

SMD ■ REFLECTOR 99-235/RSGHB2W-S01/2D/MS

Features

- White package.
- Optical indicator.
- Colorless clear window.
- Ideal for backlight and light pipe application.
- Inter reflector.
- Wide viewing angle.
- Suitable for vapor-phase reflow, Infrared reflow and wave solder processes.
- Computable with automatic placement equipment.
- Available on tape and reel (12mm Tape)
- Pb-free
- The product itself will remain within RoHS compliant version.



Description

- The 99-235 SMD LED package provides a perfect solution when users need a side view of signage display with any size board with 3 in 1 full color SMD LEDs which offer smaller pixel pitch between two LEDs to create a high resolution.

Applications

- Indoor signage display applications
- Indicator and backlighting for all consumer electronics.
- Gaming equipment.
- General use.

Device Selection Guide

Chip Materials	Emitted Color	Resin Color
AlGaInP	Brilliant Red	White Diffused
InGaN	Brilliant Green	
InGaN	Brilliant Blue	

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage	VR	5	V
Forward Current	IF	R:50 G:30 B:30	mA
Peak Forward Current (Duty 1/10 @1KHz)	IFP	R:100 G:100 B:100	mA
Power Dissipation	Pd	R:130 G:110 B:110	mW
Junction Temperature	Tj	100	℃
Operating Temperature	Topr	-40 ~ +85	℃
Storage Temperature	Tstg	-40 ~ +90	℃
ESD (Classification acc. AEC Q101)	ESD(HBM)	R:2000 G:1000 B:1000	V
Soldering Temperature	Tsol	Reflow Soldering : 260 ℃ for 30 sec. Hand Soldering : 350 ℃ for 3 sec.	

Note:

1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v	R 393	-----	805	mcd	I _F =20mA
		G 1045	-----	1840		
		B 235	-----	480		
Viewing Angle	2θ _{1/2}	-----	120	-----	deg	I _F =20mA
Peak Wavelength	λ _p	R 632	-----		nm	I _F =20mA
		G 518	-----			
		B 468	-----			
Dominant Wavelength	λ _d	R 619.0	-----	628.0	nm	I _F =20mA
		G 520.0	-----	529.0		
		B 466.0	-----	475.0		
Spectrum Radiation Bandwidth	Δλ	R 20	-----		nm	I _F =20mA
		G 25	-----			
		B 25	-----			
Forward Voltage	V _F	R 1.7	-----	2.5	V	I _F =20mA
		G 2.7	-----	3.7		
		B 2.7	-----	3.7		
Reverse Current	I _R	-----	-----	10	μA	V _R =5V

Note:

1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

Floating Bin(Red) Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
RA	393	472	mcd	$I_F = 20\text{mA}$
RB	472	566		
RC	566	670		
RD	670	805		

Bin Range of Dominant Wavelength

Bin Code	Min.	Max.	Unit	Condition
R1	619.0	622.0	nm	$I_F = 20\text{mA}$
R2	622.0	625.0		
R3	625.0	628.0		

Floating Bin(Green) Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
GA	1045	1275	mcd	$I_F = 20\text{mA}$
GB	1275	1530		
GC	1530	1840		

Bin Range of Dominant Wavelength

Bin Code	Min.	Max.	Unit	Condition
G1	520.0	523.0	nm	$I_F = 20\text{mA}$
G2	523.0	526.0		
G3	526.0	529.0		

Note:

- 1.Tolerance of Luminous Intensity: $\pm 10\%$
- 2.Tolerance of Dominant Wavelength: $\pm 1\text{nm}$

Floating Bin(Blue) Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
BA	235	280	mcd	$I_F = 20\text{mA}$
BB	280	335		
BC	335	400		
BD	400	480		

Bin Range of Dominant Wavelength

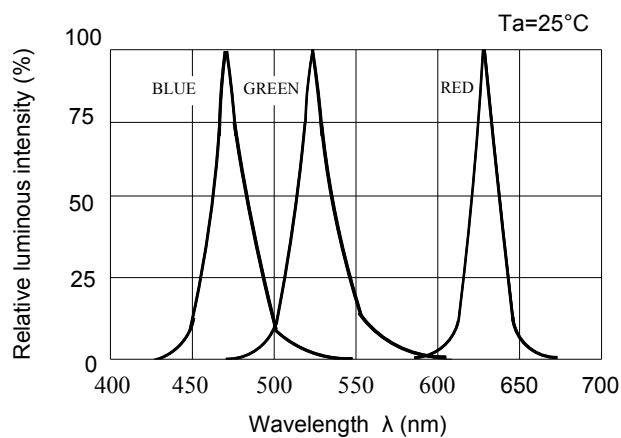
Bin Code	Min.	Max.	Unit	Condition
B1	466.0	469.0	nm	$I_F = 20\text{mA}$
B2	469.0	472.0		
B3	472.0	475.0		

Note:

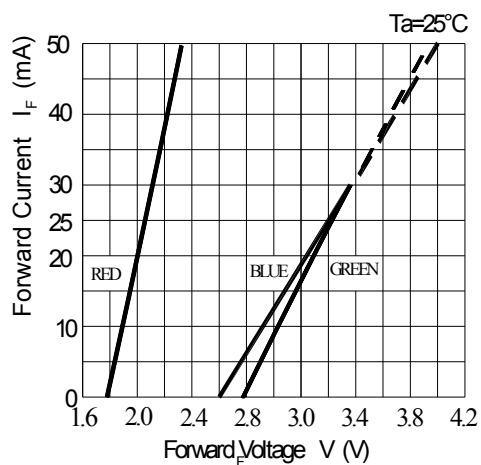
1. Tolerance of Luminous Intensity: $\pm 10\%$
2. Tolerance of Dominant Wavelength: $\pm 1\text{nm}$

Typical Electro-Optical Characteristics Curves

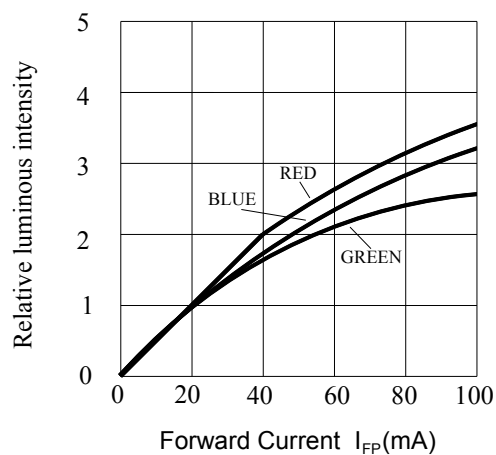
Spectrum Distribution



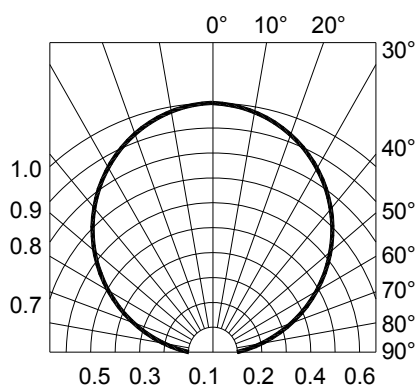
Forward Current vs. Forward Voltage



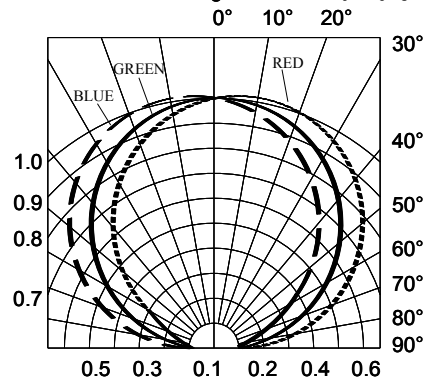
Forward Current Derating Curve



Radiation Diagram Ta=25°C

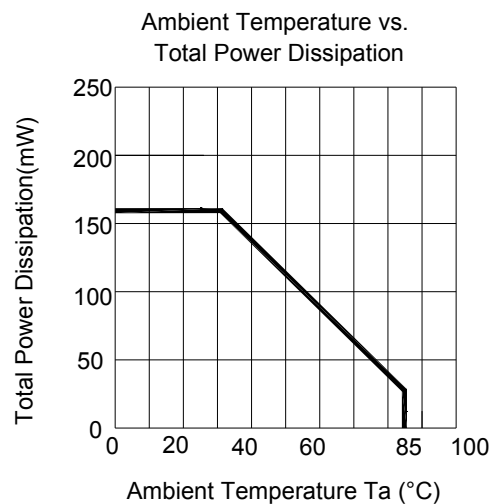
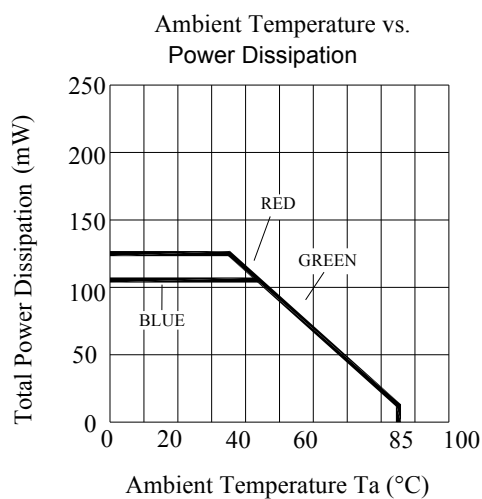


Radiation Diagram Ta=25°C

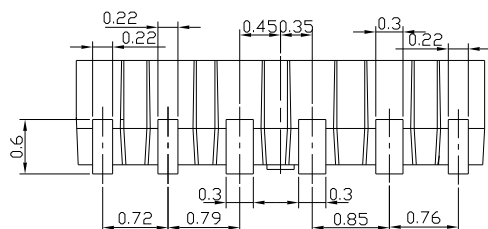
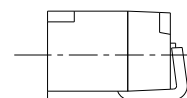
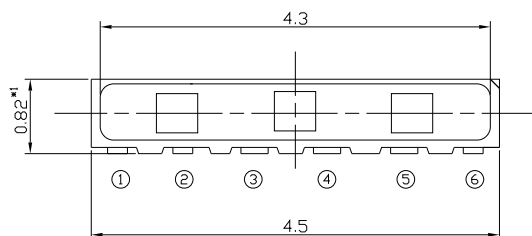
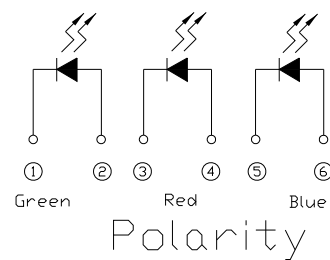
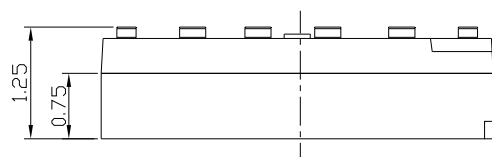


Typical Electro-Optical Characteristics Curves

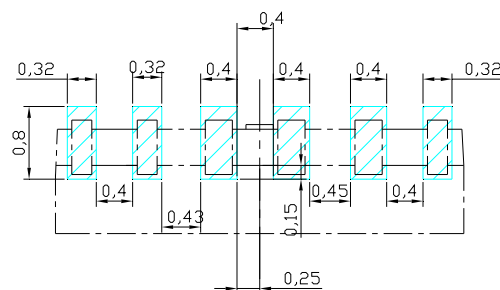
3



Package Dimension



Recommended soldering pad design

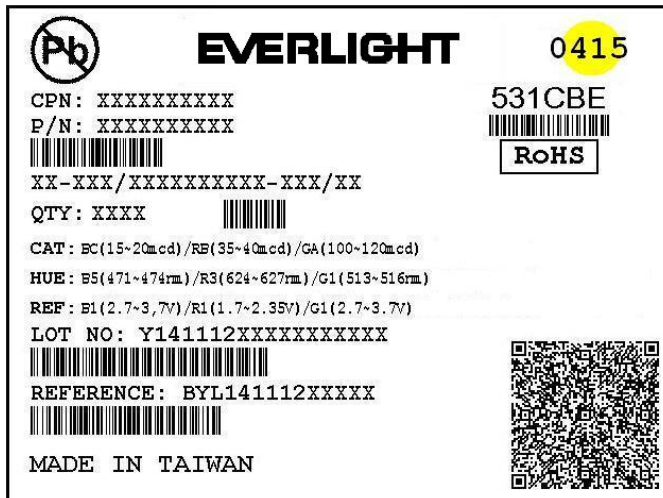


Note:

Tolerances unless mentioned ± 0.1 mm. Unit = mm

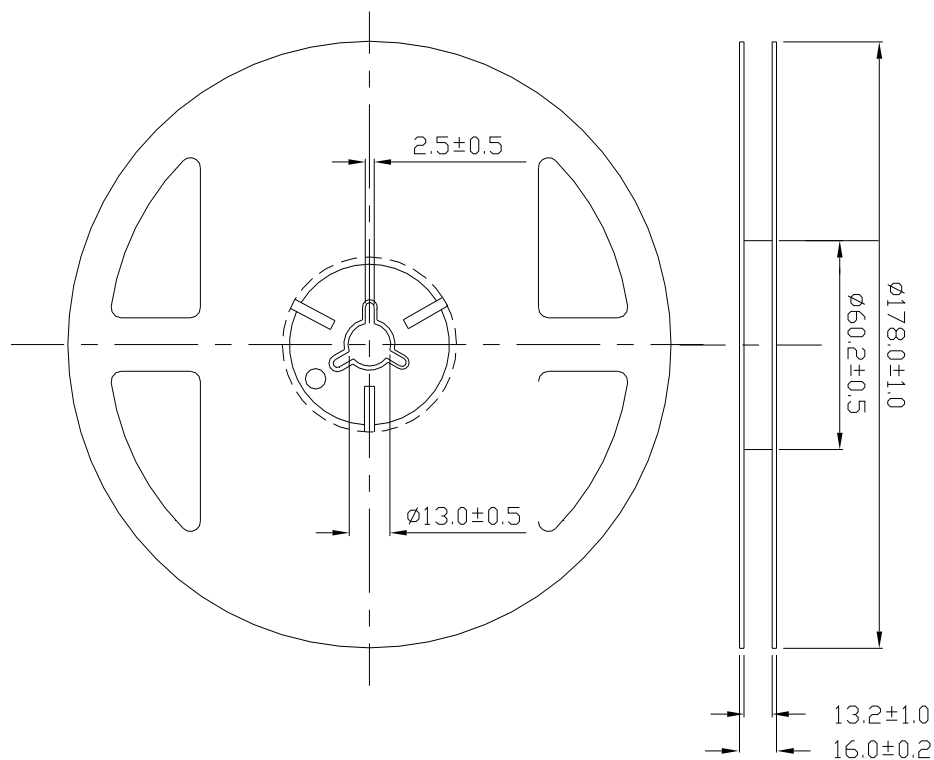
Moisture Resistant Packing Materials

Label Explanation



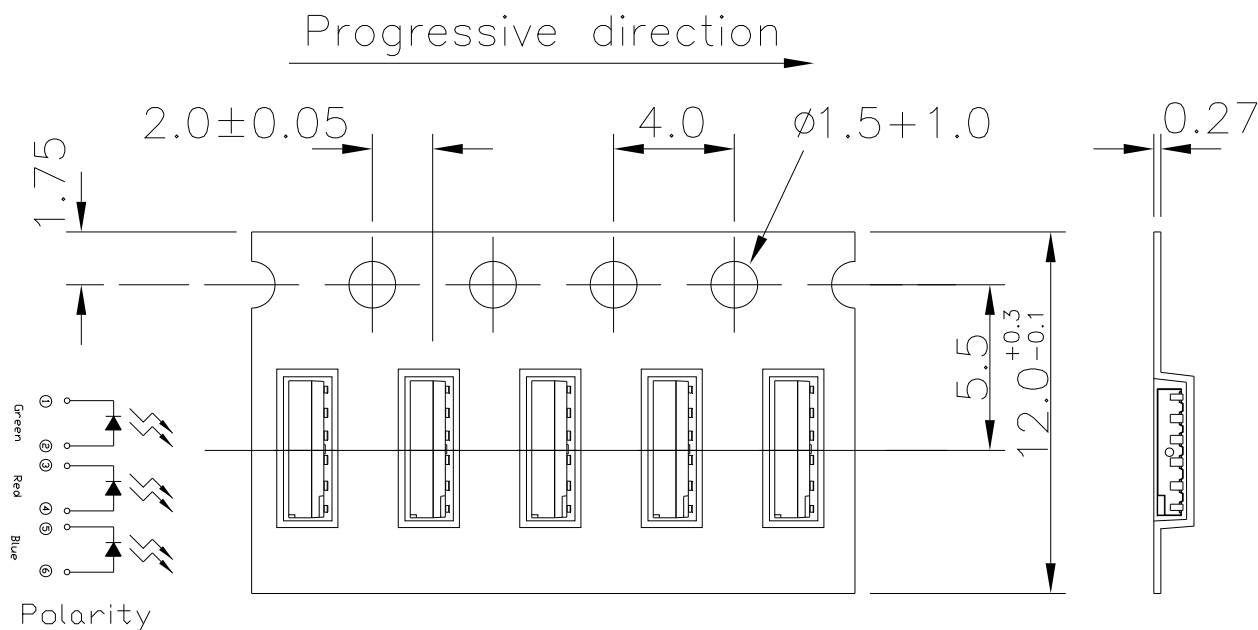
- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions



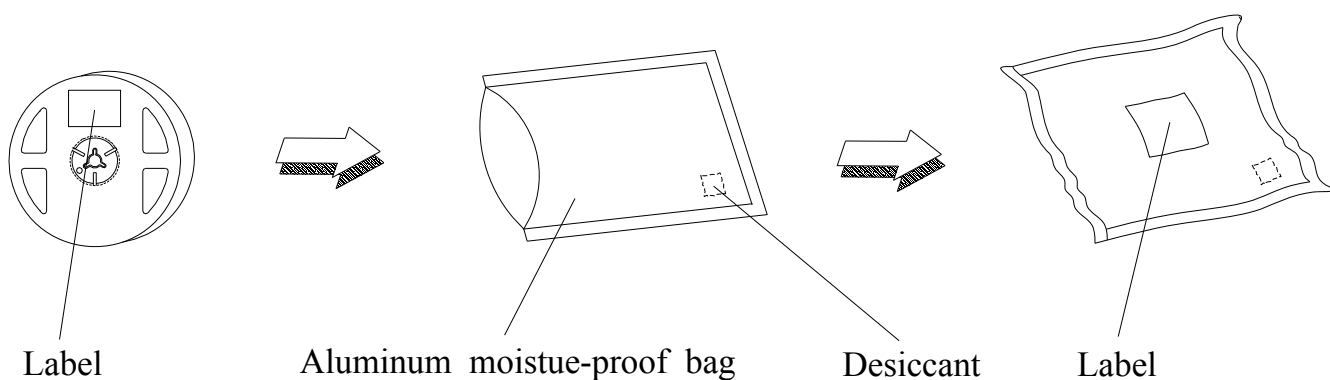
Carrier Tape Dimensions:

Loaded Quantity 2000 pcs. Per Reel



Note: Tolerances unless mentioned $\pm 0.1\text{mm}$. Unit = mm

Moisture Resistant Packing Process



Note: Tolerances unless mentioned $\pm 0.1\text{mm}$. Unit = mm

Precautions for Use

1. Over-current-proof

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 After opening the package: The LED's floor life is 168Hrs under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

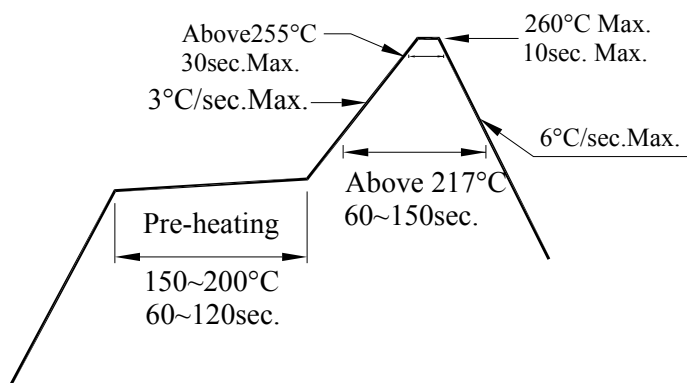
2.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

Baking treatment : 60±5°C for 24 hours.

2.5 Before using LEDs, baking treatment should be implemented based on the following conditions: pre-curing at 60±5°C for 24 hours or 125±5°C for 3 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.

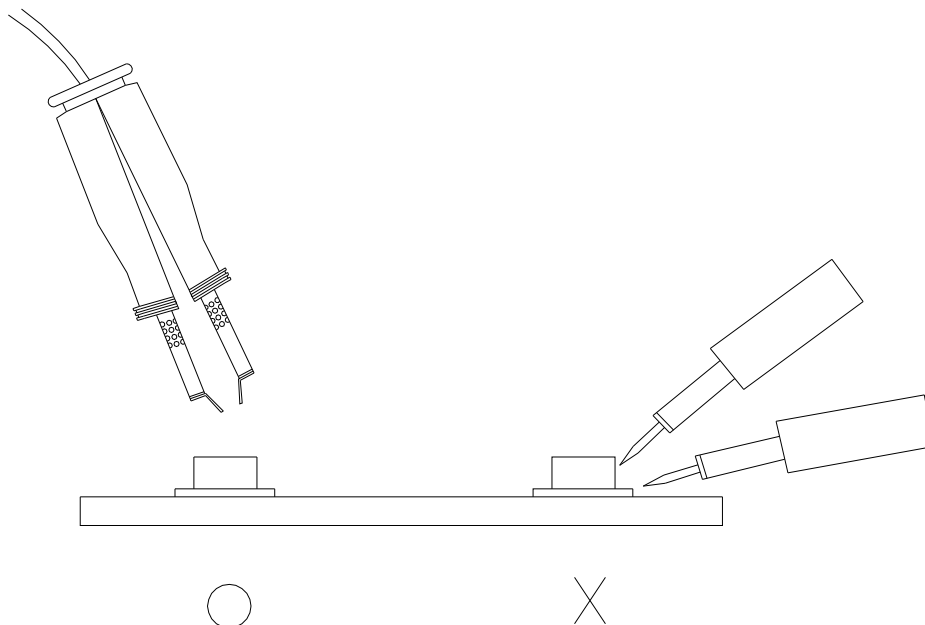
3.4 After soldering, do not warp the circuit board.

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.



6.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.

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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.
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