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# Tight Tolerance Ultraviolet LED Lamp TZ Series (T1<sup>3/4</sup>, 5mm Round / 15° & 30°)

# BIVAR

## UV5TZ-XXX-XX

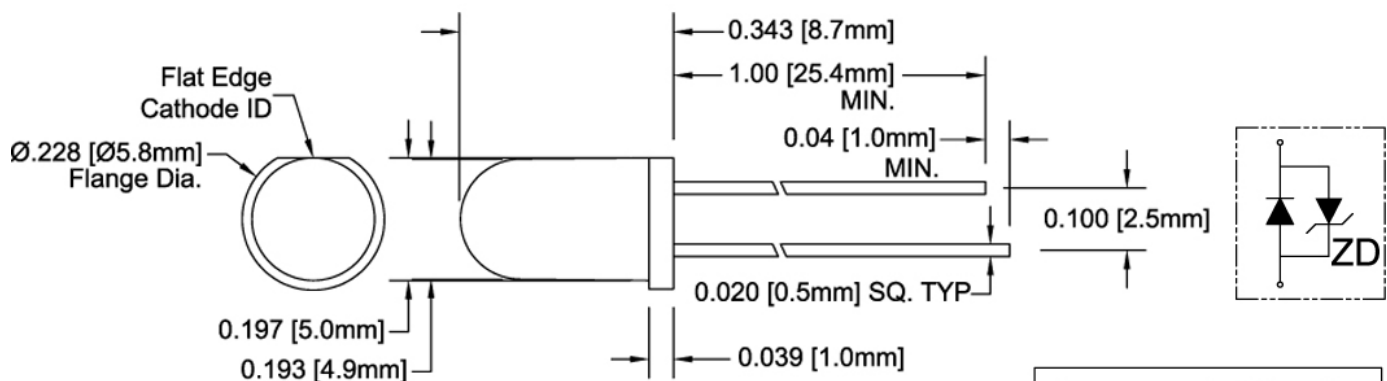
- ◆ RoHS Compliant
- ◆ Low Power Consumption
- ◆ Low Current Requirement
- ◆ High Efficiency
- ◆ Tight Tolerance of Wavelengths
- ◆ Equipped with a Protective Zener Diode Built-in



Bivar **UV5TZ-XXX-XX** Tight Tolerance Ultraviolet (UV) LEDs have peak wavelengths in the highly desirable ranges from 385 to 405nm with a tight tolerance of +/-2.5nm. These UV LEDs also have a built-in Zener Diode providing protective circuit against electrostatic discharge (ESD).

Applications: Industrial curing, fluorescence disclosing and verification, air purification, medical and biomedical applications, dermatological equipment, and hazardous materials detection.

| Part Number  | Chip Material  | Emitted Color | Peak Wavelength | Lens Color  | Viewing Angle |
|--------------|----------------|---------------|-----------------|-------------|---------------|
| UV5TZ-385-15 | InGaN/Sapphire | Purple        | 385nm           | Water Clear | 15°           |
| UV5TZ-390-15 |                |               | 390nm           |             |               |
| UV5TZ-395-15 |                |               | 395nm           |             |               |
| UV5TZ-400-15 |                |               | 400nm           |             |               |
| UV5TZ-405-15 |                |               | 402.5nm         |             |               |
| UV5TZ-385-30 | InGaN/Sapphire | Purple        | 385nm           | Water Clear | 30°           |
| UV5TZ-390-30 |                |               | 390nm           |             |               |
| UV5TZ-395-30 |                |               | 395nm           |             |               |
| UV5TZ-400-30 |                |               | 400nm           |             |               |
| UV5TZ-405-30 |                |               | 402.5nm         |             |               |



### Outline Drawings Notes:

1. All dimensions are in inches [millimeters].
2. Standard tolerance: ±0.010" unless otherwise noted.
3. Tolerance of overall epoxy outline: ±0.020" unless otherwise noted.
4. Epoxy meniscus may extend to 0.060" max.

### Recommended Mounting

Hole Size = Ø.032<sup>+0.003</sup><sub>-0.002</sub>



### CAUTION: EMITS ULTRAVIOLET RADIATION!!

- This UV (ultraviolet) LED during operation radiates intense UV light.
  - Do not look directly into the UV light during operation of device. This can be harmful to human body especially to the eyes and skin, even for brief period due to the intense UV light.
  - If viewing the UV light is necessary, please use UV filtered glasses to avoid damage by the UV light.
  - If the UV LED in your product might be viewed directly, please affix a caution label to your product to that effect.
- Avoid direct eye and skin exposure to UV light. Keep out of reach of children.



Bivar reserves the right to make changes at any time.

# Tight Tolerance Ultraviolet LED Lamp UV5TZ-XXX-XX



## Absolute Maximum Ratings

$T_A = 25^\circ\text{C}$  unless otherwise noted

|                                                                                  |             |
|----------------------------------------------------------------------------------|-------------|
| Power Dissipation                                                                | 120 mW      |
| Forward Current ( DC )                                                           | 30 mA       |
| Peak Forward Current <sup>1</sup>                                                | 100 mA      |
| Electrostatic Discharge ( Class1 )                                               | 2000 V      |
| Reverse Voltage                                                                  | — V         |
| Operating Temperature Range                                                      | -25 ~ +80°C |
| Storage Temperature Range                                                        | -30 ~ +80°C |
| Lead Soldering Temperature ( 3 mm from the base of the epoxy bulb ) <sup>2</sup> | 260°C       |

Notes: 1. 10% Duty Cycle, Pulse Width  $\leq 0.1$  msec. 2. Solder time less than 5 seconds at temperature extreme.

## Electrical Characteristics

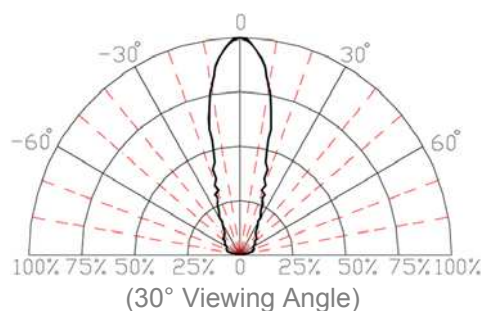
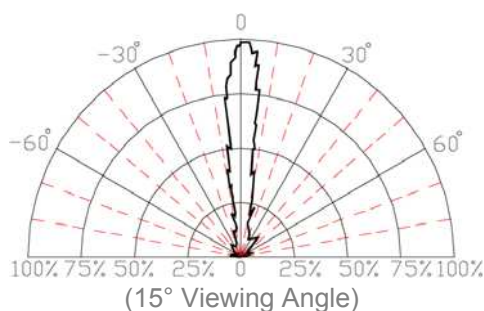
$T_A = 25^\circ\text{C}$  &  $I_F = 20$  mA unless otherwise noted

| Part Number  | Forward Voltage (V) <sup>1</sup> |     |     | Recommend Forward Current (mA) |     |     | Reverse Current (mA) | Peak Wavelength $\lambda_p$ (nm) <sup>2</sup> |       |       | Emitting Power (mW) |                  | 50% Power Angle (deg) |
|--------------|----------------------------------|-----|-----|--------------------------------|-----|-----|----------------------|-----------------------------------------------|-------|-------|---------------------|------------------|-----------------------|
|              | MIN                              | TYP | MAX | MIN                            | TYP | MAX | MAX                  | MIN                                           | TYP   | MAX   | MIN                 | TYP <sup>3</sup> | TYP                   |
| UV5TZ-385-15 | 2.9                              | 3.2 | 3.5 | 10                             | 15  | 20  | /                    | 382.5                                         | 385.0 | 387.5 | 10                  | 20               | 15                    |
| UV5TZ-390-15 | 2.9                              | 3.2 | 3.5 |                                |     |     |                      | 387.5                                         | 390.0 | 392.5 | 20                  | 40               |                       |
| UV5TZ-395-15 | 2.9                              | 3.2 | 3.5 |                                |     |     |                      | 392.5                                         | 395.0 | 397.5 | 20                  | 40               |                       |
| UV5TZ-400-15 | 2.9                              | 3.2 | 3.5 |                                |     |     |                      | 397.5                                         | 400.0 | 402.5 | 20                  | 40               |                       |
| UV5TZ-405-15 | 2.9                              | 3.2 | 3.5 |                                |     |     |                      | 400.0                                         | 402.5 | 405.0 | 20                  | 40               |                       |
| UV5TZ-385-30 | 2.9                              | 3.2 | 3.5 | 10                             | 15  | 20  | /                    | 382.5                                         | 385.0 | 387.5 | 10                  | 20               | 30                    |
| UV5TZ-390-30 | 2.9                              | 3.2 | 3.5 |                                |     |     |                      | 387.5                                         | 390.0 | 392.5 | 20                  | 40               |                       |
| UV5TZ-395-30 | 2.9                              | 3.2 | 3.5 |                                |     |     |                      | 392.5                                         | 395.0 | 397.5 | 20                  | 40               |                       |
| UV5TZ-400-30 | 2.9                              | 3.2 | 3.5 |                                |     |     |                      | 397.5                                         | 400.0 | 402.5 | 20                  | 40               |                       |
| UV5TZ-405-30 | 2.9                              | 3.2 | 3.5 |                                |     |     |                      | 400.0                                         | 402.5 | 405.0 | 20                  | 40               |                       |

Notes: 1. Tolerance of forward voltage :  $\pm 0.05\text{V}$ . 2. Tolerance of peak wavelength :  $\pm 1.0\text{nm}$ . 3. Tolerance of emitting power (Typ) :  $\pm 15\%$ .

## Directivity Radiation — Relative Luminous Intensity vs. Radiation Angle

$T_A = 25^\circ\text{C}$  unless otherwise noted



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# Tight Tolerance Ultraviolet LED Lamp UV5TZ-XXX-XX



## Typical Electrical / Optical Characteristics Curves

$T_A = 25^\circ\text{C}$  unless otherwise noted

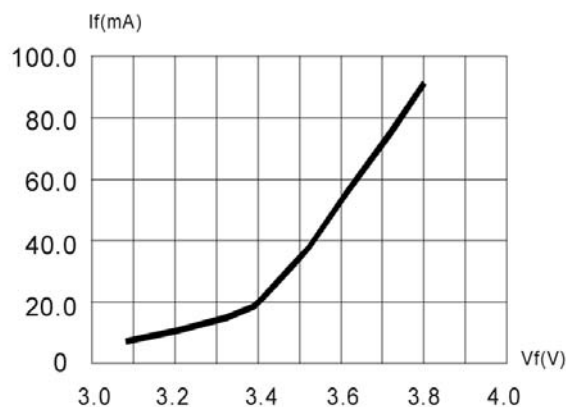


Fig.1 Forward Current vs. Forward Voltage

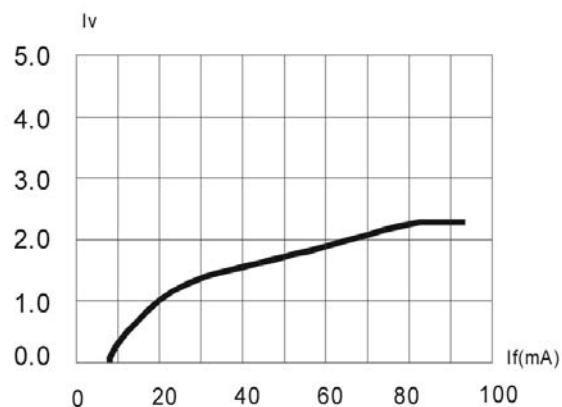


Fig.2 Relative Luminous Intensity vs. Forward Current

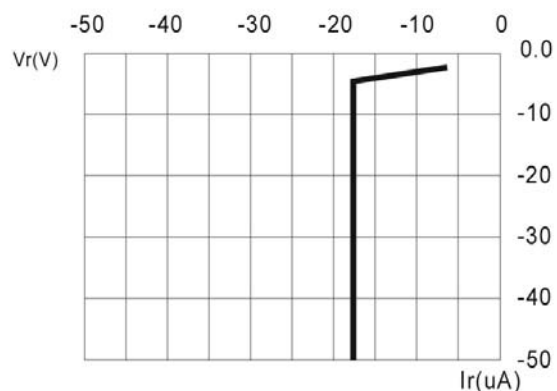


Fig.3 Reverse Current vs. Reverse Voltage

Half Width =  $\Delta\lambda_{35\text{nm}}$   
Domi WL = A:385nm(UVXTZ-385-XX), B:390nm(UVXTZ-390-XX)  
C:395nm(UVXTZ-395-XX), D:400nm(UVXTZ-400-XX)  
E:402.5nm(UVXTZ-405-XX)

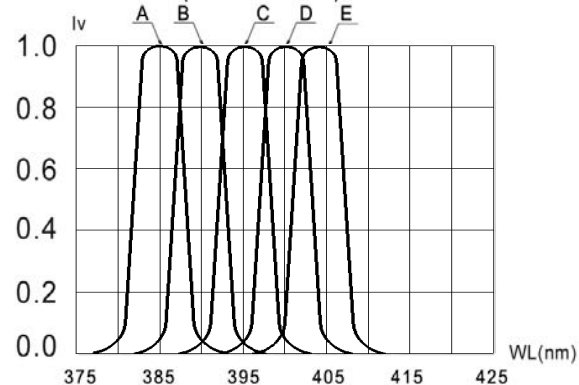


Fig.4 Relative Luminous Intensity vs. Wavelength

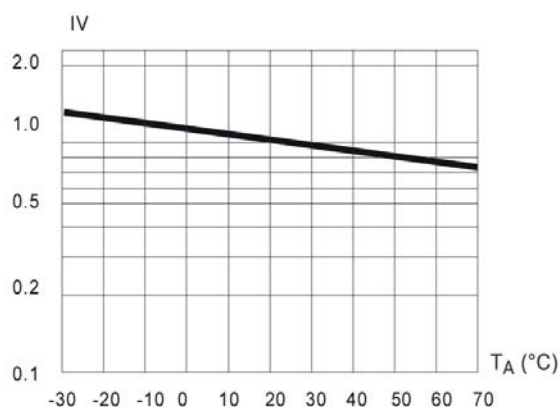


Fig. 5 Relative Luminous Intensity vs. Ambient Temperature

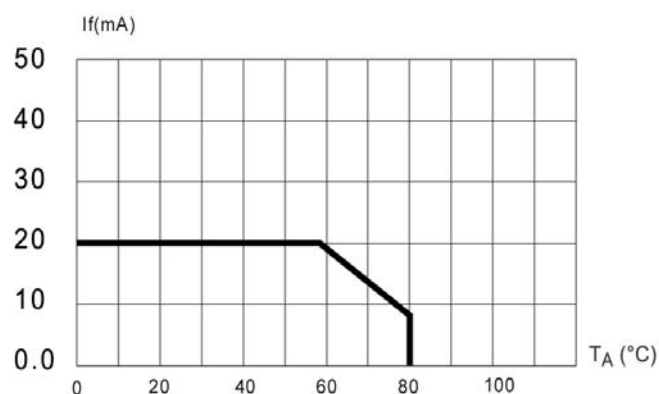


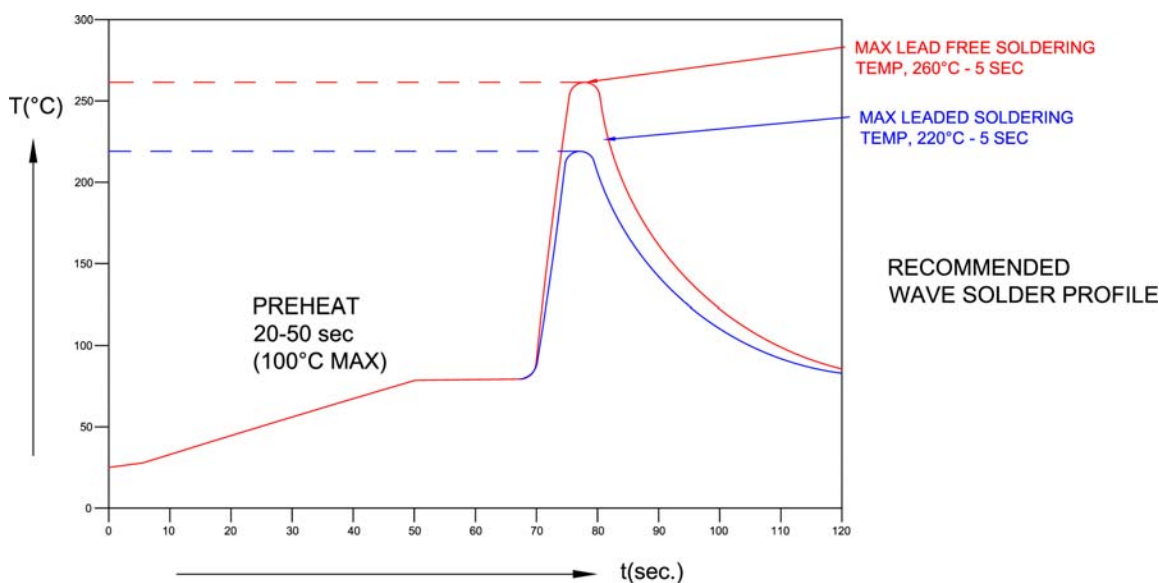
Fig.6 Maximum Forward Current vs. Ambient Temperature

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# Tight Tolerance Ultraviolet LED Lamp UV5TZ-XXX-XX



## Recommended Soldering Conditions



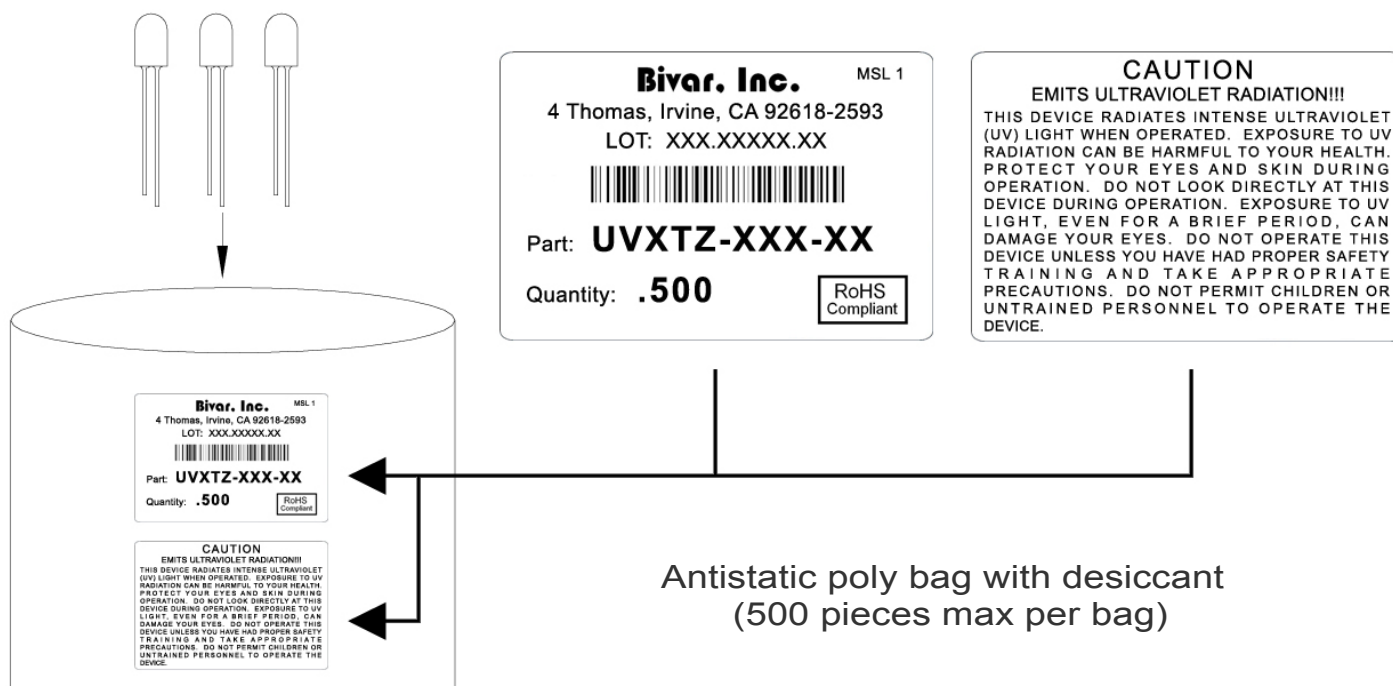
### Recommended Lead Free Wave Soldering Profile

|                                 |                                         |
|---------------------------------|-----------------------------------------|
| Preheat Temperature: 100°C Max. | Peak Profile Temperature: 260°C Max.    |
| Preheat Time: 20 ~ 50 Seconds   | Solder Time Above 217°C: 5 Seconds Max. |

#### Note:

1. All top preheat stages are to be turned off so that the lamp body is not directly exposed to the heat source.
2. Profile taken on the LED lead at the bottom of the PCB.

## Packaging and labeling plan



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