

# 3mm (T1) Package Discrete LED RED



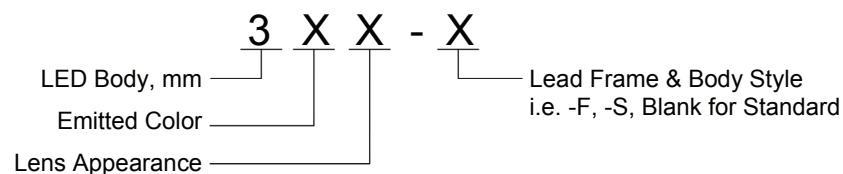
## 3HX-X

- ◆ Industry Standard 3mm (T1) Package
- ◆ RoHS Compliant
- ◆ Water Clear (C), Diffused (D), and Tinted (T) Lenses
- ◆ Available in Flange (F), Standard (Blank), and Shouldered (S) Lead Frame styles
- ◆ Ideal for Status Indication and Display

Bivar 3mm T1 Package LED may be used in almost any application. Bivar offers water clear LED lens for maximum light output, diffused LED lens for uniform light output, and tinted lens to identify the color of the LED. The Flanged LED is ideal for Panel Mount Clip & Ring assemblies, the Standard Lead frame LED is ideal for vertical spacer assemblies without lead bends, and the Shouldered Lead frame LED has a built in strain relief feature which is ideal for Right Angle Holder assemblies that require lead bends. A long lead version is also available with a "-LL" suffix added to the part numbers.

Part Number	Material	Emitted Color	Peak. Wavelength $\lambda_p$ (nm) TYP.	Lens Appearance	Viewing Angle
3HC-F	GaAsP/GaP	RED	625nm	Water Clear	20°
3HD-F				Red Diffused	35°
3HT-F				Red Tinted	20°
3HC				Water Clear	30°
3HD				Red Diffused	40°
3HT				Red Tinted	30°
3HC-S				Water Clear	30°
3HD-S				Red Diffused	40°
3HT-S				Red Tinted	30°

## Part Number Designation

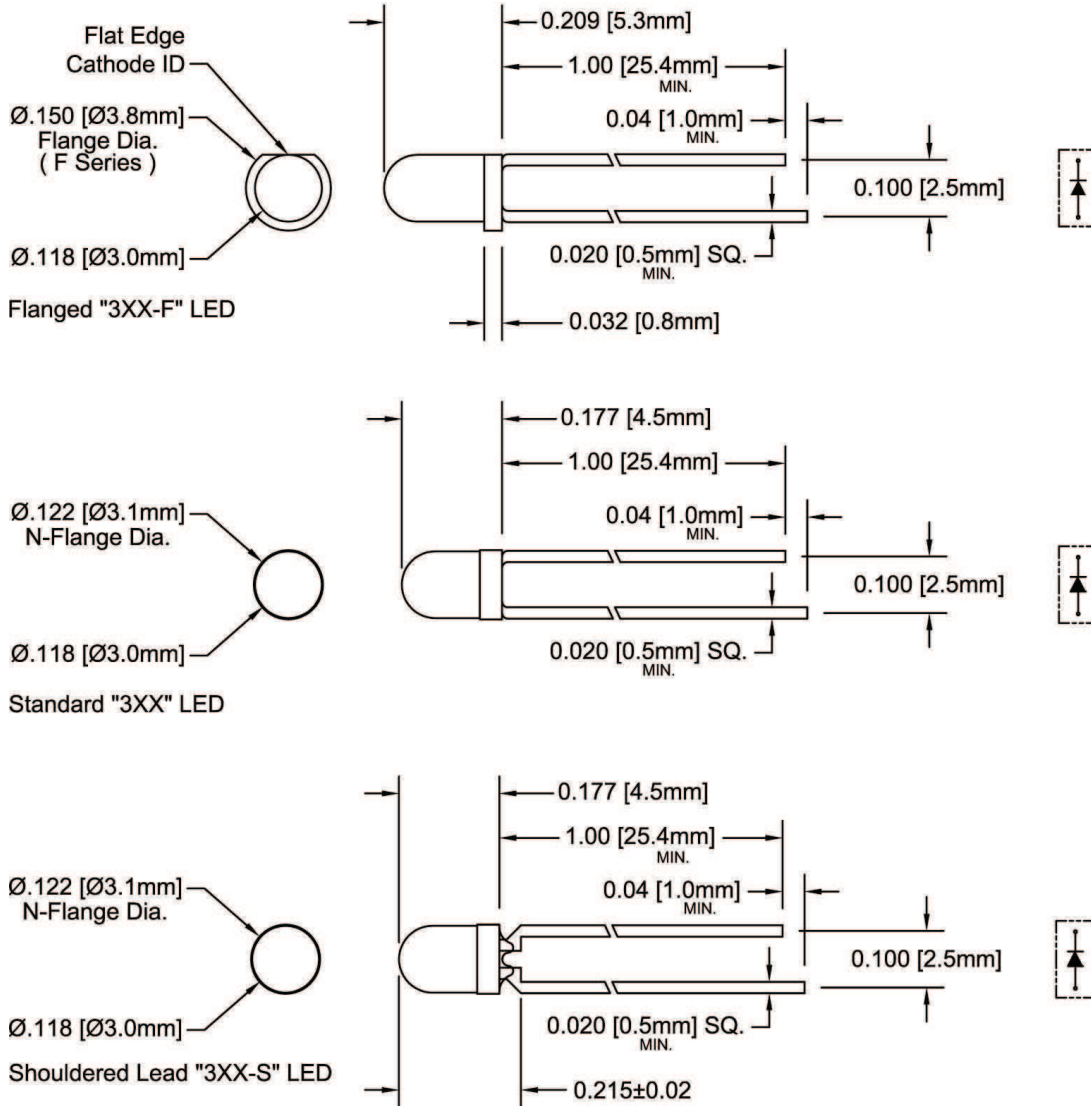


Bivar reserves the right to make changes at any time without notice.

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## Outline Dimensions



**Recommended Mounting**  
Hole Size =  $\varnothing.032^{+.003}_{-.002}$

**NOTE:** Add suffix -LL for long lead.  
Changes 1.00 Min. to 1.57 Min.  
**Standard Lead Only**

- Outline Drawings Notes:**
1. All dimensions are in inches [millimeters].
  2. Standard tolerance:  $\pm 0.010$ " unless otherwise noted.
  3. Tolerance of overall epoxy outline:  $\pm 0.020$ " unless otherwise noted.
  4. Epoxy meniscus may extend to 0.060" max.

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## Absolute Maximum Ratings

T<sub>A</sub> = 25°C unless otherwise noted

Power Dissipation	80 mW
Forward Current ( DC )	30 mA
Peak Forward Current <sup>1</sup>	150 mA
Reverse Voltage	5 V
Operating Temperature Range	-25 ~ +85°C
Storage Temperature Range	-30 ~ +100°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 ≤ 0.1 msec.      2. Solder time less than 5 seconds at temperature extreme.

## Electrical / Optical Characteristics

T<sub>A</sub> = 25°C & I<sub>F</sub> = 20 mA unless otherwise noted

Part Number	Forward Voltage (V) <sup>1</sup>			Recommend Forward Current (mA)			Reverse Current (μA)	Dominant Wavelength (nm) <sup>2</sup>			Luminous Intensity I <sub>v</sub> (mcd)			Viewing Angle 2Θ ½ (deg)
	MIN	TYP	MAX	MIN	TYP	MAX	MAX	MIN	TYP	MAX	MIN	TYP	MAX	TYP
3HC-F								/	/	/	/	50	/	20
3HD-F	/	2.0	2.8	/	20	/	100	/	/	/	/	30	/	35
3HT-F								/	/	/	/	50	/	20
3HC								/	/	/	/	50	/	30
3HD	/	2.0	2.8	/	20	/	100	/	/	/	/	30	/	40
3HT								/	/	/	/	50	/	30
3HC-S								/	/	/	/	50	/	30
3HD-S	/	2.0	2.8	/	20	/	100	/	/	/	/	30	/	40
3HT-S								/	/	/	/	50	/	30

Notes: 1. Tolerance of forward voltage : ±0.05V.      2. Tolerance of dominant wavelength : ±1.0nm.

## Typical Electrical / Optical Characteristics

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

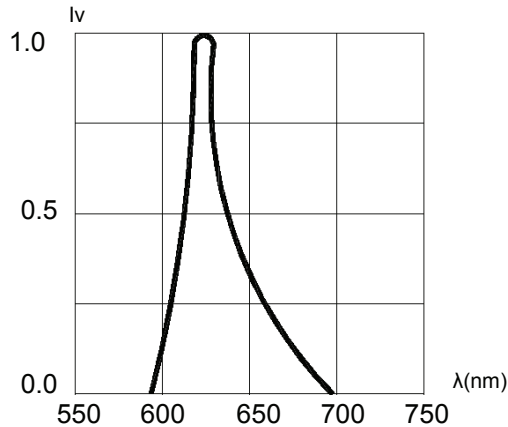


Fig. 1 Relative Luminous Intensity vs. Wavelength @ 20mA

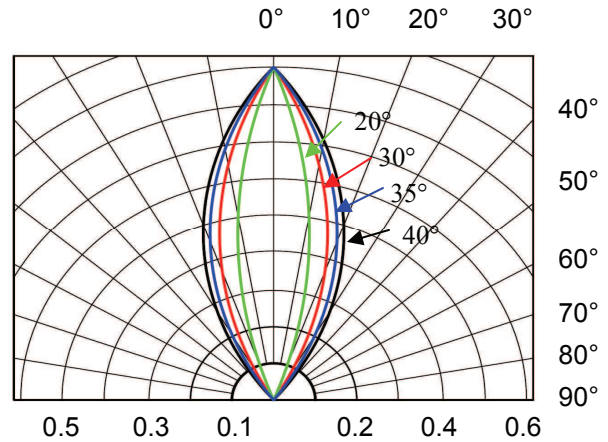


Fig. 2 Directivity Radiation Diagram

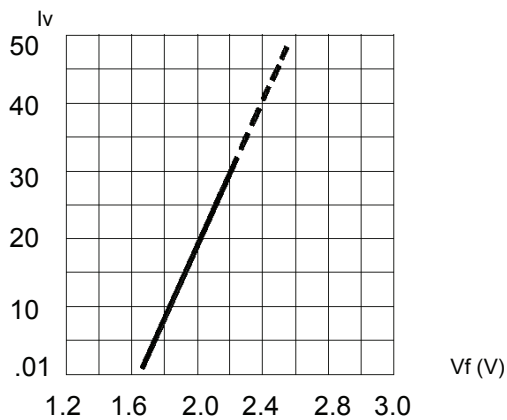


Fig. 3 Relative Intensity (10mA) vs. Forward Voltage

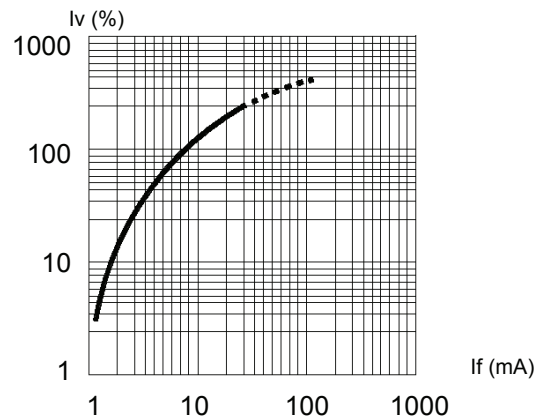


Fig. 4 Relative Luminous Intensity (%) vs. Forward Current

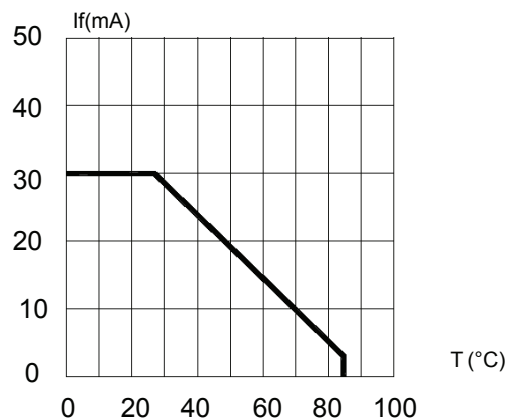


Fig. 5 Forward Current vs. Temperature

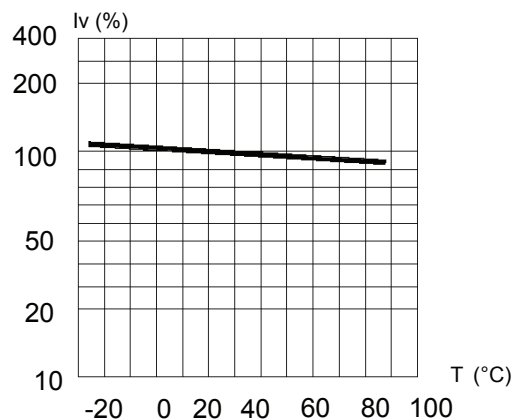


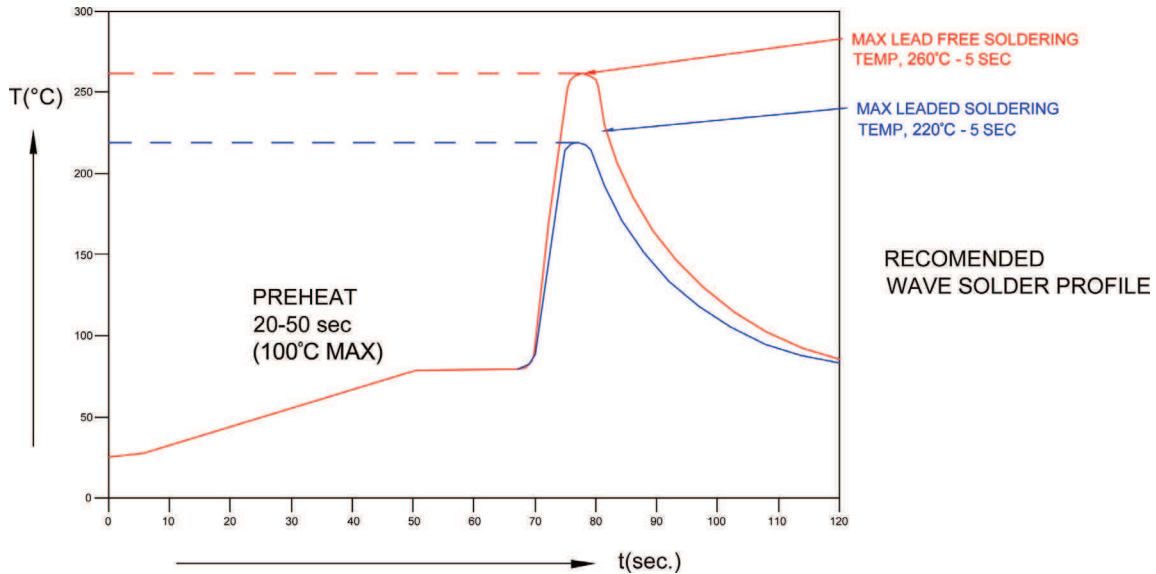
Fig. 6 Relative Intensity (%) vs. Temperature @ 20 mA

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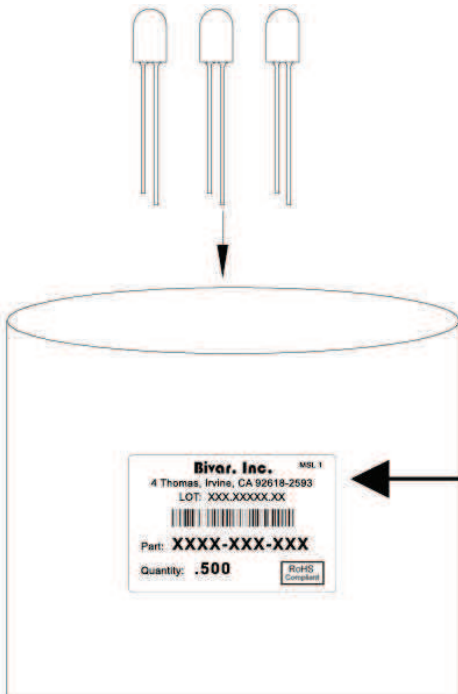


## Recommended Soldering Conditions



Recommended Lead Free Wave Soldering Profile	
Preheat Temperature: 100°C Max.	Peak Temperature: 260°C Max.
Preheat Time: 20 ~ 50 Seconds	Solder Time Above 217°C: 5 Seconds Max.
Note: Turn off top heater at preheat to prevent the lamp body directly exposed to the heat source.	

## Packaging and Labeling Plan



**Bivar, Inc.** MSL 1

4 Thomas, Irvine, CA 92618-2593  
 LOT: XXX.XXXXX.XX



Part: **XXXX-XXX-XXX**

Quantity: **.500**

RoHS Compliant

AntiStatic Poly Bag with Desiccant  
(500 pcs Max. per Bag)

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