

Parts Affected	UV3TZ-385-15	Old Rev.	D	New Rev.	Е
	UV3TZ-390-15		D		Е
	UV3TZ-395-15		D		Е
	UV3TZ-400-15	1	D		Е
	UV3TZ-405-15]	D		Е
	UV3TZ-385-30		D		Е
	UV3TZ-390-30]	D		Е
	UV3TZ-395-30		D		Е
	UV3TZ-400-30		D		Е
	UV3TZ-405-30]	D		Е
	UV5TZ-390-15		D		Е
	UV5TZ-395-15		D		Е
	UV5TZ-400-15		D		Е
	UV5TZ-405-15		D		Е
	UV5TZ-390-30		D		Е
	UV5TZ-395-30		D		Е
	UV5TZ-400-30		D		Е
	UV5TZ-405-30		D		Е
	UV5TZ-385-15		D		E
	UV5TZ-385-30		D		Е
	UV5TZ-385-15]	D		E
	UV5TZ-385-30		D		E

Change Will Affect:

The product specifications on the drawing.

Description of Change:

Changes are reflected as shown in red in the table below.

These changes have been reviewed and approved by Bivar management per Bivar Procedure: Engineering Change Order and Part Change Notification, SOP-040, SOP-ENG-045



		Forward Voltage (Vf) Min/Typ/ Max	Wavelength (nm) Min/Typ/Max
UVXXX-385-XX	D	3.2V/3.4V/3.6V	382.5nm/385.0nm/387.5nm
	Е	2.9V/3.2V/3.5V	382.5nm/385.0nm/387.5nm
UVXXX-390-XX	D	3.2V/3.4V/3.6V	387.5nm/390.0nm/392.5nm
	Е	2.9V/3.2V/3.5V	387.5nm/390.0nm/392.5nm
UVXXX-395-XX	D	3.2V/3.4V/3.6V	392.5nm/395.0nm/397.5nm
	Е	2.9V/3.2V/3.5V	392.5nm/395.0nm/397.5nm
UVXXX-400-XX	D	3.2V/3.4V/3.6V	397.5nm/400.0nm/402.5nm
	Е	2.9V/3.2V/3.5V	397.5nm/400.0nm/402.5nm
UVXXX-405-XX	D	3.2V/3.4V/3.6V	402.5nm/405.0nm/407.5nm
	Е	2.9V/3.2V/3.5V	400.0nm/402.5nm/405.0nm

Effective Date of Change: August 9, 2024

Reason for Change: Error in the datasheet.

These changes have been reviewed and approved by Bivar management per Bivar Procedure: Engineering Change Order and Part Change Notification, SOP-040, SOP-ENG-045



Parts Affected	SM1206HC	Old Rev.	А	New Rev.	В
	SM1210BC		А		В
	SM1210BC-SR/HG		В		С
	SM1206HC-IL		В		С

Change Will Affect:

LED optical, electrical and mechanical characteristics.

Description of Change:

Changes are reflected as shown in the tables below.

	Feature	SM1206HC Rev. A	SM1206HC Rev. B
1	Material	AlGaAs	AlGaInP
2	Polarity Marking	Anode Marking	Cathode Marking
3	Power Dissipation	69mW	78mW
4	Operating Temperature	-30C to +80C	-40C to +85C
5	Forward Voltage (Vf) Min/Typ/ Max	NA, 1.8V, 2.3V	1.7V, 2.0V, 2.6V
6	Peak Wavelength Typ (nm)	660	655
7	Dominant Wavelength Min/Typ/ Max (nm)	NA, 643, NA	632, 640, 660
8	Luminous Intensity Min/Typ/Max (mcd)	6, 15, NA	11.5, 28.5, 72
9	relative Iv vs. If Graph Start Point	2.5%, 0mA	1%, 1mA

These changes have been reviewed and approved by Bivar management per Bivar Procedure: Engineering Change Order and Part Change Notification, SOP-040, SOP-ENG-045



	Feature	SM1206HC-IL Rev. B	SM1206HC-IL Rev. C
1	Material	AlGaAs	AlGaInP
2	Polarity Marking	Anode Marking	Cathode Marking
3	Operating Temperature	-30C to +80C	-40C to +85C
4	Forward Voltage (Vf) Min/Typ/ Max	NA, 2.0V, 2.6V	1.8V, 2.0V, 2.3V
5	Peak Wavelength Typ (nm)	660	655
6	Dominant Wavelength Min/Typ/ Max (nm)	NA, 643, NA	632, 640, 660
7	Luminous Intensity Min/Typ/Max (mcd)	11.5, 45, NA	18, 45, 115
8	relative Iv vs. If Graph Start Point	2.5%, 0mA	1%, 1mA

	Feature	SM1210BC Rev. A	SM1210BC Rev. B
1	Material (Red Die)	AlGaAs	AlGaInP
2	Peak Wavelength Typ (nm)	660	655
3	Dominant Wavelength (Red Die) Min/Typ/Max (nm)	NA, 643, NA	632, 640, 660
			Green. No change
4	Luminous Intensity Min/Typ/Max (mcd)	Red: 6, 15, NA	Red: 11.5, 22.5, 45
	(med)	Green: 8, 15, NA	Green: 7.2, 11.5, 18
5	Forward Voltage (Vf) Min/Typ/	Red: 1.85, 2.3	Red: 2.0, 2.6
	With	Green: 2.3, 2.6	Green: 2.1, 2.6
6	power Dissipation (Red Die)	69mW	78mW
7	Operating Temperature	-30C to +80C	-40C to +85C

These changes have been reviewed and approved by Bivar management per Bivar Procedure: Engineering Change Order and Part Change Notification, SOP-040, SOP-ENG-045



	Feature	SM1210BC-SRHG Rev.B	SM1210BC-SRHG Rev. C
1	Material (Red Die)	AlGaAs	AlGaInP
2	Peak Wavelength Typ (Red Die (nm)	660	655
3	Dominant Wavelength (Green Die) Min/Typ/Max (nm)	NA, 570, 572	568, 570, 576 Red: No change
4	Luminous Intensity Min/Typ/Max (mcd)	Red: 7.2, 11.5, NA	Red: 11.5, 22.5, 45 Green: No change
5	Forward Voltage Typ/Max (V)	Red: 1.85, 2.3	Red: 2.0, 2.6 Green: No change

Effective Date of Change: August 8, 2024

Reason for Change: New chips are being used due to chip obsolescence.

These changes have been reviewed and approved by Bivar management per Bivar Procedure: Engineering Change Order and Part Change Notification, SOP-040, SOP-ENG-045



Appendix:

New chips are being used due to chip obsolescence.

These changes have been reviewed and approved by Bivar management per Bivar Procedure: Engineering Change Order and Part Change Notification, SOP-040, SOP-ENG-045



SM1210BC

- Industry Standard Package
- RoHS Compliant
- Two Chips in One Package
- Water Clear Lens
- Wide Viewing Angle
- Ideal for Status Indication and Lighting

Bivar Surface Mount 1210 package Bi-Color LED combines two chips in a single package. They are ideal for small scale applications where multiple signals need to be displayed. When needed, the third color can be created by powering up both chips together. Bivar offers water clear LED lens for high luminous intensity and wide viewing angles. Wide variety of color and intensity combinations are available to meet any illumination need. The SM1210 LED is packaged in standard tape and reels for pick and place assemblies.

Part Number	Material	Emitted Color	Peak Wavelength λp(nm) TYP.	Lens Appearance	Luminous Intensity (mcd) TYP.	Viewing Angle
SM1210PC	AlGaInP	RED	655	Water Clear	22.5	120°
SIVE 12 TUBC	GaP	GREEN	568	vvaler Clear	11.5	130

Outline Dimensions





Absolute Maximum Ratings

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

Power Dissipation	Red - 78 mW Green - 78 mW
Forward Current (DC)	30 mA
Peak Forward Current ¹	100 mA
Reverse Voltage	5 V
Operating Temperature Range	-40 ~ +85°C
Storage Temperature Range	-40 ~ +85°C
Lead Soldering Temperature (3 mm from the base of the epoxy bulb) ²	260°C
Electrostatic Discharge (HBM)	2000 V

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

Electrical / Optical Characteristics

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

Part Number	Emitted color	l Vo	Forward oltage ('	d V)¹	Re I Cu	comme Forward rrent (r	end d nA)	Reverse Current (µA)	Dominant Wavelength (nm) ²		Luminous Intensity Iv (mcd)			Viewing Angle 2 O ½ (deg)	
		MIN	ТҮР	MAX	MIN	ТҮР	MAX	MAX	MIN	ТҮР	MAX	MIN	ТҮР	MAX	ТҮР
SM1210PC	RED	1	2.0	2.6	/	20	/	10	632	640	660	11.5	22.5	45	130
SIVE 12 10 DC	GREEN	/	2.1	2.6	/	20	/	10	568	570	576	7.2	11.5	18	130

Notes: 1. Tolerance of forward voltage : ±0.05V.

2. Tolerance of dominant wavelength : ±1.0nm.



Typical Electrical / Optical Characteristics

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





Fig. 2 Relative Luminous Intensity vs. Forward Current







Fig. 4 Directivity Radiation Diagram





Recommended Soldering Conditions



Tape and Reel Dimensions Note: 3000 pcs/Reel







Outline Drawings Notes:

1. All dimensions are in inches [millimeters]. 2. Standard tolerance unless otherwise noted: X.XXX ± 0.010"

X.X ± 0.1'

Packaging and Labeling Plan Note: 1 Reel / Bag



XXXX-XXX-XXX
XXXX-XXX-XXX
XXXX
XXXXXXXXXX
X.XXX PCS
XXX BIN
2008.XX.XX

Internal Quality Control Label

Bivar. Inc.	MSL4
4 Thomas, Irvine, CA 92618	-2593
LOT: XXX.XXXXX.XX	(
Part: XXXX-XXX-X	XX
Quantity: X.XXX	RoHS Compliant

Bivar Standard Packaging Label



SM1210BC-SR/HG

- Industry Standard Package
- RoHS Compliant
- Two Chips in One Package
- Water Clear Lens
- Wide Viewing Angle
- Ideal for Status Indication and Lighting



Bivar Surface Mount 1210 package Bi-Color LED combines two chips in a single package. They are ideal for small scale applications where multiple signals need to be displayed. When needed, the third color can be created by powering up both chips together. Bivar offers water clear LED lens for high luminous intensity and wide viewing angles. Wide variety of color and intensity combinations are available to meet any illumination need. The SM1210 LED is packaged in standard tape and reels for pick and place assemblies.

Part Number	Material	Emitted Color	Peak Wavelength λp(nm) TYP.	Lens Appearance	Luminous Intensity (mcd) TYP.	Viewing Angle	
SM1210BC-	AlGaInP	RED	655	Water Clear	22.5	130°	
SR/HG	GaP	GREEN	568	water Clear	11.5		

Outline Dimensions





Absolute Maximum Ratings

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

Power Dissipation	78 mW
Forward Current (DC)	30 mA
Peak Forward Current 1	100 mA
Reverse Voltage	5 V
Operating Temperature Range	-30 ~ +80°C
Storage Temperature Range	-40 ~ +85°C
Lead Soldering Temperature (3 mm from the base of the epoxy bulb) 2	260°C
Electrostatic Discharge (HBM)	2000 V

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

Electrical / Optical Characteristics

 $T_{A} = 25^{\circ}C \& I_{F} = 20 \text{ mA}$ unless otherwise noted

Part Number	Emitted color	Forward Voltage (V) [,]			Recommend Forward Current (mA)		Reverse Current (µA)	Dominant Wavelength (nm)²		Luminous Intensity Iv (mcd)			Viewing Angle 2 O ½ (deg)		
		MIN	ТҮР	МАХ	MIN	ТҮР	МАХ	MAX	MIN	ТҮР	MAX	MIN	ТҮР	MAX	TYP
SM1210BC- SR/HG	RED	/	2.00	2.60	/	20	/	10	632	640	660	11.5	22.5	45	130
	GREEN	/	2.10	2.60	/	20	/	10	568	570	576	7.2	11.5	18	130

Notes: 1. Tolerance of forward voltage : ±0.05V.

2. Tolerance of dominant wavelength : ±1.0nm.

m. 3. Tolerance of luminous intensity : ±10%.



Typical Electrical / Optical Characteristics

 $T_{A} = 25^{\circ}C$ unless otherwise noted













Fig. 4 Directivity Radiation Diagram





Soldering Iron

- 1. Temperature at tip of iron: 300 °C Max. (25 W Max.)
- 2. Soldering Time: 5 ± 1 sec.

Recommended Soldering Conditions

Temp. (°C)		Time (sec)		
а	25	T0~T1	Max. 3 °C/sec	
b	150	T1~T2	90~130 sec	
С	200	T2~T4	Max. 3 °C/sec	
d	220	T3~T6	Max. 50 sec	
е	245			
f	Max. 260		Max. 10 sec	
		T5~T7	Max3 °C/sec	
Bel	t Speed	70~90 cm/min		

Note: Will vary based on equipment and process used.



Tape and Reel Dimensions Note: 3000 pcs/Reel



convos the right to make changes at any time without notice





Outline Drawings Notes:

1. All dimensions are in inches [millimeters].

2. Standard tolerance unless otherwise noted: $X.XXX \pm 0.010^{"}$ X.X ± 0.1"

Packaging and Labeling Plan Note: 1 Reel / Bag



Part No.	XXXX-XXX-XXX
Prod. No.	XXXX-XXX-XXX
PO No.	XXXX
Lot No.	XXXXXXXXX
Q'ty:	X.XXX PCS
Q.C.	XXX BIN
Date:	2008.XX.XX

Internal Quality Control Label

Bivar. Inc.	MSL4					
4 Thomas, Irvine, CA 9261	8-2593					
LOT: XXX.XXXXX.X	X					
Part: XXXX-XXX-XXX						
Quantity: X.XXX	RoHS Compliant					

Bivar Standard Packaging Label



SM1206HC-IL

- Industry Standard 1206 Package
- RoHS Compliant
- Water Clear Inner Lens
- High Luminous Intensity
- Narrow Viewing Angle
- Ideal for Status Indication, Display, and Backlighting

Bivar Surface Mount 1206 Inner Lens package LED may be used in nearly any lighting or indication application. The water clear inner lens provides a narrow viewing angle and high luminous intensity making it suitable for small scale applications such as display, backlighting, and general indication. Low power consumption and excellent long life reliability are ideal for battery powered equipment. Wide variety of wavelength and intensity combinations are available to meet any illumination need. The SM1206-IL LED is packaged in standard tape and reels for pick and place assemblies.

Peak Luminous Lens Part Number Material **Emitted Color** Wavelength Viewing Angle Appearance λp(nm) TYP (mcd) TYP SM1206HC-IL AlGaInP RED 655 45 30° Water Clear

Outline Dimensions



Outline Drawings Notes:

All dimensions are in inches [millimeters].
 Standard tolerance: ±0.010" unless otherwise noted.

ATTENTION OBSERVE PRECAUTIONS PELECTROSTATIC SENSITIVE DEVICES ROHS Compliant Woisture Rohs Compliant



Absolute Maximum Ratings

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

~~~~~

| 78 mW       |
|-------------|
| 30 mA       |
| 100 mA      |
| 5 V         |
| -40 ~ +85°C |
| -40 ~ +85°C |
| 260°C       |
|             |

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

# **Electrical / Optical Characteristics**

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

| Part Number | F<br>Vo | orwai<br>Itage | rd<br>(V) <sup>1</sup> | Rec<br>F<br>Cur | comm<br>forwai<br>rrent ( | end<br>rd<br>mA) | Reverse<br>Current<br>(µA) | D<br>Wave | omina<br>length | nt<br>(nm) <sup>2</sup> | Luminous<br>Intensity Iv (mcd) |     |     | Viewing<br>Angle<br>2 O ½<br>(deg) |
|-------------|---------|----------------|------------------------|-----------------|---------------------------|------------------|----------------------------|-----------|-----------------|-------------------------|--------------------------------|-----|-----|------------------------------------|
|             | MIN     | TYP            | MAX                    | MIN             | ΤΥΡ                       | MAX              | MAX                        | MIN       | TYP             | MAX                     | MIN                            | TYP | MAX | ТҮР                                |
| SM1206HC-IL | 1.8     | 2.0            | 2.3                    | /               | 20                        | /                | 10                         | 632       | 640             | 660                     | 18                             | 45  | 115 | 30                                 |

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



# **Typical Electrical / Optical Characteristics** T<sub>A</sub> = 25°C unless otherwise noted





















#### **Recommended Soldering Conditions**



### Tape and Reel Dimensions Note: 3000 pcs/Reel



Outline Drawings Notes: 1. All dimensions are in inches [millimeters]. 2. Standard tolerance: ±0.010" unless otherwise noted.

RERERERERERERERERERERER





# **Packaging and Labeling Plan** Note: 1 Reel / Bag

Vacuum and Heat Sealed Clear AntiStatic Poly Bag

xxx-xxx-xxx xxxx

XXX BIN

RoHS

Bivar. Inc. Part: XXXX-XXX-XXX X.XXX

Humidity Indicator

Card



Notes:

1. Reel color can be black or white.

| Part No.  | XXXX-XXX-XXX |
|-----------|--------------|
| Prod. No. | XXXX-XXX-XXX |
| PO No.    | XXXX         |
| Lot No.   | XXXXXXXXX    |
| Q'ty:     | X.XXX PCS    |
| Q.C.      | XXX BIN      |
| Date:     | 2008.XX.XX   |

Internal Quality Control

| Bivar. Inc.               | MSL4              |  |  |  |  |
|---------------------------|-------------------|--|--|--|--|
| 4 Thomas, Irvine, CA 9261 | 8-2593            |  |  |  |  |
| LOT: XXX.XXXXX.X          | X                 |  |  |  |  |
|                           |                   |  |  |  |  |
| Part: XXXX-XXX-X          | XX                |  |  |  |  |
| Quantity: X.XXX           | RoHS<br>Compliant |  |  |  |  |

#### **Bivar Standard Packaging Label**

Desiccant



#### SM1206HC

- Industry Standard 1206 Package
- RoHS Compliant
- Small Package and Footprint
- Water Clear Lens
- Wide Viewing Angle
- Ideal for Status Indication, Display, and Backlighting

Bivar Surface Mount 1206 package LED may be used in nearly any lighting or indication application. The miniature package is ideal for small scale applications such as general indication and backlighting. Low power consumption and excellent long life reliability are suitable for battery powered equipment. Bivar offers water clear LED lens for maximum luminous intensity. Wide variety of wavelength and intensity combinations are available to meet any illumination need. The SM1206 LED is packaged in standard tape and reels for pick and place assemblies.

| Part Number | Material | Emitted Color | Peak<br>Wavelength<br>λp(nm) TYP. | Lens<br>Appearance | Luminous<br>Intensity<br>(mcd) TYP. | Viewing Angle |
|-------------|----------|---------------|-----------------------------------|--------------------|-------------------------------------|---------------|
| SM1206HC    | AlGaInP  | RED           | 655                               | Water Clear        | 28.5                                | 140°          |

#### **Outline Dimensions**







# **Absolute Maximum Ratings**

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

| 78 mW       |
|-------------|
| 30 mA       |
| 100 mA      |
| 5 V         |
| -40 ~ +85°C |
| -40 ~ +85°C |
| 260°C       |
|             |

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

# **Electrical / Optical Characteristics**

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

| Part Number | Forward<br>Voltage (V) <sup>1</sup> |     | Recommend<br>Forward<br>Current (mA) |     |     | Reverse<br>Current<br>(µA) | Dominant<br>Wavelength (nm) <sup>2</sup> |     |     | Luminous<br>Intensity Iv (mcd) |      |      | Viewing<br>Angle<br>2 O ½<br>(deg) |     |
|-------------|-------------------------------------|-----|--------------------------------------|-----|-----|----------------------------|------------------------------------------|-----|-----|--------------------------------|------|------|------------------------------------|-----|
|             | MIN                                 | TYP | MAX                                  | MIN | TYP | MAX                        | MAX                                      | MIN | TYP | MAX                            | MIN  | TYP  | MAX                                | ТҮР |
| SM1206HC    | 1.7                                 | 2.0 | 2.6                                  | /   | 20  | /                          | 10                                       | 632 | 640 | 660                            | 11.5 | 28.5 | 72                                 | 140 |

Notes: 1. Tolerance of forward voltage :  $\pm 0.05V$ . 2. Tolerance of dominant wavelength :  $\pm 1.0$ nm.



# **Typical Electrical / Optical Characteristics**

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





















**Recommended Soldering Conditions** 



#### Tape and Reel Dimensions Note: 3000 pcs/Reel



Outline Drawings Notes:
1. All dimensions are in inches [millimeters].
2. Standard tolerance: ±0.010" unless otherwise noted.





#### **Outline Drawings Notes:**

1. All dimensions are in inches [millimeters]. 2. Standard tolerance unless otherwise noted: X.XXX ± 0.010"

X.X ± 0.1'

## Packaging and Labeling Plan Note: 1 Reel / Bag



| Part No.  | XXXX-XXX-XXX |
|-----------|--------------|
| Prod. No. | XXXX-XXX-XXX |
| PO No.    | XXXX         |
| Lot No.   | XXXXXXXXX    |
| Q'ty:     | X.XXX PCS    |
| Q.C.      | XXX BIN      |
| Date:     | 2008.XX.XX   |

Internal Quality Control

| Bivar. Inc.                | MSL4              |
|----------------------------|-------------------|
| 4 Thomas, Irvine, CA 92618 | -2593             |
|                            |                   |
|                            | <br>\/\/          |
| Part: XXXX-XXX-X           | XX                |
| Quantity: X.XXX            | RoHS<br>Compliant |

**Bivar Standard Packaging Label** 

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



#### UV3TZ-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 **UV3TZ-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 |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------|-----------------|-------------|---------------|--|--|--|
| UV3TZ-385-15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |               | 385nm           |             |               |  |  |  |
| UV3TZ-390-15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |               | 390nm           |             |               |  |  |  |
| UV3TZ-395-15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | InGaN/Sapphire | Purple        | 395nm           | Water Clear | 15°           |  |  |  |
| UV3TZ-400-15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |               | 400nm           |             |               |  |  |  |
| UV3TZ-405-15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |               | 402.5nm         |             |               |  |  |  |
| UV3TZ-385-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |               | 385nm           |             |               |  |  |  |
| UV3TZ-390-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |               | 390nm           |             |               |  |  |  |
| UV3TZ-395-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | InGaN/Sapphire | Purple        | 395nm           | Water Clear | 30°           |  |  |  |
| UV3TZ-400-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |               | 400nm           |             |               |  |  |  |
| UV3TZ-405-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |               | 402.5nm         |             |               |  |  |  |
| Flat Edge       0.211 [5.4mm]         Cathode ID       1.00 [25.4mm]         Ø.154 [Ø3.9mm]       0.04 [1.0mm]         Flange Dia.       0.04 [1.0mm]         0.118 [3.0mm]       0.020 [0.5mm]SQ. TYP.         0.110 [2.8mm]       0.028 [0.7mm]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |               |                 |             |               |  |  |  |
| <ul> <li>1. Standard tolerance: 30 Unificitation and tolerance: 40.020° unless otherwise noted.</li> <li>3. Tolerance of overall epoxy outline: ±0.220° unless otherwise noted.</li> <li>4. Epoxy meniscus may extend to 0.060° max.</li> <li>Mole Size = Ø.032<sup>+</sup>.003<sup>-</sup>.002</li> </ul> |                |               |                 |             |               |  |  |  |

Bivar, Inc. — 4 Thomas, Irvine, California 92618, U.S.A. Phone: (949) 951-8808 Fax: (949) 951-3974 Web: www.bivar.com



#### Absolute Maximum Ratings

 $T_A = 25^{\circ}C$  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 ) $^2$ | 260°C       |

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

#### **Electrical Characteristics**

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

| Part Number  | F<br>Vo | orwa<br>Itage | rd<br>(V) <sup>1</sup> | Recommend<br>Forward<br>Current (mA) |     | Reverse<br>Current<br>(mA) | Peak Wavelength<br>λp (nm) <sup>2</sup> |       |       | Emitting<br>Power (mW) |     | 50% Power<br>Angle (deg) |     |
|--------------|---------|---------------|------------------------|--------------------------------------|-----|----------------------------|-----------------------------------------|-------|-------|------------------------|-----|--------------------------|-----|
|              | MIN     | TYP           | MAX                    | MIN                                  | TYP | MAX                        | MAX                                     | MIN   | TYP   | MAX                    | MIN | <b>TYP</b> <sup>3</sup>  | TYP |
| UV3TZ-385-15 | 2.9     | 3.2           | 3.5                    |                                      |     |                            |                                         | 382.5 | 385.0 | 387.5                  | 10  | 20                       |     |
| UV3TZ-390-15 | 2.9     | 3.2           | 3.5                    |                                      |     |                            |                                         | 387.5 | 390.0 | 392.5                  | 10  | 20                       |     |
| UV3TZ-395-15 | 2.9     | 3.2           | 3.5                    | 10                                   | 15  | 20                         | /                                       | 392.5 | 395.0 | 397.5                  | 10  | 20                       | 15  |
| UV3TZ-400-15 | 2.9     | 3.2           | 3.5                    |                                      |     |                            |                                         | 397.5 | 400.0 | 402.5                  | 10  | 20                       |     |
| UV3TZ-405-15 | 2.9     | 3.2           | 3.5                    |                                      |     |                            |                                         | 400.0 | 402.5 | 405.0                  | 10  | 20                       |     |
| UV3TZ-385-30 | 2.9     | 3.2           | 3.5                    |                                      |     |                            |                                         | 382.5 | 385.0 | 387.5                  | 10  | 20                       |     |
| UV3TZ-390-30 | 2.9     | 3.2           | 3.5                    |                                      |     |                            |                                         | 387.5 | 390.0 | 392.5                  | 20  | 40                       |     |
| UV3TZ-395-30 | 2.9     | 3.2           | 3.5                    | 10                                   | 15  | 20                         | /                                       | 392.5 | 395.0 | 397.5                  | 20  | 40                       | 30  |
| UV3TZ-400-30 | 2.9     | 3.2           | 3.5                    |                                      |     |                            |                                         | 397.5 | 400.0 | 402.5                  | 20  | 40                       |     |
| UV3TZ-405-30 | 2.9     | 3.2           | 3.5                    |                                      |     |                            |                                         | 400.0 | 402.5 | 405.0                  | 20  | 40                       |     |

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

3. Tolerance of emitting power (Typ) : ±15%.

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

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









#### **Typical Electrical / Optical Characteristics Curves**

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



Fig.1 Forward Current vs.Forward Voltage



Fig.3 Reverse Current vs. Reverse Voltage











Fig.4 Relative Luminous Intensity vs.Wavelength





Bivar reserves the right to make changes at any time.



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

#### Packaging and labeling plan



Bivar reserves the right to make changes at any time.

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



#### 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                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               | 385nm           |             |               |  |  |  |
| UV5TZ-390-15                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 390nm         |                 |             |               |  |  |  |
| UV5TZ-395-15                                                                                                                                                                                                                                                                                               | InGaN/Sapphire                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Purple        | 395nm           | Water Clear | 15°           |  |  |  |
| UV5TZ-400-15                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               | 400nm           |             |               |  |  |  |
| UV5TZ-405-15                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               | 402.5nm         |             |               |  |  |  |
| UV5TZ-385-30                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               | 385nm           |             |               |  |  |  |
| UV5TZ-390-30                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               | 390nm           |             |               |  |  |  |
| UV5TZ-395-30                                                                                                                                                                                                                                                                                               | InGaN/Sapphire                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Purple        | 395nm           | Water Clear | 30°           |  |  |  |
| UV5TZ-400-30                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               | 400nm           |             |               |  |  |  |
| UV5TZ-405-30                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               | 402.5nm         |             |               |  |  |  |
| Flat Edge<br>Cathode ID<br>Ø.228 [Ø5.8mm]<br>Flange Dia.<br>0.197 [5.0mm]<br>0.193 [4.9mm]<br>0.193 [4.9mm]<br>Wilk<br>0.020 [0.5mm] SQ. TYP<br>0.039 [1.0mm]<br>Recommended Mounting<br>Hole Size = Ø.032 <sup>+</sup> .003<br>Hole Size = Ø.032 <sup>+</sup> .003<br>Hole Size = Ø.032 <sup>+</sup> .003 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |                 |             |               |  |  |  |
| • This t     • Do no     skin,     • If the     • If the                                                                                                                                                                                                                                                   | <ul> <li>CAUTION - EMITS ULTRAVIOLET RADIATION!!</li> <li>         • 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.         • Moisture Sensitivity Levels 1</li></ul> |               |                 |             |               |  |  |  |

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#### Absolute Maximum Ratings

 $T_A = 25^{\circ}C$  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 ) $^2$ | 260°C       |

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

#### **Electrical Characteristics**

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

| Part Number  | F<br>Vo | orwa<br>Itage | rd<br>(V) <sup>1</sup> | Recommend<br>Forward<br>Current (mA) |     | Reverse<br>Current<br>(mA) | Peak Wavelength<br>λp (nm) <sup>2</sup> |       |       | Emitting<br>Power (mW) |     | 50% Power<br>Angle (deg) |     |
|--------------|---------|---------------|------------------------|--------------------------------------|-----|----------------------------|-----------------------------------------|-------|-------|------------------------|-----|--------------------------|-----|
|              | MIN     | TYP           | MAX                    | MIN                                  | TYP | MAX                        | MAX                                     | MIN   | TYP   | MAX                    | MIN | <b>TYP</b> <sup>3</sup>  | TYP |
| UV5TZ-385-15 | 2.9     | 3.2           | 3.5                    |                                      |     |                            |                                         | 382.5 | 385.0 | 387.5                  | 10  | 20                       |     |
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| UV5TZ-395-15 | 2.9     | 3.2           | 3.5                    | 10                                   | 15  | 20                         | /                                       | 392.5 | 395.0 | 397.5                  | 20  | 40                       | 15  |
| 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                    |                                      |     |                            |                                         | 382.5 | 385.0 | 387.5                  | 10  | 20                       |     |
| 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                    | 10                                   | 15  | 20                         | /                                       | 392.5 | 395.0 | 397.5                  | 20  | 40                       | 30  |
| 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 : ±0.05V. 2. Tolerance of peak wavelength : ±1.0nm.

3. Tolerance of emitting power (Typ) : ±15%.

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

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







#### **Typical Electrical / Optical Characteristics Curves**

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



Fig.1 Forward Current vs.Forward Voltage



Fig.3 Reverse Current vs.Reverse Voltage











Fig.4 Relative Luminous Intensity vs. Wavelength





Bivar reserves the right to make changes at any time.



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

#### Packaging and labeling plan



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