

SPECIFICATIONS FOR T7F SERIES

DUAL COLOR LED

Model: 7070X

Part No: TR067F3095790122N-N***

**Features:**

- * Top view white LED
- * Thermally Enhanced Package Design
- * High luminous flux output
- * High current capability
- * Compact Package Size
- * Wide viewing angle
- * Pb-free Reflow Soldering Application
- * The product itself will remain within RoHS and REACH compliant

Applications

- * Architectural / Decorative lighting
- * Retrofits (replacement)
- * General lighting
- * Indoor & Outdoor sign board back light
- * Downlight & Spotlight

Part Numbering System

T -

X1 X2 X3 X4 X5 X6 X7 X8 X9 X10 X11

Item Number Code	Description	Content
X1	Diameter code	R06:5.5-6.5; R07:6.5-7.5; R08:7.5-8.5; R09:8.5-9.5; R10:9.5-10.5; R11:10.5-11.5; R12:11.5-12.5; R13:12.5-13.5;
X2	Type code	7C:7070-2pad; 7F:7070-5Pad; 1D:100100-2pad; 1E:100100-5pad;
X3/X5	CCT code	XX00K:XX,ex.: 2700K:27; 4000K:40 RE:Red; GR:Green; BL:Blue; YE:Yellow; PA:PC Amber; IR: Infrared.
X4/X6	Color Rendering	Ra70:7; Ra80:8; Ra90:9; Ra85:A; Ra75:B; Ra95:C.
X7	No. of serial chip	1-Z.
X8	No. of parallel chip	1-Z.
X9	Component code	A-Z.
X10	Color Code	Z: Zener; N: No Zener
X11	Spare code	\

Absolute Maximum Ratings at Tj=25°C

Item	Symbol	Absolute Maximum Rating	Unit
Forward current	IF	240	mA
Pulse Forward current	IFP	300	mA
Power Dissipation	PD	9600	mW
Operating Temperature	Topr	-40~+105	°C
Storage Temperature	Tstg	-40~+105	°C
Junction Temperature	Tj	120	°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.

Electro Optical Characteristics, IF = 240mA, Tj = 25°C

Item	Symbol	CCT	Min	Typ	Max	Unit	Test Condition
Forward Voltage	VF	All	34	37	40	V	IF=240mA
Reverse Current	IR	-	-	-	10	μA	VR=5V
View Angle	2θ1/2	-	-	120	-	°	IF=240mA
Luminous Flux	Φv	3000K	950	1050	-	lm	IF=240mA
		5700K	1050	1170	-		
Color Rendering	Ra	All	90	-	-	-	IF=240mA
Thermal resistance	(Rth j-sp)	-	-	2	-	°C/W	IF=240mA

* Tolerance of measurements of the Forward Voltage is ±3%.

* 2θ1/2 is the off-axis where the luminous intensity is 1/2 of the peak intensity.

* Tolerance of measurements of the Luminous Flux is ±7%.

* Ra measurement tolerance is ±2.

* Rth j-sp is the thermal resistance from LED junction to solder point on MCPCB with electrical power.

Bin Structure

Luminous Flux Ranks, IF = 240mA, Tj =25°C

Code	Min	Max	Unit
GX	950	1000	lm
3A	1000	1100	lm
3B	1100	1200	lm
3C	1200	1300	lm
3D	1300	1400	lm

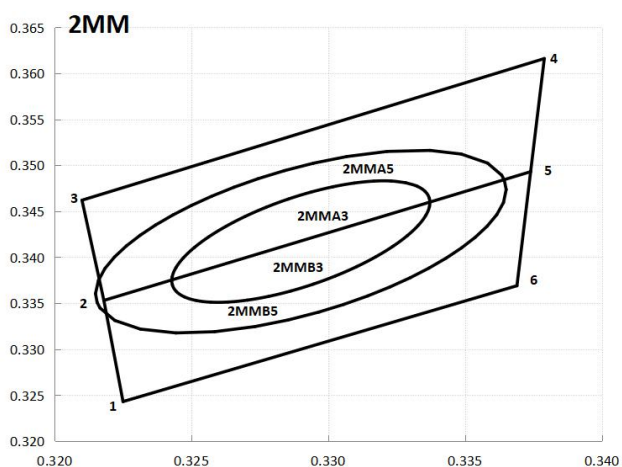
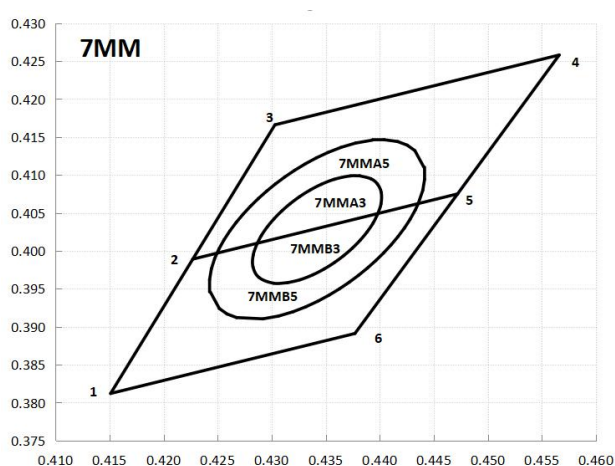
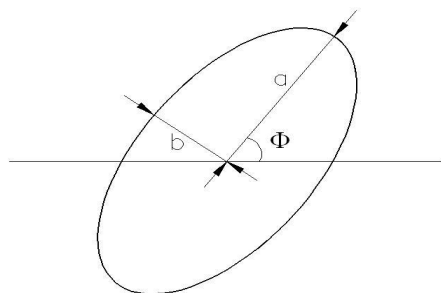
* Tolerance of measurements of the Luminous Flux is $\pm 7\%$.

Forward Voltage Ranks, IF = 240mA, Tj =25°C

Code	Min	Max	Unit
6K	34	36	V
6L	36	38	V
6M	38	40	V

* Tolerance of measurements of the Forward Voltage is $\pm 3\%$.

CIE Chromaticity Diagram, IF = 240mA, Tj = 25°C



The color ranks have chromaticity ranges within 3/5-step MacAdam ellipse

Color Code	Nominal CCT	Center		3/5 step		5 step		Angle(deg)
		x	y	a	b	a	b	
7MM	3000K	0.4342	0.4028	0.008340	0.004080	0.013900	0.006800	53.13
2MM	5700K	0.3290	0.3417	0.006705	0.003300	0.011175	0.005500	58.35

* Tolerance of measurements of the chromaticity Coordinate is ± 0.005 .

Bin Code description

Color Code	No.	CIE x	CIE y	No.	CIE x	CIE y
7MM	1	0.4151	0.3812	4	0.4566	0.4258
	2	0.4227	0.3989	5	0.4472	0.4075
	3	0.4303	0.4166	6	0.4377	0.3891
2MM	1	0.3225	0.3243	4	0.3379	0.3616
	2	0.3218	0.3353	5	0.3374	0.3493
	3	0.3210	0.3462	6	0.3369	0.3369

* Tolerance of measurements of the chromaticity Coordinate is ± 0.005 .

Fig 1. Color Spectrum, $T_j = 25^\circ\text{C}$

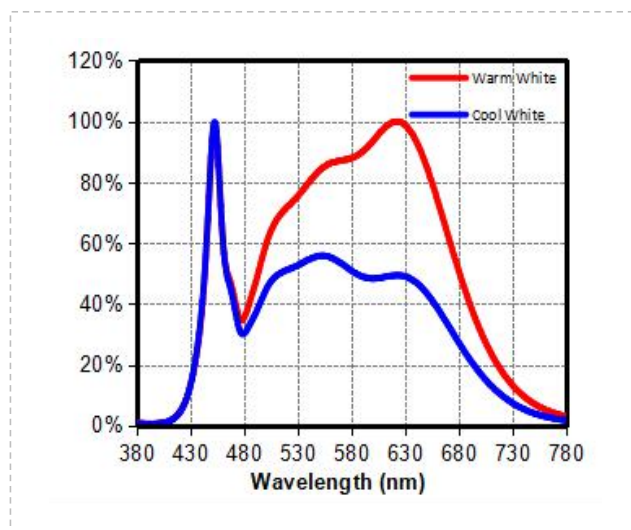


Fig 2. Viewing Angle Distribution, $T_j = 25^\circ\text{C}$

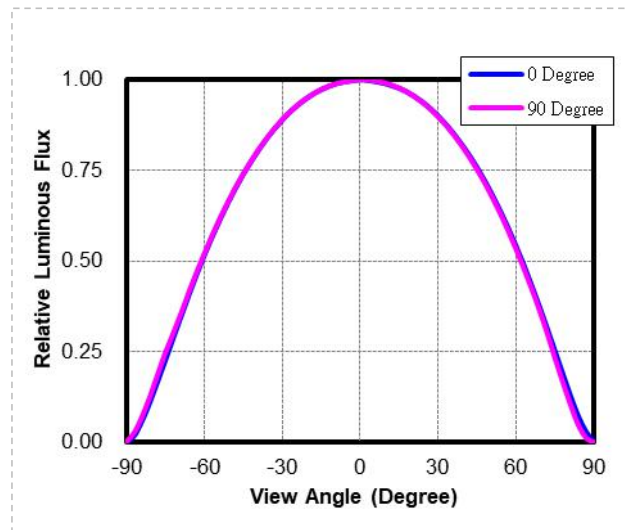


Fig 3. Forward Current vs. Relative Intensity, $T_j = 25^\circ\text{C}$

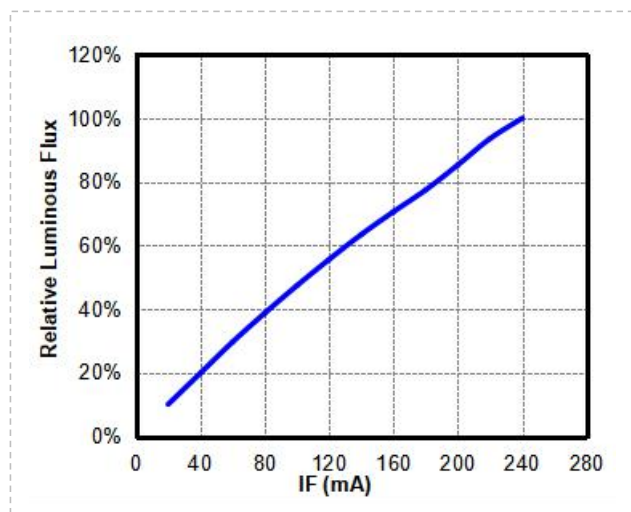


Fig 4. Forward Current vs. Forward Voltage, $T_j = 25^\circ\text{C}$

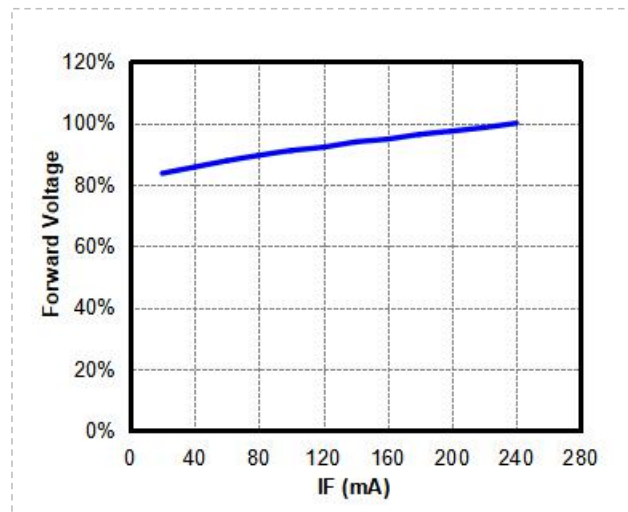


Fig 5. Soldering Temperature vs. Relative Luminous flux ($I_F=240\text{mA}$)

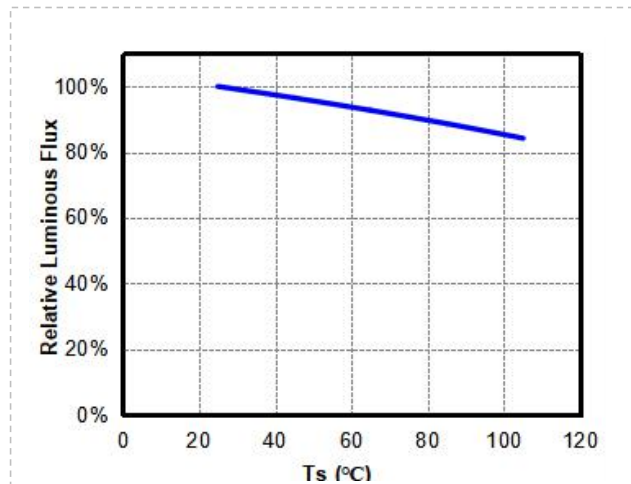


Fig 6. Soldering Temperature vs. Forward Voltage ($I_F=240\text{mA}$)

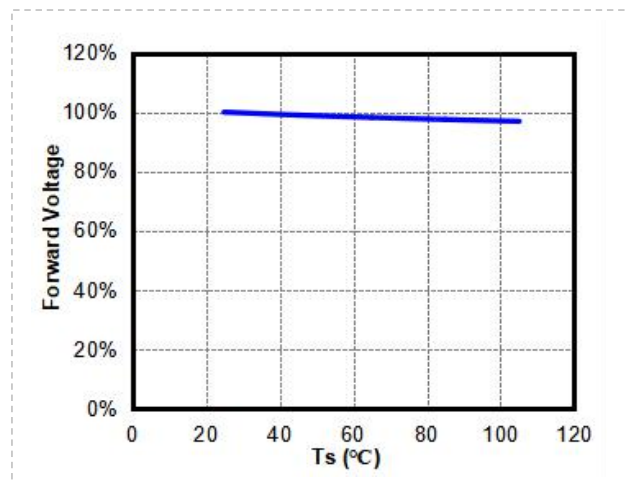
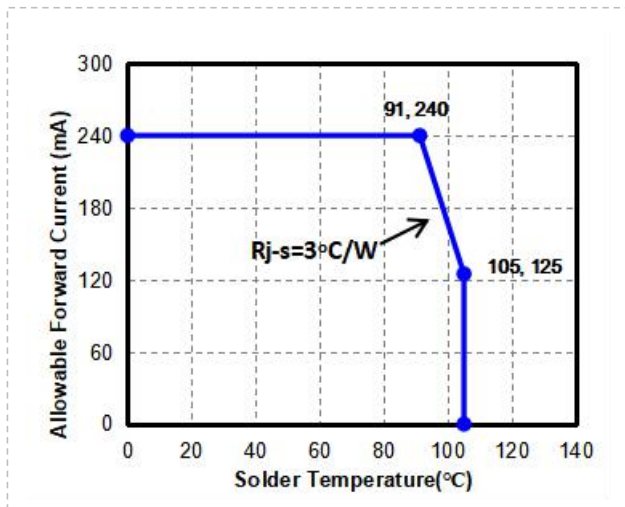
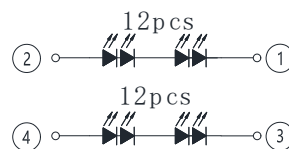
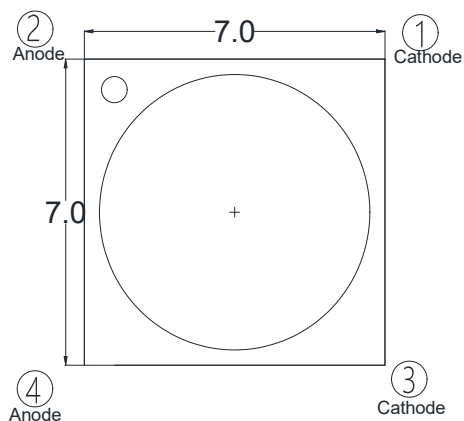


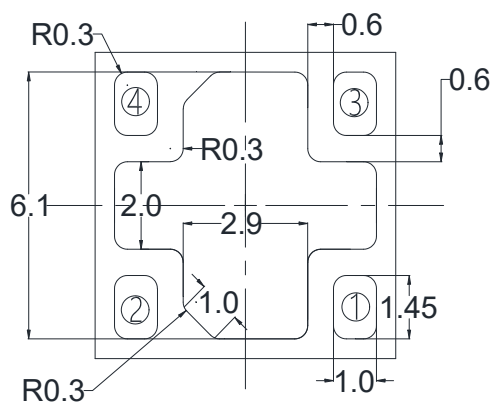
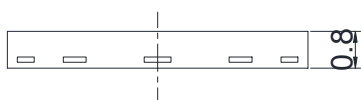
Fig 7.Allowable Forward Current vs. Soldering Temperature



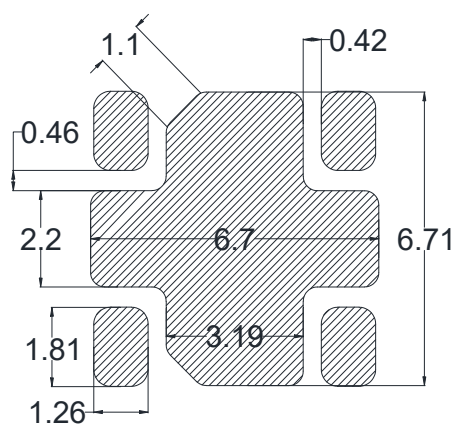
Package Dimensions



Polarity



Bot. view

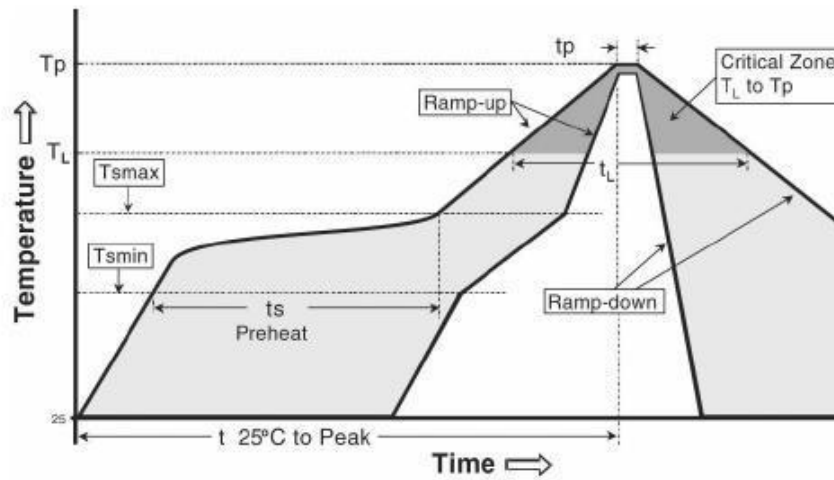


Soldering patterns

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

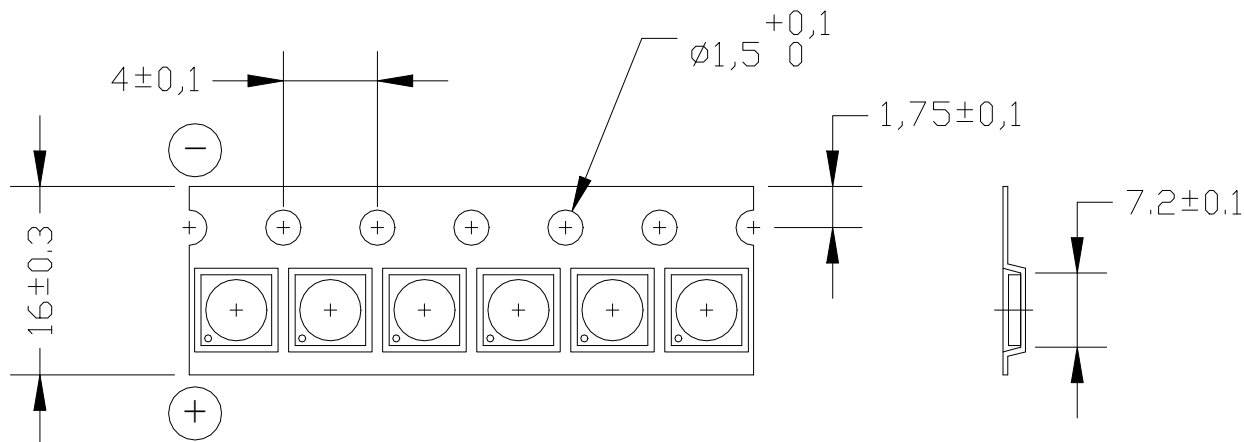
* The soldering pad pattern is only for reference and can be modified according to actual requirements

Reflow Soldering Characteristics



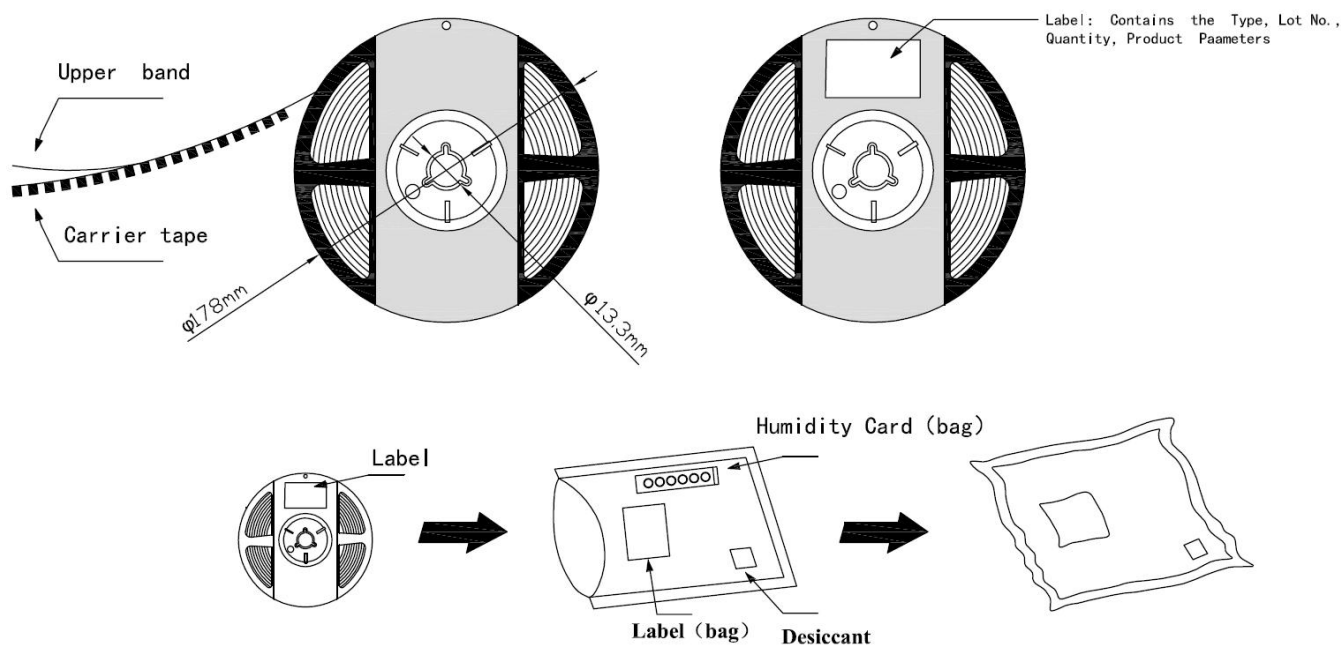
Reflow soldering	
Temperature Min (Tmin)	150° C
Temperature Max (Tsmax)	200° C
Time(ts)from (Tmin to Tsmax)	60-120 seconds.
Ramp-up rate (TL to Tp)	3° C/seconds max.
Liquidous temperature(TL)	217° C
Time(tL) maintained above TL	60-150 seconds
Peak package body temperature(Tp)	260° C max
Time (tp) within 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

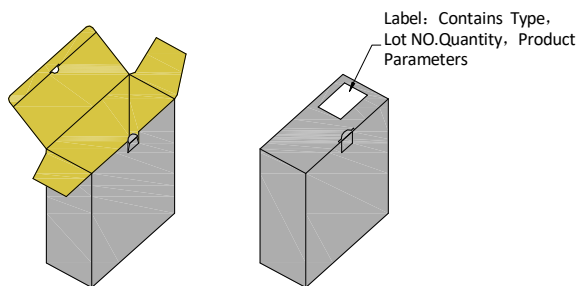


- * Quantity : Max 1000pcs/Reel
- * Cumulative Tolerance : Cumulative Tolerance/10 pitches to be $\pm 0.2\text{mm}$
- * Package : P/N, Manufacturing data Code No. and Quantity to be indicated on a damp proof Package.
- * Adhesion Strength of Cover Tape Adhesion strength to be 0.1-0.7N when the cover tape is turned off from the carrier tape at the angle of 10° to the carrier tape

Package Dimensions of Reel

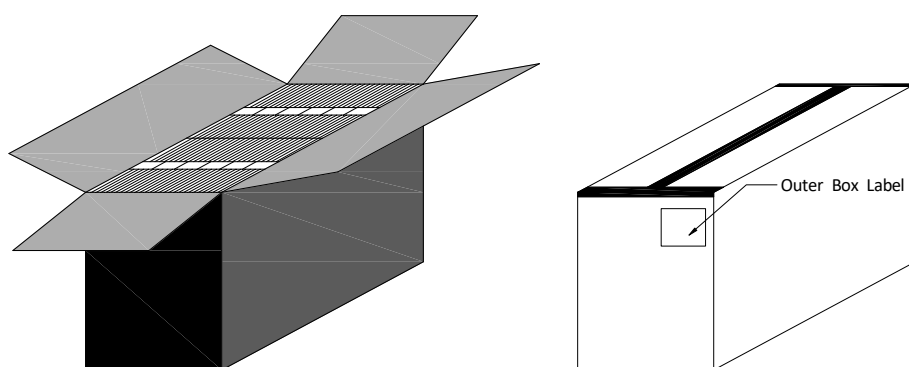


Package Box



* Capacity 4 or 8 reels per box.

Outer Box



* Capacity 24 or 48 reels per box.

Label :

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]	
色区Color Bin@*** mA: ****	
电压Vf@ *** mA: ** - ** [V]	
显指Ra@*** mA: ** (MIN)	
Lot No.: A*****_ *_ *****	
Bin Code: ****	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 EMC 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 5°C~30°C and 60%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

Revision record				
Version	Page	Chapter	Content of change	Date record
1.0	14	/	Preliminary Document	2021/05/11