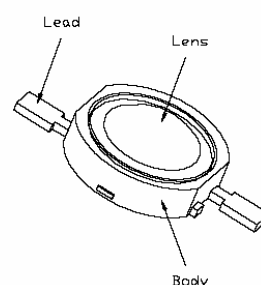
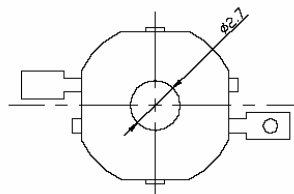
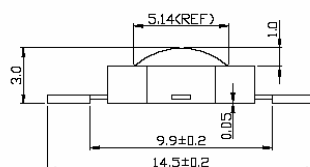
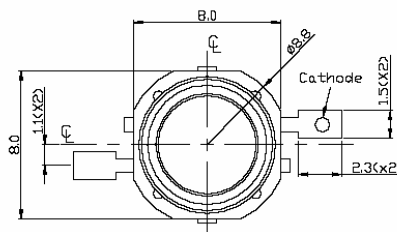


# ProLite 3W SMD Emitter

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



### Package Dimension



### Features

- Highest Lumen Per Watt
- Long Operational Life
- White Housing
- Superior ESD Protection
- Instant Light (less than 100ns)
- Compatible to Luxeon's "Lambertian"
- True SMD Emitter
- IR Reflow Soldering Process

### Applications

- Accent Light/Down Light/Spot Light
- Automotive Exterior/Interior Light
- Large Area LCD Backlights
- Marine/Miner's Lighting
- Portable Flashlight/ General Lighting

Note: Lens is low dome profile

Tolerance: ± see spec

Unit: mm

### Optical Characteristics at $T_J=25^{\circ}\text{C}$ , $I_F=700\text{mA}$

PART NUMBER	Emitting Color	LED Chip Material	Lens Color	Wavelength (nm)		Drive Voltage	Luminous Flux (lm)	VIEW ANGLE 2θ <sub>1/2</sub> (deg)
				CCT (K) Range		@ 700mA	@700mA	
				Min	Max	Typ.	Typ.	
BTP3-99NRCG-XX-X/W	Normal Red	AlInGaP	Water Clear	620	635	2.40V	60 lm	140
BTP3-99AMCG-XX-X/W	Amber		Water Clear	610	620	2.40V	72 lm	
BTP3-99YECG-XX-X/W	Yellow		Water Clear	585	595	2.40V	60 lm	
BTP3-99BLCG-XX-X/W	Blue	AlInGaN	Water Clear	460	475	3.50V	20 lm	
BTP3-99PGCG-XX-X/W	Green		Water Clear	520	540	3.50V	60 lm	
BTP3-99WWCG-XX-X/W	Warm White		Water Clear	2800K	3800K	3.50V	40 lm	
BTP3-99WHCG-XX-X/W	White		Water Clear	5000K	8000K	3.50V	60 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

## ProLite 3W SMD Emitter

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

Absolute Maximum Ratings at  $T_J=25^{\circ}\text{C}$

Parameter	Red/Amber/Yellow	White/Blue/Green
Power Dissipation (W)	2.17	2.80
DC Forward Current (mA) <sup>[1]</sup>	700	700
Peak Pulsed Forward Current (mA) <sup>[4]</sup>	1000	1000
Average Forward Current (mA)	700	700
Reverse Voltage (V)	5	5
Reverse Current (uA)	50	50
ESD Sensitivity (V) <sup>[2]</sup>	16,000	16,000
LED Junction Temperature at 350mA ( $^{\circ}\text{C}$ ) <sup>[3]</sup>	120	135
Thermal Resistance Junction to Board ( $^{\circ}\text{C}/\text{W}$ )	13	13
Temperature Coefficient of $V_F$ (mV/ $^{\circ}\text{C}$ )	-2	-2
Storage Temperature ( $^{\circ}\text{C}$ )	-40 to +105	-40 to +105
Operating Temperature ( $^{\circ}\text{C}$ )	-40 to +105	-40 to +105
Lead Soldering Temperature ( $^{\circ}\text{C}$ ) <sup>[4]</sup>	260 $^{\circ}\text{C}$ for 5 seconds max	260 $^{\circ}\text{C}$ 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:  $t_p \leq 10\mu\text{s}$ , 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.

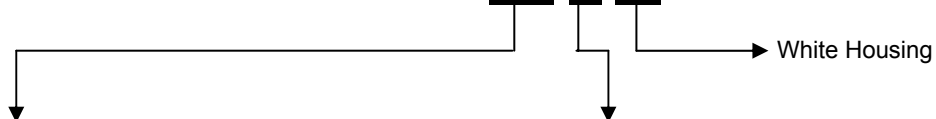
**Note:** Industry standard procedures regarding static must be observed when handling this product.

# ProLite 3W SMD Emitter

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

CCT, Flux and  $V_F$  Selection Guide (@ $T_J=25^\circ\text{C}$ ,  $I_F=700\text{mA}$ )

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



#### Wavelength Ranks Selection

Color	Bin	$\lambda_D(\text{nm})$	
		Min	Max
Blue	B5	460	465
	B6	465	470
	B7	470	475
	XX	460 – 475	
Green	G6	515	520
	G7	520	525
	G8	525	530
	G9	530	535
	XX	515 – 535	
Red	XX	620 – 630	
Amber	XX	610 – 620	
Yellow	XX	585 – 595	

#### Flux Ranks Selection

Color	Bin	Flux (lumens)
Blue	K	8~10
	L	10~14
	M	14~18
	X	Default Full Range
Red Amber Yellow Green White	Q	30~39
	R	39~50
	S	50~65
	T	65~85
	U	85~111
	X	Default Full Range

#### CCT Ranks Selection

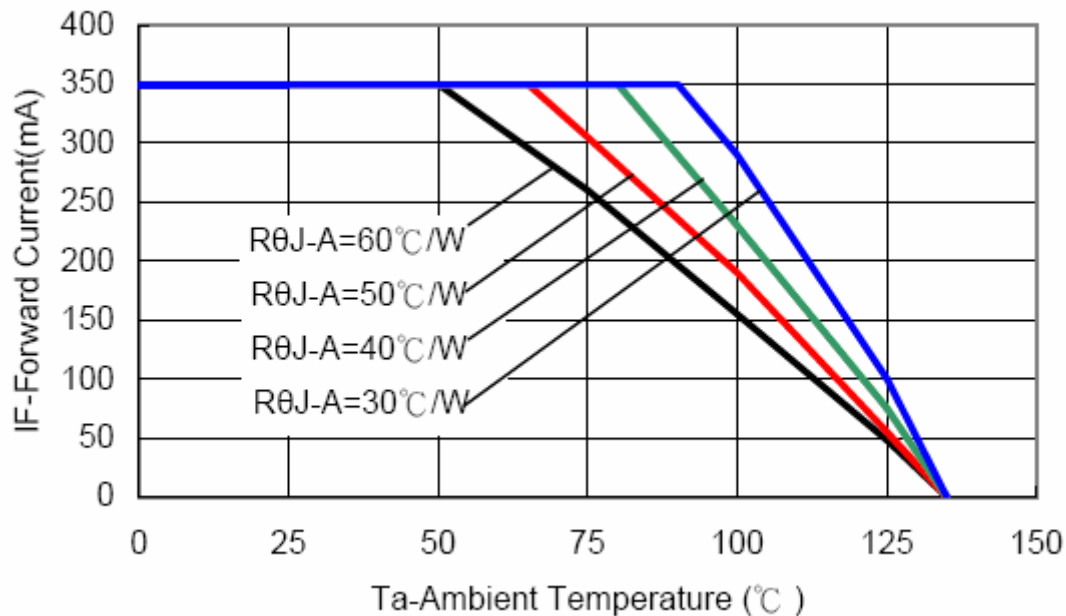
Color Temp	Bin	CCT(K)	
		Min	Max
Warm White	00	2800	3300
	01	3300	3800
	XX	2800K – 3800K	
White	02	5000	6000
	03	6000	7000
	04	7000	8000
	XX	5000K – 8000K	

#### $V_F$ Ranks Selection

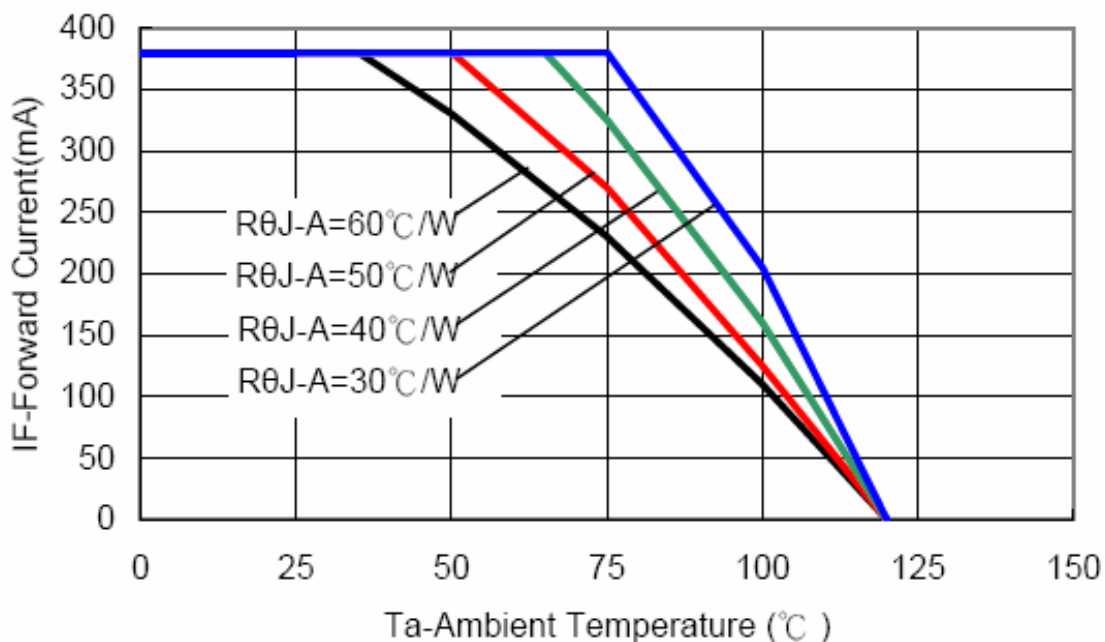
Color	Bin	$V_F$ (V)	
		Min	Max
Red Amber Yellow	V04	2.0	2.2
	V05	2.2	2.4
	V06	2.4	2.6
	V07	2.6	2.8
	VXX(Full)	2.0~2.8	
White Blue Green	V08	2.8	3.0
	V09	3.0	3.2
	V10	3.2	3.4
	V11	3.4	3.6
	V12	3.6	3.8
	VXX(Full)	2.8~3.8	

(Please specify on order, otherwise, default full range of  $V_F$ )

## Typical Electro-Optical Characteristics Curves



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



**Fig. 2 Forward Current vs Ambient Temperature (Red, Amber and Yellow)**

## ProLite 3W SMD Emitter

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

### Forward Current Characteristics, $T_j=25^\circ\text{C}$

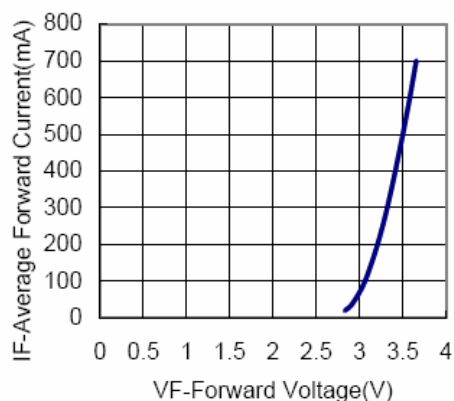


Fig 3a. Forward Current vs. Forward Voltage for White, Warm White, Blue and Green.

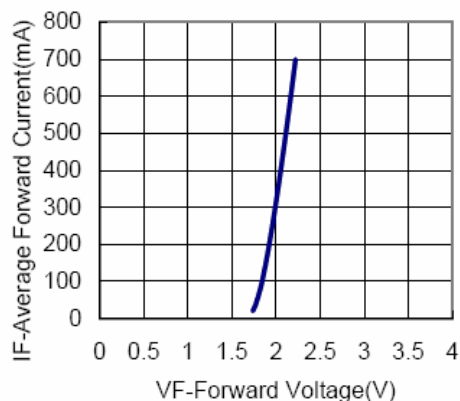


Fig 3b. Forward Current vs. Forward Voltage for Amber, Red-Orange and Red.

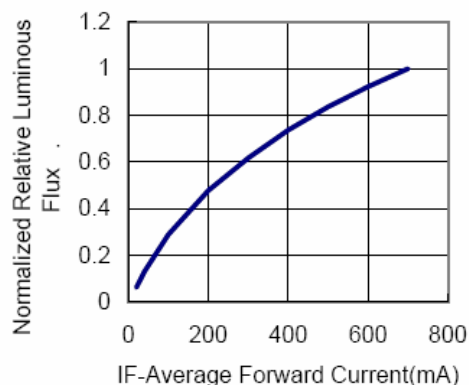


Fig 4a. Relative Luminous Flux vs. Forward Current for White, Warm White, Blue and Green at  $T_j=25^\circ\text{C}$  maintained.

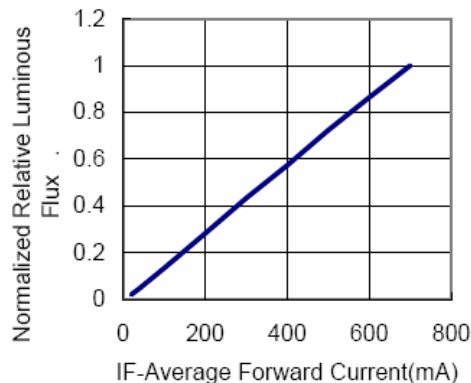
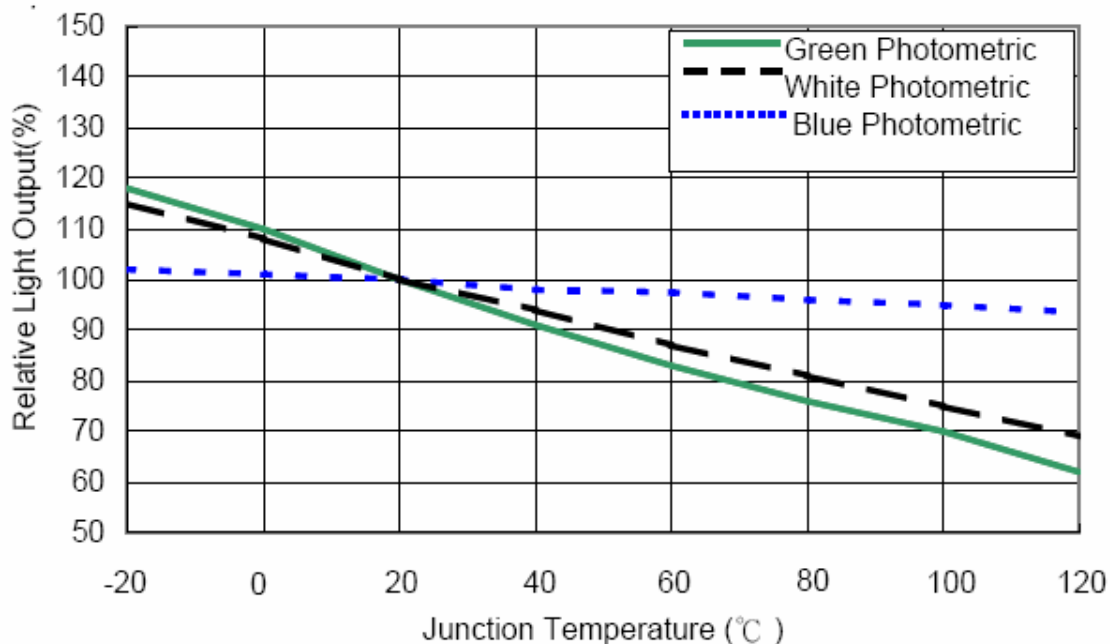
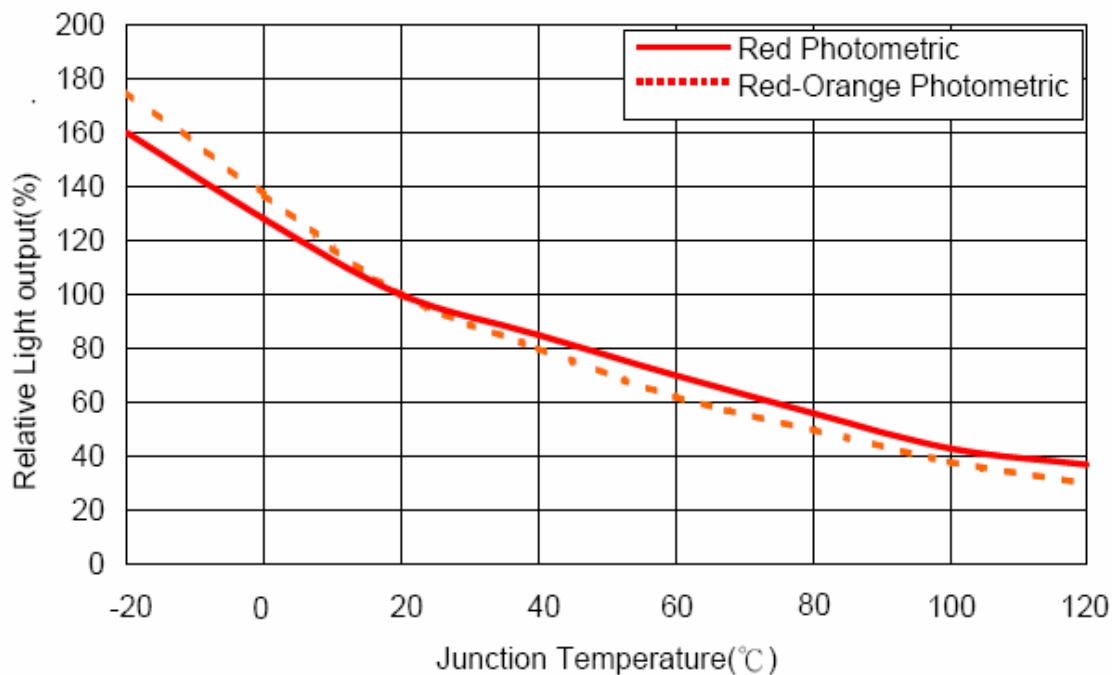


Fig 4b. Relative Luminous Flux vs. Forward Current for Amber, Red-Orange, Red at  $T_j=25^\circ\text{C}$  maintained.

## Typical Electro-Optical Characteristics Curves

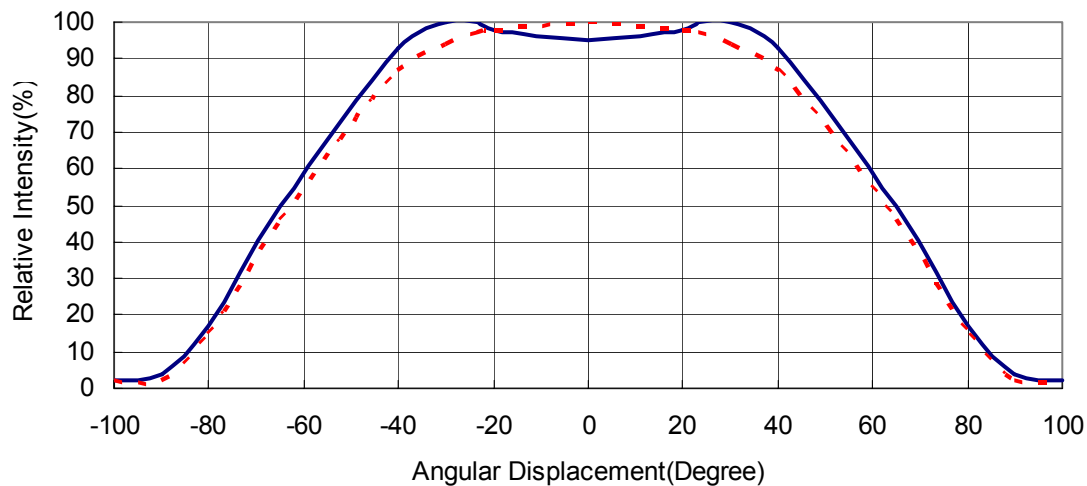


**Fig. 5a Relative Light Output vs Junction Temperature**



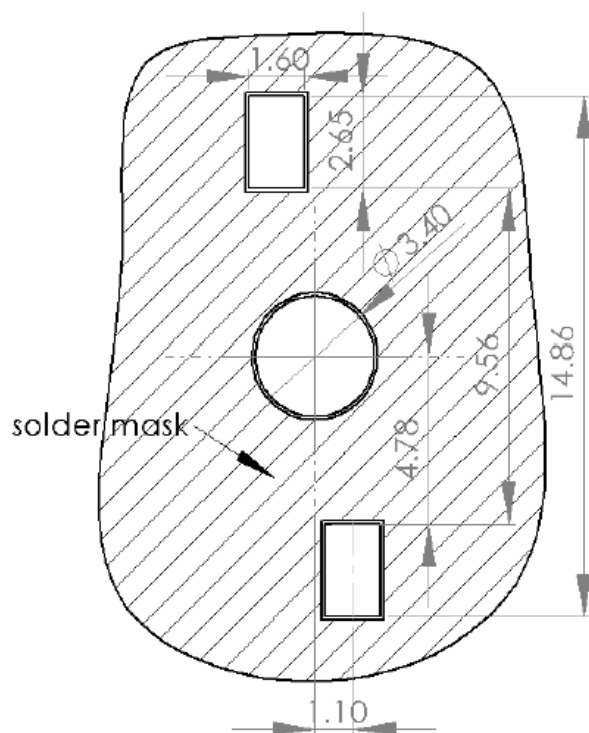
**Fig. 5b Relative Light Output vs Junction Temperature**

### Typical Electro-Optical Characteristics Curves



**Fig. 6 Typical Radiation Pattern**

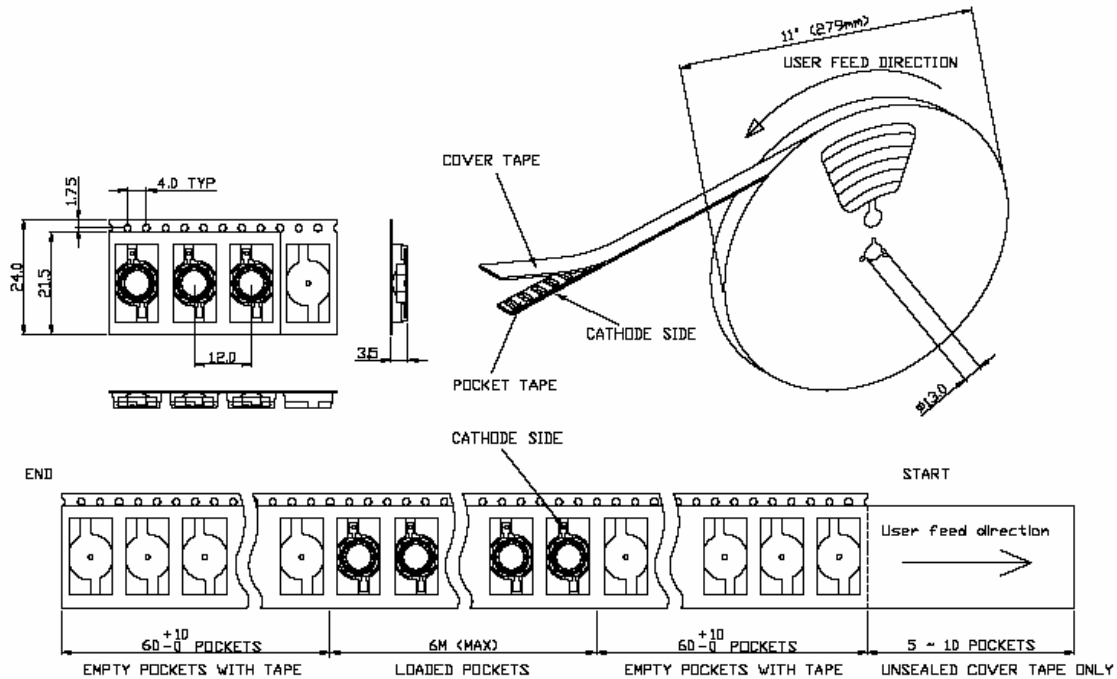
### Recommended Solder Pad Layout



**Fig. 7 Recommended Solder Pads Dimension**



## Tape and Reel Packaging Dimension



### Notes:

1. The emitters should be picked up by the body (not the lens) during placement. The inner diameter of the pick-up collet should be greater than or equal to 6.5 mm.
2. Drawing not to scale.
3. All dimensions are in millimeters.
4. All dimensions without tolerances are for reference only.



## ProLite 3W SMD Emitter

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

#### Recommended IR Reflow Conditions

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

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

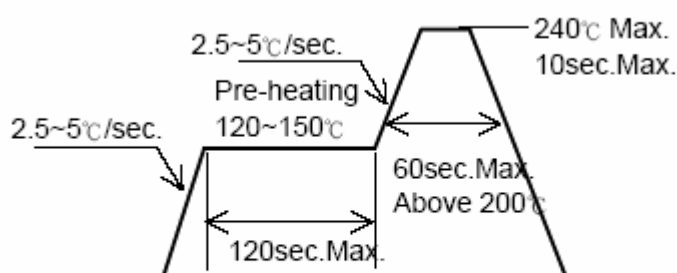


Figure 8a. Lead Solder Temperature Profile

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

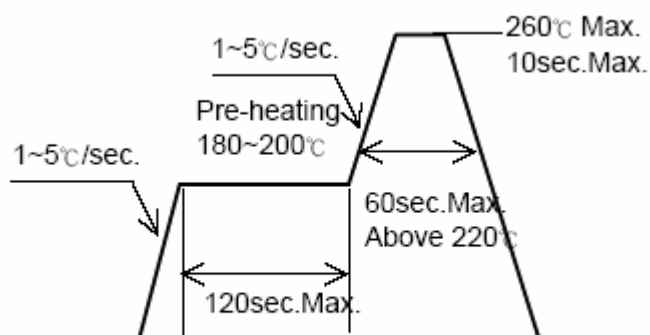


Figure 8b. Lead-free Solder Temperature Profile

## **ProLite 3W SMD Emitter**

### **BTP3-99XXCG-XX-X/W**

#### **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 to the dielectric layer can cause a short circuit in the array.

#### **Other Important Notes:**

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