

<b>Customer Approved</b>
<b>Date:</b>

**Part No.:**  
**LM770IR3C-Q03T1**

**DATA SHEET**

Issue Date: 2017.11.25

Issue No.: LTD-770-001

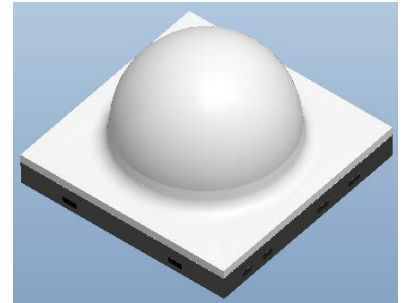
REVISION: V1

Designer	Checker	Approver
<i>Vic</i>	<i>Rock</i>	<i>Jeff</i>

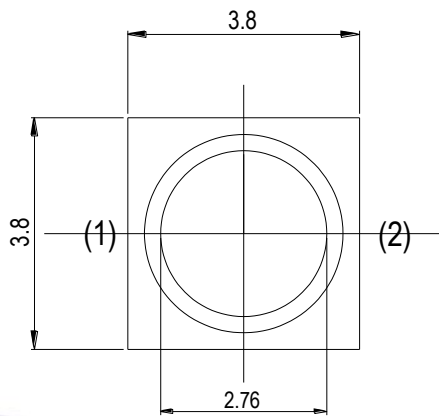
High Power Infrared ■ Top view 3838 Package  
LM770IR3C-Q03T1

**Features**

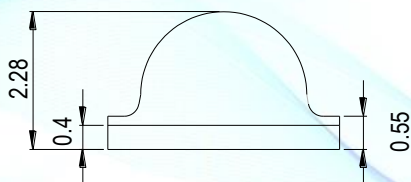
- 3838 package
- Top view LED
- Narrow viewing angle --- 90°
- Compatible with infrared and vapor phase reflow solder process
- Pb-free
- RoHS compliant



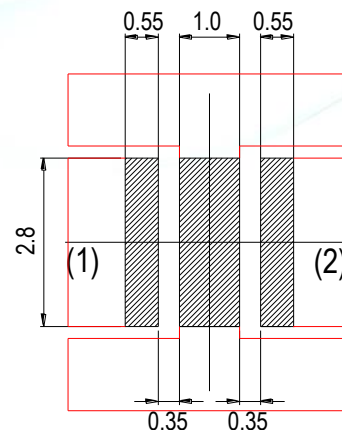
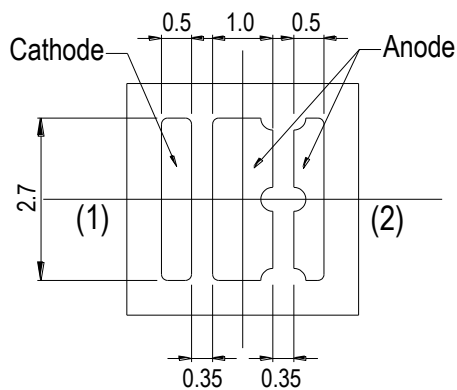
**Package Dimensions**



Polarity



**Recommended Solder Pad**



Note:

Tolerance unless mentioned is  $\pm 0.1$  mm, Unit = mm.

### Applications

- Infrared remote control units with high power requirement
- Smoke detector
- Infrared applied system
- Infrared illumination for cameras
- Surveillance systems

### Absolute Maximum Ratings (T<sub>Soldering</sub>=25°C)

Parameter	Symbol	Rating	Unit
Forward Current	I <sub>F</sub>	1000	mA
Peak Forward Current (Pulse Width ≤ 100us ,Duty ≤ 1%)	I <sub>FP</sub>	1400	mA
Power Dissipation at (or below) 25°C Free Air Temperature	P <sub>d</sub>	2.3	W
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +100	°C
Soldering Temperature	T <sub>sol</sub>	Reflow Soldering : 260°C for 10 sec. Hand Soldering : 350°C for 3 sec.	
Reverse Voltage	V <sub>R</sub>	5	V
Electrostatic Discharge(HBM)	ESD	2000	V
Thermal Resistance(junction to case)	R <sub>s</sub>	18	°C/W

### Electro-Optical Characteristics (T<sub>Soldering</sub>=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Radiant Intensity	I <sub>e</sub>	350	450	550	mW/sr	I <sub>F</sub> =1A, t <sub>p</sub> =10ms
Forward Voltage	V <sub>F</sub>	1.70	1.95	2.30	V	I <sub>F</sub> =1A, t <sub>p</sub> =10ms
Peak Wavelength	λ <sub>p</sub>	-	855	-	nm	I <sub>F</sub> =1A, t <sub>p</sub> =10ms
Centroid Wavelength	λ <sub>centroid</sub>	-	850	-	nm	I <sub>F</sub> =1A, t <sub>p</sub> =10ms
Spectral Half-width	Δλ	-	25	-	nm	I <sub>F</sub> =1A, t <sub>p</sub> =10ms
Viewing Angle	2θ <sub>1/2</sub>	-	90	-	deg	I <sub>F</sub> =350mA
Dimensions of active chip area	L x W (Typ.)	-	1066x1066	-	mm	-
Reverse Current	I <sub>R</sub>	-	-	5	μA	V <sub>R</sub> =5V

Notes:

1. Tolerance of Radiant Intensity ±10%.
2. Tolerance of Forward Voltage : ±0.1V.

## Bin Code Description

### Bin Range of Radiant Intensity

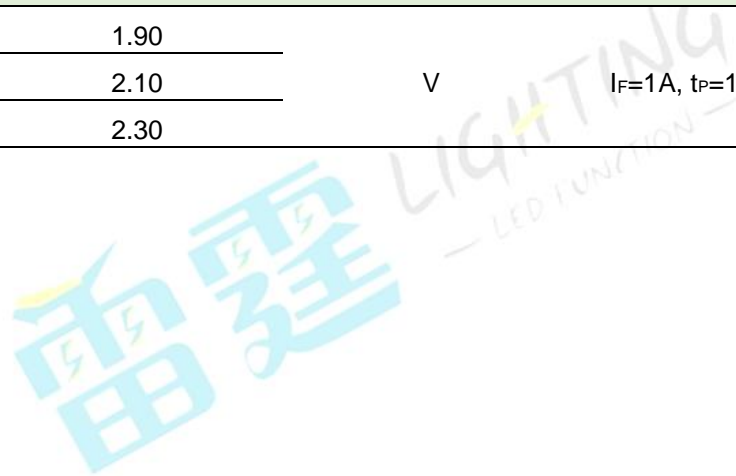
Bin Code	Min.	Max.	Unit	Condition
B	350	450	mW/sr	I <sub>F</sub> =1A, t <sub>P</sub> =10ms
C	450	550		

### Bin Range of Forward Voltage

Bin Code	Min.	Max.	Unit	Condition
V4	1.70	1.90	V	I <sub>F</sub> =1A, t <sub>P</sub> =10ms
V5	1.90	2.10		
V6	2.10	2.30		

Notes:

- 1.Tolerance of Radiant Intensity  $\pm 10\%$ .
- 2.Tolerance of Forward Voltage :  $\pm 0.1V$ .



**Typical Electro-Optical Characteristics Curves**

Fig.1-Forward Current(V) vs. Forward Voltage  $T_s=25^\circ\text{C}$

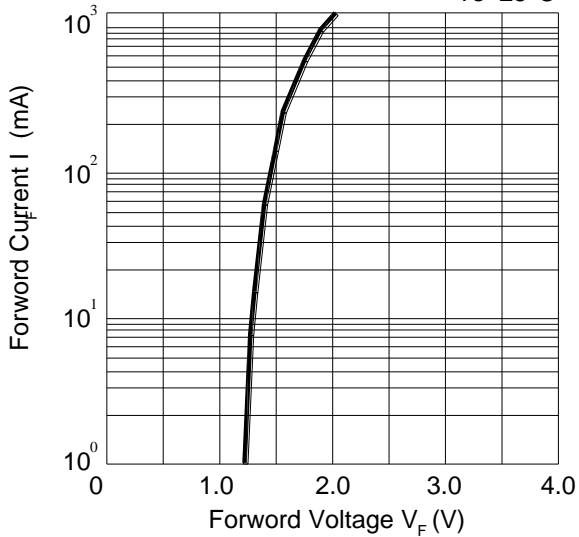


Fig.2-Radiant Intensity vs. Forward Current  $T_s=25^\circ\text{C}$



Fig.3-Max. Driving Forward Current vs. Soldering Temperature

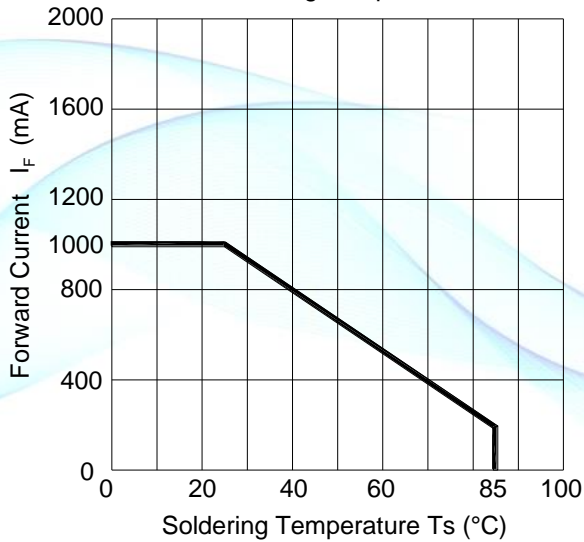
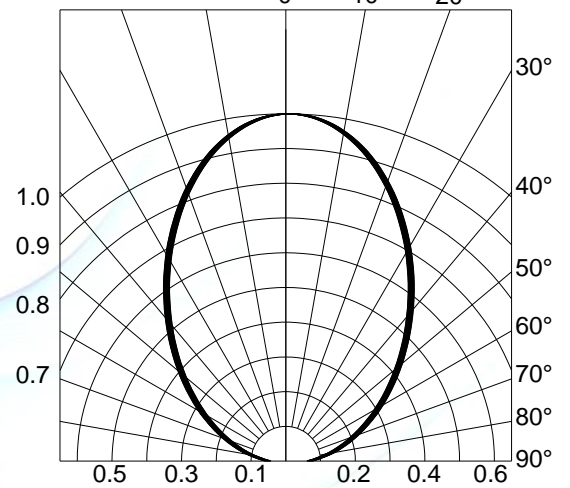


Fig.4-Radiation Diagram  $T_a=25^\circ\text{C}$



**Typical Electro-Optical Characteristics Curves**

Fig.5-Radiant Intensity vs. Ambient Temperature Ta=25°C

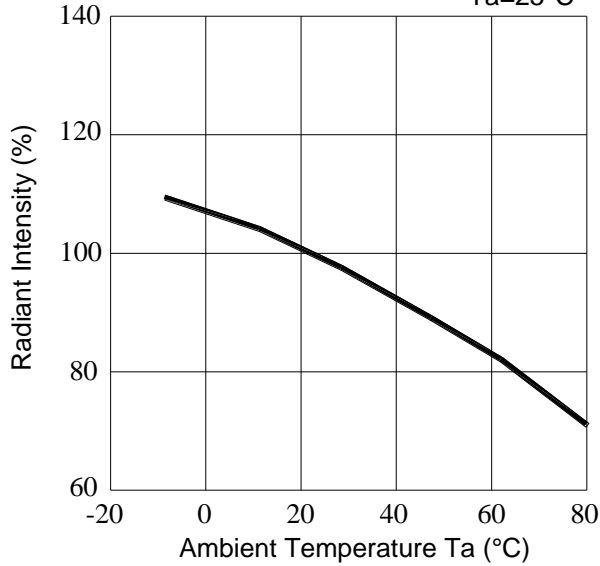
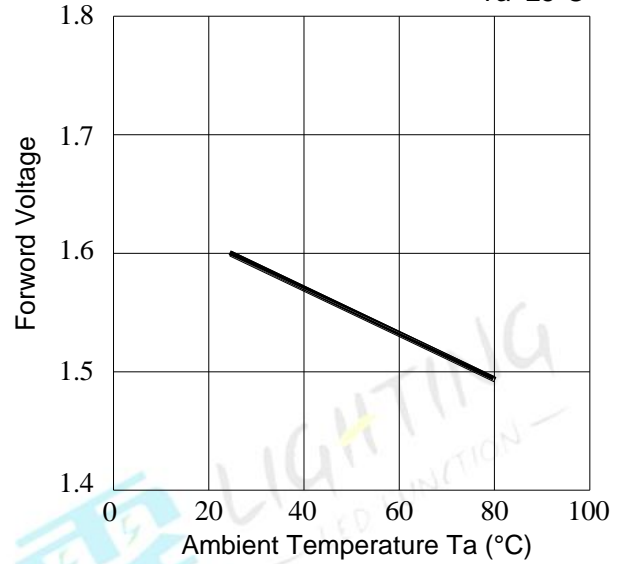
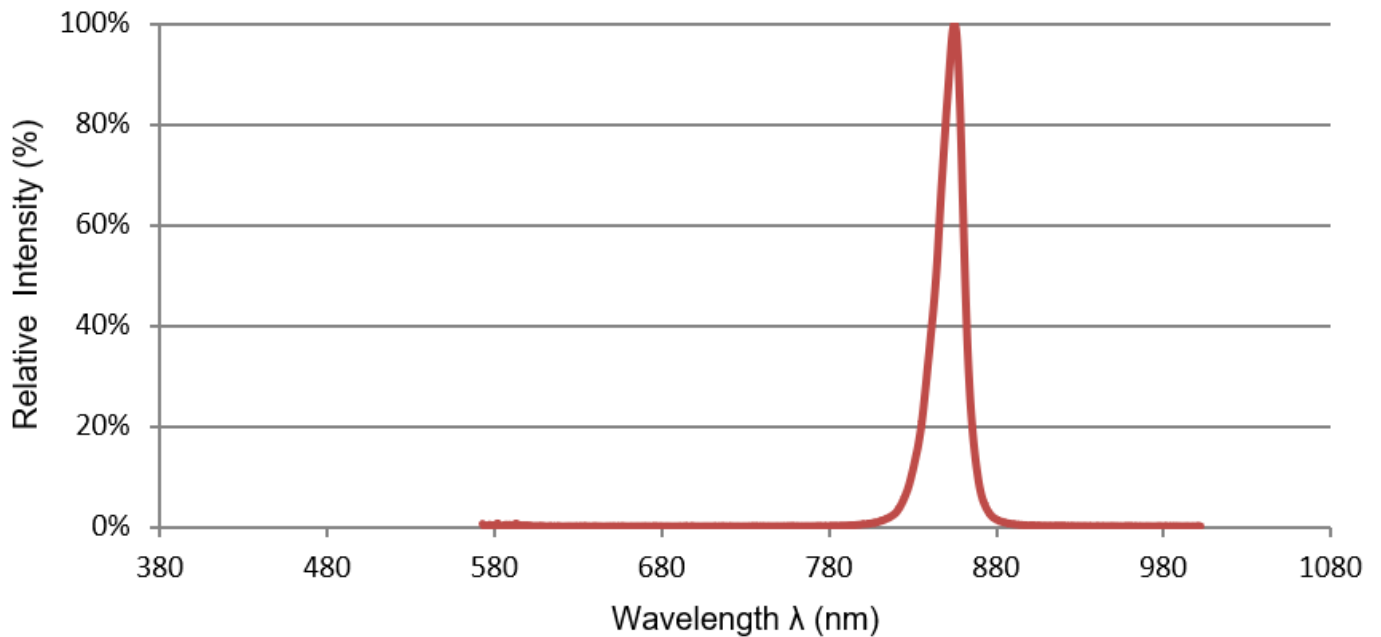


Fig.6-Forward Voltage vs. Ambient Temperature Ta=25°C



**Spectrum Distribution**



**Moisture Resistant Packing Materials**

**Label Explanation**





P/N: ××××××××××

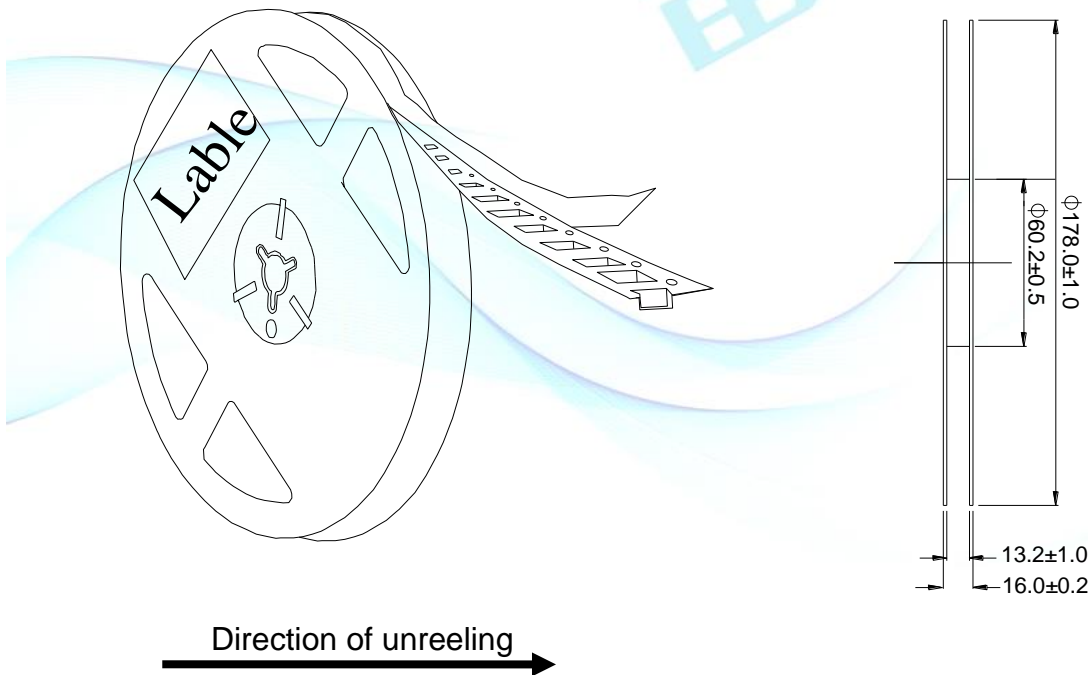
TYPE: LXXXXXXXX-XXXX

	CODE	MIN	MAX	
IV:	××	××	××	mW
HUE:	××	××	××	
VF:	××	××	××	V
QYT:	××××			
LOT NO.:	××××××××××			



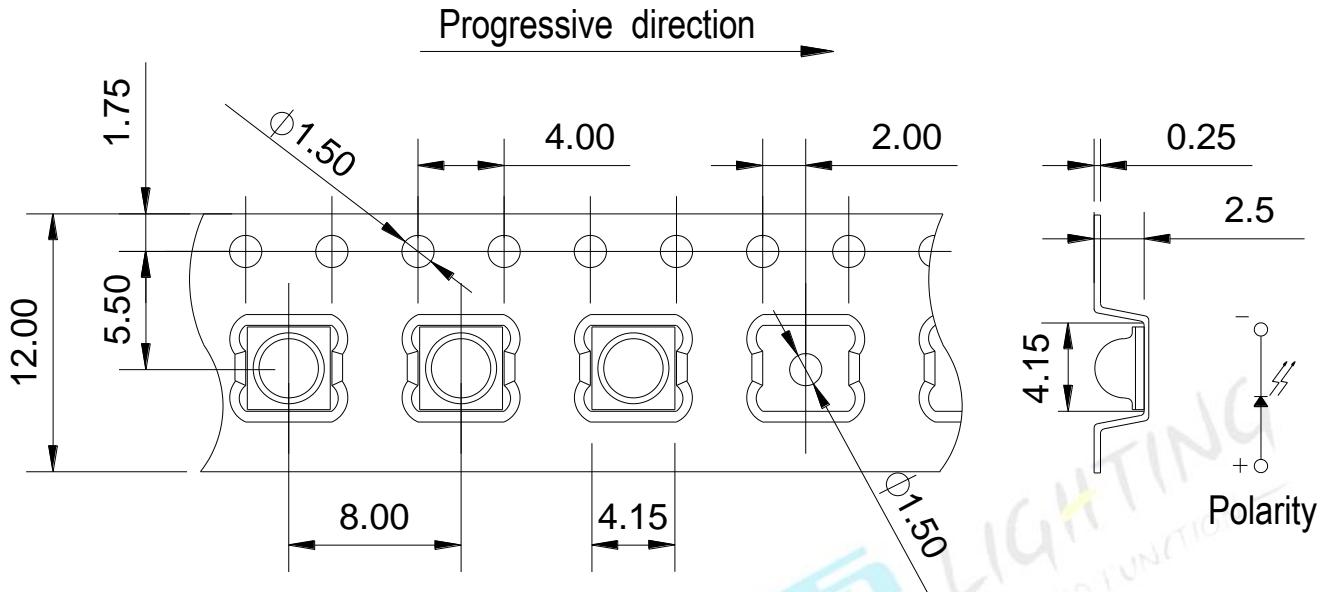

- \* QR code:  
Contains all of the following information
- \* P/N: Product Number
- \* TYPE :Part NO.
- \* IV: Radiant Intensity Rank
- \* HUE: Dom. Wavelength Rank
- \* VF: Forward Voltage Rank
- \* QTY: Packing Quantity
- \* LOT NO.: Lot Number

**Taping method: Loaded Quantity 800 pcs Per Reel**



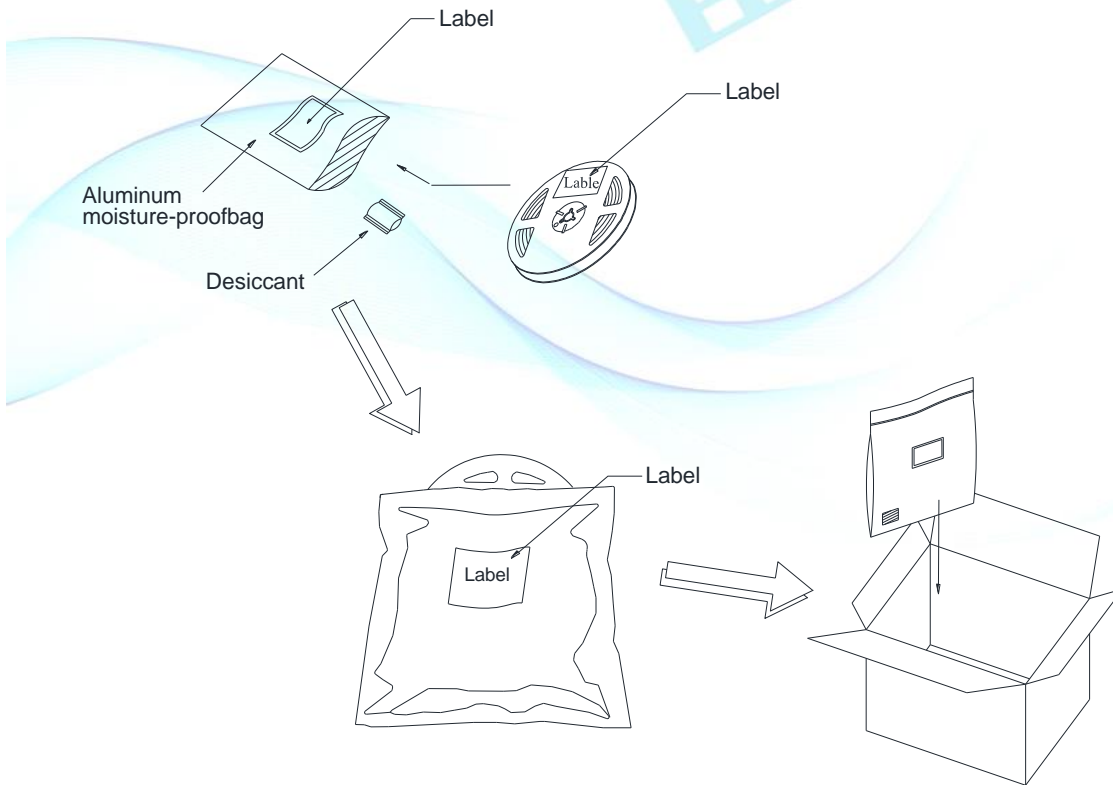
Notes:  
Tolerance unless mentioned is  $\pm 0.1\text{mm}$ , Unit = mm.

**Carrier Tape Dimensions:**



Note:  
Tolerance unless mentioned is  $\pm 0.1$  mm, Unit = mm.

**Moisture Resistant Packing Process**



Moisture/Reflow sensitivity classification  
IPC / JEDEC J-STD-020C: Level 3



**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°C/10sec.	6 Min.	22 PCS.	0/1
2	Thermal Shock	H : +100°C/5min ∩ 10 sec L : -10°C/5min	300 Cycles	22 PCS.	0/1
3	Temperature Cycle	H : +100°C/15min ∩ 5 min L : -40°C/15min	300 Cycles	22 PCS.	0/1
4	High Temperature/Humidity Storage	Ta=85°C,85%RH	1000 Hrs.	22 PCS.	0/1
5	Low Temperature Storage	Ta=-40°C	1000 Hrs.	22 PCS.	0/1
6	High Temperature Storage	Ta=100°C	1000 Hrs.	22 PCS.	0/1
7	DC Operation Life	Ta=25°C, If = 1000 mA	1000 Hrs.	22 PCS.	0/1

Note:

All reliability items are tested under good thermal management with 1.0 x 1.0 cm<sup>2</sup> MCPCB

## 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°C or less and 90%RH or less.

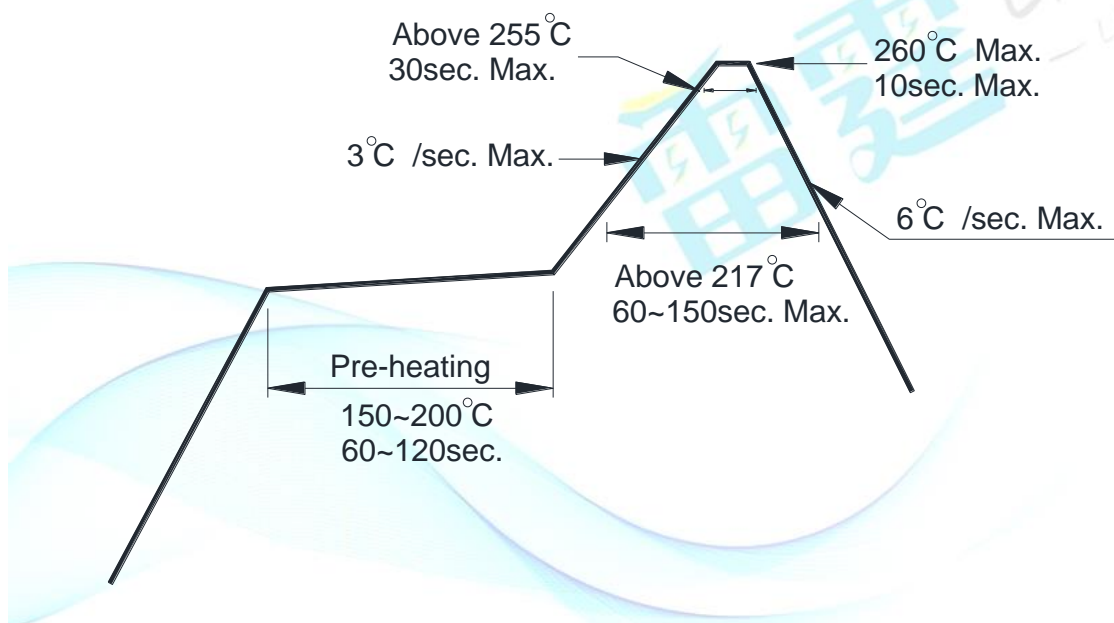
2.3 After opening the package: The LED's floor life is 168 Hrs. under 30°C or less and 60%RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

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°C 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°C 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.