



Data Sheet

Customer:

Part No:

Sample No:

Description:

Item No:

CL-SFC5900RGB-02(30W)

5050 SMD Full Color

Customer			
Check	Inspection	Approval	Date

Description

- This RGB 3in1 surface-mount LED size is standard package: 5.0x5.0x1.18mm.
- The SFC5900 series is designed for high flux output applications with high current operation capability.

Features And Benefits

- Designed for high current operation
- Low thermal resistance
- Superior corrosion robustness
- Superior high efficacy at rated current enables outstanding lm/W at system level
- Viewing angle at 50%I_v : 120°
- Lumen Maintenance:Testresults according to IESNA LM-80 available
- RoHS certification
- This RGB 3in1, Intelligent controled

Applications

- Indoor lighting
- Outdoor lighting
- Exhibition hall lighting
- Architectural lighting
- Landscape lighting
- Stage lighting
- Atmosphere lamp

Table 1. Product overview

Parameter	Color	Dominant Wavelength (nm)	Voltage Rank(V)	LUMINOUS Flux(lm)
	Color	Rank	IF=1000mA	IF=1000mA
CL-SFC5900RGB-02(30W)	R	620-625	2.0-2.4	120-150
	G	520-525	2.8-3.4	280-310
	B	450-455	2.8-3.4	55-70

Performance Characteristics

Table 2. Product For RGB Electro Optical Characteristics ,
IF = 1000mA , Ta = 25°C, RH60%

Parameter	Color	Dominant Wavelength (nm)	Voltage Rank(V)	Main Luminous Flux Rank (lm)
Model No.	Color	Rank	IF=1000mA	IF=1000mA
CL-SFC5900RGB-02(30W)	R	620-625	2.0-2.4	120-150
	G	520-525	2.8-3.4	280-310
	B	450-455	2.8-3.4	55-70

- Tolerance of measurements of the Luminous Flux is $\pm 7\%$.
- Tolerance of measurements of the Dominant Wavelength is $\pm 2\text{nm}$.
- Voltage measurement tolerance is $\pm 0.1\text{V}$.
- The luminous flux was measured at the peak of the spatial pattern which may not be aligned with the mechanical axis of the LED package.
- The lumen table is only for reference.

Table 3. Electro and Thermal Characteristics , IF = 1000mA , Ta = 25°C, RH60%

Item	Symbol	Min	Typ	Max	Unit	Condition
Forward Voltage R	VF	2.0	-	2.4	V	IF=1000mA
Forward Voltage G	VF	2.8	-	3.4	V	IF=1000mA
Forward Voltage B	VF	2.8	-	3.4	V	IF=1000mA
Reverse Current	IR	-	-	10	μA	VR=5V
View Angle	2θ1/2	-	120	-	°	IF=1000mA
Thermal Resistance R	(R _{th j-sp})	-	9	-	°C/W	IF=1000mA
Thermal Resistance G	(R _{th j-sp})	-	10	-	°C/W	IF=1000mA
Thermal Resistance B	(R _{th j-sp})	-	10	-	°C/W	IF=1000mA
Electrostatic Discharge	ESD	-	8000	-	V	-

- Tolerance : VF :±0.1V.
- 2θ1/2 is the off-axis where the luminous intensity is 1/2 of the peak intensity.
- Thermal resistance : RthJS (Junction / solder) .

Table 4. Absolute Maximum Ratings , Ta = 25°C, RH60%

Item	Symbol	Absolute Maximum Ratings	Unit
Forward Current	IF	3000	mA
Pulse Forward Current	IFP	3500	mA
Power Dissipation	PD	23	W
Reverse Voltage	VR	5	V
Operating Temperature	T _{opr}	-40 ~ +100	°C
Storage Temperature	T _{stg}	-40 ~ +100	°C
Junction Temperature R	T _j	115	°C
Junction Temperature G	T _j	125	°C
Junction Temperature B	T _j	125	°C

- 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.

Product Bin

Table 5. Luminous Flux Ranks for Red, Ta = 25°C, RH60%, IF=1000mA

Luminous Flux(lm)			Luminous Flux(lm)		
Code	Min	Max	Code	Min	Max
A20	120	130	A40	140	150
A30	130	140			

Table 6. Luminous Flux Ranks for Green, Ta = 25°C, RH60%, IF=1000mA

Luminous Flux(lm)			Luminous Flux(lm)		
Code	Min	Max	Code	Min	Max
WB8	280	290	WC0	300	310
WB9	290	300			

Table 7. Luminous Flux Ranks for Blue, Ta = 25°C, RH60%, IF=1000mA

Luminous Flux(lm)			Luminous Flux(lm)		
Code	Min	Max	Code	Min	Max
A55	55	60	A65	65	70
A60	60	65			

Table 8. Dominant Wavelength Ranks for Red, Ta = 25°C, RH60%, IF=1000mA

Dominant Wavelength (nm)			Dominant Wavelength (nm)		
Code	Min	Max	Code	Min	Max
62A	620.0	622.5	62C	625.0	627.5
62B	622.5	625.0	62D	627.5	630.0

Table 9. Dominant Wavelength Ranks for Green, Ta = 25°C, RH60%, IF=1000mA

Dominant Wavelength (nm)			Dominant Wavelength (nm)		
Code	Min	Max	Code	Min	Max
52A	520.0	522.5	52C	525.0	527.5
52B	522.5	525.0	52D	527.5	530.0

Table 10. Dominant Wavelength Ranks for Blue, Ta = 25°C, RH60%, IF=1000mA

Dominant Wavelength (nm)			Dominant Wavelength (nm)		
Code	Min	Max	Code	Min	Max
45A	450.0	452.5	45C	455.0	457.5
45B	452.5	455.0	45D	457.5	460.0

Table 11. Forward Voltage Ranks , Ta = 25°C, RH60%, IF=1000mA

Forward Voltage Ranks(V)			Forward Voltage Ranks(V)		
Code	Min	Max	Code	Min	Max
BA8	1.8	2.0	BB6	2.6	2.8
BB0	2.0	2.2	BB8	2.8	3.0
BB2	2.2	2.4	BC0	3.0	3.2
BB4	2.4	2.6	BC2	3.2	3.4

Typical Characteristics Curve

Fig 1. Color Spectrum For RGB, IF=1000mA,Ta = 25°C, RH60%

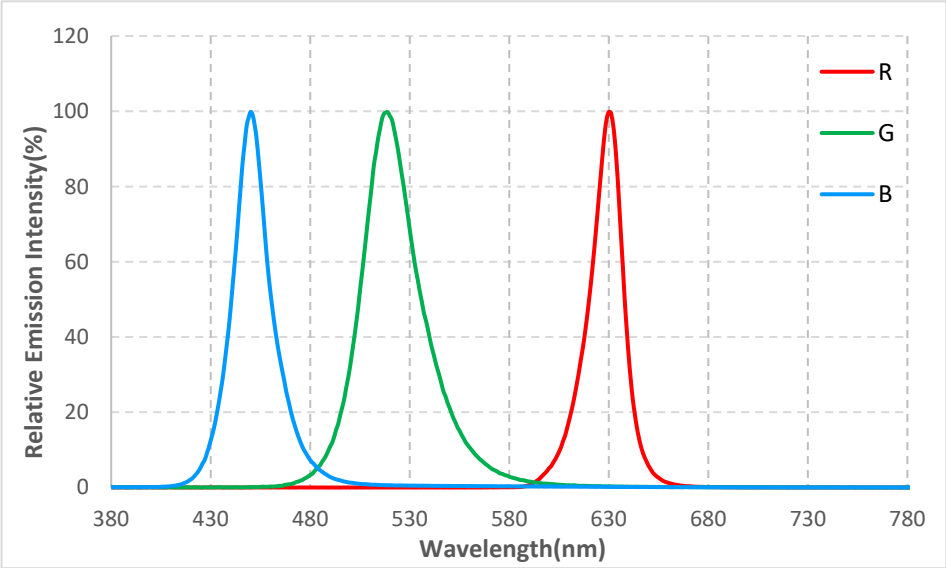


Fig 2. Viewing Angle Distribution , IF=1000mA,Ta = 25°C, RH60%

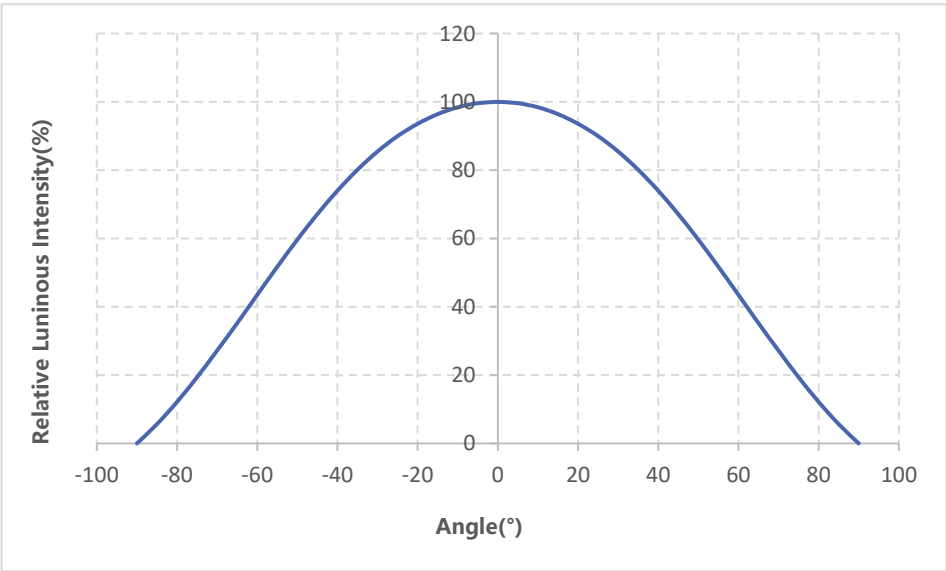


Fig 3. Relative Luminous flux VS Forward Current, $T_a = 25^{\circ}\text{C}$, RH60%

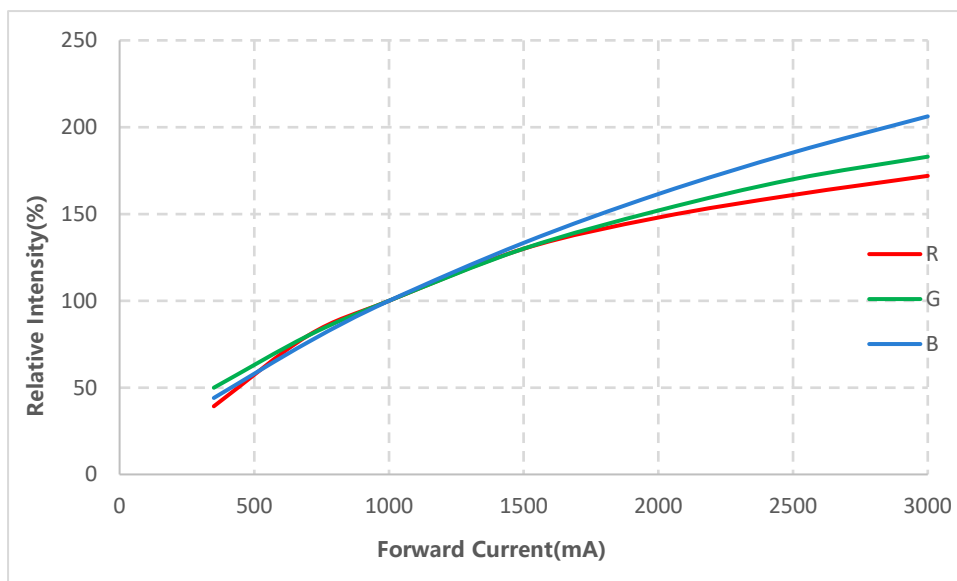


Fig 4. Forward Voltage VS Forward Current, $T_a = 25^{\circ}\text{C}$, RH60%

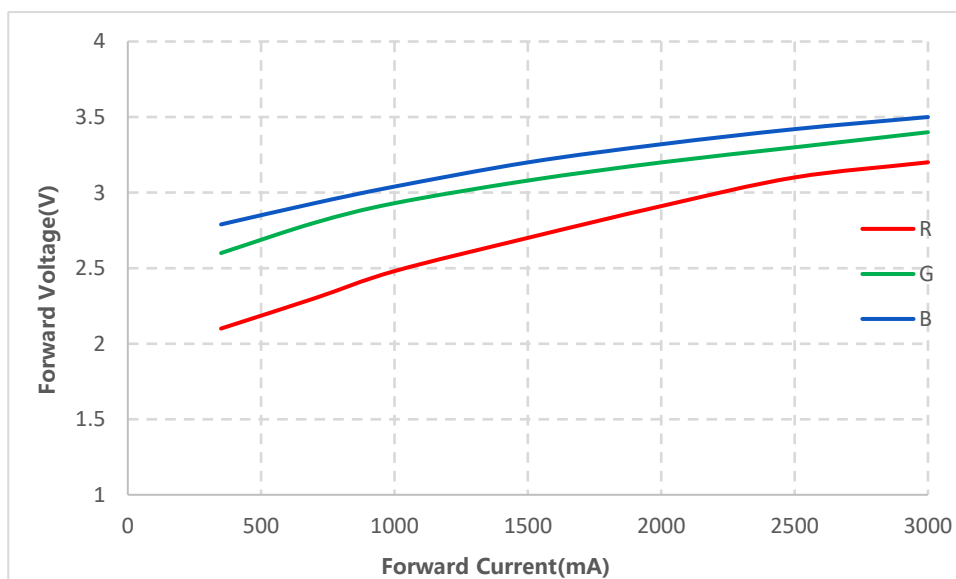


Fig 5. Relative Luminous flux VS Solder Temperature IF=1000mA, RH60%

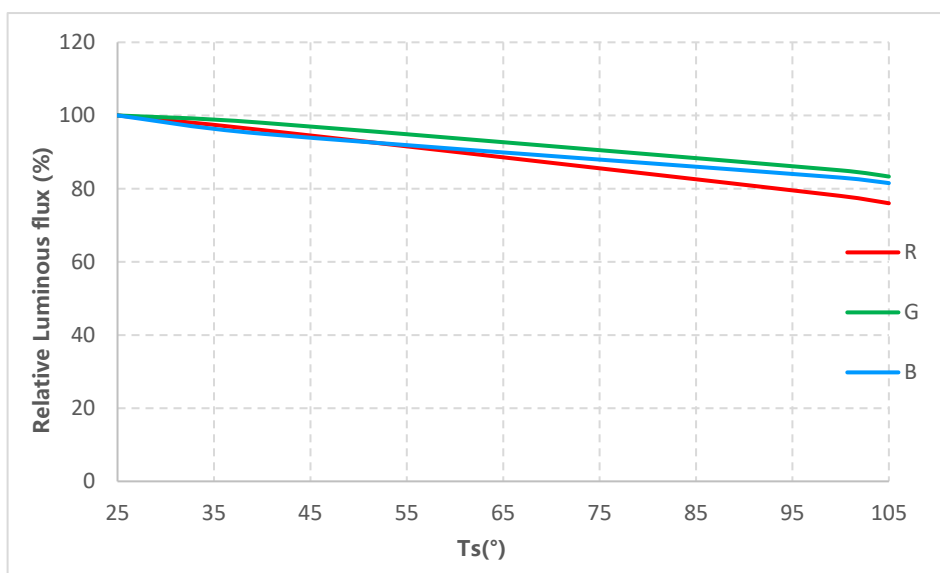
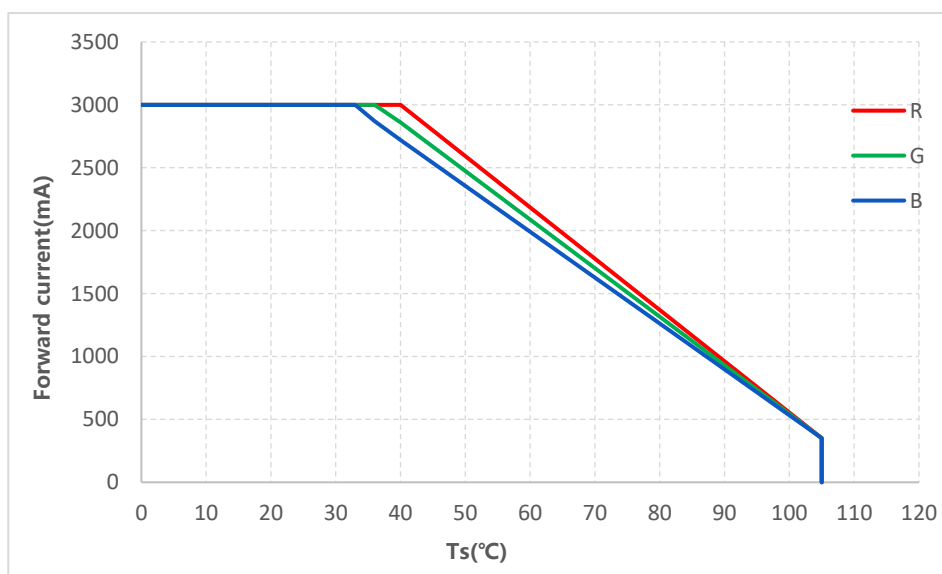


Fig 6. Forward Current VS Solder Temperature



Outline Vs. Recommended Solder Pad

Fig 7. Mechanical Dimensions

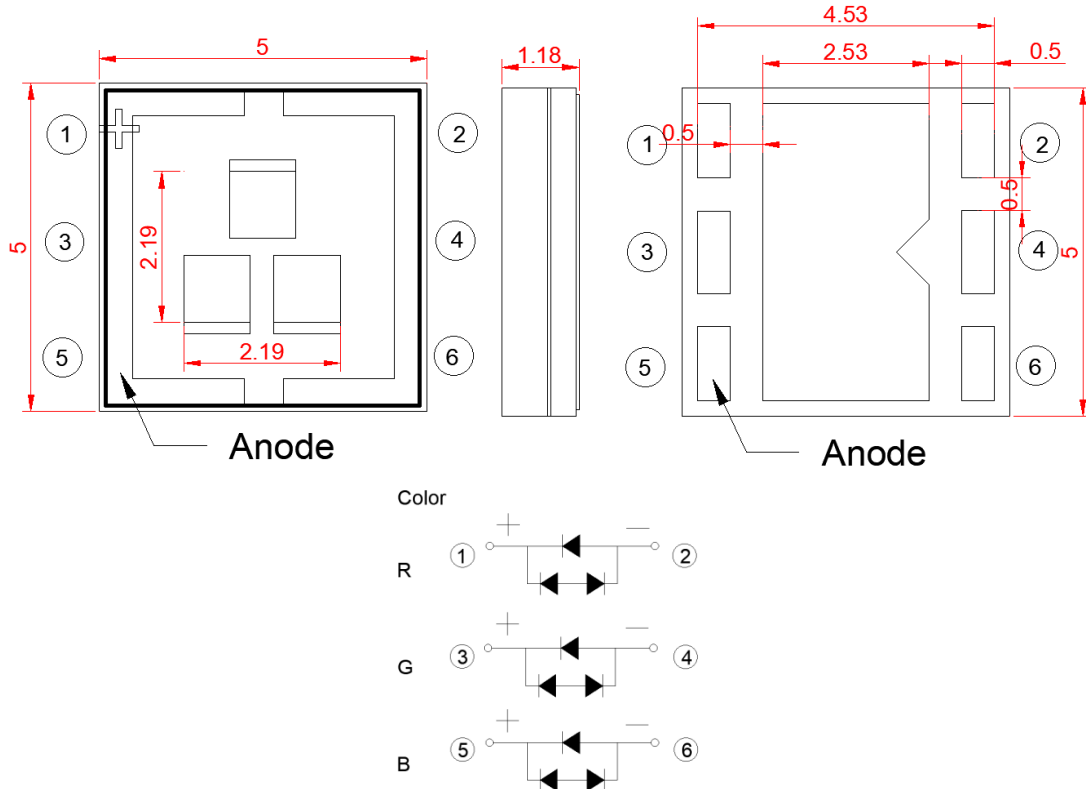
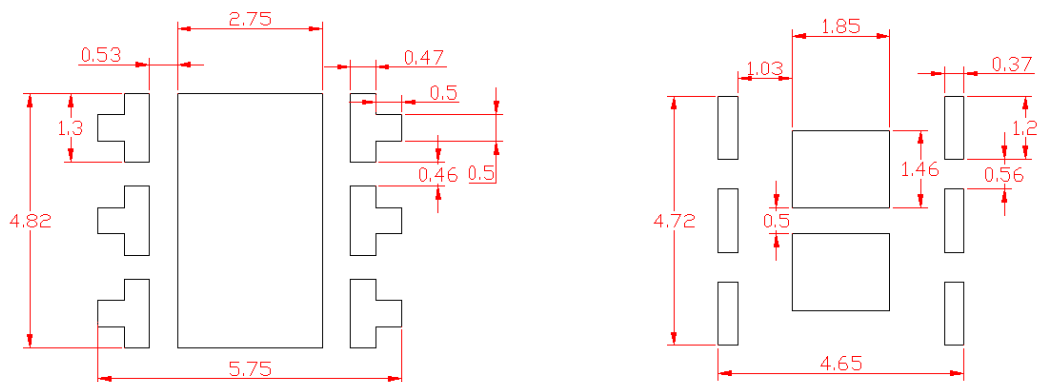


Fig 8. Recommended Solder Pad



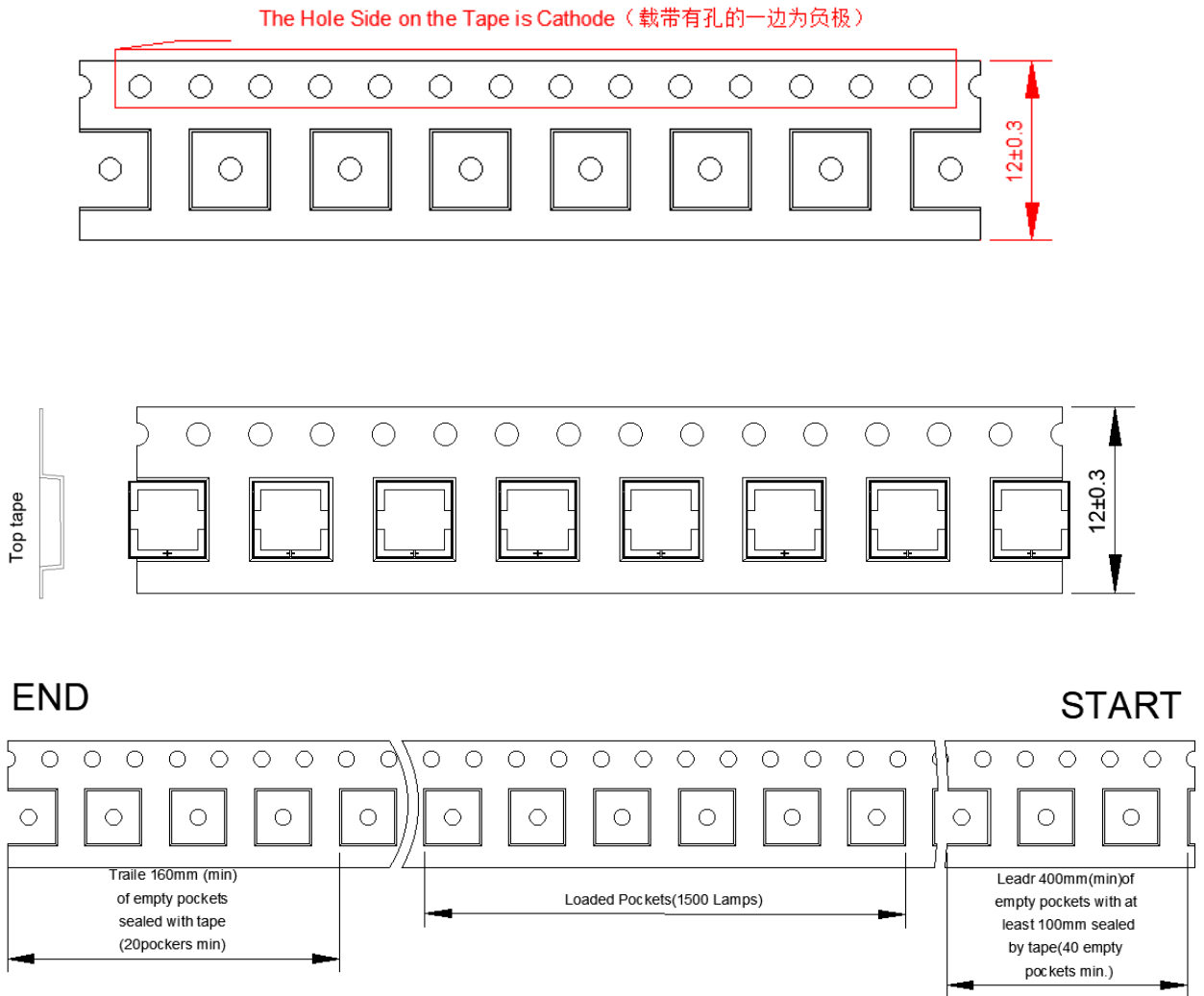
Recommended PCB Solder Pad

Recommended Stencil Pattern Stencil:0.12mm

- All dimensions are in millimeters.
- Scale: none.
- Undefined tolerance is $\pm 0.1\text{mm}$.

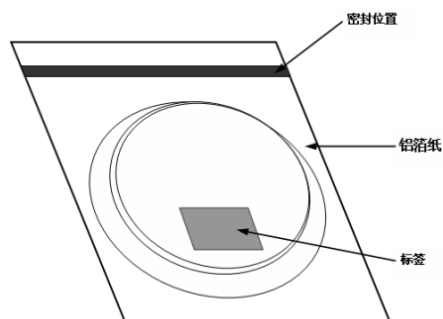
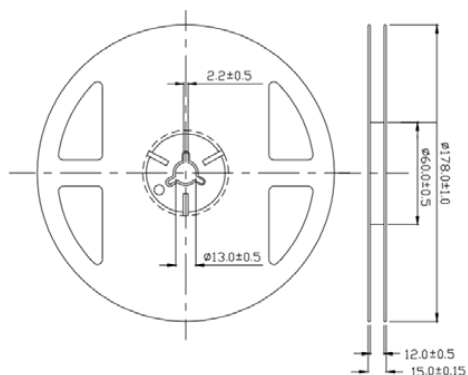
Packaging Information

Fig 23. Reel Packaging 1500pcs/Reel

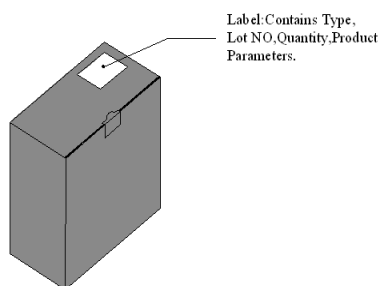
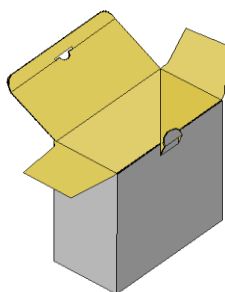


- Quantity : Max 1500pcs/Reel.
- Cumulative Tolerance : Cumulative Tolerance/10 pitches to be $\pm 0.25\text{mm}$.
- Adhesion Strength of Cover Tape Adhesion strength to be 0.1-0.7N when the cover tape is turned off from the carrier tape at the angle of 10° to the carrier tape.
- Package : P/N, Manufacturing data Code No. and Quantity to be indicated on a damp proof Package.

Reels

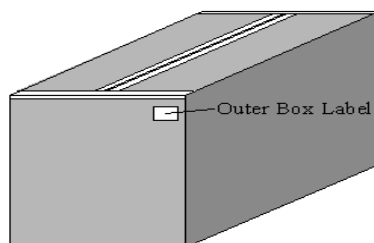
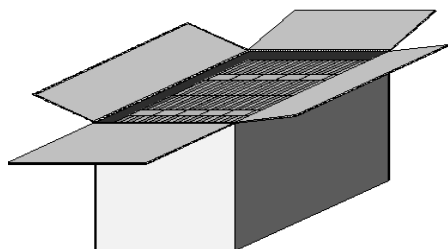


Inner Box



•Capacity 5 or 10 reels per box

Outer Box



Reflow Soldering

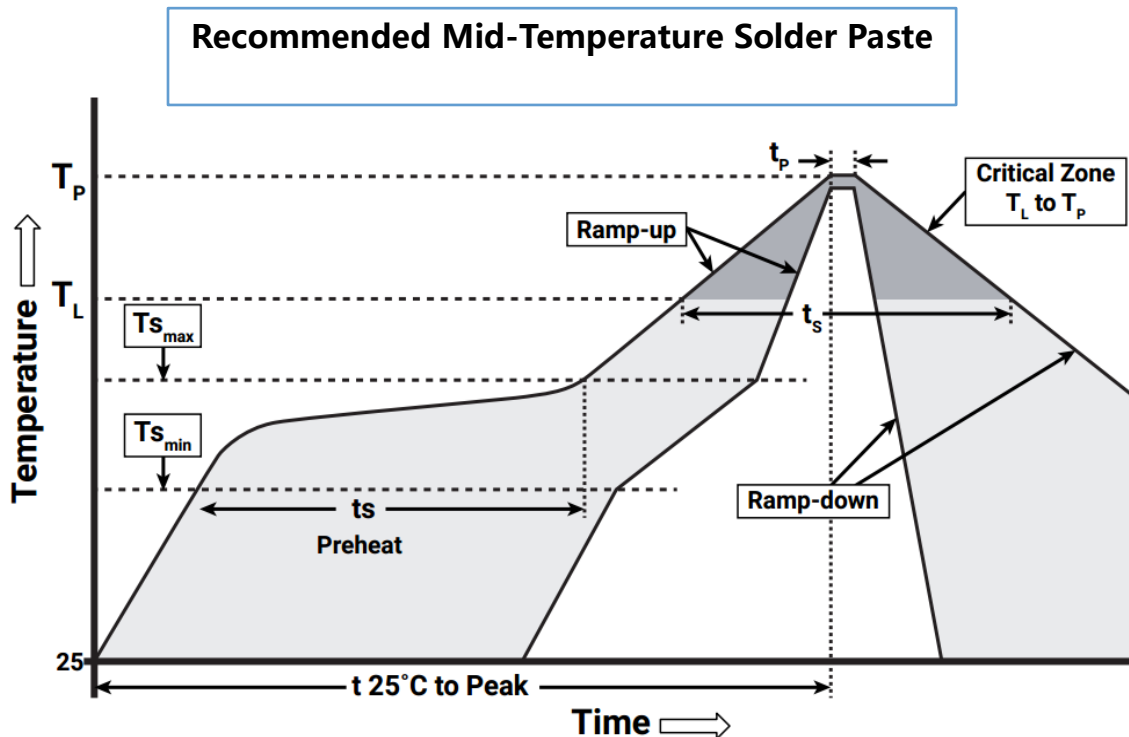


Table 13. Reflow profile characteristics

Profile Feature	Lead-Free Solder
Average Ramp-Up Rate($T_{S_{\max}}$ to T_P)	1.2°C/second
Preheat:Temperature Min($T_{S_{\min}}$)	120°C
Preheat:Temperature Max($T_{S_{\max}}$)	170°C
Preheat:Time Max($t_{S_{\min}}$ to $t_{S_{\max}}$)	65-150 seconds
Time Maintained Above:Temperature(T_L)	217°C
Time Maintained Above:Time(t_L)	45-90 seconds
Peak/Classification Temperature(T_P)	235-245°C
Time Within 5°C of Actual Peak Temperature(t_p)	20-40 seconds
Ramp-Down Rate	1-6°C/ seconds
Time 25°C to Peak Temperature	4 minutes max

Pre-caution

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, LED's will be damaged.
2. Repairs should not be done after the LED's 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 LED's during heating.
5. After soldering, do not warp the circuit board.

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. LED's 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.