3.5x2.8x1.9 mm TOP LED

Features

- .Small size(3.5x2.8x1.9mm)
- .Industry Standard Footprint
- .Compatible in 8mm tape on 178mm Diameter Reels
- .Low Profile
- .Several Colors Available

Absolute Maximum Ratings at TA=25°C (Single input)

REVERSE VOLTAGE (<100 uA).....5.0V
D.C.FORWARD CURRENT..... 30mA
PULSE CURRENT (1/10 Duty Cycla,0.1 ms Pulse Width)…….. 100 mA
OPERATING TEMPERATURE RANGE.....-30°C to 85°C
STORAGE TEMPERATURE RANGE.....-40°C TO +100°C
REFLOW SOLDERING TEMP. ……..... 260°C FOR 4 SEC

PRELIMINARY

Precautions：

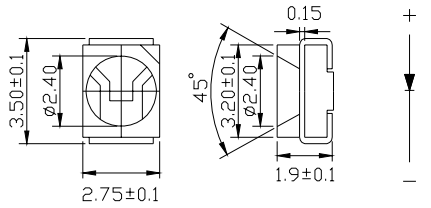
These products are sensitive to static electricity; high standard of care must be fully taken when handling them. Particularly if an over-voltage that exceeds the Absolute maximum Rating of these products were applied, the overflow energy will cause damage to and possibly result in destruction of these products. Buyer shall take absolute secure countermeasures against static electricity and surge when handling these products.

Electrical/Optical Characteristics at TA=25

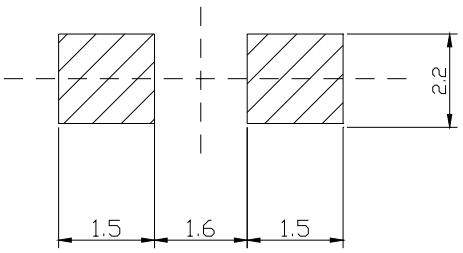
Part Number	LED CHIP		Forward voltage @20mA		Reverse Current	dom. Wave-length	Luminous In-tesity @20mA	View Angle
	Material	Emitting Color	Min	Max	Ir(Vr=5V)	Typ	Typ.	Typ
61000111	AlInGaP	rot/red	1,8	2,4	50uA	625nm	800mcd	120°

3.5x2.8x1.9 mm TOP LED

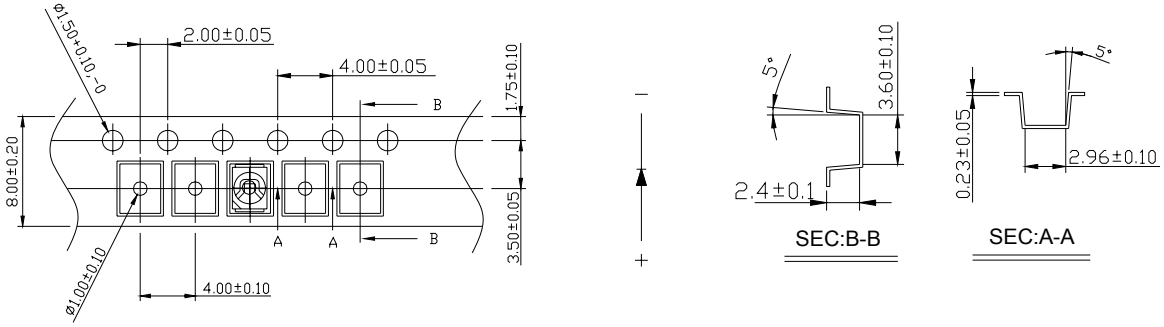
Unit:mm Tolerance:±0.1



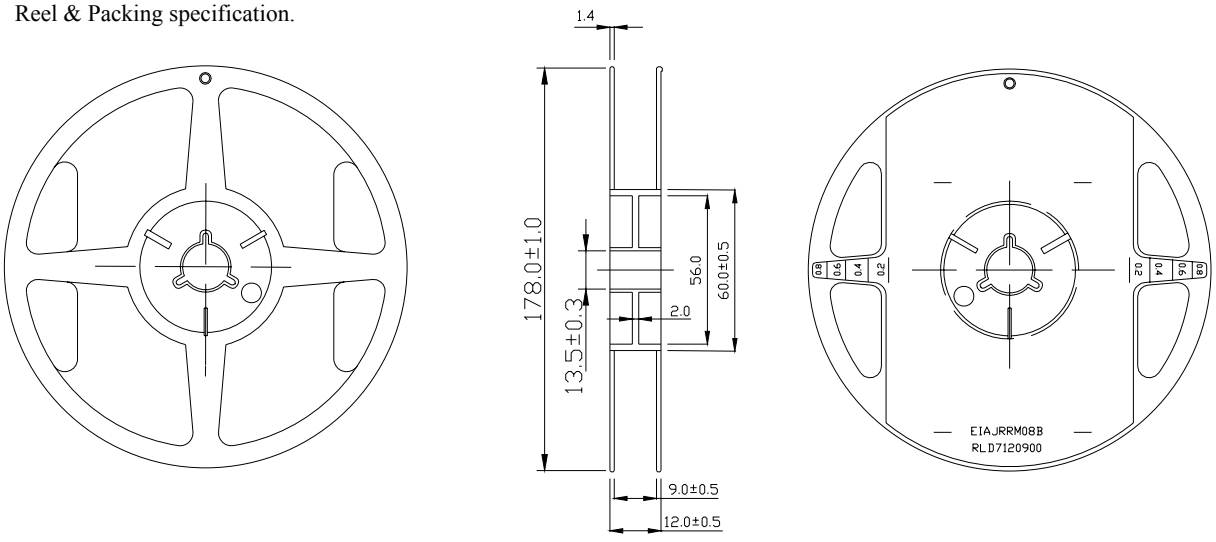
The following soldering patterns are recommended for reflow soldering.



Dimensions. (unit : mm)



Reel & Packing specification.



Electrical And Optical Characteristics Curve

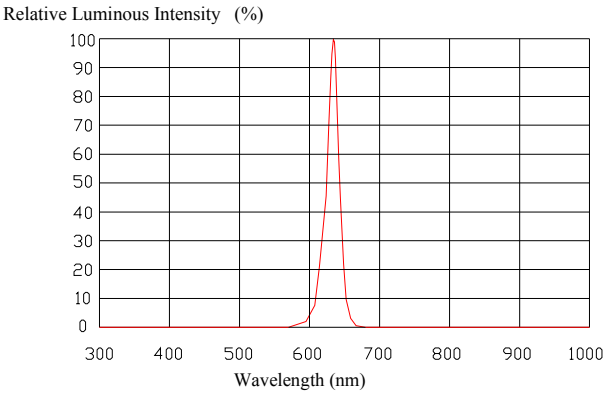


FIG.1 SPECTRUM (If=20mA)

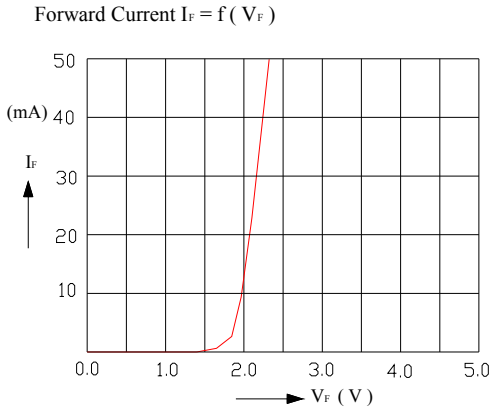


FIG.2 FORWARD CURRENT VS. FORWARD VOLTAGE

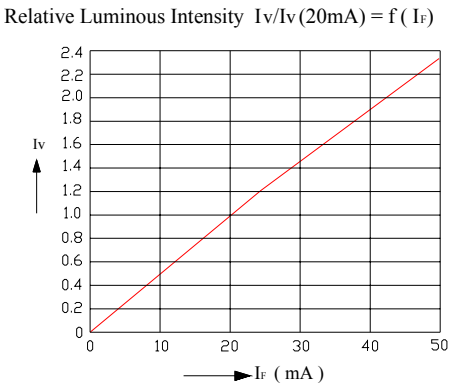


FIG.3 RELATIVE LUMINOUS INTENSITY
VS. FORWARD CURRENT

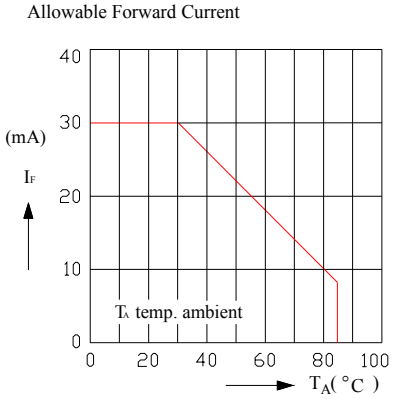


FIG.4 ALLOWABLE FORWARD CURRENT
VS. AMBIENT TEMPERATURE

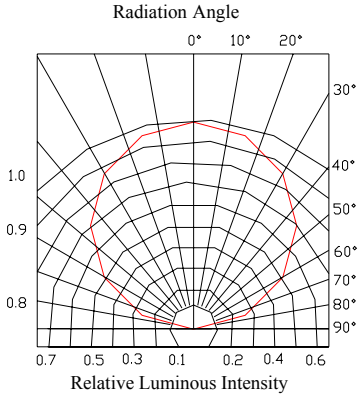


FIG.5 RADIATION DIAGRAM

RELIABILITY

TEST ITEMS AND RESULTS

Test Item		Test Conditions	Note	Number of Damaged
Resistance to Soldering Heat (Reflow Soldering)	JEITA ED-4701 300-301	Tald=260±5℃ 4sec (Leadfree Solder)	2 times	0/50
Solderability (Reflow Soldering)	JEITA ED-4701 300-303	Tald=215±5℃ 3sec (Lead Solder)	1 time over 95%	0/50
Thermal Shock	MIL-STD 202-107D MIL-STD 705-1051 MIL=STD 808-1011	0℃ – 100℃ 15sec.15sec	20cycles	0/50
Temperature Cycle	JEITA ED-4701 100-105	-40℃ – 25℃ – 100℃ – 25℃ 30min. 5min. 30min. 5min	100 cycles	0/50
Moisture Resistance Cyclic	JEITA ED-4701 200-203	25℃ – 65℃– –10℃ 90%RH 24hrs/1cycle	10 cycles	0/50
Temperature Humidity Storage	MIL-STD202-103B JIS-C-7021 B-11	Ta=60℃ RH=90%	1000hrs	0/50
Low Temperature Storage	JIS-C-7021 B-12	Ta=-40℃	1000hrs	0/50
Steady State Operating Life of High Humidity Heat	MIL-STD202-103B JIS-C-7021 B-11	85℃, RH=85%, If=20mA	500hrs	0/50

JUDGMENT CRITERIA OF FAILURE FOR THE RELIABILITY

Measuring items	Symbol	Measuring conditions	Judgement criteria for failure
Forward voltage	VF(V)	IF=20mA	Over U*1.2
Reverse current	IR(uA)	VR=5V	Over U*2
Luminous intensity	IV(mcd)	IF=20mA	Below S*0.5

Note: 1.U means the upper limit of specified characteristics. S means initial value.

2.Measurment shall be taken between 2 hours and after the test pieces have been returned to normal ambient conditions after completion of each test.

Warning

1. Storage

After open the package, the SMD LED should be kept at 28 ° C, 60%RH or less.
The SMD LED should be soldered with in 7 days after opening the package.
Heat generation must be taken into design consideration when using the SMD LED.

2. Cleaning

Use IPA as a solvent for cleaning the SMD LED. The other solvent may dissolve the SMD LED package and the epoxy, ultrasonic cleaning should not be done.

3.Static Electricity:

These products are so sensitive to static electricity charge so all equipment and machinery must be properly grounded and it is recommended to use a wristband or anti-electrostatic glove when handing the SMD LED.
Particularly if any over-current and over-voltage which exceed the Absolute Maximum Ratings of LED applied, the more energy may cause damage or possibly result in electrical destruction of the Products.
A protection design should be installed in the LED driving circuit, which does not exceed the max. rating for surge current during on/off switching.
A tip if soldering iron is requested to be grounded.An ionizer should be installed when risk of static generation is high.
If the contermeasures mentioned above are implemented, LED can work well.
Users are required to check those countermeasures when problems occur by static electricity charge

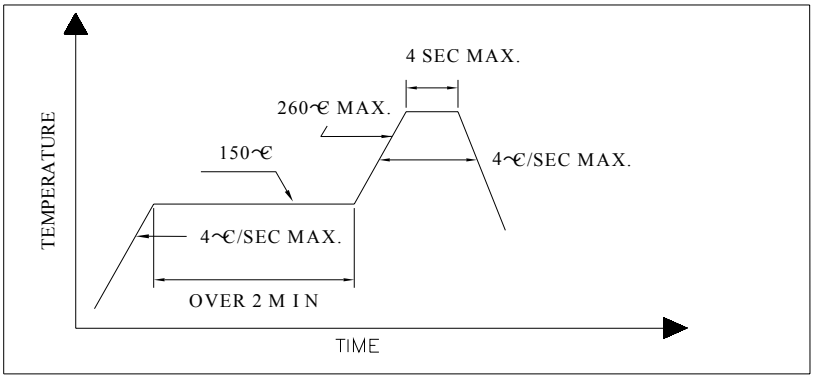
4.else

Damaged SMD LED will show unusual characteristics such as leak current remarkably low current. Increase, turn-on voltage becomes lower and the SMD LED get unlight at low current .
In automatic mounting of the SMD LEDs on printed circuit boards, any bending and pulling forces or shock against the SMD LEDs shall be kept min.
to prevent them from expanding or electrical failures and mechanical damages of the devices.
Illustration&Application
The SMD LED taping is much smaller than leaded components,thus enable smaller size,applications, etc. higher packing density, reduced storage space and finally smaller equipment board to be obtained. Besides, lightweight makes them ideal for miniature
The products described in this brochure are intended only for standard applictions or general electronic equipment such as :

1. Telecommunication: indicator and backlight in telephone and fax.
2. Automotive: backlight in dashboard and switch.
3. LCD:Flat backlight for LCD, switch and symbol.

Lead-free Temperature Profile

Application(Soldering)
Manual soldering (We do not recommend this method strongly.)
Soldering tin material: tin 6/4 alloy or contained Ag.
To prevent cracking, please bake before manual soldering.
keep the temperature on the edge of iron at 300 ℃ Max.(25W)and apply for 3 seconds.If the temperature become higher,apply in a shorter time (1sec)
In manual soldering, take care not to damage the package especially terminal or resin. (Do not give stress to the product when soldering.)
Do not use again it you remove the soldered product.
It is recommended using an iron with a temperature control.
Reflow Soldering
Recommend tin glue specifications:
Melting temperature:150-260℃
Contains:Sn 96.5% , Ag 3.0% ,Gu0.5 % JIS Z 3282TEST
Never take next process until the component is cooled down to room temperature after reflow.
The recommended reflow soldering profile (measuring on the surface of the LED resin) is following:



Cleaning
The conditions of cleaning after soldering:
An alcohol-based solvent such as Isopropyl Alcohol(IPA) is recommended.
Temperature Time:<50℃*30sec,or <30℃*3min
Ultra sonic cleaning:<15W/bath; Bath volume:1liter max.
Curing:100 max,<3min
Cautions of Pick and Place
It should be avoided to load stress on the resin during high temperature.
Avoid rubbing or scraping the resin by any object.
Electric-static may cause damage to the component. Please confirm that the equipment is grounding well. Using an ionzer fan is recommended.
Cautions of Design and Applications
It should be done to connect with a current-limiting serial resistor.Avoid to drive reverse voltage over the specifications on LEDwhen ON/OFF.
Any application should refer to the specifications of absolute maximum ratings.
The dimensions of the recommended soldering pattern may mot meet every user. Please confirm and study first before designing the soldering patterm in order to obtain the best performance of soldering.
Do not contact with any component on the assembly board.

SURFACE MOUNT CHIP LED SPECIFICATION

Notes for designing:
Care must be taken to provide the current limiting resistor in the circuit so as to drive the LEDs within the rated figures. Also, caution should be taken not to overload LEDs with instataneous voltage at the turning ON and OFF of the circuit.
When using the pulse drive care must be taken to keep the average current within the rated figures. Also, the circuit should be designed so as be subjected to reverse voltage when turning off the LEDs.
Storage:
In order to avoid the absorption of moisture,it is recommended to solder LEDs as soon as possible after unpacking the sealed envelope.

If the envelope is still packed,to store it in the environment as following:

(1) Temperature: 5℃ -30℃ (41° F) Humidity: RH 60% Max.
(2) After this bag is opened, devices that will be applied to infrared reflow, vapor-phase reflow,or equivalent soldering process must be:
a. Completed within 24hours.
b. Stored at less than 30% RH.
(3)Devices require baking before mounting, if:
(2) a or (2)b is not met.
(4) If baking is required, devices must be baked under below conditions:
24 hours at 60℃ ± 3℃ .
Package and Label of Products:
(1) Package: Products are packed in one bag of 1000pcs (one taping reel) and a label is attached on each bag.