

## SMD- Full Color Top View LEDs 67-23-RSHGRBYC-M050505-2T8-CS



### Features

- P-LCC-4 package.
- White package.
- Optical indicator.
- Colorless clear window.
- Ideal for backlight and light pipe application.
- Inter reflector.
- Wide viewing angle.
- Suitable for vapor-phase reflow.
- Computable with automatic placement equipment.
- Available on tape and reel (8mm Tape).
- Pb-free.
- The product itself will remain within RoHS compliant version.
- Precondition: Bases on JEDEC J-STD 020D Level 3

### Applications

- Switches, symbol, mobile phone, digital camera and illuminated advertising.
- Display for indoor and outdoor application.
- Ideal for coupling into light guides.
- Substitution of traditional light.
- Amusement equipment.
- General applications.
- Optical indicator.

## Device Selection Guide

Chip Code	Chip Materials	Emitted Color	Resin Color
RSH	AlGaInP	Brilliant Red	Water Clear
GR	InGaN	Brilliant Green	Water Clear
BY	InGaN	Brilliant Blue	Water Clear

## Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Code	Rating	Unit
Reverse Voltage	$V_R$	RSH	10	V
		GR / BY	5	
Forward Current	$I_F$	RSH	50	mA
		GR	30	
		BY	30	
Peak Forward Current (Duty 1/10 @1KHz)	$I_{FP}$		100	mA
Power Dissipation	$P_d$	RSH	115	mW
		GR	93	
		BY	93	
Junction Temperature	$T_j$		115	°C
Operating Temperature	$T_{opr}$		-40 ~ +85	°C
Storage Temperature	$T_{stg}$		-40 ~ +90	°C
ESD	ESD	RSH	2000	V
		GR / BY	1000	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	Code	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	RSH	140	---	355	mcd	R:IF=5mA G:IF=5mA B:IF=5mA
		GR	355	---	900		
		BY	71	---	180		
		Mix	560	---	1800		
Viewing Angle	2θ <sub>1/2</sub>		---	120	---	deg	R:IF=5mA G:IF=5mA B:IF=5mA
Peak Wavelength	λp	RSH	---	632	---	nm	R:IF=5mA G:IF=5mA B:IF=5mA
		GR	---	518	---		
		BY	---	468	---		
Dominant Wavelength	λd	RSH	617.5	---	629.5	nm	R:IF=5mA G:IF=5mA B:IF=5mA
		GR	520.0	---	535.0		
		BY	464.5	---	476.5		
Spectrum Radiation Bandwidth	Δλ	RSH	---	18	---	nm	R:IF=5mA G:IF=5mA B:IF=5mA
		GR	---	29	---		
		BY	---	20	---		
Forward Voltage	V <sub>F</sub>	RSH	1.50	---	2.30	V	R:IF=5mA G:IF=5mA B:IF=5mA
		GR	2.40	---	3.10		
		BY	2.40	---	3.10		
White point coordinate	x	---	---	0.25	---	---	R:IF=5mA G:IF=5mA B:IF=5mA
	y	---	---	0.26	---	---	B:IF=5mA
Reverse Current	I <sub>R</sub>	RSH	---	---	10	μA	V <sub>R</sub> =10V
		GR	---	---	10	μA	V <sub>R</sub> =5V
		BY	---	---	10	μA	V <sub>R</sub> =5V

Notes:

1. Tolerance of Luminous Intensity: ±11%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Chromaticity Coordinates: ±0.01
4. Tolerance of Forward Voltage: ±0.1V

### Bin Range of Luminous Intensity

Chip	Bin Code	Min.	Max.	Unit	Condition
RSH	R2	140	180	mcd	R:I <sub>F</sub> =5mA G:I <sub>F</sub> =5mA B:I <sub>F</sub> =5mA
	S1	180	224		
	S2	224	280		
	T1	280	355		
GR	T2	355	450		
	U1	450	560		
	U2	560	710		
	V1	710	900		
BY	Q1	71	90		
	Q2	90	112		
	R1	112	140		
	R2	140	180		
Mix	U2	560	710		
	V1	710	900		
	V2	900	1120		
	AA	1120	1400		
	AB	1400	1800		

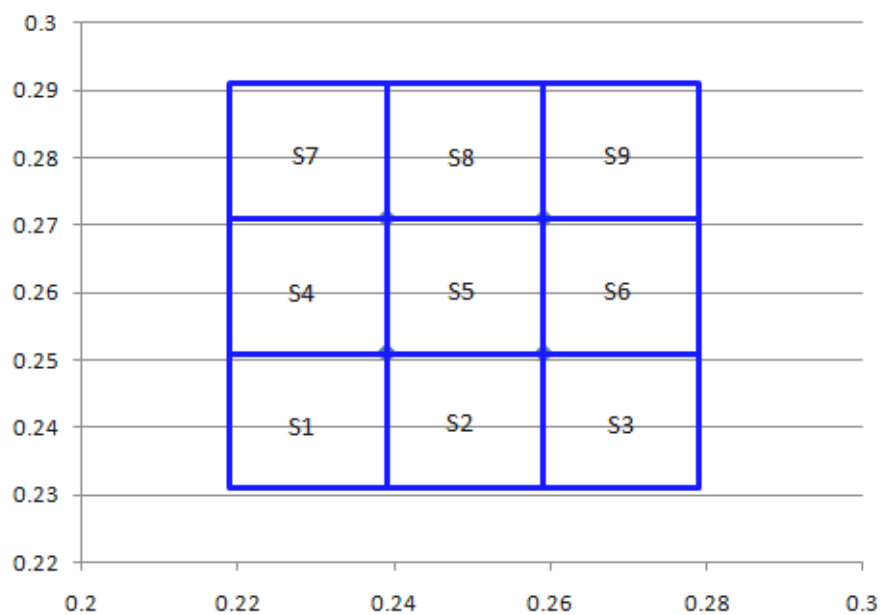
Note:  
Tolerance of Luminous Intensity:  $\pm 11\%$

### Bin Range of Dominant Wavelength

Chip	Bin Code	Min.	Max.	Unit	Condition
RSH	E4	617.5	621.5	nm	R:I <sub>F</sub> =5mA G:I <sub>F</sub> =5mA B:I <sub>F</sub> =5mA
	E5	621.5	625.5		
	E6	625.5	629.5		
GR	X	520.0	525.0		
	Y	525.0	530.0		
	Z	530.0	535.0		
BY	A9	464.5	467.5		
	A10	467.5	470.5		
	A11	470.5	473.5		
	A12	473.5	476.5		

Note:  
Tolerance of Dominant Wavelength:  $\pm 1\text{nm}$

**Bin Code of Chromaticity Coordinates**  
**R/G/B=5/5/5mA**



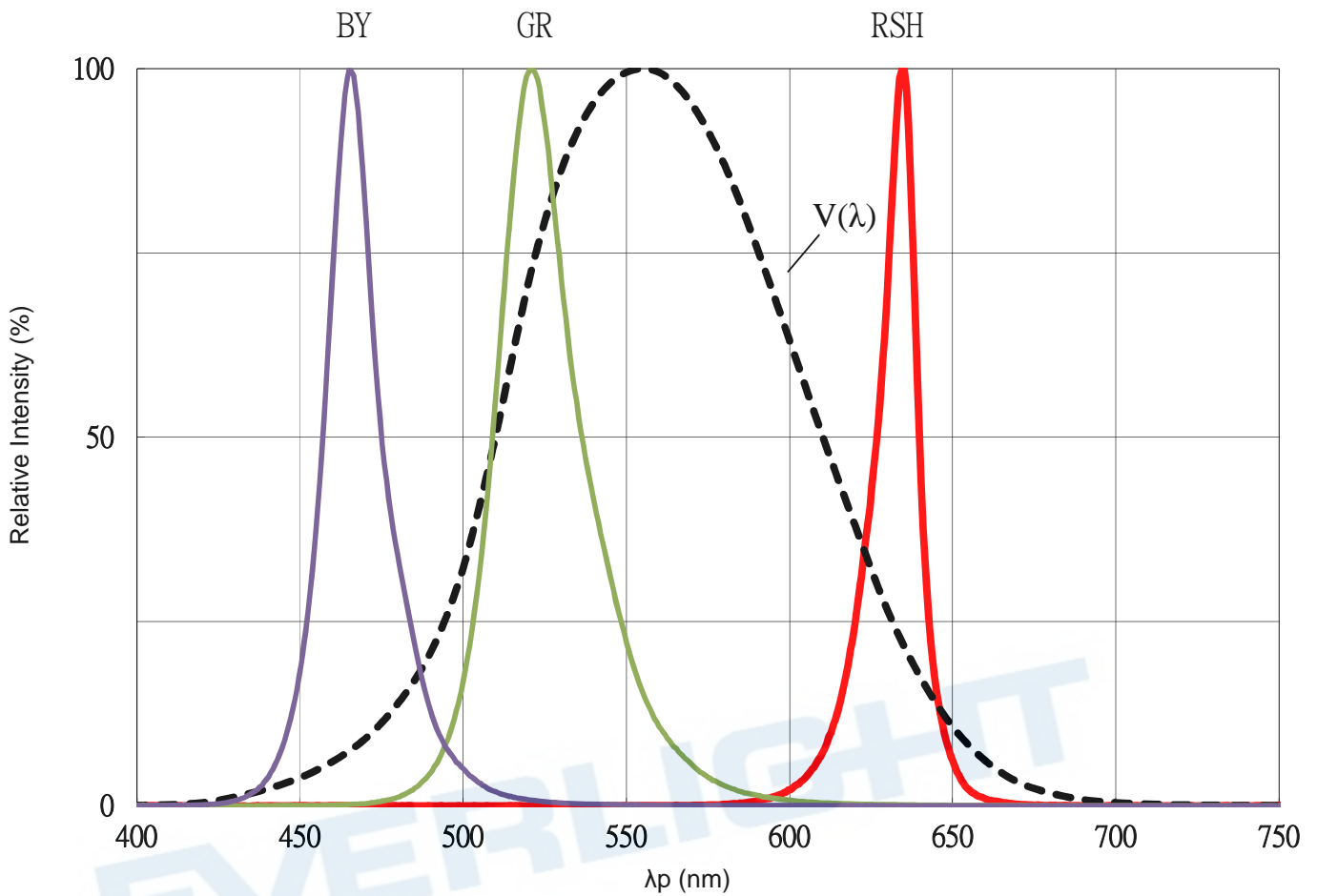
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**Bin Code of Chromaticity Coordinates**

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
S1	0.219	0.231	S2	0.239	0.231
	0.219	0.251		0.239	0.251
	0.239	0.251		0.259	0.251
	0.239	0.231		0.259	0.231
S3	0.259	0.231	S4	0.219	0.251
	0.259	0.251		0.219	0.271
	0.279	0.251		0.239	0.271
	0.279	0.231		0.239	0.251
S5	0.239	0.251	S6	0.259	0.251
	0.239	0.271		0.259	0.271
	0.259	0.271		0.279	0.271
	0.259	0.251		0.279	0.251
S7	0.219	0.271	S8	0.239	0.271
	0.219	0.291		0.239	0.291
	0.239	0.291		0.259	0.291
	0.239	0.271		0.259	0.271
S9	0.259	0.271			
	0.259	0.291			
	0.279	0.291			
	0.279	0.271			

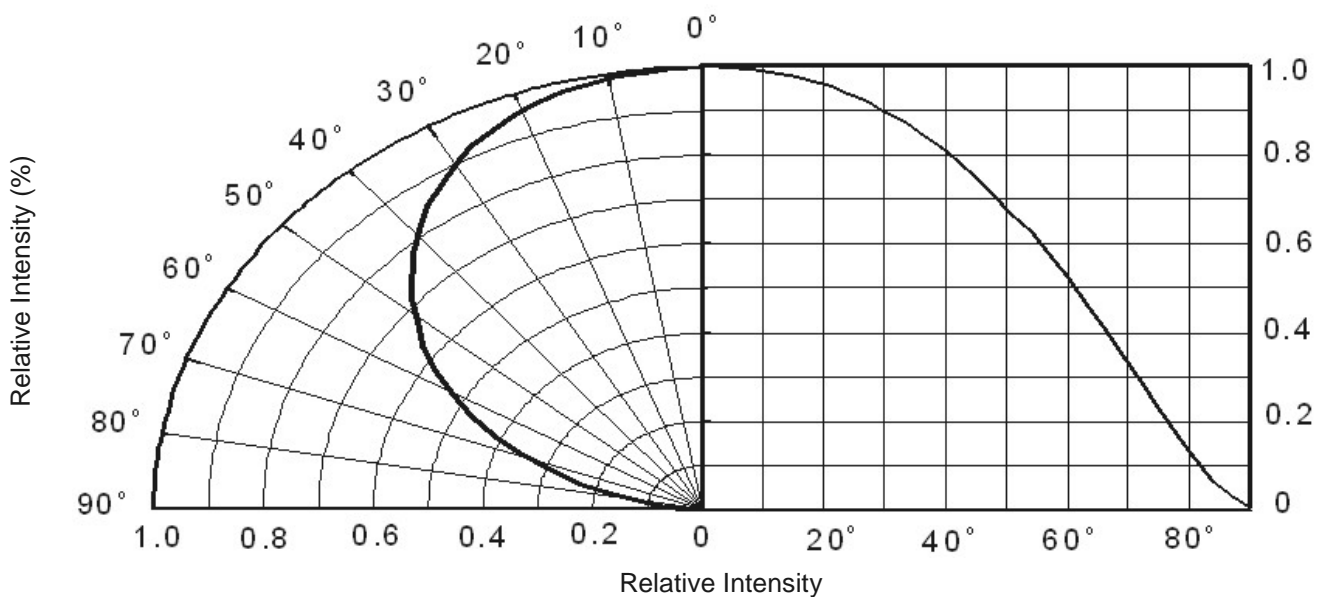
Note:  
 Tolerance of Chromaticity Coordinates:  $\pm 0.01$ .

**Typical Electro-Optical Characteristics Curves**  
 Typical Curve of Spectral Distribution



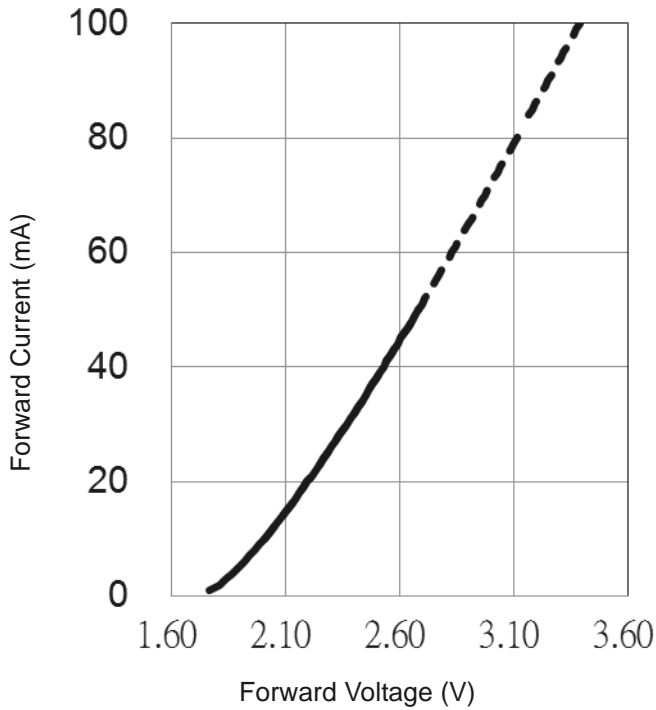
Note:  $V(\lambda)$ =Standard eye response curve

**Diagram Characteristics of Radiation**

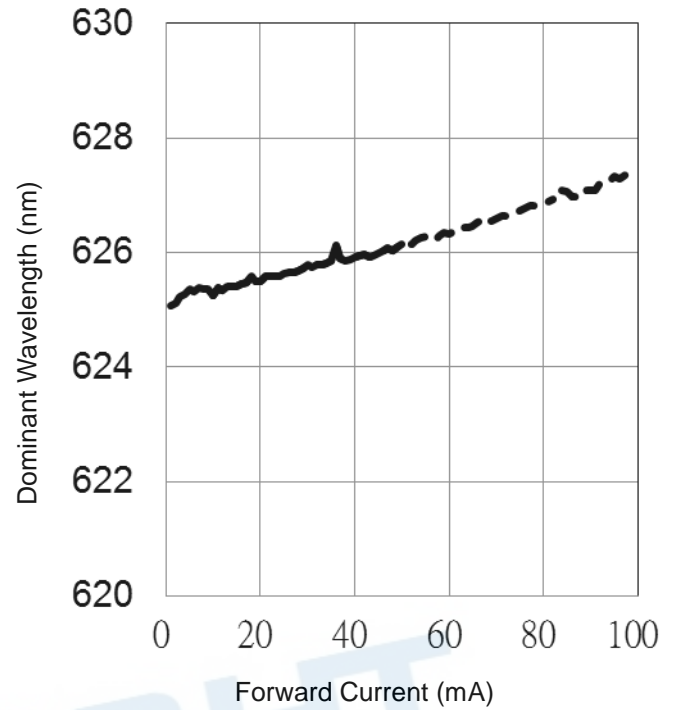


Typical Electro-Optical Characteristics Curves (RSH)

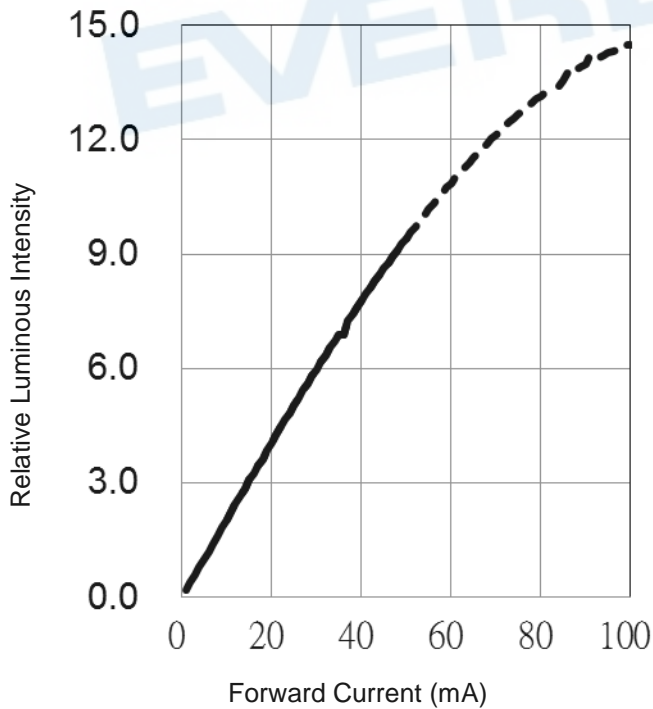
Forward Current vs. Forward Voltage (Ta=25°C)



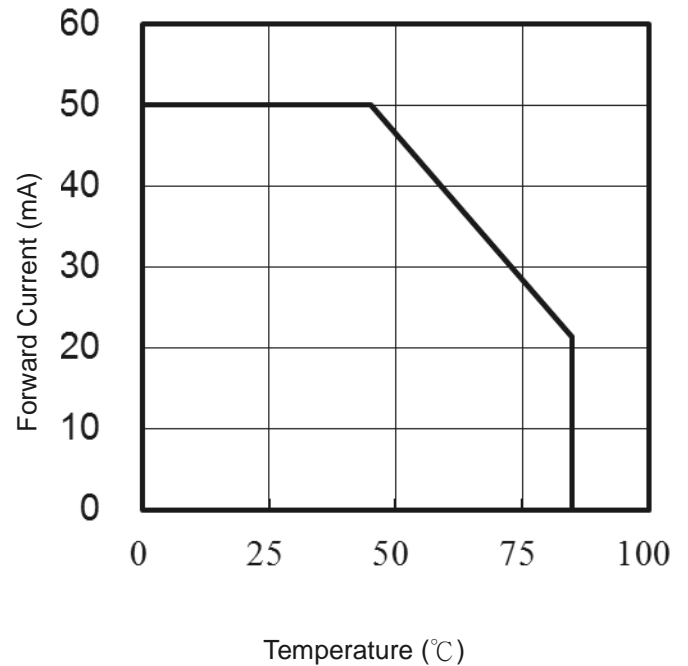
Dominant Wavelength vs. Forward Current (Ta=25°C)



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



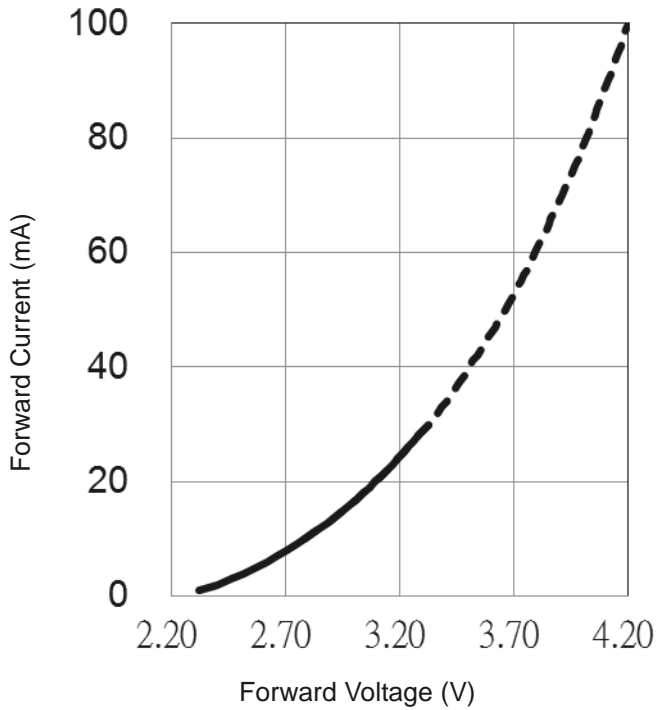
Max. Permissible Forwarded Current (Ta=25°C)



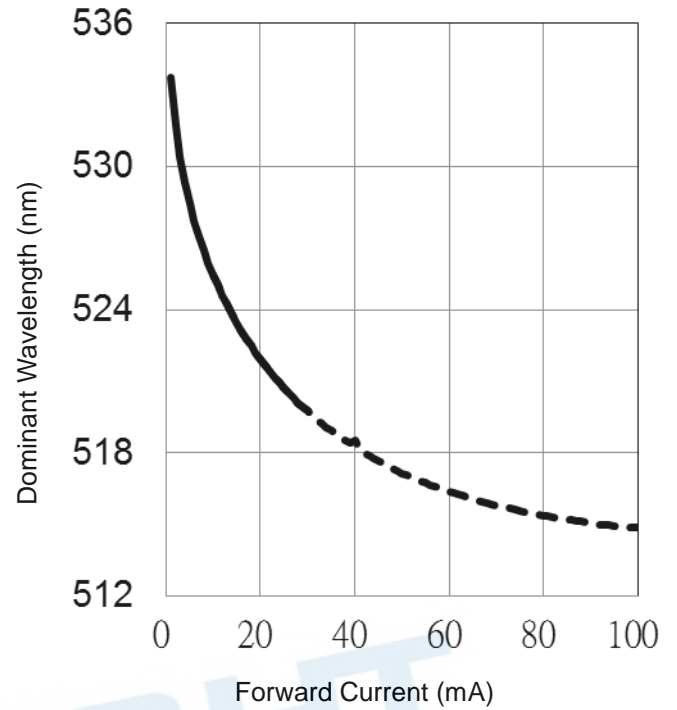


Typical Electro-Optical Characteristics Curves (GR)

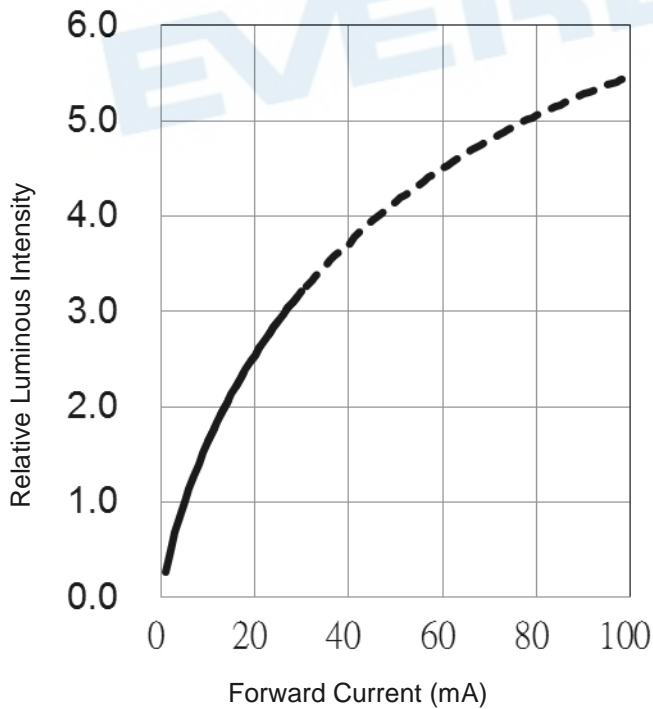
Forward Current vs. Forward Voltage (Ta=25°C)



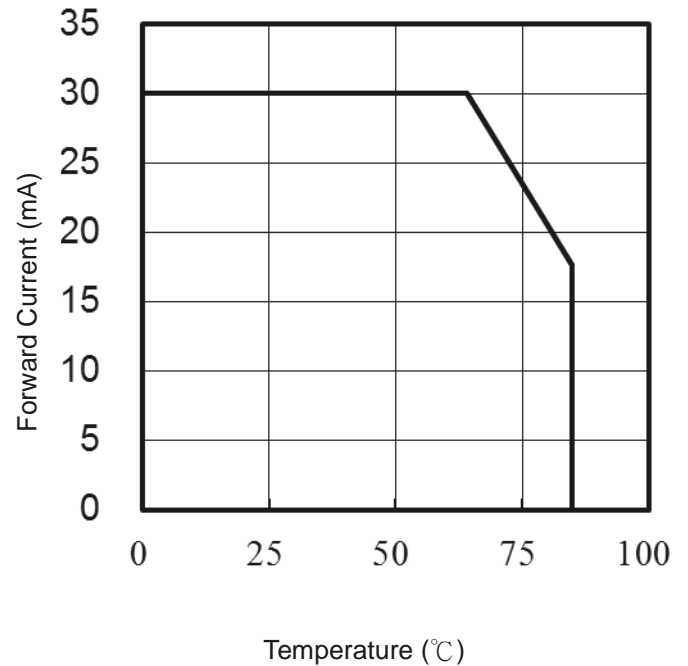
Dominant Wavelength vs. Forward Current (Ta=25°C)



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

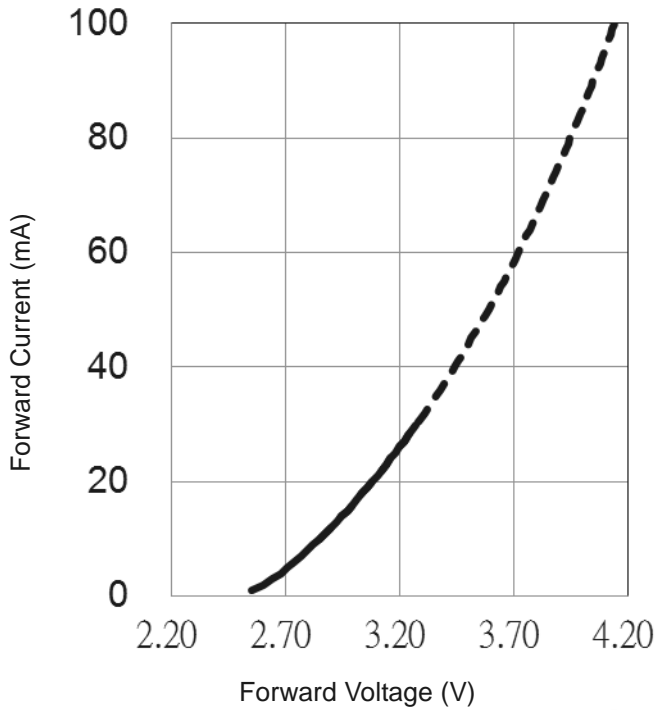


Max. Permissible Forwarded Current (Ta=25°C)

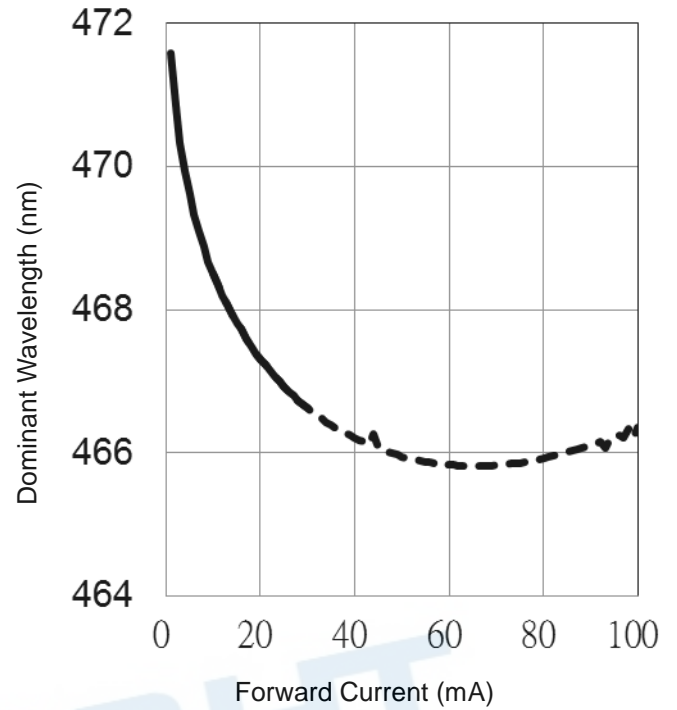


Typical Electro-Optical Characteristics Curves (BY)

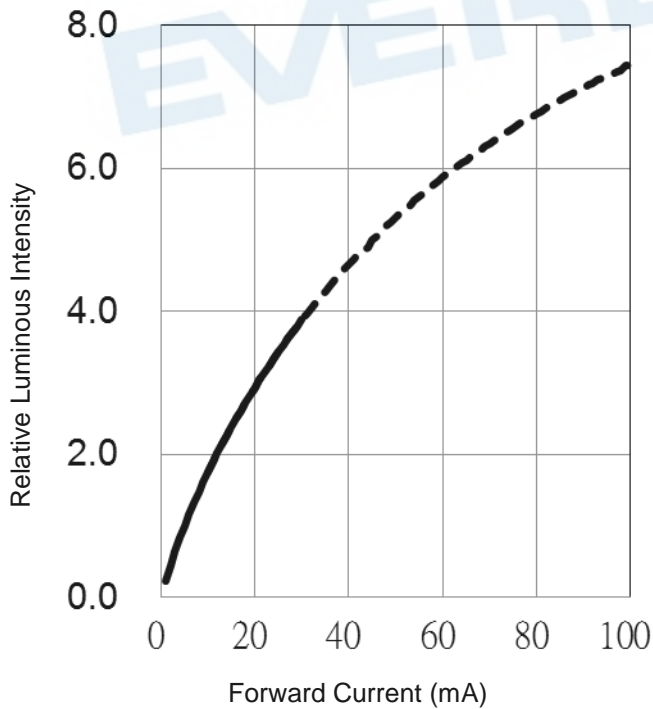
Forward Current vs. Forward Voltage (Ta=25°C)



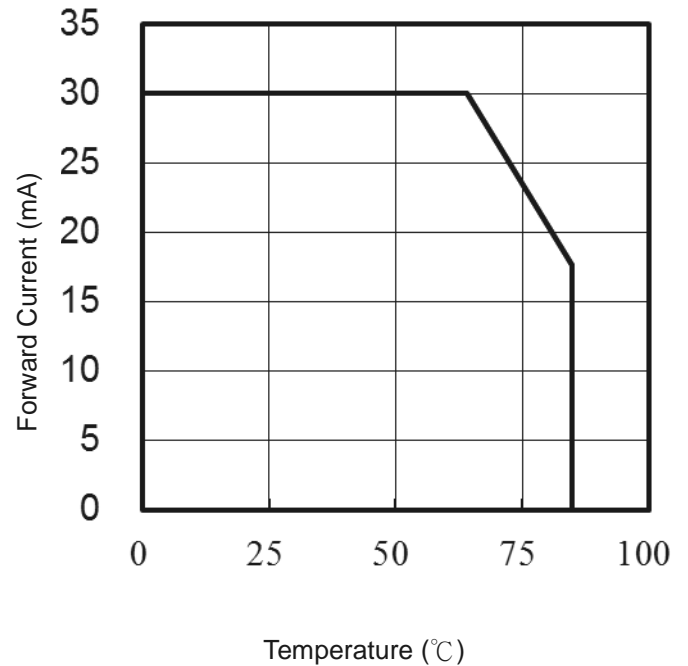
Dominant Wavelength vs. Forward Current (Ta=25°C)



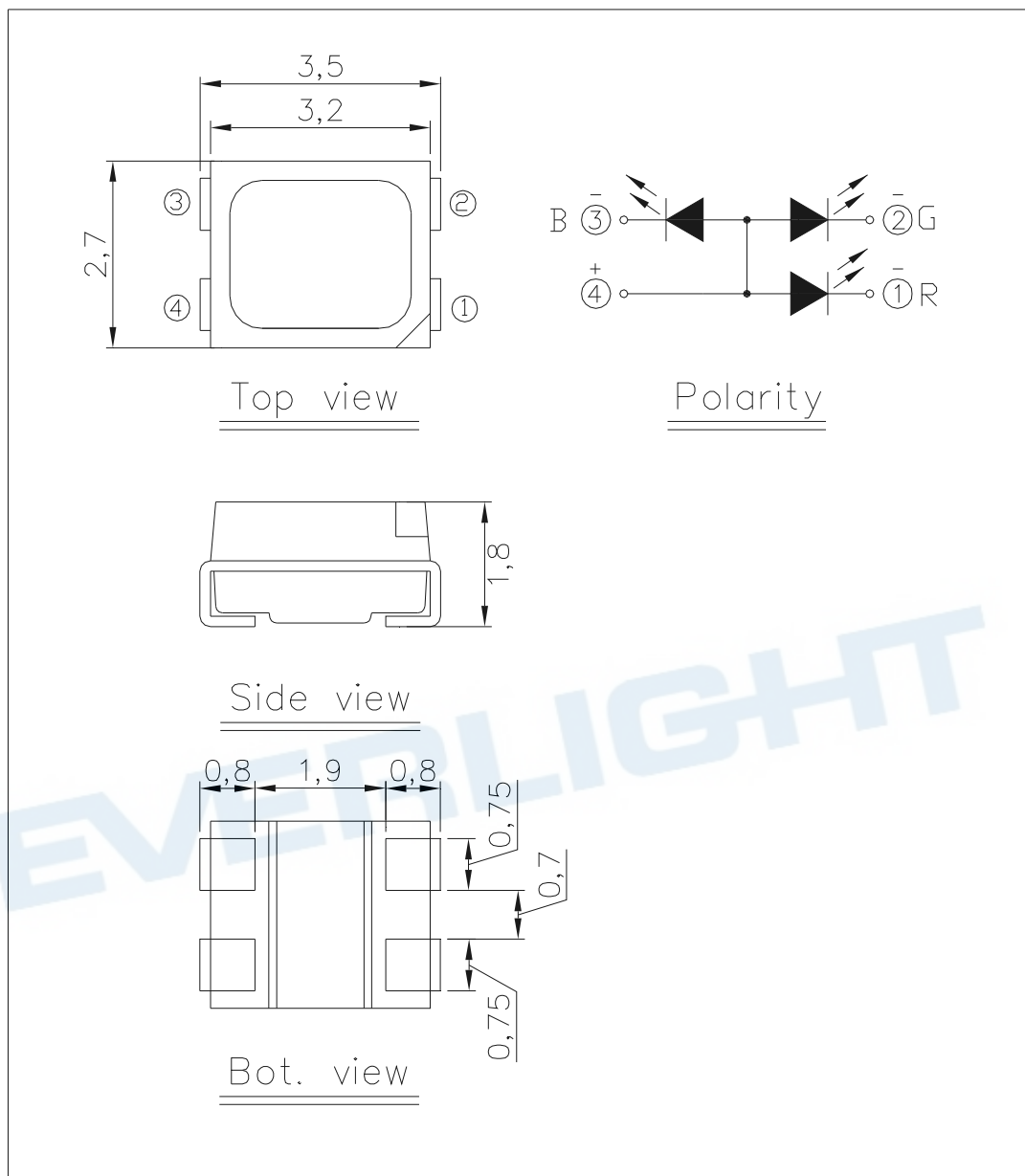
Relative Luminous Intensity vs. Forward Current (Ta=25°C)



Max. Permissible Forwarded Current (Ta=25°C)



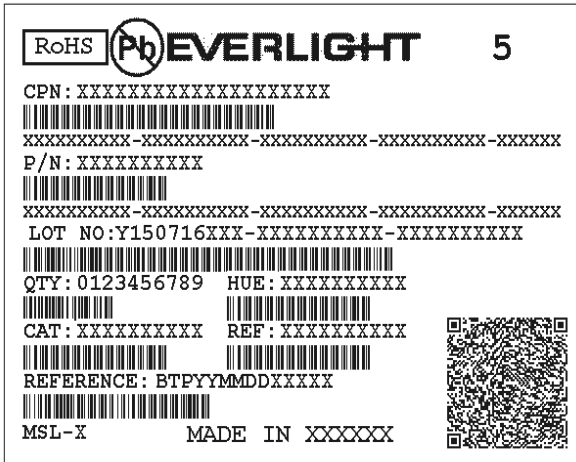
Package Dimension



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

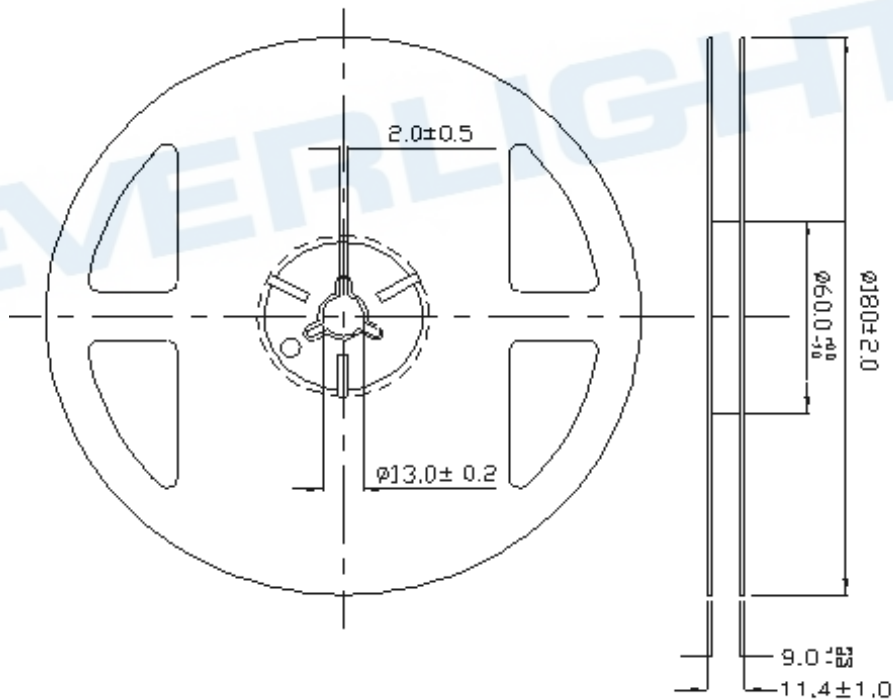
Moisture Resistant Packing Materials

Label Explanation

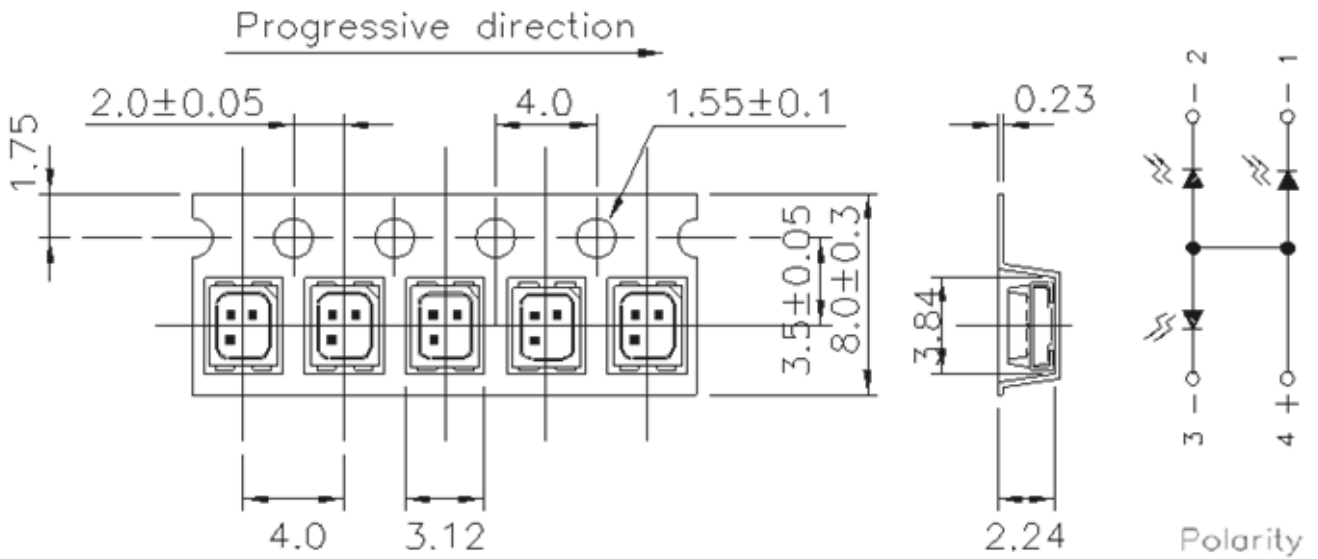


- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions

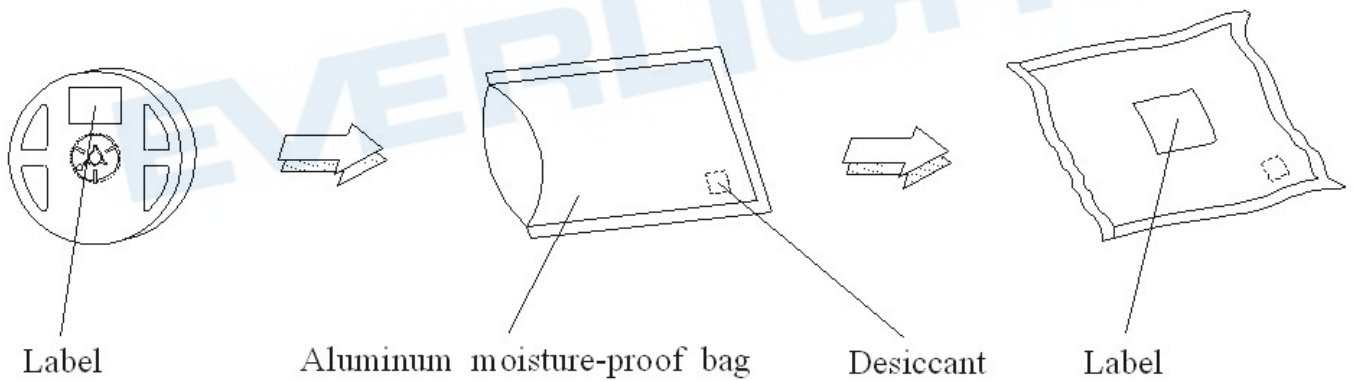


**Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel**



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

**Moisture Resistant Packing Process**

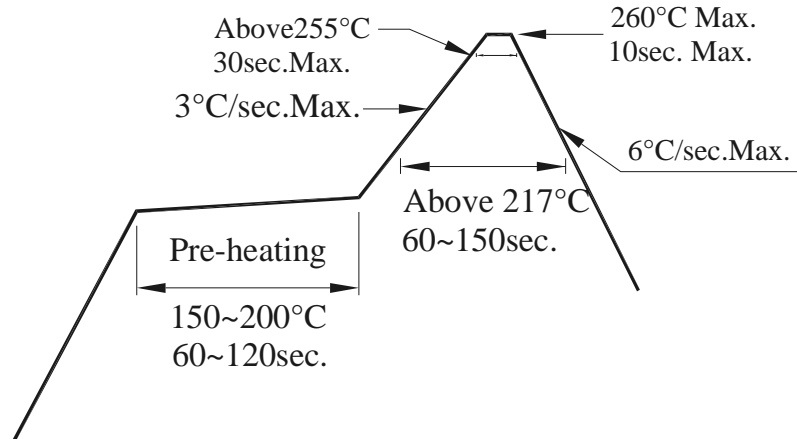


Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

## 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 Moisture proof bag should only be opened immediately prior to usage.
- 2.2 Environment should be less than 30°C and 60% RH when moisture proof bag is opened.
- 2.3 After opening the package MSL Conditions stated on page 1 of this spec should not be exceeded.
- 2.4 If the moisture sensitivity card indicates higher than acceptable moisture, the component should be baked at min. 60deg +/-5deg for 24 hours.

### 3. Soldering Condition

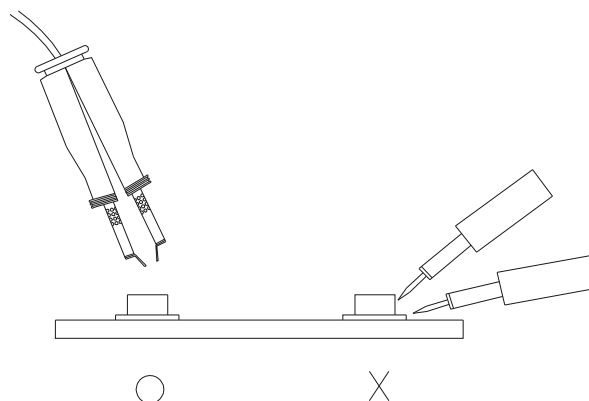
- 3.1 Pb-free solder temperature profile
- 3.2 Reflow soldering should not be done more than two times.
- 3.3 When soldering, do not put stress on the LEDs during heating.
- 3.4 After soldering, do not warp the circuit board.

### 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.



## 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.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the 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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