

and finally smaller equipment to be obtained.

- Besides, light weight makes them ideal for miniature applications.
- Furthermore by automation assembly machines the accuracy is anticipated.

Applications

- Small indicator for indoor applications.
- Flat backlight for LCD, switches and symbols.
- Indicator and backlight in office equipment.
- Indicator and backlight for battery driven equipment.
- Indicator and backlight for audio and video equipment.
- Backlighting in dashboards and switches.
- Telecommunication : indicator and backlighting in telephone and fax.

Device Selection Guide

Chip Materials	Emitted Color	Resin Color
AlGaInP	Super Yellow	Water Clear

Absolute Maximum Ratings (Ta=25 °C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	20	mA
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	60	mA
Power Dissipation	P_d	160	mW
Operating Temperature	T_{opr}	-40 ~ +85	
Storage Temperature	T_{stg}	-40 ~ +90	
Electrostatic Discharge	ESD	2000	V
Soldering Temperature	T_{sol}	Reflow Soldering : 260 Hand Soldering : 350	for 10 sec. for 3 sec.

Electro-Optical Characteristics (Ta=25 °C)

Parameter	Symbol	Rank	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v	A2	198	529	----	mcd	I _F =20mA
		A3	463	714	----		
		A4	661	892	----		
		A5	793	1156	----		
		A6	991	1454	----		
		A7	1150	1600	----		
Viewing Angle	2θ _{1/2}		-----	25	-----	deg	I _F =20mA
Peak Wavelength	λ _p		-----	591	-----	nm	I _F =20mA
Dominant Wavelength	λ _d		-----	589	-----	nm	I _F =20mA
Spectrum Radiation Bandwidth	Δλ		-----	15	-----	nm	I _F =20mA
Forward Voltage	V _F		-----	2.0	2.4	V	I _F =20mA
Reverse Current	I _R		-----	-----	10	μA	V _R =5V

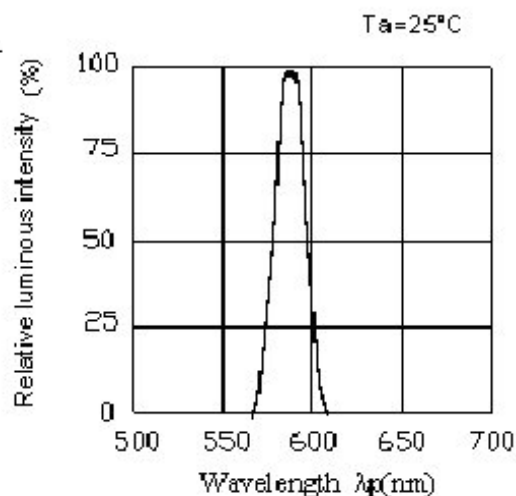
Note:

- 1.T0lerance of Luminous Intensity: ±11%
- 2.Tolerance of Dominant Wavelength ±1nm
- 3.Tolerance of Forward Voltage: ±0.1V

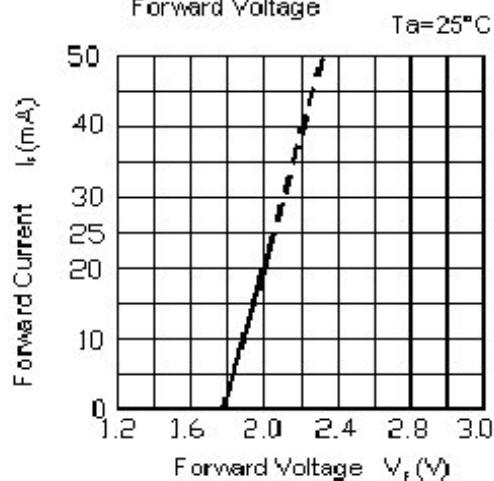
Typical Electro-Optical Characteristics Curves

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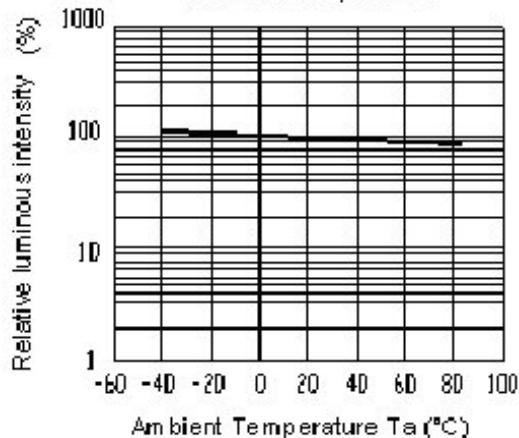
Spectrum Distribution



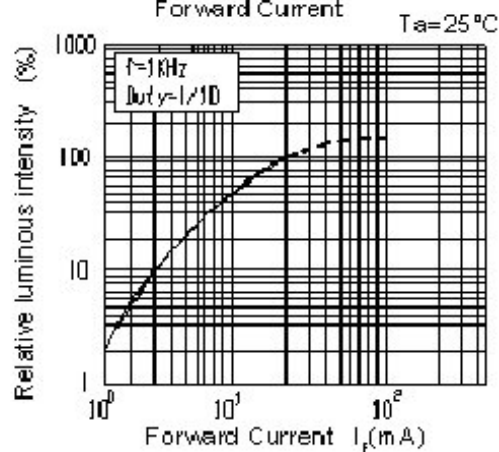
Forward Current vs.
Forward Voltage



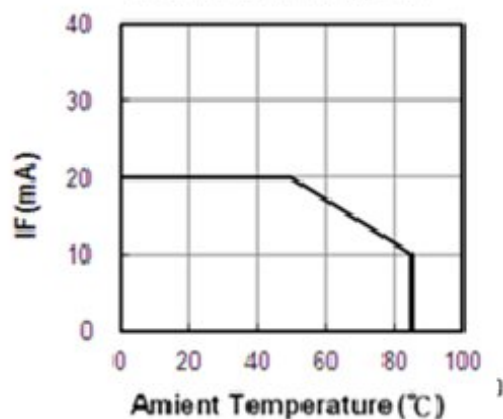
Luminous Intensity vs.
Ambient Temperature



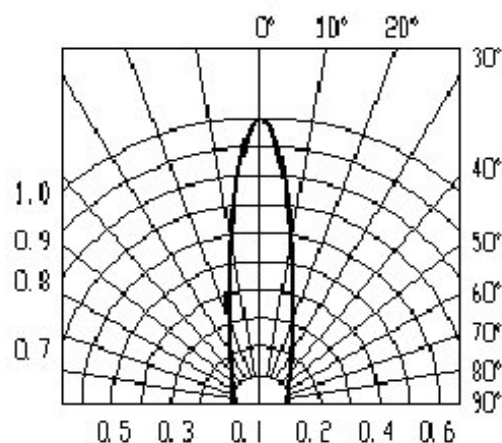
Luminous Intensity vs
Forward Current



Forward Current Derating Curve

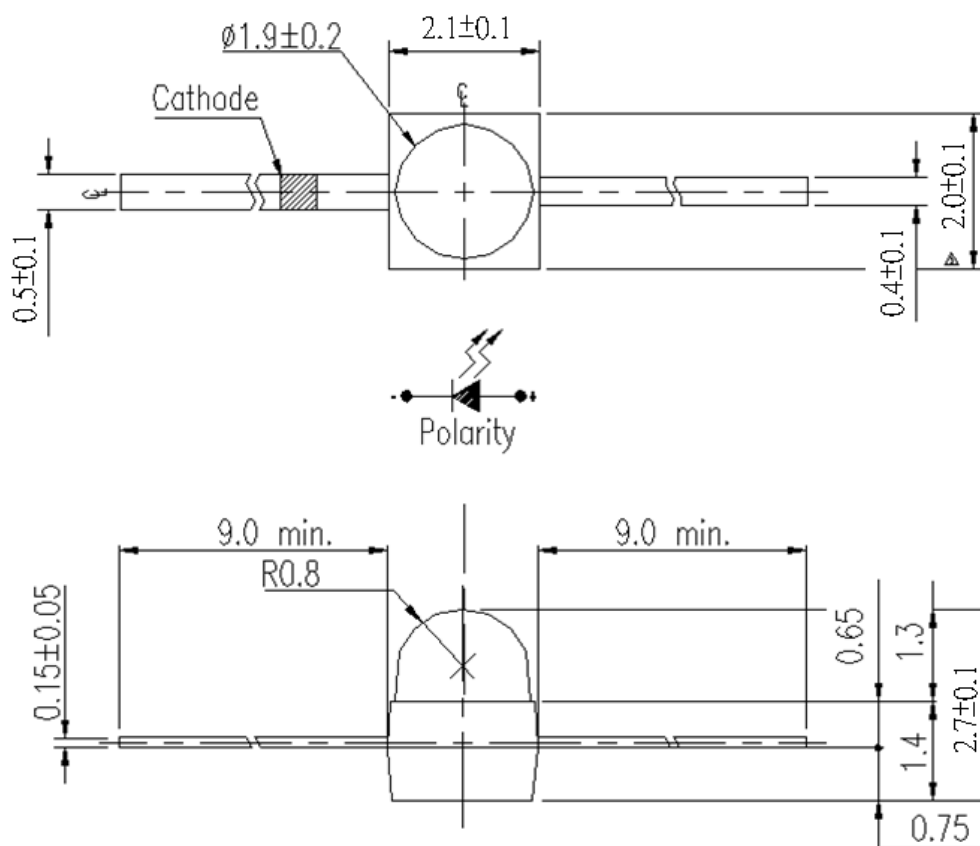


Radiation Diagram $T_a = 25^\circ\text{C}$



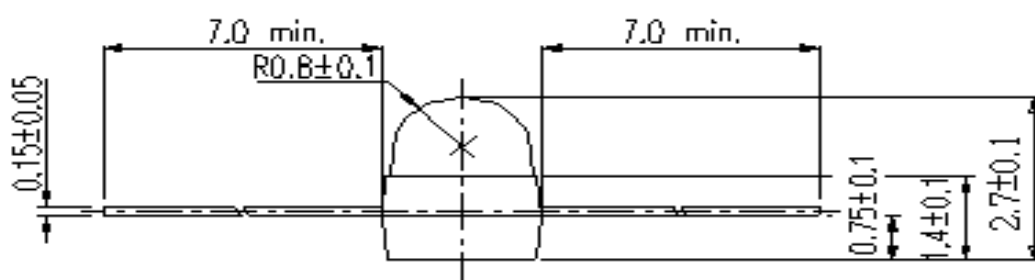
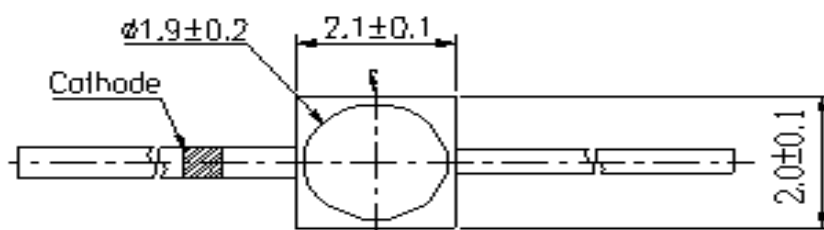
Package Outline Dimensions

F5

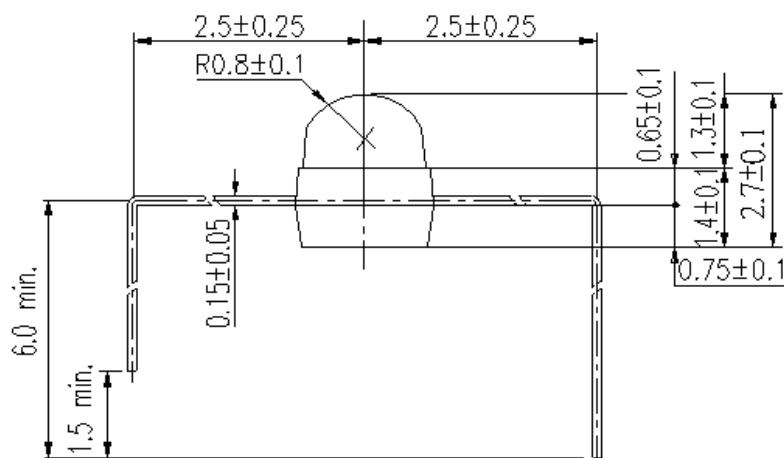
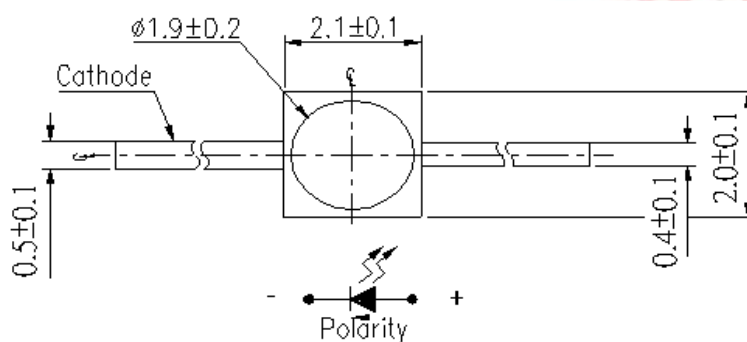


95-21

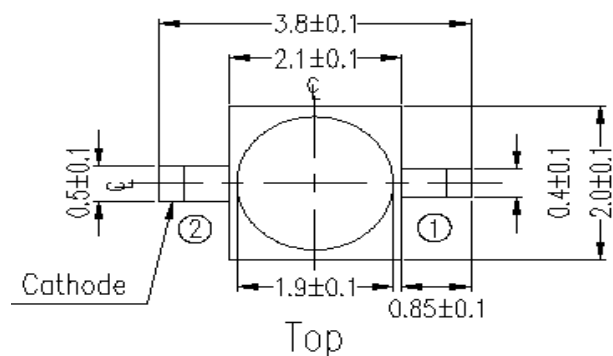
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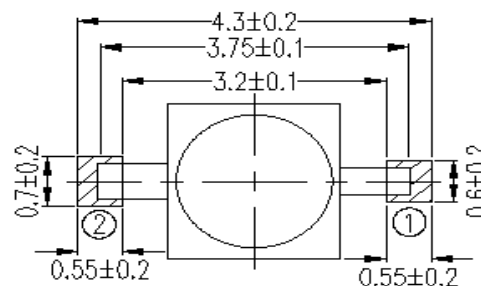
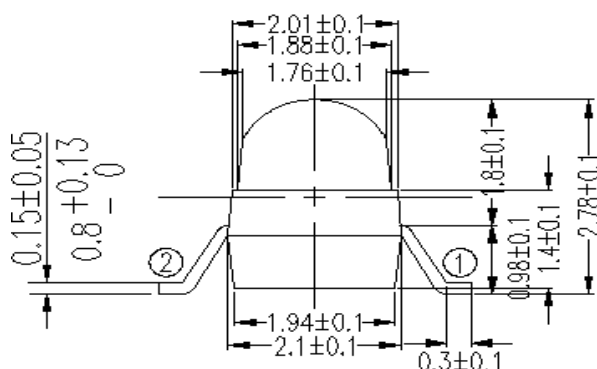


TR7

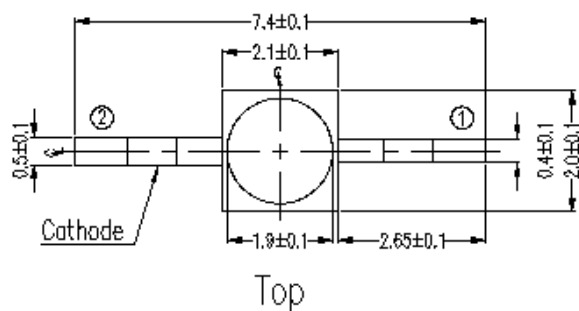


Polarity

Recommend Soldering Pad

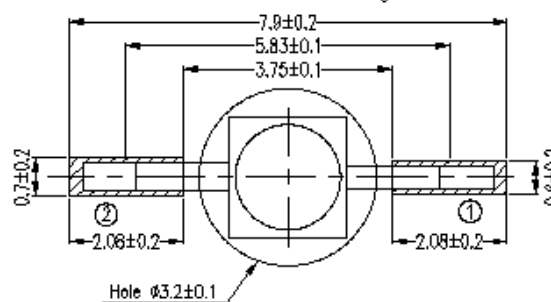
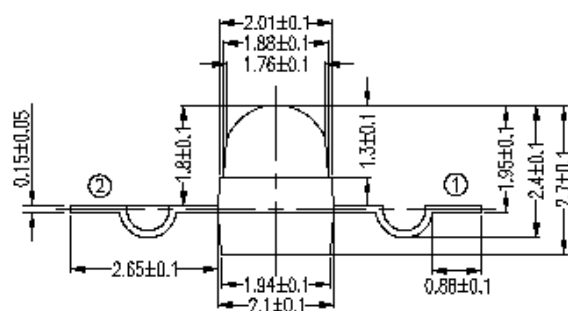


TR9

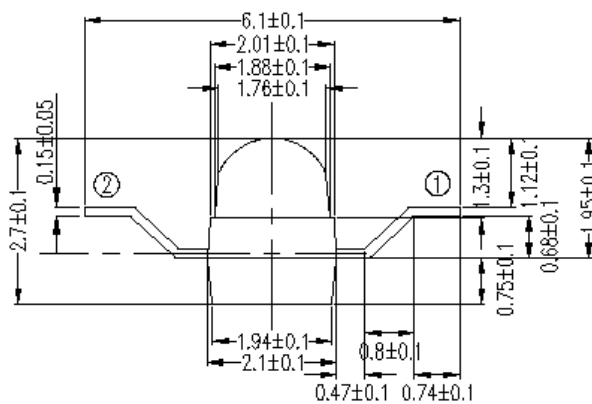
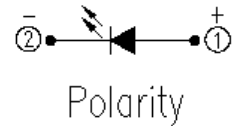
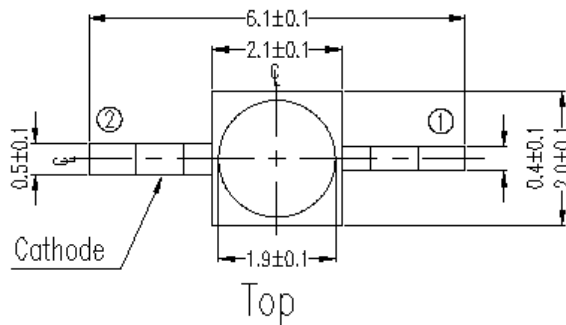


Polarity

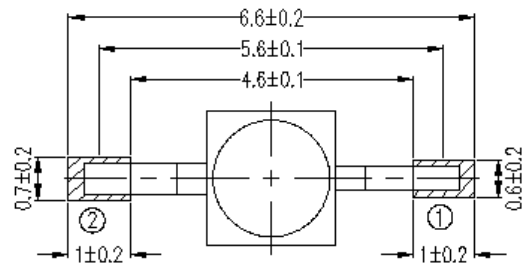
Recommend Soldering Pad



TR10



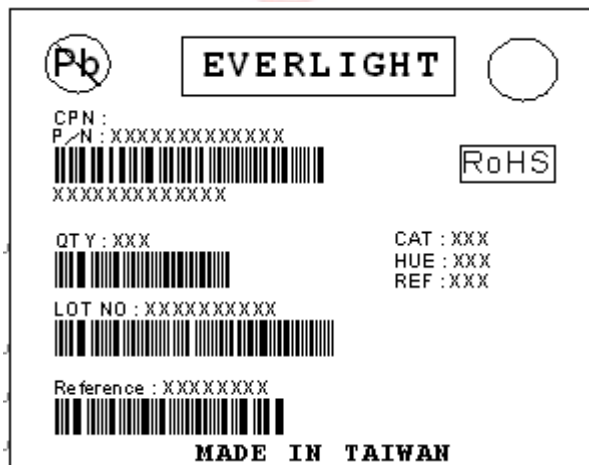
Recommend Soldering Pad



Note: The tolerances unless mentioned are ± 0.1 , unit=mm.

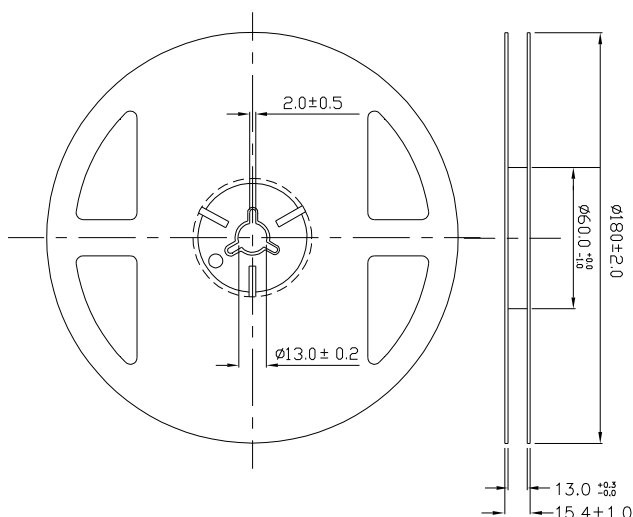
Package Outline Dimensions

Label Explanation



- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank

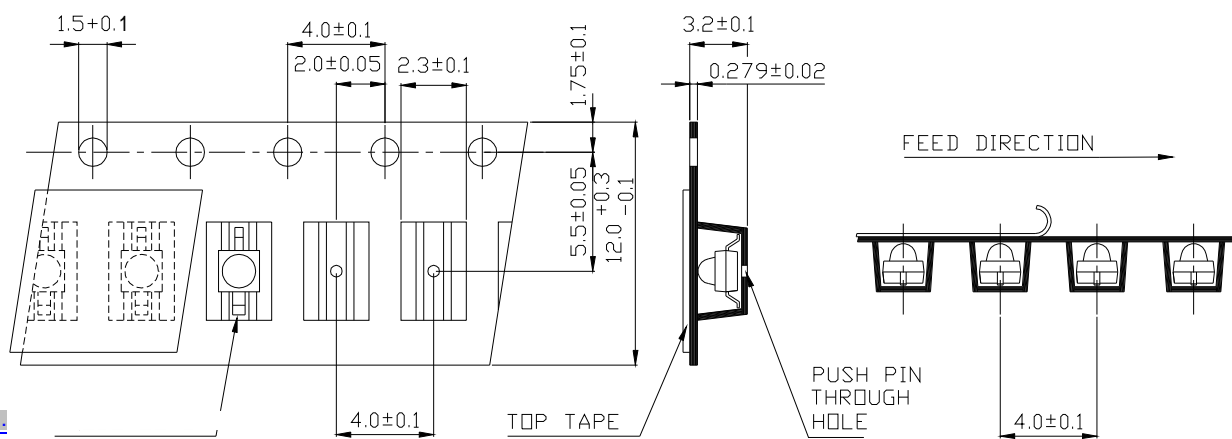
Reel & Carrier Tape Dimensions



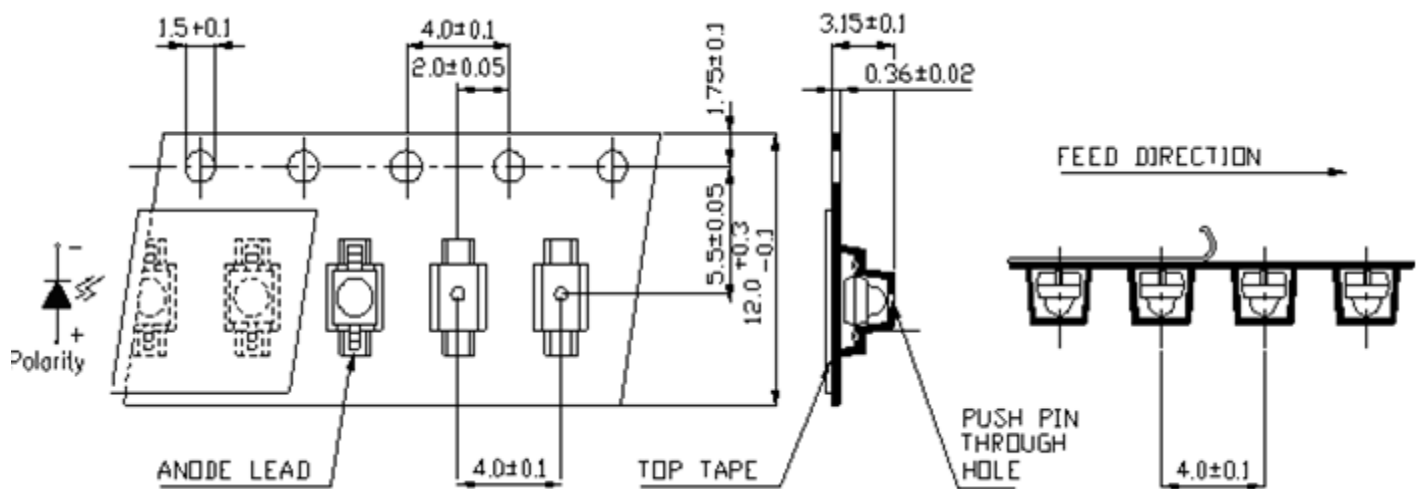
Note: The tolerances unless mentioned are ± 0.1 , unit=mm.

Loaded quantity is 1000 PCS/bag bulk

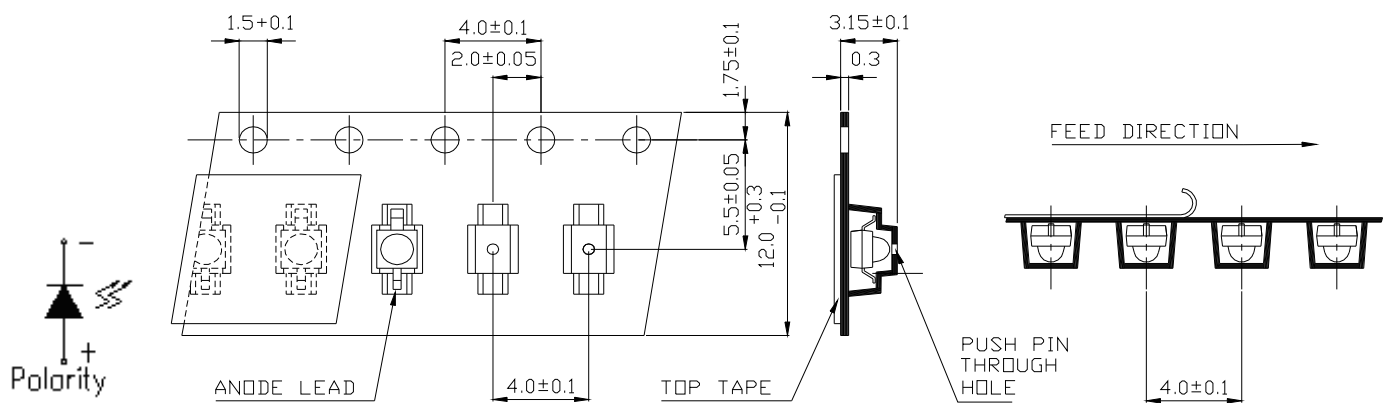
95-21/TR7



95-21/TR9



95-21/TR10



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 ° or less and 90%RH or less.

2.3 After opening the package: The LED's floor life is 72 hours under 30 ° or less and 60% RH or less.

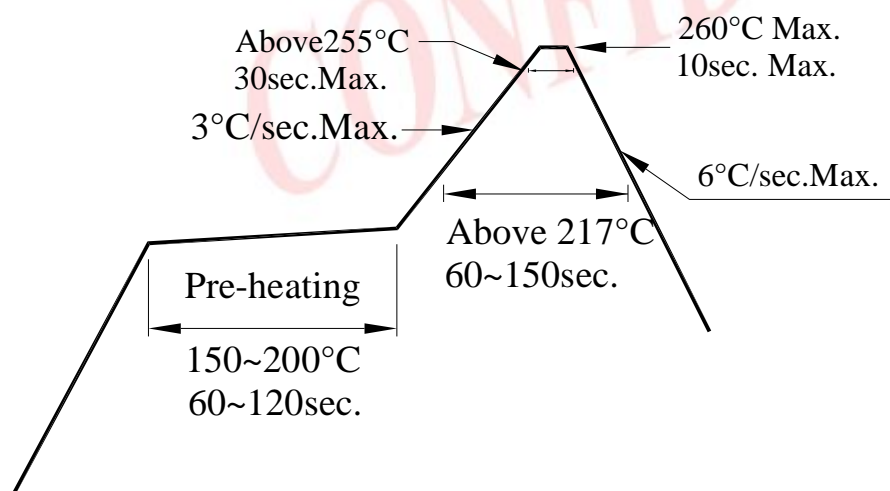
If unused LEDs remain, it should be stored in moisture proof packages.

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 ° 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.

