# Specifications for Approval

Customer Part No.:

Inhere Part No.: S1608BHET-001

Part Name: 1608 红光 LED

Spec Issue Date: 2018-07-05

Revision No.: A

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To Customer:

We submit herewith the following information for your approval:

■Sample ☐OQC Inspection Record ■LED Dimension

■Electrical Characteristics Curve ■Internal Circuit Diagram

■Soldering recommendation

| Prepared by: Lily | Checked by: Tom | Approved by: Wangxiaojun |
|---|---|---|
| Date: 2018-07-05 | Date: 2018-07-05 | Date: 2018-07-05 |

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Customer Opinion

☐ Approve and no objection

☐ Reject with the following reason:

_____


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**Features**

1.6mm x 0.8mm SMD LED, 0.6mm thickness

Low power consumption

Wide view angle

Package: 4000pcs/reel

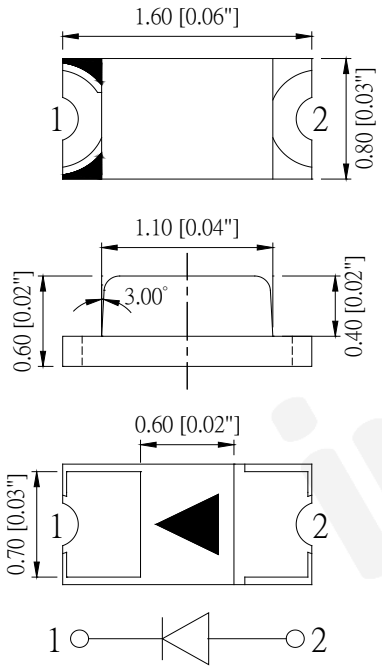
RoHS Compliant

**Applications**

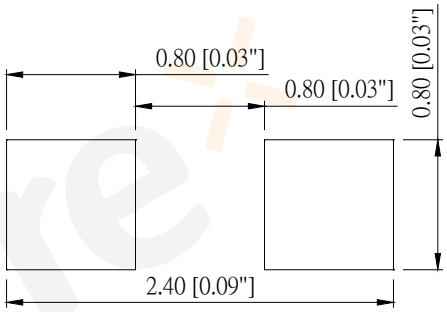
Ideal for back light and indicator

Various colors and lens types available

**Package outlines**




**Recommend Pad Layout**



| Part No. | Emitted color | Dice | Lens color |
|---|---|---|---|
| S1608BHET-001 | Red | AlGaInP | Water transparent |

Notes:

All dimensions are in millimeters (inches);

Tolerances are ±0.1mm (0.004inch) unless otherwise noted.

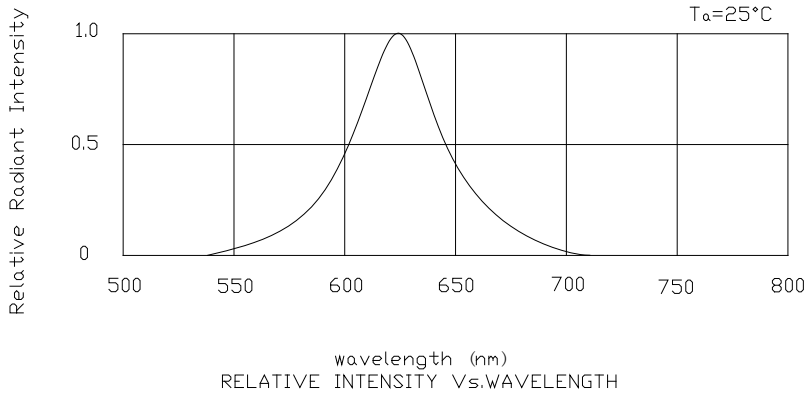
**Absolute Maximum Ratings (TA=25℃)**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Forward current | If | 30 | mA |
| Reverse voltage | Vr | 5 | V |
| Power dissipation | Pd | 72 | mW |
| Operating temperature | Top | -40 ~+80 | ℃ |
| Storage temperature | Tstg | -40 ~+85 | ℃ |
| Peak pulsing current (1/8 duty f=1kHz) | Ifp | 125 | mA |

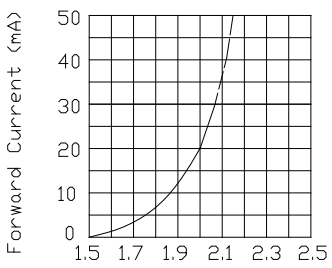
**Electro-Optical Characteristics (TA=25℃)**

| Parameter | Test Condition | Symbol | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | |
| Wavelength at peak emission | If=20mA | λ p | -- | 630 | -- | nm |
| Spectral half bandwidth | If=20mA | △λ | -- | 20 | -- | nm |
| Dominant wavelength | If=20mA | λ d | 620 | -- | 630 | nm |
| Forward voltage | If=20mA | Vf | 1.8 | -- | 2.4 | V |
| Luminous intensity | If=20mA | Iv | 80 | 130 | -- | mcd |
| Viewing angle at 50% Iv | If=10mA | 2θ 1/2 | -- | 120 | -- | Deg |
| Reverse current | Vr=5V | Ir | -- | -- | 10 | μA |

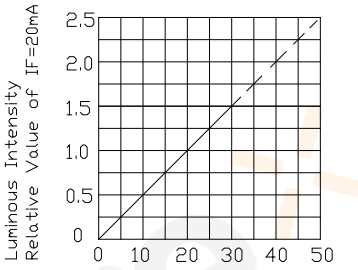
## Optical Characteristic Curves



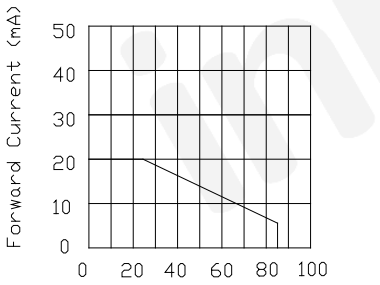

RELATIVE INTENSITY Vs.WAVELENGTH



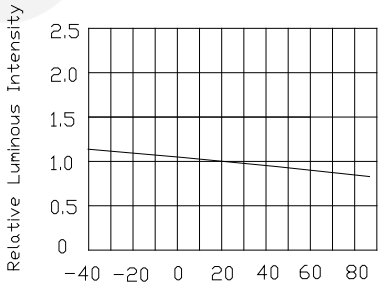

FORWARD CURRENT Vs.
FORWARD VOLTAGE



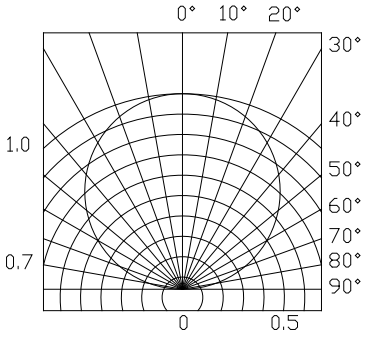

LUMINOUS INTENSITY Vs.
FORWARD CURRENT




FORWARD CURRENT
DERATING CURE



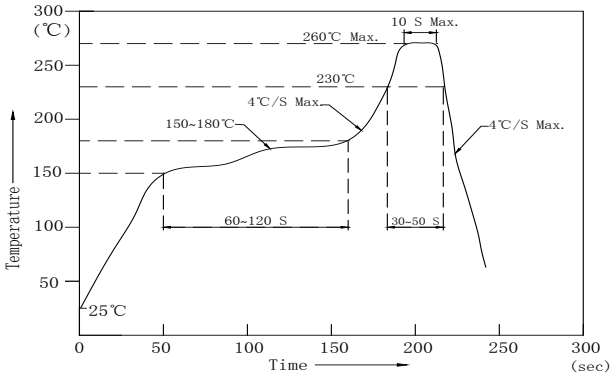

LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE




SPATIAL DISTRIBUTION

**Reflow Profile**

■ Reflow Temp/Time




Notes:

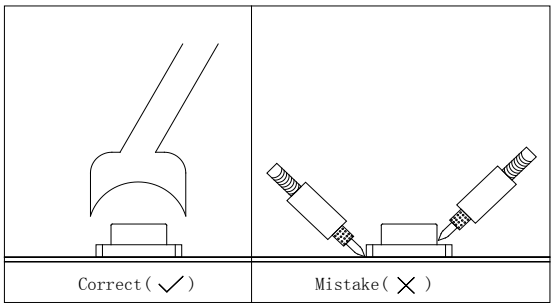
1. We recommend the reflow temperature 245℃ (±5℃).the maximum soldering temperature should be limited to 260℃.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

■Soldering iron

Basic spec is ≤ 5sec when 320℃ (±20℃). If temperature is higher, time should be shorter (+10℃→ -1sec). Power dissipation of iron should be smaller than 20W, and temperatures should be controllable .Surface temperature of the device should be under 350℃.

■Rework

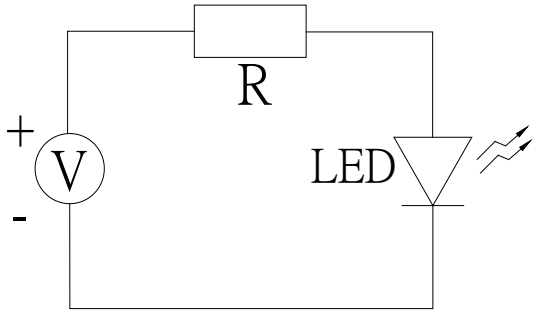
1. Customer must finish rework within 5 sec under 340℃.
2. The head of iron cannot touch copper foil
3. Twin-head type is preferred.




■ Avoid rubbing or scraping the resin by any object, during high temperature, for example reflow solder etc.

**Test circuit and handling precautions**

■ Test circuit




■ Handling precautions

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 It is recommended to store the products in the following conditions:

Humidity: 60% R.H. Max.

Temperature: 5℃~30℃

2.2 Shelf life in sealed bag: 12 month at ＜5℃~30℃ and ＜30% R.H. after the package is opened, the products should be used within a week or they should be keeping to stored at≦20 R.H. with zip-lock sealed.

3. Baking

It is recommended to baking before soldering when the pack is unsealed after 72hrs. The Conditions are as followings:

3.1 60±3℃ x (12~24hrs) and ＜5%RH, taped reel type

3.2 100±3℃ x (45min~1hr), bulk type

3.3 130±3℃ x (15~30min), bulk type

**Test Items and Results of Reliability**

| Test Item | Test Conditions | Standard Test Method | Note | Number of Test |
|---|---|---|---|---|
| Reflow Soldering | Ta=260±5℃,Time=10±2S | JB/T 10845-2008 | 3times | 0/22 |
| Salt Atmosphere | Ta=35±3℃,PH=6.5～7.2 | GB/T 2423.17-2008 | 24hrs | 0/22 |
| Temperature Cycling | -40±5℃ 30±1min<br>↑→(25℃/5±1min)↓<br>100±5℃ 30±1min | GB/T 2423.22-2012 | 100cycles | 0/22 |
| Thermal Shock | Ta=-40±5℃～100±5℃,<br>15±1min dwell | GB/T 2423.22-2012 | 100cycles | 0/22 |
| High Humidity High Temp. Cycling | Ta=30±5℃～65±5℃,<br>90±5%RH,24hrs/1cycle | GB/T 2423.4-2008 | 10cycles | 0/22 |
| High Humidity High Temp. Storage Life | Ta=85±5℃,ψ(%)=85±5%RH | GB/T 2423.3-2006 | 1000hrs | 0/22 |
| High Temperature Storage Life | Ta=100±5℃,non-operating | GB/T 2423.2-2008 | 1000hrs | 0/22 |
| Low Temperature Storage Life | Ta=-40±5℃,non-operating | GB/T 2423.1-2008 | 1000hrs | 0/22 |
| Life Test | Ta=26±5℃,@20mA,<br>ψ(%)=25%RH～55%RH | -- | 1000hrs | 0/22 |
| High Humidity High Temp. Operating Life | Ta=85±5℃,@20mA,<br>ψ(%)=85%RH | GB/T 2423.3-2006 | 500hrs | 0/22 |
| Low Temperature Operating Life | Ta=-20±5℃,@20mA | GB/T 2423.1-2008 | 1000hrs | 0/22 |

**Forward Voltage Rank Combination (IF=20mA)**

| Rank | Min. | Max. | Unit |
|---|---|---|---|
| 7 | 1.8 | 1.9 | V |
| 8 | 1.9 | 2.0 | |
| 9 | 2.0 | 2.1 | |
| A | 2.1 | 2.2 | |
| B | 2.2 | 2.3 | |
| C | 2.3 | 2.4 | |

**Luminous Intensity Rank Combination (IF=20mA)**

| Rank | Min. | Max. | Unit |
|---|---|---|---|
| I | 80 | 100 | mcd |
| J | 100 | 125 | |
| K | 125 | 160 | |
| L | 160 | 200 | |
| M | 200 | -- | |

**Dominant wavelength Rank Combination (IF=20mA)**

| Rank | Min. | Max. | Unit |
|---|---|---|---|
| Ra | 620 | 622 | nm |
| Rb | 622 | 624 | |
| Rc | 624 | 626 | |
| Rd | 626 | 628 | |
| Re | 628 | 630 | |

**Group Name on Label (Example DATA: 9JRa 20)**

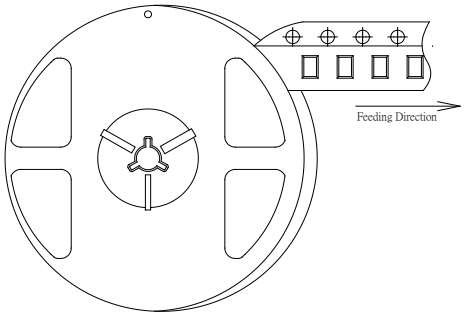
| DATA: 9JRa 20 | Vf(V) | Iv (mcd) | λd (nm) | Test Condition |
|---|---|---|---|---|
| 9→J→Ra→20 | 2.0~2.1 | 100~125 | 620~622 | IF=20mA |

Notes:

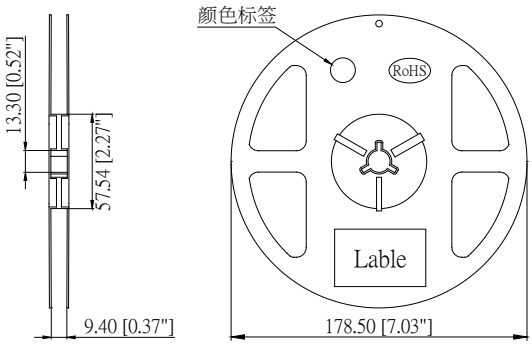
1.The tolerance of luminous intensity (Iv )is ±15％.
2. The tolerance of dominant wavelength is ±1nm.
3. This specification is preliminary.
4. This specification is a standard specification of our factory, can make in accordance with customer's special requirement.

**1608 Series SMD Chip LED Lamps Packaging Specifications**

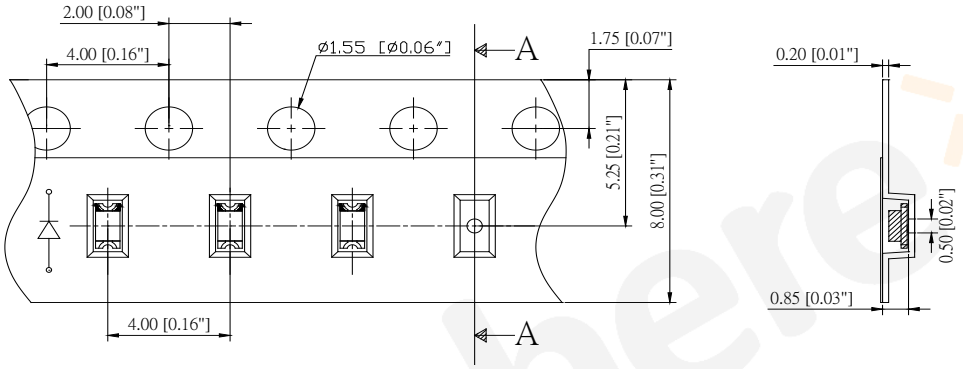
- **Feeding Direction**



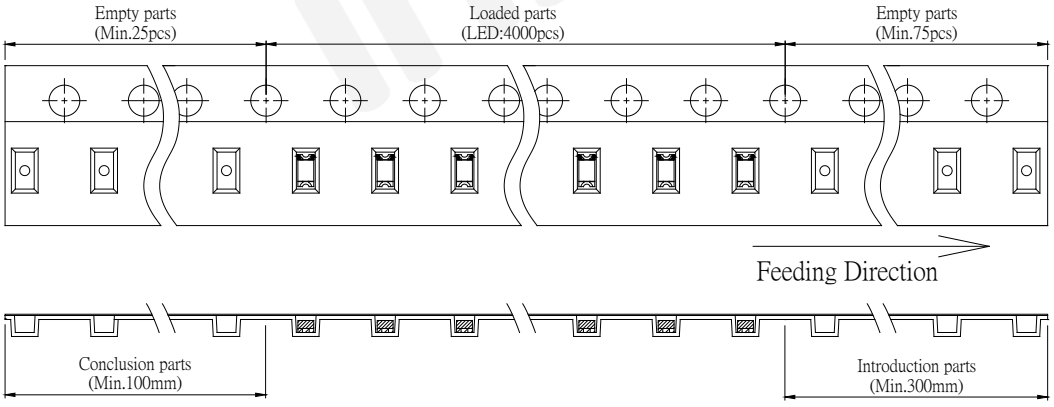

- **Dimensions of Reel (Unit: mm)**




- **Dimensions of Tape (Unit: mm)**




- **Arrangement of Tape**

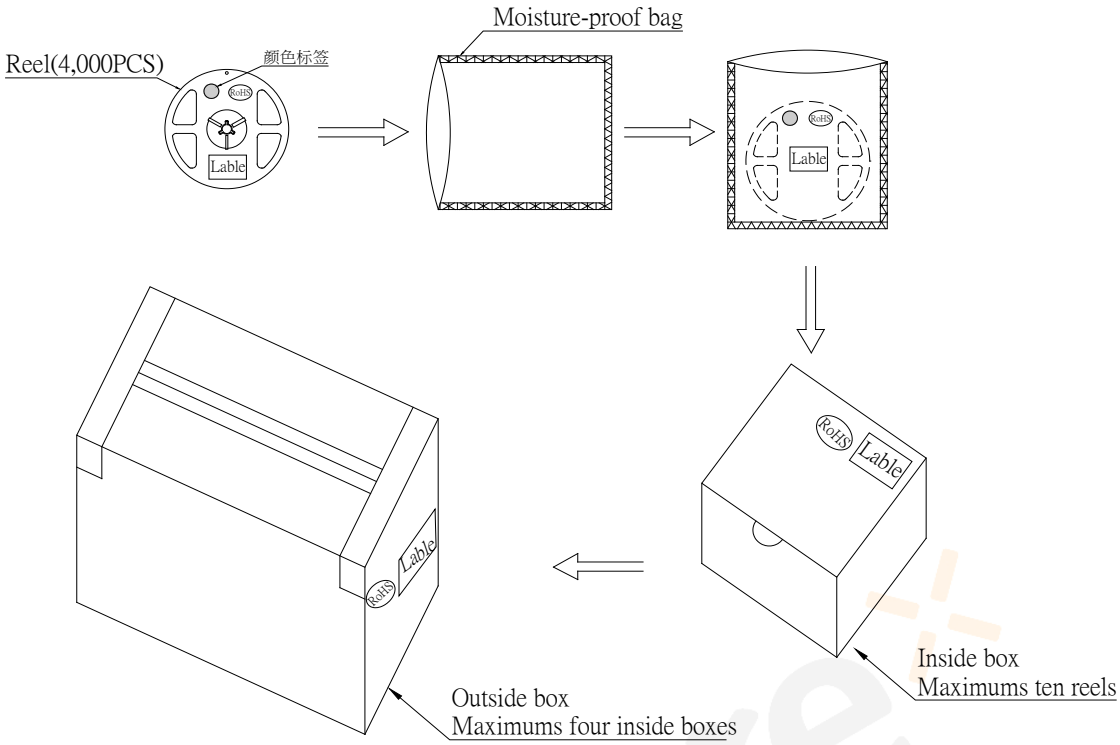



Notes:

1. Empty component pockets are sealed with top cover tape;
2. The maximum number of missing lamps is two;
3. The cathode is oriented towards the tape sprocket hole in accordance with ANSI/EIA RS-481 specifications.
4. 4,000pcs/Reel.

**1608 Series SMD Chip LED Lamps Packaging Specifications**

- **Packaging specifications**




Notes:

Reeled products (numbers of products are 4,000pcs) packed in a seal off moisture-proof bag along with a desiccant one by one, ten moisture-proof bag of maximums (total maximum number of products are 40,000pcs) packed in an inside box (about size: 240x 230x 130mm) and four inside boxes of maximums are put in the outside box (about size: 545mm x 260mm x 250mm) Together with buffer material, and it is packed. (Part No., Lot No., quantity should appear on the label on the moisture-proof bag, part No. And quantity should appear on the label on the cardboard box.) The number of the loading steps of outside box (cardboard box) has it to three steps.