eliminating the charge
  - Grounded wrist strap, ESD footwear, clothes, and floors
  - Grounded workstation equipment and tools
  - ESD table/shelf mat made of conductive materials
- Proper grounding is required for all devices, equipment, and machinery used in product assembly. Surge protection should be considered when designing of commercial products.
- If tools or equipment contain insulating materials such as glass or plastic,

the following measures against electrostatic discharge are strongly recommended:

- Dissipating static charge with conductive materials
- Preventing charge generation with moisture
- Neutralizing the charge with ionizers

**7. Directions for use**

- The LEDs should be operated with forward bias. The driving circuit must be designed so that the LEDs are not subjected to forward or reverse voltage while it is off. If reverse voltage is continuously applied to the LEDs, it may cause migration resulting in LED damage

**8. Other**

- EVERLIGHT assumes no responsibility for any damage resulting from 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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### **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.



## Revision History

Rev.	Modified date	File modified contents
4	2015/5/7	Change Spec.