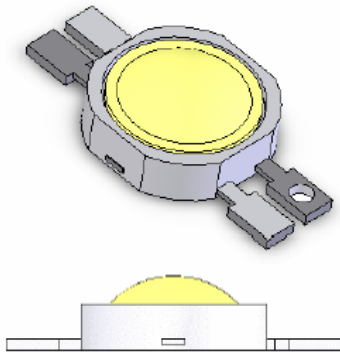
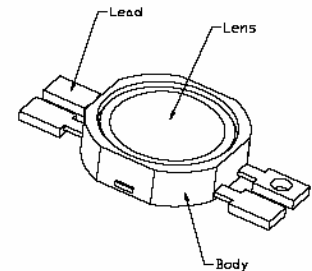
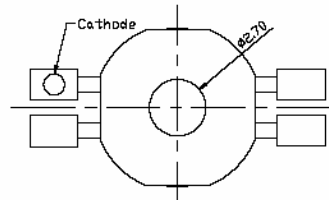
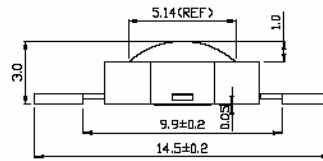
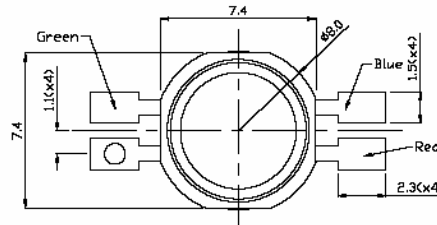


# ProLite 3W RGB SMD Emitter

## BTP3-99RGBCG-XX-X/W



### Package Dimension



### Features

- Highest Lumen Per Watt
- Long Operational Life
- White Housing
- Superior ESD Protection
- 1W per color; Total 3W per package
- Instant Light (less than 100ns)
- Compatible to Luxeon's "Lambertian"
- True SMD Emitter
- IR Reflow Soldering Process
- Lead (Pb) Free – RoHS compliant

Note: Lens is low dome profile

### Applications

- Full Color Down Light/Spot Light
- Automotive Exterior/Interior Light
- Marine/Miner's Lighting
- Portable Flashlight/ General Lighting

Tolerance: ± see spec Unit: mm

### Optical Characteristics at $T_J=25^\circ\text{C}$ , $I_F=350\text{mA}$ each color

PART NUMBER	Emitting Color	LED Chip Material	Lens Color	Wavelength (nm)		Drive Voltage @ 350mA	Luminous Flux (lm) @350mA	VIEW ANGLE $2\theta_{1/2}$ (deg)
				CCT (K) Range				
				Min	Max	Typ.	Typ.	
BTP3-99RGBCG-XX-X/W	Normal Red	AllnGaP	Water Clear	615	645	2.20V	30 lm	140
	Green	AllnGaN		520	550	3.55V	30 lm	
	Blue			460	485	3.55V	10 lm	

#### Notes:

- 1) Picture for illustration purpose only. Please refer to outline dimension for actual package size.
- 2) Flux is measured with the accuracy of  $\pm 15\%$ . Please refer to Flux Selection Guide
- 3) CCT is measured with the accuracy of  $\pm 400\text{K}$ . Please refer to CCT Selection Guide
- 4)  $V_F$  is measured with the accuracy of  $\pm 0.15\text{V}$ . Please refer to  $V_F$  Selection Guide

**Absolute Maximum Ratings at T<sub>J</sub>=25°C**

Parameter	Red	Blue/Green
Power Dissipation (W)	1.00	1.22
DC Forward Current (mA) <sup>[1]</sup>	350	350
Peak Pulsed Forward Current (mA) <sup>[4]</sup>	500	500
Average Forward Current (mA)	350	
Reverse Voltage (V)	5	
Reverse Current (uA)	50	
ESD Sensitivity (V) <sup>[2]</sup>	16,000	
LED Junction Temperature at 350mA (°C) <sup>[3]</sup>	120	135
Storage Temperature (°C)	-40 to +105	
Operating Temperature (°C)	-40 to +105	
Lead Soldering Temperature (°C) <sup>[4]</sup>	260°C for 5 seconds max	

**Application Notes:**

1. Proper forward current must be observed to maintain the junction temperature below maximum rating
2. Although all products listed are class one ESD protection (+/- 16KV by HBM mode), care must be fully taken when handling products
3. Specification is subjected to change for improvements without notice.
4. Test conditions: tp≤10us, duty cycle = 0.005
5. CAUTION: When lighting up, the emitter will become very hot if it is not attached to a heat sink. Please provide proper heat management to prevent damage to the emitter.



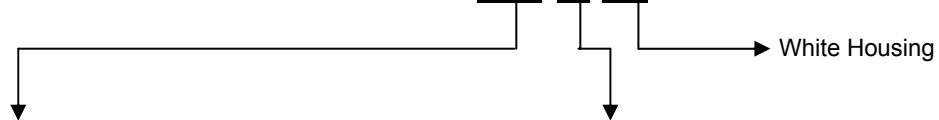
**WARNING**

This range of LEDs is produced with die having a high radiant flux. Care must be taken when viewing the product at close range as the light may be intense enough to cause damage to the human eye.

**Note:** Industry standard procedures regarding static must be observed when handling this product.

CCT, Flux and  $V_F$  Selection Guide (@ $T_J=25^\circ\text{C}$ ,  $I_F=350\text{mA}$ )

**BTP3-99RGBCG-XX-X/W**



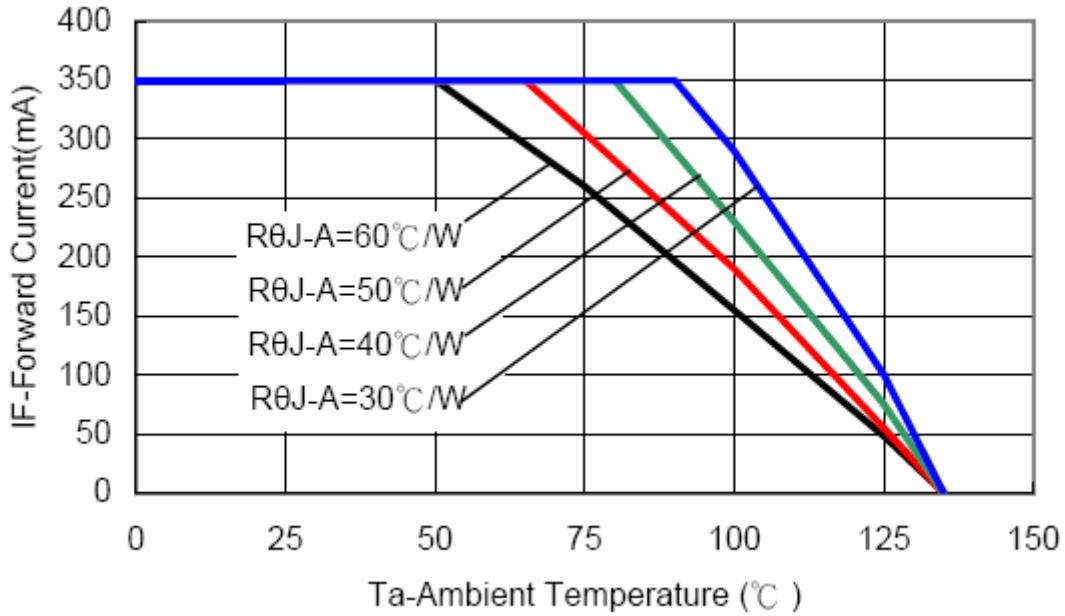
**Wavelength Ranks Selection**

Color	Bin	$\lambda_D(\text{nm})$	
		Min	Max
Blue	<b>B5</b>	460	465
	<b>B6</b>	465	470
	<b>B7</b>	470	475
	<b>B8</b>	475	480
	<b>XX</b>	460 – 475	
Green	<b>G7</b>	520	525
	<b>G8</b>	525	530
	<b>G9</b>	530	535
	<b>G10</b>	535	540
	<b>XX</b>	520 – 540	
Red	<b>XX</b>	615	645

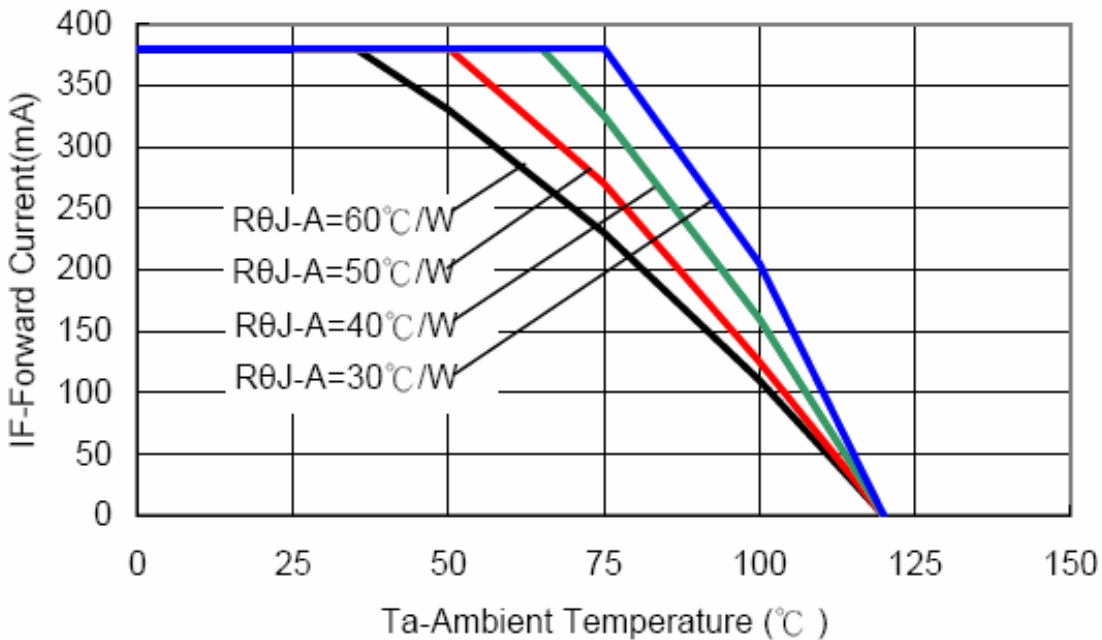
**Flux Ranks Selection**

Color	Bin	Flux (lumens)
Blue	<b>K</b>	8~10
	<b>L</b>	10~14
	<b>M</b>	14~18
	<b>X</b>	Default Full Range
Red Green	<b>P</b>	23~30
	<b>Q</b>	30~39
	<b>R</b>	39~50
	<b>X</b>	Default Full Range

Typical Electro-Optical Characteristics Curves



**Fig. 1 Forward Current vs Ambient Temperature (Green, and Blue)**



**Fig. 2 Forward Current vs Ambient Temperature (Red)**

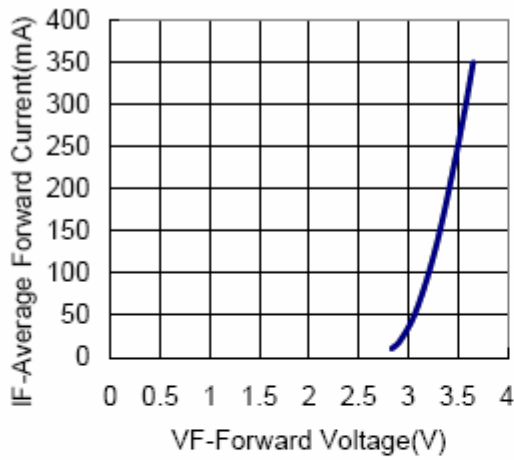


Fig 3a. Forward Current vs. Forward Voltage for Blue and Green.

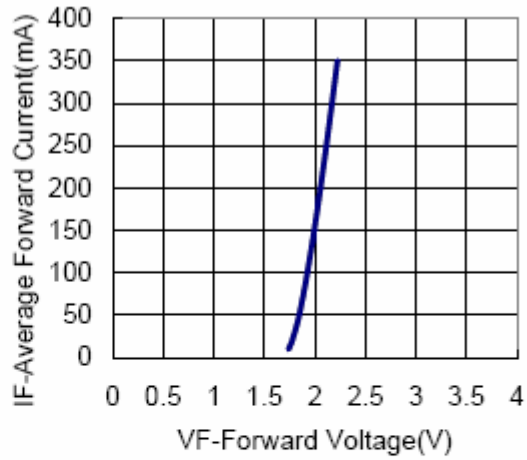


Fig 3b. Forward Current vs. Forward Voltage for Red.

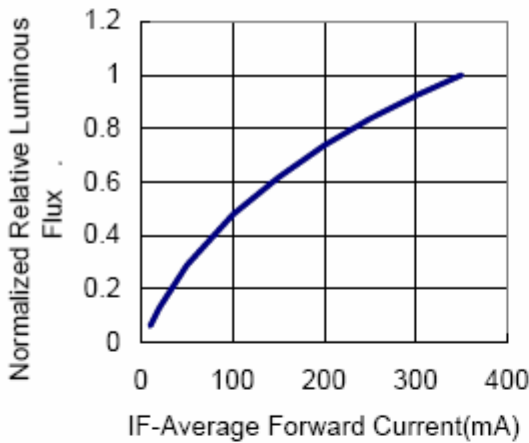


Fig 4a. Relative Luminous Flux vs. Forward Current for Blue and Green at  $T_j=25^\circ\text{C}$  maintained.

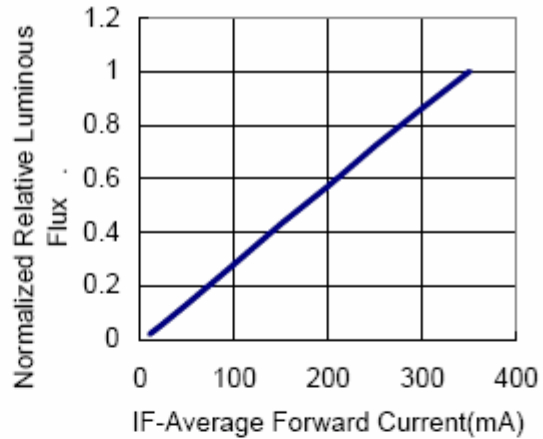
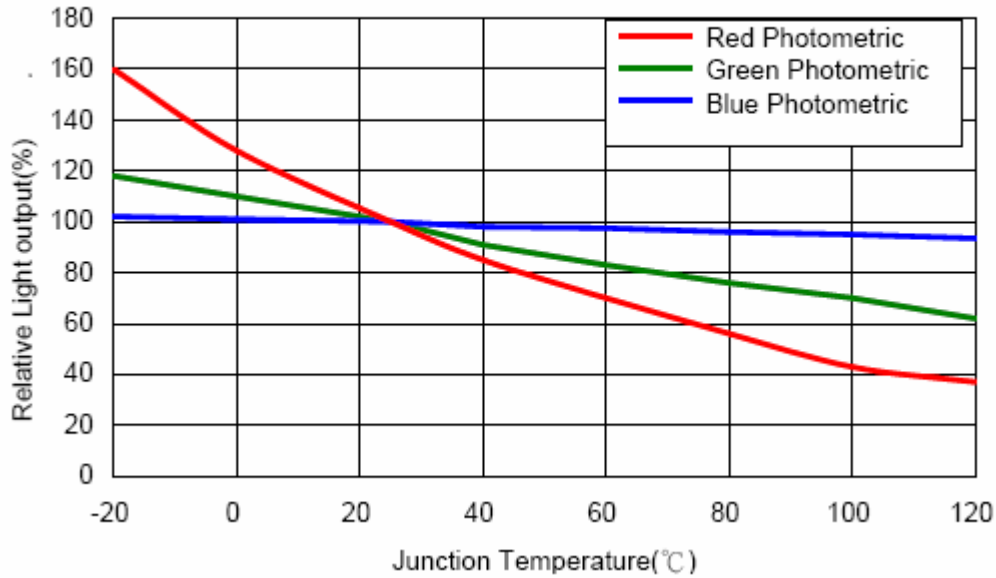
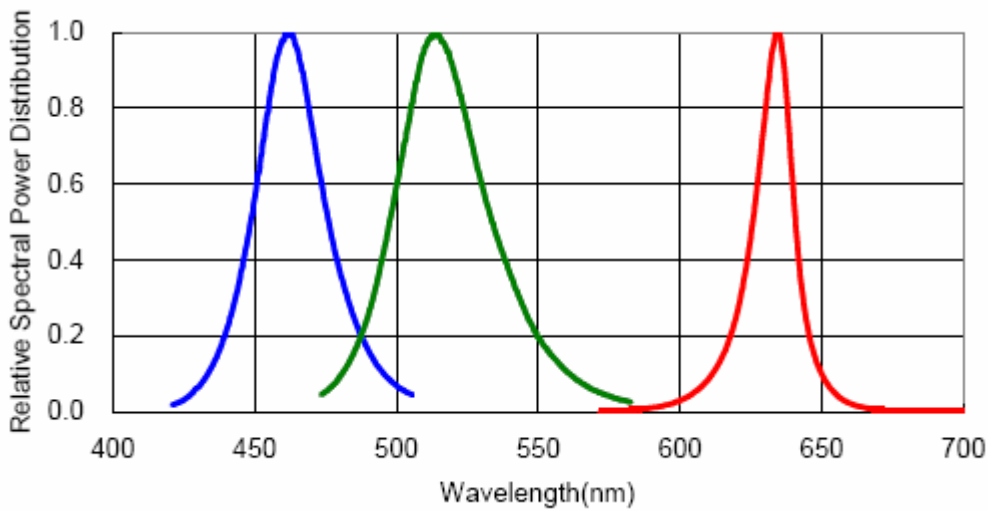


Fig 4b. Relative Luminous Flux vs. Forward Current for Red at  $T_j=25^\circ\text{C}$  maintained.

Typical Electro-Optical Characteristics Curves

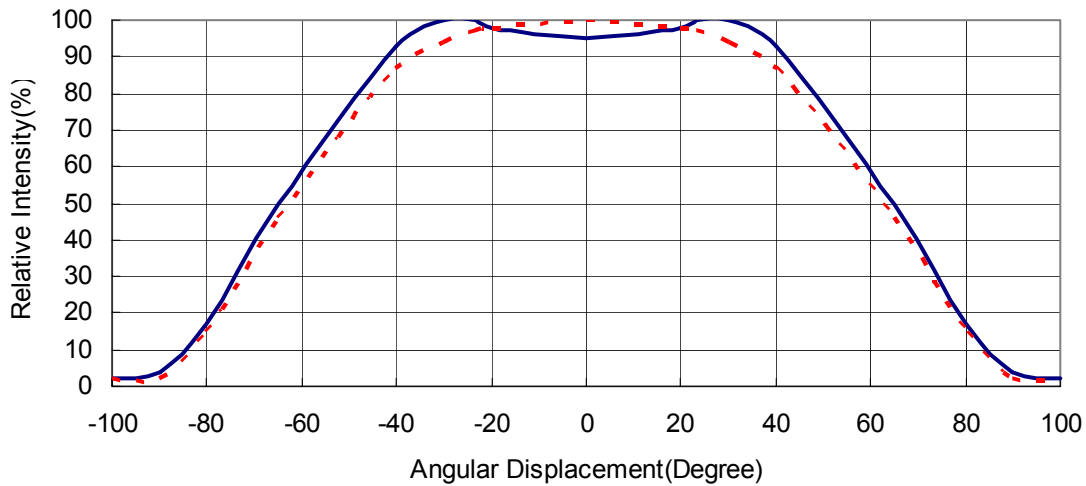


**Fig. 5a Relative Light Output vs Junction Temperature**



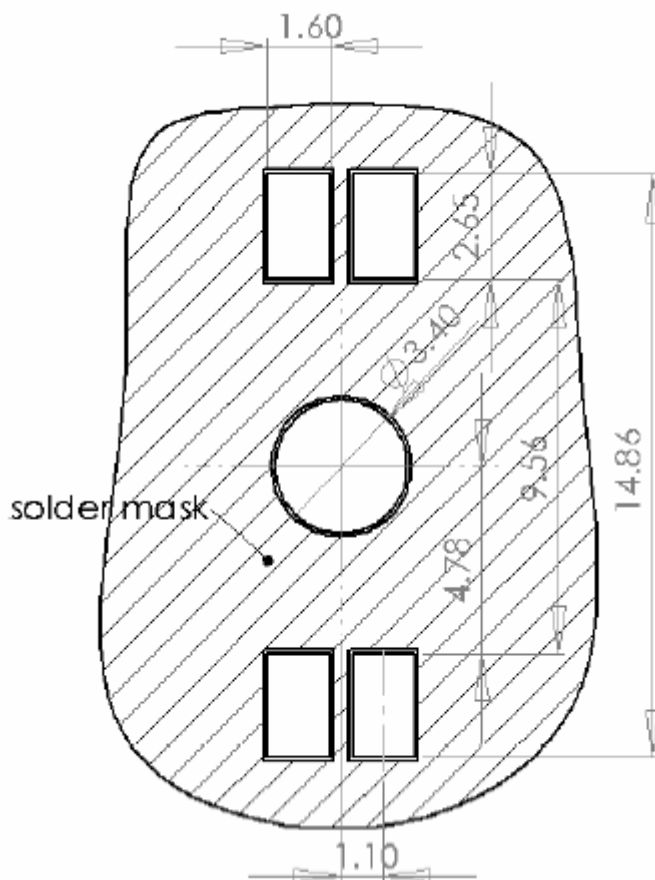
**Fig. 5b Relative Intensity vs Wavelength**

Typical Electro-Optical Characteristics Curves



**Fig. 6 Typical Radiation Pattern**

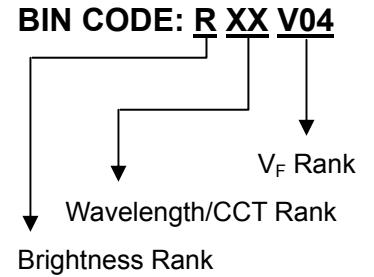
Recommended Solder Pads Layout



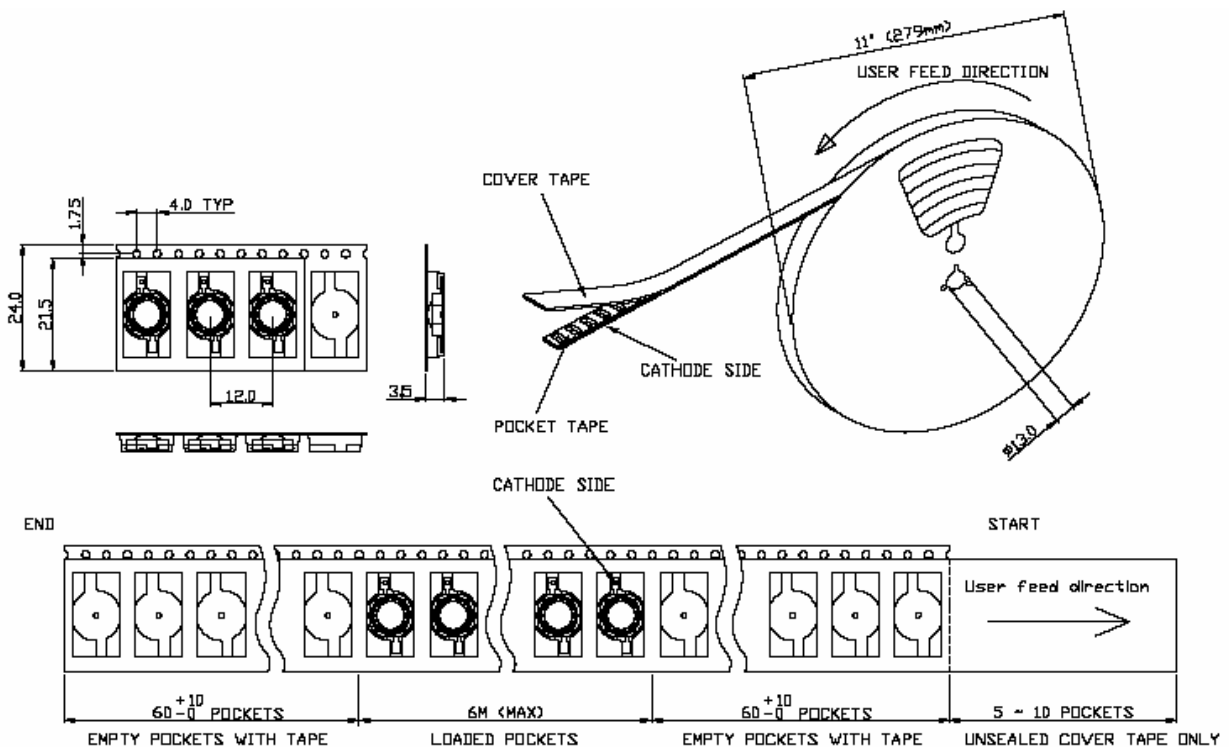
**Fig. 7 Recommended Solder Pads Dimension**

Product Barcode Label

CUST PO: SAMPLE		<b>Brilliance Technologies</b> <i>Lighting Up Your World with Brilliance Technologies</i>	
			
MFG P/N: BTP-89YECG-XX-X/W			
			
QUANTITY: 500	LOT #: 20050128P		
			
BIN CODE: RXXV04	COUNTRY OF ORIGIN: CHINA		
			
www.brilliance-tech.com			



Tape and Reel Packaging Dimension



Note: The emitter should be picked up by the body (not lens) during placement. The inner diameter of the pick-up collect should be greater or equal to 6.5mm



Recommended IR Reflow Conditions

Reflow Soldering		
	Lead Solder	Lead-Free Solder
Pre-heat	120~150°C	180~200°C
Pre-heat time	120 sec Max	120 sec Max
Peak Temperature	240°C Max	260°C Max
Soldering Time	10 sec Max	10 sec Max
Conditions	Refer to Temperature profile A	Refer to Temperature profile B (N <sub>2</sub> reflow is recommended)

**Temperature Profile A (Surface of MCPCB)**

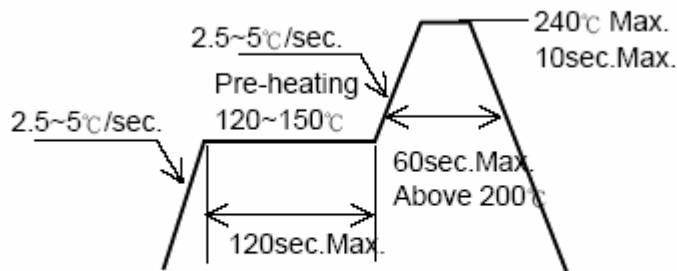


Figure 8a. Lead Solder Temperature Profile

**Temperature Profile B (Surface of MCPCB)**

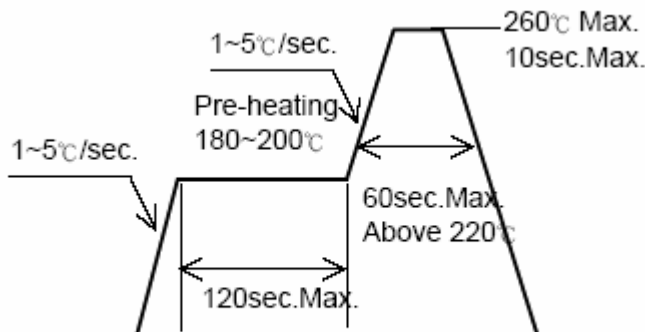


Figure 8b. Lead-free Solder Temperature Profile

## IR Reflow Process Notes

- Occasionally there is a brightness decrease due to the influence of heat or ambient during air reflow. It is recommended that customer use nitrogen reflow method.
- Repairing should not be done after the LEDs have been soldered. When repairing is required, double-head soldering iron should be used. Customer should confirm whether the characteristics of the LEDs will or will not be damaged before carrying out the repair.
- Reflow soldering should not be done more than two times
- When soldering, do not put stress on the LEDs during heating.
- After soldering, do not warp the circuit board.

## Manual Hand Soldering Notes

- For prototype builds or small production runs, it is possible to place and solder the emitters.
- It is recommended to hand solder the leads and slug with a solder tip temperature of 230°C for less than 10 seconds. This profile ensures a junction temperature below the maximum of 120°C, avoiding damage to the emitter or to the MCPCB dielectric layer. Damage dielectric layer can cause a short circuit in the array.

## Other Important Notes:

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- Brilliance Technologies continually improves the quality of our products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the customer, when using Brilliance Technologies products, to comply with the standard of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such Brilliance Technologies products cause loss of human life, bodily injury or damage to property.
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