SPECIFICATIONS FOR T15 SERIES

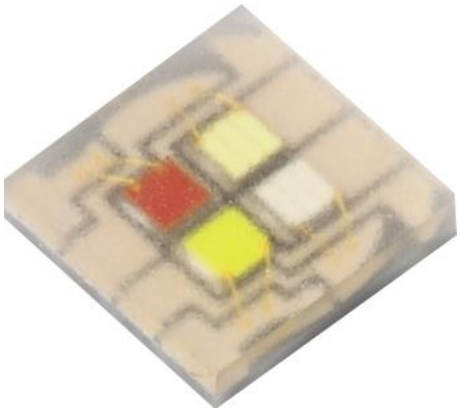
Full Colour LED

Model: Ceramic 5050

Part No: T15FW014A-xxxxxx

Features:

* Good color mixing effect
* Unique RGB white design
* Good light-dimmer
* Maximum drive current: 700 mA
* Low thermal resistance
* viewing angle:140±5°
* Pb-free Reflow Soldering Application
* The product itself will remain within RoHS compliant version



Applications

* The stage lighting
*Decorative lighting
* Architecture and landscape lighting

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 ; CW:RGB; FW: RGBW
X3	Color Rendering	0:clour or mix colour
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℃

Item	Symbol	Colour	Absolute Maximum Rating	Unit
Forward current	I_F	Red/Green/Blue/White	700	mA
Pulse Forward current	I_{FP}	Red/Green/Blue/White	1000	mA
Power Dissipation	P_D	Red	1820	mW
		Green/Blue/White	2380	
Reverse Voltage	V_R	Red/Green/Blue/White	5	V
Operating Temperature	Topr	/	-40～+85	℃
Storage Temperature	Tstg	/	-40～+105	℃
Soldering Temperature	Tsld	Reflow Soldering: 230℃ or 260℃ for 10sec		

* I_{FP} 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℃

Item	Symbol	Colour	Min.	Typ.	Max.	Unit	Condition
Luminous Flux	Lm	Red	50	-	70	Lm	I_F=350mA
		Green	130	-	150		
		Blue	20	-	40		
		White	90	-	110		
Forward Voltage	V_F	Red	1.6	-	2.6	V	I_F=350mA
		Green/Blue/White	2.6	-	3.4		
Reverse Current	I_R	Red/Green/Blue/White	-	-	10	μA	V_R=5V
View Angle	$2\theta_{1/2}$	/	-	140	-	°	IF=350mA
Thermal resistance	(Rth $_{j\text{-}sp}$)	Red	-	5	-	℃/W	IF=350mA
		Green/Blue/White	-	4.5	-		
Electrostatic Discharge	ESD	/	1000	-	-	V	HBM

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

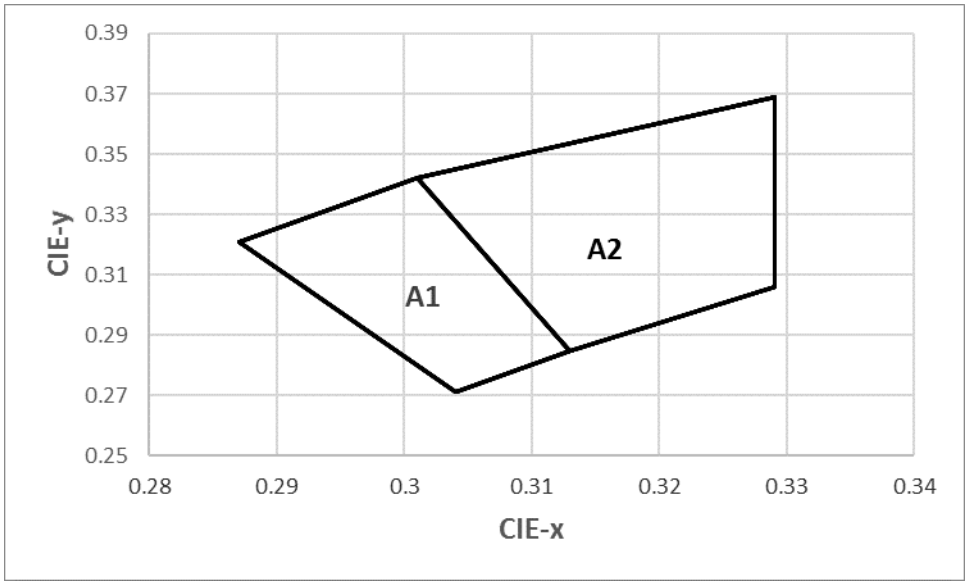
Bin Structure

Dominant Wavelength Ranks（Red/Green/Blue）, IF = 350mA, Ta =25℃

Colour	Code	Min.	Max.	Unit	Colour	Code	Min.	Max.	Unit
Red	RB2	615	620	nm	Blue	BB3	450	452.5	nm
	RC1	620	625	nm		BB4	452.5	455	nm
	RC2	625	630	nm		BB5	455	457.5	nm
Green	GC3	520	522.5	nm		BB6	457.5	460	nm
	GC3	522.5	525	nm		BC3	460	462.5	nm
	GC3	525	527.5	nm		BC4	462.5	465	nm
	GC3	527.5	530	nm		BC5	465	467.5	nm
	GC3	530	532.5	nm		BC6	467.5	470	nm
	GC3	532.5	535	nm					

*Tolerance of measurements of the WD is ±1nm

CIE Chromaticity Diagram, IF = 350mA, Ta = 25℃



A1	0.2870	0.3210	A2	0.301	0.342
	0.3010	0.3420		0.329	0.369
	0.3130	0.2850		0.329	0.306
	0.3040	0.2710		0.313	0.285

*Tolerance of measurements of the x/y is ±0.007nm

Forward Voltage Ranks, IF = 350mA, Ta =25℃

Code	Min	Max	Unit
AA6	1.8	2	V
AB3	2	2.2	V
AB4	2.2	2.4	V
AB5	2.4	2.6	V
AB6	2.6	2.8	V
AC3	2.8	3	V
AC4	3	3.2	V
AC5	3.2	3.4	V
AC6	3.4	3.6	V

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

Luminous Flux Ranks, IF = 150mA, Ta =25℃

Colour	Code	Min.	Max.	Unit
Red	EC2	50	60	Lm
	ED1	60	70	Lm
Green	EG2	130	140	Lm
	EH1	140	150	Lm
Blue	EB1	20	30	Lm
	EB2	30	40	Lm
White	EE2	90	100	Lm
	EF1	100	110	Lm

Fig 1. Color Spectrum, Ta = 25℃

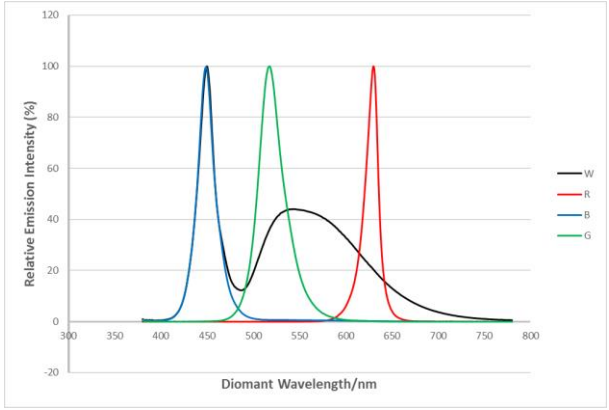


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Fig 2. Viewing Angle Distribution, Ta = 25℃

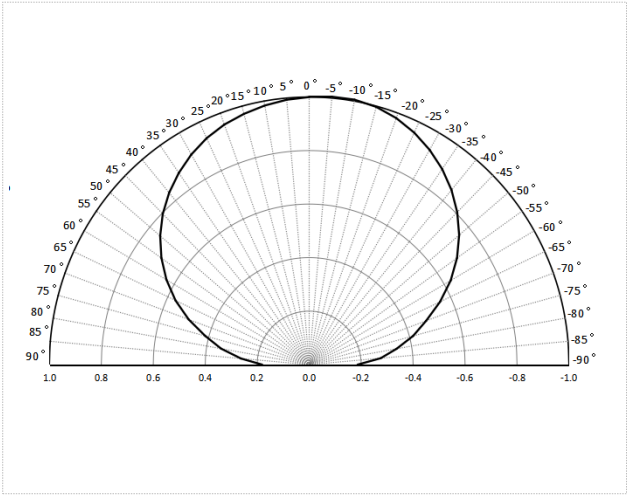


Fig 3. Forward Current vs. Relative Intensity, Ta = 25℃

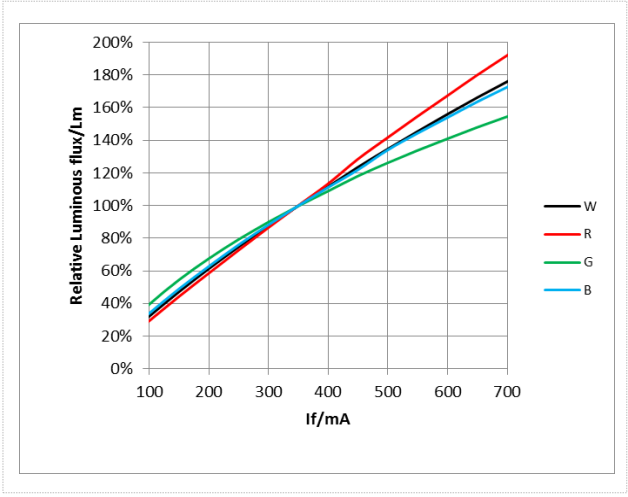


Fig 4. Forward Current vs. Forward Voltage, Ta = 25℃

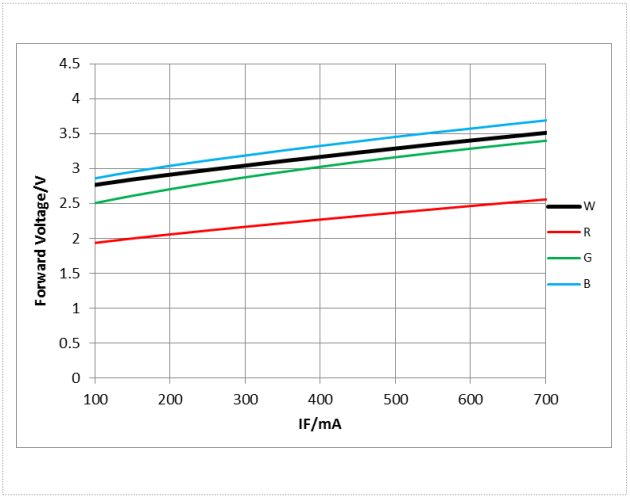


Fig 5. Ambient Temperature vs. Relative Luminous flux (IF=350mA)

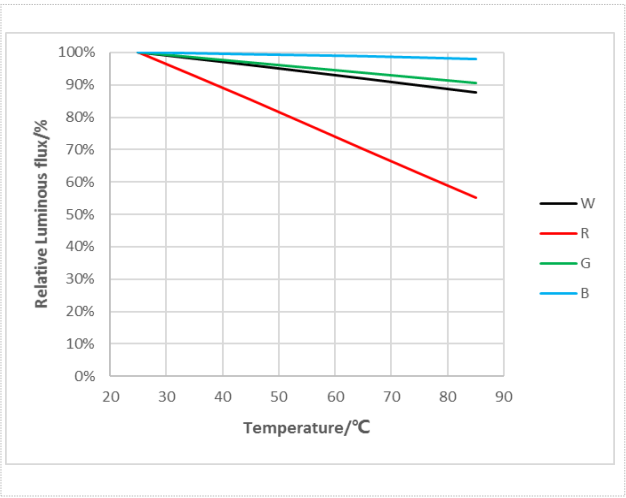
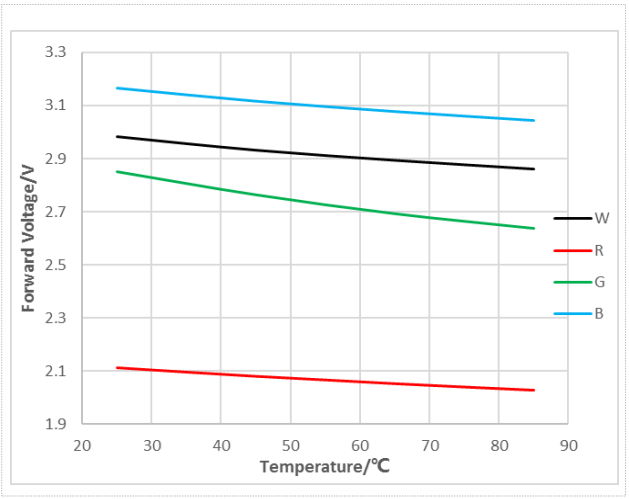
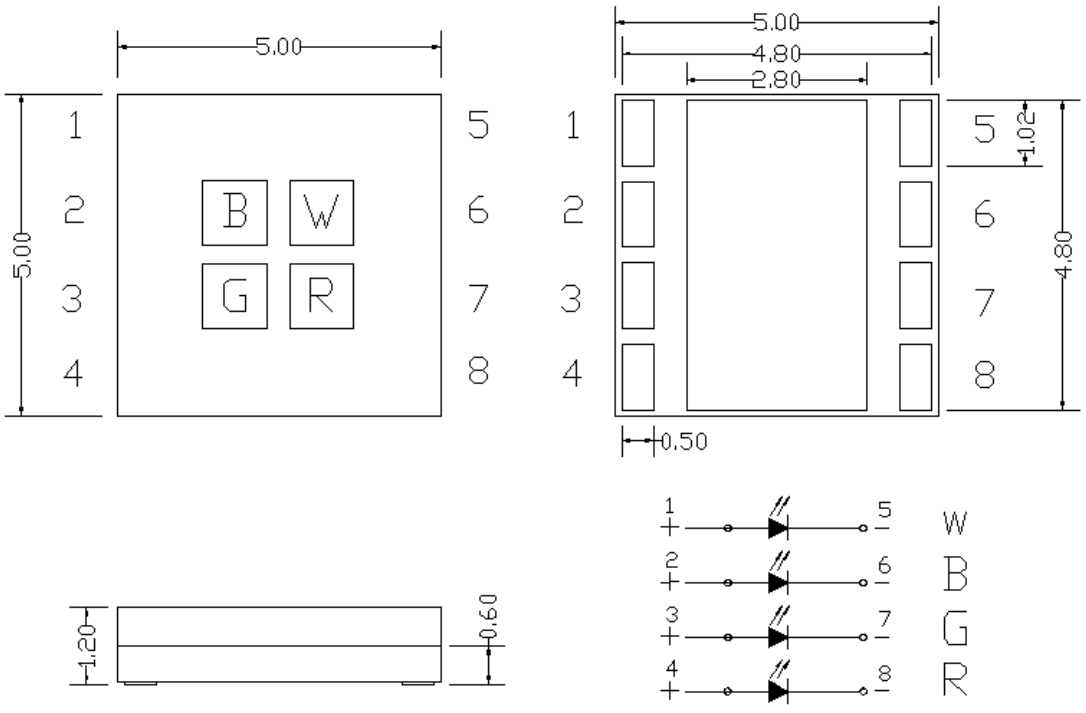


Fig 6. Ambient Temperature vs. Relative Forward Voltage (IF=350mA)

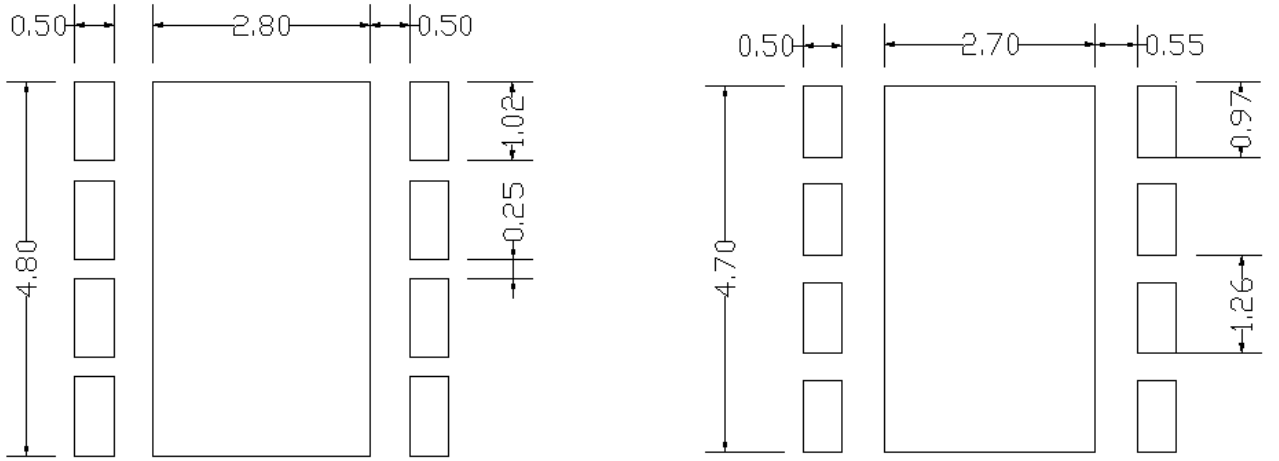


Package Dimensions



* The tolerance unless mentioned is ±0.2mm, unit = mm

Recommended Solder Pad

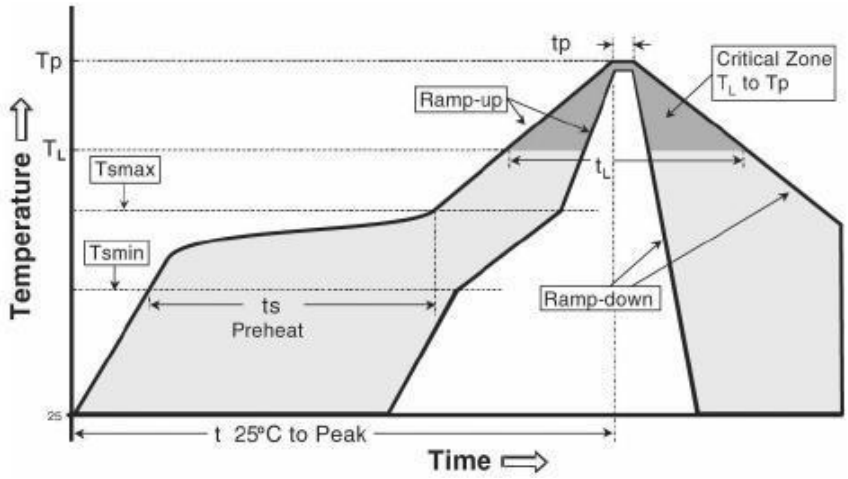


Recommended PCB Solder Pad

Recommeded Stencil Pattern

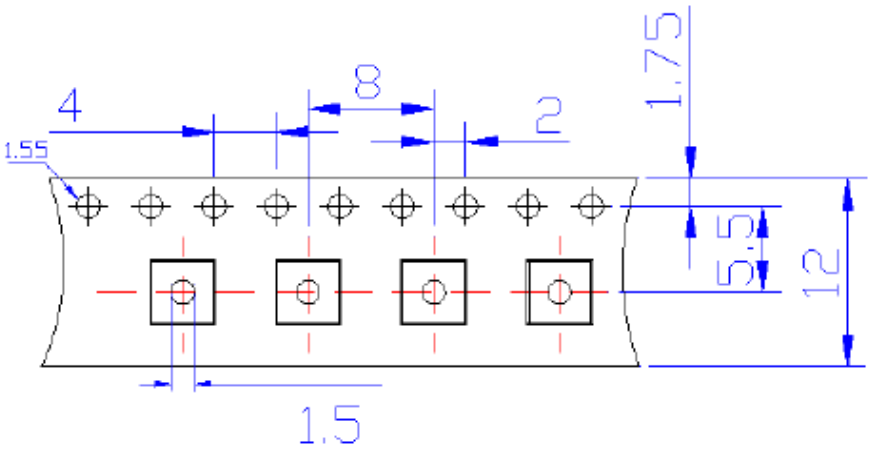
* The tolerance unless mentioned is ±0.1mm, unit = mm

Reflow Soldering Characteristics



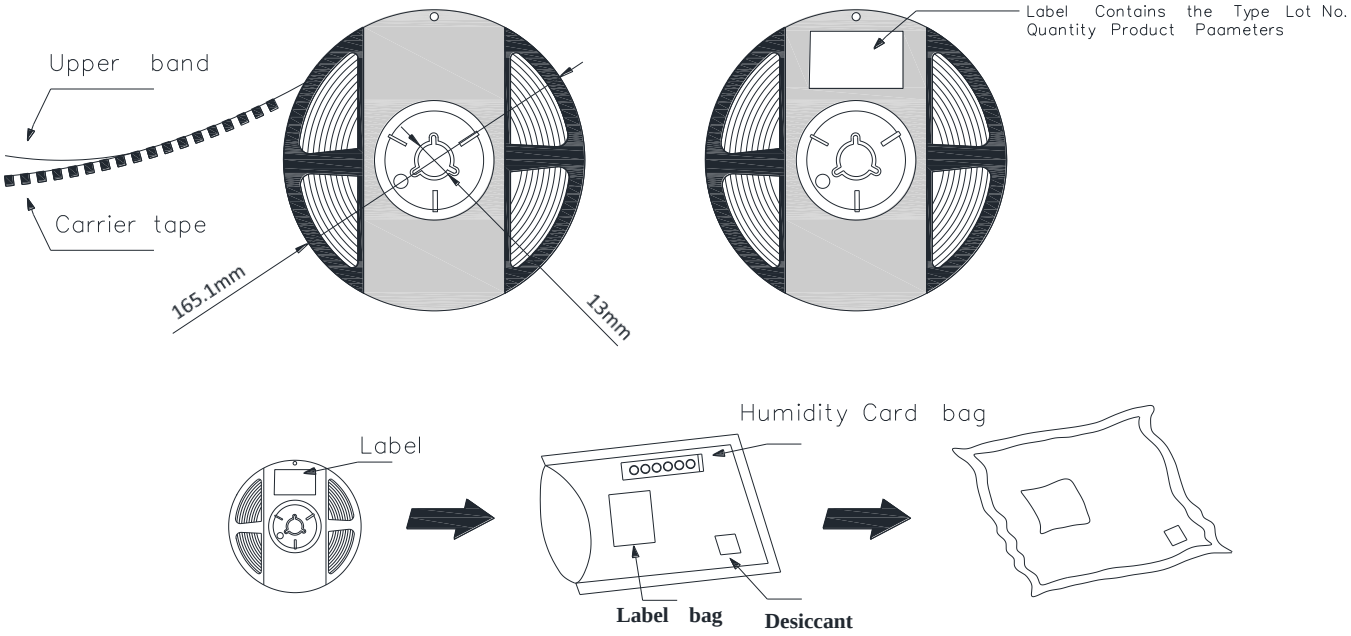
Reflow soldering	
Temperature Min (Tsmin) Temperature Max (Tsmax) Time(ts)from (Tsmin to Tsmax)	150° C 200° C 60-120 seconds.
Ramp-up rate (TL to Tp)	3° C/seconds max.
Liquidous temperature(TL) Time(tL) maintained above TL	217° C 60-150 seconds
Peak package body temperature(Tp)	260° C max
Time (tp) within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

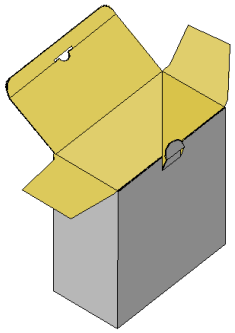


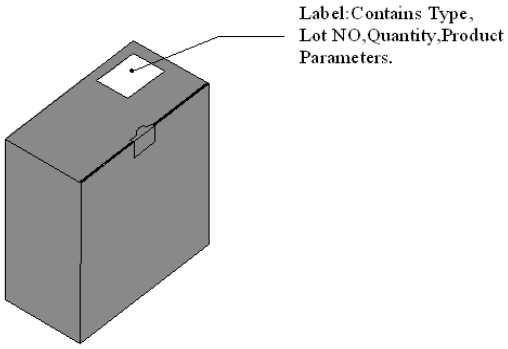
* Quantity : Max 500pcs/Reel
* Cumulative Tolerance : Cumulative Tolerance/10 pitches to be ±0.25mm
* Package : P/N, Manufacturing data Code No. and Quantity to be indicated on a damp proof Package.
* unit = mm

Package Dimensions of Reel

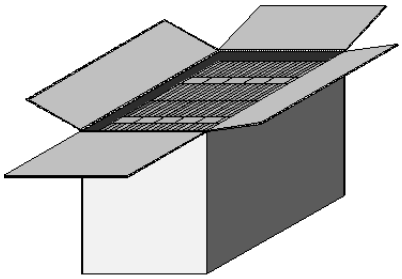


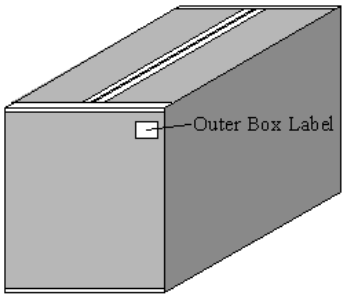
Package Box





* Capacity 4 or 8 reels per box.





* Capacity 48 or 64 reels per box.

Label

福建天电光电有限公司

FUJIAN LIGHTNING OPTOELEC TRONIC 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 30℃ or less and 90%RH or less.

2.After opening the package: The LED's floor life is 168Hrs under 30℃ 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℃ for 24 hours.