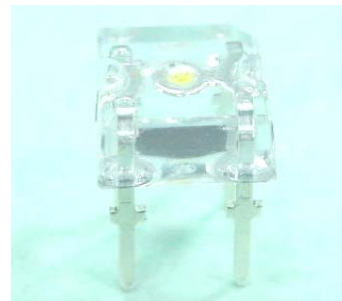


**Technical Data Sheet**

**Flat Power LED**

**32-01/T4C-4PRB**

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



**Feature**

- RoHS compliant.
- Piranha package.
- Colorless clear resin.
- Low thermal resistance
- Packaged in tubes for Automatic Insertion Equipment.
- Total Flux: 2850 to 5650 mlm at 30mA.
- Typical chromaticity coordinates  $x=0.30, y=0.29$
- according to CIE1931.

**Applications**

- Electronic signs and signals
- General lighting application

**Device Selection Guide**

Chip	Emitted Color	Resin Color
Material		
InGaN	White	Water Clear

Technical Data Sheet

Flat Power LED

**32-01/T4C-4PRB**

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V <sub>R</sub>	5	V
Forward Current	I <sub>F</sub>	30	mA
Peak Forward Current (Duty 1/10 @1KHz)	I <sub>FP</sub>	100	mA
Power Dissipation	P <sub>d</sub>	110	mW
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +100	°C
Thermal Resistance	R <sub>th J-A</sub>	220	K/W
ESD (Classification acc. AEC Q101)	ESD <sub>HBM</sub>	4000	V
	ESD <sub>MM</sub>	200	V
Soldering Temperature	T <sub>sol</sub>	Wave Soldering : 260 °C for 5 sec. Hand Soldering : 350 °C for 3 sec.	

Technical Data Sheet

Flat Power LED

**32-01/T4C-4PRB**

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Total Flux	$\Phi_V$	2850	---	5650	mlm	I <sub>F</sub> =30mA
Viewing Angle	$2\theta_{1/2}$	---	130	---	deg	I <sub>F</sub> =30mA
Chromaticity Coordinates	x	----	0.30	----	----	I <sub>F</sub> =30mA
	y	----	0.29	----	----	I <sub>F</sub> =30mA
Forward Voltage	V <sub>F</sub>	2.8	---	3.8	V	I <sub>F</sub> =30mA
Reverse Current	I <sub>R</sub>	---	---	10	μA	V <sub>R</sub> =5V

Note:

1. Tolerance of Total Flux: ±11%
2. Tolerance of Forward Voltage: ±0.1V
2. Tolerance of color coordinates: ±0.01

Technical Data Sheet

Flat Power LED

**32-01/T4C-4PRB**

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

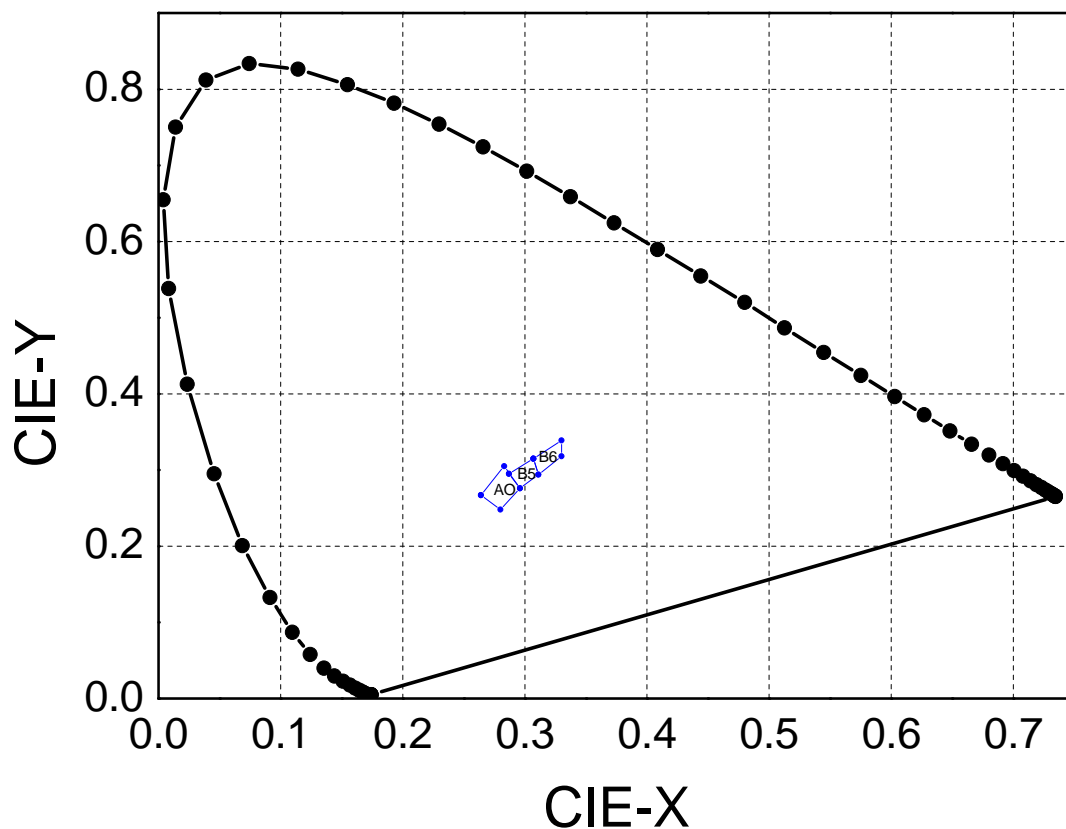
Bin Code	Min.	Max.	Unit	Condition
0	2.8	3.0	V	I <sub>F</sub> =30mA
1	3.0	3.2		
2	3.2	3.4		
3	3.4	3.6		
4	3.6	3.8		

Technical Data Sheet

Flat Power LED

**32-01/T4C-4PRB**

CIE Chromaticity Diagram



Color Ranks (IF=30mA , Ta=25°C)

Color Ranks		CIE			
A0	X	0.264	0.283	0.296	0.28
	Y	0.267	0.305	0.267	0.248
B5	X	0.287	0.307	0.311	0.296
	Y	0.295	0.315	0.294	0.276
B6	X	0.307	0.33	0.33	0.311
	Y	0.315	0.339	0.318	0.294

**Technical Data Sheet****Flat Power LED****32-01/T4C-4PRB****Bin Range of Total Flux (Ta=25°C)**

<b>Bin Code</b>	<b>Min.</b>	<b>Max.</b>	<b>Unit</b>	<b>Condition</b>
P	2850	3600	mlm	I <sub>F</sub> =30mA
Q	3600	4500		
R	4500	5650		

Technical Data Sheet

Flat Power LED

**32-01/T4C-4PRB**

Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distribution

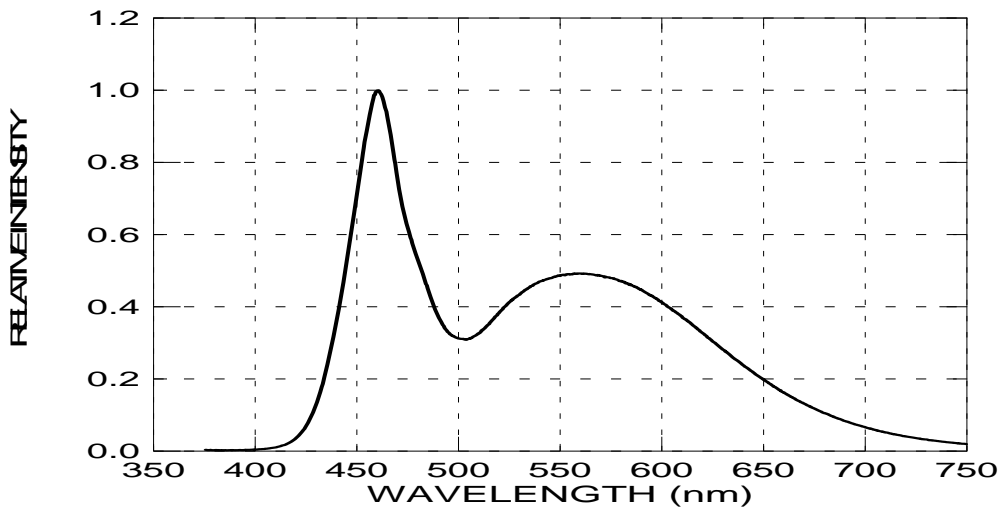
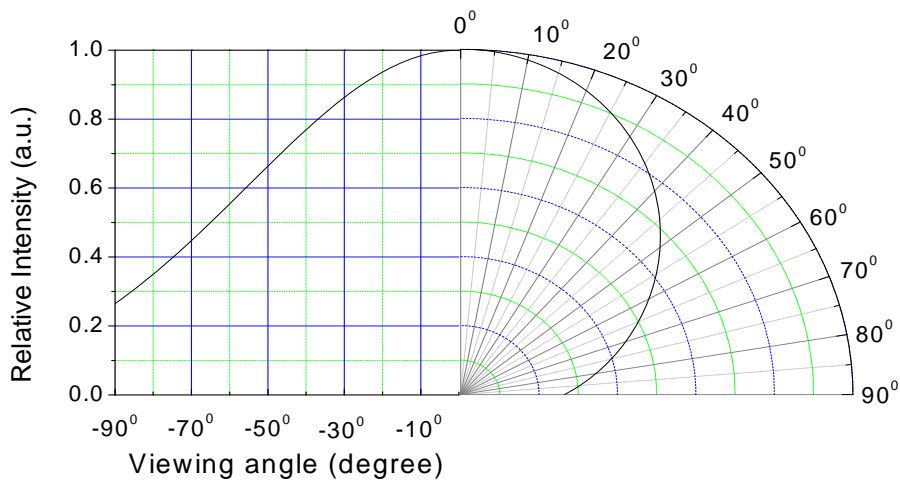


Diagram Characteristics of Radiation

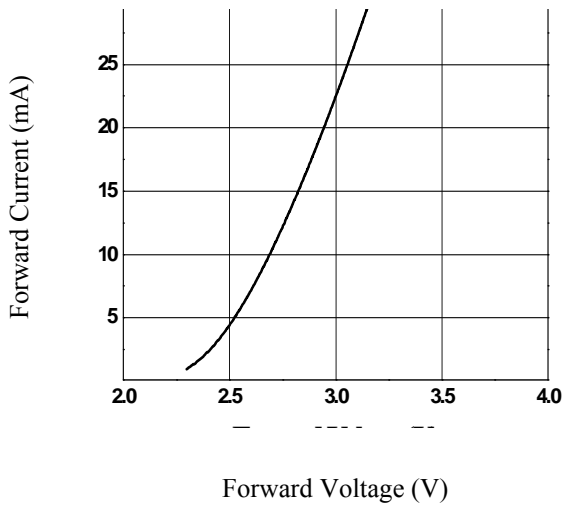


Technical Data Sheet

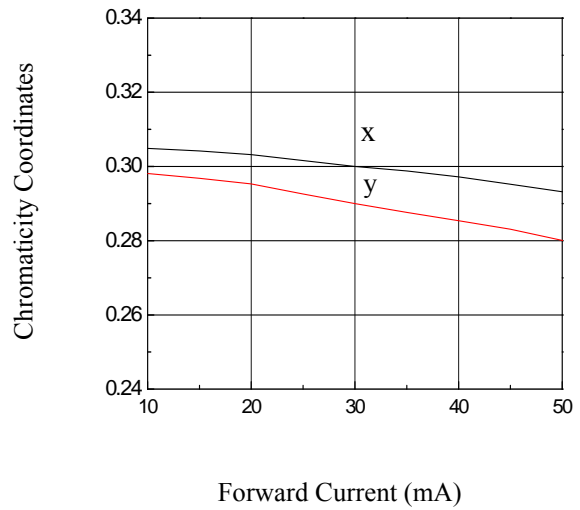
Flat Power LED

**32-01/T4C-4PRB**

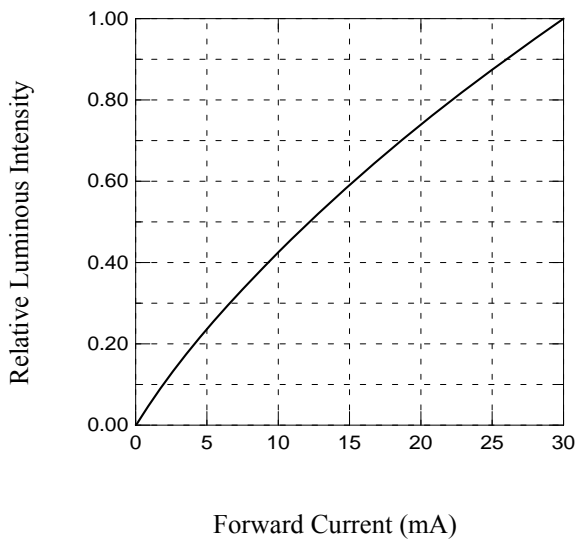
**Forward Current vs. Forward Voltage**  
(Ta=25°C)



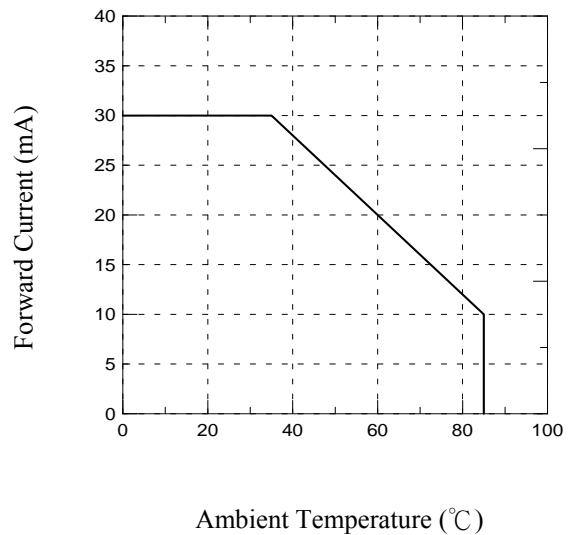
**Chromaticity Coordinate vs. Forward Current**  
(Ta=25°C)



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



**Max. Permissible Forward Current vs. Ambient Temperature**



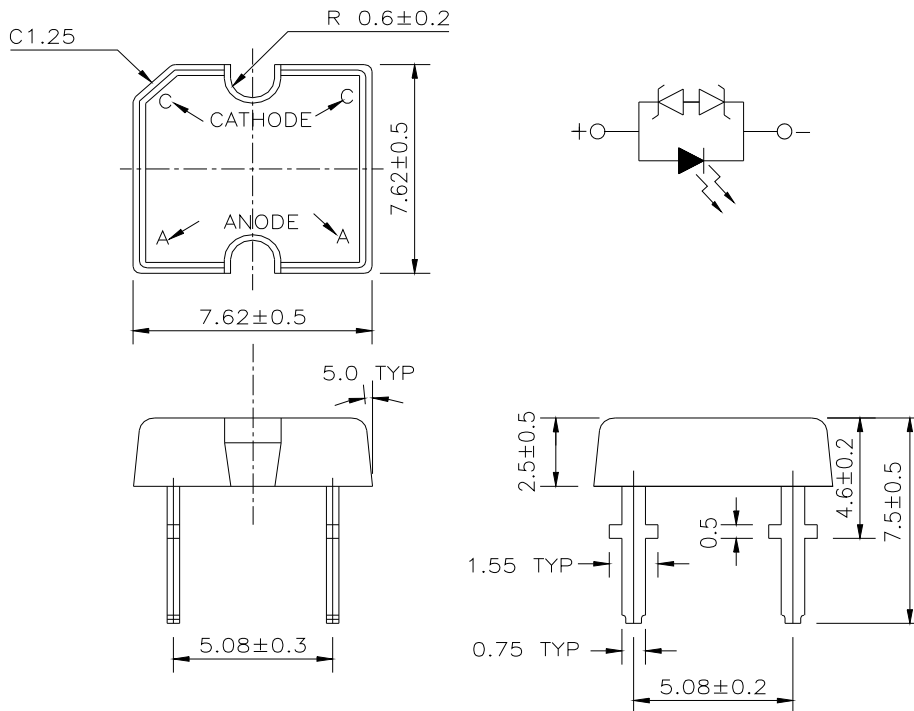


Technical Data Sheet

Flat Power LED

**32-01/T4C-4PRB**

Package Dimension



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

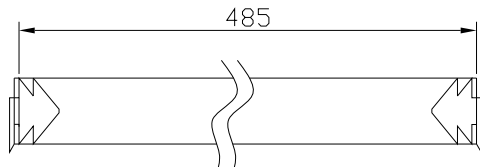
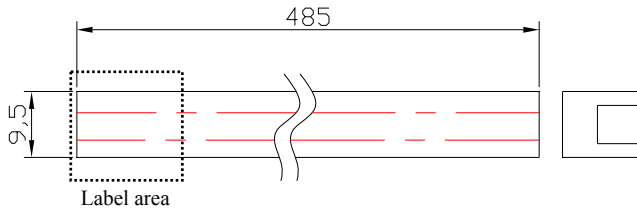
**Technical Data Sheet**

**Flat Power LED**

**32-01/T4C-4PRB**

**Moisture Resistant Packing Materials**

**Tube**



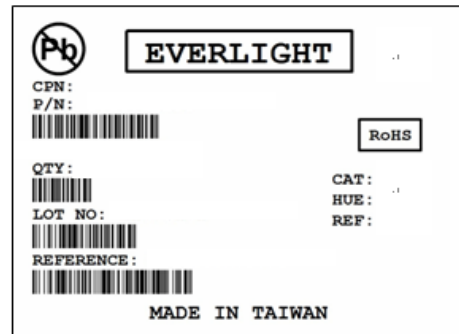
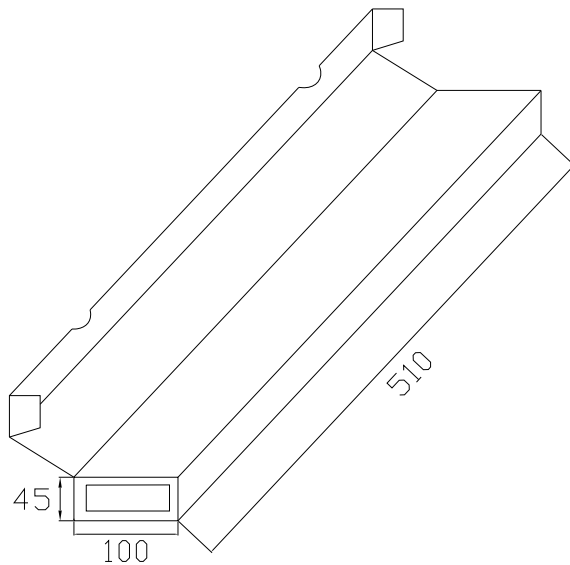
<b>EVERLIGHT</b>	PART NO:	QTY:
	LOT NO:	CAT:

**Tube Label Explanation**

- PART NO: Product Number
  - 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**



**Tube Label Explanation**

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

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

**Technical Data Sheet****Flat Power LED****32-01/T4C-4PRB****Packing Quantity**

Packing material	Length × Width × height (mm)	Tube Quantity (Pcs)	LED Quantity (Pcs)
Tube	485 x 9.5 x 14.8	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.

Technical Data Sheet

Flat Power LED

**32-01/T4C-4PRB**

Notes

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 70%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

Technical Data Sheet

Flat Power LED

**32-01/T4C-4PRB**

			from the base of stopper
--	--	--	--------------------------

- Dip and hand soldering should not be done more than one time
- After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.
- A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.
- Although the recommended soldering conditions are specified in the above table, dip or handsoldering at the lowest possible temperature is desirable for the LEDs.
- Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

4. Cleaning

- When necessary, cleaning should occur only with isopropyl alcohol at room temperature for a duration of no more than one minute. Dry at room temperature before use.
- Do not clean the LEDs by the ultrasonic. When it is absolutely necessary, the influence of ultrasonic cleaning on the LEDs depends on factors such as ultrasonic power and the assembled condition. Ultrasonic cleaning shall be pre-qualified to ensure this will not cause damage to the LED

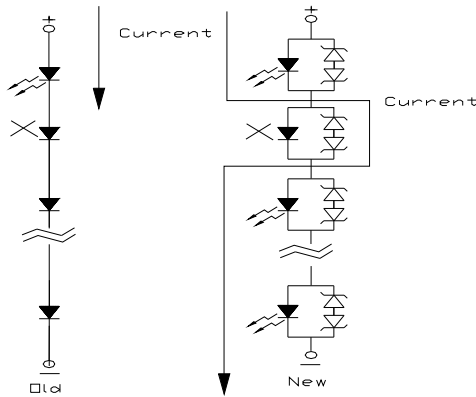
5. Circuit Protection

- Below the zener reference voltage  $V_z$ , all the current flows through LED and as the voltage rises to  $V_z$ , the zener diode “breakdown.” If the voltage tries to rise above  $V_z$  current flows through the zener branch to keep the voltage at exactly  $V_z$ .
- When the LED is connected using serial circuit, if either piece of LED is no light up but current can’t flow through causing others to light down. In new design, the LED is parallel with zener diode. if either piece of LED is no light up but current can flow through causing others to light up.

# Technical Data Sheet

## Flat Power LED

**32-01/T4C-4PRB**



### 6. Heat Management

- Heat management of LEDs must be taken into consideration during the design stage of LED application. The current should be de-rated appropriately by referring to the de-rating curve found in each product specification.
- The temperature surrounding the LED in the application should be controlled. Please refer to the data sheet de-rating curve.

### 7. ESD (Electrostatic Discharge)

- Electrostatic discharge (ESD) or surge current (EOS) can damage LEDs.
- An ESD wrist strap, ESD shoe strap or antistatic gloves must be worn whenever handling LEDs.
- All devices, equipment and machinery must be properly grounded.
- Use ion blower to neutralize the static charge which might have built up on surface of the LEDs plastic lens as a result of friction between LEDs during storage and handing.

### 8. Other

- Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
- When using this product, please observe the absolute maximum ratings and the instructions

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