

# **SPECIFICATIONS FOR T19 SERIES**

## **Yellow LED**

**Model: Ceramic 3535**

**Part No: T19YE011A-xxxxxx**

## Features:

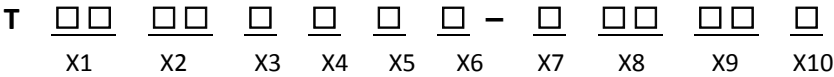
- \* High luminous flux output and efficacy
- \* Low Thermal Resistance
- \* Pb-free Reflow Soldering Application
- \* The product itself will remain within RoHS compliant version



## Applications:

- \* Turn Signal
- \* Signal Lamp
- \* Rear Lamp
- \* Instrument Lamp

Part Numbering System



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 ; 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℃ ANSI; T:105℃ ANSI; B:Backlighting; Q:Others;AT:Tospo
X8	Internal code1	\
X9	Internal code2	\
X10	Spare code	\

### Absolute Maximum Ratings at Ta=25°C

Item	Symbol	Absolute Maximum Rating	Unit
Forward current	I <sub>F</sub>	600	mA
Pulse Forward current	I <sub>FP</sub>	1000	mA
Power Dissipation	P <sub>D</sub>	1560	mW
Reverse Voltage	V <sub>R</sub>	5	V
Operating Temperature	Topr	-40~+105	°C
Storage Temperature	Tstg	-40~+85	°C
Junction Temperature	T <sub>j</sub>	115	°C
Soldering Temperature	Tsld	Reflow Soldering: 230°C or 260°C for 10sec	

- \* IFP condition with Pulse: Width≤100μs, Duty cycle≤1/10.
- \* 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.

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

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V <sub>F</sub>	1.8	---	2.6	V	IF=350mA
Reverse Current	I <sub>R</sub>	---	---	10	μA	VR=5V
Luminous Flux	Φ <sub>V</sub>	51	---	80	lm	IF=350mA
Dominant Wavelength	λ	585	---	595	nm	IF=350mA
View Angle	2θ1/2	---	120	---	°	IF=350mA
Thermal resistance	(Rth j-sp)	-	5	-	°C/W	IF=350mA
Electrostatic Discharge	ESD	2000	-	-	V	HBM

- \* Tolerance of measurements of the Forward Voltage is ±0.1V.
- \* Tolerance of measurements of the Luminous Flux is ±7%.
- \* 2θ1/2 is the off-axis where the luminous intensity is 1/2 of the peak intensity.
- \* Tolerance of measurements of Dominant Wavelength is ±2.0nm
- \* Rth j-sp is the thermal resistance from LED junction to solder point on MCPCB with electrical power.

# Bin Structure

## Diomant Wavelength Ranks, IF =350mA, Ta =25°C

Code	Min.	Max.	Unit
Y7	585	590	nm
Y8	590	595	nm

\* Tolerance of measurements of the WD is  $\pm 2\text{nm}$ .

## Luminous Flux Ranks, IF = 350mA, Ta =25°C

Luminous Flux			
Code	Min.	Max.	Unit
AP	51	58	lm
AQ	58	65	lm
AR	65	72	lm
AS	72	80	lm

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

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

Code	Min.	Max.	Unit
C3	1.8	2.0	V
D3	2.0	2.2	V
E3	2.2	2.4	V
F3	2.4	2.6	V

\* Tolerance of measurements of the Forward Voltage is  $\pm 0.1\text{V}$ .

## Typical Characteristics Curves

Fig 1. Color Spectrum, Ta = 25°C

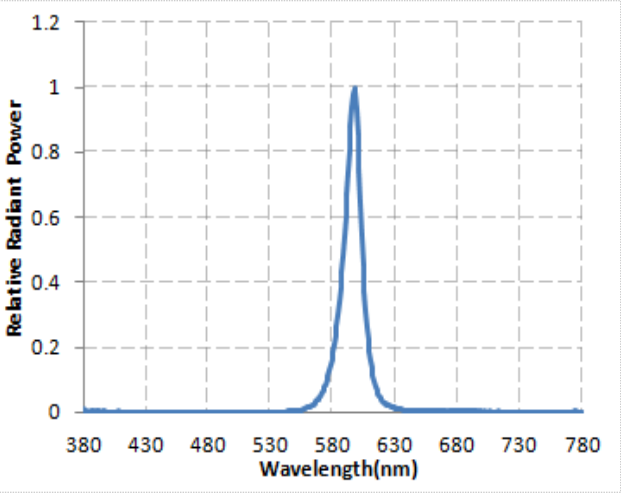


Fig 2. Ambient Temperature vs. Wavelength, Ta = 25°C

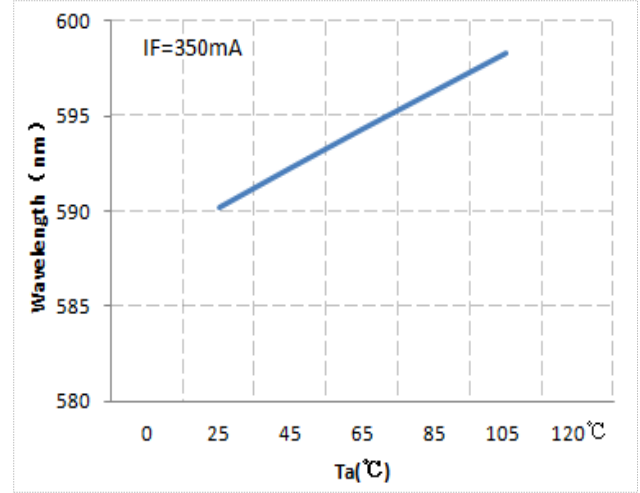


Fig 3. Forward Current vs. Relative Intensity, Ta = 25°C

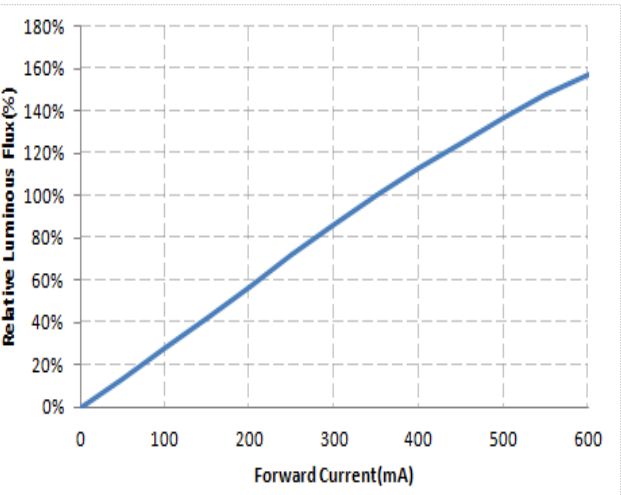


Fig 4. Forward Current vs. Forward Voltage, Ta = 25°C

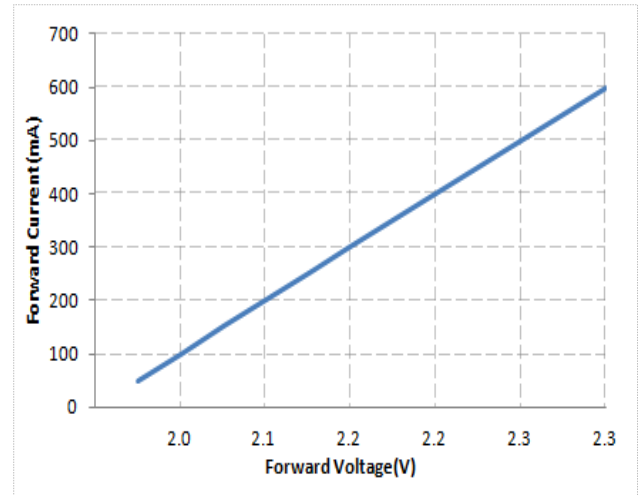


Fig 5. Ambient Temperature vs. Relative Luminous flux

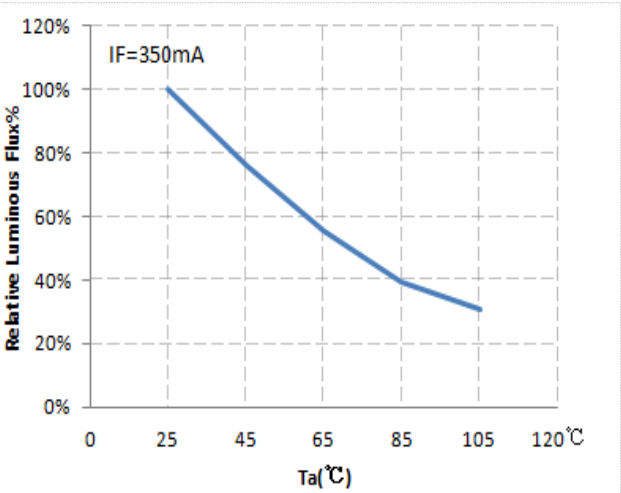


Fig 6. Ambient Temperature vs. Relative Forward Voltage

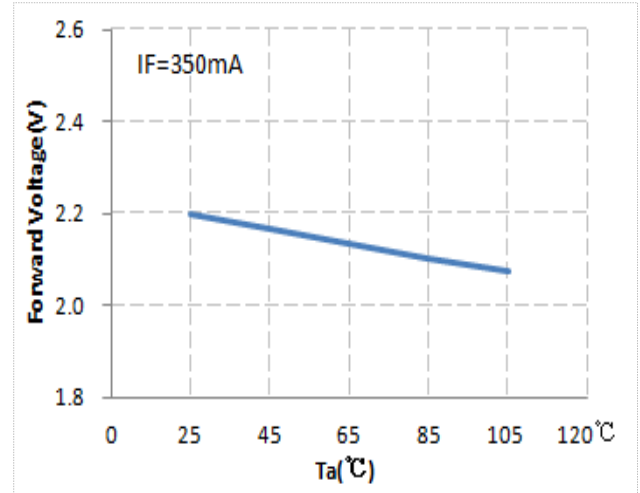


Fig 7. Typical Viewing Angle =120° , Ta = 25°C

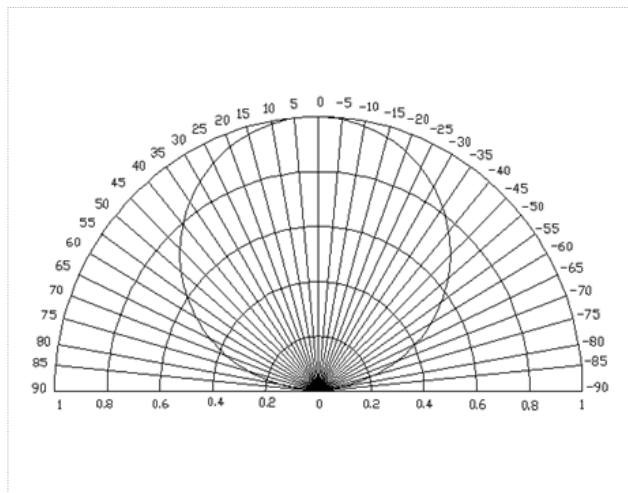
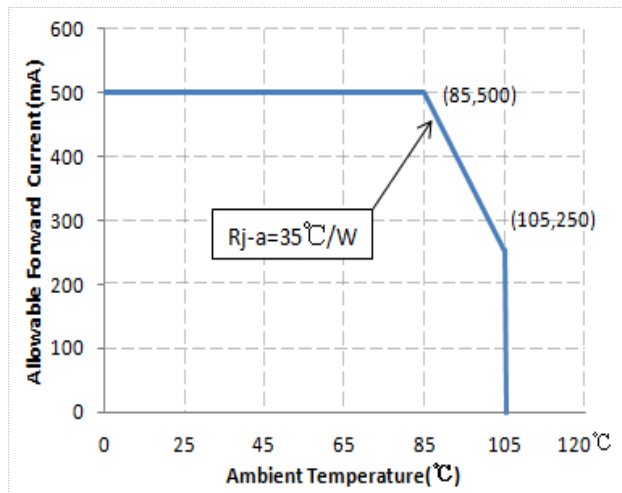
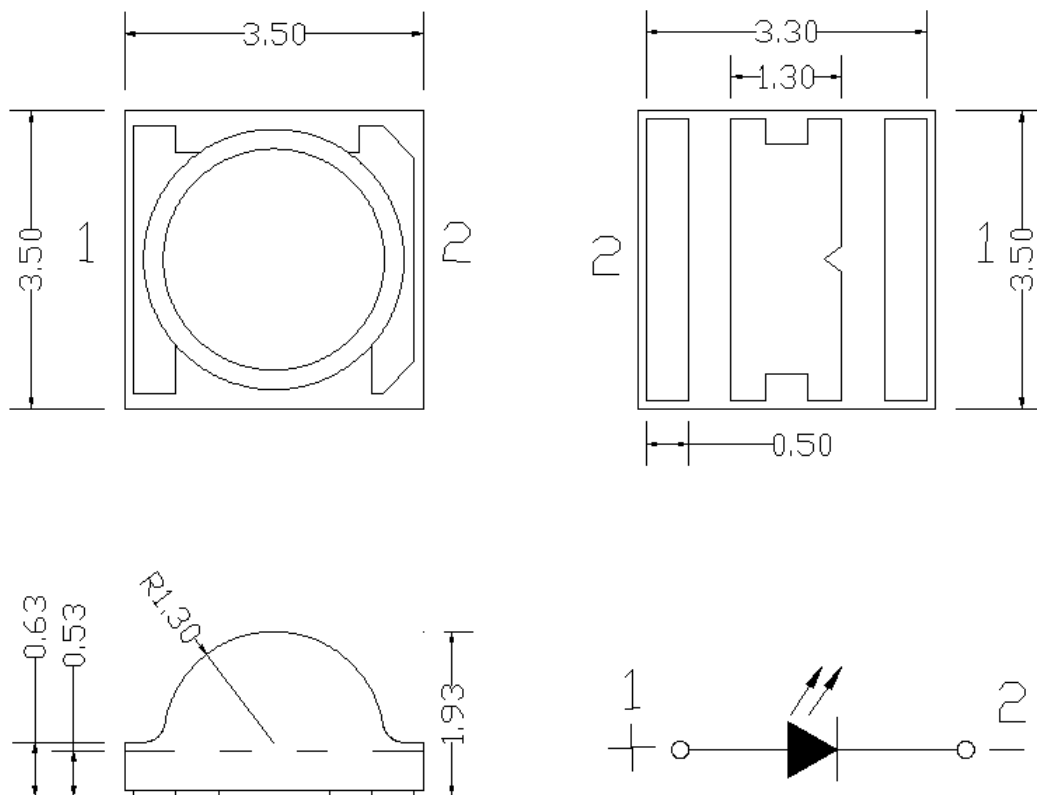


Fig 8. Ambient Temperature vs.Maximum Forward Current

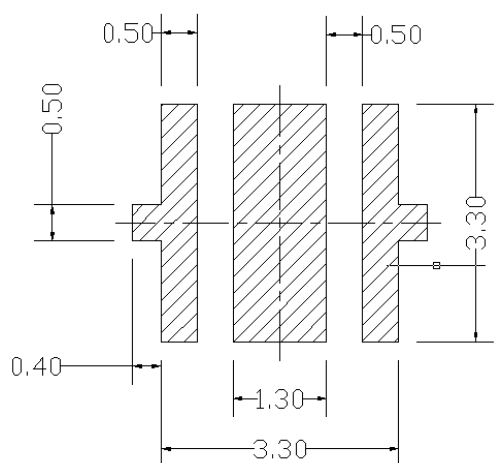


## Package Dimensions

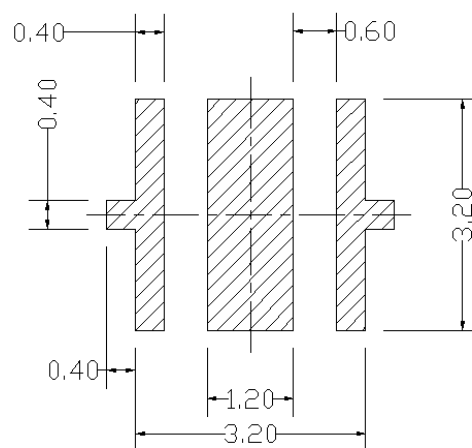


\* The tolerance unless mentioned is  $\pm 0.2\text{mm}$ , unit = mm

## Recommended Solder Pad



Recommended PCB Solder Pad

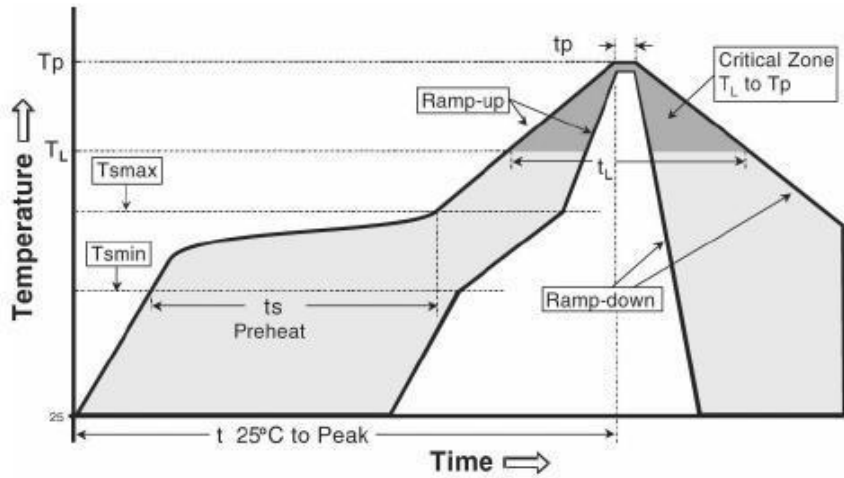


Recommended Stencil Pattern

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

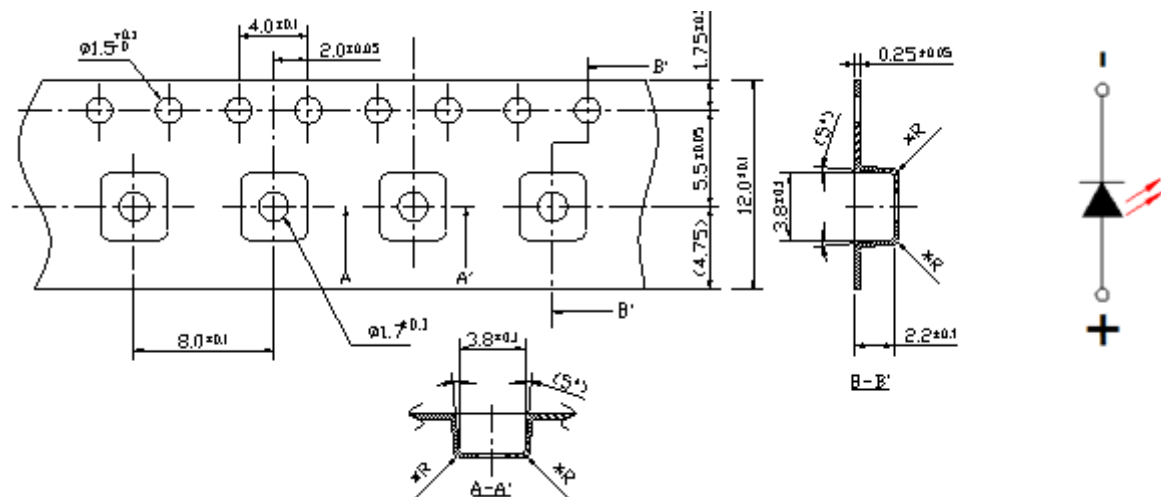


# Reflow Soldering Characteristics



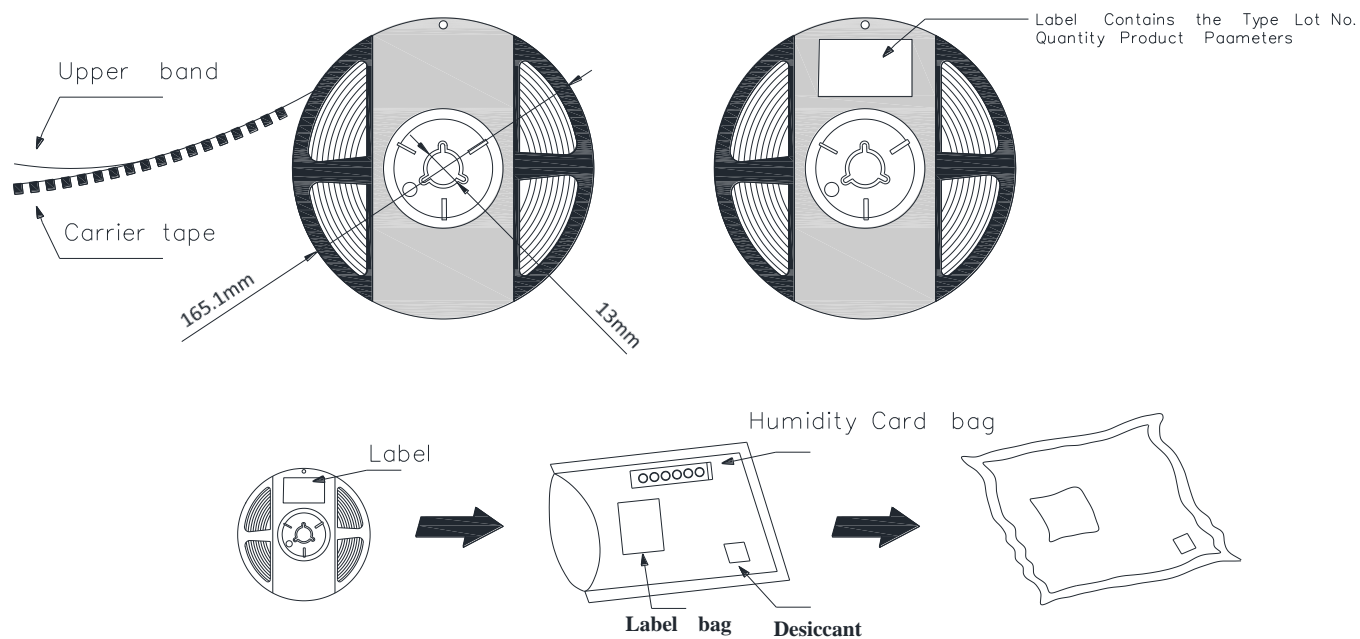
Reflow soldering	
Temperature Min (Tsmín)	150° C
Temperature Max (Tsmáx)	200° C
Time(ts)from ( Tsmín to Tsmáx)	60-120 seconds.
Ramp-up rate (TL to Tp)	3° C/seconds max.
Liquidous temperature( TL)	217° C
Time(tL) maintained above TL	60-150 seconds
Peak package body temperature( Tp)	260° C max
Time (tp) within 5° C of the specified classification temperature (Tc).	30 seconds max
Ramp-down rate (Tp to TL)	6° C/second max
Time 25 ° C to peak temperature	8 min max

## Package Dimensions of Tape

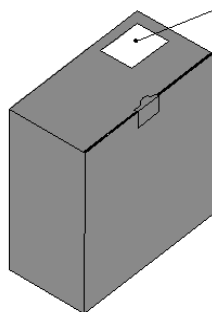
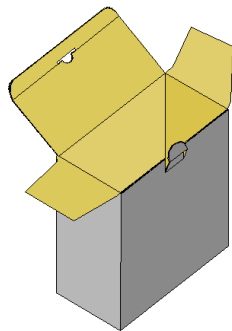


- \* Quantity : Max 1000pcs/Reel
- \* Cumulative Tolerance : Cumulative Tolerance/10 pitches to be  $\pm 0.25\text{mm}$
- \* Package : P/N, Manufacturing data Code No. and Quantity to be indicated on a damp proof Package.
- \* unit = mm

## Package Dimensions of Reel

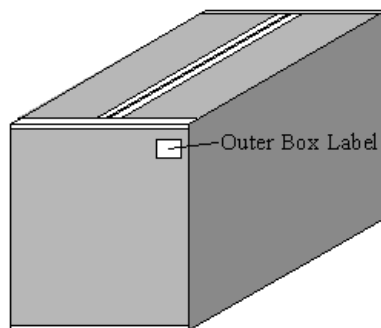
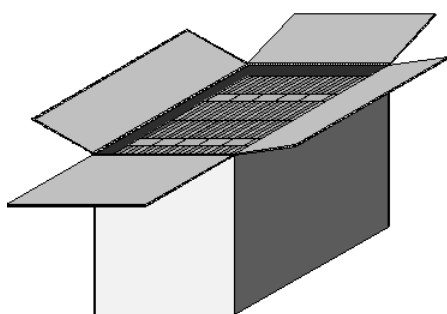


## Package Box



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\*\*\*\*\*\_\*\*\*\*\*




光通量Φ@\*\*\*mA: \*\*\* - \*\*\* LM

主波长Wld@ \*\*\*mA: \*\*\* - \*\*\* nm

电压 Vf@\*\*\* 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.