



## Data Sheet

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Customer:

Part No:

Sample No:

Description:

Item No:

CL-SP172PT-02

2012 SMD Photo Transister

| Customer |            |          |      |
|----------|------------|----------|------|
| Check    | Inspection | Approval | Date |
|          |            |          |      |

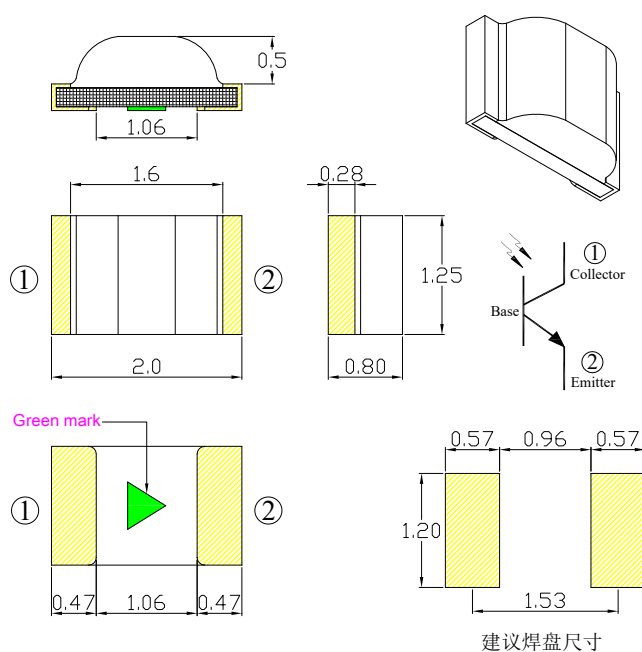
## Features

1. Outline Package: 2.0x1.25x0.80mm
2. Emitted Color: non-luminance
3. Lens Appearance: Black
3. Comply with RoHS
4. PACKAGE: 3000PCS / REEL.

## Applications

1. Applicable to all kinds of mechanical keyboard launch requirements
2. Suitable for all kinds of infrared transmitting and receiving equipment
3. Infrared remote control transmitter is suitable for all kinds of electronic products
4. Applicable to all kinds of small household electrical appliance products for reflection application

## Package Outline Dimensions



## NOTES:

1. All dimensions are in millimeters (inches);
2. Tolerances are  $\pm 0.2\text{mm}$  (0.008inch)

### Absolute maximum ratings at Ta=25°C

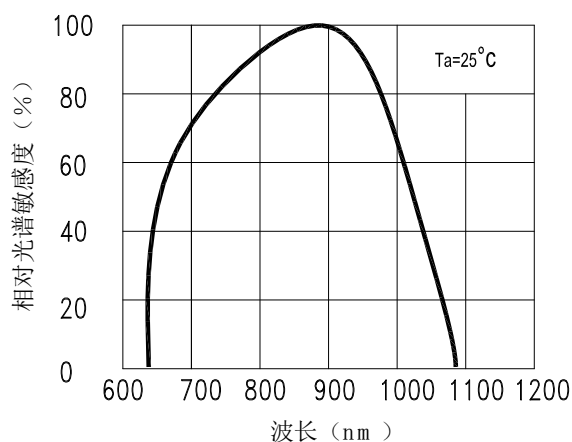
| Parameter                   | Symbol | Value                      | Unit |
|-----------------------------|--------|----------------------------|------|
| Power dissipation           | Pd     | 100                        | mW   |
| Collector-Emitter Voltage   | Vceo   | 30                         | V    |
| Emitter-Collector Voltage   | Veco   | 5                          | V    |
| Operating temperature range | Top    | -30 ~+85                   | °C   |
| Storage temperature range   | Tstg   | -40~+100                   | °C   |
| Soldering Temperature       | Tsol   | Max. 260° C for 8 sec Max. |      |
| Electrostatic Discharge     | ESD    | 2000 (HBM)                 | V    |

### Electrical-optical characteristics at Ta=25°C

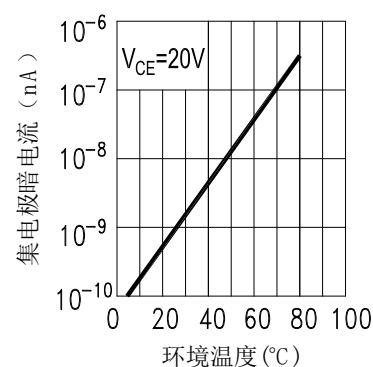
| Paramete                   | Test Condition                                                | Symbol    | Value |      |      | Unit |
|----------------------------|---------------------------------------------------------------|-----------|-------|------|------|------|
|                            |                                                               |           | Min.  | Typ. | Max. |      |
| Collector-Emitter          | I <sub>R</sub> =100uA<br>E <sub>e</sub> =0mW/cm <sup>2</sup>  | Bvceo     | 85    | --   | --   | V    |
| Breakdown Voltage          |                                                               |           |       |      |      |      |
| Emitter-Collector          | I <sub>R</sub> =100uA<br>E <sub>e</sub> =0mW/ cm <sup>2</sup> | Bveco     | 8.2   | --   | --   | V    |
| Breakdown Voltage          |                                                               |           |       |      |      |      |
| Collector Emitter          | I <sub>c</sub> =2mA<br>E <sub>e</sub> =0.5mW/ cm <sup>2</sup> | Bvc (sat) |       | --   | 0.3  | V    |
| Saturation voltage         |                                                               |           |       |      |      |      |
| Rise Time                  | VCE=5V IC=1Ma<br>RL=1K Ω                                      | Tr        |       | 15   | --   | us   |
| Fall Time                  | VCE=5V IC=1Ma<br>RL=1K Ω                                      | Tf        | --    | 15   | --   | us   |
| Collector Dark Current     | VCE=20V<br>Ee=0mW/cm2                                         | ICEO      | --    | --   | 30   | nA   |
| On State Collector Current | VCE=5V<br>Ee=1mW/cm2<br>λ =940nm                              | ICEO      | 500   | --   | 600  | uA   |

# Typical optical characteristics curve

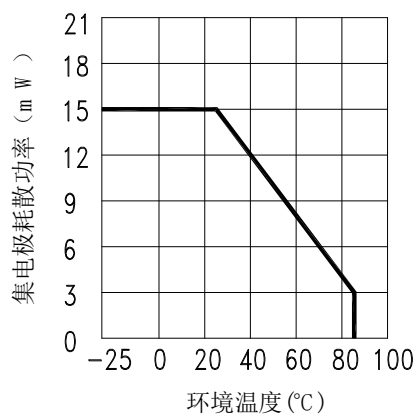
图一：光谱敏感度曲线



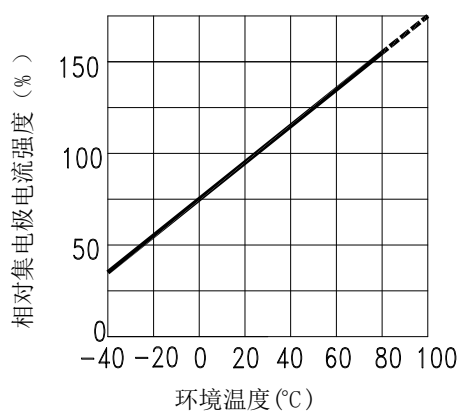
图二：集电极暗电流VS环境温度曲线



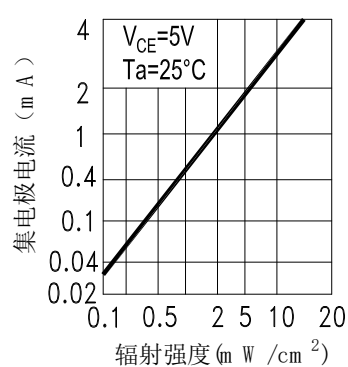
图三：耗散功率VS环境温度曲线



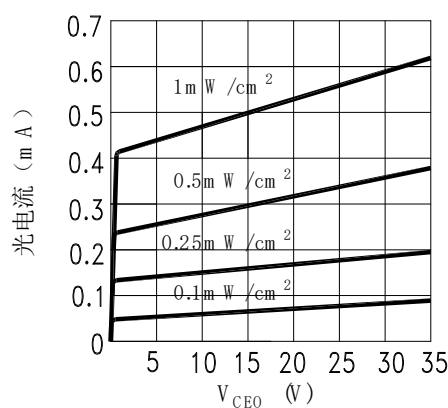
图四：相对集电极电流强度VS环境温度曲线



图五：集电极电流VS辐射照度



图六：光电流VS  $V_{CE0}$  曲线



## RELIABILITY

### Test Items and Results

| No.    | Items                                                                                                                                                                                                                                                                                                                                                                                                   | Guideline                   | Test Condition                                                            | Test Hours/Cycles                      | Sample QTY | Ac/Re |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------|----------------------------------------|------------|-------|
| 1      | Temperature Cycle                                                                                                                                                                                                                                                                                                                                                                                       | JEITA<br>ED-4701            | -40℃~25℃~<br>100℃~<br>25℃<br>30 MIN 5 MIN<br>30 MIN 5 MIN                 | Loop 100<br>rounds                     | 50         | 0/50  |
| 2      | Thermal Shock                                                                                                                                                                                                                                                                                                                                                                                           | MIL-STD-202G                | -40℃~100℃<br>15 MIN 15 MIN                                                | Loop 500<br>rounds                     | 50         | 0/50  |
| 3      | High Temperature Storage                                                                                                                                                                                                                                                                                                                                                                                | JEITA<br>ED-4701<br>200 201 | T <sub>a</sub> =100℃                                                      | 1000 hous                              | 50         | 0/50  |
| 4      | Low Temperature Storage                                                                                                                                                                                                                                                                                                                                                                                 | JEITA<br>ED-4701<br>200 201 | T <sub>a</sub> =-40℃                                                      | 1000 hours                             | 50         | 0/50  |
| 5      | DC Operation Life                                                                                                                                                                                                                                                                                                                                                                                       |                             | T <sub>a</sub> =25±5℃<br>I <sub>F</sub> =20Ma                             | 1000 houts                             | 50         | 0/50  |
| 6      | High Temperature/Humidity Reverse Bias                                                                                                                                                                                                                                                                                                                                                                  |                             | T <sub>a</sub> =60℃ RH=85%<br><br>I <sub>F</sub> =20mA                    | 1000 hours                             | 50         | 0/50  |
| 7      | Solderability<br>(reflow soldering)                                                                                                                                                                                                                                                                                                                                                                     | JEITA<br>ED-4701<br>300 303 | T <sub>sol</sub> =235℃±5℃, 5<br>sec<br><br>Use flux                       | Weld once, 5<br>seconds                | 10         | 0/10  |
| 8      | Solderability<br>(reflow soldering)                                                                                                                                                                                                                                                                                                                                                                     | JEITA<br>ED-4701<br>300 301 | T <sub>sol</sub> =260℃, 10 sec<br>preprocessing :<br>35℃ 95%RH<br>96hours | Weld twice, 10<br>seconds each<br>time | 10         | 0/10  |
| REMARK | If the above test items are different from the customer's test requirements or have special customer requirements, they can be trial-produced according to the actual situation and in accordance with the customer's requirements. If the customer does not require them, they can be trial-produced according to our company's test standards. Different products use different currents for testing. |                             |                                                                           |                                        |            |       |

## Cautions

### (1) Soldering Conditions

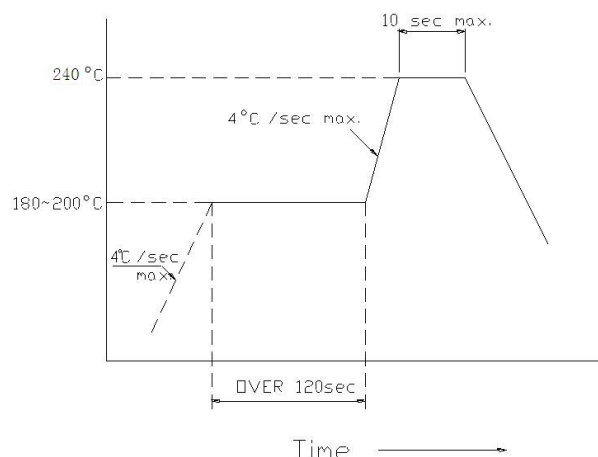
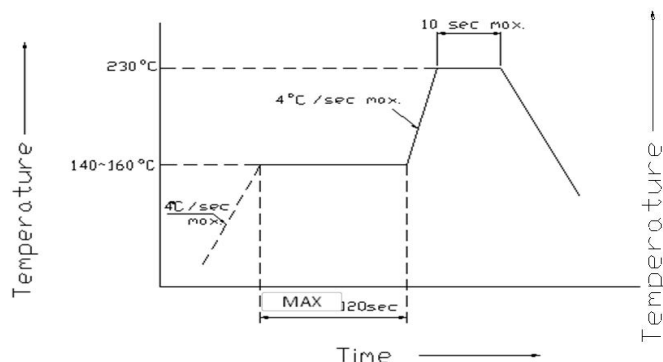
Number of reflow process shall be less than 2 times and cooling process to normal temperature is required between first and Second soldering process.

(Recommended soldering conditions)

| 回流焊接 Reflow Soldering     |                               |                               | 手工焊接                |                                |
|---------------------------|-------------------------------|-------------------------------|---------------------|--------------------------------|
| 预热温度 Pre-heat temperature | 有铅 Lead Solder                | 无铅 Lead-free Solder           | 温度 Temperature      | 350° C Max.                    |
| 预热时间 Pre-heat time        | 140 ~ 160° C<br>120 sec. Max. | 180 ~ 200° C<br>120 sec. Max. | 焊接时间 Soldering time | 3 sec. Max.<br>(one time only) |
| 峰值温度 Peak temperature     | 230° C Max.<br>10 sec. Max.   | 240° C Max.<br>10 sec. Max.   |                     |                                |
| 焊接时间 Soldering time       | 参考下图                          | 参考下图                          |                     |                                |
| 条件 Condition              |                               |                               |                     |                                |

(Lead Solder)

(Lead-Free Solder)



## (2) Static Electricity

It is recommended that a wrist band or an anti-electrostatic glove be used when handling the LEDs.

All devices, equipment and machinery must be properly grounded.

Damaged LEDs will show some unusual characteristics such as the forward voltage becomes lower, or the LEDs do not light at the low current. Criteria : ( $V_F > 2.0V$  at  $I_F=0.5mA$ )

## (3) Moisture Proof Package

It is recommended that moisture proof package be used .

## (4)

Cautions:

### 4.1.

Please check if there is air leak before opening the package, if so, please return the goods back to take drying process for later using.

### 4.

Products can be used within 15days after packaging, after that, they must be:

#### 4.2.1

Soldered within 24 hrs

#### 4.2.2

Used in the condition:  $30^{\circ}C$  within and 60%RH below

#### 4.2.3

Stored in 30%RH for moisture below.

### 4.3.

Products cannot be used for and over 15days after being packaged unless opening the package and take drying our process in  $85^{\circ}C/6H$ .

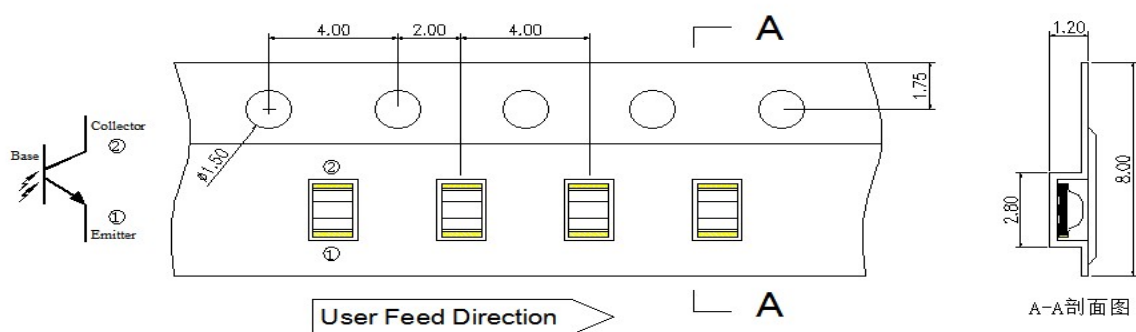
### 4.4.

Products not be used for or over 60days after being packaged please return back to take drying out and packaging process for forward using.

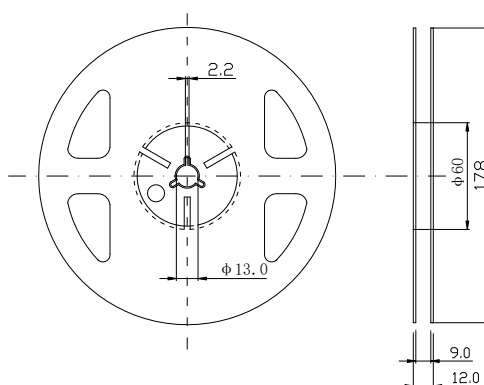
### 4.5.

Products not be used after opening the package need to be dried out for  $85^{\circ}C/6H$

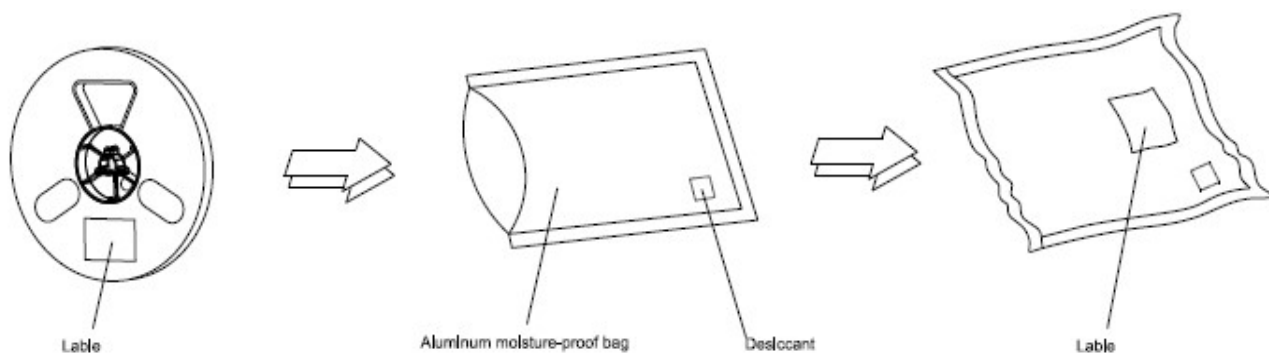
## PACKAGING



## Reel Dimensions



## Moisture Resistant Packaging



Note: The tolerances unless mentioned is  $\pm 0.1\text{mm}$ , Unit: mm