DATASHEET

SMD- Full Color Side View LEDs (Height 0.8mm)
99-235-RSHGSBOD-M202515-2G-CS

Features

- P-LCC-6 package.
- Inner reflector and white package.
- Built in 3 LED chips.
- Colorless clear resin
- Wide viewing angle 120°.
- White SMT package.
- 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).
- 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.
- Substitution of traditional light.
- Amusement equipment.
- General applications.
- Optical indicator.

Device Selection Guide

Chip Materials	Emitted Color	Resin Color
AlGaInP	Brilliant Red	Diffuser
InGaN	Brilliant Green	Diffuser
InGaN	Brilliant Blue	Diffuser

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Type	Rating	Unit
Reverse Voltage	V_R		5	V
Forward Current	I_F	RSH	30	mA
		GS	30	
		BO	30	
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	RSH	60	mA
		GS	60	
		BO	60	
Power Dissipation	Pd	RSH	52	mW
		GS	85	
		BO	50	
Junction Temperature	T_j		115	℃
Operating Temperature	T_{opr}		-40 ~ +85	℃
Storage Temperature	Tstg		-40 ~ +90	℃
ESD	ESD_{HBM}	RSH	2000	V
		GS	500	
		BO	500	
Soldering Temperature	T_{sol}		Reflow Soldering : 260 ℃ for 10 sec. Hand Soldering : 350 ℃ for 3 sec.	

Electro-Optical Characteristics (Ta=25℃)

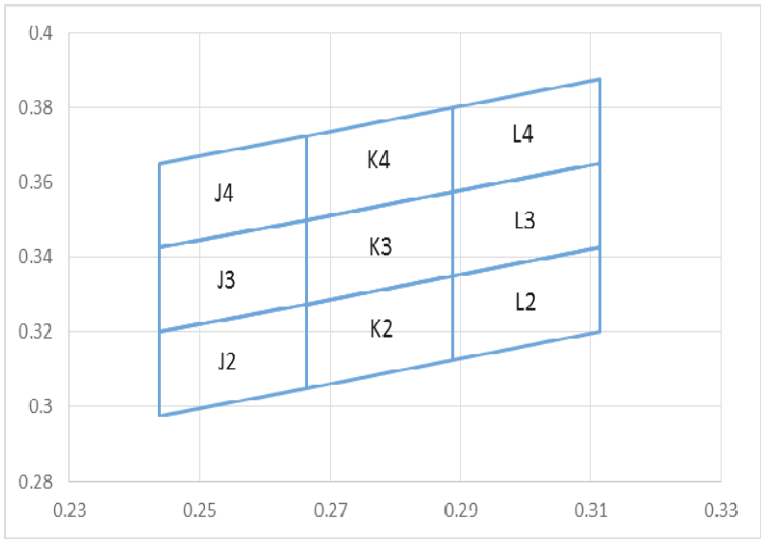
Parameter	Symbol	Type	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	RSH	710	1200	2240	mcd	R:I_F=20mA G:I_F=25mA B:I_F=15mA
		GS	2240	2700	4500		
		BO	224	370	560		
Viewing Angle	$2\theta_{1/2}$		-----	120	-----	deg	R:I_F=20mA G:I_F=25mA B:I_F=15mA
Peak Wavelength	λp	RSH	---	630	---	nm	R:I_F=20mA G:I_F=25mA B:I_F=15mA
		GS	---	525	---		
		BO	---	465	---		
Dominant Wavelength	λd	RSH	618	---	628	nm	R:I_F=20mA G:I_F=25mA B:I_F=15mA
		GS	518	---	533		
		BO	465	---	475		
Spectrum Radiation Bandwidth	Δλ	RSH	---	20	---	nm	R:I_F=20mA G:I_F=25mA B:I_F=15mA
		GS	---	35	---		
		BO	---	25	---		
Forward Voltage	V_F	RSH	1.95	---	2.60	V	R:I_F=20mA G:I_F=25mA B:I_F=15mA
		GS	2.70	---	3.40		
		BO	2.60	---	3.30		
White point coordinate	x	-----	-----	0.2775	-----	-----	R:I_F=20mA G:I_F=25mA B:I_F=15mA
	y	-----	-----	0.3425	-----	-----	
Reverse Current	I_R	-----	-----	-----	10	μA	V_R=5V

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

Bin Range of Luminous

Type	Min.	Avg	Max.	Unit	Min.	Avg	Max.	Unit	Condition
RSH	710	1200	2240	mcd	2.20	3.60	6.80	lm	R:I_F=20mA G:I_F=25mA B:I_F=15mA
GS	2240	2700	4500		6.80	8.20	13.6		
BO	224	370	560		0.70	1.10	1.70		
Mix	3174	4270	7300		9.7	12.90	22.10		

The C.I.E. 1931 Chromaticity Diagram



Note:
Tolerance of Chromaticity Coordinates: ±0.02

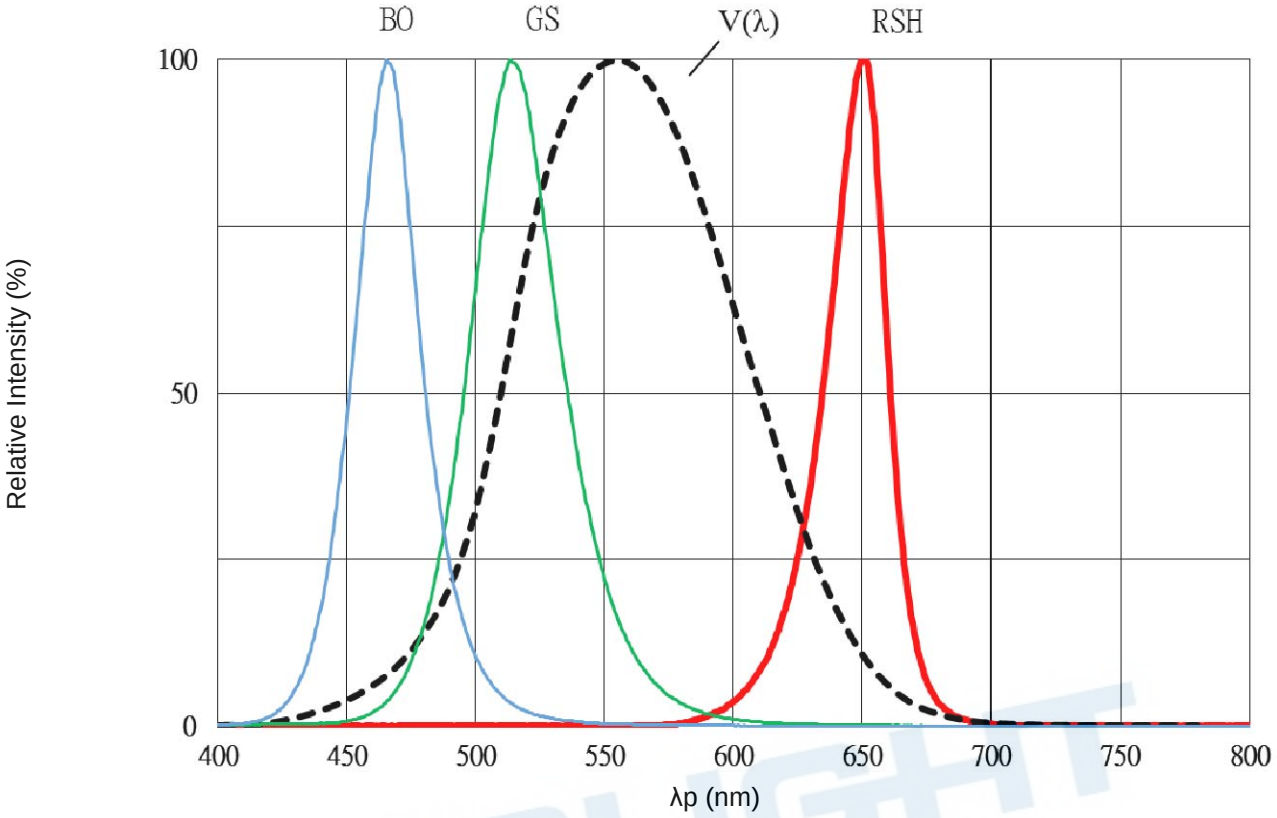
Bin Range of Chromaticity Coordinates Specifications

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
J2	0.2438	0.2975	K2	0.2663	0.3050	L2	0.2888	0.3125
	0.2663	0.3050		0.2888	0.3125		0.3113	0.3200
	0.2663	0.3275		0.2888	0.3350		0.3113	0.3425
	0.2438	0.3200		0.2663	0.3275		0.2888	0.3350
J3	0.2438	0.3200	K3	0.2663	0.3275	L3	0.2888	0.3350
	0.2663	0.3275		0.2888	0.3350		0.3113	0.3425
	0.2663	0.3500		0.2888	0.3575		0.3113	0.3650
	0.2438	0.3425		0.2663	0.3500		0.2888	0.3575
J4	0.2438	0.3425	K4	0.2663	0.3500	L4	0.2888	0.3575
	0.2663	0.3500		0.2888	0.3575		0.3113	0.3650
	0.2663	0.3725		0.2888	0.3800		0.3113	0.3875
	0.2438	0.3650		0.2663	0.3725		0.2888	0.3800

Note:
Color coordinates measurement allowance: ±0.02.

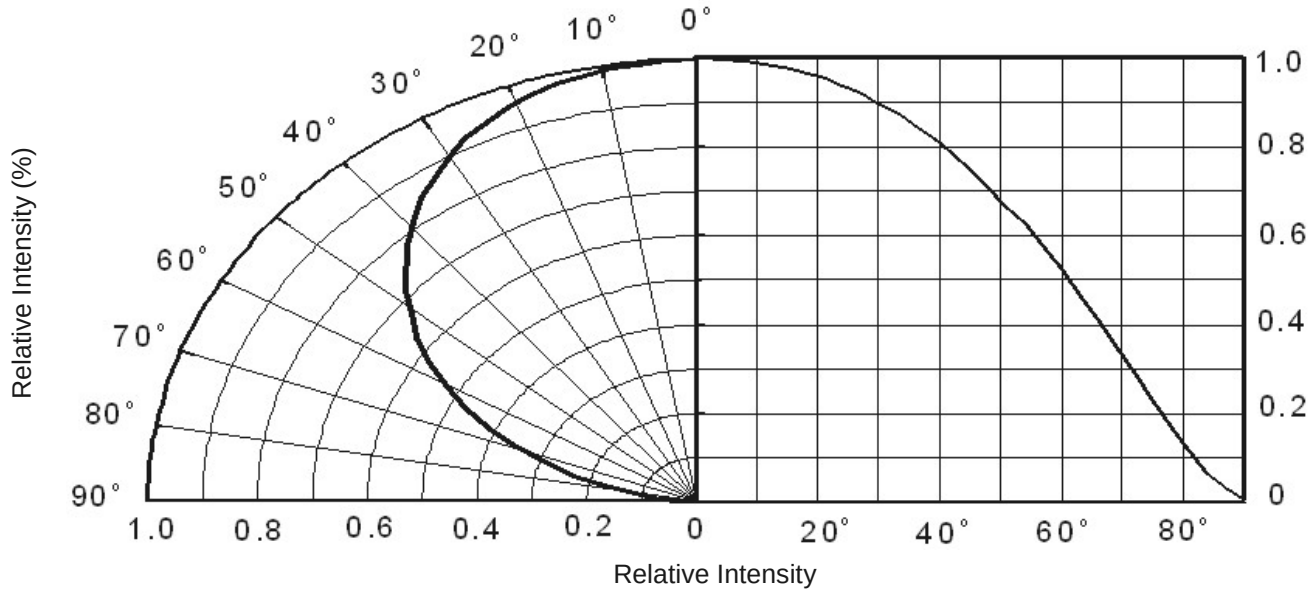
Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distribution



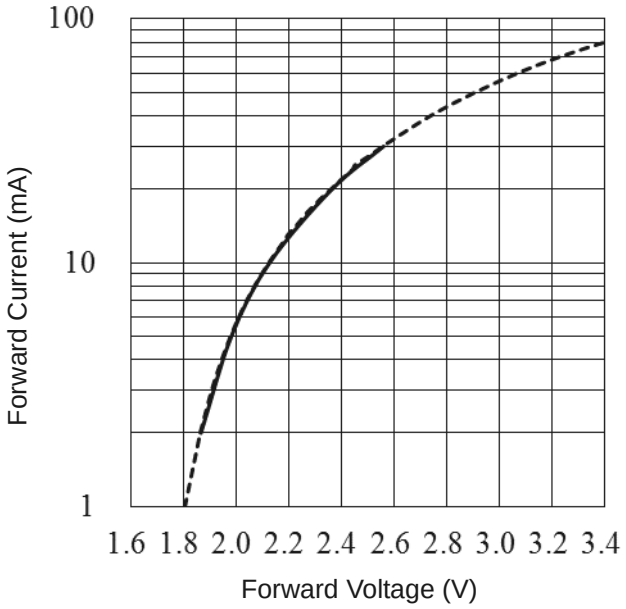
Note: V(λ)=Standard eye response curve;

Diagram Characteristics of Radiation

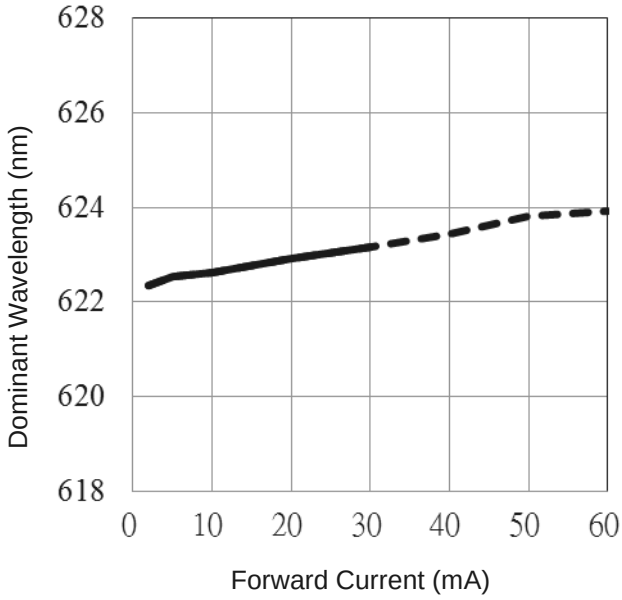


Typical Electro-Optical Characteristics Curves (RSH)

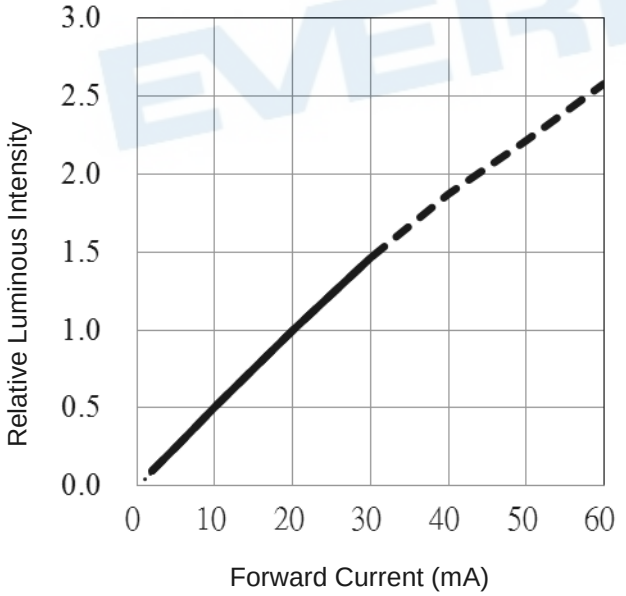
Forward Current vs. Forward Voltage (Ta=25℃)



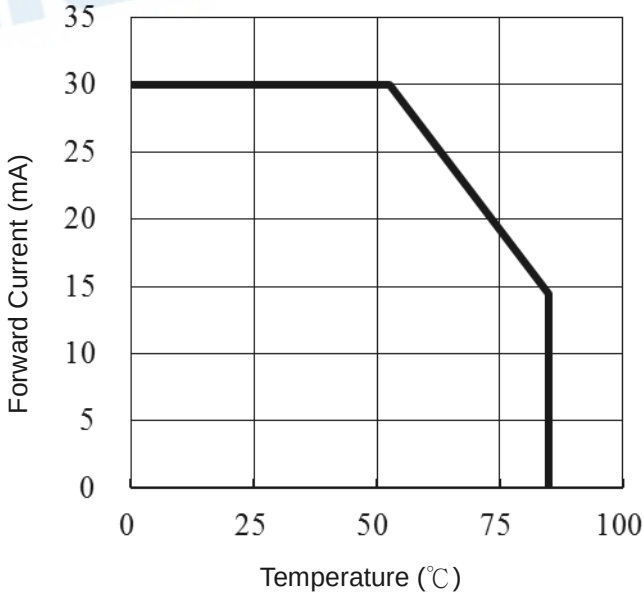
Dominant Wavelength vs. Forward Current (Ta=25℃)



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

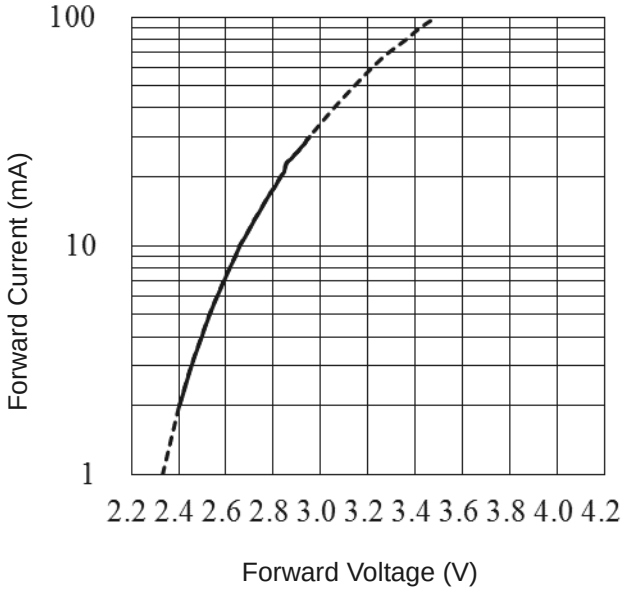


Max. Permissible Forwarded Current(Ta=25℃)

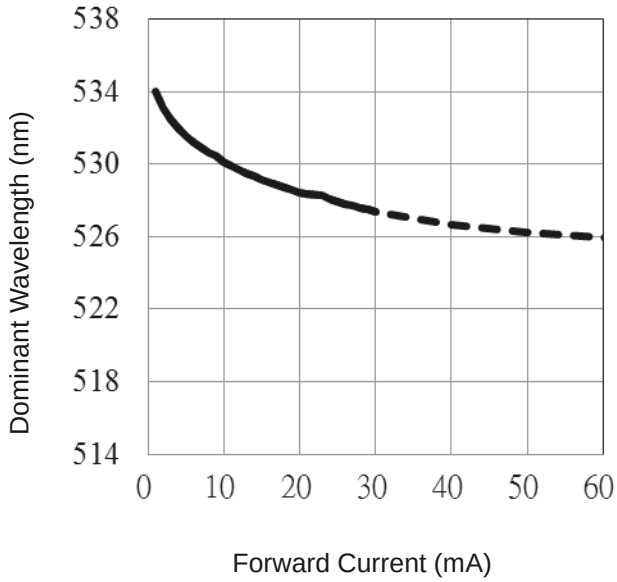


Typical Electro-Optical Characteristics Curves (GS)

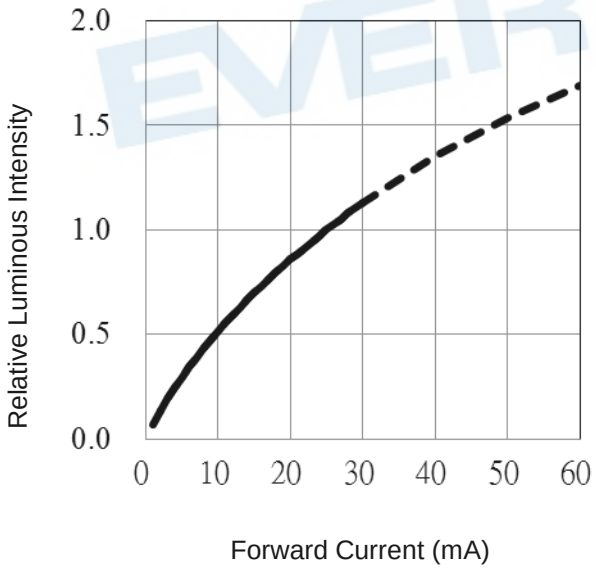
Forward Current vs. Forward Voltage (Ta=25℃)



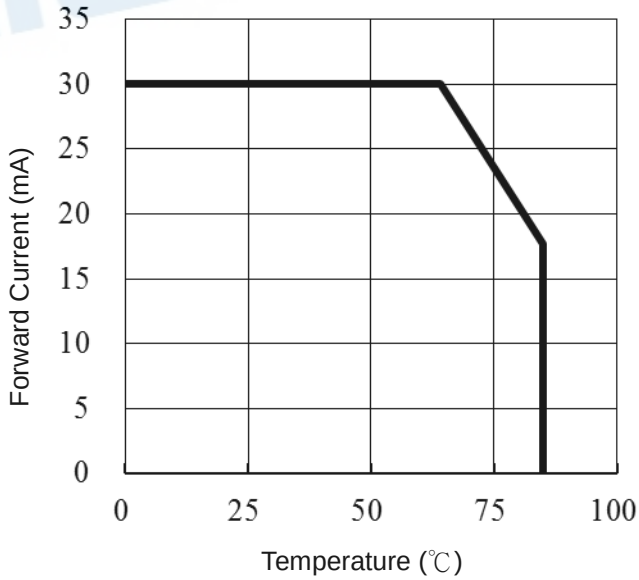
Dominant Wavelength vs. Forward Current (Ta=25℃)



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

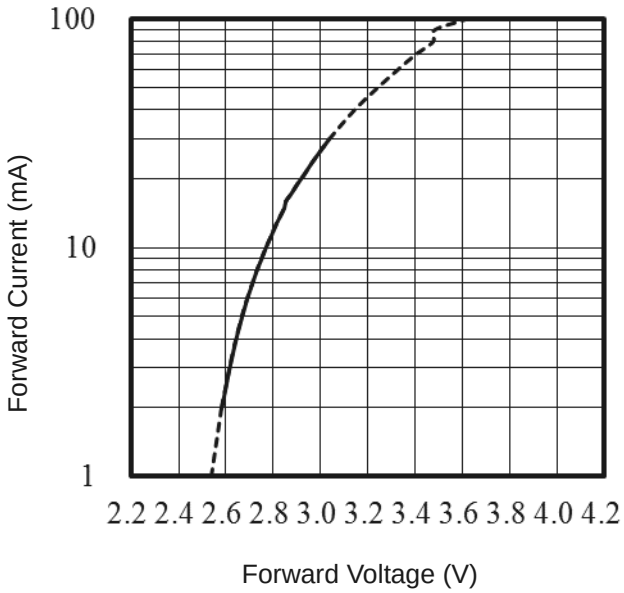


Max. Permissible Forwarded Current(Ta=25℃)

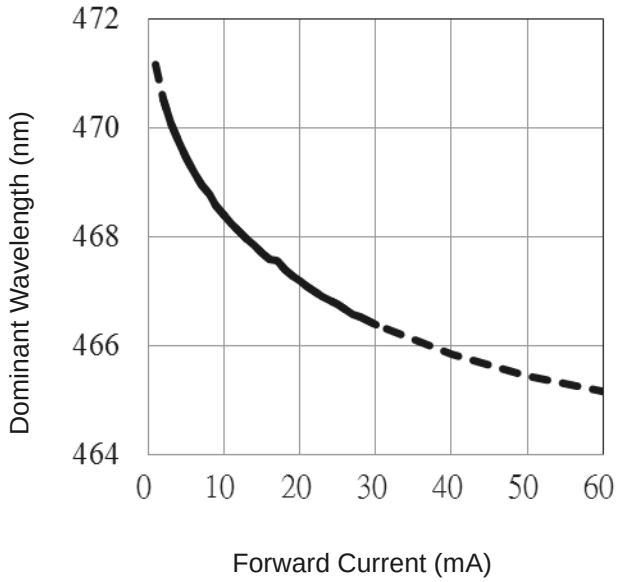


Typical Electro-Optical Characteristics Curves (BO)

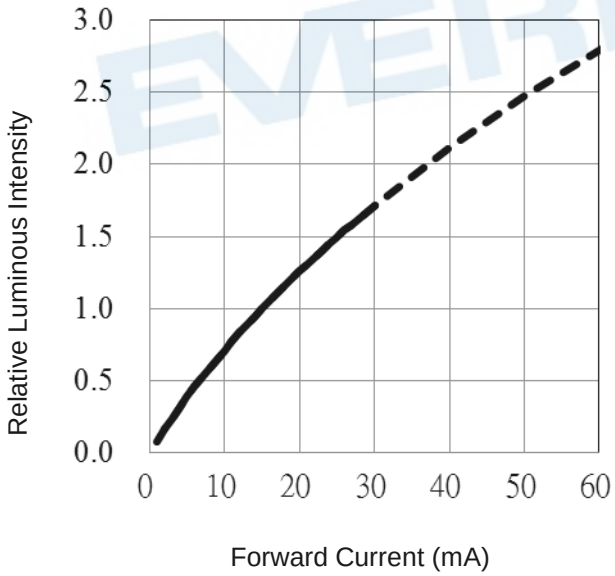
Forward Current vs. Forward Voltage (Ta=25℃)



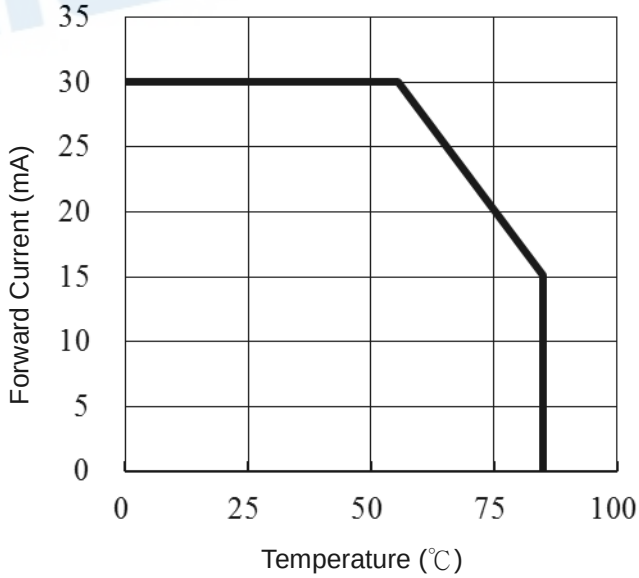
Dominant Wavelength vs. Forward Current (Ta=25℃)



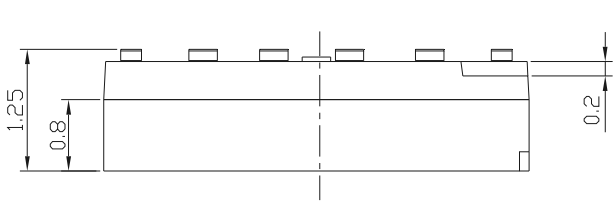
Relative Luminous Intensity vs. Forward Current (Ta=25℃)

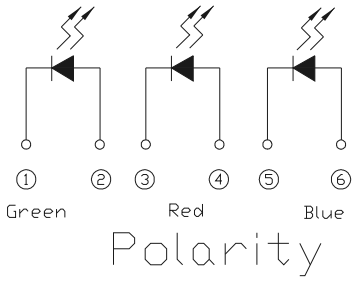


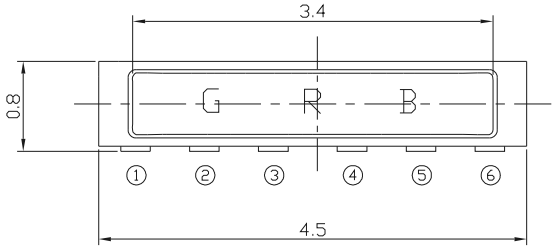
Max. Permissible Forwarded Current(Ta=25℃)

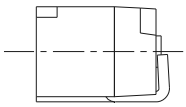


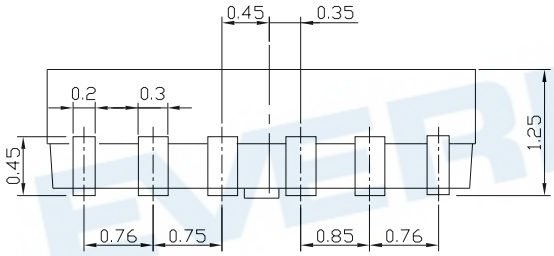
Package Dimension

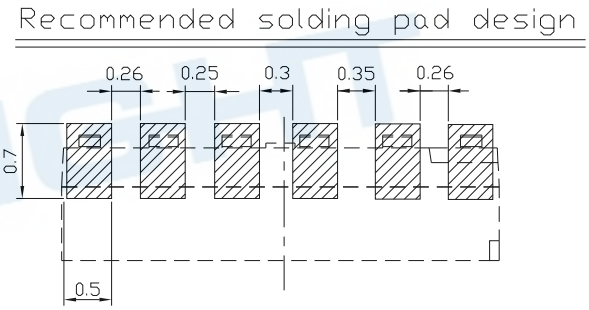








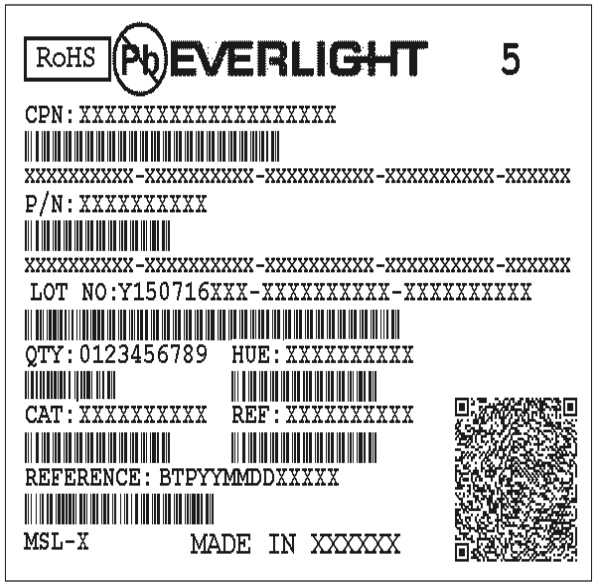




Note: Tolerances unless mentioned ±0.1mm. Unit = mm

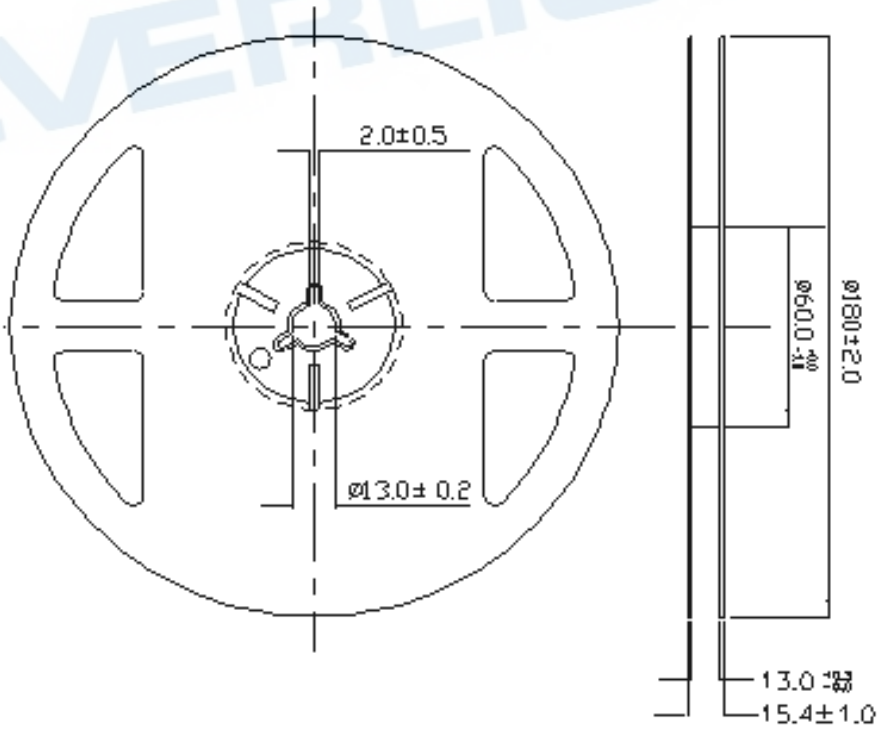
Moisture Resistant Packing Materials

Label Explanation

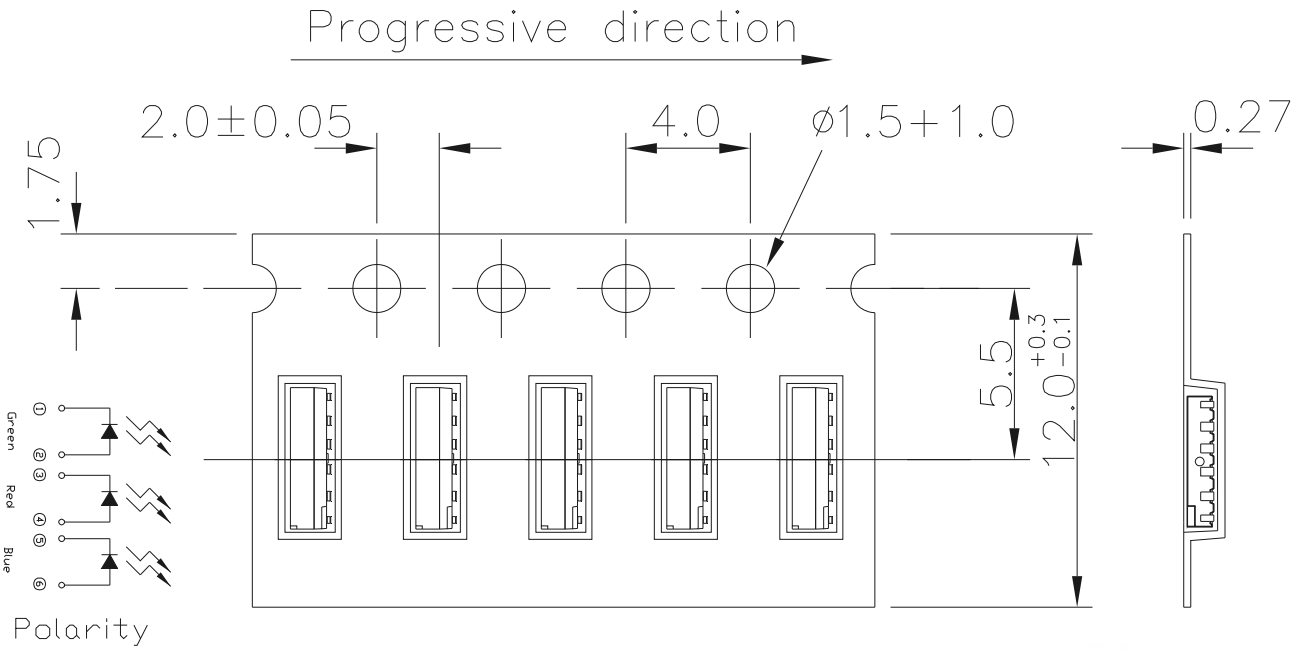


- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions

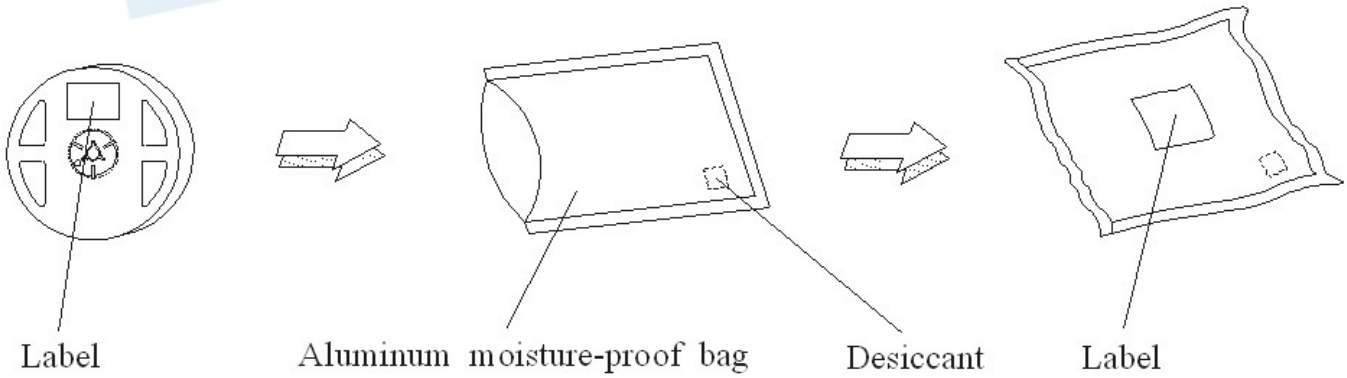


Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel



Notes:
1. Tolerances unless mentioned ±0.1mm. Unit = mm
2.Minimum packing amount is 250/500/1000/2000 pcs per reel

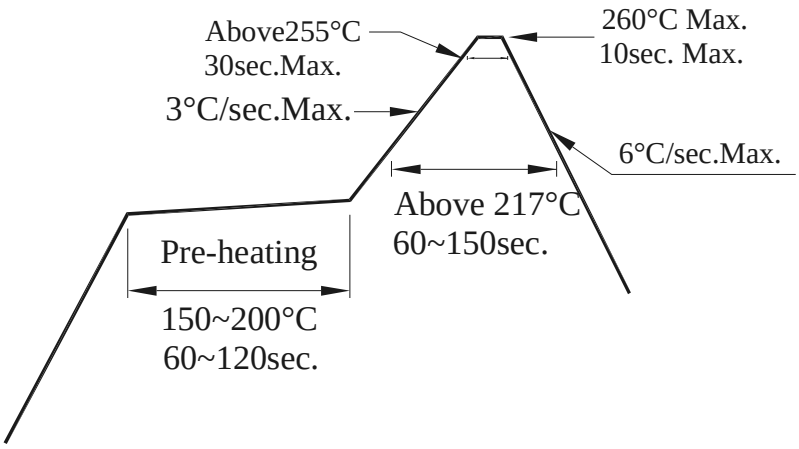
Moisture Resistant Packing Process



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℃ 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.

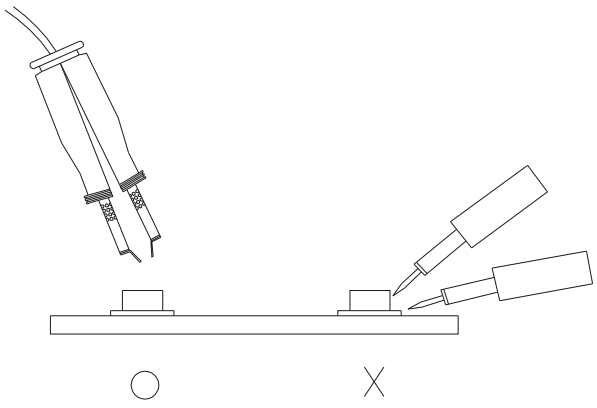
   3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

   Each terminal is to go to the tip of soldering iron temperature less than 350℃ 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.

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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