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LED SMD



Lead-Free Parts

**LG-150HIR-CT**

DATA SHEET

DOC. NO : QW0905-LG-150HIR-CT

REV. : D

DATE : 08 - Sep. - 2008



### Features:

1. Package in 8.0mm carrier tape on 7" diameter reel.
2. Low forward voltage
3. Good spectral matching to Si photo detector

### Descriptions:

1. The LG-150HIR is an infrared emitting diode in miniature SMD package which is molded in a water clear plastic with flat top view lens.
2. The device is spectrally matched with silicon photodiode and phototransistor.

### Applications:

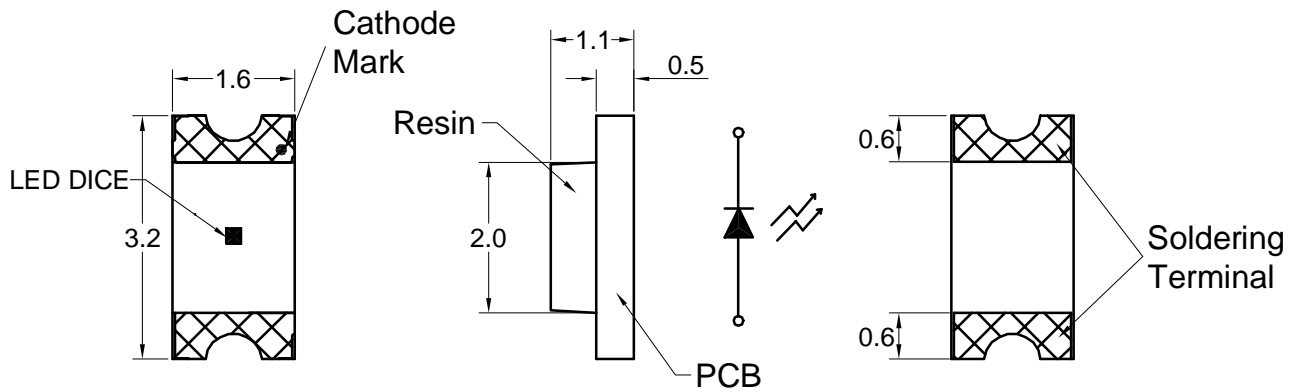
1. PCB mounted infrared sensor
2. Infrared emitting for miniature light barrier
3. Floppy disk drive
4. Optoelectronic switch
5. Smoke detector

### Device Selection Guide:

| PART NO      | MATERIAL | Lens Color  |
|--------------|----------|-------------|
| LG-150HIR-CT | GaAIAs   | Water Clear |

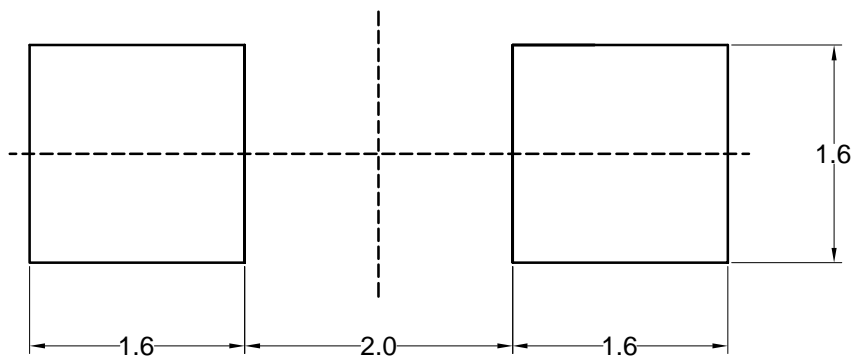


### Package Dimensions



Note : 1.All dimension are in millimeter tolerance is  $\pm 0.1$ mm unless otherwise noted.  
2.Specifications are subject to change without notice.

### Recommended Soldering Pad Dimensions



Note : The tolerances unless mentioned is  $\pm 0.1$ mm, Angle  $\pm 0.5$ . Unit=mm.

**Absolute Maximum Ratings at Ta=25**

| Parameter                                     | Symbol | Ratings               | UNIT |
|---|--------|-----------------------|------|
| Power Dissipation                             | PD     | 100                   | mW   |
| Peak Forward Current<br>(300pps,10 μ s Pulse) | IFP    | 1                     | A    |
| Forward Current                               | IF     | 50                    | mA   |
| Reverse Voltage                               | Vr     | 5                     | V    |
| Operating Temperature                         | Topr   | -25 ~ +85             |      |
| Storage Temperature                           | Tstg   | -40 ~ +85             |      |
| Soldering Temperature                         | Tsol   | Max 260 for 5 sec Max |      |

**Typical Electrical & Optical Characteristics (Ta=25 )**

| PARAMETER                | SYMBOL | Min. | Typ. | Max. | UNIT  | TEST CONDITION |
|--------------------------|--------|------|------|------|-------|----------------|
| Radiant Intensity        | Le     | 0.5  | 1.2  |      | mW/sr | IF=20mA        |
| Peak Emission Wavelength | peak   |      | 850  |      | nm    | IF=20mA        |
| Spectral Line Half Width |        |      | 50   |      | nm    | IF=20mA        |
| Forward Voltage          | VF     |      | 1.2  | 1.6  | V     | IF=20mA        |
| Reverse Current          | IR     |      |      | 100  | μ A   | VR=5V          |
| Viewing Angle            | 2 1/2  |      | 160  |      | deg   |                |

Note : 1.The forward voltage data did not including  $\pm 0.1V$  testing tolerance.  
2. The Radiant intensity data did not including  $\pm 15\%$  testing tolerance.



### Typical Electro-Optical Characteristics Curve

HIR CHIP

Fig.1 Forward Current vs. Forward Voltage

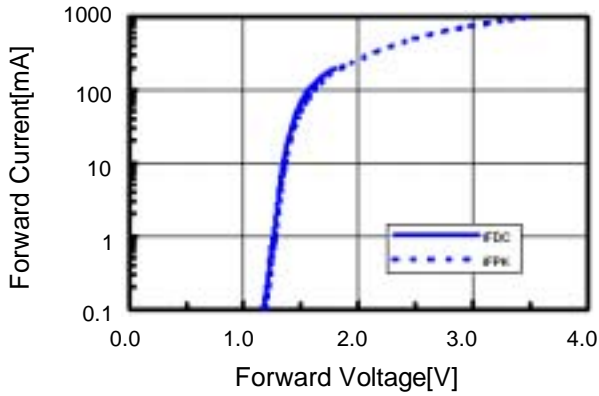


Fig.2 Relative Radiant Power vs. Wavelength

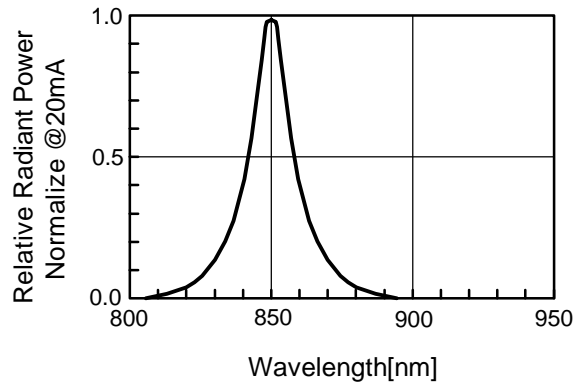


Fig.3 Relative Radiant Power vs. Forward DC Current

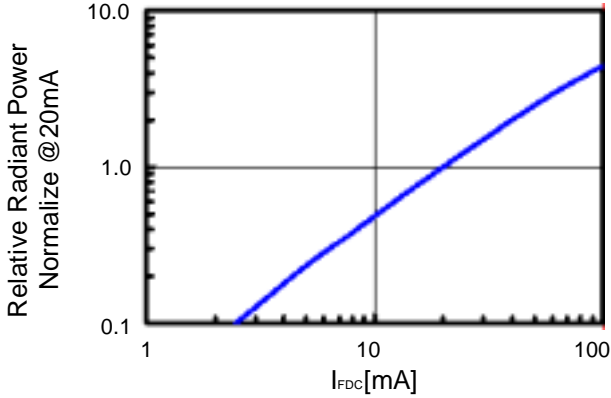


Fig.4 Relative Radiant Power vs. Forward Peak Current

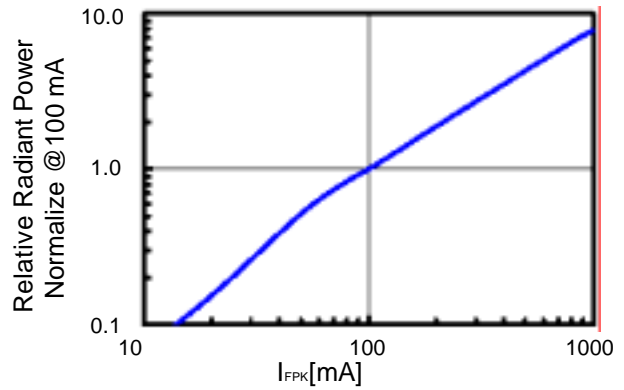


Fig.5 Forward DC Voltage vs. Temperature

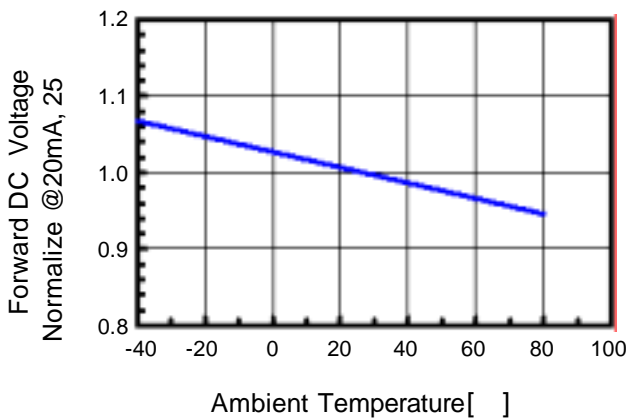
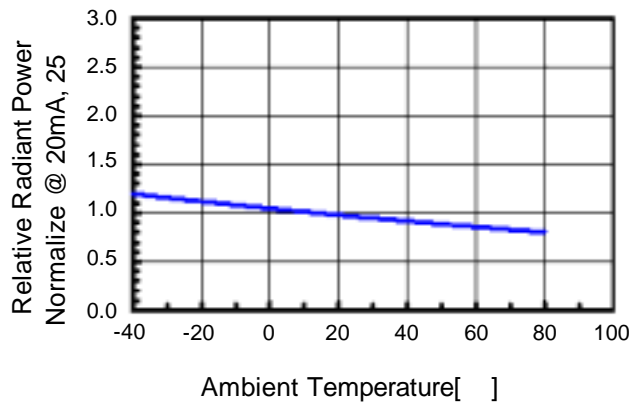


Fig.6 Relative Radiant Power vs. Temperature





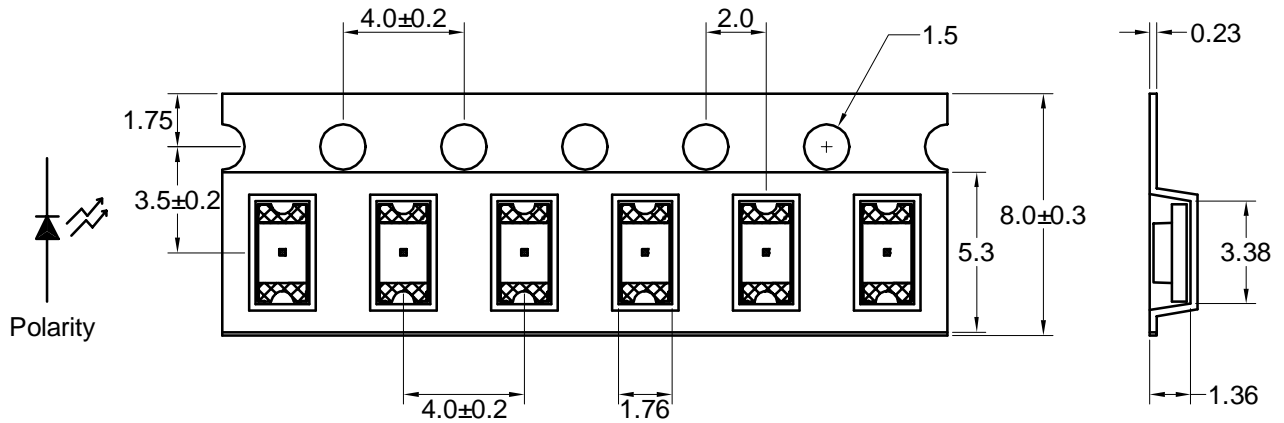
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PART NO. LG-150HIR-CT

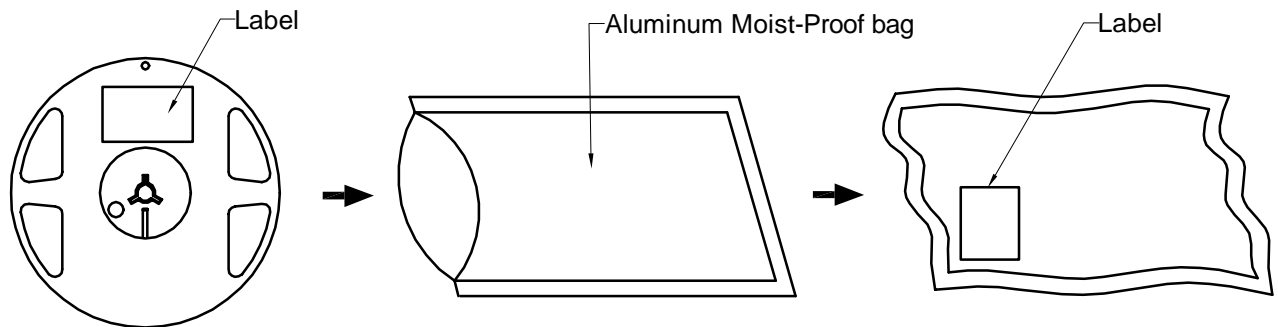
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### Carrier Type Dimensions



Note : The tolerances unless mentioned is ±0.1mm, Angle ± 0.5. Unit=mm.


### Packing Specifications



| Part No.     | Description         | Quantity/Reel |
|--------------|---------------------|---------------|
| LG-150HIR-CT | 8.0mm tape, 7" reel | 3000 devices  |



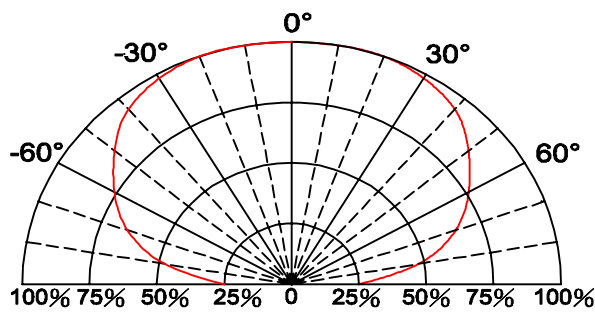
### Label Explanation

|   |           |
|---|-----------|
|  立基電子工業股份有限公司<br>LIGITEK ELECTRONICS CO., LTD. |           |
| PART NO. : LG-150HIR-CT   |           |
| LOT NO. : MC9400008   |           |
| Q'TY(PCS) : 3000 PCS  |           |
| BIN/HUE : K   | 1.4 - 1.6 |

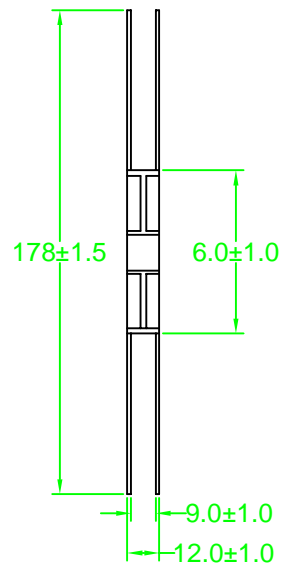
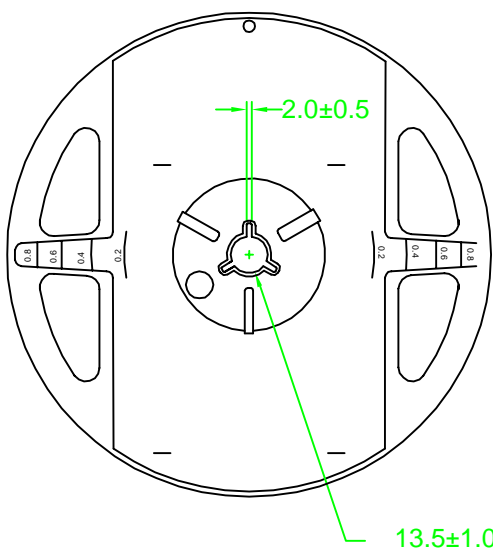
BIN : Luminous Intensity

1.4 - 1.6 : Forward Voltage

### Directive Radiation



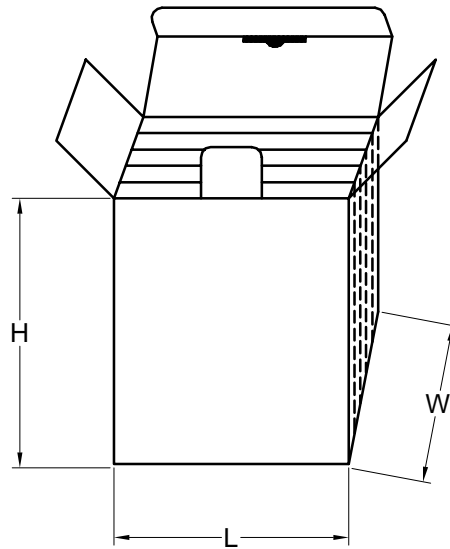
### Reel Dimensions



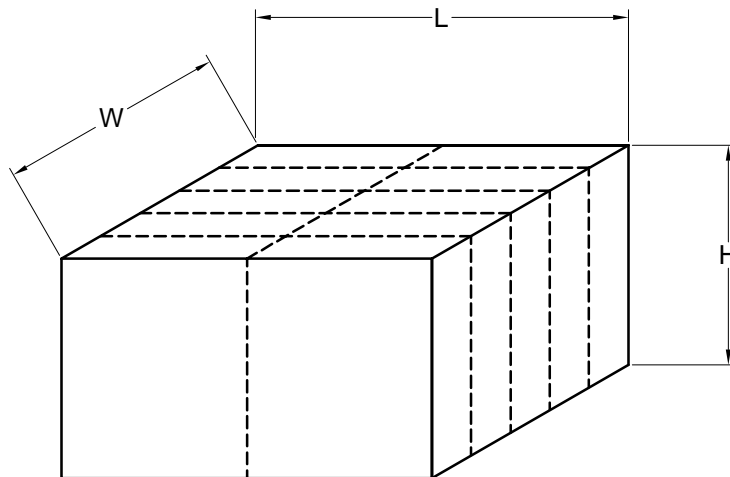


### Box Explanation

- 1. 5 BAG / INNER BOX
- 2. INNER BOX SIZE : L X W X H 23cm X 8.5cm x 26cm



- 3. 10 INNER BOXES / CARTON
- 4. CARTON SIZE : L X W X H 49cm X 46cm x 29cm





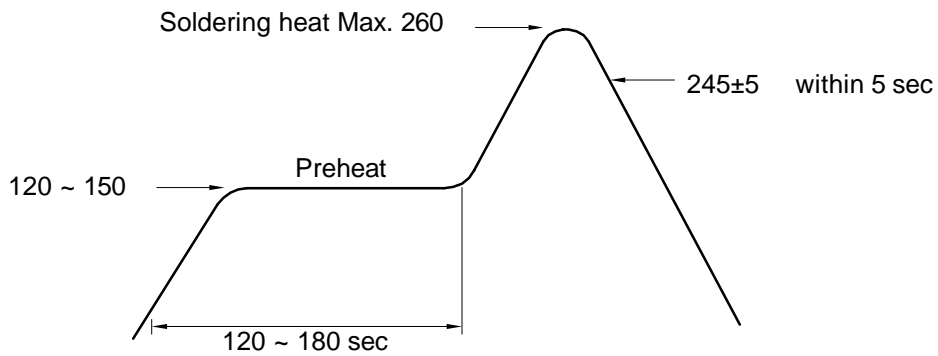


Recommended Soldering Conditions

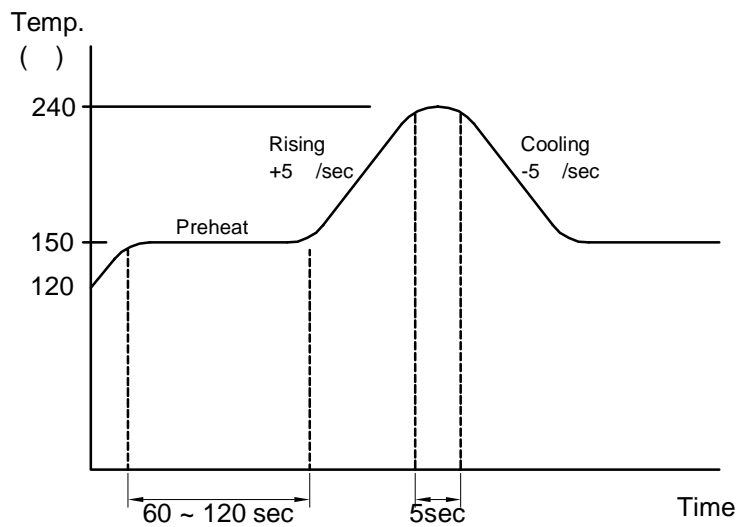
1. Hand Solder

Basic spec is 280 3 sec one time only.

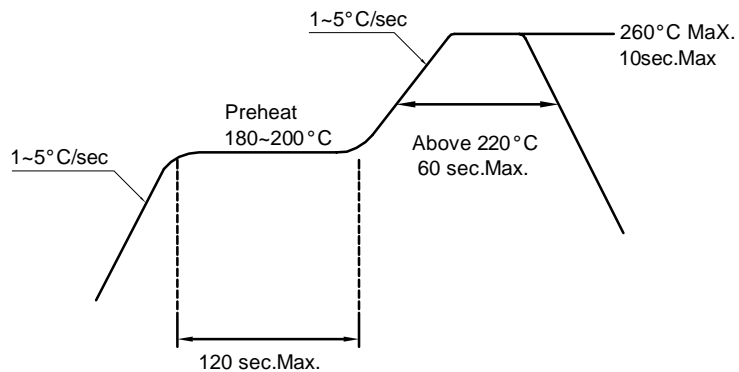
2. Wave Solder



3-1. LEAD Reflow Solder



3-2 PB-Free Reflow Solder



Reflow Soldering should not be done more than two times.

**Precautions For Use:**
**Storage time:**

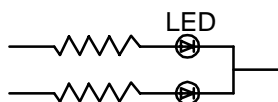
- 1.The operation of Temperatures and RH are : 5 ~35 ,RH60%.
- 2.Once the package is opened, the products should be used within a week.  
 Otherwise, they should be kept in a damp proof box with descanting agent.  
 Considering the tape life, we suggest our customers to use our products within a year(from production date).
- 3.If opened more than one week in an atmosphere 5 ~ 35 ,RH60%,  
 they should be treated at 60 ±5 fo r 15hrs.

**Drive Method:**

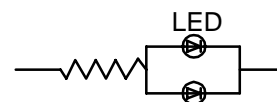
LED is a current operated device, and therefore, requirer some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor placed in series with the LED.

Consider worst case voltage variations than could occur across the current limiting resistor. The forwr d current should not be allowed to change by more than 40 % of its desired value.

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The difference of brightness between LED could be found due to the VF-IF characteristics of LED.

**Cleaning:**

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED.

**ESD(Electrostatic Discharge):**

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing these LED. All devices, equipment and machinery must be properly grounded.



Reliability Test:

| Classification     | Test Item                                   | Test Condition  | Reference Standard  |
|--------------------|---|---|---|
| Endurance Test     | Operating Life Test                         | 1.Ta=Under Room Temperature As Per Data Sheet Maximum Rating.<br>2.If=20mA<br>3.t=1000 hrs (-24hrs, +72hrs) | MIL-STD-750D: 1026<br>MIL-STD-883D: 1005<br>JIS C 7021: B-1   |
|                    | High Temperature Storage Test               | 1.Ta=105 ±5<br>2.t=1000 hrs (-24hrs, +72hrs)  | MIL-STD-883D:1008<br>JIS C 7021: B-10   |
|                    | Low Temperature Storage Test                | 1.Ta=-40 ±5<br>2.t=1000 hrs (-24hrs, +72hrs)  | JIS C 7021: B-12  |
|                    | High Temperature High Humidity Storage Test | 1.Ta=65 ±5<br>2.RH=90%~95%<br>3.t=1000hrs ±2hrs   | MIL-STD-202F:103B<br>JIS C 7021: B-11   |
| Environmental Test | Thermal Shock Test                          | 1.Ta=105 ±5 & -40 ±5<br>(10min) (10min)<br>2.total 10 cycles  | MIL-STD-202F: 107D<br>MIL-STD-750D: 1051<br>MIL-STD-883D: 1011  |
|                    | Solderability Test                          | 1.T.Sol=235 ±5<br>2.Immersion time 2 ±0.5sec<br>3.Coverage 95% of the dipped surface                        | MIL-STD-202F: 208D<br>MIL-STD-750D: 2026<br>MIL-STD-883D: 2003<br>IEC 68 Part 2-20<br>JIS C 7021: A-2 |
|                    | Temperature Cycling                         | 1.105 ~ 25 ~ -55 ~ 25<br>30mins 5mins 30mins 5mins<br>2.10 Cycles   | MIL-STD-202F: 107D<br>MIL-STD-750D: 1051<br>MIL-STD-883D: 1010<br>JIS C 7021: A-4                     |
|                    | IR Reflow                                   | 1.T=260°C Max. 10sec.Max.<br>2. 6 Min   | MIL-STD-750D:2031.2<br>J-STD-020  |