

TO-1608AC-MRK

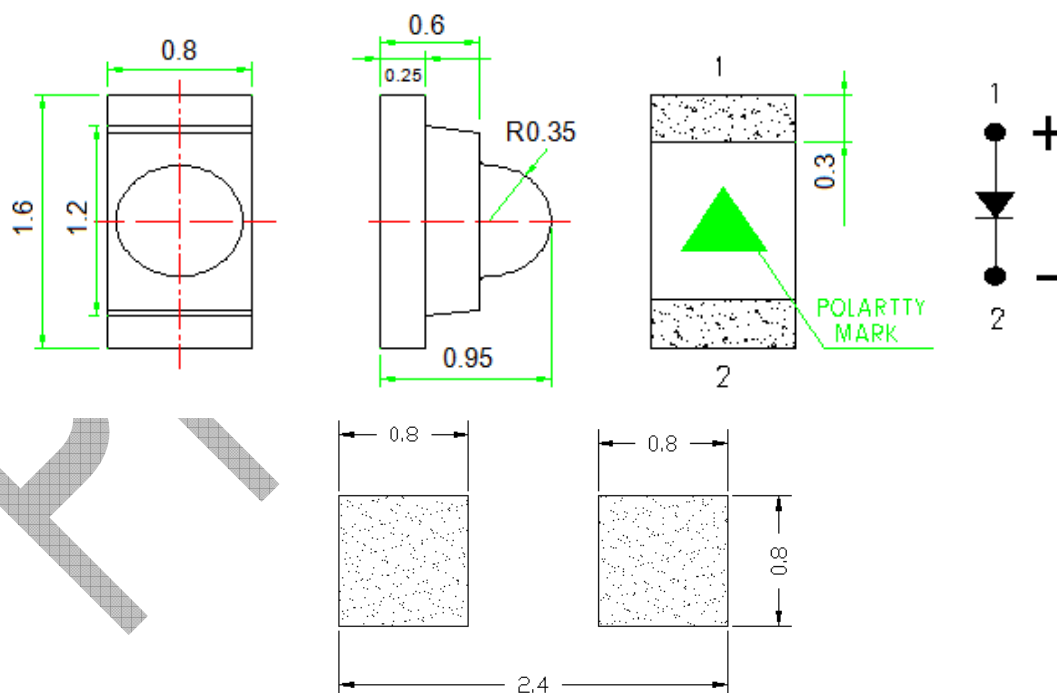
Surface Mount Device LED

Part Number	Chip		Lens Color
	Material	Source Color	
TO-1608AC-MRK	AlGaInP	Ultra Bright Red	Water Clear

Features

- IC compatible.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow soldering process.
- RoHS compliant.
- Moisture sensitivity Level: level 3.

Dimensions



Recommended Soldering Pattern

Notes:

1. All dimensions are in millimeter.
2. Tolerance is ± 0.1 mm unless individual mark noted.

Absolute Maximum Rating @ Ta=25°C

Parameter	Maximum Rating	Unit
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	60	mA
Power Dissipation	75	mW
Continuous Forward Current	25	mA
Reverse Voltage	5	V
Operating Temperature Range	-40°C to +80°C	
Storage Temperature Range	-40°C to +85°C	
Soldering Temperature	260°C for 10 sec max	

Electrical / Optical Characteristic @ Ta=25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	I _v	917	-	2620	mcd	I _F =20mA
Viewing Angle	2θ _{1/2}	-	35	-	deg	I _F =20mA
Forward Voltage	V _F	1.8	-	2.4	V	I _F =20mA
Dominant Wavelength	λ _d	618	-	628	nm	I _F =20mA
Spectral Line Half-Width	Δλ	-	18	-	nm	I _F =20mA
Reverse Current	I _R	-	-	10	μA	V _R =5V

Bin Code List for Reference

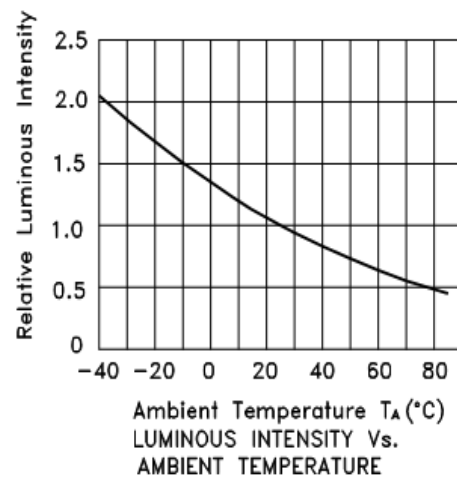
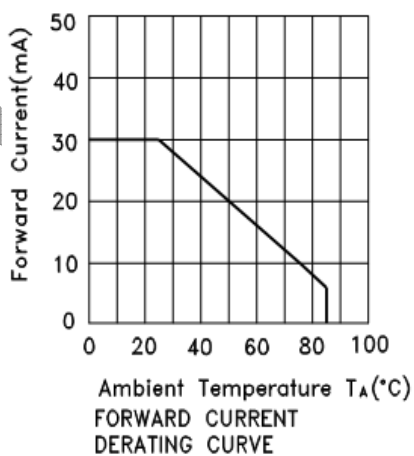
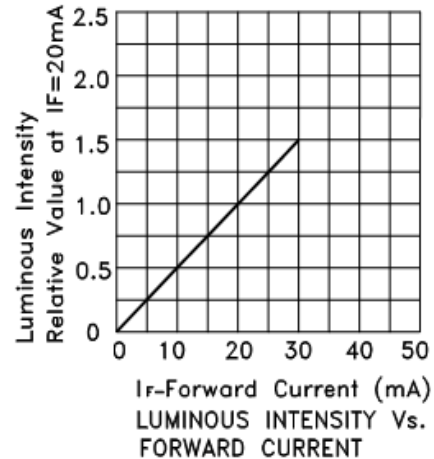
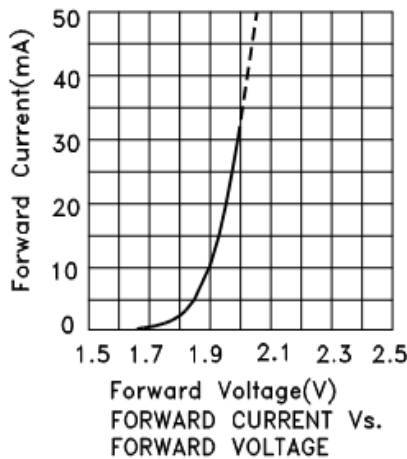
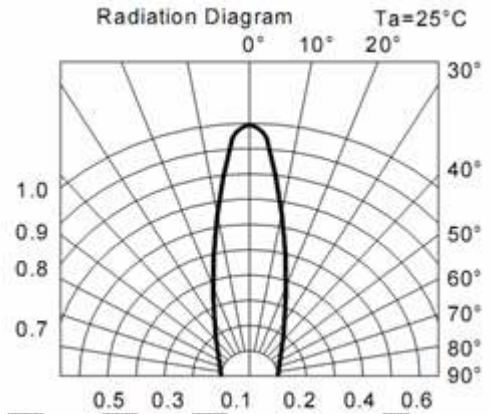
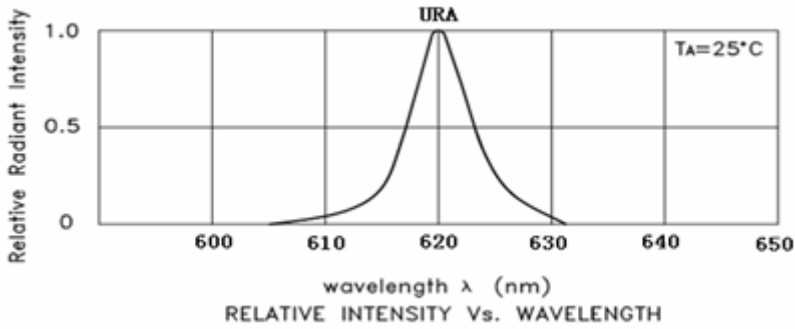
Luminous Intensity		Unit : mcd@20mA	
Bin Code	Min	Max	
H1	917	1192	
H2	1192	1550	
H3	1550	2015	
K1	2015	2620	

Tolerance of Luminous Intensity on each bin is $\pm 15\%$

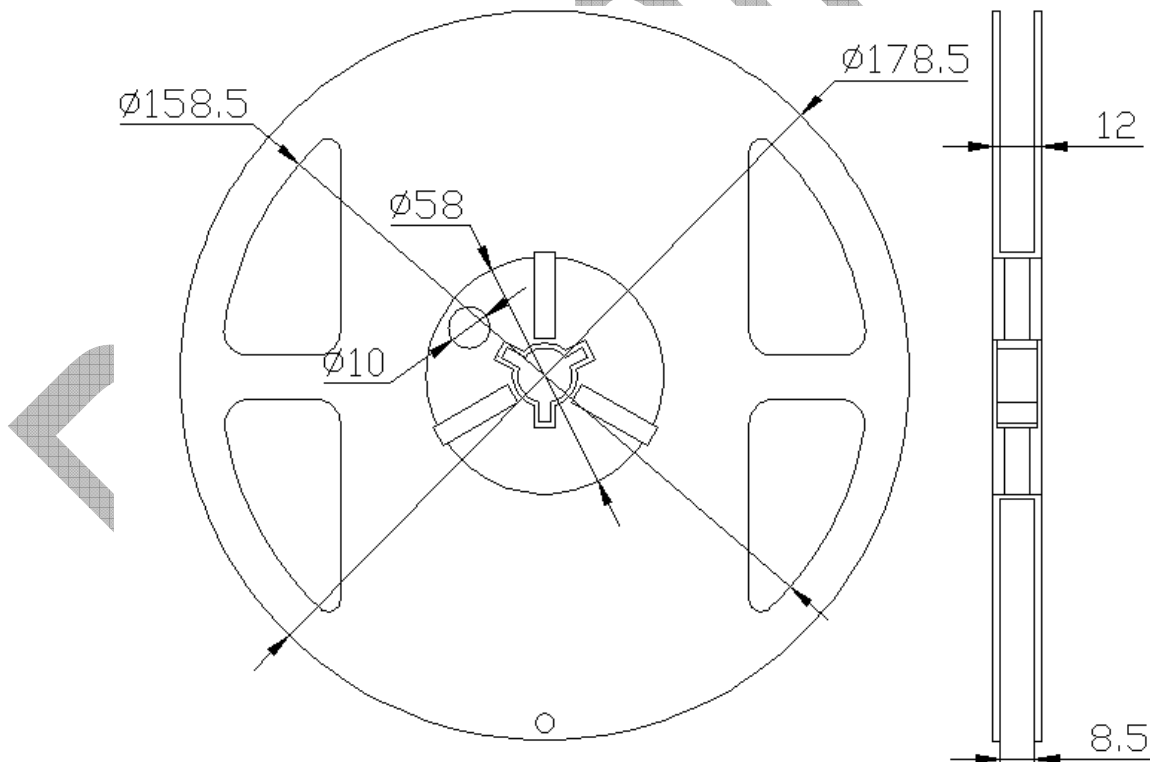
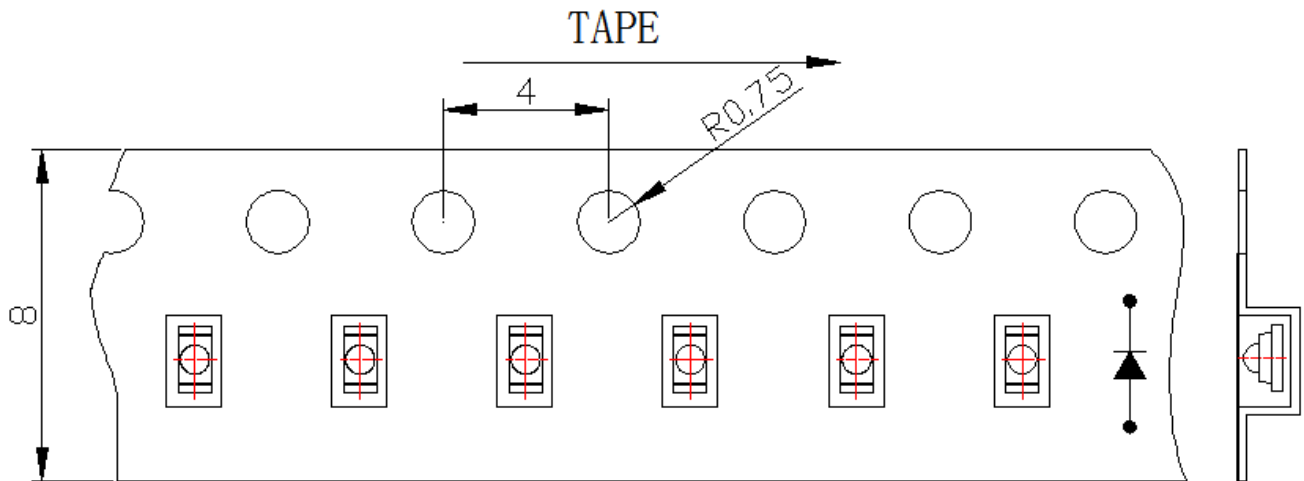
Dominant Wavelength		Unit : nm@20mA	
Bin Code	Min	Max	
618620	618	620	
620622	620	622	
622624	622	624	
624626	624	626	
626628	626	628	

Tolerance of Dominant Wavelength on each bin is $\pm 1\text{nm}$.

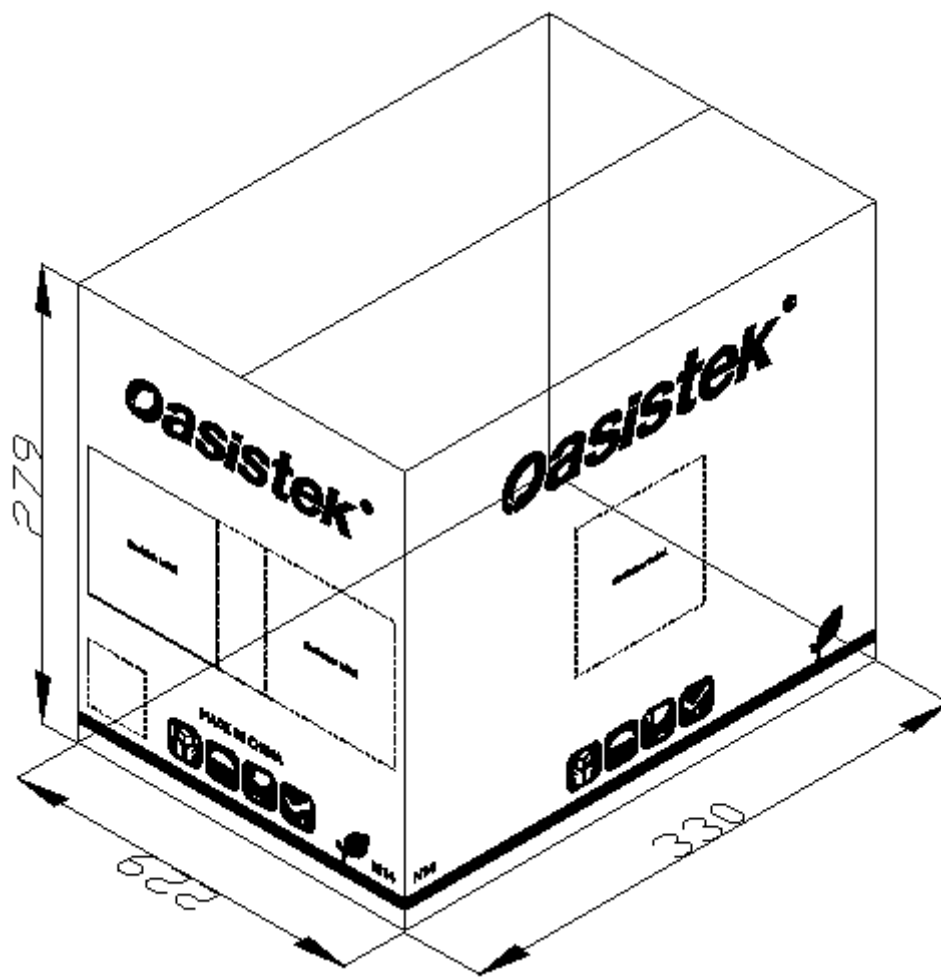
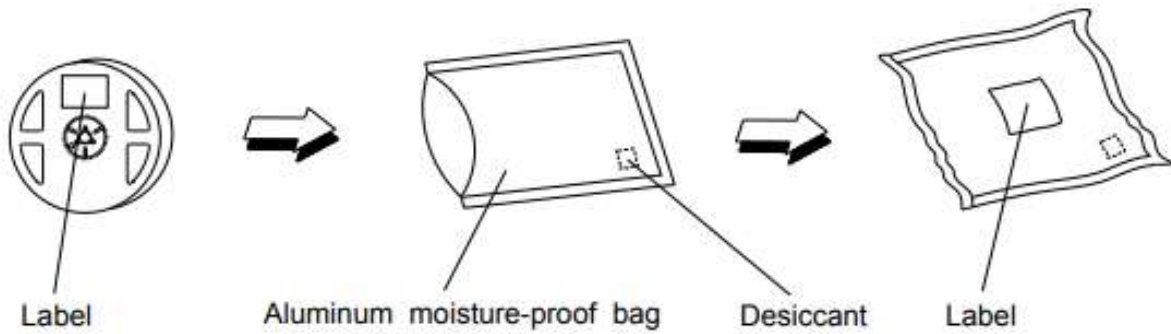
Typical Electrical / Optical Character Curves



1608 SMD Packaging Specifications

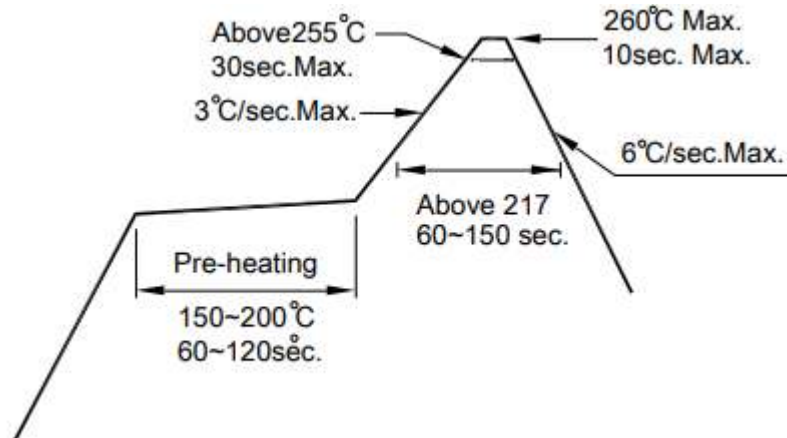


Package: 3000Pcs/Reel



Soldering Condition

1. Pb-free solder temperature profile



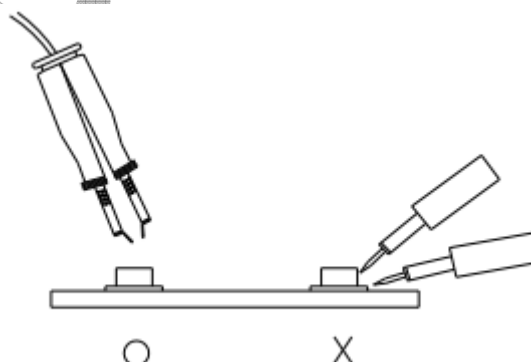
- Note:**
- (1) Reflow soldering should not be done more than two times.
 - (2) When soldering, do not put stress on the LEDs during heating.
 - (3) After soldering, do not warp the circuit board.

2. 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.

3. 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.



Cautions

Care should be taken after due consideration when using LED's.

1. Moisture Proof Package:

When moisture is absorbed into the SMT package it may vaporize and expand during soldering. There is a possibility that this can cause exfoliation of the contacts and damage to the optical characteristics of the LED's. For this reason, the moisture proof package is used to keep moisture to a minimum in the package.

Storage Conditions

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°C-30°C (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 168 hours.
 - 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: 48 hours at 60°C±5°C.

2. Heat Generation

Thermal design of the end product is of paramount importance. Please consider the heat generation of the LED when making the system design. The coefficient of temperature increase per input electric power is affected by the thermal resistance of the circuit board and density of LED placement on the board, as well as other components. It is necessary to avoid intense heat generation and operate within the maximum ratings given in this specification. The operating current should be decided after considering the ambient maximum temperature of LED's.

3. Cleaning

It is recommended that isopropyl alcohol be used as a solvent for cleaning the LED 's. when using other solvents, it should be confirmed beforehand whether the solvents will dissolve the package and the resin or not. Freon solvents should not be used to clean the LED's because of worldwide regulations. Do not clean the LED's by the ultrasonic. When it is absolutely necessary, the influence of ultrasonic cleaning on the LED's depends on factors such as ultrasonic power and the assembled condition. Before cleaning, a pre-test should be done to confirm whether any damage to the LED's will occur °C.

4. Static Electricity

Static electricity or surge voltage damages the LED's. It is recommended that a wrist band or an anti-electrostatic glove be used when handling the LED's. All devices, equipment and machinery must be properly grounded. It is recommended that measures be taken against surge voltage to the equipment that mounts the LED's. When inspecting the final products in which LED's were assembled, it is recommended to check. Whether the assembled LED's are damaged by static electricity or not, it is easy to find

static-damaged LED's by a light –on test or a VF test at a lower current (below 1mA is recommended). Damaged LED's will show some unusual characteristics such as the leak current remarkably increases, the forward voltage becomes lower, or the LED's do not light at the low current. Criteria ($V_f > 2.0V$ at $I_f = 0.5mA$)

5.Others

Care must be taken to ensure that the reverse voltage will not exceed the absolute maximum rating when using the LED's with matrix drive. The LED light output is strong enough to injure human eyes. Precautions must be taken to prevent looking directly at the LED's with unaided eyes for more than a few seconds. Flashing lights have been known to cause discomfort in people, you can prevent this by taking precautions during use. Also, people should be cautions when using equipment that has had LED's incorporated into it. The LED's described in this brochure are intended to be used for ordinary electronic equipment (such as office equipment , communications equipment, measurement instruments and household appliances) Consult Oasistek's sales staff in advance for information on the applications in which exceptional quality and reliability are required, particularly when the failure or malfunction of the LED's may directly jeopardize life or health (such as for airplanes, aerospace, submersible repeaters, nuclear reactor control systems, automobile, traffic control equipment, life support systems and safety devices). User shall not reverse engineer by disassembling or analysis of the LED's without having prior written consent from Oasistek when defective LED's are found, the User shall inform Oasistek directly before disassembling or analysis. The formal specifications must be exchanged and signed by both parties before large volume purchase begins.