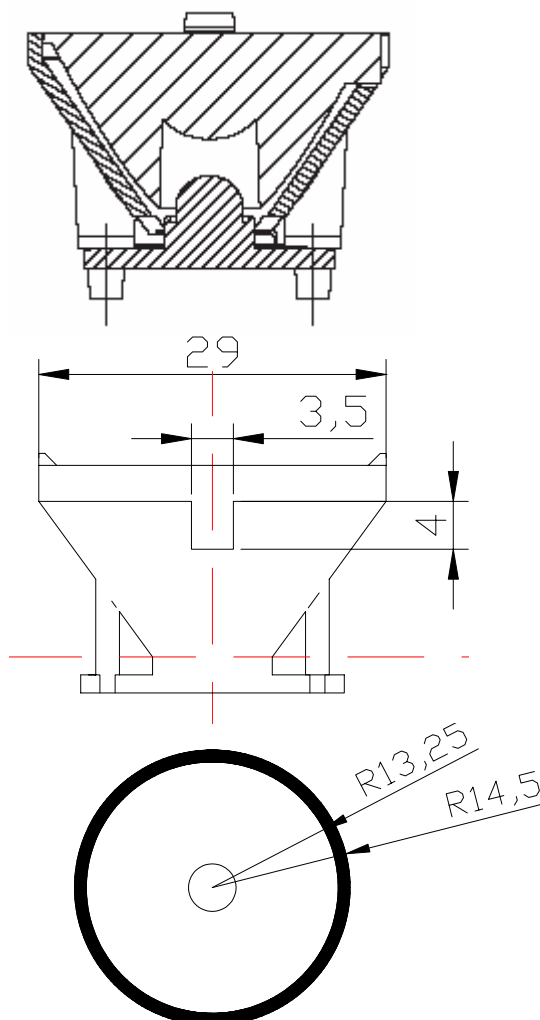




### Package Dimension



### Features

- Highest Lumen Per Watt
- Long Operational Life
- Environmentally Safe AI PCB
- White or Black Housing
- Superior ESD Protection
- Instant Light (less than 100ns)

### Applications

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

Tolerance:  $\pm$  see spec

Unit: mm

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

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)
				Min	Max			
BTM-89NRCT-XX-X/X	Normal Red	AlInGaP	Water Clear	620	630	2.20V	27 lm	$5^\circ \pm 1$
BTM-89AMCT-XX-X/X	Amber	AlInGaP		610	620	2.20V	30 lm	
BTM-89YECT-XX-X/X	Yellow	AlInGaP		585	595	2.20V	25 lm	
BTM-89BLCT-XX-X/X	Blue	AlInGaN		460	475	3.50V	7 lm	
BTM-89PGCT-XX-X/X	Green	AlInGaN		515	535	3.20V	25 lm	
BTM-89WWCT-XX-X/X	Warm White	AlInGaN		2800K	3800K	3.50V	20 lm	
BTM-89WHCT-XX-X/X	White	AlInGaN		5000K	8000K	3.50V	25 lm	

#### Notes:

- 1) Flux is measured with the accuracy of  $\pm 15\%$ . Please refer to Flux Selection Guide
- 2) CCT is measured with the accuracy of  $\pm 400\text{K}$ . Please refer to CCT Selection Guide
- 3)  $V_F$  is measured with the accuracy of  $\pm 0.15\text{V}$ . Please refer to  $V_F$  Selection Guide

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

Parameter	Red/Amber/Yellow	White/Blue/Green
Power Dissipation (W)	0.77	1.22
DC Forward Current (mA) <sup>[1]</sup>	350	350
Peak Pulsed Forward Current (mA) <sup>[4]</sup>	1000	1000
Average Forward Current (mA)	350	350
Reverse Voltage (V)	5	5
Reverse Current (uA)	50	50
ESD Sensitivity (V) <sup>[2]</sup>	2,000	2,000
LED Junction Temperature at 350mA ( $^{\circ}\text{C}$ ) <sup>[3]</sup>	125	125
Thermal Resistance Junction to Board ( $^{\circ}\text{C}/\text{W}$ )	15	15
Temperature Coefficient of $V_F$ (mV/ $^{\circ}\text{C}$ )	-2	-2
Storage Temperature ( $^{\circ}\text{C}$ )	-40 to +120	-40 to +120
Operating Temperature ( $^{\circ}\text{C}$ )	-30 to +110	-30 to +110
Lead Soldering Temperature ( $^{\circ}\text{C}$ ) <sup>[4]</sup>	240 $^{\circ}\text{C}$ for 5 seconds max	240 $^{\circ}\text{C}$ 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 (+/- 2KV 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.

**CCT, Flux and V<sub>F</sub> Selection Guide (@ I<sub>F</sub>=350mA)**
**BTM-89XXCT-XX-X/X**

White Housing (Optional: B=Black)

**Wavelength Ranks Selection**

Color	Bin	$\lambda_D$ (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	H	4.5~6
	J	6~8
	K	8~10
	X	Default Full Range
Red Amber Yellow Green White	M	14~18
	N	18~23
	P	23~30
	Q	30~39
	R	39~50
	X	Default Full Range

**CCT Ranks Selection**

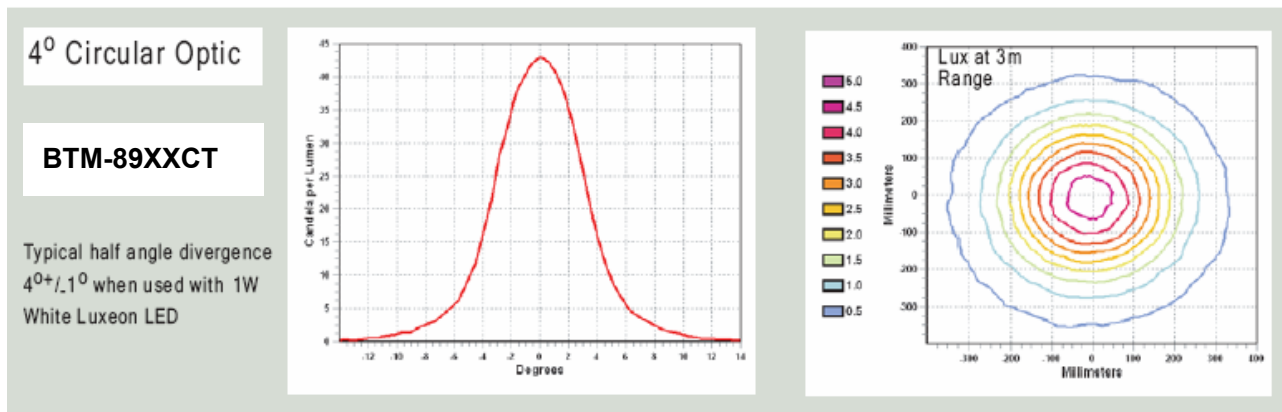
Color Temp	Bin	CCT(K)	
		Min	Max
Warm White	00	2800	3300
	01	3300	3800
	XX	2800K – 3800K	
White	02	5000	6000
	03	6000	7000
	04	7000	8000
	XX	5000K – 8000K	

**V<sub>F</sub> Ranks Selection**

Color	Bin	V <sub>F</sub> (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	

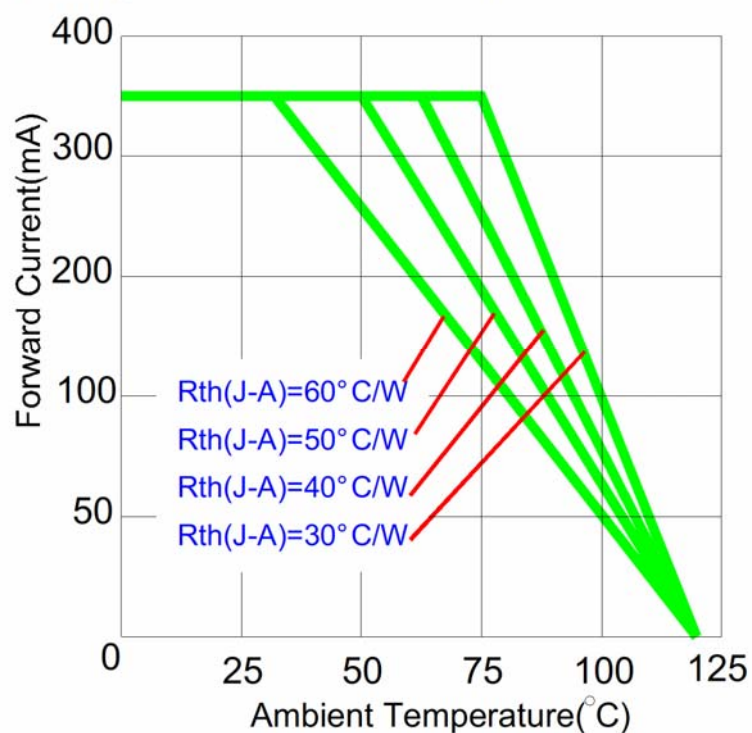
 (Please specify on order, otherwise, default full range of V<sub>F</sub>)

**Typical Radiation Pattern for 1W LED Module**



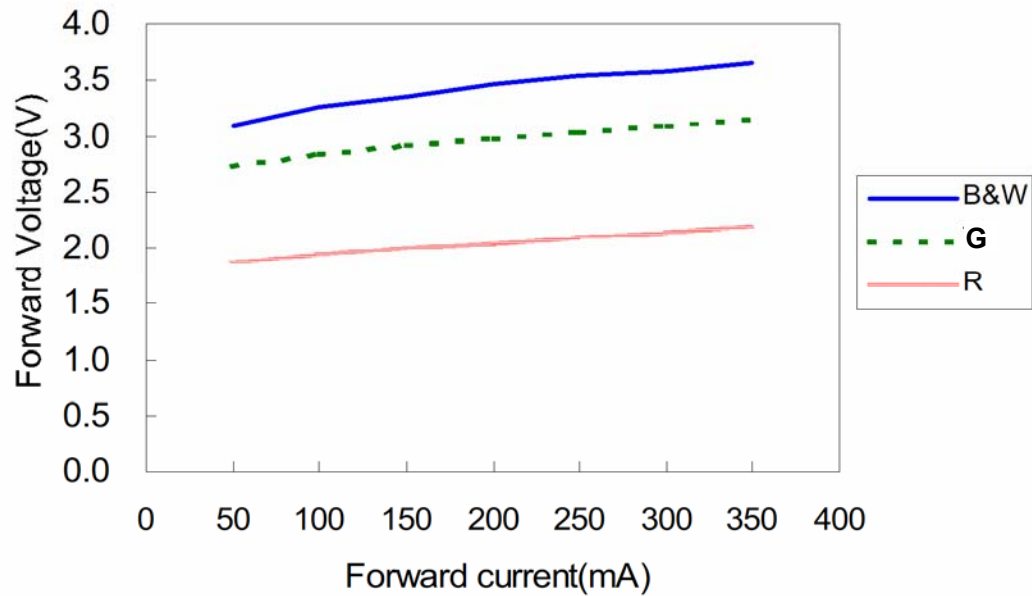
**Fig. 1 Typical Radiation Pattern**

**Operating Current & Ambient Temperature**



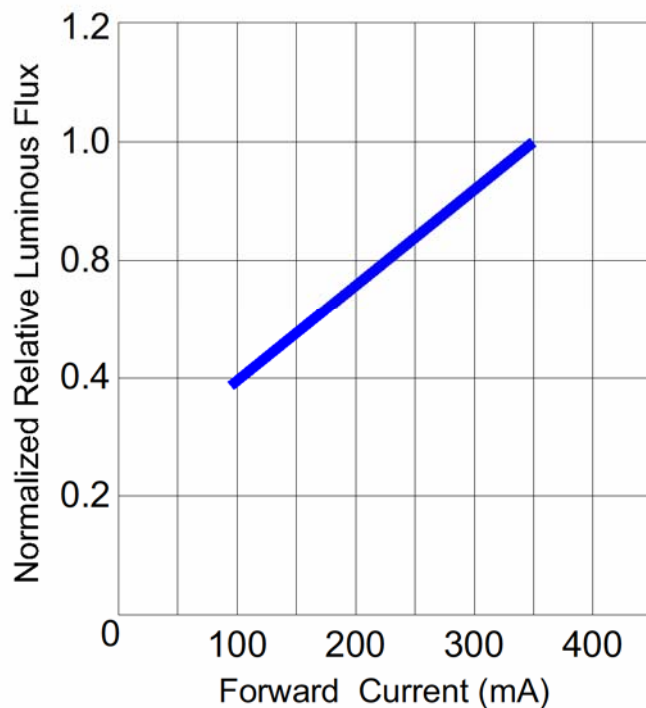
**Fig. 2 Forward Current vs Ambient Temperature**

### Operating Current & Forward Voltage



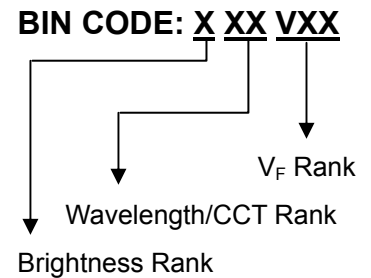
**Fig. 3. Forward Current vs Forward Voltage**

### Current & Luminous Flux



**Fig. 4 Forward Current vs Luminous Flux**

## Product Barcode Label



## 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 10seconds. 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:

- The information contained herein is presented only as a Guide for the application of our products. Brilliance Technologies assumes no responsibility for any infringement of intellectual property or other rights of the third parties which may result from its use.
- 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 responsible 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.



## **BriLux 1W LED Module**

### **BTM-89XXCT-XX-X/X**

- **Brilliance Technologies products listed in this data sheet are intended for usage in general electronics and/or non-commercial or industrial lighting products. These products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury.**
- **In developing your design, please ensure that Brilliance Technologies products are used within specified operating ranges as set forth in the most recent Brilliance Technologies data sheets.**

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