

SMD ▪ Low Power LED 5050/RGBWD-A100/ET



Features

- White SMT package.
- Built in Blue, Green, Red chips.
- Lead frame package with individual 8 pins.
- Wide viewing angle.
- Soldering methods: IR reflow soldering.
- Pb-free.
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH.
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).

Description

The Everlight 61-238 package has high efficacy, low power consumption, wide viewing angle and a compact form factor. These features make this package an ideal LED for all lighting applications.

Applications

- General lighting
- Decorative and Entertainment Lighting
- Indicators
- Illumination
- Switch lights

Type	Material	Emitted Color	Resin Color
R	AlInGaP	Brilliant Red	Diffused
G	InGaN	Brilliant Green	
B	InGaN	Brilliant Blue	
W	InGaN	White	Yellowish

Absolute Maximum Ratings (T_{Soldering}=25°C)

Parameter	Symbol	Rating		Unit
Reverse Voltage	V _R	R	5	V
		G	5	
		B	5	
		W	5	
Forward Current	I _F	R	200	mA
		G	180	
		B	180	
		W	200	
Peak Forward Current (Duty 1/10 @10ms)	I _{FP}	R	400	mA
		G	360	
		B	360	
		W	400	
Power Dissipation	P _d	R	520	mW
		G	684	
		B	684	
		W	720	
Operating Temperature	T _{opr}	-40 ~ +85		°C
Storage Temperature	T _{stg}	-40 ~ +100		°C
Junction Temperature	T _j	≤ 110		°C
Thermal Resistance (Junction / Soldering point)	R _{th J-S}	R	60	°C/W
		G	110	
		B	75	
		W	75	
Soldering Temperature	T _{sol}	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.		

Notes:

1.The value are based on one dice performance.

2.The products are sensitive to static electricity and must be carefully taken when handling products.

Electro-Optical Characteristics (T_{Soldering}=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous intensity	I _v	R	3550	5000	-----	mcd I _F =100mA
		G	7100	11000	-----	
		B	1800	3000	-----	
		W	5600	10000	-----	
Forward Voltage	V _F	R	-----	2.10	2.60	V I _F =100mA
		G	-----	3.00	3.80	
		B	-----	3.10	3.80	
		W	-----	2.90	3.60	
Viewing Angle	2θ _{1/2}	-----	120	-----	deg	I _F =100mA
Dominant Wavelength	λ _p	R	619	-----	629	nm I _F =100mA
		G	520	-----	535	
		B	460	-----	475	
Reverse Current	I _R	R	----	----	10	μA V _R =-5V
		G	----	----	10	
		B	----	----	10	
		W	----	----	10	

Note:

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

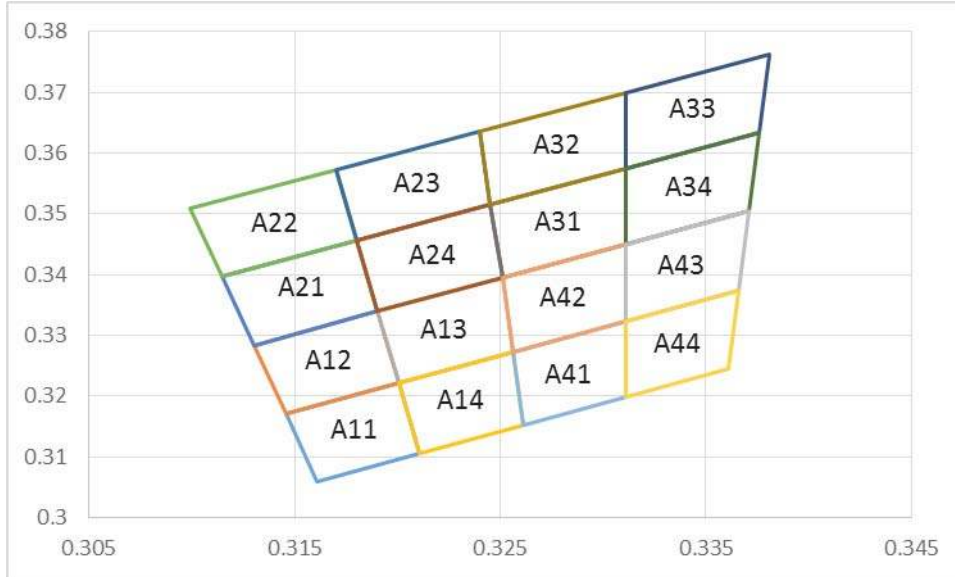
Bin Range of Luminous intensity

Symbol	Bin Code	Min.	Max.	Unit	Condition
R	CB	3550	4500	mcd	I _F =100mA
	DA	4500	5600		
	DB	5600	7100		
G	EA	7100	9000		
	EB	9000	11200		
	FA	11200	14000		
B	BA	1800	2240		
	BB	2240	2800		
	CA	2800	3550		
	CB	3550	4500		
W	DB	5600	7100		
	EA	7100	9000		
	EB	9000	11200		
	FA	11200	14000		
	FB	14000	18000		

Bin Range of Dominant Wavelength

Symbol	Bin Code	Min.	Max.	Unit	Condition
R	RB	619	624	nm	I _F =100mA
	RC	624	629		
G	G7	520	525		
	G8	525	530		
	G9	530	535		
B	B3	460	465		
	B4	465	470		
	B5	470	475		

The C.I.E. 1931 Chromaticity Diagram



Bin Range of Chromaticity Coordinates Specifications

Bin	CIE X	CIE Y
A11	0.3146	0.3172
	0.3201	0.3222
	0.3211	0.3106
	0.3161	0.3059
Bin	CIE X	CIE Y
A12	0.3130	0.3284
	0.3190	0.3339
	0.3201	0.3222
	0.3146	0.3172
Bin	CIE X	CIE Y
A13	0.3190	0.3339
	0.3251	0.3394
	0.3256	0.3273
	0.3201	0.3222
Bin	CIE X	CIE Y
A14	0.3201	0.3222
	0.3256	0.3273
	0.3261	0.3152
	0.3211	0.3106
Bin	CIE X	CIE Y
A21	0.3115	0.3397
	0.3180	0.3456
	0.3190	0.3339
	0.3130	0.3284
Bin	CIE X	CIE Y
A22	0.3099	0.3509
	0.3170	0.3572
	0.3180	0.3456
	0.3115	0.3397

Bin	CIE X	CIE Y
A31	0.3245	0.3515
	0.3311	0.3574
	0.3311	0.3449
	0.3251	0.3394
Bin	CIE X	CIE Y
A32	0.3240	0.3636
	0.3311	0.3699
	0.3311	0.3574
	0.3245	0.3515
Bin	CIE X	CIE Y
A33	0.3311	0.3699
	0.3381	0.3762
	0.3376	0.3633
	0.3311	0.3574
Bin	CIE X	CIE Y
A34	0.3311	0.3574
	0.3376	0.3633
	0.3371	0.3504
	0.3311	0.3449
Bin	CIE X	CIE Y
A41	0.3256	0.3273
	0.3311	0.3324
	0.3311	0.3199
	0.3261	0.3152
Bin	CIE X	CIE Y
A42	0.3251	0.3394
	0.3311	0.3449
	0.3311	0.3324
	0.3256	0.3273

Bin	CIE X	CIE Y
A23	0.3170	0.3572
	0.3240	0.3636
	0.3245	0.3515
	0.3180	0.3456
Bin	CIE X	CIE Y
A24	0.3180	0.3456
	0.3245	0.3515
	0.3251	0.3394
	0.3190	0.3339

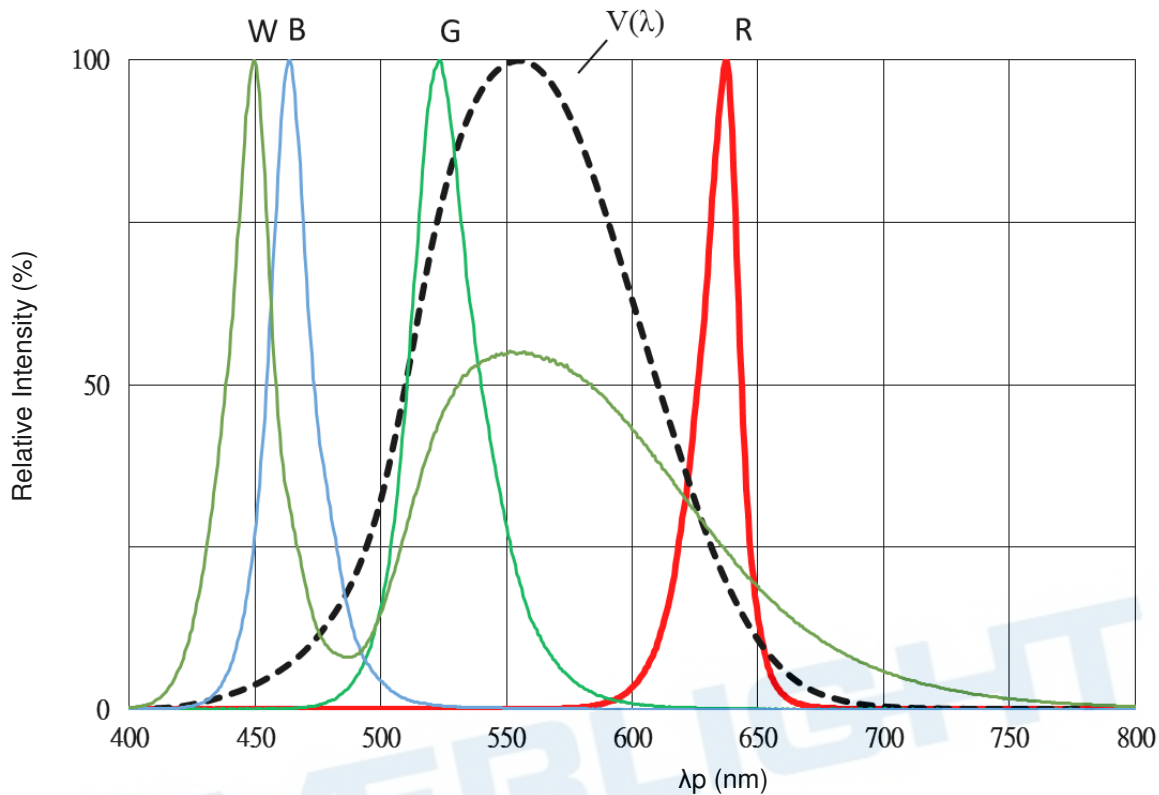
Bin	CIE X	CIE Y
A43	0.3311	0.3449
	0.3371	0.3504
	0.3366	0.3374
	0.3311	0.3324
Bin	CIE X	CIE Y
A44	0.3311	0.3324
	0.3366	0.3374
	0.3361	0.3245
	0.3311	0.3199

Note:
Tolerance of Chromaticity Coordinates : ± 0.01

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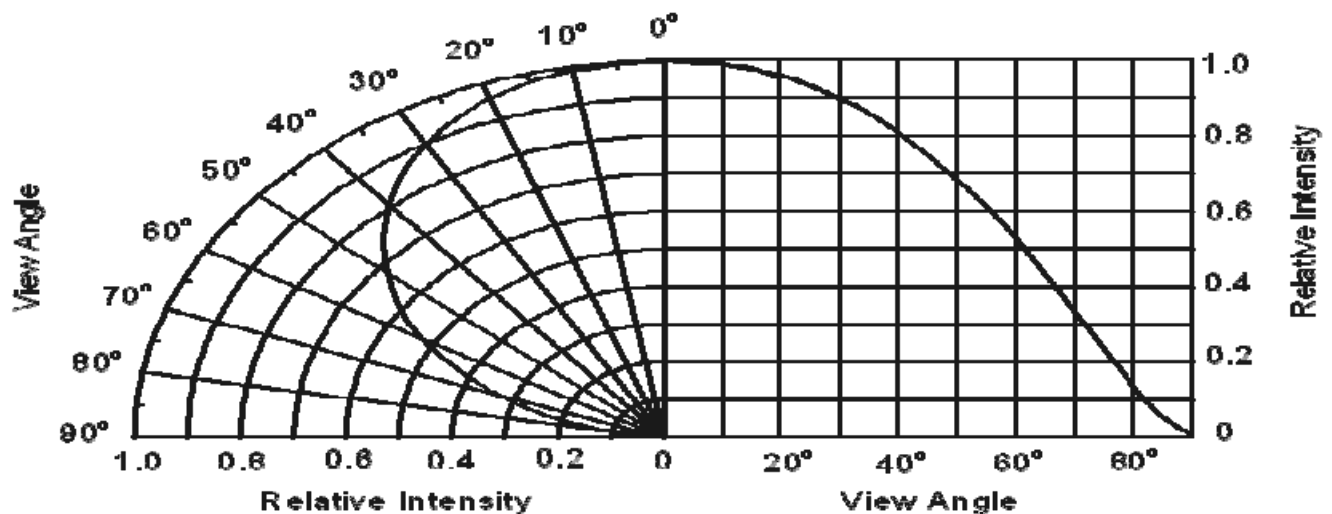
Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distribution



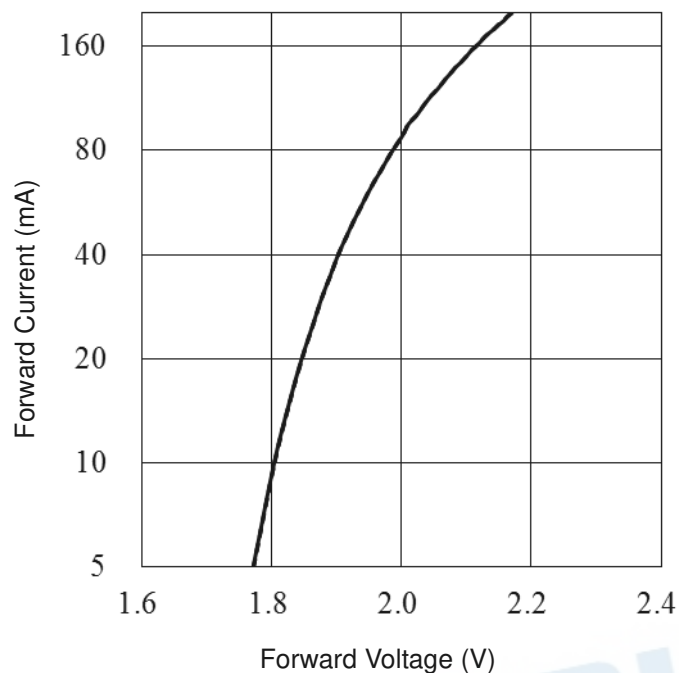
Note: $V(\lambda)$ =Standard eye response curve;

Diagram Characteristics of Radiation

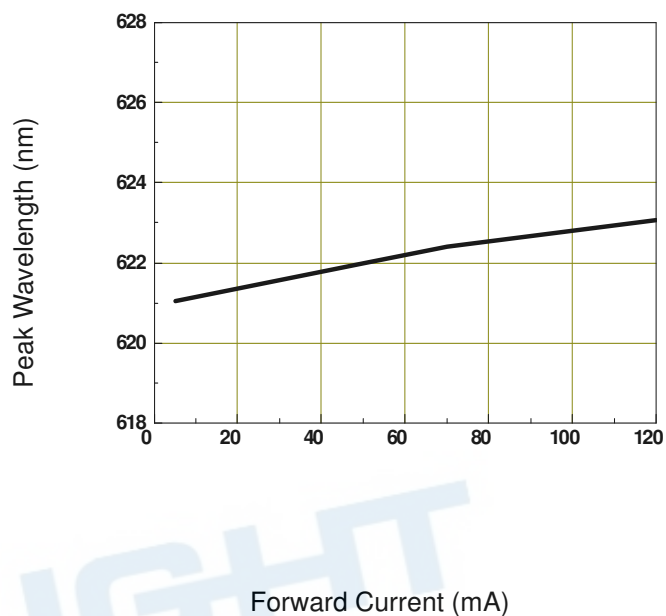


Typical Electro-Optical Characteristics Curves (R)

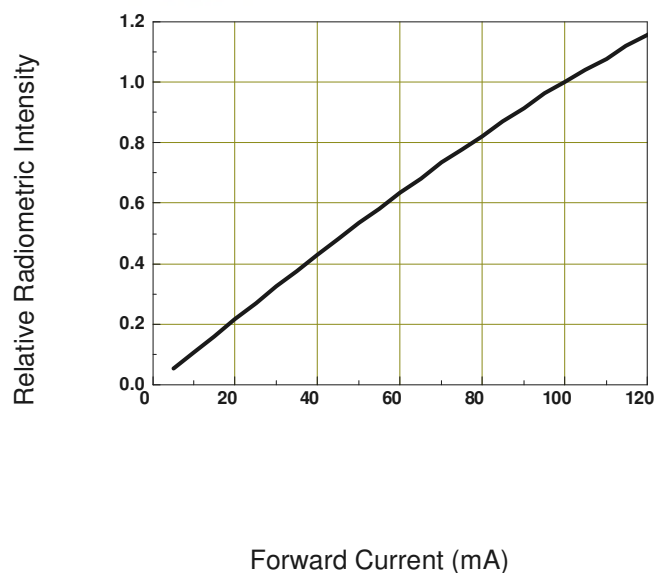
Forward Current vs. Forward Voltage
($T_a=25^{\circ}\text{C}$)



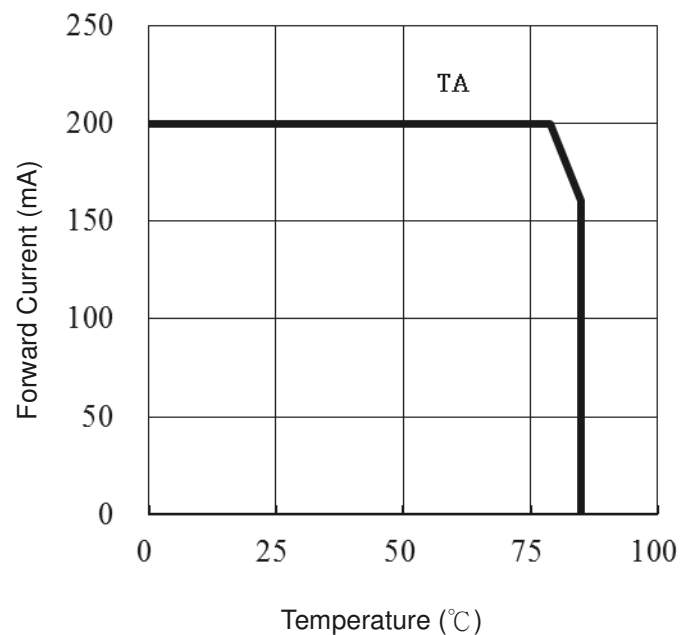
Dominant Wavelength vs. Forward Current
($T_a=25^{\circ}\text{C}$)



Relative Radiometric Intensity vs.
Forward Current ($T_a=25^{\circ}\text{C}$)

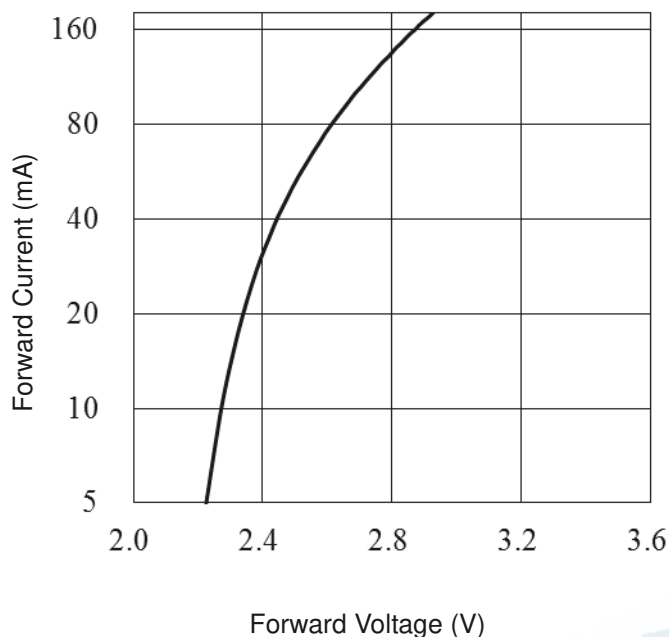


Max. Permissible Forwarded Current

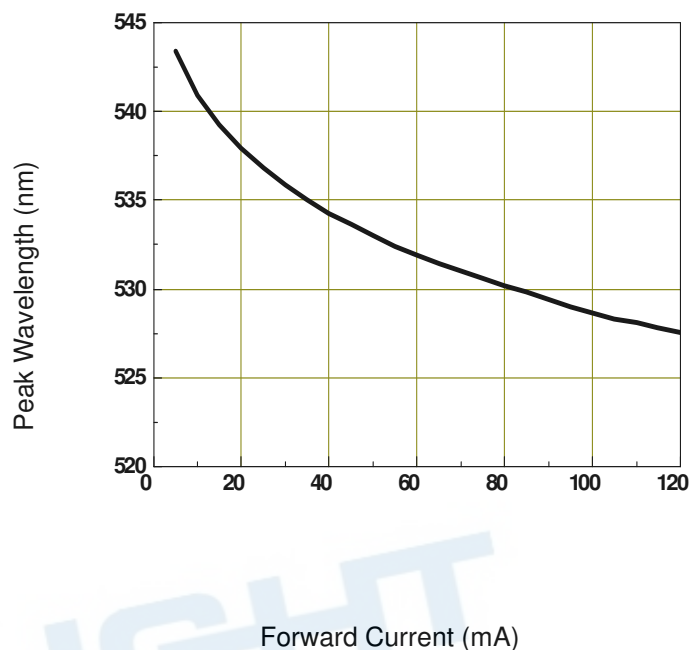


Typical Electro-Optical Characteristics Curves (G)

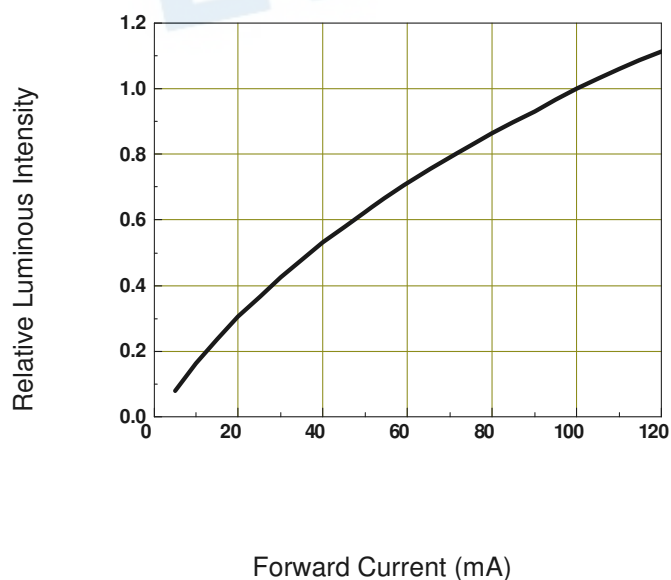
Forward Current vs. Forward Voltage
($T_a=25^{\circ}\text{C}$)



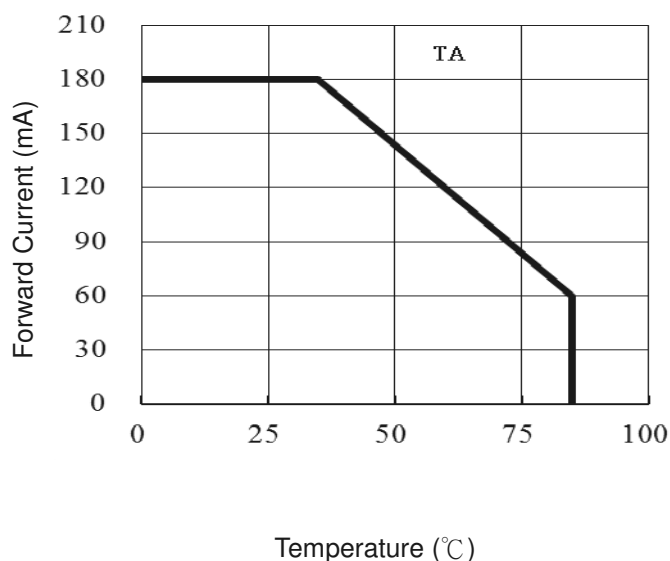
Dominant Wavelength vs. Forward Current
($T_a=25^{\circ}\text{C}$)



Relative Luminous Intensity vs. Forward Current
($T_a=25^{\circ}\text{C}$)

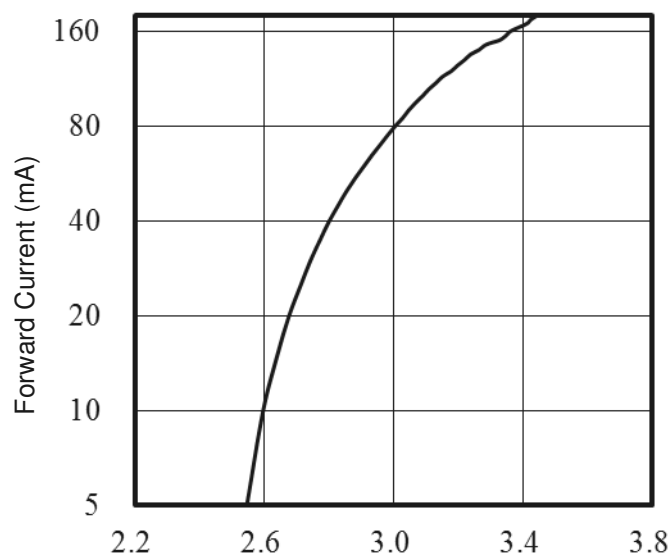


Max. Permissible Forwarded Current

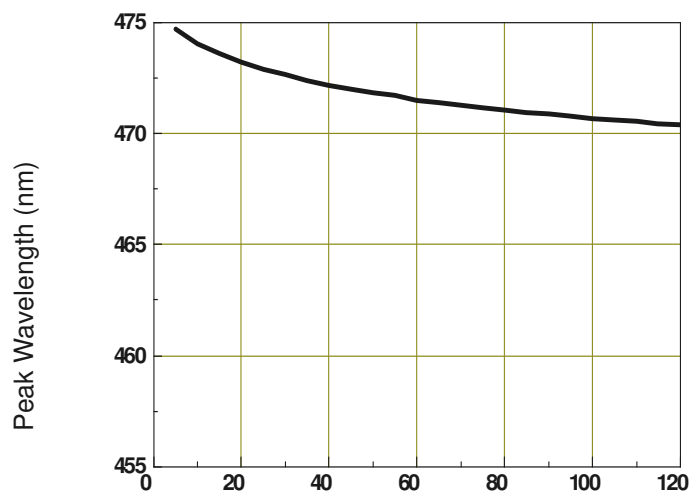


Typical Electro-Optical Characteristics Curves (B)

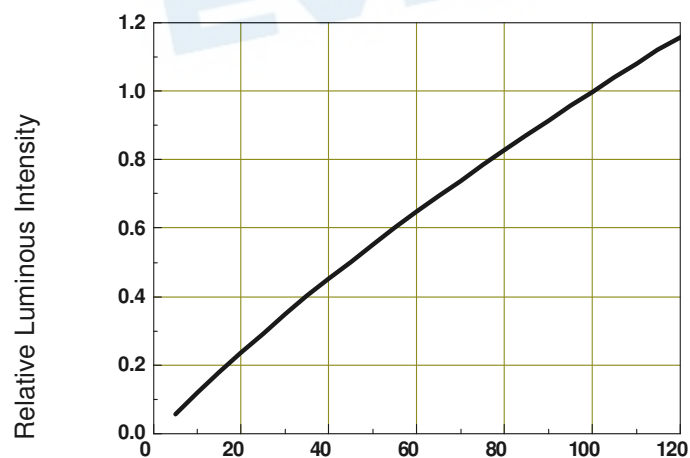
Forward Current vs. Forward Voltage
($T_a=25^{\circ}\text{C}$)



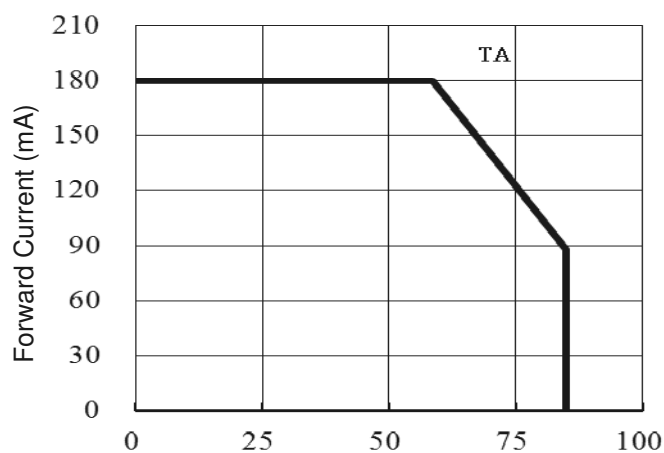
Dominant Wavelength vs. Forward Current
($T_a=25^{\circ}\text{C}$)



Relative Luminous Intensity vs.
Forward Current ($T_a=25^{\circ}\text{C}$)



Max. Permissible Forwarded Current

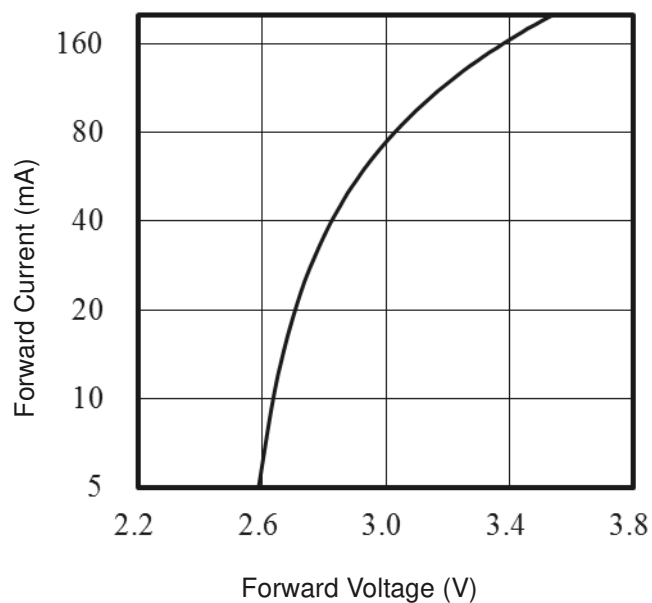


Forward Current (mA)

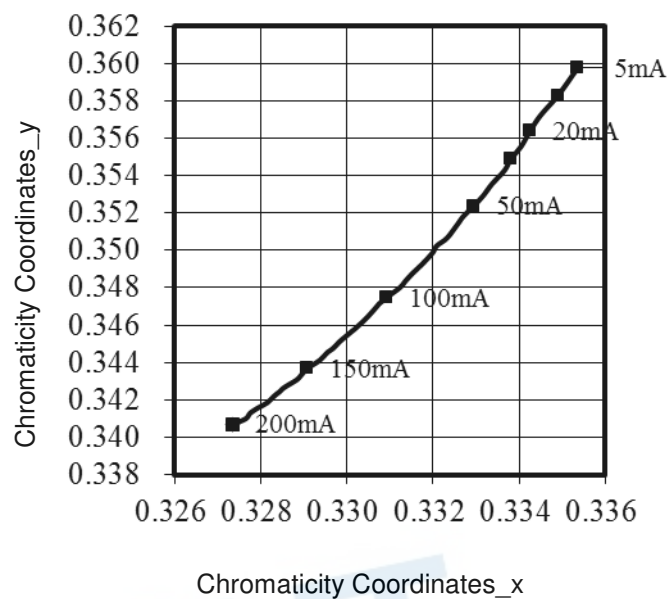
Temperature ($^{\circ}\text{C}$)

Typical Electro-Optical Characteristics Curves (W)

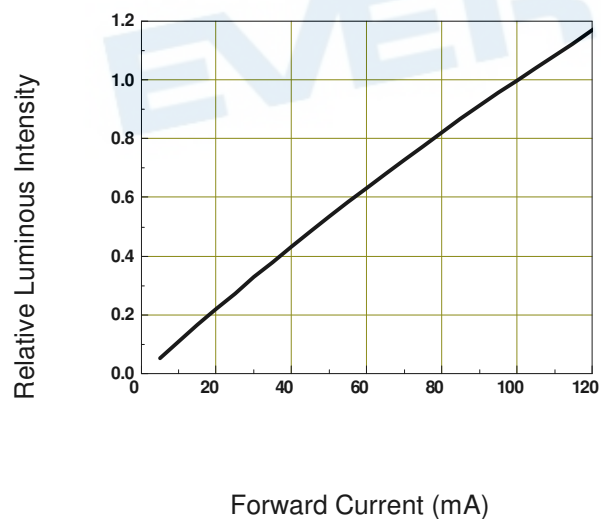
Forward Current vs. Forward Voltage (Ta=25°C)



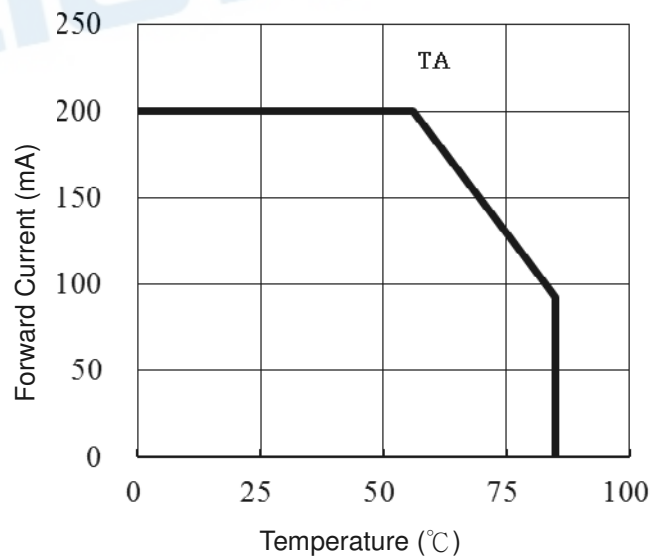
Chromaticity Coordinates vs. Forward Current (Ta=25°C)



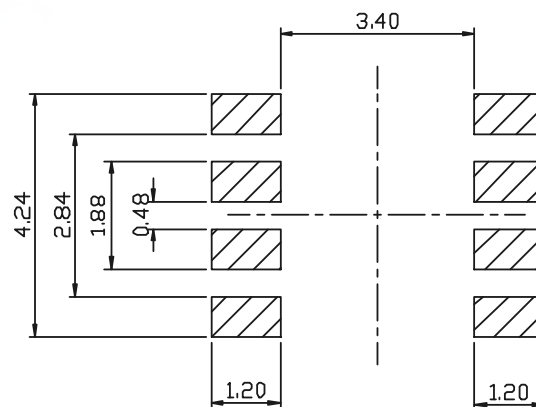
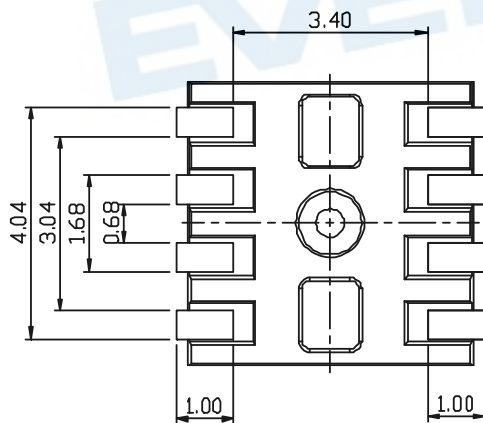
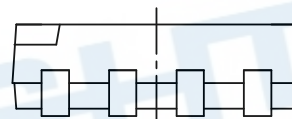
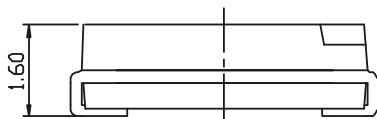
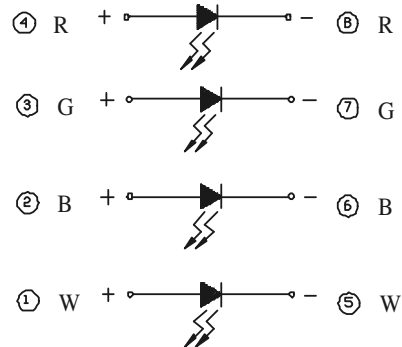
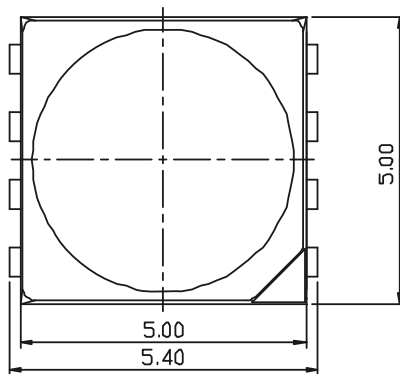
Relative Luminous Intensity vs. Forward Current (Ta=25°C)



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



Package Dimension



Soldering patterns

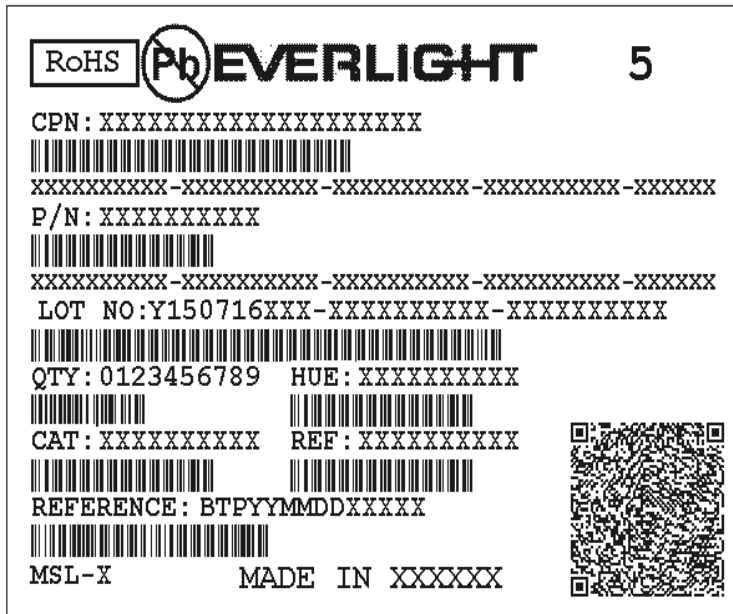
Suggested pad dimension is just reference only.
Please modify the pad dimension based on individual need.

Bot. view

Note:
Tolerance unless mentioned is $\pm 0.2\text{mm}$; Unit = mm

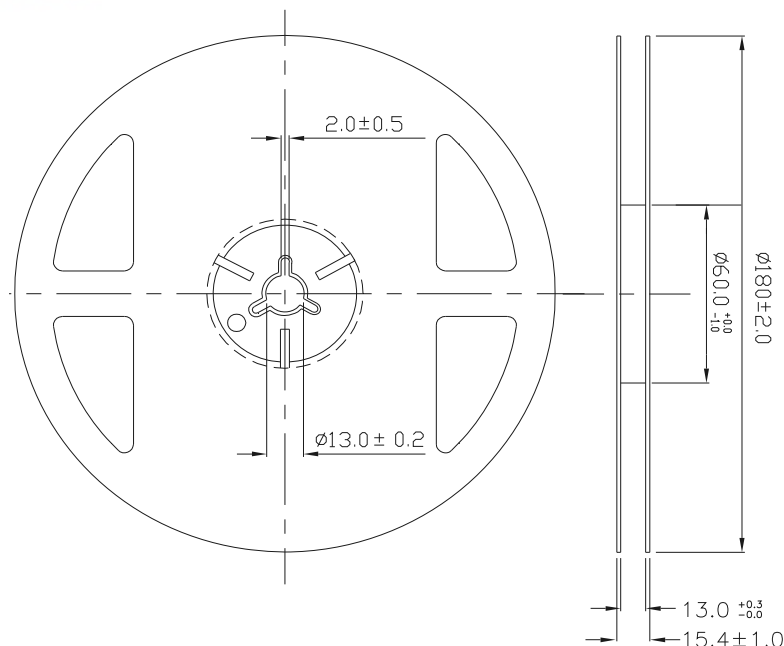
Moisture Resistant Packing Materials

Label Explanation



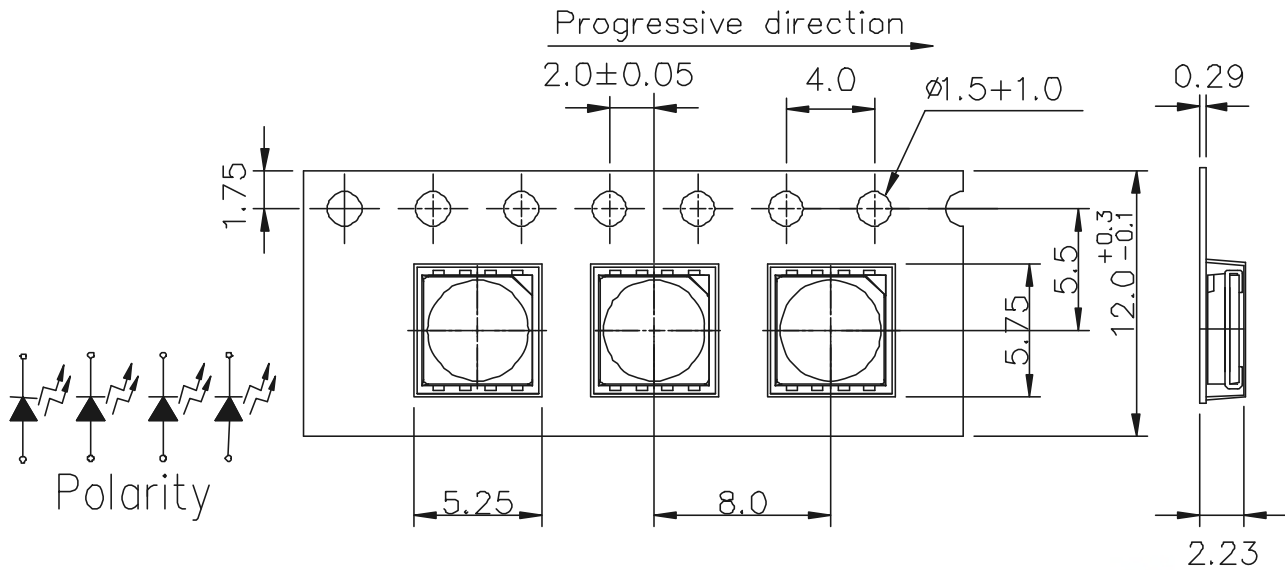
- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Peak. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions



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

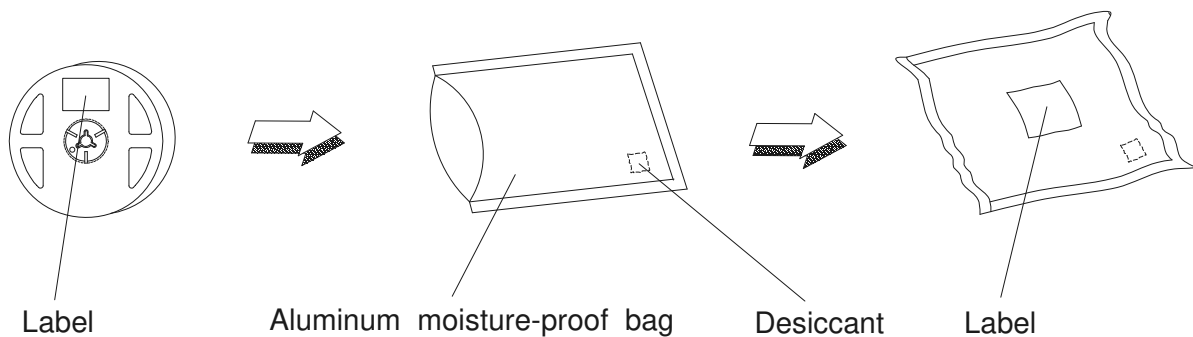
Carrier Tape Dimensions: Loaded Quantity 800 pcs Per Reel



Note:

1. The tolerances unless mentioned is : ± 0.1 mm, Unit = mm
2. Minimum packing amount is 250/500 pcs per reel

Moisture Resistant Packing Process



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.

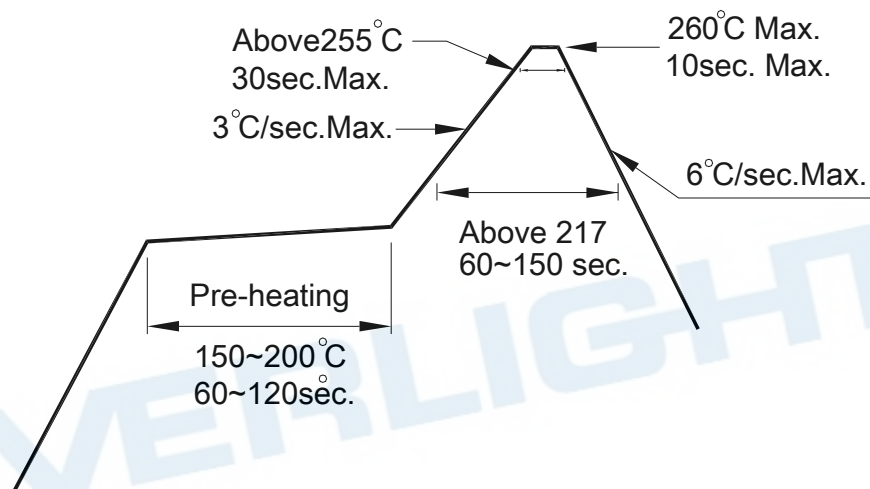
2.3 After opening the package: The LED's floor life is 168 Hrs under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

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.

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.

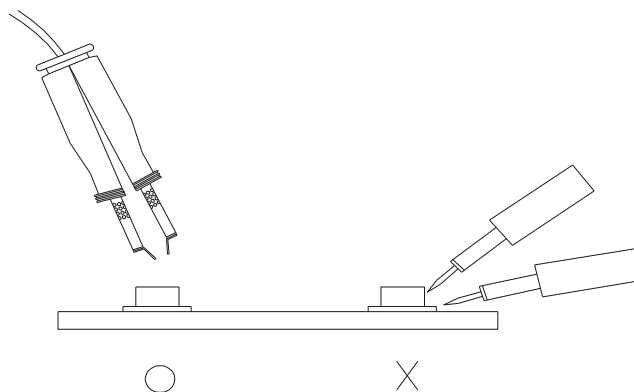
3.4 After soldering, do not warp the circuit board.

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.



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.
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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