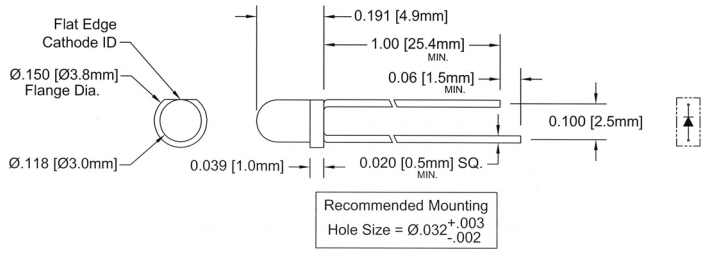
- Highly Efficient InGaN Materials Produce the Industry's Greatest Radiant Flux at 12mW
- Ideally Suited to Currency Validation, Medical, Test and Measurement and Security Applications
- Life: 1,000 Hours
- LEDs are Not Safe for Direct Viewing AEL Class 3 per IEC 825-1, EN-60825-1, EN60825-2 *(Do not look directly at the light source)*

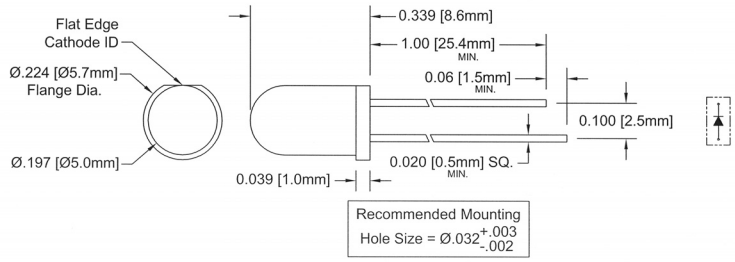
LED3-UV-XXX-30 Series — 3mm Ultraviolet LED

LED Part No.	Chip			Lens Appearance	Absolute Max. Ratings				Electro-Optical Data @20mA			Viewing Angle 2 θ 1/2 (deg)
	Material	Peak Wave Length λp(nm)	Emitted Color		Δ λ (nm)	Pd (mW)	If (mA)	Peak If (mA)	Vf (V) TYP	Vf (V) MAX	Iv (mcd) TYP	
LED3-UV-395-30	InGaN	395	BLUE UV	WATER CLEAR	60	100	30	100	3.7	4.0	11.0	30
LED3-UV-400-30	InGaN	400	BLUE UV	WATER CLEAR	60	100	30	100	3.7	4.0	12.0	30
LED3-UV-405-30	InGaN	405	BLUE UV	WATER CLEAR	60	100	30	100	3.7	4.0	12.0	30



LED5-UV-XXX-30 Series — 5mm Ultraviolet LED

LED Part No.	Chip			Lens Appearance	Absolute Max. Ratings				Electro-Optical Data @20mA			Viewing Angle 2 θ 1/2 (deg)
	Material	Peak Wave Length λp(nm)	Emitted Color		Δ λ (nm)	Pd (mW)	If (mA)	Peak If (mA)	Vf (V) TYP	Vf (V) MAX	Iv (mcd) TYP	
LED5-UV-395-30	InGaN	395	BLUE UV	WATER CLEAR	60	100	30	100	3.7	4.0	11.0	30
LED5-UV-400-30	InGaN	400	BLUE UV	WATER CLEAR	60	100	30	100	3.7	4.0	12.0	30
LED5-UV-405-30	InGaN	405	BLUE UV	WATER CLEAR	60	100	30	100	3.7	4.0	12.0	30



CAUTIONS: EMITS ULTRAVIOLET RADIATION

This device radiates intense ultraviolet (UV) light when operated. Exposure to UV radiation can be harmful to your health. Protect your eyes and skin during operation. Do not look directly at the device during operation. Exposure to UV light, even for a brief period, can damage your eyes. Do not operate the device unless you have had proper safety training and take appropriate precautions. **Do not permit children or untrained personnel to operate the device.**

Bivar. Inc.

Complete UV Specifications

Bivar, Inc.
4 Thomas
Irvine, CA 92618
1-800-772-2377
www.bivar.com - info@bivar.com

Understanding a little more about UV

Ultraviolet radiation (UV) is only a small portion of the radiation we receive from the sun, but has a large impact on all biological activity here on Earth. BivarOpto solid state UV emitters can produce up to 12mW of 400nm UVA radiation for specialized applications that in the past relied upon large high-voltage incandescent/filament lamps. We have provided special cautions for users in order to avoid miss-use. Prolonged exposure or miss-use of any UV light source carries with it some potential health risks.
Physical Definition

All radiation from our sun travels in the form of electromagnetic waves and is characterized as solar (originating with the Sun) radiation. Solar Radiation is measured in terms of wavelength with is the distance between two points of identical phase in a successive cycle of the wave and expressed in nanometers, one-billionth of a meter. Wavelengths just short of the visible spectrum (410nm-790nm) are classified as Ultraviolet (UV). UV is defined as all radiation between 100 and 400nm. Although there are other sources of UV radiation, such as welding arcs, incandescent lamps and LEDs, most UV Radiation that you will come in contact with is from our sun.

The UV portion of daylight accounts for less than 10% of the total energy output from our sun and the majority of this is absorbed or scattered back into space by the protective shield of our atmosphere. This results in very little UV radiation actually reaching the surface of the Earth.

Ultraviolet radiation is classified in three groups:

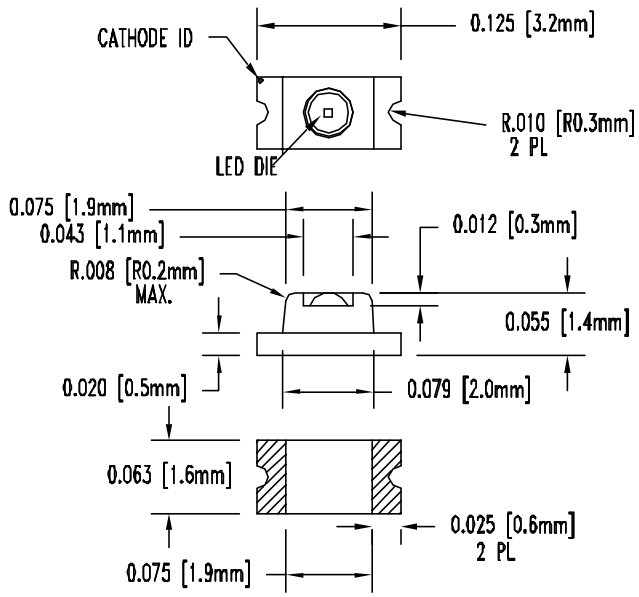
- UVA 320-400nm: the most prevelant form of UV Radiation (and the dominant wavelength of BivarOpto UV LEDs)
- UVB 280-320nm: most of this energy is absorbed in our atmosphere. UVB can be generated with incandescent sources and has medical (germicidal) applicaitons.
- UVC 100-280nm: nasty radiation and very little of it reaches the Earth's surface. (protect that ozone layer or we will all be growing extra limbs and learning to live in caves again!)

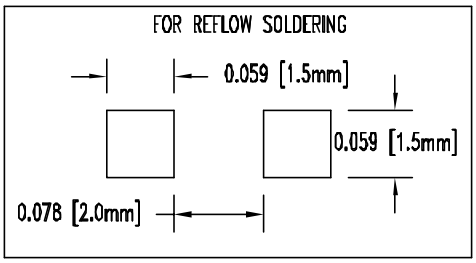
UV Effects

UV has a variety of effects on plants, animals, and materials here on Earth and frankly, most of them aren't good. UV is known to negatively affect commonly used materials such as plastics that we rely on to provide us everything from lighter cars to cheap lawn furniture. While stratospheric and tropospheric chemistry finds UV its main catalyst, the majority of UV's effects that have been studied involve the impact of UV on general biology. These effects can range from human health impacts to impacts on single cell organisms. Underlying many of these studies is the fact that each UV photon has more energy than most other photons normally encountered in nature. UV wavelengths, particularly those in the UVB range, can efficiently break DNA bonds. While some studies have shown that UVA, can actually assist in repairing some forms of DNA damage. The one thing for sure it that the shorter the wavelength the greater and more damaging are the potential effects.

According to a paper written by E. C. Weatherhead and A.R. Webb (from which most of this paper has been "borrowed"), the most well-known effects of UV on carbon based life forms (that's you and I) include the nefarious sunburn and snow blindness (photo-keratitis). UV has also been linked to skin cancers, immune suppression, and cataract formation as well as a number of dermatological and ocular problems. These effects have been observed either in controlled laboratory experiments or from epidemiological studies. These studies can help to explain, for instance, the differences in skin cancer incidence by latitude.

REV	DESCRIPTION
A	ENGINEERING RELEASE.





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LED Part No.	Chip						Lens Appearance	Absolute Maximum Ratings				E
	Material	Emitted Color	Peak Wave Length λp (nm) Min.	Typ.	Max.	Dom. Wave Length λd (nm) Typ.		△λ (nm)	Pd (mW)	If (Typ) (mA)	Peak (If) (mA)	V Typ.
SM1206UV-395-IL	InGaN	BLUE UV	390	395	400	430	WATER CLEAR	60	100	30	100	3.7
SM1206UV-400-IL	InGaN	BLUE UV	390	400	410	430	WATER CLEAR	60	100	30	100	3.7
SM1206UV-405-IL	InGaN	BLUE UV	400	405	410	430	WATER CLEAR	60	100	30	100	3.7

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

ELECTROSTATIC DISCHARGE THRESHOLD (HBM) ——— 1000V

ELECTROSTATIC DISCHARGE CLASSIFICATION (MIL-STD-883E) ——— CLASS 2 (CLASS 1 FOR UV)

LED JUNCTION TEMPERATURE ——— 125°C

REVERSE VOLTAGE ——— 5V

REVERSE CURRENT (V_R=5V) ——— 10uA

OPERATING TEMPERATURE RANGE ——— -25°C ~ 85°C

STORAGE TEMPERATURE ——— -30°C ~ 100°C

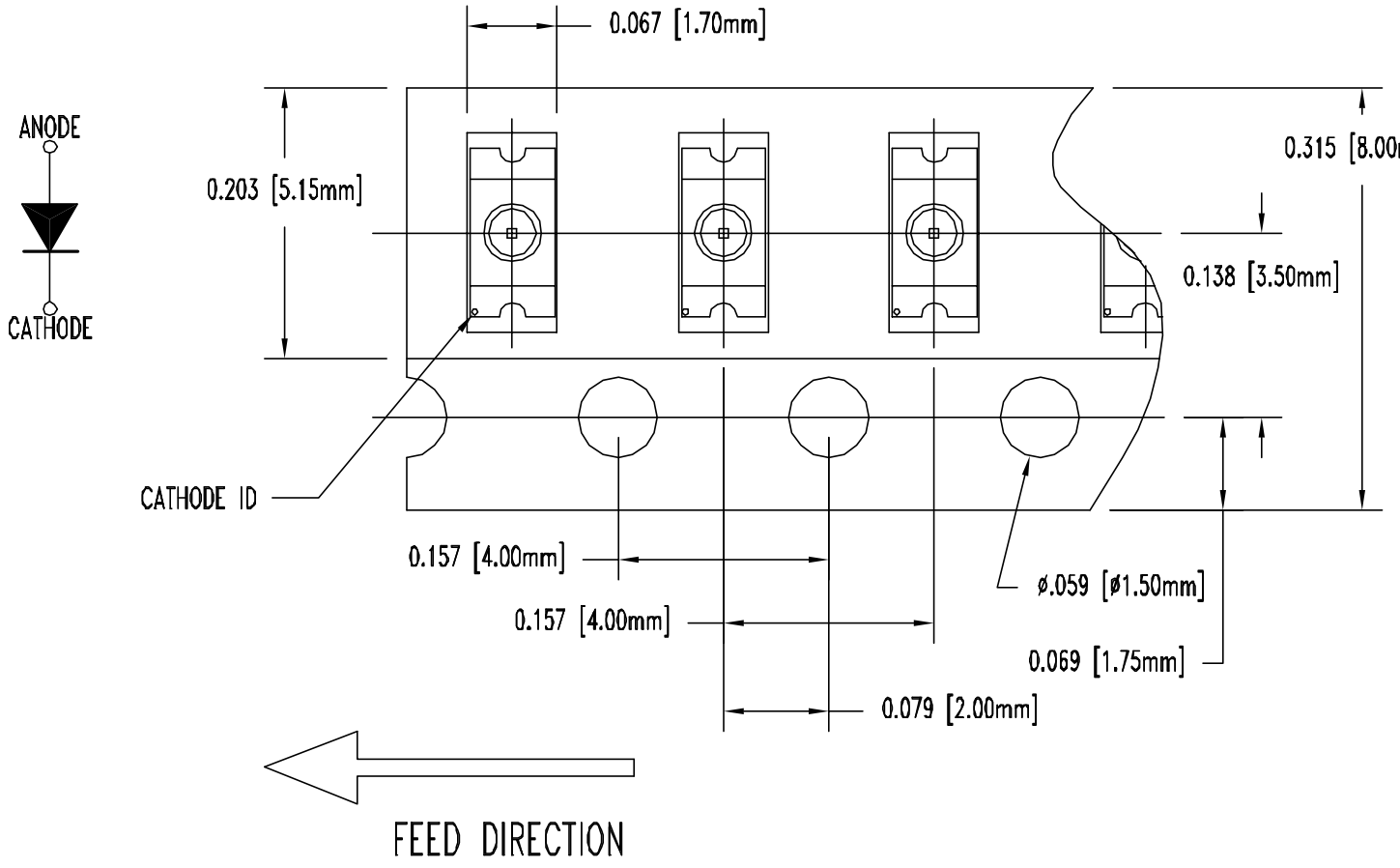
LEAD SOLDERING TEMPERATURE(1/16" FROM BODY) ——— 260°C FOR 5 SECONDS

Product resistance to electrostatic dis
simulating ESD using a rapid avalanc
procedures are designed to approxim
shown. Seller gives no other assura
Products to withstand ESD.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES			
TOLERANCES			
DECIMALS		ANGULAR	
.X	± .1	X°	± 1°
.XX	± .02		
.XXX	± .010		
DESIGNER: DAVID GREEN	DATE: 05/19/03	SIZE: A	DWG NA
CHECKER: M CHEN	DATE: 05/19/03	SCALE: 1=1	

PART N

REV	DESCRIPTION
	SEE SHEET #1.



2. UNLESS OTHERWISE SPECIFIED,
PACKAGING TO COMPLY WITH EIA-481-B
1. 3000 pcs PER REEL

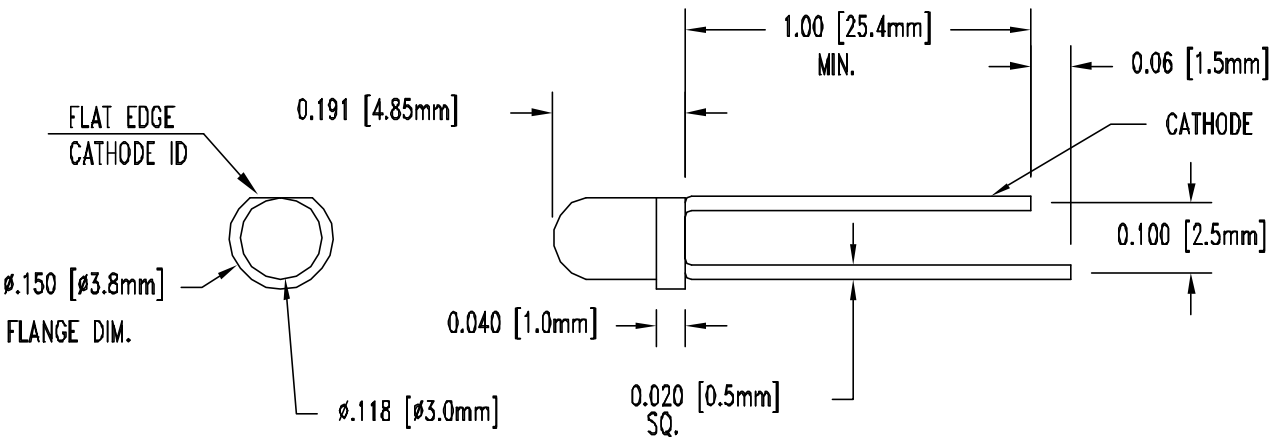
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES			
TOLERANCES			
DECIMALS		ANGULAR	
.X	± .1	X°	± 1°
.XX	± .02		
.XXX	± .010		
DESIGNER: DAVID GREEN		DATE: 05/19/03	
CHECKER: M CHEN		DATE: 05/19/03	

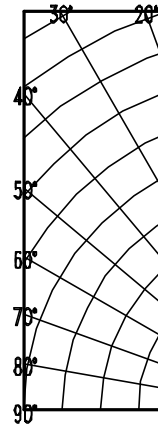
PART N

SIZE A

SCALE 1=1

REV	DESCRIPTION
A	ENGINEERING RELEASE.





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LED Part No.	Chip						Lens Appearance	Absolute Maximum Ratings				E
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LED3-UV-395-30	InGaN	BLUE UV	390	395	400	430	WATER CLEAR	60	100	30	100	3.7
LED3-UV-400-30	InGaN	BLUE UV	390	400	410	430	WATER CLEAR	60	100	30	100	3.7
LED3-UV-405-30	InGaN	BLUE UV	400	405	410	430	WATER CLEAR	60	100	30	100	3.7

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REVERSE CURRENT (V_R=5V)	10uA
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LEAD SOLDERING TEMPERATURE(1/16" FROM BODY)	260°C FOR 5 SECONDS

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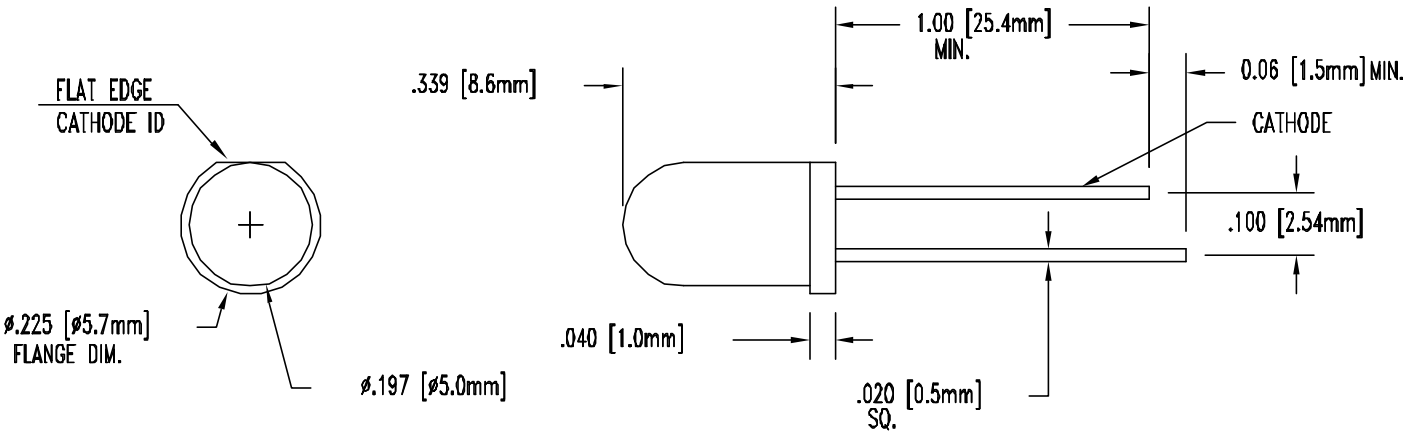
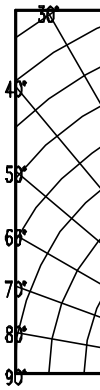
DESIGNER: DAVID GREEN	DATE: 05/19/03	SIZE: A	DWG NA
CHECKER: M CHEN	DATE: 05/19/03	SCALE: 1=1	

4
TEL: (
PART N

REV	DESCRIPTION
A	ENGINEERING RELEASE.





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LEAD SOLDERING TEMPERATURE(1/16" FROM BODY) ——— 260°C FOR 5 SECONDS

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CHECKER: M CHEN	DATE: 05/19/03	SCALE: 1=1	

PART N

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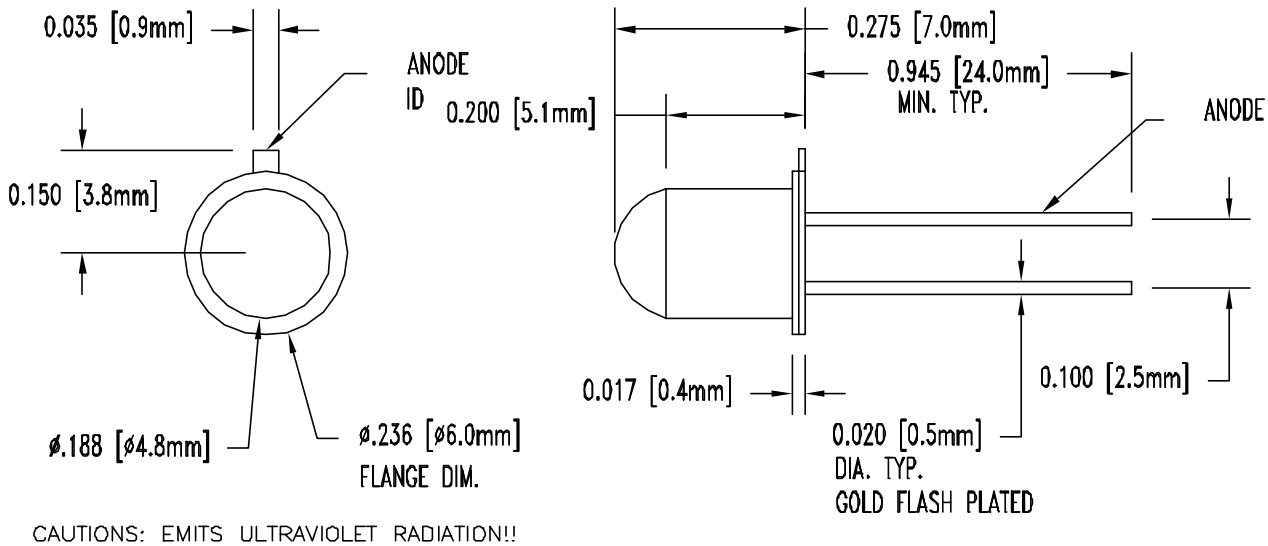

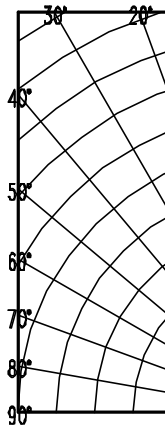

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UV-400-T092	InGaN	BLUE UV	390	400	410	430	WATER CLEAR	60	100	30	100	3.7
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DESIGNER: DAVID GREEN — DATE: 05/19/03
CHECKER: M CHEN — DATE: 05/19/03
SIZE: A — SCALE: 1=1
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4
TEL: (
DWG NA

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