



Data Sheet

Customer: _____
Part No: CL-BIT1608DBW-02(0.4T)
Sample No: _____
Description: 1608 WHITE 0.4T
Item No: _____

Customer			
Check	Inspection	Approval	Date

SMD ■ CHIP



Features

- 0603 package
- Top view LED
- Compatible with infrared and vapor phase reflow solder process.
- Wide viewing angle
- Pb-free
- RoHS compliant

Description

CIEL LIGHT 1608 package has high efficacy, high power consumption, wide viewing angle and a compact form factor. These features make this package an ideal LED for all lighting applications.

Applications

- General lighting
- Decorative and Entertainment Lighting
- Indicators
- Automotive Telecommunication
- Switch lights

Device Selection Guide

Chip Materials	Emitted Color	Resin Color
InGaN	White	Yellow Diffused

Absolute Maximum Ratings (T_{Soldering}=25 °C)

Parameter	Symbol	Rating	Unit
Forward Current	I _F	25	mA
Peak Forward Current (Duty 1/10 @1ms)	I _{FP}	60	mA
Power Dissipation	P _d	95	mW
Operating Temperature	T _{opr}	-40 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +100	°C
Electrostatic Discharge(HBM)	ESD	150	V
Soldering Temperature	T _{sol}	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.	

Note:

The products are sensitive to static electricity and must be carefully taken when handling products.

Electro-Optical Characteristics (T_{Soldering}=25 °C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v	280	-----	720	mcd	I _F =20mA
Forward Voltage	V _F	2.7	-----	3.3	V	I _F =20mA
Viewing Angle	2θ _{1/2}	-----	130	-----	deg	I _F =20mA
Reverse Current	I _R	-----	-----	10	μA	V _R =5V

Notes:

1. Tolerance of Luminous Intensity ±10%.
2. Tolerance of Forward Voltage : ±0.05V.

Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
AQ1	280	360	mcd	I _F =20mA
AQ2	360	450		
AR1	450	570		
AR2	570	720		

Note:

Tolerance of Luminous Intensity: $\pm 10\%$.

Bin Range of Forward Voltage

Bin Code	Min.	Max.	Unit	Condition
10-1	2.70	2.80	V	I _F =20mA
10-2	2.80	2.90		
11-1	2.90	3.00		
11-2	3.00	3.10		
12-1	3.10	3.20		
12-2	3.20	3.30		

Note:

Tolerance of Forward Voltage: $\pm 0.05V$.

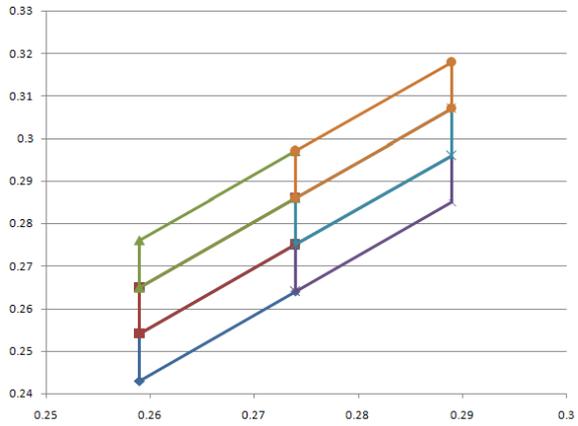
Bin Range of Chromaticity Coordinates

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
A4-A	0.259	0.243	2-A	0.274	0.230
	0.259	0.254		0.274	0.263
	0.274	0.275		0.289	0.294
	0.274	0.264		0.289	0.258
A4-B	0.259	0.226	2-B	0.274	0.258
	0.259	0.258		0.274	0.291
	0.274	0.286		0.289	0.319
	0.274	0.254		0.289	0.286
A3-C	0.259	0.254	1-C	0.274	0.226
	0.259	0.264		0.274	0.260
	0.274	0.277		0.289	0.274
	0.274	0.262		0.289	0.266

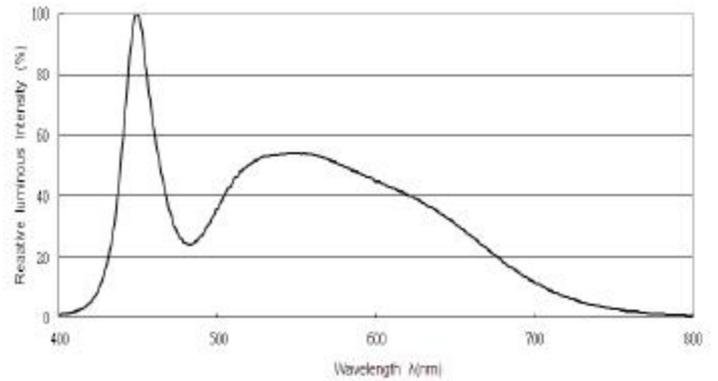
Note:

1. The value is based on driving current by 5mA.
2. Tolerance of Chromaticity Coordinates: ± 0.01

The C.I.E. 1931 Chromaticity Diagram

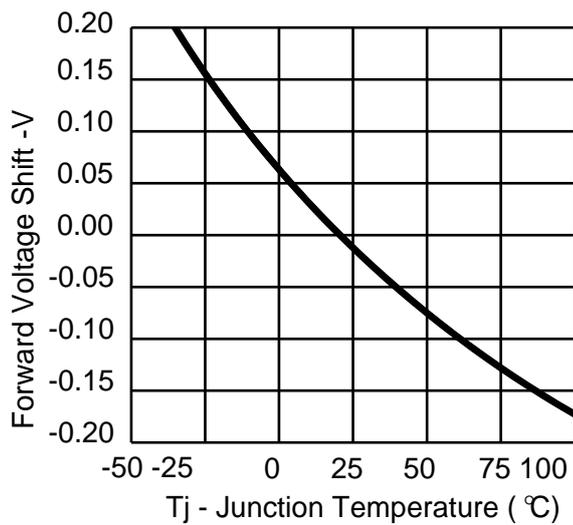


Spectrum Distribution

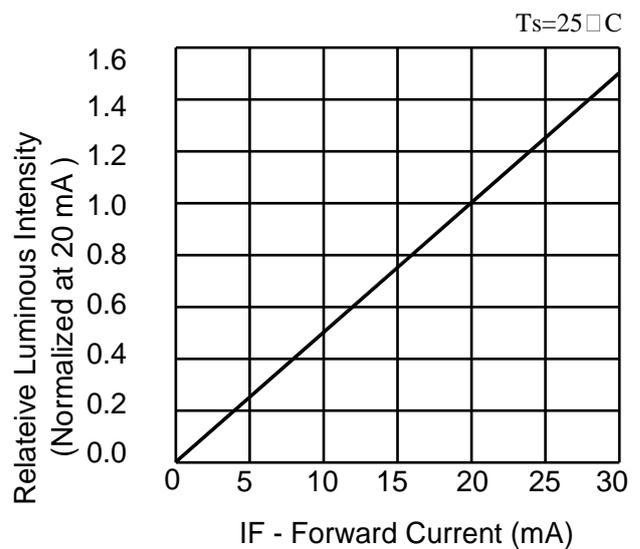


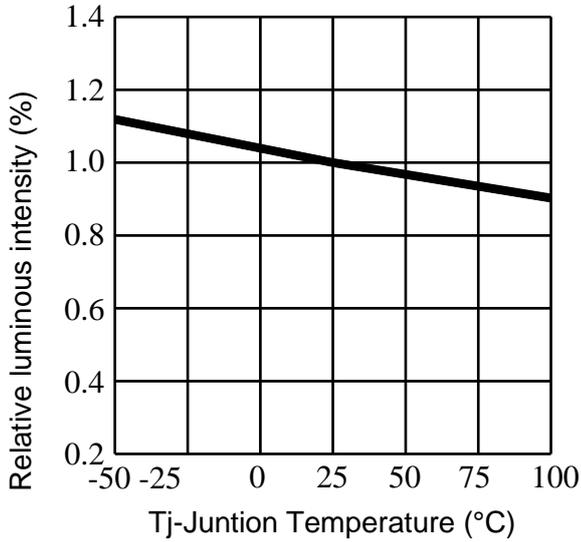
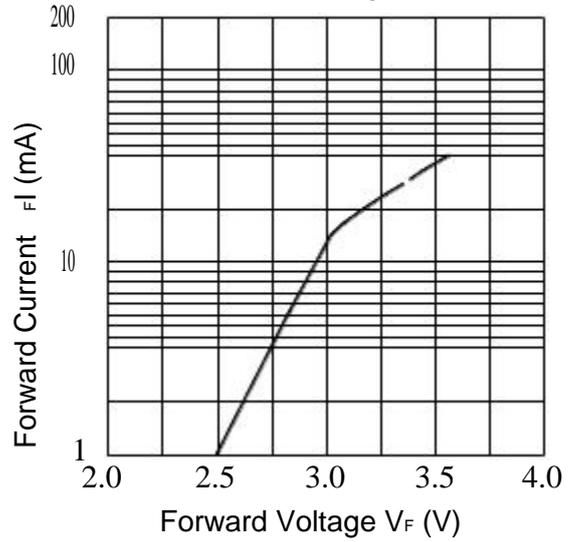
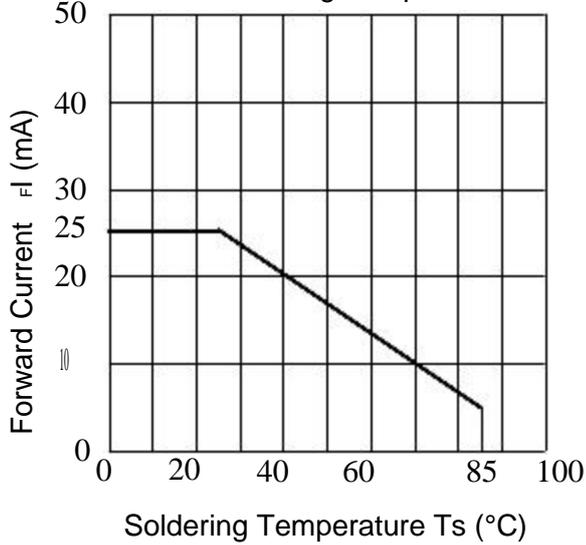
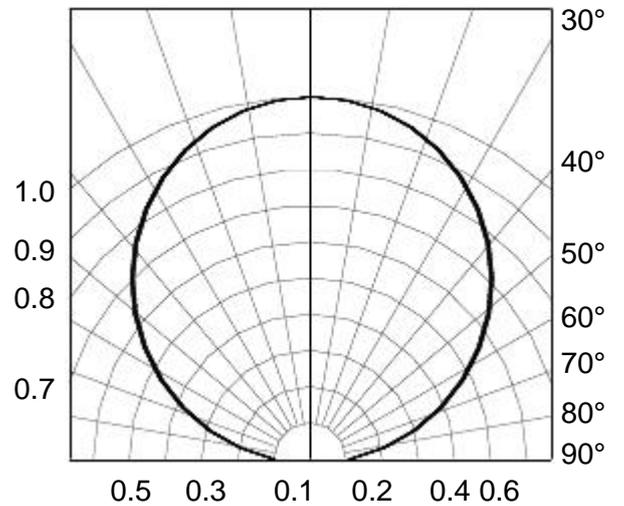
Typical Electro-Optical Characteristics Curves

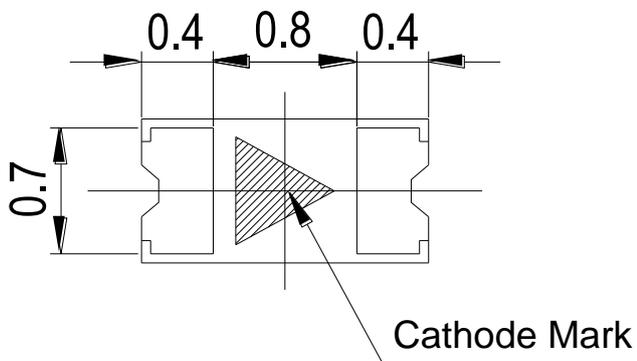
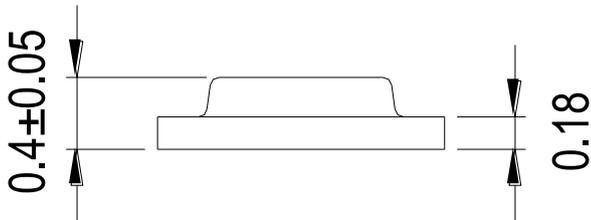
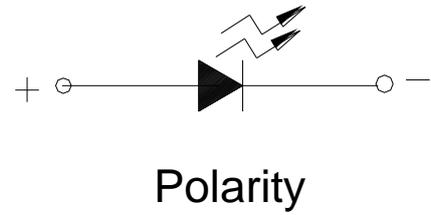
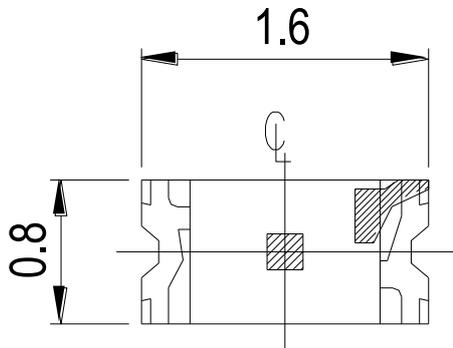
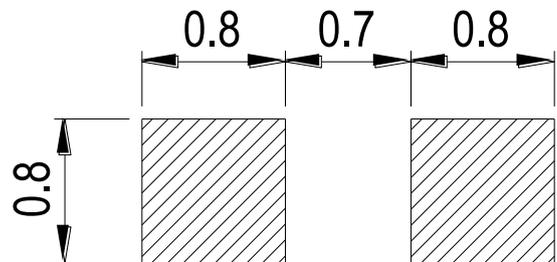
Fig.1 - Forward Voltage Shift vs. Junction Temperature



vs. Forward Current



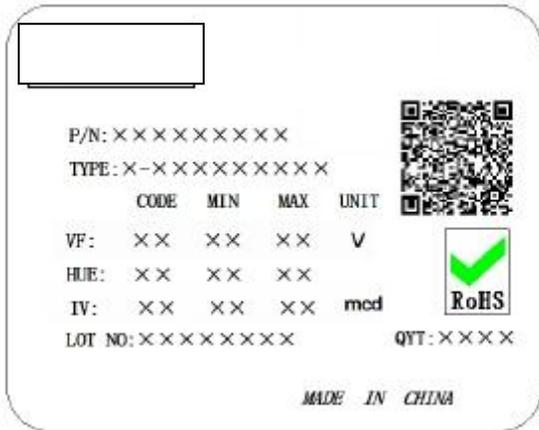
Typical Electro-Optical Characteristics Curves
Fig.3-Relative Luminous Intensity vs.Juntion Temperature

Fig.4-Forward Current vs. Forward Voltage Ta=25°C

Fig.5-Max.Driving Forward Current vs.Soldering Temperture

Fig.6-Radiation Diagram Ta=25°C 0° 10° 20°


Package Dimension**Recommended Solder Pad**

Note:
Tolerance unless mentioned is ± 0.1 mm, Unit = mm.

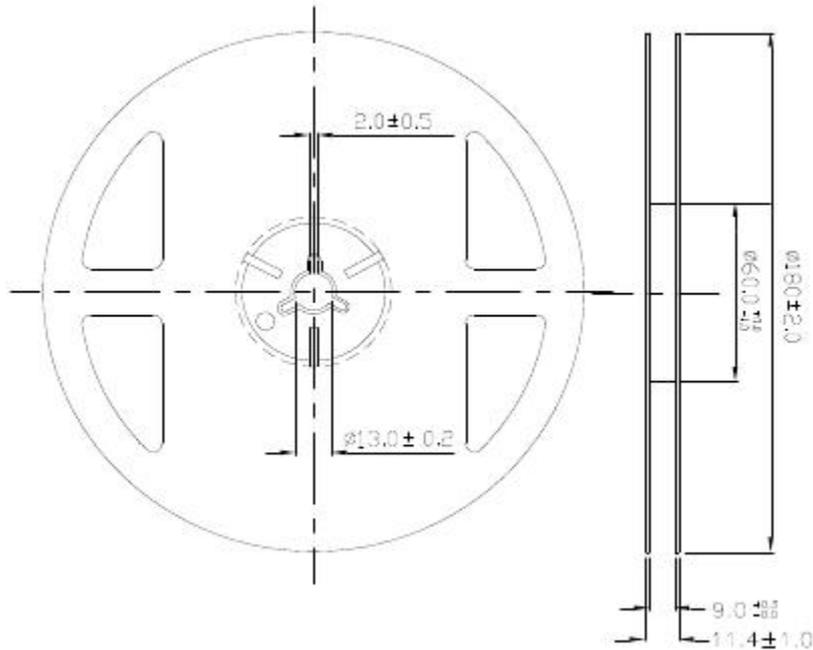
Moisture Resistant Packing Materials

Label Explanation



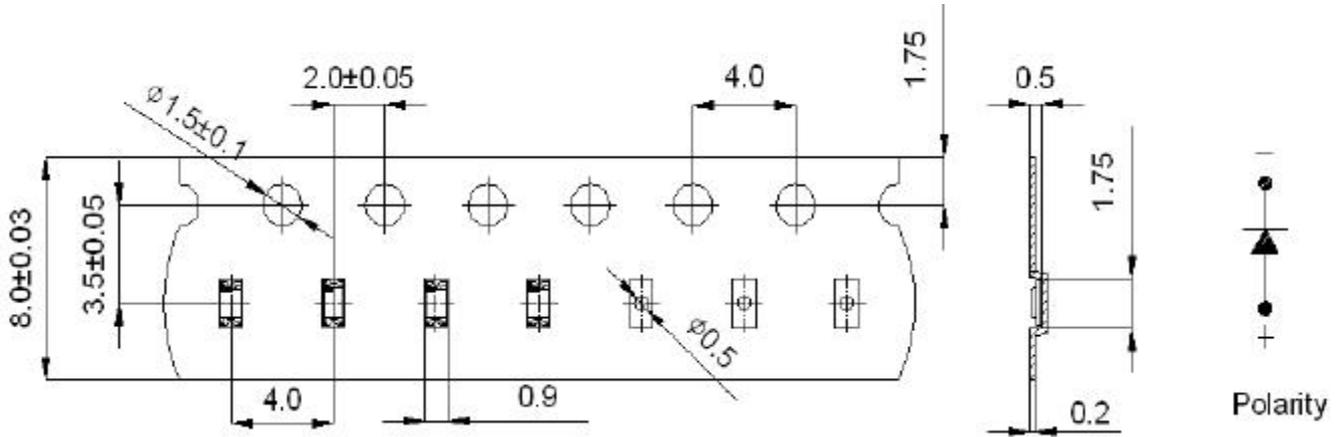
- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions



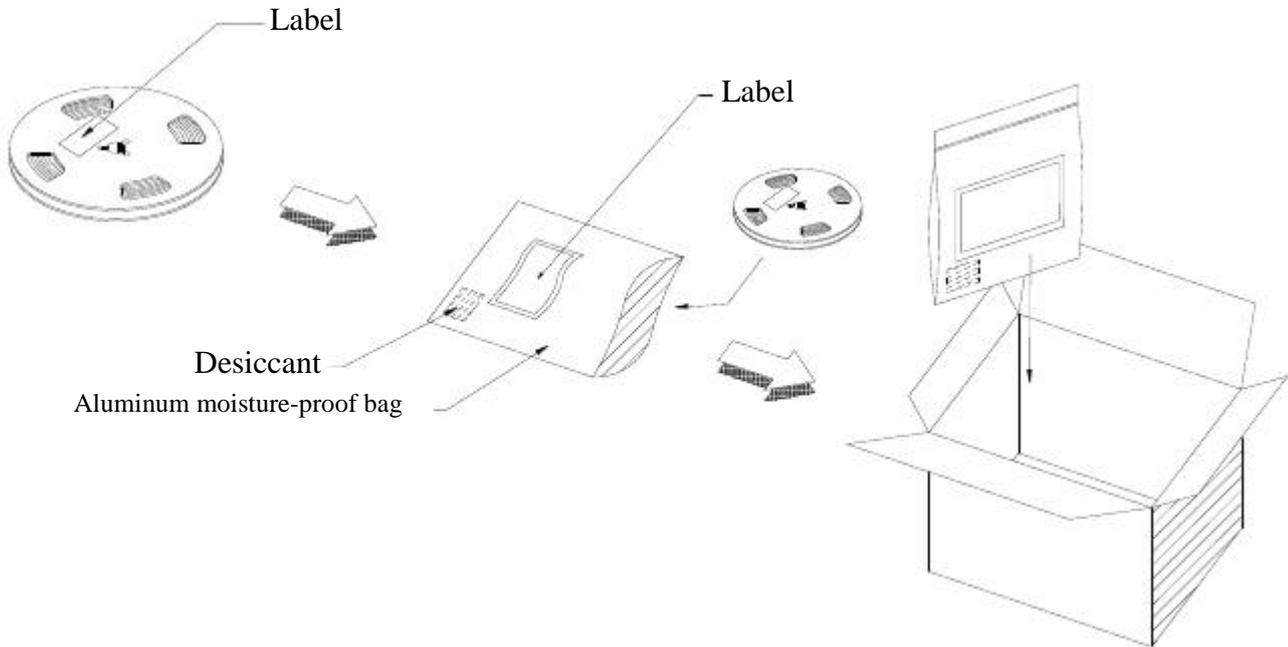
Note:
 Tolerances unless mentioned ±0.1mm, Unit = mm.

Carrier Tape Dimensions: Loaded Quantity 4000 pcs Per Reel



Note:
 1. Tolerance unless mentioned is ± 0.1 mm, Unit = mm.
 2. Minimum packing amount is 1000/2000 pcs per reel.

Moisture Resistant Packing Process



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 Reverse Bias	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 = 20 mA	1000 Hrs.	22 PCS.	0/1

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.

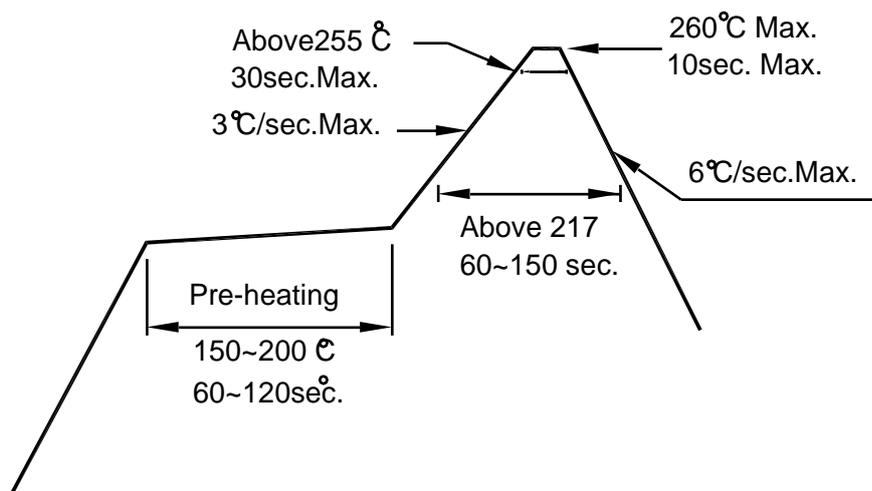
2.3 After opening the package: The LED's floor life is 1 year under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

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.