

SPECIFICATIONS FOR T38 SERIES

Dual Junction Infrared LED

Model: EMC 3838-90° (940nm)

Part No: T38IR011A-xxxxxx

Features:

Top view Infrared LED

- * High Power Infrared LED
- * Low Thermal Resistance
- * Pb-free Reflow Soldering Application
- * RoHS and REACH compliant

**Applications:**

- * Infrared Illumination for cameras
- * Surveillance systems
- * Proximity sensor
- * Auto Focus
- * Gaming Notebook
- * Large Size Touch Panel
- * Car Sensors
- * Virtual Reality

Part Numbering System

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X1 X2 X3 X4 X5 X6 X7 X8 X9 X10

Item Number Code	Description	Content
X1	Type code	1S:1010; 1A:1919; 20:2016; 3B:3014; 28:2835 34:3020; 3C:3030; 5C:5050; 7C:7070; 1D:100100; 19:Ceramic 3535; 15:Ceramic 5050; 11:Ceramic 1616.
X2	CCT code	BL: blue ; GR : green; YE : yellow; RE : red; PA: PC Amber ;IR :Infrared; UV : ultra violet;CW:RGB; FW: RGBW
X3	Color Rendering	Color :0.
X4	No. of serial chip	1-Z.
X5	No. of parallel chip	1-Z.
X6	Component code	A-Z.
X7	Color Code	M:ANSI; F:ERP; R:85°C ANSI; T:105°C ANSI; B:Backlighting; Q:Others;AT:Tospo
X8	Internal code1	\
X9	Internal code2	\
X10	Spare code	\

Electrical/Optical Characteristics at Ta=25°C

Item	Symbol	Min	Typ	Max	Unit	Condition
Forward Voltage	V_F	2.6	3.1	3.6	V	$I_F=350\text{mA}$
Reverse Current	I_R	-	-	10	μA	$V_R=5\text{V}$
Radiant flux	Φ_e	-	470	-	mw	$I_F=350\text{mA}$
View Angle	$2\theta_{1/2}$	-	90	-	°	$I_F=350\text{mA}$
Thermal resistance	$(R_{th\ j-sp})$	-	4.5	-	°C/W	$I_F=350\text{mA}$
Electrostatic Discharge	ESD	6000	-	-	V	HBM

- * Tolerance of measurements of the Forward Voltage is $\pm 0.1\text{V}$.
- * Tolerance of measurements of the Radiant Flux is $\pm 7\%$.
- * $2\theta_{1/2}$ is the off-axis where the Radiant Flux intensity is $1/2$ of the peak intensity.
- * Tolerance of measurements of Peak Wavelength is $\pm 2.0\text{nm}$
- * $R_{th\ j-sp}$ is the thermal resistance from LED junction to solder point on MCPCB with electrical power.

Absolute Maximum Ratings at Ta=25°C

Item	Symbol	Absolute Maximum Rating	Unit
Forward current	I_F	1000	mA
Pulse Forward current	I_{FP}	1200	mA
Power Dissipation	P_D	3600	mW
Reverse Voltage	V_R	5V	V
Operating Temperature	T_{opr}	-40~+105	°C
Storage Temperature	T_{stg}	-40~+105	°C
Junction Temperature	T_j	115	°C
Soldering Temperature	T_{sld}	Reflow Soldering: 230°C or 260°C for 10sec	

- * LED's properties might be different from suggested values like above and below tables if operation condition will be exceeded our parameter range. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.
- * All measurements were made under the standardized environment of Lightning LED.

Bin Structure

Radiant Flux Bins, IF = 350mA, Ta =25°C

Radiant Flux			
Bin Code	Min.	Max.	Unit
JP1	390	440	mw
JP2	440	490	mw
JQ1	490	550	mw
JQ2	550	610	mw
JR1	610	690	mw

* Tolerance of measurements of the Radiant Flux is $\pm 7\%$.

Peak Wavelength Bins, IF =350mA, Ta =25°C

Bin Code	Min.	Max.	Unit
XJ0	920	940	nm
XK0	940	960	nm

*Peak Wavelength ± 2.0 nm.

Forward Voltage Ranks, IF =350mA, Ta =25°C

Bin Code	Min.	Max.	Unit
AB6	2.6	2.8	V
AC3	2.8	3.0	V
AC4	3.0	3.2	V
AC5	3.2	3.4	V
AC6	3.4	3.6	V

* Tolerance of measurements of the Forward Voltage is ± 0.1 V.

Typical Characteristics Curves

Fig 1. Typical Spectrum, $T_a = 25^\circ\text{C}$

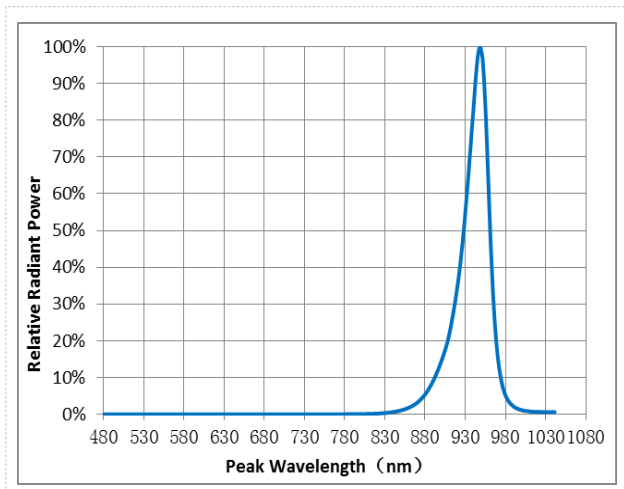


Fig 2. Forward Current vs. Relative Intensity, $T_a = 25^\circ\text{C}$

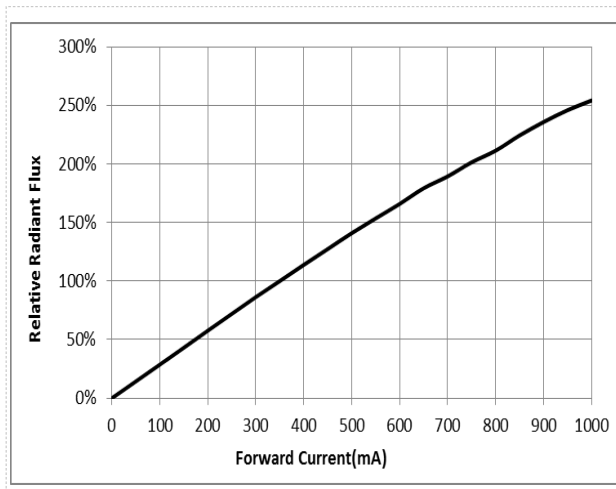


Fig 3. Forward Current vs. Relative Voltage, $T_a = 25^\circ\text{C}$

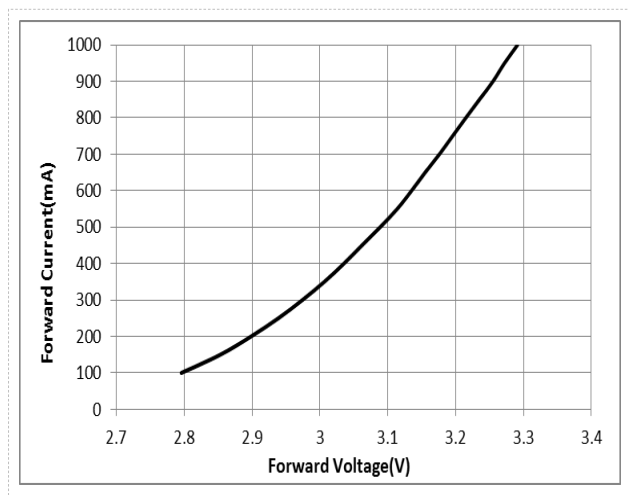


Fig 4. Ambient Temperature vs. Relative Output Flux

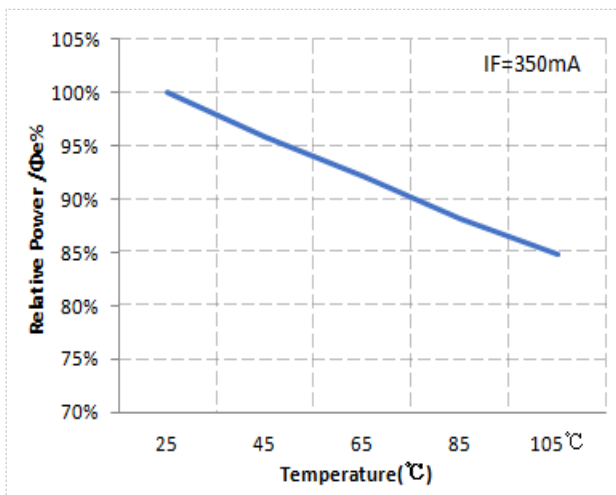


Fig 5. Typical Viewing Angle = 90° , $T_a = 25^\circ\text{C}$

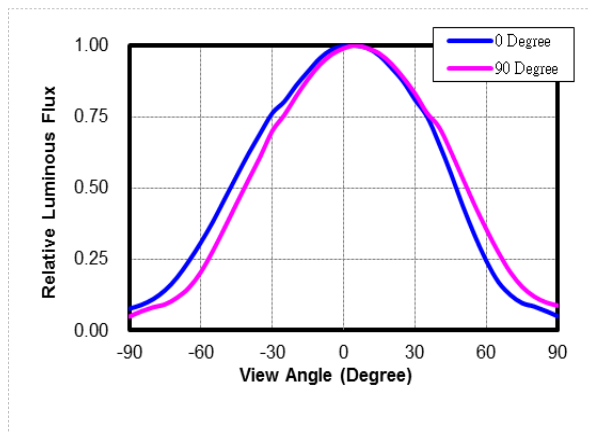
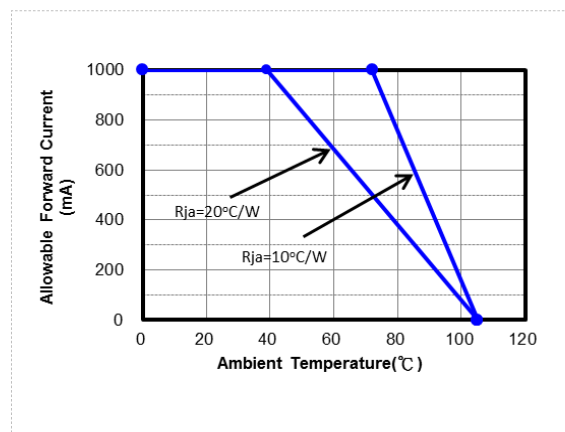
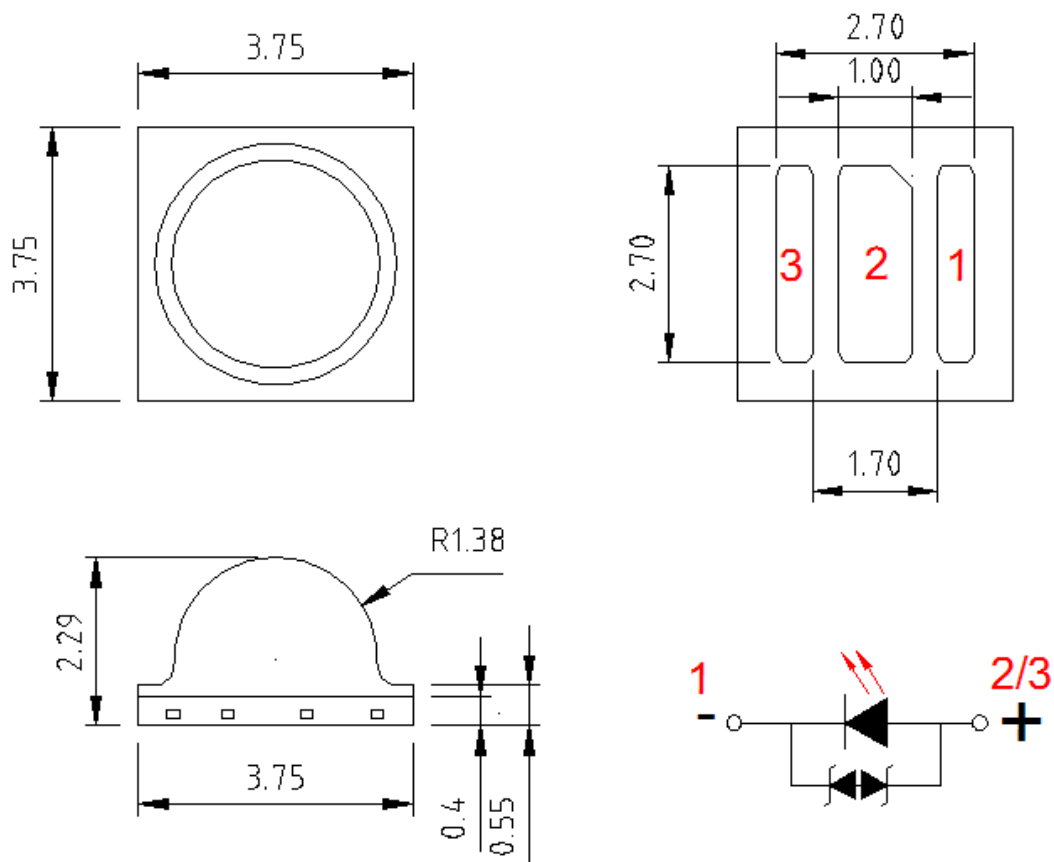


Fig 6. Ambient Temperature vs. Maximum Forward Current

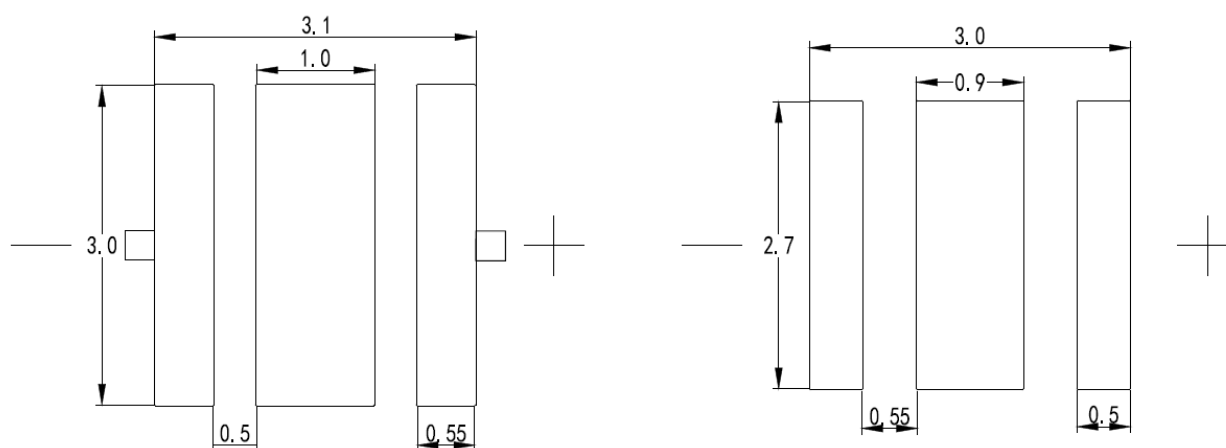


Package Dimensions



* The tolerance unless mentioned is $\pm 0.2\text{mm}$, unit = mm

Recommended Solder Pad

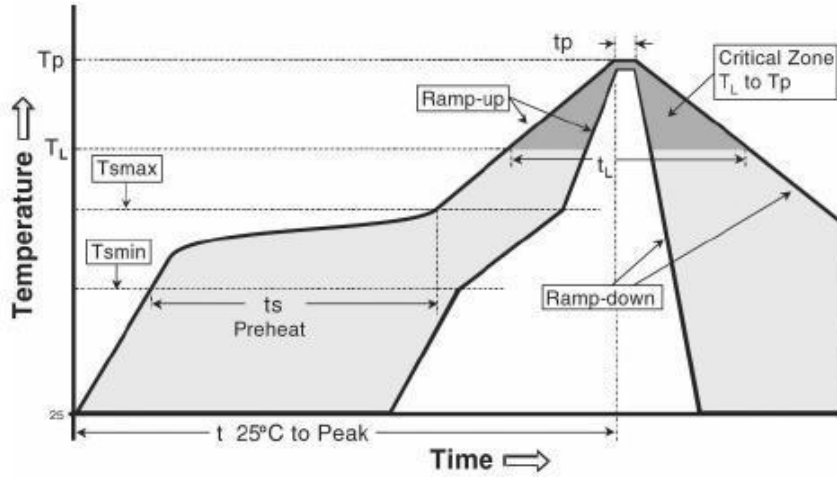


Recommended solder pad

Recommended stencil opening

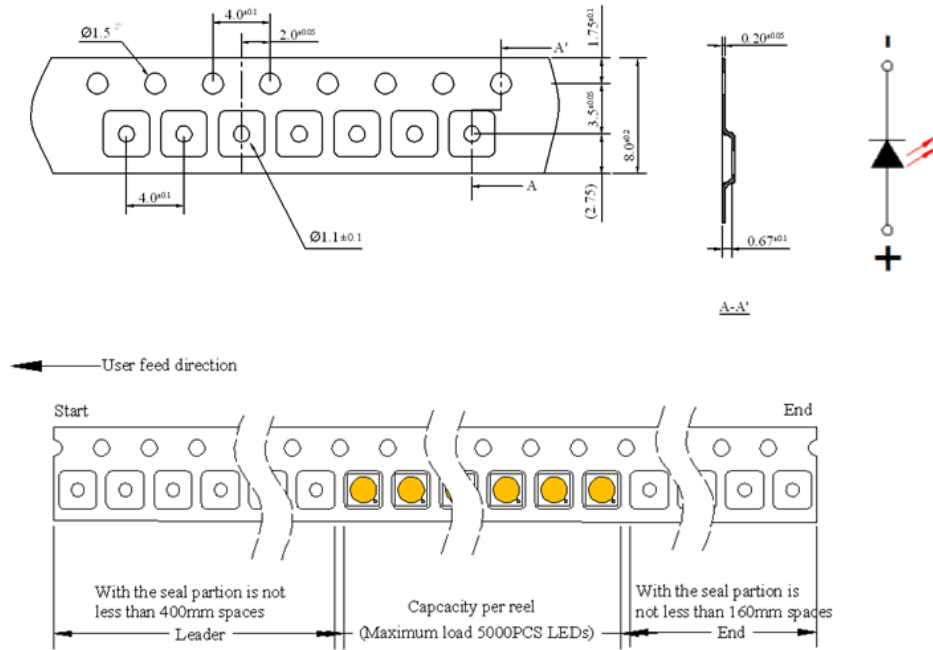
* The tolerance unless mentioned is $\pm 0.1\text{mm}$, unit = mm

Reflow Soldering Characteristics



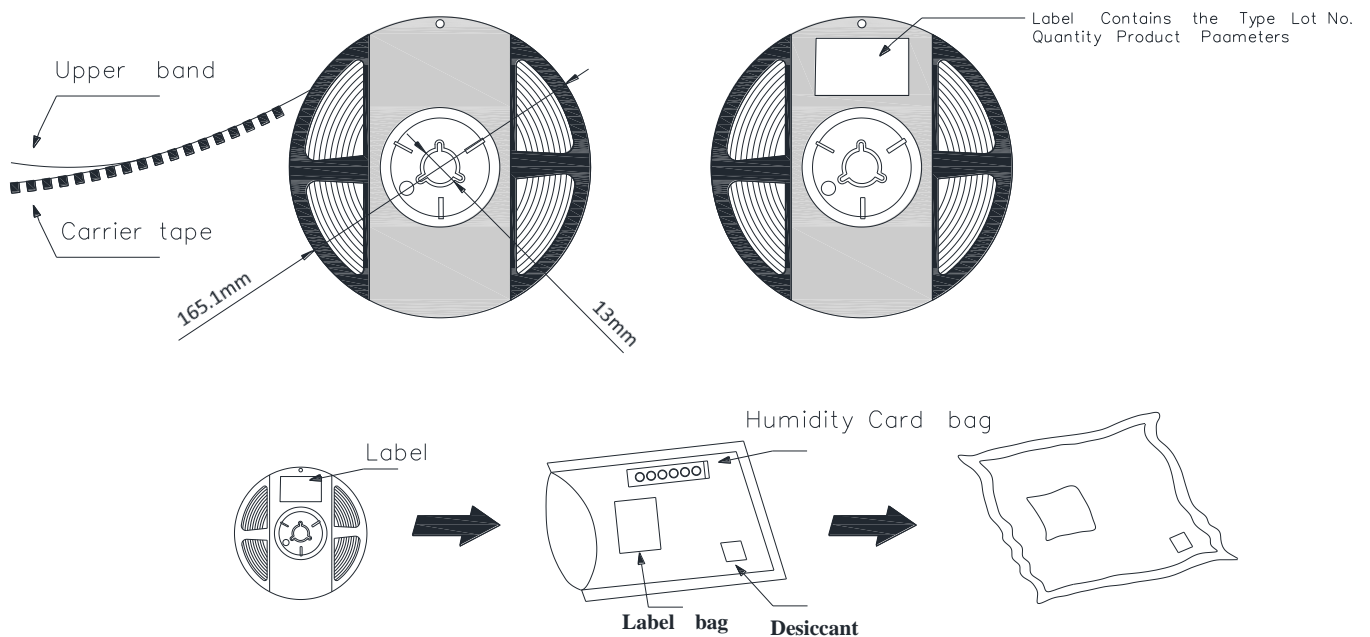
Reflow soldering	
Temperature Min (T_{smin})	150°C
Temperature Max (T_{smax})	200°C
Time(t_s)from (T_{smin} to T_{smax})	60-120 seconds.
Ramp-up rate (T_L to T_p)	$3^\circ\text{C/seconds max.}$
Liquidous temperature(T_L)	217°C
Time(t_L) maintained above T_L	60-150 seconds
Peak package body temperature(T_p)	260°C max
Time (t_p) within 5°C of the specified classification temperature (T_c).	30 seconds max
Ramp-down rate (T_p to T_L)	$6^\circ\text{C/second max}$
Time 25°C to peak temperature	8 min max

Package Dimensions of Tape

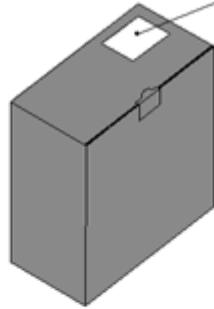
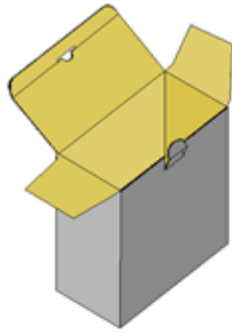


- * Quantity : Max 1000pcs/Reel
- * Cumulative Tolerance : Cumulative Tolerance/10 pitches to be $\pm 0.25\text{mm}$
- * Package : P/N, Manufacturing data Code No. and Quantity to be indicated on a damp proof Package.
- * unit = mm

Package Dimensions of Reel

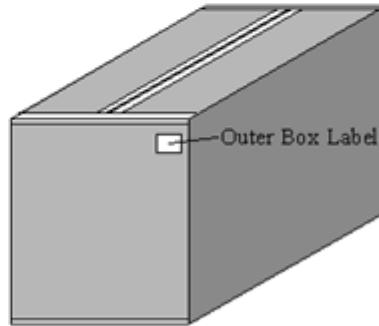
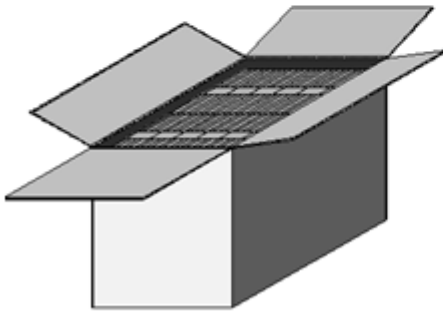


Package Box



Label: Contains Type,
Lot NO, Quantity, Product
Parameters.



* Capacity 4 or 8 reels per box.



Outer Box Label

* Capacity 48 or 64 reels per box.

Label (标签)

福建天电光电有限公司 FUJIAN LIGHTNING OPTOELECTRONIC CO.,LTD	
型号 Type:	T*****_*****
	
辐射功率 Φ_e @ ***mA:	*** - *** mW
峰值波长 λ_{p} @ ***mA:	*** - *** nm
电压 V_f @ *** mA:	** - ** V
Lot No.:	AN***** - * - *****
数量 QTY:	*** PCS
	

Caution

1. Reflow soldering is recommended not to be done more than two times. In the case of more than 24 hours passed soldering after first, LEDs will be damaged.
2. Repairs should not be done after the LEDs have been soldered. When repair is unavoidable, suitable tools must be used.
3. Die slug is to be soldered.
4. When soldering, do not put stress on the LEDs during heating.
5. After soldering, do not warp the circuit board.

Notes on Lightning Ceramic Series soldering:

1. Recommend to use reflow machine.
2. Recommend to use heating plate soldering.
3. Manual soldering is not recommended.

Notes on reflow process:

1. To confirm whether the actual temperature curve in the reflow soldering conditions comply with recommended conditions. LEDs are guaranteed for one time reflow.
2. During reflow process do not apply force on LED active area.
3. After reflow process, PCB board should be cooled down before packing or storage.

Precaution for use

Storage

1. Before opening the package: The LED should be kept at 30°C or less and 90%RH or less.
2. After opening the package: The LED's floor life is 168Hrs under 30°C or less and 60%RH or less. If unused LED remain, it should be stored in moisture proof packages JEDEC (MSL 3).
3. 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.