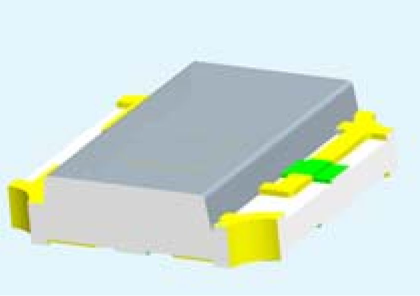
# Multi-Color Type ▪ Top view Full-color

## A-SP1942R6GHC-A01-2T



## Features

- Multi-Color Type
- Compatible with infrared and vapor phase reflow solder process.
- Wide viewing angle
- Pb-free
- RoHS compliant

## Description

The Amicc 1942 SMD LED is much smaller than lead frame type components,thus enable smaller board size, higher packing density,reduced storage space and finally smaller equipment to be obtained.Besides ,lightweight makes them ideal for miniature applications etc.

## Applications

- LCD Back-light
- Decorative and Entertainment Lighting
- Indicators
- Automotive Telecommunication
- Switch lights

## Device Selection Guide

| Type | Chip Materials | Emitted Color | Resin Color |
|---|---|---|---|
| R6 | AlGaInP | Brilliant Red | Water Clear |
| GH | InGaN | Green | |

## Absolute Maximum Ratings ($T_{Soldering}$=25℃)

| Parameter | Symbol | Color | Rating | Unit |
|---|---|---|---|---|
| Reverse Voltage | VR | | 5 | V |
| Forward Current | IF | | 25 | mA |
| Peak Forward Current (Duty 1/10 @1ms) | IFP | R6 | 60 | mA |
| | | GH | 100 | |
| Power Dissipation | Pd | R6 | 60 | mW |
| | | GH | 95 | |
| Operating Temperature | Topr | | -40~+85 | ℃ |
| Storage Temperature | Tstg | | -40~+100 | ℃ |
| Electrostatic Discharge(HBM) | ESD | R6 | 2000 | V |
| | | GH | 500 | |
| Soldering Temperature | Tsol | Reflow Soldering : 260 ℃ for 10 sec.<br>Hand Soldering : 350 ℃ for 3 sec. | | |

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

## Electro-Optical Characteristics ($T_{Soldering}$=25℃)

| Parameter | Symbol | Color | Min. | Typ. | Max. | Unit | Condition |
|---|---|---|---|---|---|---|---|
| Luminous Intensity | Iv | R6 | 28.5 | ----- | 72.0 | mcd | $I_F$=5mA |
| | | GH | 180 | ----- | 450 | | |
| Peak Wavelength | $\lambda_p$ | R6 | ----- | 632 | ----- | nm | $I_F$=5mA |
| | | GH | ----- | 516 | ----- | | |
| Dominant Wavelength | $\lambda_d$ | R6 | 616 | 622 | 626 | nm | $I_F$=5mA |
| | | GH | 520 | ----- | 535 | | |
| Forward Voltage | $V_F$ | R6 | 1.6 | ----- | 2.1 | V | $I_F$=5mA |
| | | GH | 2.5 | ----- | 3.1 | | |
| Viewing Angle | $2\theta_{1/2}$ | | ----- | 130 | ----- | deg | $I_F$=5mA |
| Reverse Current | $I_R$ | | ----- | ----- | 10 | uA | $V_R$ =5V |

Notes:
1. Tolerance of Luminous Intensity ±10%.
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage : ±0.1V.

## Bin Code Description

### R6: Bin Range of Luminous Intensity

| Bin Code | Min. | Max. | Unit | Condition |
|---|---|---|---|---|
| N | 28.5 | 45.0 | mcd | $I_F$=5mA |
| P | 45.0 | 72.0 | | |

### GH: Bin Range of Luminous Intensity

| Bin Code | Min. | Max. | Unit | Condition |
|---|---|---|---|---|
| S | 180 | 285 | mcd | $I_F$=5mA |
| T | 285 | 450 | | |

Note:
Tolerance of Luminous Intensity: ±10%.

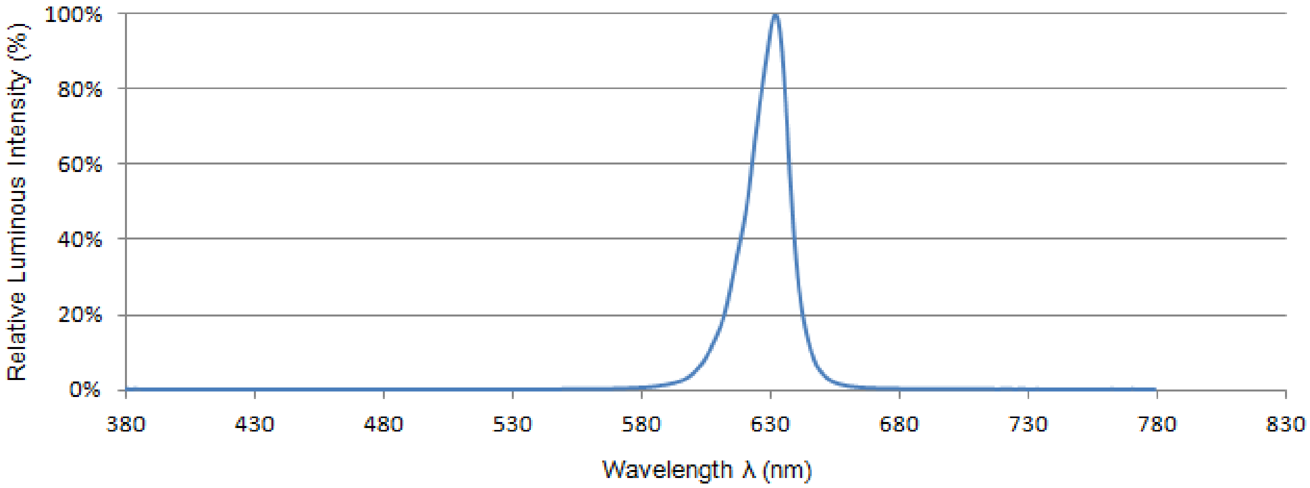
### GH: Bin Range of Dominant Wavelength

| Bin Code | Min. | Max. | Unit | Condition |
|---|---|---|---|---|
| A5 | 520 | 525 | nm | $I_F$=5mA |
| A6 | 525 | 530 | | |
| A7 | 530 | 535 | | |

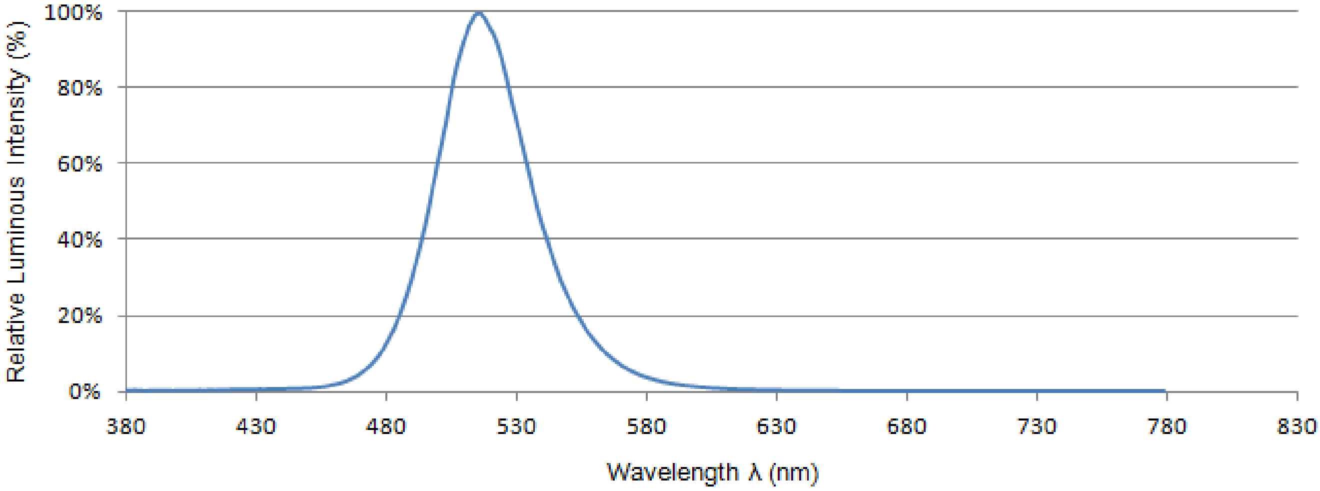
Note:
Tolerance of Dominant Wavelength: ±1nm

## Spectrum Distribution

### R6: Spectrum Distribution



### GH: Spectrum Distribution



## Typical Electro-Optical Characteristics Curve(Chip code: R6)

Fig.1-Forword Voltage Shift vs. Juntion Temperature

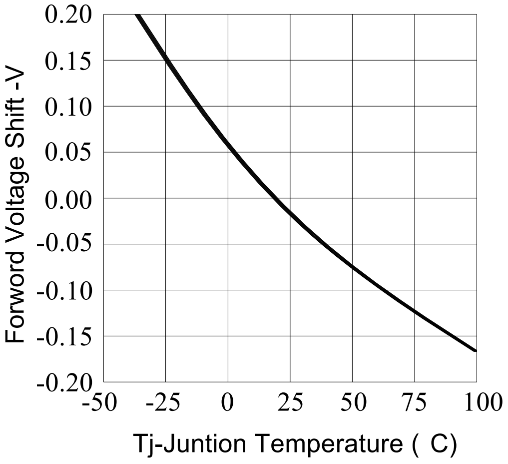


Fig.2-Relative Luminous Intensity vs. Forword Current

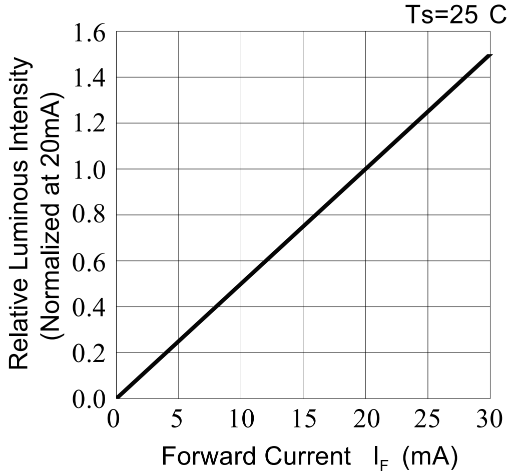


Fig.3-Relative Luminous Intensity vs.Juntion Temperature

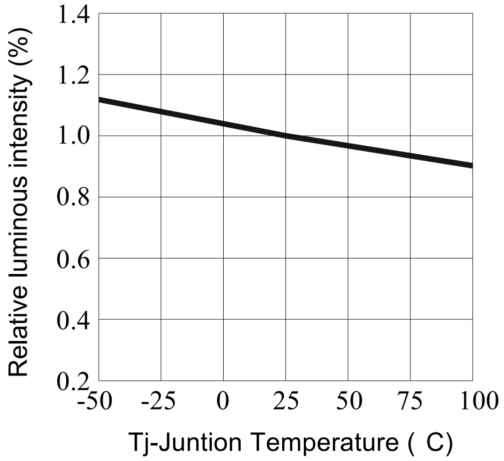


Fig.4-Forward Current vs. Forward Voltage

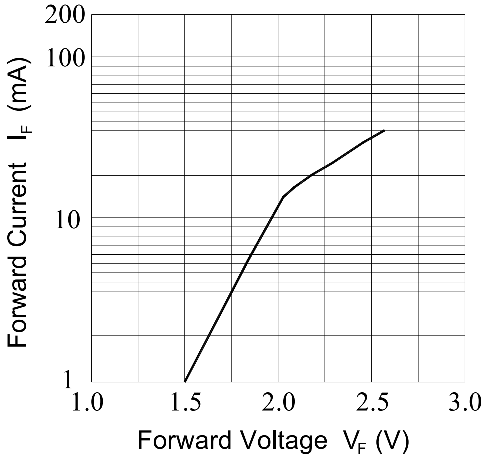


Fig.5-Max.Driving Forward Current vs.Soldering Temperture

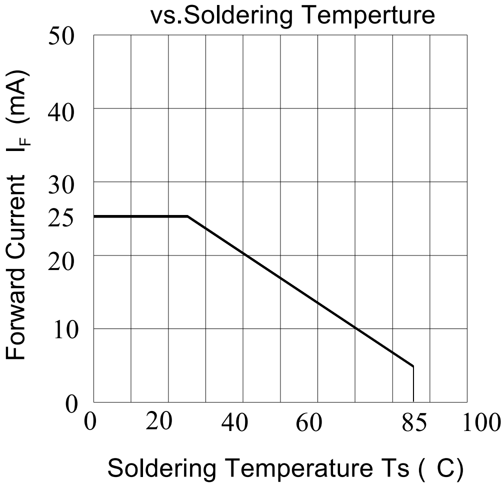
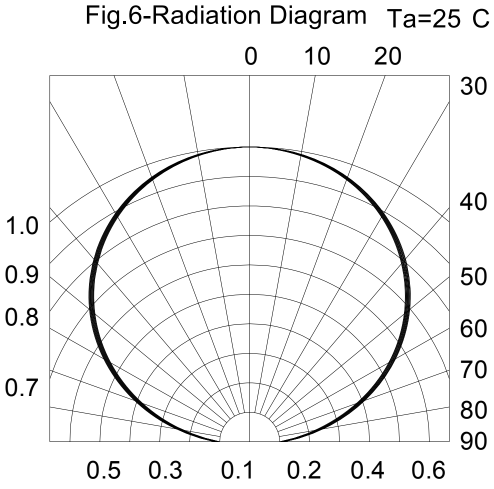


Fig.6-Radiation Diagram



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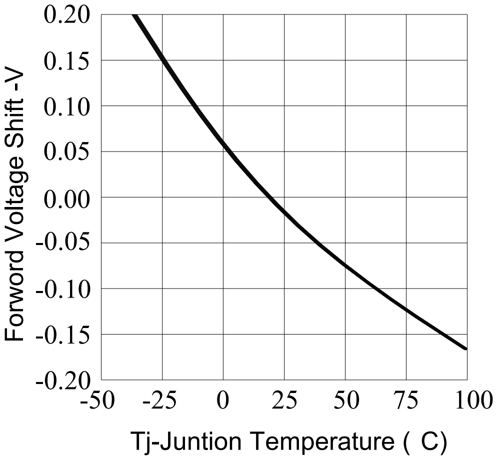


Fig.2-Relative Luminous Intensity
vs. Forword Current

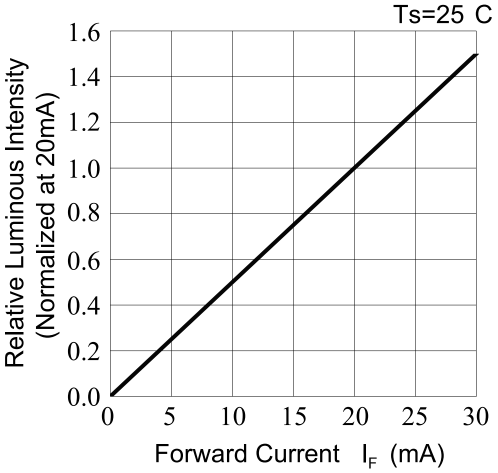
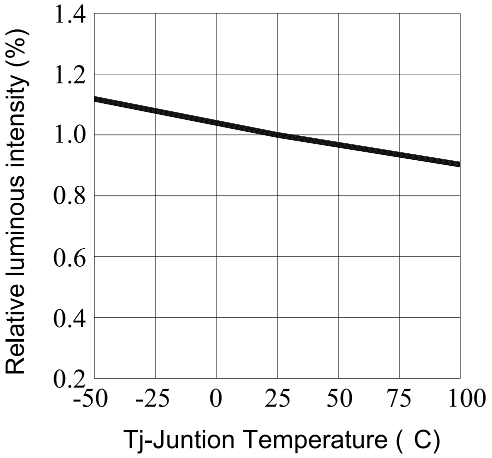


Fig.3-Relative Luminous Intensity
vs.Juntion Temperature



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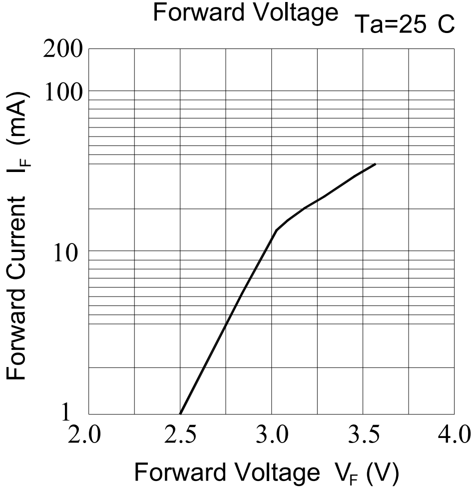


Fig.5-Max.Driving Forward Current
vs.Soldering Temperture

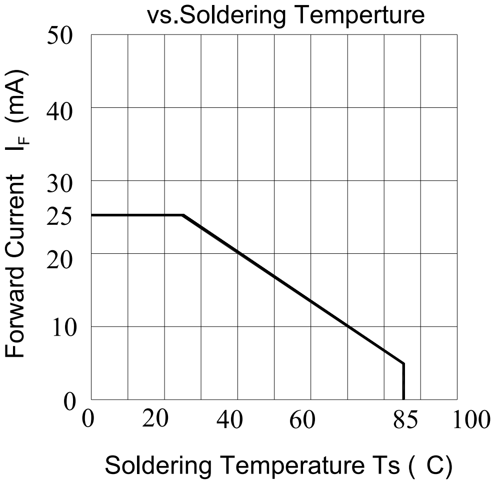
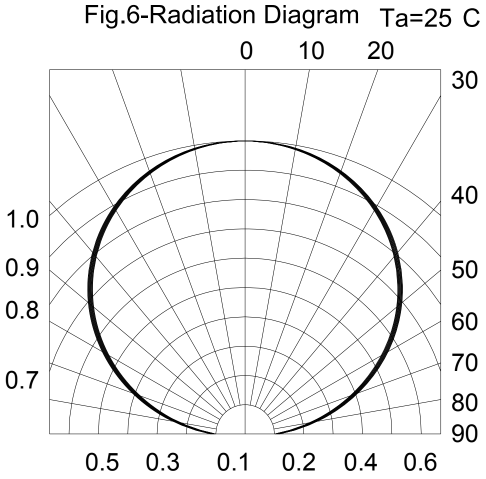
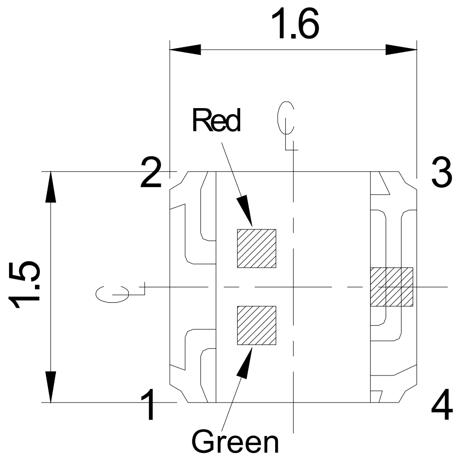
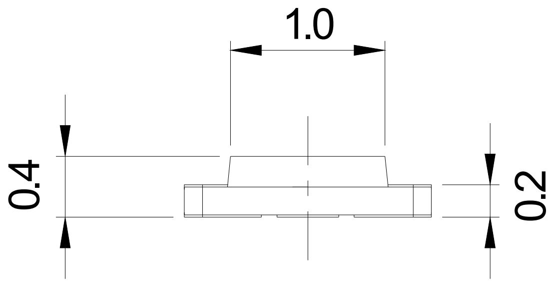


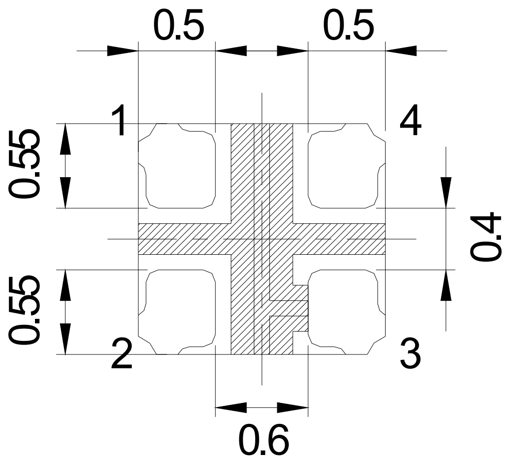
Fig.6-Radiation Diagram



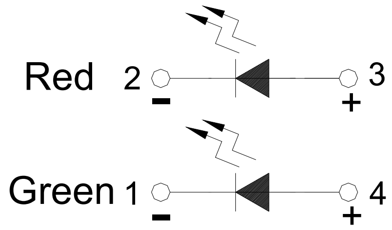
## Package Dimension



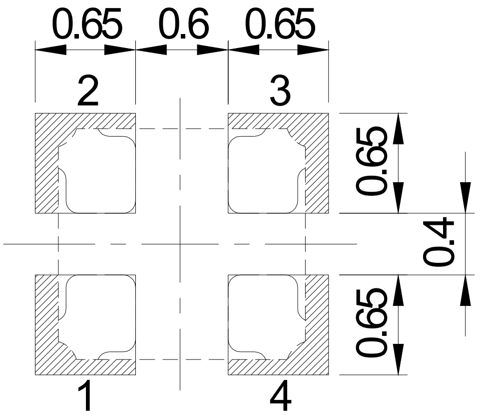




Polarity



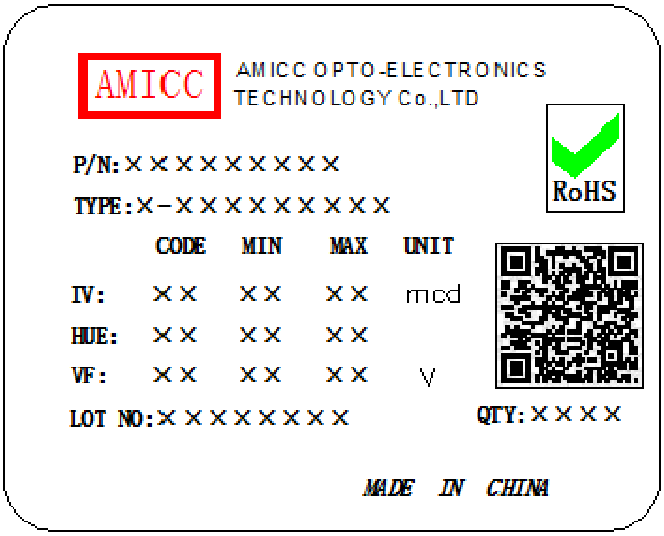
Recommended Solder Pad



Note:
Tolerance unless mentioned is ±0.1mm, Unit = mm.

# Moisture Resistant Packing Materials

## Label Explanation



AMICC

AMICC OPTO-ELECTRONICS TECHNOLOGY Co.,LTD

RoHS

P/N:XXXXXXXXX

TYPE:X-XXXXXXXXXX

| | CODE | MIN | MAX | UNIT |
|---|---|---|---|---|
| IV: | XX | XX | XX | mcd |
| HUE: | XX | XX | XX | |
| VF: | XX | XX | XX | V |

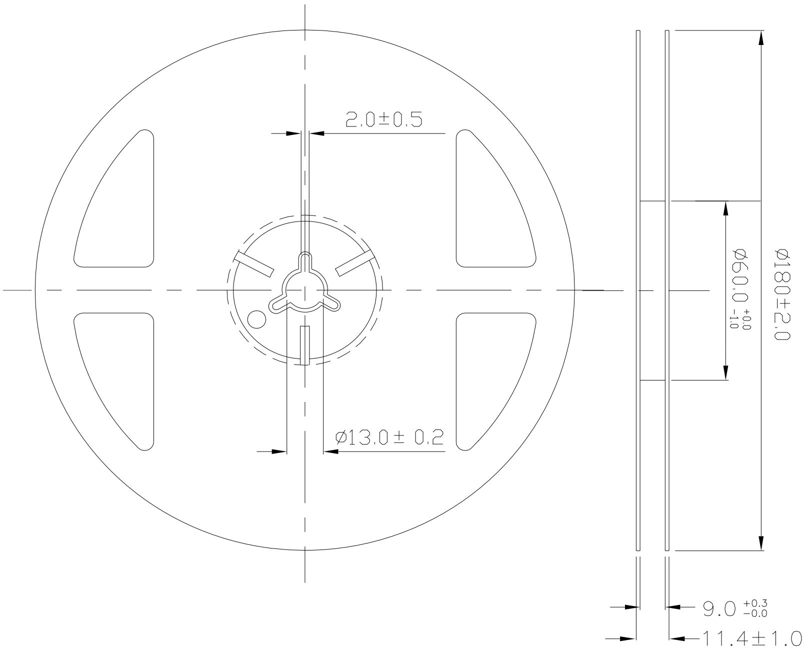
LOT NO:XXXXXXXX

QTY:XXXX

MADE IN CHINA

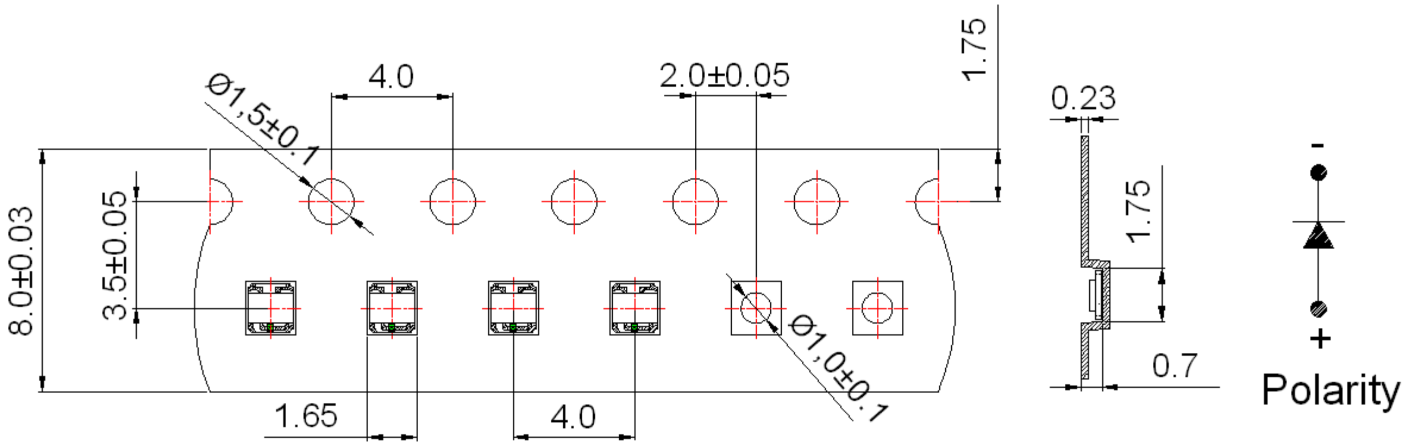
- CPN: Customer’s Product Number
- P/N: Product Number
- TYPE :Part NO.
- IV: Luminous Intensity Rank
- WD: Dom. Wavelength Rank
- VF: Forward Voltage Rank
- LOT NO.: Lot Number
- QTY: Packing Quantity

## Reel Dimensions



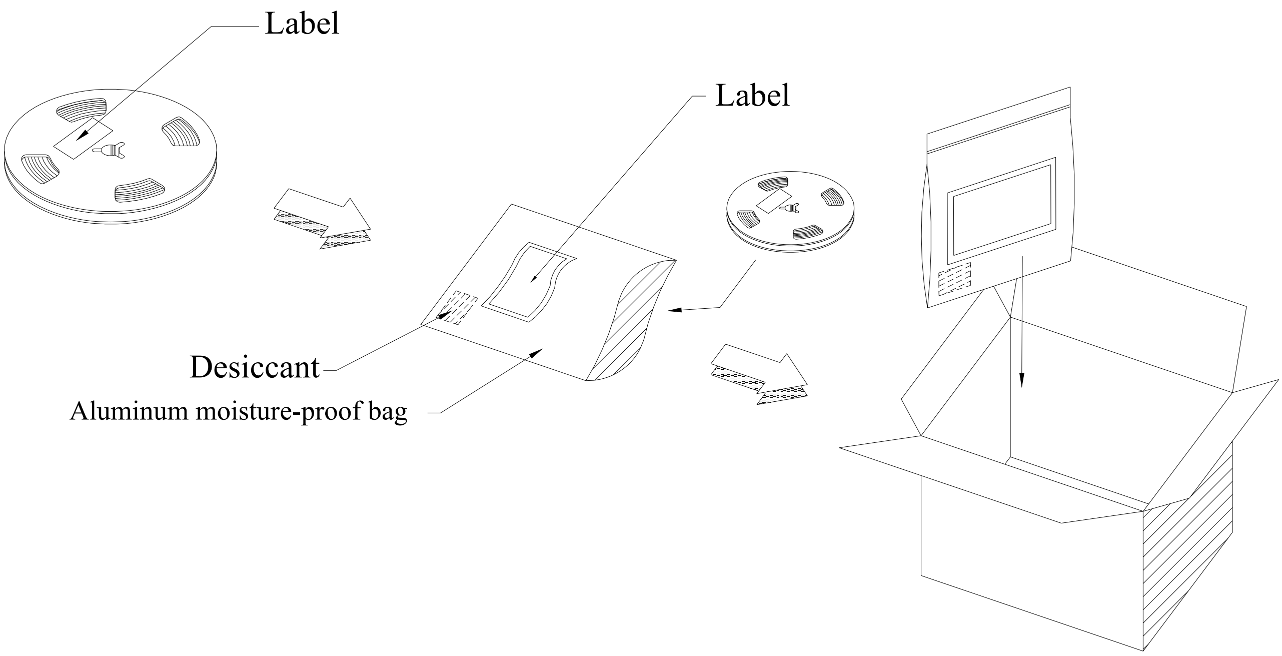
Note:
Tolerances unless mentioned ±0.1mm, Unit = mm.

## Carrier Tape Dimensions: Loaded Quantity 2000pcs Per Reel



Notes:
1.Tolerance unless mentioned is ±0.1mm, Unit = mm.
2.Minimum packing amount is 1000pcs per reel.

### Moisture Resistant Packing Process



## Reliability Test Items and Conditions

The reliability of products shall be satisfied with items listed below.
Confidence level：90%
LTPD：10%

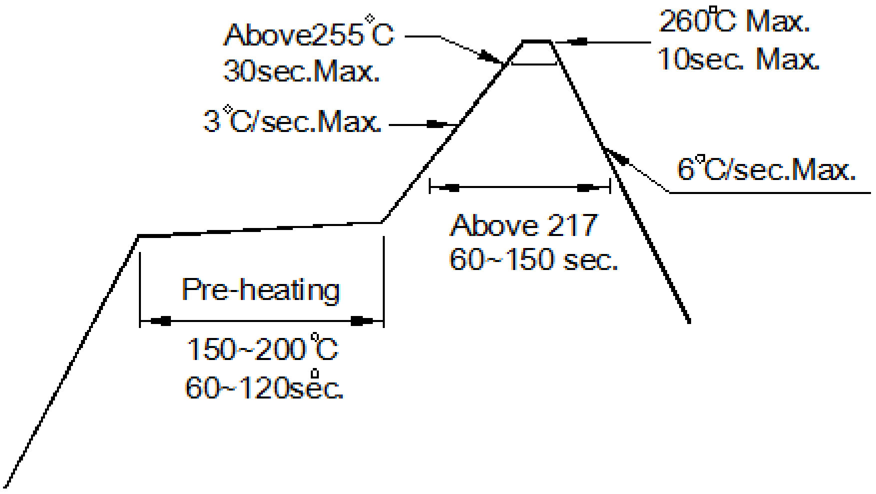
| No. | Items | Test Condition | Test Hours/Cycles | Sample Size | Ac/Re |
|---|---|---|---|---|---|
| 1 | Reflow Soldering | Temp. : 260℃/10sec. | 6 Min. | 22 PCS. | 0/1 |
| 2 | Thermal Shock | H : +100℃ 5min<br>∫ 10 sec<br>L : -10℃ 5min | 300 Cycles | 22 PCS. | 0/1 |
| 3 | Temperature Cycle | H : +100℃ 15min<br>∫ 5 min<br>L : -40℃ 15min | 300 Cycles | 22 PCS. | 0/1 |
| 4 | High Temperature/Humidity | Ta=85℃,85%RH | 1000 Hrs. | 22 PCS. | 0/1 |
| 5 | Low Temperature Storage | Ta=-40℃ | 1000 Hrs. | 22 PCS. | 0/1 |
| 6 | High Temperature Storage | Ta=100℃ | 1000 Hrs. | 22 PCS. | 0/1 |
| 7 | DC Operation Life | Ta=25℃,<br>$I_F$ =5 mA | 1000 Hrs. | 22 PCS. | 0/1 |

## 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 1 year 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.