

Part Number: KP-2012P3C

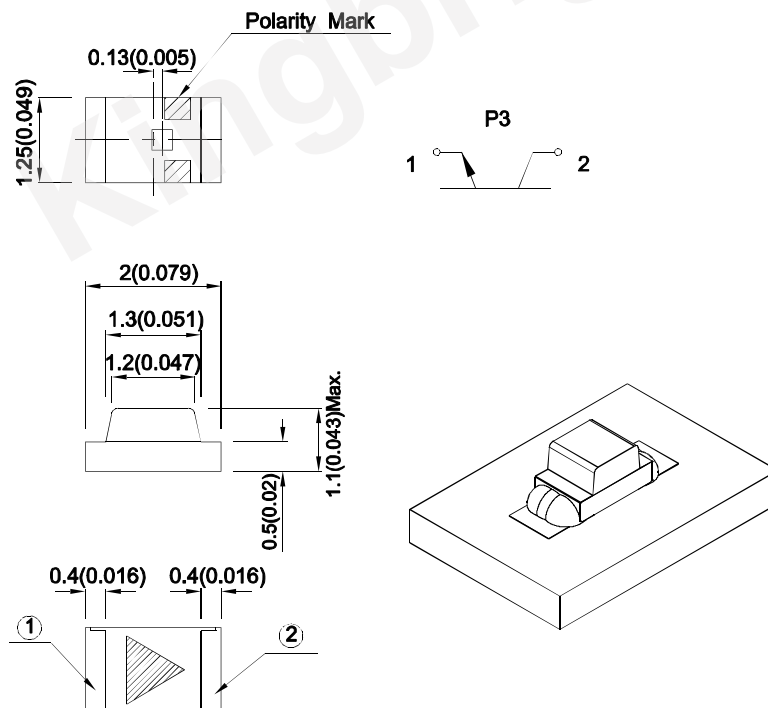
### Features

- 2.0mmx1.25mm SMD LED, 1.1mm thickness.
- Mechanically and spectrally matched to the infrared emitting LED lamp.
- Package : 2000pcs / reel.
- Moisture sensitivity level : level 3.
- RoHS compliant.

### Description

Made with NPN silicon phototransistor chips.

### Package Dimensions



#### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.1(0.004)$  unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.



## Electrical / Optical Characteristics at TA=25°C

| Symbol                | Parameter                               | Min. | Typ. | Max. | Units | Test Conditions  |
|-----------------------|---|------|------|------|-------|--|
| V <sub>BR CEO</sub>   | Collector-to-Emitter Breakdown Voltage  | 30   |      |      | V     | I <sub>C</sub> =100uA<br>E <sub>e</sub> =0mW/cm <sup>2</sup>           |
| V <sub>BR ECO</sub>   | Emitter-to-Collector Breakdown Voltage  | 5    |      |      | V     | I <sub>E</sub> =100uA<br>E <sub>e</sub> =0mW/cm <sup>2</sup>           |
| V <sub>CE (SAT)</sub> | Collector-to-Emitter Saturation Voltage |      |      | 0.8  | V     | I <sub>C</sub> =2mA<br>E <sub>e</sub> =20mW/cm <sup>2</sup>            |
| I <sub>CEO</sub>      | Collector Dark Current                  |      |      | 100  | nA    | V <sub>CE</sub> =10V<br>E <sub>e</sub> =0mW/cm <sup>2</sup>            |
| T <sub>R</sub>        | Rise Time (10% to 90% )                 |      | 15   |      | us    | V <sub>CE</sub> = 5V<br>I <sub>C</sub> =1mA<br>R <sub>L</sub> =1000Ω   |
| T <sub>F</sub>        | Fall Time (90% to 10% )                 |      | 15   |      | us    |  |
| I <sub>(ON)</sub>     | On State Collector Current              | 0.2  | 0.4  |      | mA    | V <sub>CE</sub> = 5V<br>E <sub>e</sub> =1mW/cm <sup>2</sup><br>λ=940nm |

## Absolute Maximum Ratings at TA=25°C

| Parameter   | Max.Ratings    |
|---|----------------|
| Collector-to-Emitter Voltage                              | 30V            |
| Emitter-to-Collector Voltage                              | 5V             |
| Power Dissipation at (or below) 25°C Free Air Temperature | 100mW          |
| Operating Temperature                                     | -40°C To +85°C |
| Storage Temperature                                       | -40°C To +85°C |

Note:

1. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

Typical Electro-Optical Characteristics Curves

Fig.1 Collector Power Dissipation vs. Ambient Temperature

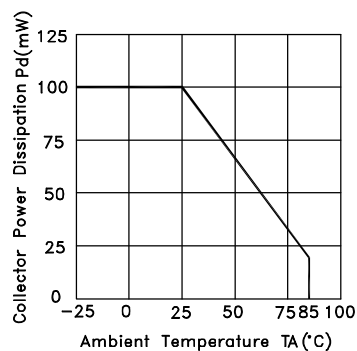


Fig.2 Spectral Sensitivity

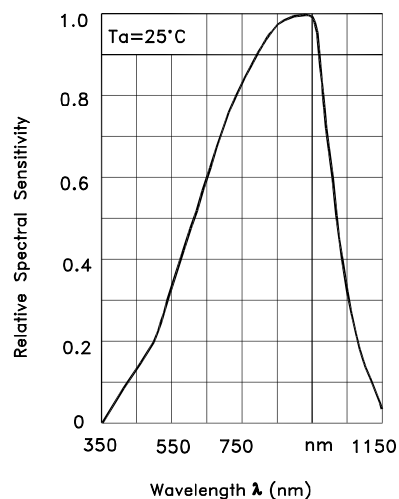


Fig.3 Relative Collector Current vs. Ambient Temperature

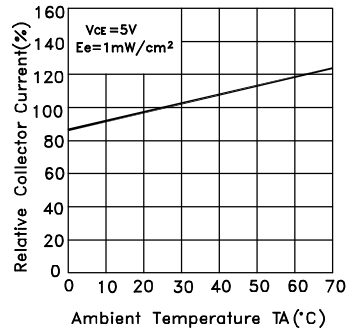


Fig.4 Collector Current  
 $I_c=f(E_e), V_{ce}=5\text{V}, T_a=25^{\circ}\text{C}$

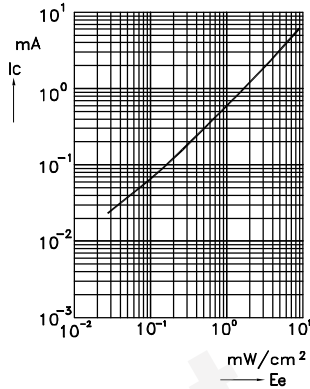


Fig.5 Collector Dark Current vs. Ambient Temperature

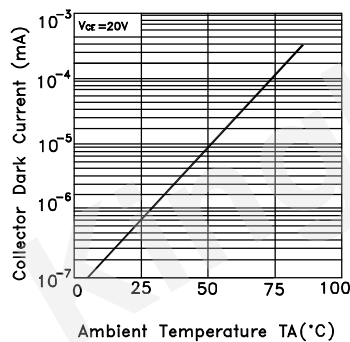


Fig.6 Collector Current vs. Collector-Emitter Voltage

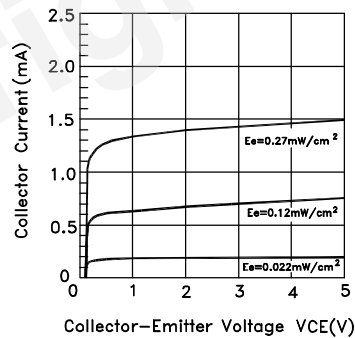
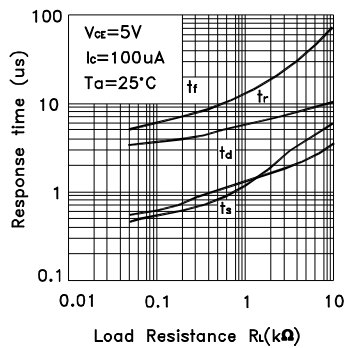
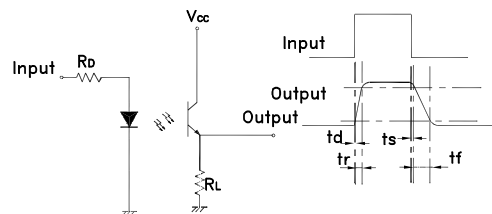


Fig.7 Response Time vs. Load Resistance



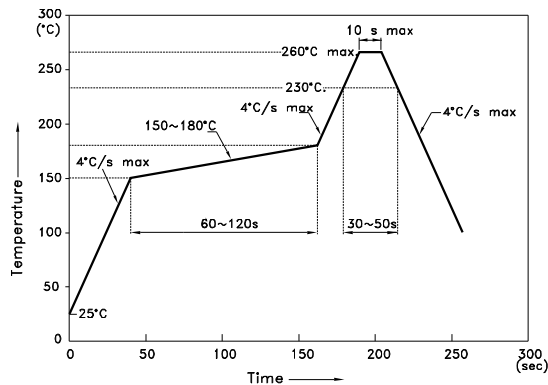
Test Circuit for Response Time



## KP-2012P3C

Reflow soldering is recommended and the soldering profile is shown below.  
Other soldering methods are not recommended as they might cause damage to the product.

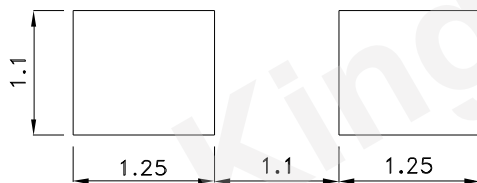
Reflow Soldering Profile For Lead-free SMT Process.



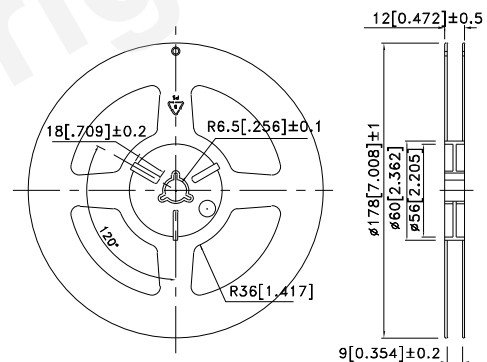
### NOTES:

1. We recommend the reflow temperature  $245^{\circ}\text{C} (+/-5^{\circ}\text{C})$ . The maximum soldering temperature should be limited to  $260^{\circ}\text{C}$ .
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.

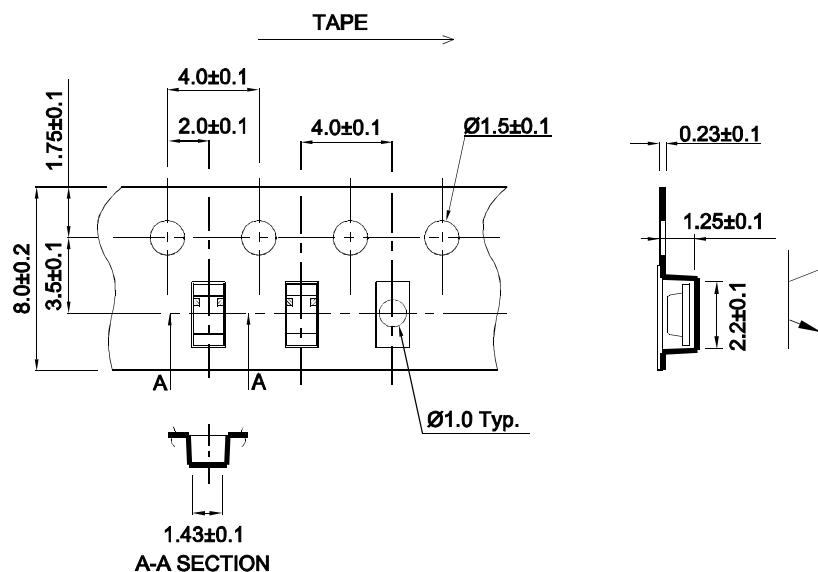
## Recommended Soldering Pattern (Units : mm; Tolerance: $\pm 0.1$ )



## Reel Dimension

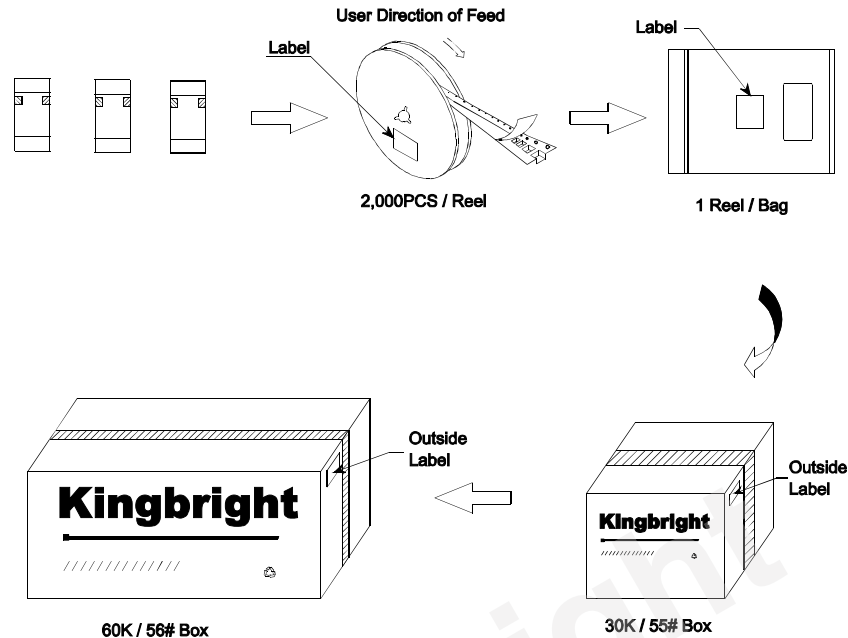


## Tape Specifications (Units : mm)



## PACKING & LABEL SPECIFICATIONS

KP-2012P3C



|                   |      |                             |
|-------------------|------|-----------------------------|
| <b>Kingbright</b> |      |                             |
| P/NO: KP-2012xxx  |      |                             |
| QTY: 2,000 PCS    | Q.C. | Q C<br>XX-XX-XXXX<br>PASSED |
| S/N: XXXX         |      |                             |
| CODE: XXX         |      |                             |
| LOT NO:           |      |                             |
|                   |      |                             |
| RoHS Compliant    |      |                             |

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