

Optoelectronic Components Catalogue

2021-2022



Infinite Design Possibilities ∞

GUARANTEED TO SHINE

IATF16949 Automotive • ISO9001 Quality • ISO14001 Environmental

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High Temperature Series

SunLED launches the high-temperature series, a line of high-performance LEDs that are designed to withstand temperatures higher than the industry standard. Products in all industries experience temperature fluctuations and may be subject to high ambient temperatures. These conditions require a performance-driven LED that can withstand harsh environments.



Features

- ◆ High-temperature operation
- ◆ Higher outputs and energy efficiency
- ◆ Longer lifetime and reduced die degradation
- ◆ Prevent shifts in color due to heat
- ◆ Eliminate failures in harsh environments due to excessive heat
- ◆ Robust packages with superior quality
- ◆ Available in single- and multi-wavelength package configurations

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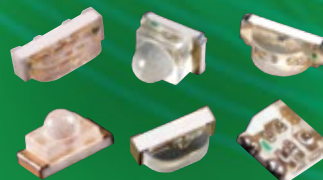
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Ultra-Low Current

2

Features

- ◆ Low current operation: 2 mA
- ◆ Low forward voltages
- ◆ Variety of package options and colors available
- ◆ Dome lens packages for high-intensity output
- ◆ Narrow to wide viewing angles: 10° to 170°



0603 PLCC2



18

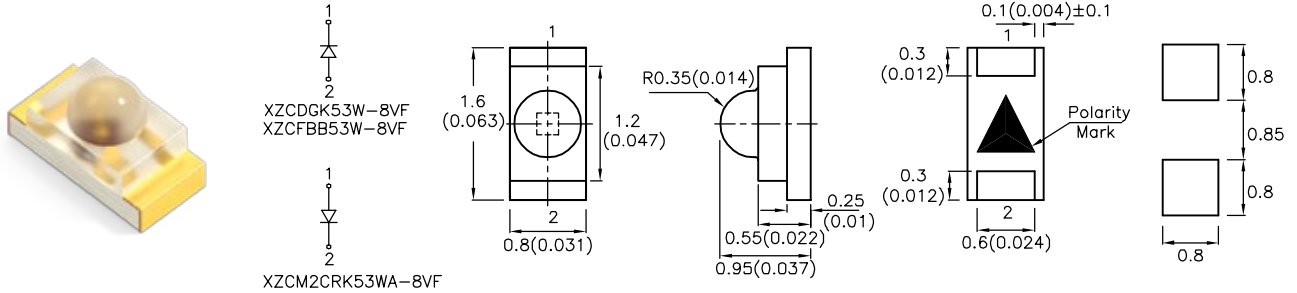
3-Dome RGB



7

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=2mA$		Viewing Angle 2 θ /2	Lens
			Min.	Typ.		

**1.6x0.8x0.95mm
(0603 Dome Lens)**

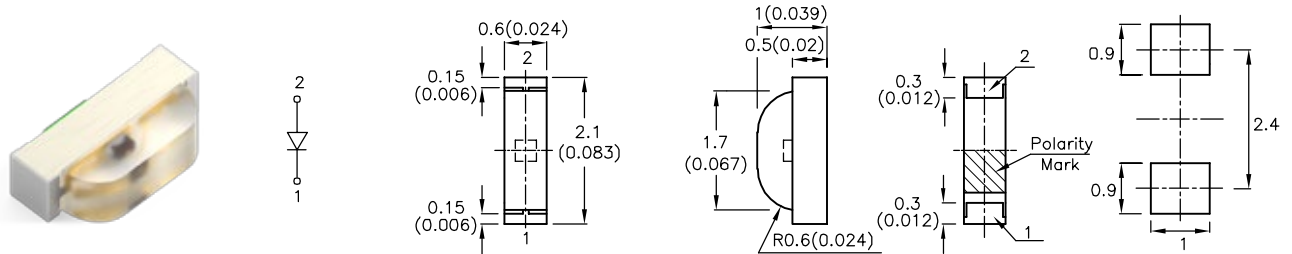


Dimension Unit: mm(inches), Tolerance : $\pm 0.15(0.006^*)$

Recommended Soldering Pattern

XZCM2CRK53WA-8VF	◆ AlGaInP(Red)	640	50	118	60°	Water Clear
XZCDGK53W-8VF	◆ InGaN(Green)	515	250	417	60°	Water Clear
XZCFBB53W-8VF	◆ InGaN(Blue)	465	30	64	40°	Water Clear

**2.1x1.0x0.6mm
(Right Angle)**



Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004^*)$

Recommended Soldering Pattern

XZCFBB74W-3VU	◆ InGaN(Blue)	465	10	19	170°	Water Clear
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Ultra-Low Current

PRODUCT HIGHLIGHT

SunLED proudly announces a new series to support engineering demands for ultra-low current LEDs.

A low current operation of $I_f=2mA$ paired with low forward voltages allows these LEDs to provide engineers with over 90% power reduction compared to traditional LEDs. SunLED has carefully rated this series of 9 LEDs to ensure the highest level of quality and consistency. Included in this series of 9 part numbers are options in both top emitting and right angle form factors.

Single color and RGB are available to further enhance design flexibility. Several parts are offered with ultra bright chips in a dome lens package to maintain a high intensity output while running at low currents.

PRODUCT APPLICATIONS

- Consumer devices
- Wearable electronics
- Medical and healthcare
- Mobile and handheld products
- Battery powered devices
- Instrumentation
- Safety and security

PRODUCT FEATURES

- Low current operation: $I_f=2mA$
- Low forward voltages
- Dome lens packages for high intensity output
- High reliability and consistency
- Narrow to wide viewing angles: 10° to 170°
- Single color and RGB options
- Top emitting and rt. angle packages


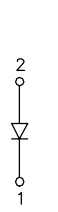
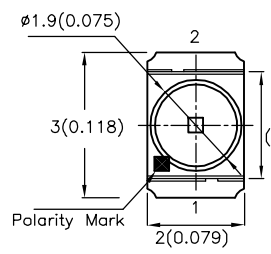
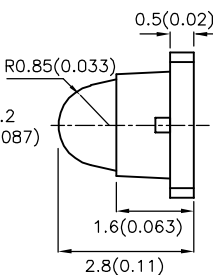
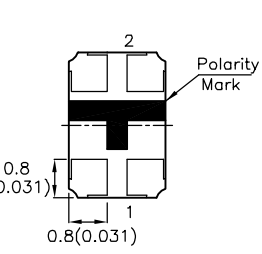
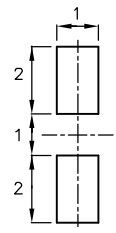
1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

PRODUCT HIGHLIGHT


PRODUCT HIGHLIGHT

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_v=2mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

**3.0x2.8x2.0 mm
(Dome Lens Right Angle)**

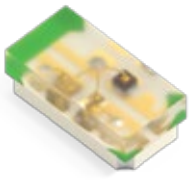
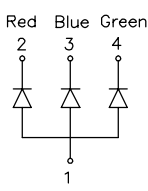
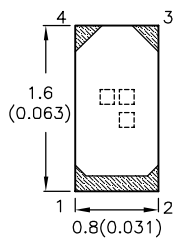
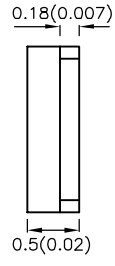
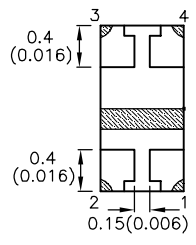
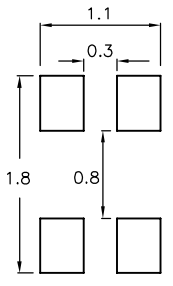







Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)$




XZCDGK50W-2-3VU	 InGaN(Green)	515	700	1495	10°	Water Clear
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PRODUCT HIGHLIGHT

**1.6x0.8x0.5mm
(Full Color)**


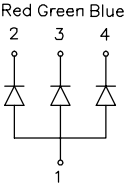
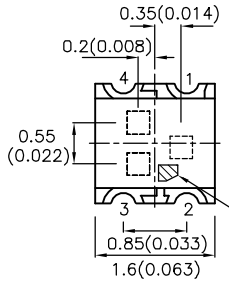
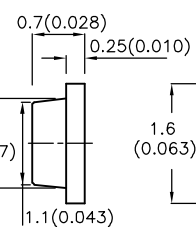
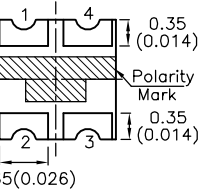
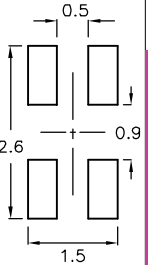







Dimension Unit: mm(inches), Tolerance : $\pm 0.15(0.006)$




XZCMECBDDGK53W	 AlGaInP(Red)	630	4	14	140°	Water Clear
	 InGaN(Blue)	460	4	9		
	 InGaN(Green)	515	20	69		

PRODUCT HIGHLIGHT

**1.6x1.6x0.7mm
(Full Color)**

Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)$


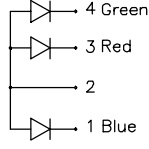
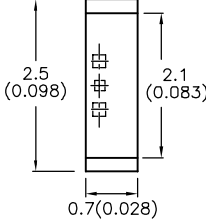

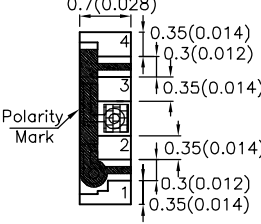
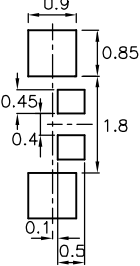
XZCMEDGCB110W	 AlGaInP(Red)	630	6	14	130°	Water Clear
	 InGaN(Green)	515	20	49		
	 InGaN(Blue)	460	6	13		

PRODUCT HIGHLIGHT

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

PRODUCT HIGHLIGHT

2.5x1.0x0.7mm (Right Angle, Full Color)


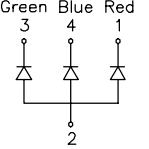
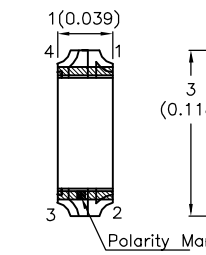
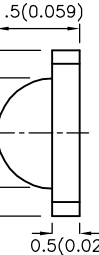
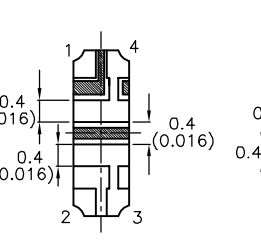
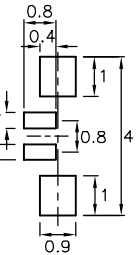







Dimension Unit: mm(inches), Tolerance : ±0.15(0.006")

Part Number	Chip Structure (Emitted Color)	λ _{peak} (nm)	Intensity(mcd) I _r =2mA		Viewing Angle 2θ1/2	Lens
			Min.	Typ.		
XZCCBDMEDGK161W	◆ InGaN(Blue)	460	4	9	130°	Water Clear
	◆ AlGaInP(Red)	630	6	9		
	◆ InGaN(Green)	515	20	59		

PRODUCT HIGHLIGHT

3.0x1.5x1.0mm (Right Angle, Full Color)


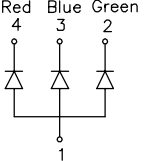
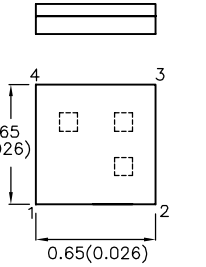
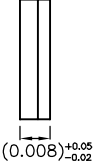
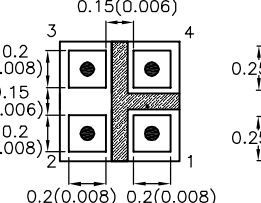
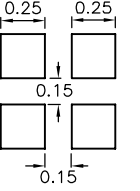







Dimension Unit: mm(inches), Tolerance : ±0.2(0.008")

Part Number	Chip Structure (Emitted Color)	λ _{peak} (nm)	Intensity(mcd) I _r =5mA		Viewing Angle 2θ1/2	Lens
			Min.	Typ.		
XZCMEDGCBD56W	◆ AlGaInP(Red)	630	6	14	150°	Water Clear
	◆ InGaN(Green)	515	20	59		
	◆ InGaN(Blue)	460	4	9		

MULTI-COLOR

0.65x0.65x0.2mm (Full Color)

Mask open area ratio: 80%
Mask thickness: 80~100um

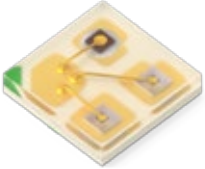
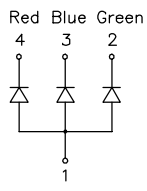
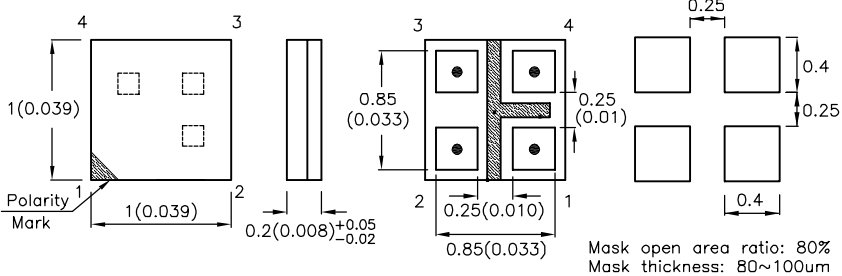
Dimension Unit: mm(inches), Tolerance : ±0.1(0.004")

Part Number	Chip Structure (Emitted Color)	λ _{peak} (nm)	Intensity(mcd) I _r =5mA		Viewing Angle 2θ1/2	Lens
			Min.	Typ.		
XZBGRBBRMER158W	◆ InGaN(Green)	518	30	89	140°	Water Clear
	◆ InGaN(Blue)	461	5	19		
	◆ AlGaInP(Red)	632	15	24		

1. Soldering Pattern Dimension Unit : mm, Tolerance : ±0.1mm.
2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.




Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_v=20mA,5mA^*$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

1.0x1.0x0.2mm (Full Color)

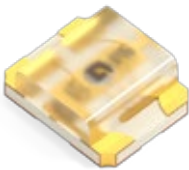
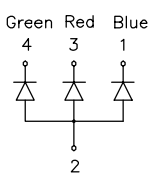
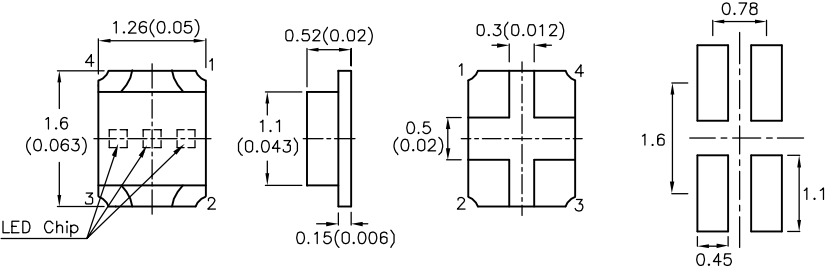




Mask open area ratio: 80%
Mask thickness: 80~100um




Dimension Unit: mm(ounces), Tolerance : $\pm 0.1(0.004)$ Recommended Soldering Pattern

XZBGRBRRMERK150W	 InGaN(Green)	518	*50	*79	150°	Water Clear
	 InGaN(Blue)	461	*10	*22		
	 AlGaInP(Red)	632	*15	*29		


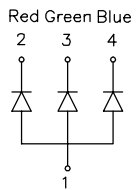
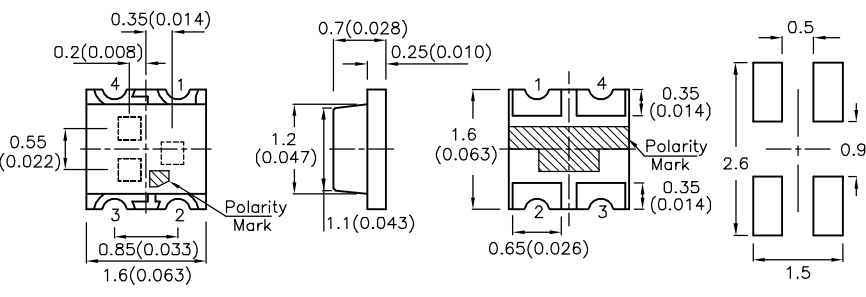
1.6x1.26x0.52mm (Full Color)




Dimension Unit: mm(ounces), Tolerance : $\pm 0.2(0.008)$ Recommended Soldering Pattern

XZCBDMKDG62W-2	 InGaN(Blue)	460	40	69	140°	Water Clear
	 AlGaInP(Red)	645	40	79		
	 InGaN(Green)	515	400	597		

1.6x1.6x0.7mm (Full Color)

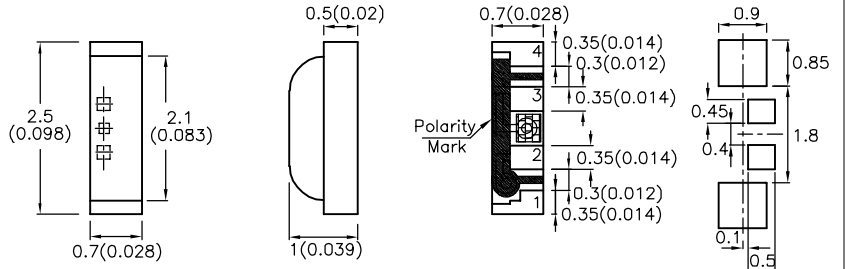
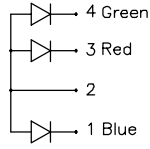
Dimension Unit: mm(ounces), Tolerance : $\pm 0.2(0.008)$ Recommended Soldering Pattern

XZMDKDCBD110W	 AlGaInP(Red)	645	40	79	130°	Water Clear
	 InGaN(Green)	515	120	278		
	 InGaN(Blue)	460	40	69		

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

**2.5x1.0x0.7mm
(Right Angle, Full Color)**

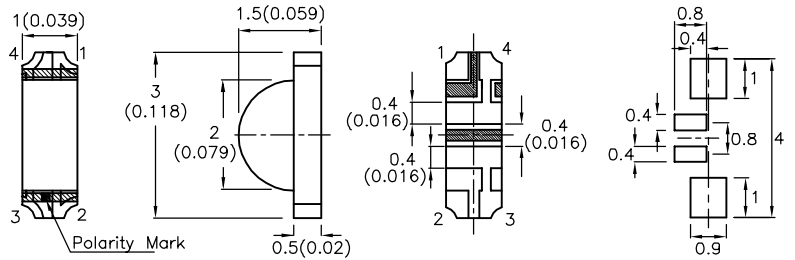
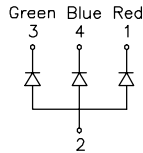


Dimension Unit: mm(inches), Tolerance : $\pm 0.15(0.006^{\circ})$

Recommended Soldering Pattern

XZCBDMEDGK161W	◆ InGaN(Blue)	460	40	64	130°	Water Clear
	◆ AlGaInP(Red)	630	80	108		
	◆ InGaN(Green)	515	300	497		

**3.0x1.5x1.0mm
(Right Angle, Full Color)**

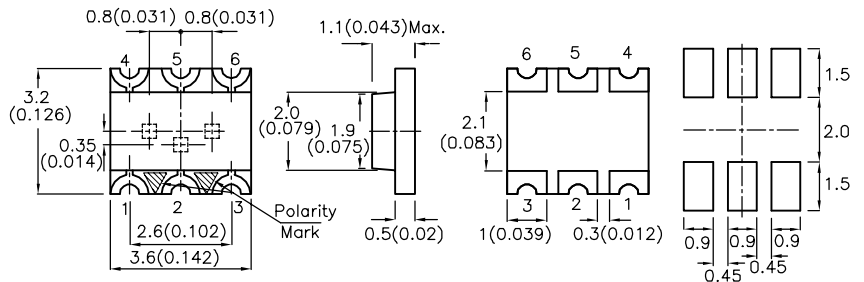
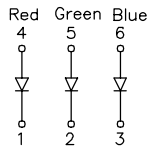


Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008^{\circ})$

Recommended Soldering Pattern

XZMEDGCBDS6W	◆ AlGaInP(Red)	630	80	138	150°	Water Clear
	◆ InGaN(Green)	515	300	497		
	◆ InGaN(Blue)	460	40	69		

**3.2x3.6x1.1mm
(Full Color)**



Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008^{\circ})$

Recommended Soldering Pattern


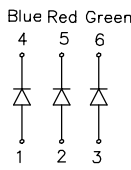
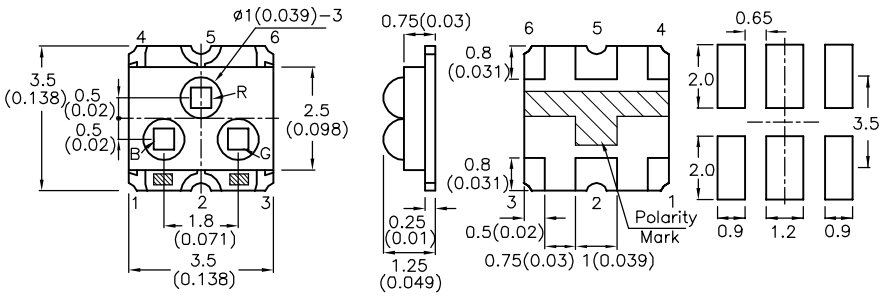
XZMEDGKCB61W	◆ AlGaInP(Red)	630	80	138	150°	Water Clear
	◆ InGaN(Green)	515	200	327		
	◆ InGaN(Blue)	460	40	69		

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

PRODUCT HIGHLIGHT

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		


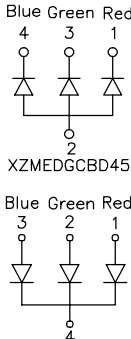
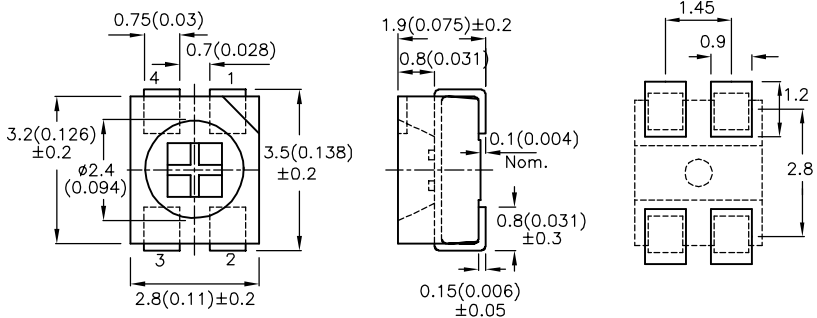
3.5x3.5x1.25mm (3-Dome RGB SMD)

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)$ Recommended Soldering Pattern

XZFBBM2ACRDG92W-3	◆ InGaN(Blue)	465	300	497	50°	Water Clear
	◆ AlGaInP(Red)	640	1000	1590		
	◆ InGaN(Green)	520	1300	1890		

3.5x2.8x1.9mm (PLCC4 Full Color)

Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm(0.01)$ Recommended Soldering Pattern

XZMEDGCB45S	◆ AlGaInP(Red)	630	120	218	120°	Water Clear
	◆ InGaN(Green)	515	400	497		
	◆ InGaN(Blue)	460	55	98		
XZM2CRKM2DGFBB45SCCB	◆ AlGaInP(Red)	640	400	497	120°	Water Clear
	◆ InGaN(Green)	520	1000	1590		
	◆ InGaN(Blue)	465	200	327		



XZFBBM2ACRDG92W-3 – 3-Dome RGB SMD

PRODUCT HIGHLIGHT

At the forefront of innovation, SunLED introduces a state-of-the-art LED: the 3-Dome RGB SMD LED, a single package with optics that focuses the light output from all 3 dies - individually - in an RGB LED.

This LED package leverages domed optical technology to concentrate light for each of the red, green, and blue chips to optimize intensity in a narrow viewing angle. SunLED, one of the world's leading manufacturers of optoelectronics, specializes in performance - driven, robust LED packages. With an extensive product offering of LED packages, SunLED manufactures with careful attention to detail and rigorous quality control. SunLED is committed to supporting new engineering designs with the first true RGB-domed package, the 3-Dome RGB LED.

PRODUCT APPLICATIONS

- Light pipe applications
- Icon and text backlighting
- Consumer electronics
- Handheld products
- Home automation
- Safety and security
- White goods
- Audio and video
- Medical and healthcare

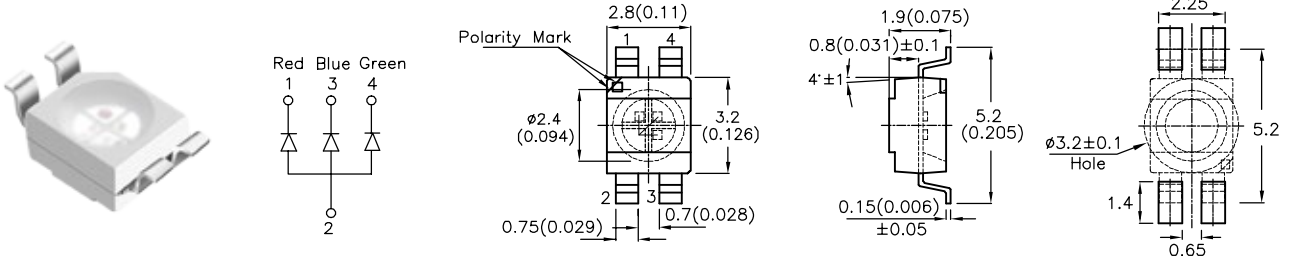
PRODUCT FEATURES

- Full color 3-dome optics in a single RGB package
- 3.5x3.5mm footprint
- Higher intensity and narrow viewing angle
- Low current: 20 mA operation
- Prevents light bleeding
- Moisture sensitivity level (MSL): 3

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

**3.2x2.8x1.9mm
(Reverse Mount, Full Color)**



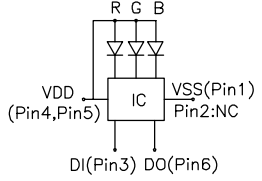
Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008^\circ)$

Recommended Soldering Pattern

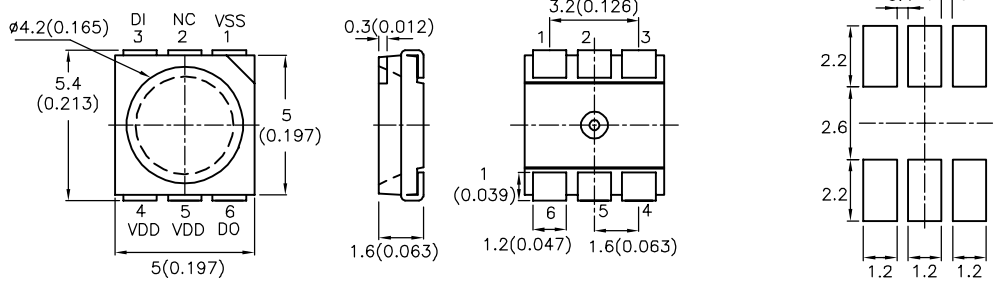
XZMDKCBDDG45S-9	◆ AlGaInP(Red)	645	55	108	120°	Water Clear
	◆ InGaN(Blue)	460	55	98		
	◆ InGaN(Green)	515	400	497		

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Iv (mcd) @ VDD = 5V, Gray Scale Level = 255		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

**5.0x5.0x1.6mm
(Full Color)**



PIN FUNCTION		
No.	Symbol	Function Description
1	VSS	Ground
2	NC	/
3	DI	Control data signal input
4	VDD	Power supply LED
5	VDD	Power supply LED
6	DO	Control data signal output



Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008^\circ)$


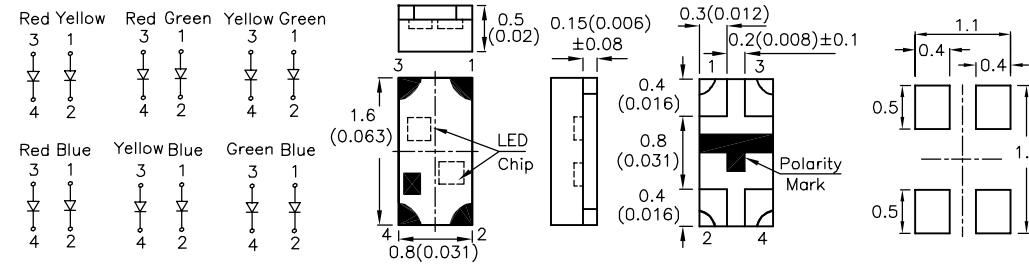
Recommended Soldering Pattern

XZM2CRKDGKBD107S-IC	◆ AlGaInP(Red)	640	200	357	120°	Water Clear
	◆ InGaN(Green)	515	400	597		
	◆ InGaN(Blue)	460	80	148		

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

1.6x0.8x0.5mm (0603 Bi-Color)


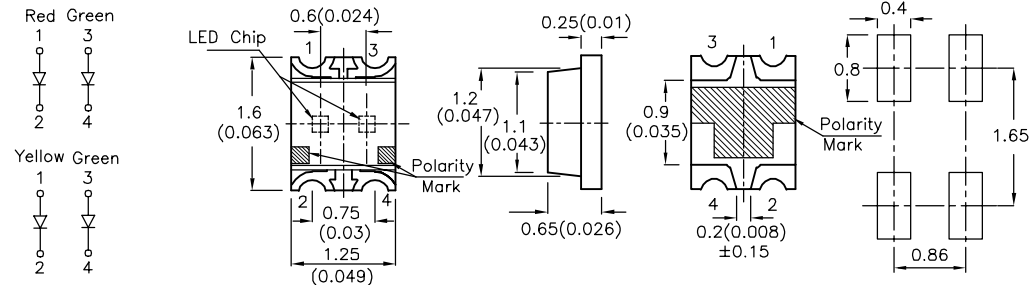



Dimension Unit: mm(inches), Tolerance : $\pm 0.15(0.006")$

Recommended Soldering Pattern

XZMYKMDK53W-9	◆ AlGaInP(Yellow)	590	80	148	130°	Water Clear
	◆ AlGaInP(Red)	645	40	89		
XZDGKMDK53W-9	◆ InGaN(Green)	515	200	347	130°	Water Clear
	◆ AlGaInP(Red)	645	40	89		
XZVGMKY53W-9	◆ AlGaInP(Green)	574	20	49	130°	Water Clear
	◆ AlGaInP(Yellow)	590	80	148		
XZVGMK53W-9	◆ AlGaInP(Green)	574	20	49	130°	Water Clear
	◆ AlGaInP(Red)	645	40	89		
XZCBDMK53W-9	◆ InGaN(Blue)	460	40	69	130°	Water Clear
	◆ AlGaInP(Red)	645	40	89		
XZCBDMKY53W-9	◆ InGaN(Blue)	460	40	69	130°	Water Clear
	◆ AlGaInP(Yellow)	590	80	148		
XZCBDVG53W-9	◆ InGaN(Blue)	460	40	69	130°	Water Clear
	◆ AlGaInP(Green)	574	20	49		

1.6x1.25x0.65mm (Bi-Color)


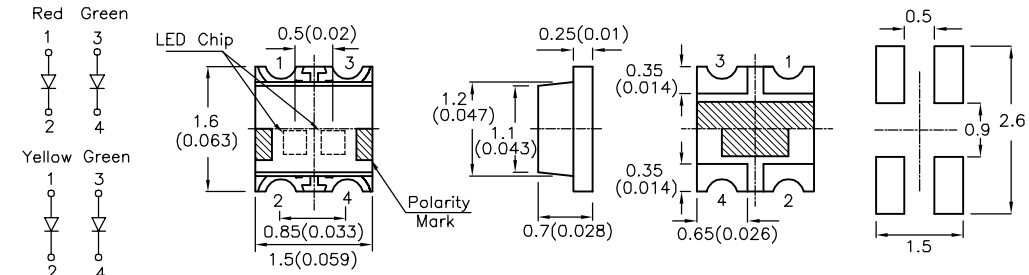



Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008")$

Recommended Soldering Pattern

XZMDKVG62W-1	◆ AlGaInP(Red)	645	40	79	150°	Water Clear
	◆ AlGaInP(Green)	574	20	49		
XZMYKVG62W-1	◆ AlGaInP(Yellow)	590	80	118	150°	Water Clear
	◆ AlGaInP(Green)	574	20	49		

1.6x1.5x0.7mm (Bi-Color)

Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008")$


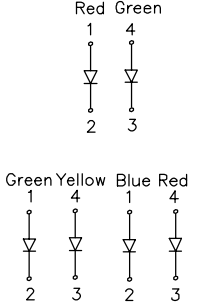
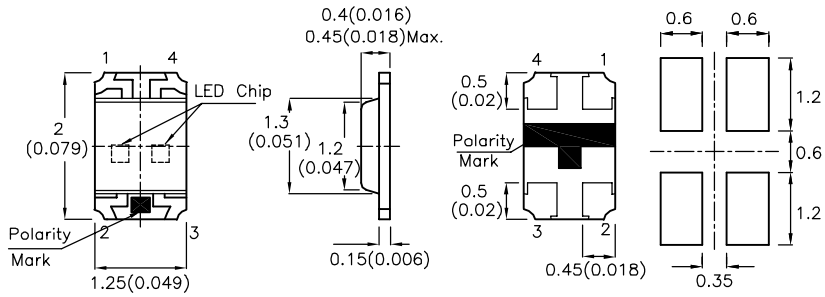
Recommended Soldering Pattern

XZMDKVG59W-1	◆ AlGaInP(Red)	645	40	79	150°	Water Clear
	◆ AlGaInP(Green)	574	20	49		
XZMYKVG59W-1	◆ AlGaInP(Yellow)	590	80	118	150°	Water Clear
	◆ AlGaInP(Green)	574	20	49		

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ /2	Lens
			Min.	Typ.		


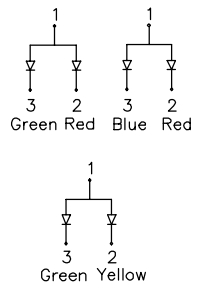
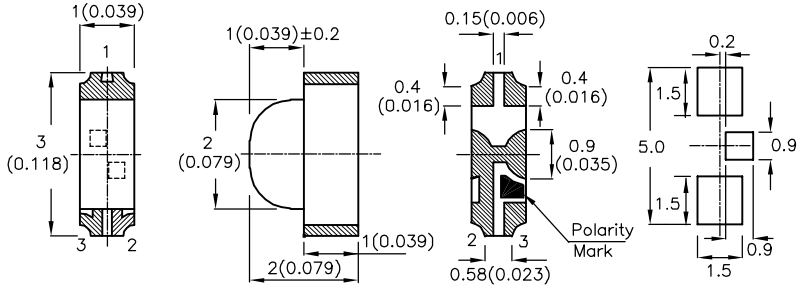
2.0x1.25x0.45mm (0805 Bi-Color)

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)^\circ$

Part Number	Chip Structure	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Lens
XZMDKDGK54W-4	<ul style="list-style-type: none"> AlGaInP(Red) InGaN(Green) 	645	40	79	120°	Water Clear
XZVGMKY54W-4	<ul style="list-style-type: none"> AlGaInP(Green) AlGaInP(Yellow) 	574	20	49	120°	Water Clear
XZCBMDK54W-4	<ul style="list-style-type: none"> InGaN(Blue) AlGaInP(Red) 	460	40	79	120°	Water Clear


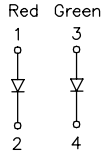
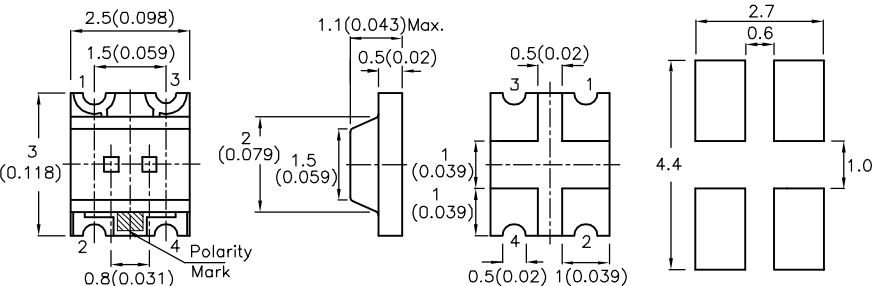
3.0x2.0x1.0mm (Right Angle, Bi-Color)

Dimension Unit: mm(inches), Tolerance : $\pm 0.15(0.006)^\circ$

Part Number	Chip Structure	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Lens
XZMDKCB56W	<ul style="list-style-type: none"> AlGaInP(Red) InGaN(Blue) 	645	40	79	140°	Water Clear
XZMYKVG56W	<ul style="list-style-type: none"> AlGaInP(Yellow) AlGaInP(Green) 	590	80	118	140°	Water Clear

3.0x2.5x1.1mm (Bi-Color)

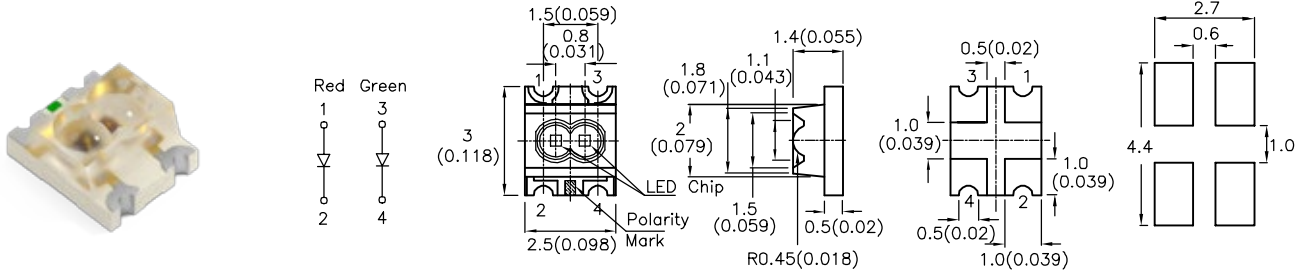
Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)^\circ$

Part Number	Chip Structure	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Lens

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

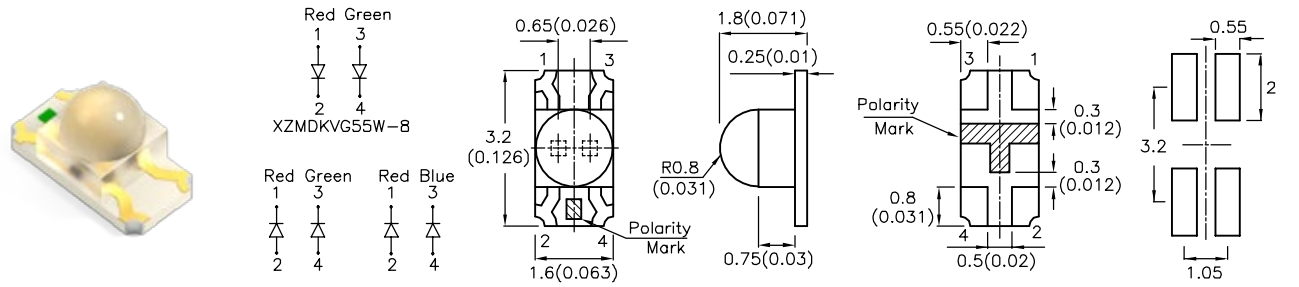
**3.0x2.5x1.4mm
(Bi-Color)**



Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008^*)$

XZMDKVG57W-1	◆ AlGaInP(Red)	645	120	297	50°	Water Clear
	◆ AlGaInP(Green)	574	80	148		

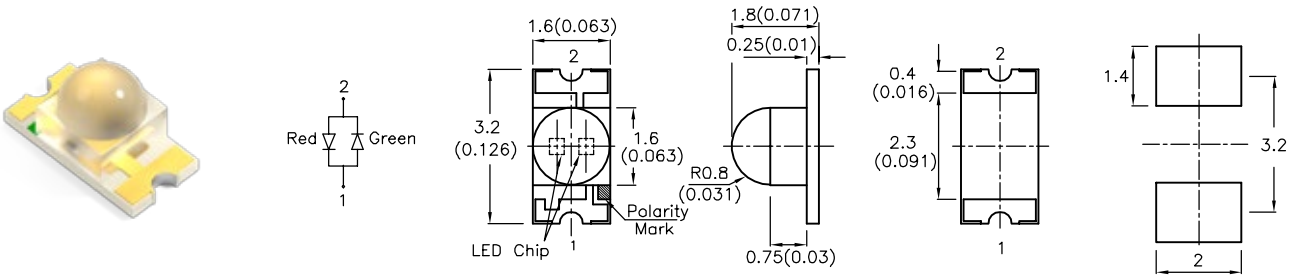
**3.2x1.6x1.8mm
(1206 Dome Lens Bi-Color)**



Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008^*)$

XZMDKVG55W-8	◆ AlGaInP(Red)	645	300	597	30°	Water Clear
	◆ AlGaInP(Green)	574	120	248		
XZM2CRKM2DG55W-8	◆ AlGaInP(Red)	640	700	1295	30°	Water Clear
	◆ InGaN(Green)	520	700	1295		
XZM2CRKFBB55W-8	◆ AlGaInP(Red)	640	700	1295	30°	Water Clear
	◆ InGaN(Blue)	465	120	278		

**3.2x1.6x1.8mm
(1206 Dome Lens Bi-Color)**




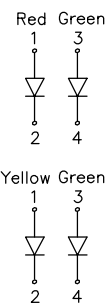
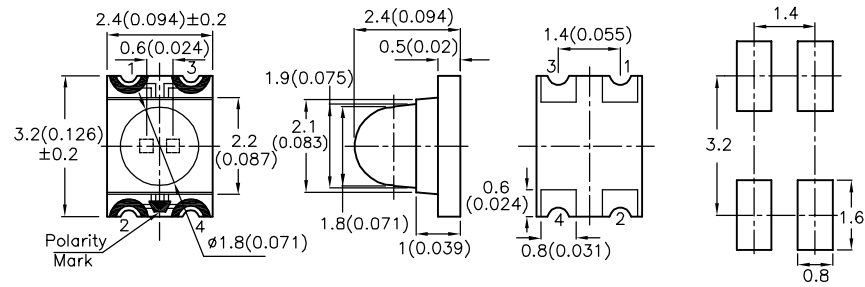
Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004^*)$

XZMDKVG55W-7	◆ AlGaInP(Red)	645	300	597	30°	Water Clear
	◆ AlGaInP(Green)	574	120	248		

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ /2	Lens
			Min.	Typ.		


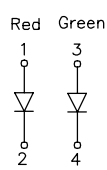
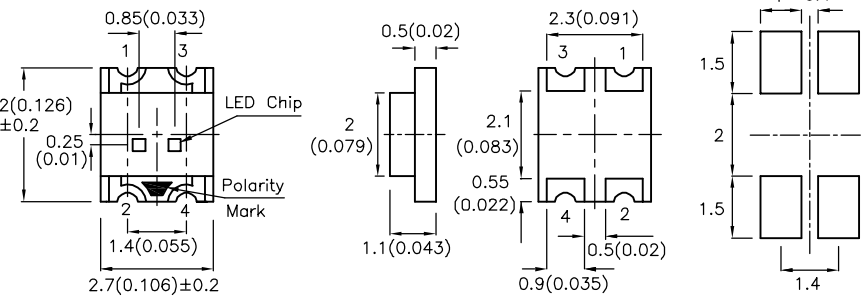
**3.2x2.4x2.4mm
(Dome Lens Bi-Color)**

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)^\circ$

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Min.	Typ.	Viewing Angle 2 θ /2	Lens
XZMYKVG78W	<ul style="list-style-type: none"> ◆ AlGaInP(Yellow) ◆ AlGaInP(Green) 	590	400	795	20°	Water Clear


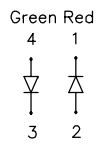
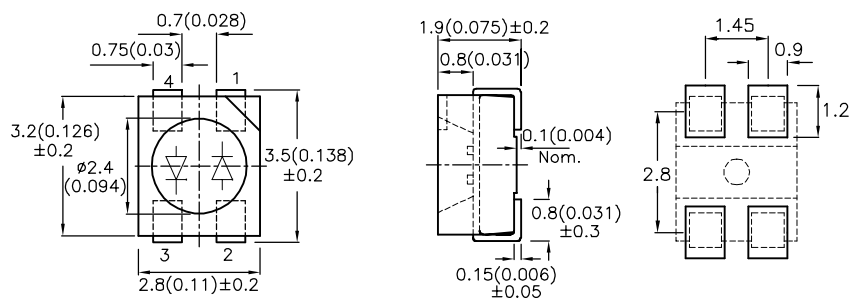
**3.2x2.7x1.1mm
(Bi-Color)**

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)^\circ$

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Min.	Typ.	Viewing Angle 2 θ /2	Lens

**3.5x2.8x1.9mm
(PLCC4 Bi-Color)**

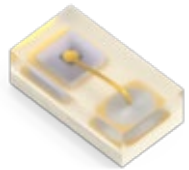
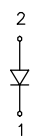
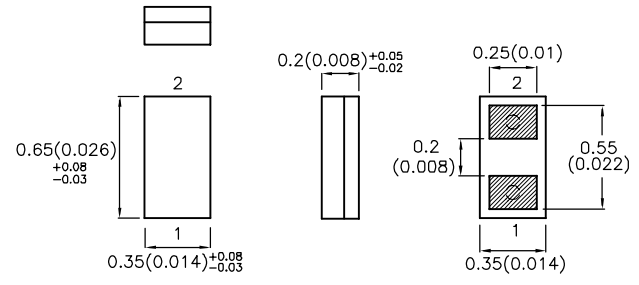
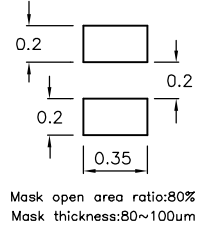
Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm(0.01)^\circ$

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Min.	Typ.	Viewing Angle 2 θ /2	Lens

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_v=10mA, 5mA^*$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

0.65x0.35x0.2mm (0201 Super Thin)

Mask open area ratio:80%
Mask thickness:80~100um


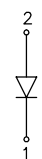
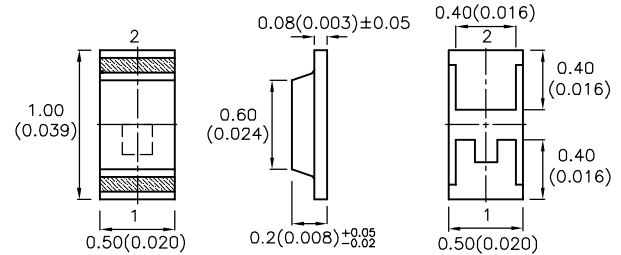
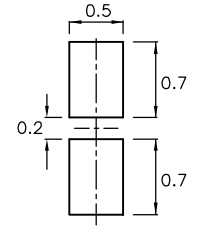
Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004")$

Recommended Soldering Pattern

XZMDR155W	◆ AlGaInP(Red)	639	10	34	140°	Water Clear
XZMER155W	◆ AlGaInP(Red)	632	15	39	140°	Water Clear
XZVGR155W	◆ AlGaInP(Green)	572	6	14	140°	Water Clear
XZDG155W5MAV	◆ InGaN(Green)	515	*180	*278	140°	Water Clear
XZFBA155W5MAV	◆ InGaN(Blue)	463	*30	*59	140°	Water Clear
XZBBR155W5MAV	◆ InGaN(Blue)	461	*15	*24	140°	Water Clear

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_v=20mA, 5mA^*$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

1.0x0.5x0.2mm (0402 Super Thin)

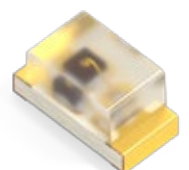

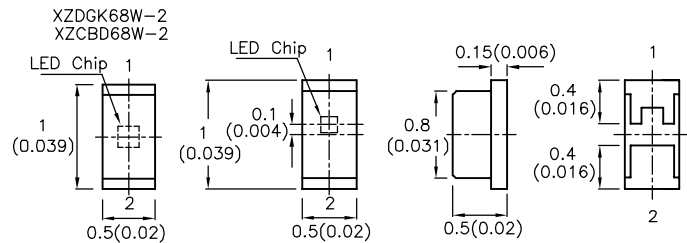
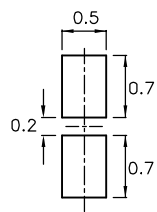
Mask open area ratio:80%
Mask thickness:80~100um

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004")$

Recommended Soldering Pattern

XZVGR68W-3	◆ AlGaInP(Green)	572	12	34	120°	Water Clear
XZBGR68W5MAV-3	◆ InGaN(Green)	518	*30	*69	140°	Water Clear
XZBBR68W5MAV-3	◆ InGaN(Blue)	461	*20	*27	140°	Water Clear

1.0x0.5x0.5mm (0402)

Mask open area ratio:80%
Mask thickness:80~100um

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004")$


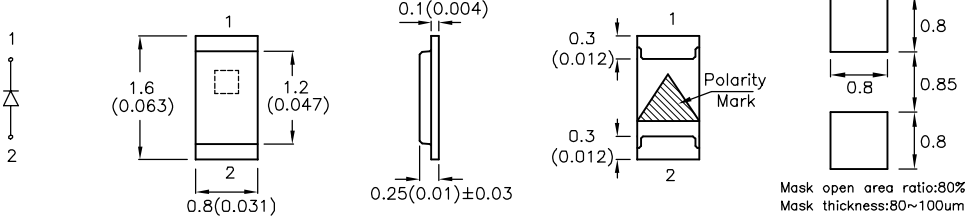
Recommended Soldering Pattern

XZMDK68W-2	◆ AlGaInP(Red)	645	40	69	120°	Water Clear
XZMOK68W-2	◆ AlGaInP(Orange)	610	80	148	120°	Water Clear
XZMYK68W-2	◆ AlGaInP(Yellow)	590	80	148	120°	Water Clear
XZVG68W-2	◆ AlGaInP(Green)	574	20	49	120°	Water Clear
XZDGK68W-2	◆ InGaN(Green)	515	400	547	140°	Water Clear
XZCBD68W-2	◆ InGaN(Blue)	460	40	59	140°	Water Clear

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ /2	Lens
			Min.	Typ.		


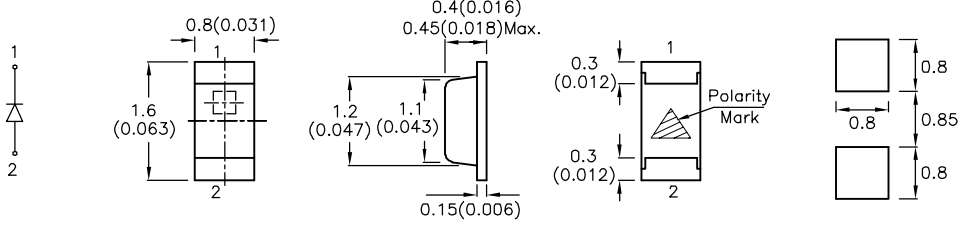
1.6x0.8x0.25mm (0603 Super Thin)

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)$ Recommended Soldering Pattern

XZMDKT53W-6	◆ AlGaInP(Red)	645	55	108	120°	Water Clear
XZMOKT53W-6	◆ AlGaInP(Orange)	610	55	98	120°	Water Clear
XZMYKT53W-6	◆ AlGaInP(Yellow)	590	55	118	120°	Water Clear
XZVGT53W-6	◆ AlGaInP(Green)	574	20	49	120°	Water Clear
XZDGK53W-6	◆ InGaN(Green)	515	300	397	130°	Water Clear
XZCBD53W-6	◆ InGaN(Blue)	460	40	98	130°	Water Clear

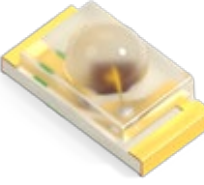
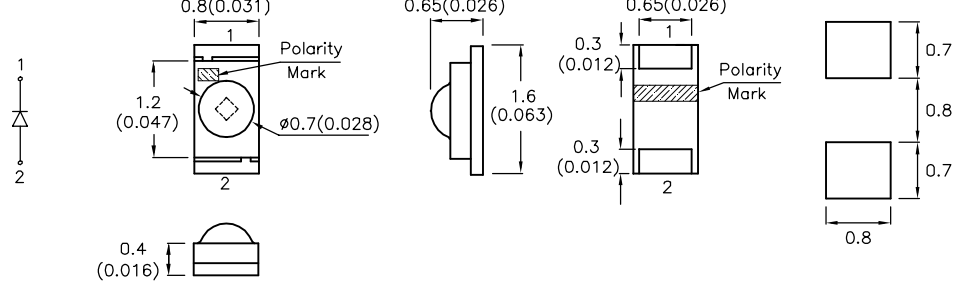
1.6x0.8x0.45mm (0603)

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)$ Recommended Soldering Pattern

XZMDK53W-3	◆ AlGaInP(Red)	645	40	79	120°	Water Clear
XZMOK53W-3	◆ AlGaInP(Orange)	610	80	178	120°	Water Clear
XZMYK53W-3	◆ AlGaInP(Yellow)	590	80	148	120°	Water Clear
XZVG53W-3	◆ AlGaInP(Green)	574	20	49	120°	Water Clear
XZCBD53W-3	◆ InGaN(Blue)	460	40	98	130°	Water Clear

1.6x0.8x0.65mm (0603)


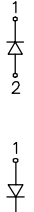
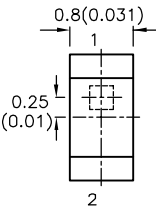
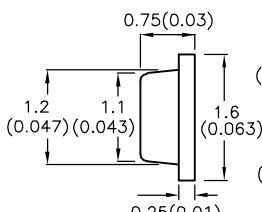
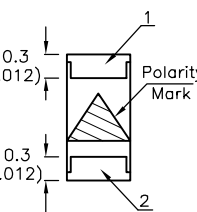
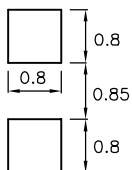
Dimension Unit: mm(inches), Tolerance : $\pm 0.15(0.006)$ Recommended Soldering Pattern

XZM2CRK53WA-8ST	◆ AlGaInP(Red)	640	300	597	100°	Water Clear
XZDGK53W-8ST	◆ InGaN(Green)	515	400	935	100°	Water Clear

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

1.6x0.8x0.75mm (0603)

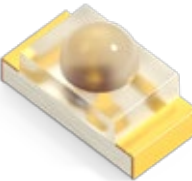
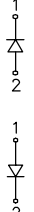
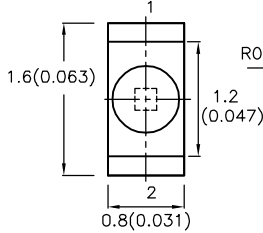
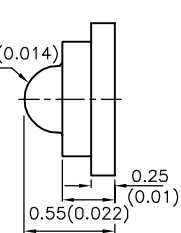
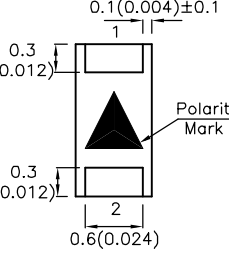
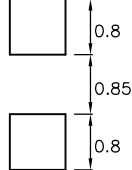
XZM2CRK53W-1
XZM2CYK53W-1

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)''$

Recommended Soldering Pattern

XZMDK53W-1	◆ AlGaInP(Red)	645	40	79	120°	Water Clear
XZM2CRK53W-1	◆ AlGaInP(Red)	640	200	347	120°	Water Clear
XZMOK53W-1	◆ AlGaInP(Orange)	610	80	178	120°	Water Clear
XZMYK53W-1	◆ AlGaInP(Yellow)	590	80	148	120°	Water Clear
XZM2CYK53W-1	◆ AlGaInP(Yellow)	590	200	317	120°	Water Clear
XZVG53W-1	◆ AlGaInP(Green)	574	20	49	120°	Water Clear
XZM2DG53W-1	◆ InGaN(Green)	520	500	795	130°	Water Clear
XZDGK53W-1	◆ InGaN(Green)	515	300	547	130°	Water Clear
XZFB53W-1	◆ InGaN(Blue)	465	120	178	130°	Water Clear
XZCBD53W-1	◆ InGaN(Blue)	460	40	98	130°	Water Clear

1.6x0.8x0.95mm (0603 Dome Lens)

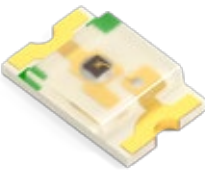

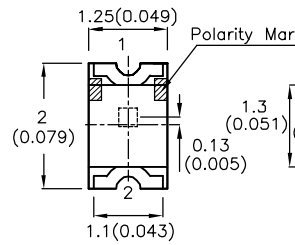
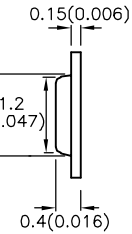
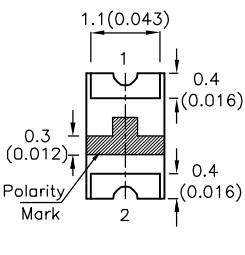
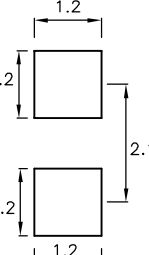
XZM2MR53W-8
XZM2CRK53W-8
XZM2CYK53W-8

Dimension Unit: mm(inches), Tolerance : $\pm 0.15(0.006)''$

Recommended Soldering Pattern

XZM2MR53W-8	◆ AlGaInP(Red)	660	200	317	60°	Water Clear
XZMDK53W-8	◆ AlGaInP(Red)	645	80	248	60°	Water Clear
XZM2CRK53W-8	◆ AlGaInP(Red)	640	500	895	60°	Water Clear
XZMOK53W-8	◆ AlGaInP(Orange)	610	200	497	60°	Water Clear
XZMYK53W-8	◆ AlGaInP(Yellow)	590	300	597	60°	Water Clear
XZM2CYK53W-8	◆ AlGaInP(Yellow)	590	500	845	60°	Water Clear
XZVG53W-8	◆ AlGaInP(Green)	574	80	188	60°	Water Clear
XZM2DG53W-8	◆ InGaN(Green)	520	1000	1495	60°	Water Clear
XZDGK53W-8	◆ InGaN(Green)	515	700	1195	60°	Water Clear
XZFB53W-8	◆ InGaN(Blue)	465	200	347	40°	Water Clear
XZCBD53W-8	◆ InGaN(Blue)	460	80	198	40°	Water Clear

2.0x1.25x0.4mm (0805)

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)''$

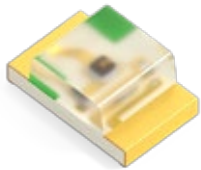
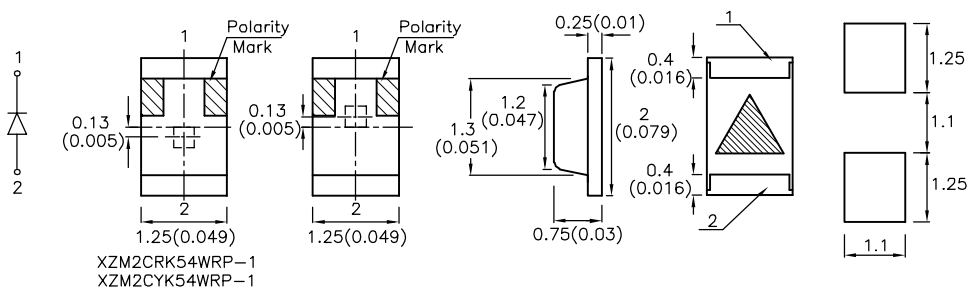
Recommended Soldering Pattern

XZMDK54W-4	◆ AlGaInP(Red)	645	40	79	140°	Water Clear
XZMOK54W-4	◆ AlGaInP(Orange)	610	80	178	140°	Water Clear
XZMYK54W-4	◆ AlGaInP(Yellow)	590	80	148	140°	Water Clear
XZVG54W-4	◆ AlGaInP(Green)	574	20	49	140°	Water Clear
XZCBD54W-4	◆ InGaN(Blue)	460	40	98	140°	Water Clear

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ /2	Lens
			Min.	Typ.		

2.0x1.25x0.75mm (0805)

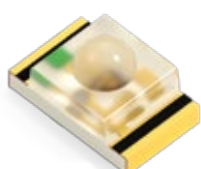
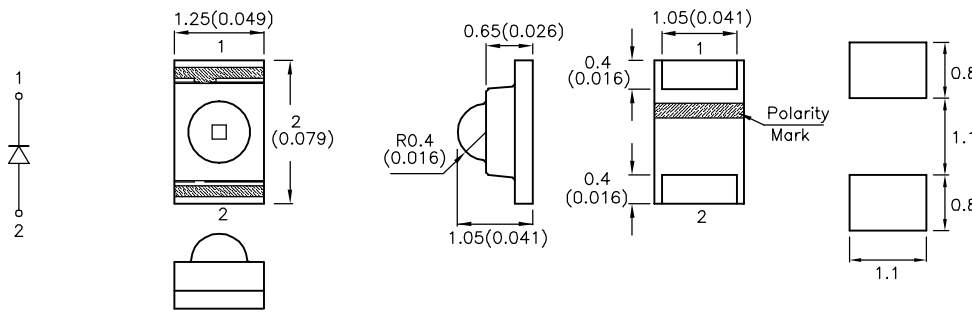
XZM2CRK54WRP-1
XZM2CYK54WRP-1

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)$

Recommended Soldering Pattern

XZMDK54W-1	◆ AlGaInP(Red)	645	40	79	140°	Water Clear
XZM2CRK54WRP-1	◆ AlGaInP(Red)	640	200	347	140°	Water Clear
XZMOK54W-1	◆ AlGaInP(Orange)	610	80	178	140°	Water Clear
XZMYK54W-1	◆ AlGaInP(Yellow)	590	80	148	140°	Water Clear
XZM2CYK54W-1	◆ AlGaInP(Yellow)	590	200	317	140°	Water Clear
XZM2CYK54WRP-1	◆ AlGaInP(Yellow)	590	200	317	140°	Water Clear
XZVG54W-1	◆ AlGaInP(Green)	574	20	49	140°	Water Clear
XZDGK54W-1	◆ InGaN(Green)	515	300	547	140°	Water Clear
XZFB54W-1	◆ InGaN(Blue)	465	120	178	140°	Water Clear
XZCBD54W-1	◆ InGaN(Blue)	460	40	98	140°	Water Clear

2.0x1.25x1.05mm (0805)


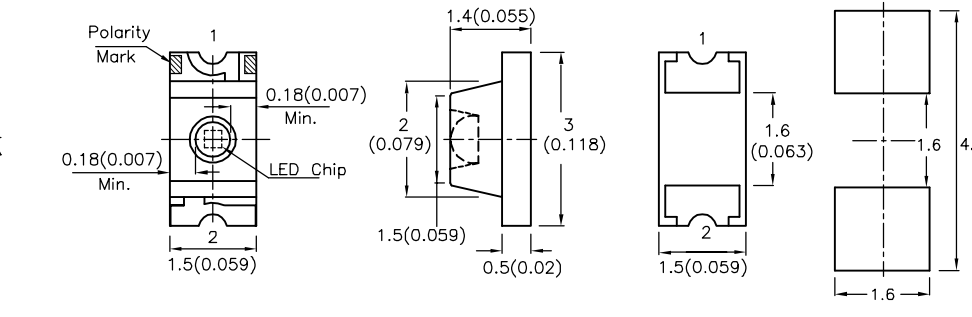



Dimension Unit: mm(inches), Tolerance : $\pm 0.15(0.006)$

Recommended Soldering Pattern

XZMDK54W-8	◆ AlGaInP(Red)	645	300	547	40°	Water Clear
XZM2CRK54WA-8	◆ AlGaInP(Red)	640	1000	1990	40°	Water Clear
XZDGK54W-8	◆ InGaN(Green)	515	1600	2490	30°	Water Clear

3.0x1.5x1.4mm (Inner Dome Lens)

Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)$

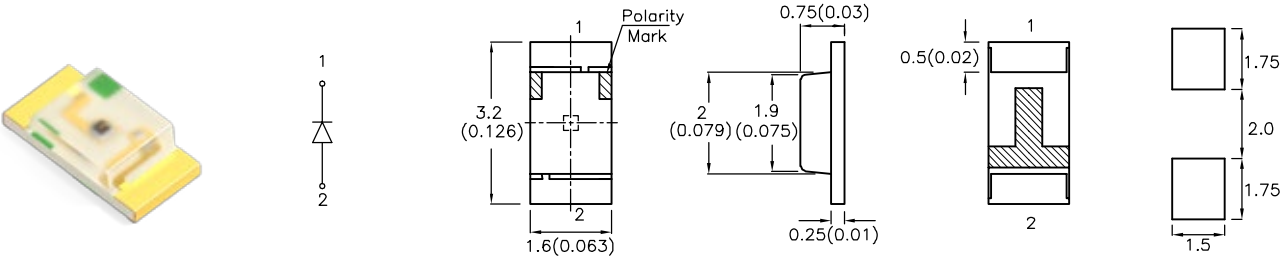
Recommended Soldering Pattern

XZMDK60W	◆ AlGaInP(Red)	645	120	178	70°	Water Clear
XZMYK60W	◆ AlGaInP(Yellow)	590	200	347	70°	Water Clear
XZVG60W	◆ AlGaInP(Green)	574	55	118	70°	Water Clear

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

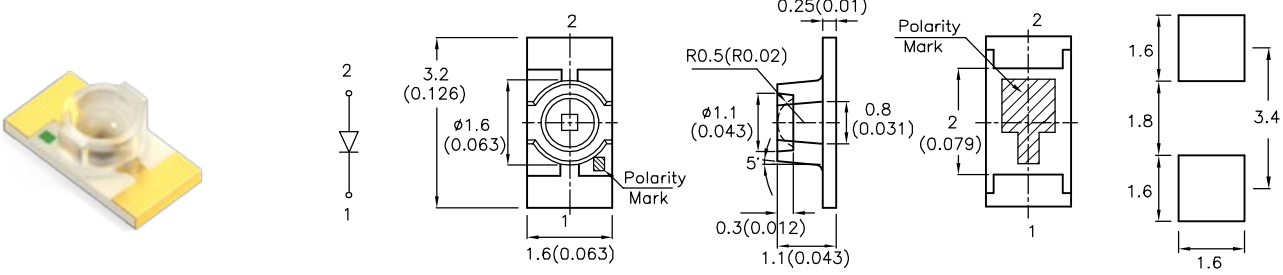
3.2x1.6x0.75mm (1206)



Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)$

Recommended Soldering Pattern						
XZMDK55W-1	◆ AlGaInP(Red)	645	40	79	140°	Water Clear
XZMOK55W-1	◆ AlGaInP(Orange)	610	80	178	140°	Water Clear
XZMYK55W-1	◆ AlGaInP(Yellow)	590	80	148	140°	Water Clear
XZVG55W-1	◆ AlGaInP(Green)	574	20	49	140°	Water Clear
XZCBD55W-1	◆ InGaN(Blue)	460	40	98	150°	Water Clear

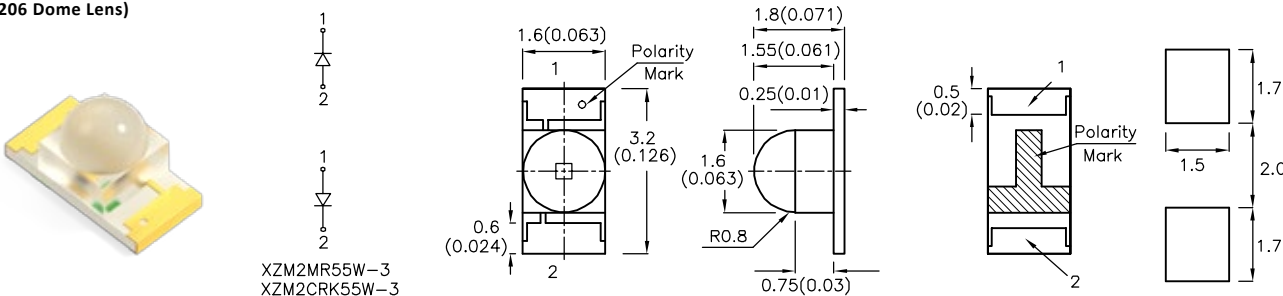
3.2x1.6x1.1mm (1206 Inner Dome Lens)



Dimension Unit: mm(inches), Tolerance : $\pm 0.1mm(0.004)$

Recommended Soldering Pattern						
XZMDK55W-A2	◆ AlGaInP(Red)	645	120	228	80°	Water Clear
XZMOK55W-A2	◆ AlGaInP(Orange)	610	200	347	80°	Water Clear
XZMYK55W-A2	◆ AlGaInP(Yellow)	590	200	347	80°	Water Clear
XZVG55W-A2	◆ AlGaInP(Green)	574	55	98	80°	Water Clear
XZCBD55W-A2	◆ InGaN(Blue)	460	120	248	80°	Water Clear

3.2x1.6x1.8mm (1206 Dome Lens)

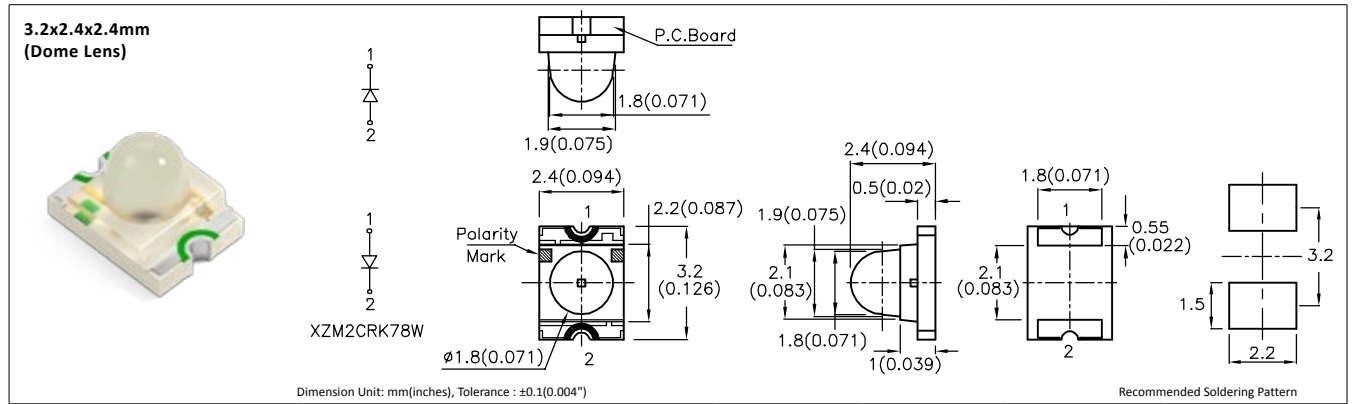


Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)$

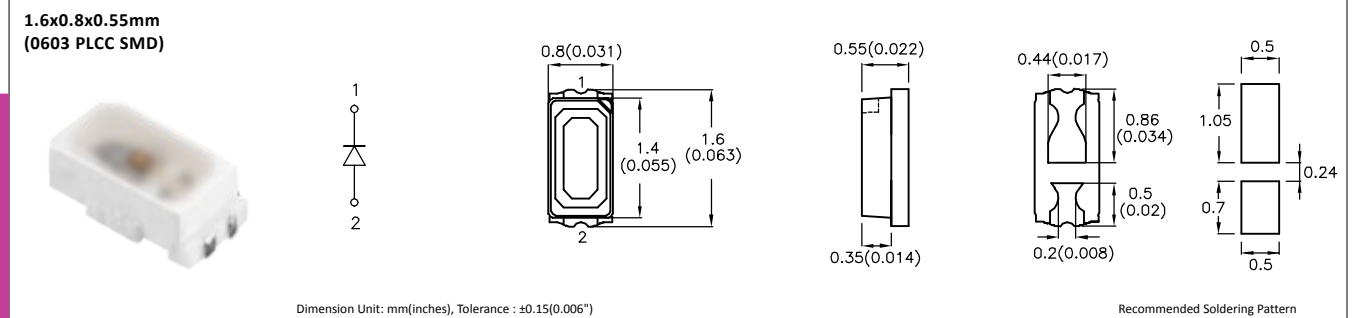
Recommended Soldering Pattern						
XZM2MR55W-3	◆ AlGaInP(Red)	660	700	1095	40°	Water Clear
XZMDK55W-3	◆ AlGaInP(Red)	645	300	795	40°	Water Clear
XZM2CRK55W-3	◆ AlGaInP(Red)	640	1600	2490	40°	Water Clear
XZMOK55W-3	◆ AlGaInP(Orange)	610	500	995	40°	Water Clear
XZMYK55W-3	◆ AlGaInP(Yellow)	590	700	795	40°	Water Clear
XZVG55W-3	◆ AlGaInP(Green)	574	120	297	40°	Water Clear
XZM2DG55W-3	◆ InGaN(Green)	520	3600	5990	30°	Water Clear
XZDGK55W-3	◆ InGaN(Green)	515	2700	3990	30°	Water Clear
XZFB55W-3	◆ InGaN(Blue)	465	700	1195	30°	Water Clear
XZCBD55W-3	◆ InGaN(Blue)	460	300	695	30°	Water Clear

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA, 10mA^*$		Viewing Angle 2 θ /2	Lens
			Min.	Typ.		



Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Lens
XZMDK78W	AlGaInP (Red)	645	700	1495	20°	Water Clear
XZM2CRK78W	AlGaInP (Red)	640	3100	4990	20°	Water Clear
XZMOK78W	AlGaInP (Orange)	610	1000	1590	20°	Water Clear
XZMYK78W	AlGaInP (Yellow)	590	1000	1295	20°	Water Clear
XZVG78W	AlGaInP (Green)	574	500	895	20°	Water Clear
XZDGK78W	InGaN (Green)	515	3600	6790	20°	Water Clear
XZFBB78W	InGaN (Blue)	465	1600	1990	20°	Water Clear
XZCBD78W	InGaN (Blue)	460	500	895	20°	Water Clear



Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Lens
XZMDK53S-4	AlGaInP (Red)	645	40	158	120°	Water Clear
XZMYK53S-4	AlGaInP (Yellow)	590	55	238	120°	Water Clear
XZVG53S-4	AlGaInP (Green)	574	12	74	120°	Water Clear
XZFBA53S10MAV-4	InGaN (Blue)	463	*50	*158	120°	Water Clear



XZxx53S-4 – 0603 PLCC2 SMD LED

PRODUCT HIGHLIGHT

SunLED, a leader in optoelectronics and discrete LEDs, releases the 0603 PLCC2 SMD LED series. Plastic-led chip carrier (PLCC) packages have been a popular choice among engineering designs requiring a higher brightness output. However, compared to smaller PCB type LEDs, the larger footprints of PLCC LEDs also create challenges in mechanical fitment. SunLED combines the best of both worlds in this new PLCC2 package - a compact and miniature version with an industry standard 0603 (1.6x0.8mm) footprint.

Super bright chip offerings paired with a wide Lambertian emission angle of 120° make this series a versatile solution for various applications. By utilizing a reflector type package, SunLED's 0603 PLCC2 SMD LEDs are able to achieve nearly twice (2x) the intensity of standard 0603 chip type LEDs. Color options of red, yellow, green, and blue are readily available. Please contact SunLED if additional color options are needed.

PRODUCT APPLICATIONS

- Icon and text backlighting
- Smart products and IOT devices
- Video conferencing equipment
- White goods
- Medical and healthcare products
- Consumer electronics
- Safety and security


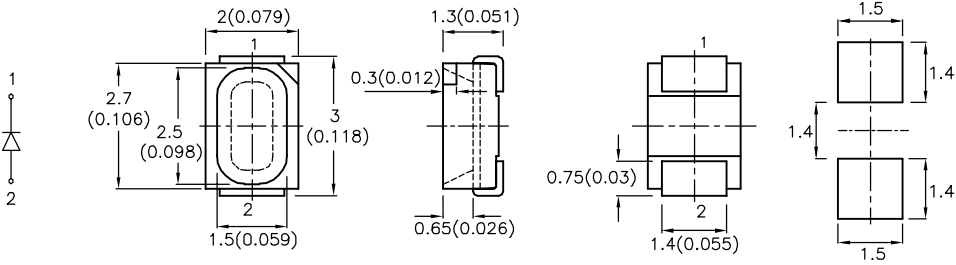
PRODUCT FEATURES

- Plastic-led chip carrier (PLCC) package
- Industry standard 0603 (1.6x0.8mm) footprint
- MSL (Moisture Sensitivity Level): 3
- Higher luminous intensity
- Wide viewing angle

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		


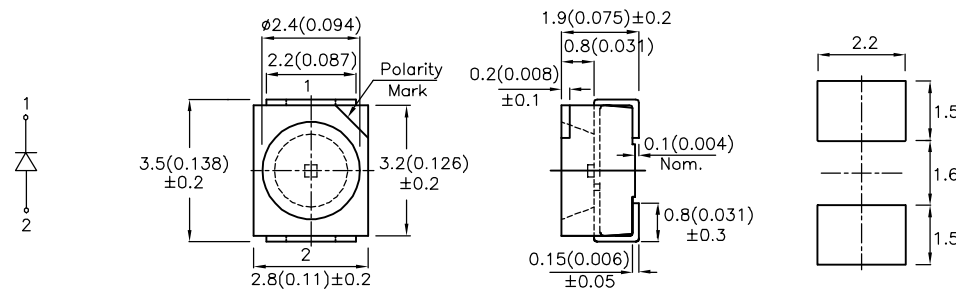
3.0x2.0x1.3mm (PLCC2)

Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)$ "

						Recommended Soldering Pattern
XZMDK105S	AlGaInP(Red)	645	40	89	120°	Water Clear
XZMYK105S	AlGaInP(Yellow)	590	120	198	120°	Water Clear
XZVG105S	AlGaInP(Green)	574	40	79	120°	Water Clear
XZCBD105S	InGaN(Blue)	460	80	118	120°	Water Clear

3.5x2.8x1.9mm (PLCC2)


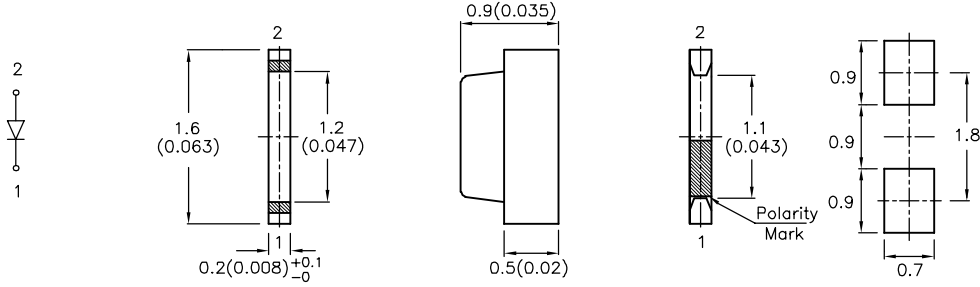
Dimension Unit: mm(inches), Tolerance : $\pm 0.25mm(0.01)$ "

						Recommended Soldering Pattern
XZMDK45WT	AlGaInP(Red)	645	55	98	120°	Water Clear
XZMOK45WT	AlGaInP(Orange)	610	120	228	120°	Water Clear
XZMYK45WT	AlGaInP(Yellow)	590	120	248	120°	Water Clear
XZVG45WT	AlGaInP(Green)	574	40	98	120°	Water Clear
XZDGK45WT	InGaN(Green)	515	500	995	120°	Water Clear
XZFB45S	InGaN(Blue)	465	300	447	120°	Water Clear
XZCBD45S	InGaN(Blue)	460	80	148	120°	Water Clear

SIDE EMITTING

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

1.6x0.9x0.2mm (Super Thin Right Angle)

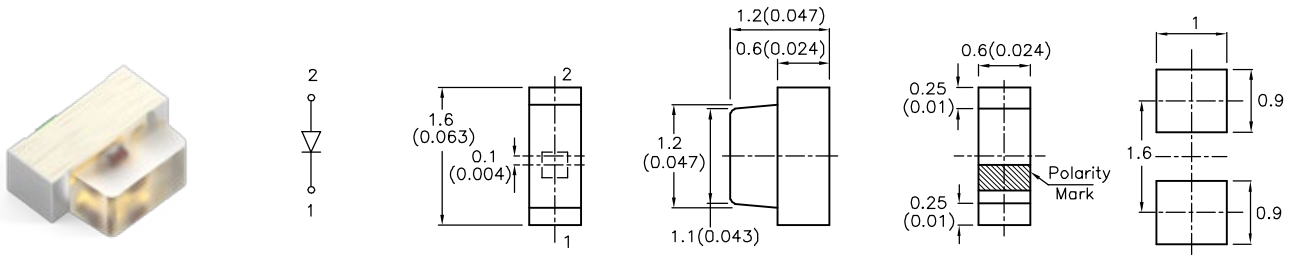
Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)$ "

						Recommended Soldering Pattern
XZVGF151W	AlGaInP(Green)	573	12	29	150°	Water Clear

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ /2	Lens
			Min.	Typ.		

**1.6x1.2x0.6mm
(Right Angle)**

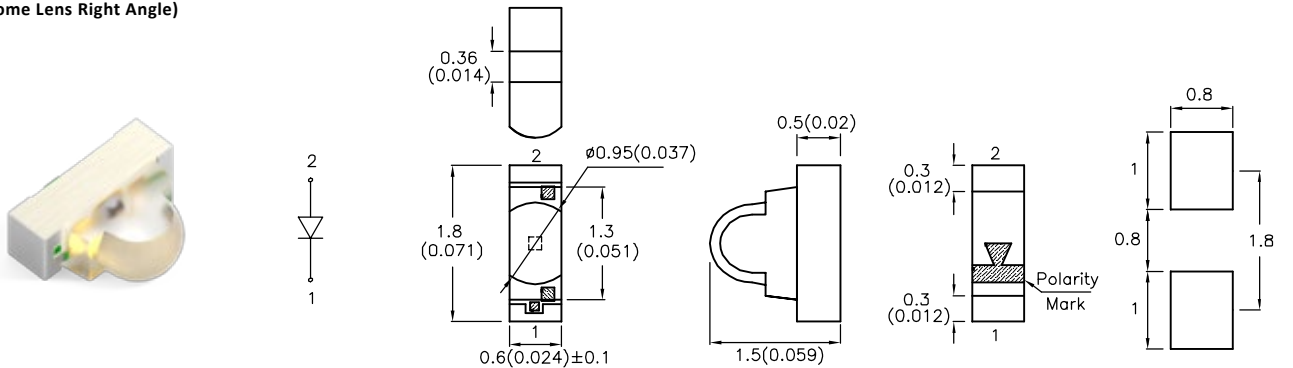


Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)$ "

Recommended Soldering Pattern

XZMDK87W	◆ AlGaInP(Red)	645	40	79	110°	Water Clear
XZMOK87W	◆ AlGaInP(Orange)	610	80	178	110°	Water Clear
XZMYK87W	◆ AlGaInP(Yellow)	590	80	148	110°	Water Clear
XZVG87W	◆ AlGaInP(Green)	574	20	49	110°	Water Clear
XZFB87W	◆ InGaN(Blue)	465	120	198	110°	Water Clear
XZCB87W	◆ InGaN(Blue)	460	40	79	110°	Water Clear

**1.8x1.5x0.6mm
(Dome Lens Right Angle)**

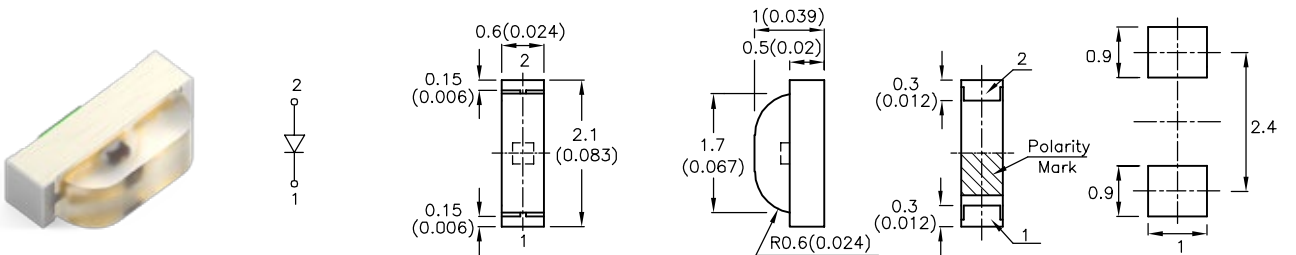


Dimension Unit: mm(inches), Tolerance : $\pm 0.15(0.006)$ "

Recommended Soldering Pattern

XZMDK168W	◆ AlGaInP(Red)	645	500	1195	25°	Water Clear
XZM2CRK168WA	◆ AlGaInP(Red)	640	1300	2590	25°	Water Clear
XZMOK168W	◆ AlGaInP(Orange)	610	500	1095	25°	Water Clear
XZMYK168W	◆ AlGaInP(Yellow)	590	500	1095	25°	Water Clear
XZM2CYK168WA	◆ AlGaInP(Yellow)	590	700	1790	25°	Water Clear
XZVG168W	◆ AlGaInP(Green)	574	120	397	25°	Water Clear
XZDGK168W	◆ InGaN(Green)	515	1900	3190	25°	Water Clear
XZFB168W	◆ InGaN(Blue)	465	400	795	25°	Water Clear

**2.1x1.0x0.6mm
(Right Angle)**



Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)$ "


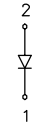
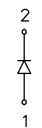
Recommended Soldering Pattern

XZMDK74W	◆ AlGaInP(Red)	645	40	79	140°	Water Clear
XZM2CRK74WA	◆ AlGaInP(Red)	640	200	377	140°	Water Clear
XZMYK74W	◆ AlGaInP(Yellow)	590	80	148	140°	Water Clear
XZVG74W	◆ AlGaInP(Green)	574	20	49	140°	Water Clear

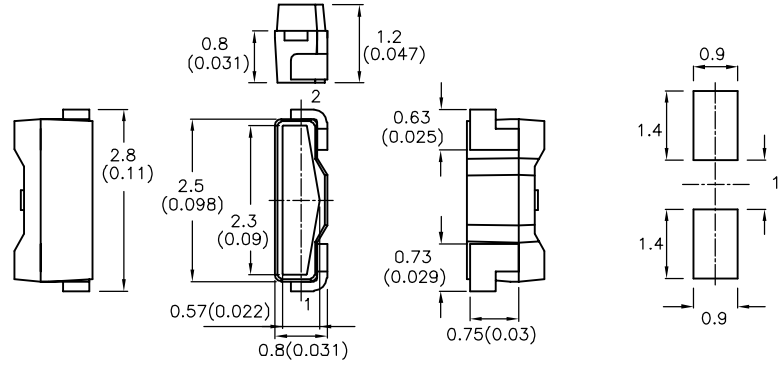
1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

2.8x1.2x0.8mm (Right Angle)


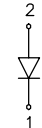
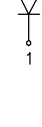
XZM2CRK81FS



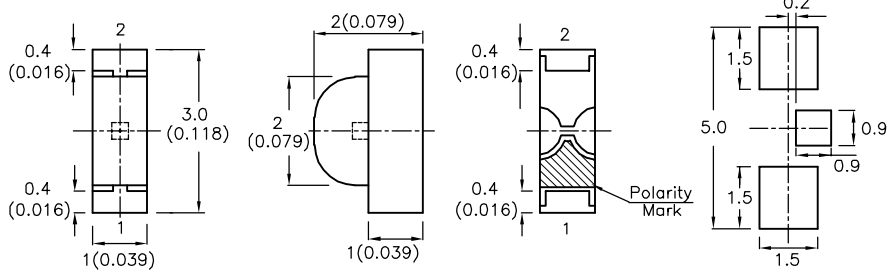
Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)$

Part Number	Chip Structure	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Recommended Soldering Pattern
XZMDK81FS	AlGaInP(Red)	645	40	98	110°	Water Clear
XZM2CRK81FS	AlGaInP(Red)	640	300	497	110°	Water Clear
XZMYK81FS	AlGaInP(Yellow)	590	120	198	110°	Water Clear
XZVG81FS	AlGaInP(Green)	574	40	69	110°	Water Clear
XZM2DG81FS	InGaN(Green)	520	1000	1395	110°	Water Clear
XZFB81FS	InGaN(Blue)	465	200	347	110°	Water Clear

3.0x2.0x1.0mm (Right Angle)

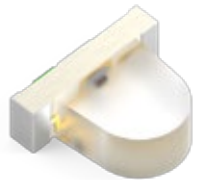

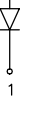
XZMOK56W



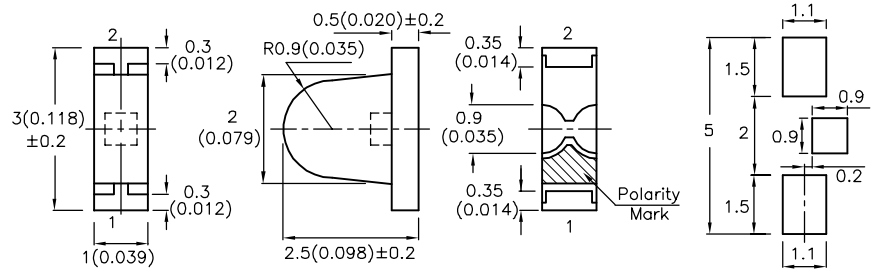
Dimension Unit: mm(inches), Tolerance : $\pm 0.15(0.006)$

Part Number	Chip Structure	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Recommended Soldering Pattern
XZMOK56W	AlGaInP(Orange)	610	80	178	120°	Water Clear
XZMYK56W	AlGaInP(Yellow)	590	80	148	120°	Water Clear
XZVG56W	AlGaInP(Green)	574	20	49	120°	Water Clear
XZCBD56W	InGaN(Blue)	460	40	79	120°	Water Clear

3.0x2.5x1.0mm (Right Angle)

XZVG56W-1




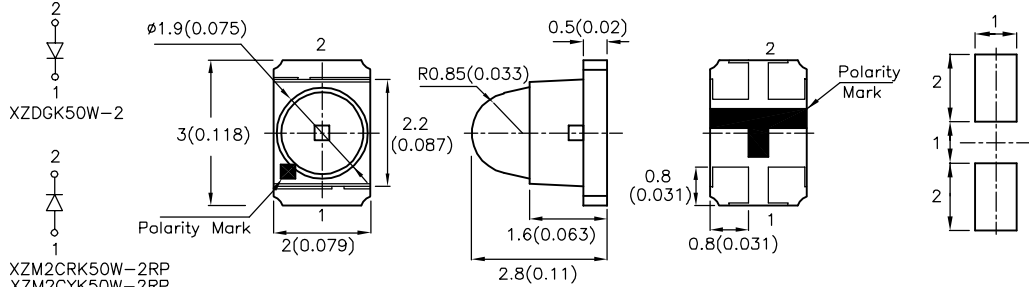
Dimension Unit: mm(inches), Tolerance : $\pm 0.15(0.006)$

Part Number	Chip Structure	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Recommended Soldering Pattern
XZVG56W-1	AlGaInP(Green)	574	80	148	30°	Water Clear

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ /2	Lens
			Min.	Typ.		

3.0x2.8x2.0 mm (Dome Lens Right Angle)


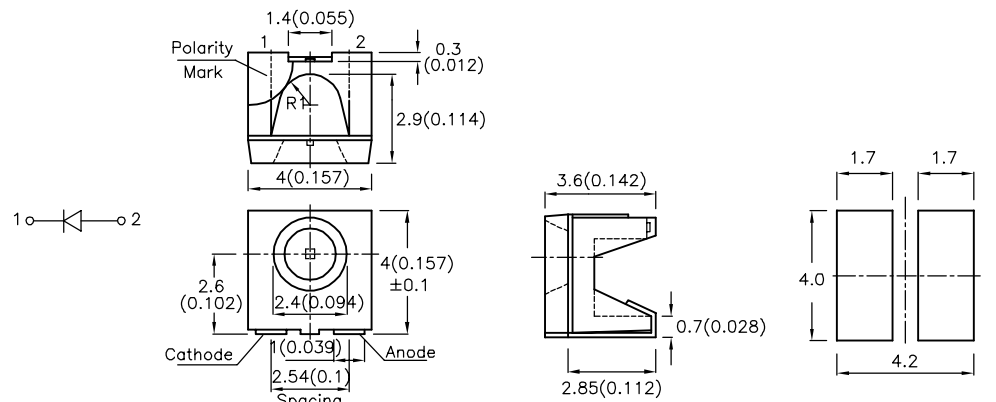



Part Number: XZD GK50W-2, XZM2CRK50W-2RP, XZM2CYK50W-2RP

Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)$

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Lens
XZM2CRK50W-2RP	AlGaInP (Red)	640	2300	3790	10°	Water Clear
XZM2CYK50W-2RP	AlGaInP (Yellow)	590	3600	6990	10°	Water Clear
XZD GK50W-2	InGaN (Green)	515	3100	5790	10°	Water Clear

4.0x4.0x3.6mm (PLCC2 Right Angle)

Part Number: XZVG67WT, XZCBD67S


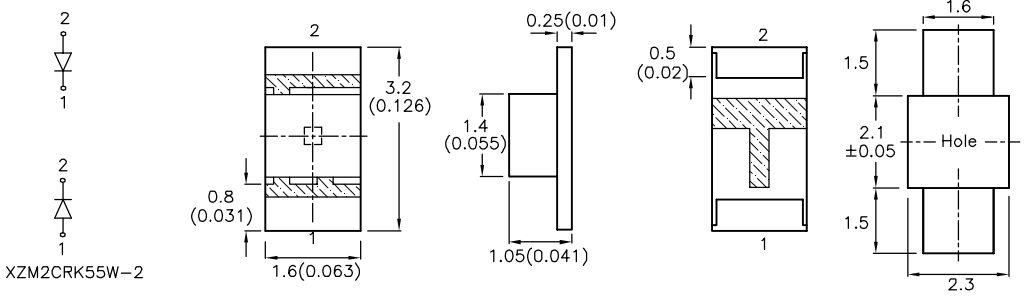
Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm (0.01)$

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Lens
XZVG67WT	AlGaInP (Green)	574	40	89	120°	Water Clear
XZCBD67S	InGaN (Blue)	460	80	218	120°	Water Clear

REVERSE MOUNT

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ /2	Lens
			Min.	Typ.		

3.2x1.6x1.05mm (1206 Reverse Mount)

Part Number: XZM2CRK55W-2

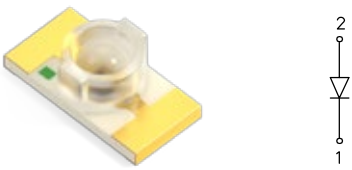
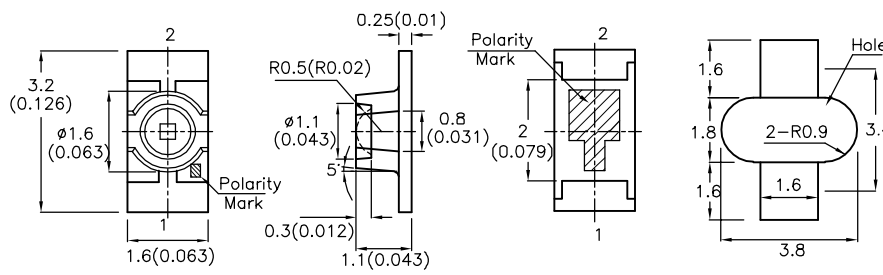
Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)$

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Lens
XZMDK55W-2	AlGaInP (Red)	645	40	79	140°	Water Clear
XZM2CRK55W-2	AlGaInP (Red)	640	200	347	140°	Water Clear
XZMOK55W-2	AlGaInP (Orange)	610	80	178	140°	Water Clear
XZMYK55W-2	AlGaInP (Yellow)	590	80	148	140°	Water Clear
XZVG55W-2	AlGaInP (Green)	574	20	49	140°	Water Clear
XZM2DG55W-2	InGaN (Green)	520	500	795	140°	Water Clear
XZD GK55W-2	InGaN (Green)	515	300	547	140°	Water Clear
XZCBD55W-2	InGaN (Blue)	460	40	98	140°	Water Clear

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

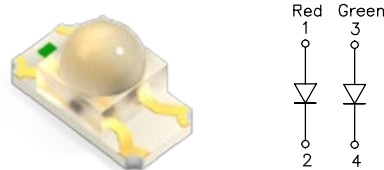
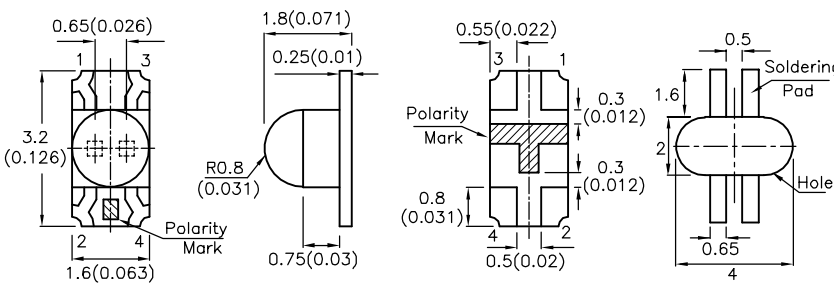
3.2x1.6x1.1mm
(1206 Inner Dome Lens Reverse Mount)

Dimension Unit: mm(ounces), Tolerance : $\pm 0.1(0.004)$

Part Number	Chip Structure	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Recommended Soldering Pattern
XZMDK55W-A2RT	AlGaInP(Red)	645	120	228	80°	Water Clear
XZMYK55W-A2RT	AlGaInP(Yellow)	590	200	347	80°	Water Clear
XZVG55W-A2RT	AlGaInP(Green)	574	55	98	80°	Water Clear
XZCBD55W-A2RT	InGaN(Blue)	460	120	248	80°	Water Clear


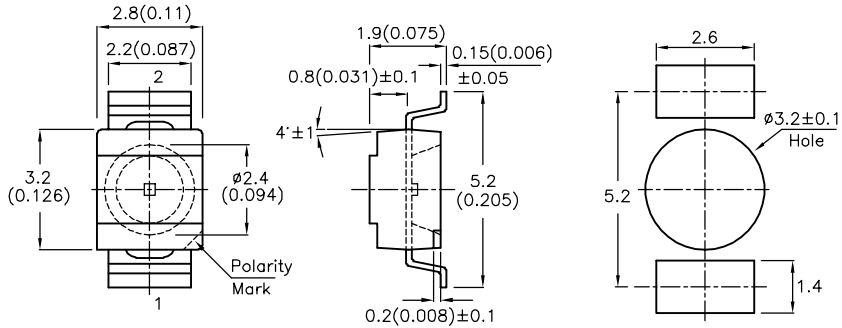
3.2x1.6x1.8mm
(1206 Dome Lens Reverse-Mount Bi-Color)

Dimension Unit: mm(ounces), Tolerance : $\pm 0.2(0.008)$

Part Number	Chip Structure	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Recommended Soldering Pattern
XZMDKDGK55W-8RT	AlGaInP(Red)	645	300	597	30°	Water Clear
	InGaN(Green)	515	400	647		

3.2x2.8x1.9mm
(PLCC2 Reverse Mount)

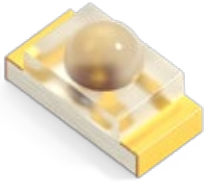

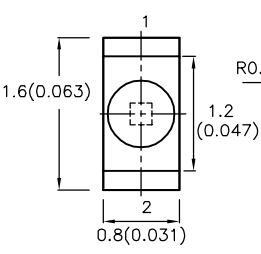
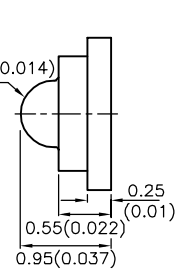
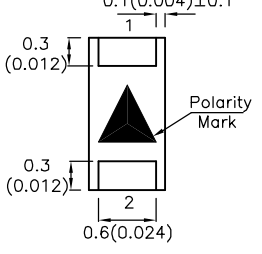
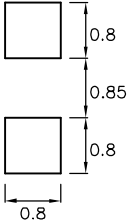
Dimension Unit: mm(ounces), Tolerance : $\pm 0.25mm(0.01)$

Part Number	Chip Structure	λ_{peak} (nm)	Min. Intensity (mcd)	Typ. Intensity (mcd)	Viewing Angle	Recommended Soldering Pattern
XZMDK45WT-9	AlGaInP(Red)	645	55	98	120°	Water Clear
XZMYK45WT-9	AlGaInP(Yellow)	590	120	248	120°	Water Clear
XZDGK45WT-9	InGaN(Green)	515	500	995	120°	Water Clear
XZFB45S-9	InGaN(Blue)	465	300	447	120°	Water Clear

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ /2	Lens
			Min.	Max.		

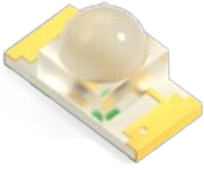

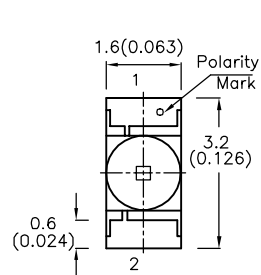
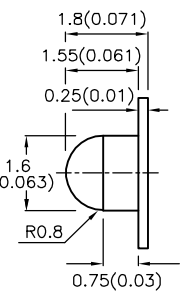
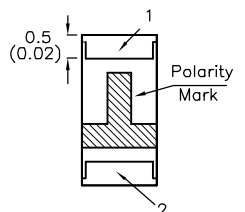
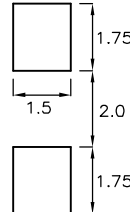
1.6x0.8x0.95mm (0603 Dome Lens)

Dimension Unit: mm(inches), Tolerance : ±0.15(0.006")


Part Number	Chip Structure	λ_{peak} (nm)	Min. Intensity	Max. Intensity	Viewing Angle	Lens
XZMDK53W-8HTA	AlGaInP(Red)	645	200	700	60°	Water Clear

3.2x1.6x1.8mm (1206 Dome Lens)

Dimension Unit: mm(inches), Tolerance : ±0.2(0.008")

Part Number	Chip Structure	λ_{peak} (nm)	Min. Intensity	Max. Intensity	Viewing Angle	Lens
XZMDK55W-3HTA	AlGaInP(Red)	645	300	1300	40°	Water Clear



High Temperature Series

SunLED launches the High Temperature Series, a line of high performance LEDs that are designed to withstand temperatures higher than industry standard.

Products in all industries experience temperature fluctuations and may be subject to high ambient temperatures. These conditions require a performance-driven LED that can withstand harsh environments. While these LEDs can be operated at a higher temperature, there is increased performance throughout the temperature range. The High Temperature Series LEDs have improved current derating curves, which results in higher brightness and overall efficiency. SunLED proudly supports engineering designs with the High Temperature Series LEDs.

PRODUCT APPLICATIONS

- Appliances
- Automotive
- Industrial Controls
- Marine
- Medical


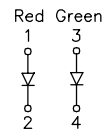
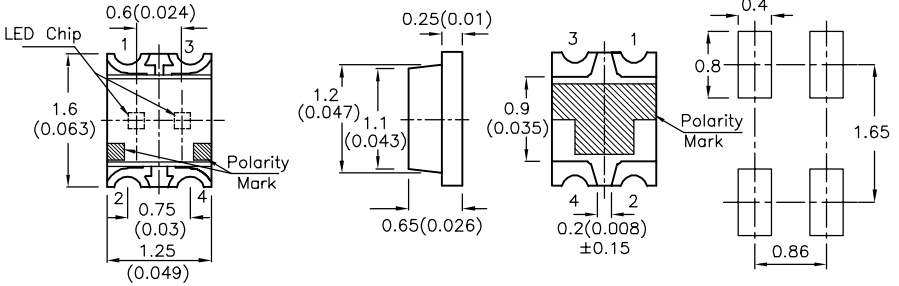
PRODUCT FEATURES

- High temperature operation
- Higher outputs and energy efficiency
- Longer lifetime and reduced die degradation
- Prevent shifts in color due to heat
- Eliminate failures in harsh environments due to excessive heat
- Robust packages with superior quality

1. Soldering Pattern Dimension Unit : mm, Tolerance : ±0.1mm.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_v=20mA, 5mA^*$		Viewing Angle 2 θ 1/2	Lens
			Min.	Max.		

1.6x1.25x0.65mm (Bi-Color)


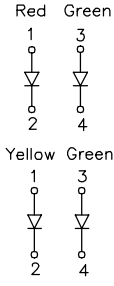
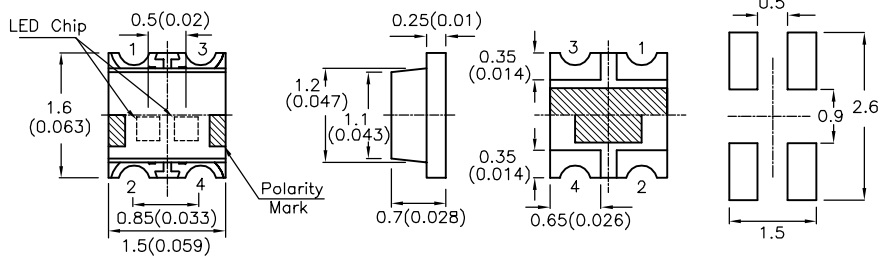




Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)^*$

XZMDKVG62W5MAV-1HTA	◆ AlGaInP(Red)	645	*15	*30	150°	Water Clear
		◆ AlGaInP(Green)	574	*6		

PRODUCT HIGHLIGHT

1.6x1.5x0.7mm (Bi-Color)


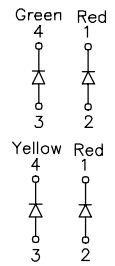
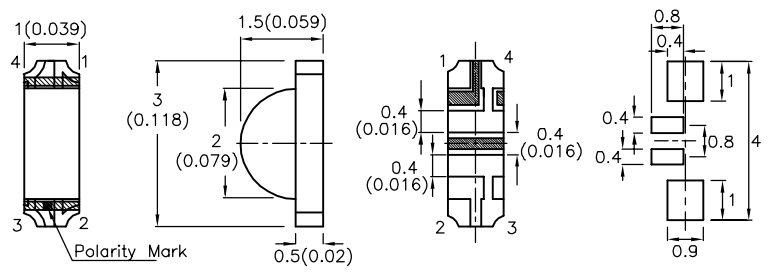




Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)^*$

XZMDKVG59W-1HTA	◆ AlGaInP(Red)	645	40	120	150°	Water Clear
		◆ AlGaInP(Green) <td>574 <td>20 <td>120</td> </td></td>	574 <td>20 <td>120</td> </td>	20 <td>120</td>		
XZMYKVG59W-1HTA	◆ AlGaInP(Yellow)	590	80	300	150°	Water Clear
		◆ AlGaInP(Green) <td>574 <td>20 <td>120</td> </td></td>	574 <td>20 <td>120</td> </td>	20 <td>120</td>		

PRODUCT HIGHLIGHT

3.0x1.5x1.0mm (Right Angle, Bi-Color)


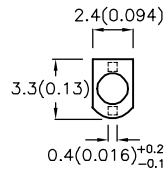
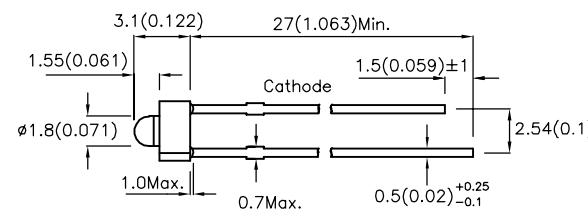





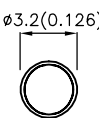
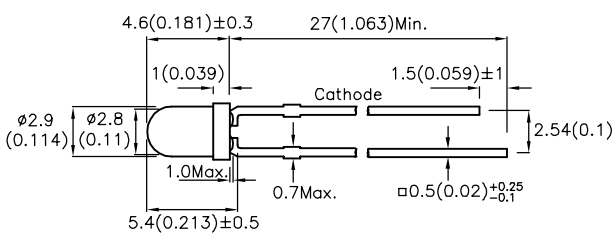
Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)^*$


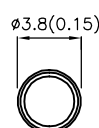
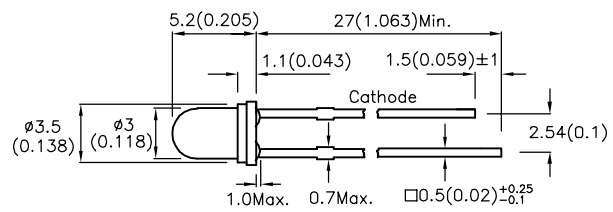
XZMDKVGX56W-HTA	◆ AlGaInP(Red)	645	55	200	150°	Water Clear
		◆ AlGaInP(Green) <td>574 <td>20 <td>80</td> </td></td>	574 <td>20 <td>80</td> </td>	20 <td>80</td>		
XZMDKMYKX56W-HTA	◆ AlGaInP(Red)	645	55	200	150°	Water Clear
		◆ AlGaInP(Yellow) <td>590 <td>120 <td>400</td> </td></td>	590 <td>120 <td>400</td> </td>	120 <td>400</td>		


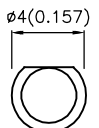
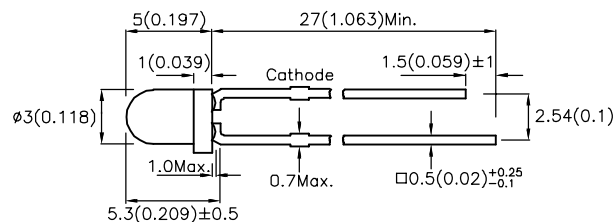
PRODUCT HIGHLIGHT

1. Soldering Pattern Dimension Unit : mm, Tolerance : $\pm 0.1mm$.
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ /2	Lens
			Min.	Typ.		
1.8mm						
						
XLMDK61D	◆ AlGaInP(Red)	645	120	297	90°	Red Diffused
XLMYK61D	◆ AlGaInP(Yellow)	590	100	248	90°	Yellow Diffused
XLVG61D	◆ AlGaInP(Green)	574	55	79	90°	Green Diffused

3mm						
						
XLMDK61D	◆ AlGaInP(Red)	645	120	297	90°	Red Diffused
XLMYK61D	◆ AlGaInP(Yellow)	590	100	248	90°	Yellow Diffused
XLVG61D	◆ AlGaInP(Green)	574	55	79	90°	Green Diffused
XLMDK11D	◆ AlGaInP(Red)	645	120	238	50°	Red Diffused
XLMDK11W	◆ AlGaInP(Red)	645	400	895	30°	Water Clear
XLMDK11W	◆ AlGaInP(Red)	645	400	895	30°	Water Clear
XLMDK11W	◆ AlGaInP(Red)	640	2300	3590	30°	Water Clear
XLMDK11W	◆ AlGaInP(Orange)	611	3600	5990	30°	Water Clear
XLMDK11W	◆ AlGaInP(Orange)	610	700	1395	30°	Water Clear
XLMDK11W	◆ AlGaInP(Yellow)	590	400	795	50°	Yellow Diffused
XLMDK11W	◆ AlGaInP(Yellow)	590	700	1495	30°	Water Clear
XLMDK11W	◆ AlGaInP(Yellow)	590	1900	2990	30°	Water Clear
XLMDK11W	◆ AlGaInP(Green)	574	80	248	50°	Green Diffused
XLMDK11W	◆ InGaN(Green)	520	10500	16490	30°	Water Clear
XLMDK11W	◆ InGaN(Green)	515	8000	13990	30°	Water Clear
XLMDK11W	◆ InGaN(Blue)	465	2100	3690	30°	Water Clear
XLMDK11W	◆ InGaN(Blue)	460	480	995	50°	Blue Diffused
XLMDK11W	◆ InGaN(Blue)	460	900	1590	30°	Water Clear

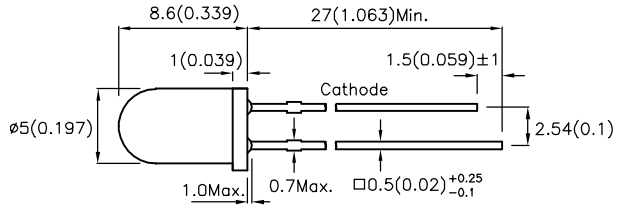
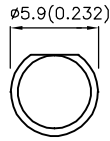
3mm						
						
XLMDK65D	◆ AlGaInP(Red)	645	60	208	60°	Red Diffused
XLMYK65D	◆ AlGaInP(Yellow)	590	110	497	60°	Yellow Diffused
XLVG65D	◆ AlGaInP(Green)	574	60	138	60°	Green Diffused

3mm						
						
XLMDK34D	◆ AlGaInP(Red)	645	100	248	60°	Red Diffused
XLMYK34D	◆ AlGaInP(Yellow)	590	300	497	60°	Yellow Diffused
XLVG34D	◆ AlGaInP(Green)	574	80	148	60°	Green Diffused

1. Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm$ (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

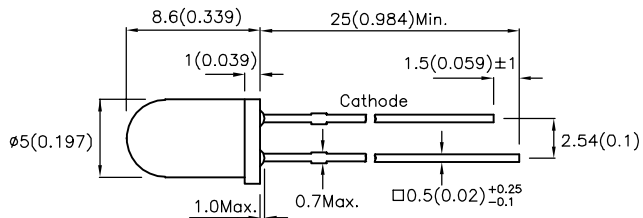
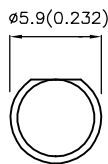
Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

5mm



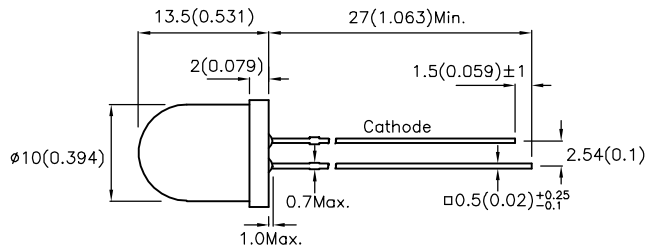
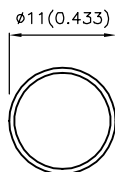
XLM2MR12D	◆ AlGaInP(Red)	660	300	597	30°	Red Diffused
XLM2MR12W	◆ AlGaInP(Red)	660	3300	4990	20°	Water Clear
XLMDK12D	◆ AlGaInP(Red)	645	300	647	30°	Red Diffused
XLMDK12W	◆ AlGaInP(Red)	645	900	1295	20°	Water Clear
XLM2CRK12W	◆ AlGaInP(Red)	640	3600	5990	20°	Water Clear
XLM2MOK12W	◆ AlGaInP(Orange)	611	5000	8890	20°	Water Clear
XLMOK12W	◆ AlGaInP(Orange)	610	1300	2090	20°	Water Clear
XLMYK12D	◆ AlGaInP(Yellow)	590	500	995	30°	Yellow Diffused
XLMYK12W	◆ AlGaInP(Yellow)	590	1800	2990	20°	Water Clear
XLM2CYK12W	◆ AlGaInP(Yellow)	590	5000	7790	20°	Water Clear
XLVG12D	◆ AlGaInP(Green)	574	50	138	30°	Green Diffused
XLM2DG12W	◆ InGaN(Green)	520	18000	29990	20°	Water Clear
XLDGK12W	◆ InGaN(Green)	515	14000	25990	20°	Water Clear
XLFB12W	◆ InGaN(Blue)	465	4300	6990	20°	Water Clear
XLCBD12D	◆ InGaN(Blue)	460	600	995	30°	Blue Diffused
XLCBD12W	◆ InGaN(Blue)	460	3100	4490	20°	Water Clear

5mm




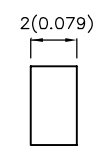
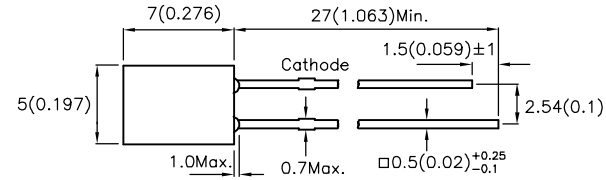
XLM2CRK14W	◆ AlGaInP(Red)	640	1500	2890	30°	Water Clear
XLFB14W	◆ InGaN(Blue)	465	1900	3090	30°	Water Clear


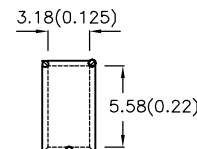
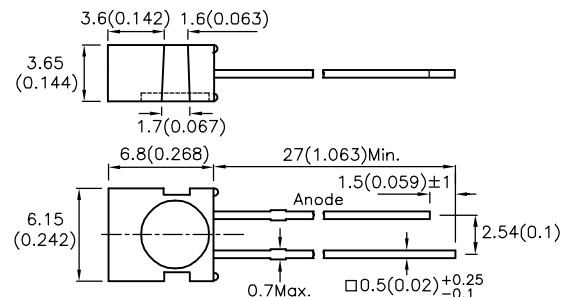
10mm




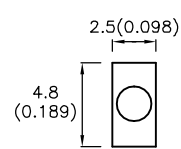
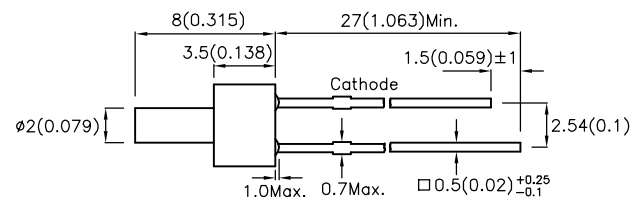
XLM2MR01D	◆ AlGaInP(Red)	660	300	597	30°	Red Diffused
XLMDK01D	◆ AlGaInP(Red)	645	150	297	30°	Red Diffused
XLMYK01D	◆ AlGaInP(Yellow)	590	300	497	30°	Yellow Diffused
XLVG01D	◆ AlGaInP(Green)	574	55	98	30°	Green Diffused

1. Dimension Unit: mm(inches), Tolerance: ±0.25mm (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.


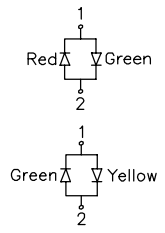
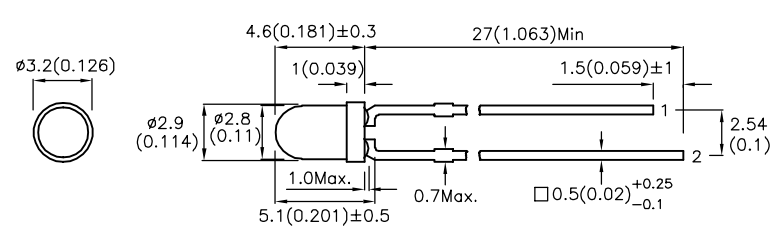
Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		
2x5mm   						
XSMDK18D	◆ AlGaInP(Red)	645	25	49	140°	Red Diffused
XSMYK18D	◆ AlGaInP(Yellow)	590	70	118	140°	Yellow Diffused
XSVG18D	◆ AlGaInP(Green)	574	10	29	140°	Green Diffused

3.65x6.15mm   						
XEMDK21D	◆ AlGaInP(Red)	645	30	59	140°	Red Diffused
XEMYK21D	◆ AlGaInP(Yellow)	590	80	148	140°	Yellow Diffused
XEVG21D	◆ AlGaInP(Green)	574	8	19	140°	Green Diffused

FLAT TOP

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		
2mm   						
XLMDK13D	◆ AlGaInP(Red)	645	80	198	50°	Red Diffused
XLMYK13D	◆ AlGaInP(Yellow)	590	80	198	50°	Yellow Diffused
XLVG13D	◆ AlGaInP(Green)	574	20	39	50°	Green Diffused


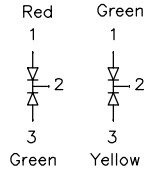
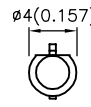
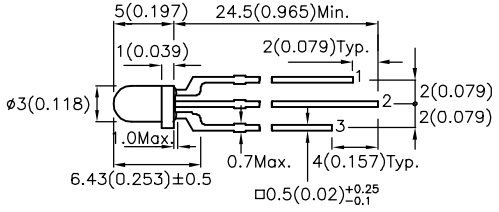
BI-COLOR & BI-POLAR

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		
3mm Round   						
XLMDKVG37M	◆ AlGaInP(Red)	645	55	108	60°	White Diffused
	◆ AlGaInP(Green)	574	40	79		
XLVGMK37M	◆ AlGaInP(Green)	574	40	79	60°	White Diffused
	◆ AlGaInP(Yellow)	590	80	228		

1. Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm$ (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.


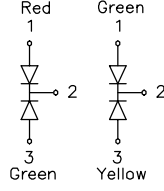
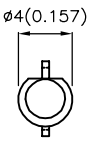
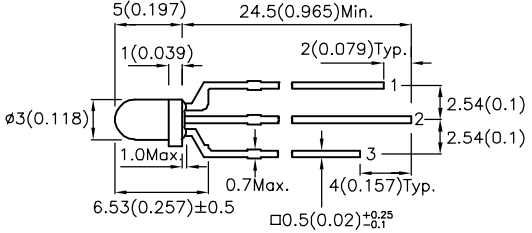
Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

3mm Round


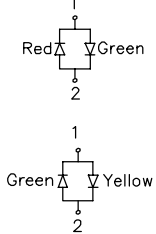
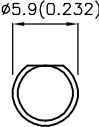
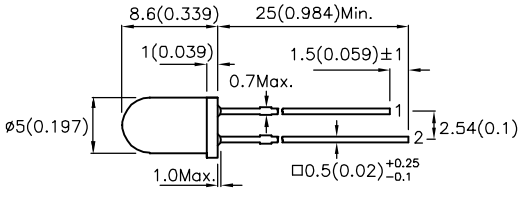
XLMDKVG29M	◆ AlGaInP(Red)	645	80	158	60°	White Diffused
	◆ AlGaInP(Green)	574	40	98		
XLVGMKY29M	◆ AlGaInP(Green)	574	55	98	60°	White Diffused
	◆ AlGaInP(Yellow)	590	120	248		

3mm Round


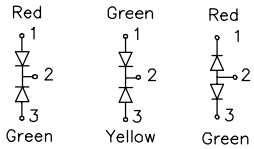
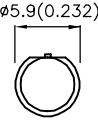
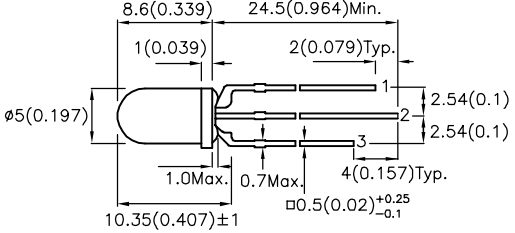
XLMDKVG34M	◆ AlGaInP(Red)	645	80	158	60°	White Diffused
	◆ AlGaInP(Green)	574	60	158		
XLMDKSGK34M	◆ AlGaInP(Red)	645	80	158	60°	White Diffused
	◆ AlGaInP(Green)	574	70	158		
XLVGMKY34M	◆ AlGaInP(Green)	574	40	118	60°	White Diffused
	◆ AlGaInP(Yellow)	590	120	297		

5mm Round

XLMDKVG58M	◆ AlGaInP(Red)	645	80	148	30°	White Diffused
	◆ AlGaInP(Green)	574	60	118		
XLVGMKY58M	◆ AlGaInP(Green)	574	60	118	30°	White Diffused
	◆ AlGaInP(Yellow)	590	80	178		

5mm Round


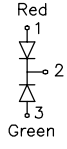
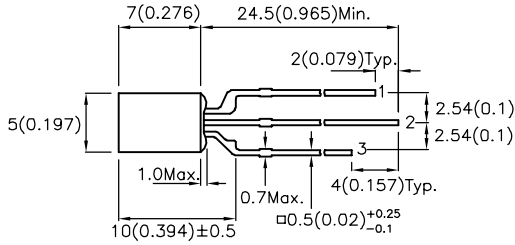
XLMDKVG59MCA

XLMDKVG59M	◆ AlGaInP(Red)	645	200	397	30°	White Diffused
	◆ AlGaInP(Green)	574	80	178		
XLMDKVG59MCA	◆ AlGaInP(Red)	645	18	39	60°	White Diffused
	◆ AlGaInP(Green)	574	8	19		
XLVGMKY59M	◆ AlGaInP(Green)	574	80	198	30°	White Diffused
	◆ AlGaInP(Yellow)	590	250	597		

1. Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm$ (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

2x5mm Rectangular


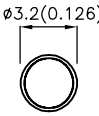
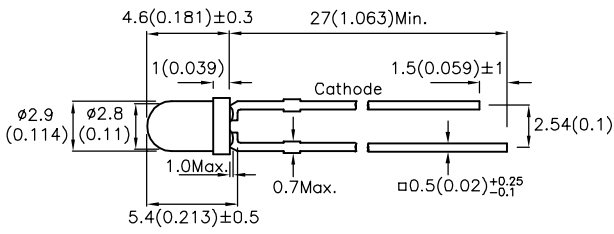




XSMDKVG47M	◆ AlGaInP(Red)	645	30	54	140°	White Diffused
	◆ AlGaInP(Green)	574	15	29		

LOW CURRENT


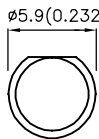
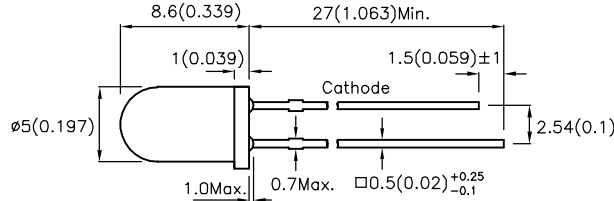
Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=2mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

3mm

XCMDK11D	◆ AlGaInP(Red)	645	10	19	50°	Red Diffused
XCVG11D	◆ AlGaInP(Green)	574	4	7	50°	Green Diffused

5mm


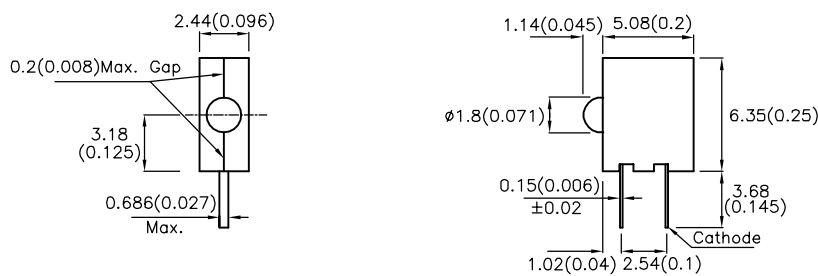




XCMDK12D	◆ AlGaInP(Red)	645	18	34	30°	Red Diffused
XCMYK12D	◆ AlGaInP(Yellow)	590	20	69	30°	Yellow Diffused
XCVG12D	◆ AlGaInP(Green)	574	6	11	30°	Green Diffused

1. Dimension Unit: mm(inches), Tolerance: ±0.25mm (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.


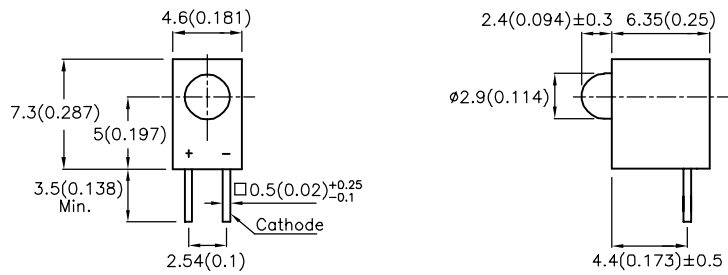
Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=10mA, 20mA^*$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

1.8mm


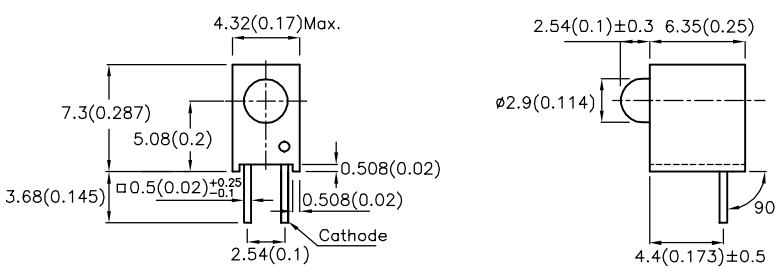
XNH1ZUR46D	◆ GaAsP/GaP(Red)	627	*8	*15	40°	Red Diffused
XNH1ZUY46D	◆ GaAsP/GaP(Yellow)	590	*5	*9	40°	Yellow Diffused
XNH1ZMG46D	◆ GaP(Green)	565	*5	*11	40°	Green Diffused

3mm


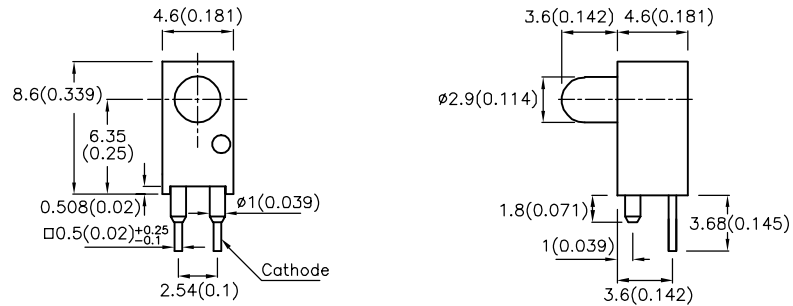
XVB1LUR11D	◆ GaAsP/GaP(Red)	627	10	19	50°	Red Diffused
XVB1LUY11D	◆ GaAsP/GaP(Yellow)	590	8	14	50°	Yellow Diffused
XVB1LUG11D	◆ GaP(Green)	565	10	24	50°	Green Diffused

3mm

XNK1LUR11D	◆ GaAsP/GaP(Red)	627	10	19	50°	Red Diffused
XNK1LUY11D	◆ GaAsP/GaP(Yellow)	590	8	14	50°	Yellow Diffused
XNK1LUG11D	◆ GaP(Green)	565	10	24	50°	Green Diffused

3mm

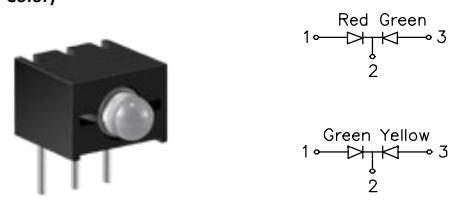



XPV1LUR11D	◆ GaAsP/GaP(Red)	627	10	19	50°	Red Diffused
XPV1LUY11D	◆ GaAsP/GaP(Yellow)	590	8	14	50°	Yellow Diffused
XPV1LUG11D	◆ GaP(Green)	565	10	24	50°	Green Diffused

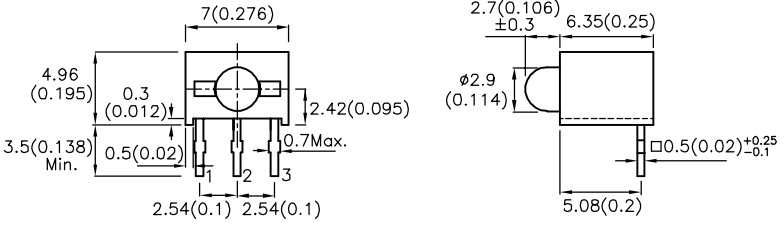
1. Dimension Unit: mm(inches), Tolerance: ±0.25mm (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=10mA, 20mA^*$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

3mm (Bi-Color)

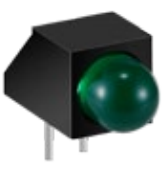
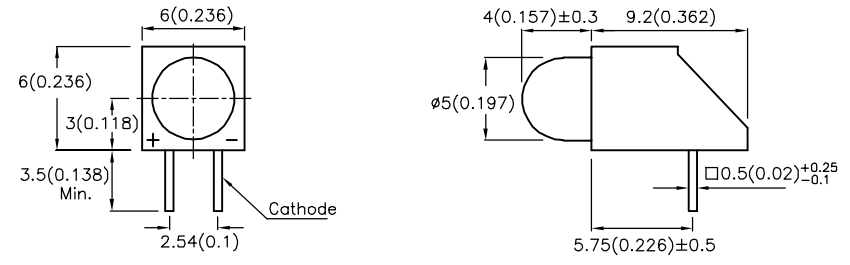


Pinout diagrams:
 Red Green: 1 (Red), 2 (Green), 3 (Cathode)
 Green Yellow: 1 (Green), 2 (Yellow), 3 (Cathode)



XNN1LUGR86M	◆ GaAsP/GaP(Red)	627	*10	*23	60°	White Diffused
	◆ GaP(Green)	565	*12	*29		
XNN1LUGY86M	◆ GaP(Green)	565	*18	*39	60°	White Diffused
	◆ GaAsP/GaP(Yellow)	590	*10	*19		

5mm


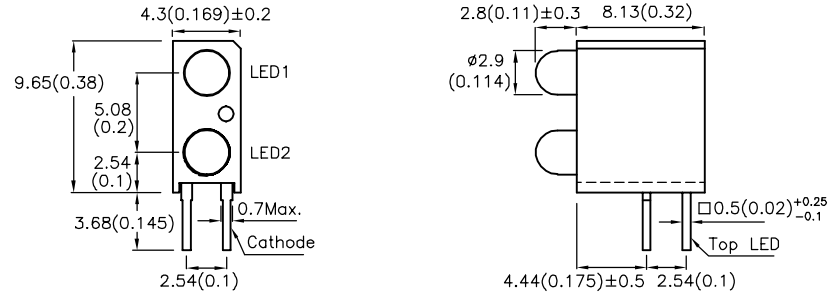



XVB1LUR50D	◆ GaAsP/GaP(Red)	627	12	39	30°	Red Diffused
XVB1LUY50D	◆ GaAsP/GaP(Yellow)	590	15	29	30°	Yellow Diffused
XVB1LUG50D	◆ GaP(Green)	565	15	29	30°	Green Diffused

TWO POSITION


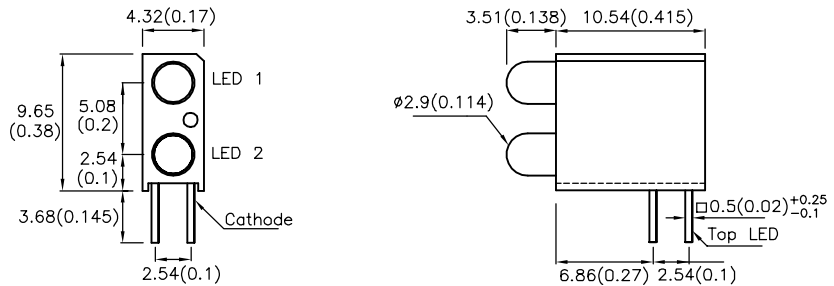
Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=10mA, 20mA^*$		Viewing Angle 2 θ 1/2	Lens
			Min	Typ		

3mm

XPC2LMR11D	◆ GaAlAs(Red)	655	*50	*98	50°	Red Diffused
XPC2LUR11D	◆ GaAsP/GaP(Red)	627	10	19	50°	Red Diffused
XPC2LUY11D	◆ GaAsP/GaP(Yellow)	590	8	14	50°	Yellow Diffused
XPC2LUG11D	◆ GaP(Green)	565	10	24	50°	Green Diffused

3mm


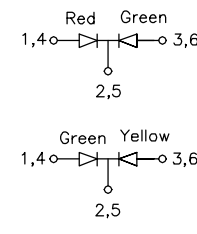
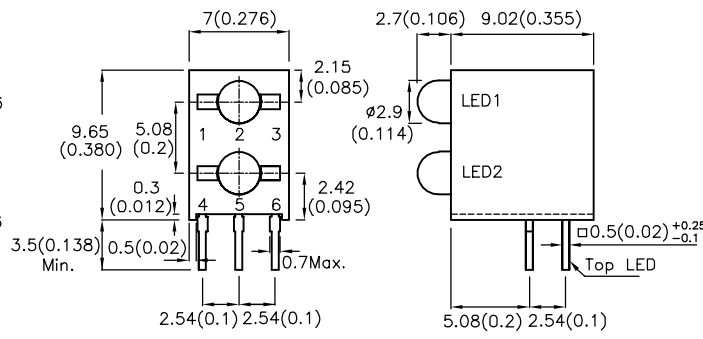



XPF2LUR11D	◆ GaAsP/GaP(Red)	627	10	19	50°	Red Diffused
XPF2LUY11D	◆ GaAsP/GaP(Yellow)	590	8	14	50°	Yellow Diffused
XPF2LUG11D	◆ GaP(Green)	565	10	24	50°	Green Diffused

1. Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm$ (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=20mA$		Viewing Angle 2 θ 1/2	Lens
			Min	Typ		

3mm (Bi-Color)


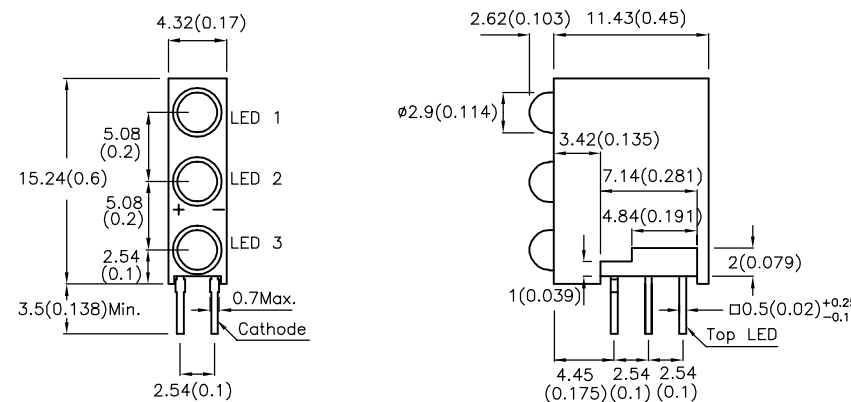




XVO2LUGR86M	◆ GaAsP/GaP(Red)	627	10	23	60°	White Diffused
	◆ GaP(Green)	565	12	29		
XVO2LUGY86M	◆ GaP(Green)	565	18	39	60°	White Diffused
	◆ GaAsP/GaP(Yellow)	590	10	19		

THREE POSITION


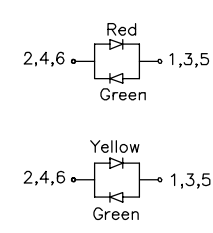
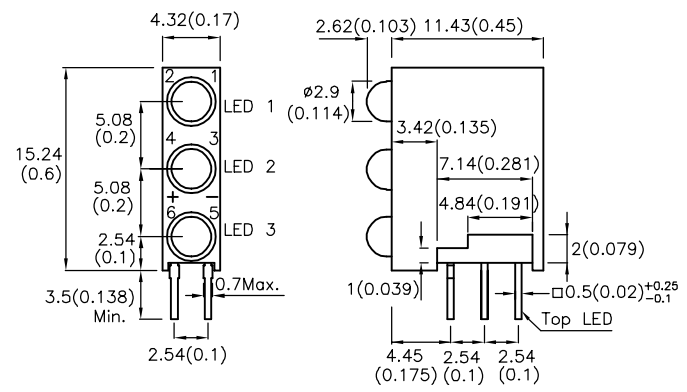
Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=10mA, 20mA^*$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		

3mm

XPZ3LUR11D	◆ GaAsP/GaP(Red)	627	10	19	50°	Red Diffused
XPZ3LUY11D	◆ GaAsP/GaP(Yellow)	590	8	14	50°	Yellow Diffused
XPZ3LUG11D	◆ GaP(Green)	565	10	24	50°	Green Diffused

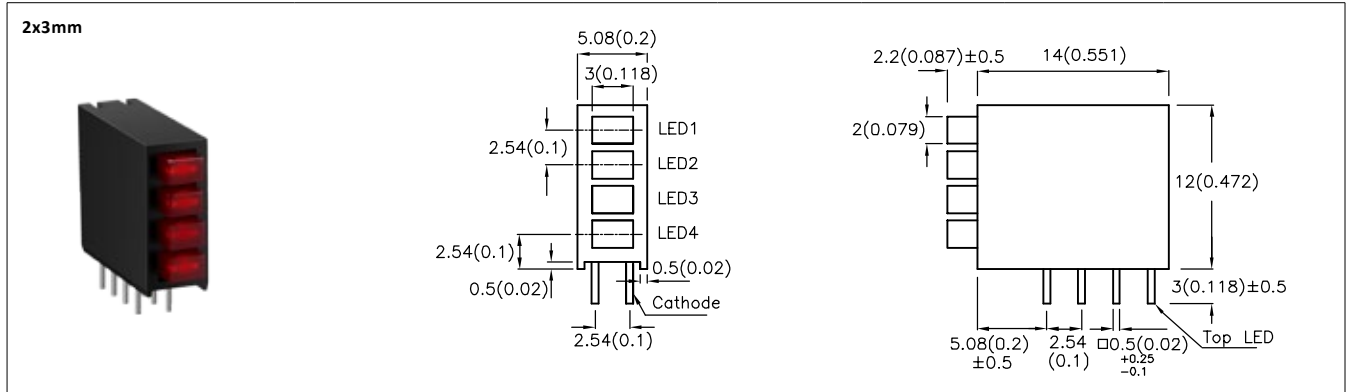
3mm (Bi-Color)

XPZ3LUGR37M	◆ GaAsP/GaP(Red)	627	*4	*9	60°	White Diffused
	◆ GaP(Green)	565	*6	*13		
XPZ3LUGY37M	◆ GaAsP/GaP(Yellow)	590	*4	*7	60°	White Diffused
	◆ GaP(Green)	565	*6	*13		

1. Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm$ (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

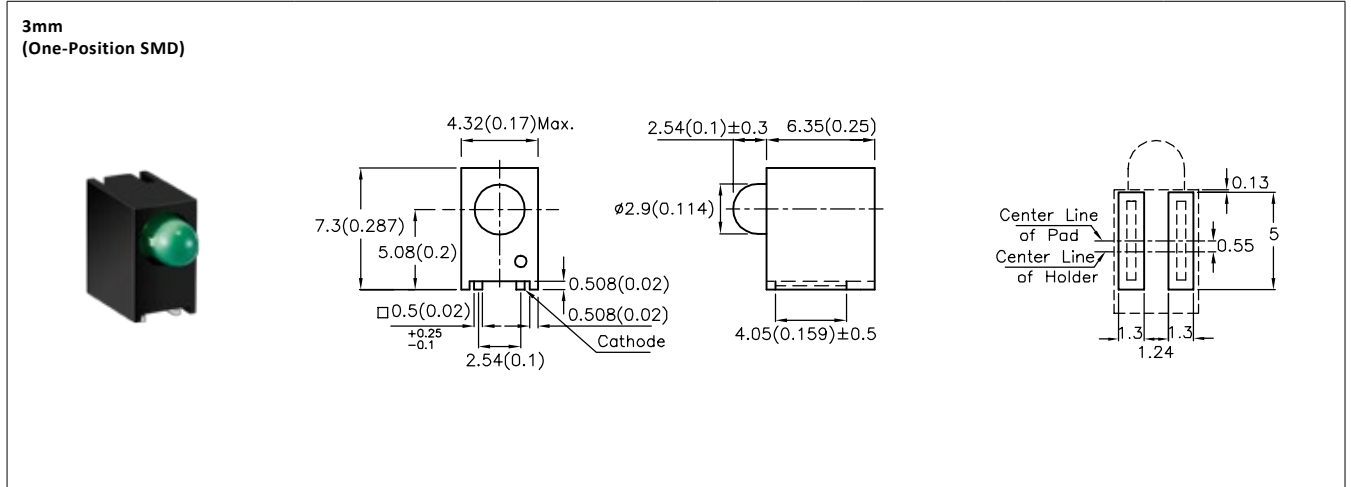
Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=10mA$		Viewing Angle 2 θ 1/2	Lens
			Min	Typ		



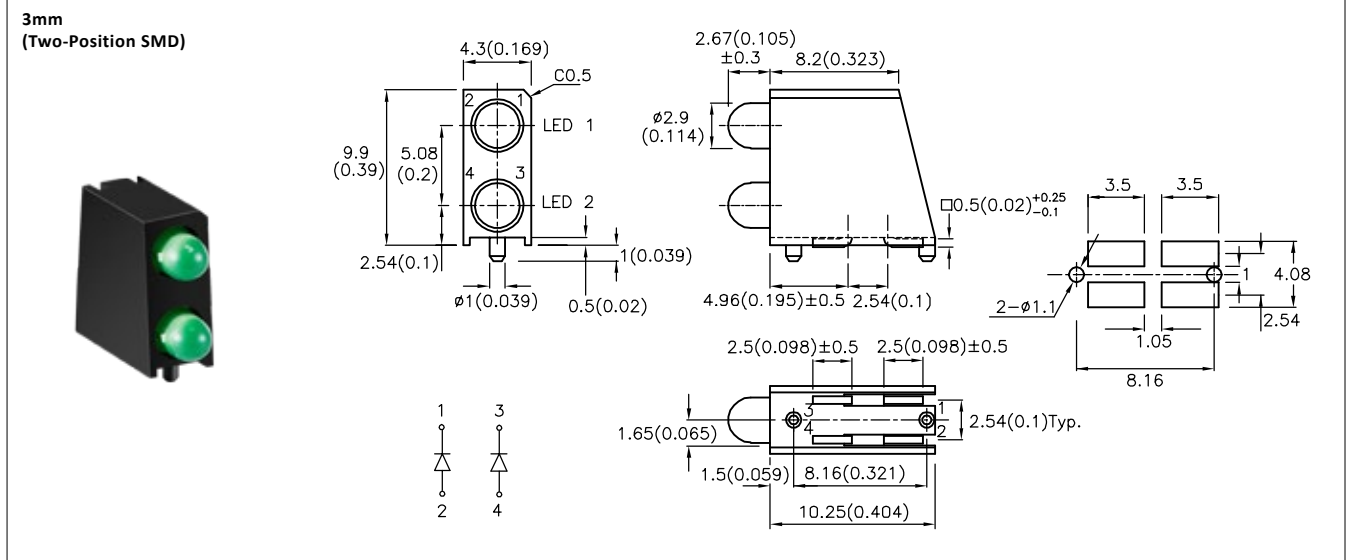
XVX4SUR36D	◆ GaAsP/GaP(Red)	627	1.2	3.8	140°	Red Diffused
XVX4SUY36D	◆ GaAsP/GaP(Yellow)	590	1.5	3.8	140°	Yellow Diffused
XVX4SUG36D	◆ GaP(Green)	565	3	5	140°	Green Diffused

SMD CBI

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(mcd) $I_f=10mA$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		



XNK1LUG11DSMD	◆ GaP(Green)	565	10	24	50°	Green Diffused
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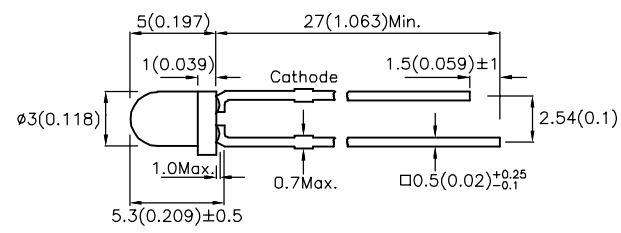


XRS2LUG11D	◆ GaP(Green)	565	10	24	50°	Green Diffused
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1. Dimension Unit: mm(inches), Tolerance: ±0.25mm (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure	λ_{peak} (nm)	$P_o(mW/sr)$ $I_f=20mA, 50mA^*$		Viewing Angle 2 θ 1/2	Lens
			Min.	Typ.		


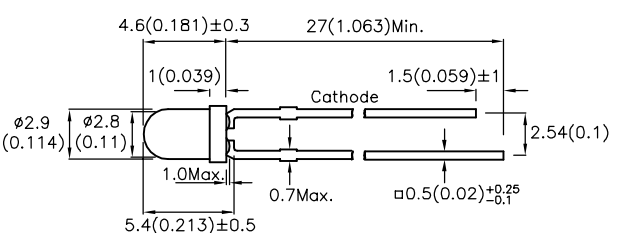
3mm

Dimensions: $\phi 4(0.157)$, $\phi 3(0.118)$, $5(0.197)$, $1(0.039)$, $27(1.063)Min.$, $1.5(0.059) \pm 1$, $2.54(0.1)$, $5.3(0.209) \pm 0.5$, $1.0Max.$, $0.7Max.$, $\square 0.5(0.02)_{-0.1}^{+0.25}$, Cathode.

XTNI30W	GaAs	940	3 *8	7 *14	50°	Water Clear
XTHI30W	GaAlAs	880	3 *5	15 *19	50°	Water Clear


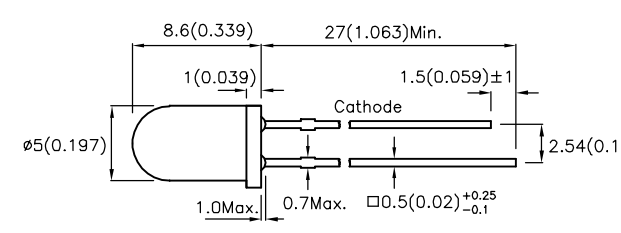
3mm

Dimensions: $\phi 3.2(0.126)$, $\phi 2.9(0.114)$, $\phi 2.8(0.11)$, $4.6(0.181) \pm 0.3$, $27(1.063)Min.$, $1(0.039)$, $1.5(0.059) \pm 1$, $2.54(0.1)$, $5.4(0.213) \pm 0.5$, $1.0Max.$, $0.7Max.$, $\square 0.5(0.02)_{-0.1}^{+0.25}$, Cathode.

XTNI11W	GaAs	940	3 *12	7 *24	30°	Water Clear
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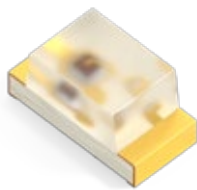

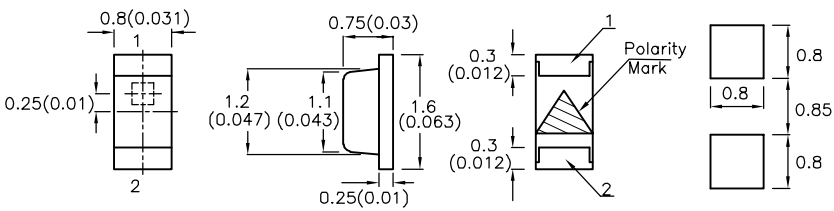
5mm

Dimensions: $\phi 5.9(0.232)$, $\phi 5(0.197)$, $8.6(0.339)$, $27(1.063)Min.$, $1(0.039)$, $1.5(0.059) \pm 1$, $2.54(0.1)$, $1.0Max.$, $0.7Max.$, $\square 0.5(0.02)_{-0.1}^{+0.25}$, Cathode.

XTNI12W	GaAs	940	8 *25	19 *49	20°	Water Clear
XTNI12BF	GaAs	940	8 *25	19 *49	20°	Blue Transparent
XTHI12W	GaAlAs	880	6 *12	14 *24	20°	Water Clear
XTHI12W850	GaAlAs	850	12 *40	29 *89	20°	Water Clear

1.6x0.8x0.75mm (0603)


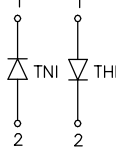
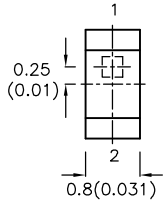
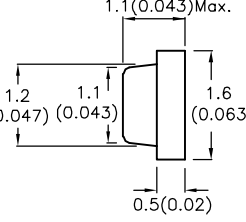
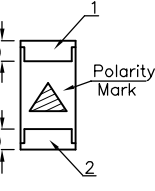
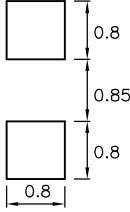
Dimensions: $0.8(0.031)$, $0.25(0.01)$, $0.75(0.03)$, $1.2(0.047)$, $1.1(0.043)$, $1.6(0.063)$, $0.3(0.012)$, $0.3(0.012)$, $0.25(0.01)$, 0.8 , 0.85 , 0.8 , Polarity Mark.

Dimension Unit: mm(inches), Tolerance: $\pm 0.1(0.004)''$		Recommended Soldering Pattern				
XZTNI53W-1	GaAs	940	0.8	1.8	150°	Water Clear

1. Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm(0.01)''$. Soldering Pattern Tolerance: $\pm 0.1mm$.
 2. Radiant intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Chip Structure	λ_{peak} (nm)	Po(mW/sr) $I_f=20mA$		Viewing Angle 2 θ /2	Lens
			Min.	Typ.		

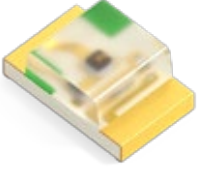

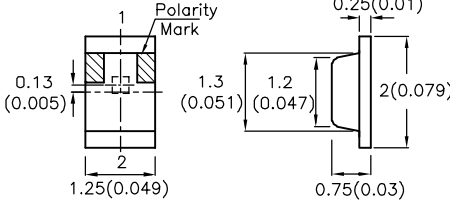
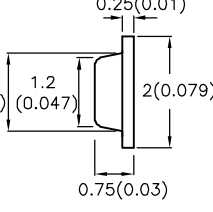
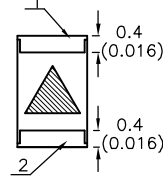
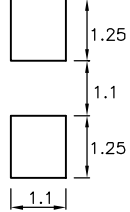
1.6x0.8x1.1mm (0603)

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)$ Recommended Soldering Pattern

XZTN153W	GaAs	940	0.8	1.8	150°	Water Clear
XZTH153W	GaAlAs	880	0.8	1.3	150°	Water Clear


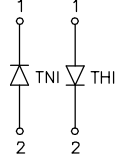
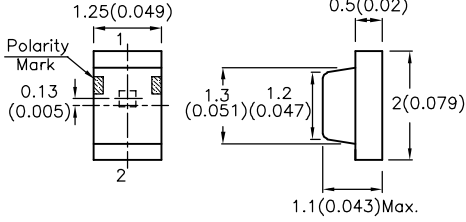
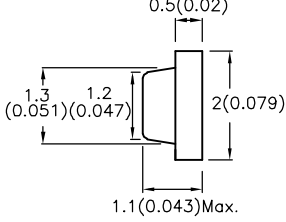
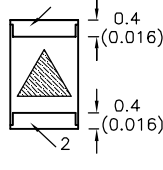
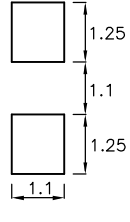
2.0x1.25x0.75mm (0805)

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)$ Recommended Soldering Pattern

XZTN154W-1	GaAs	940	0.8	1.8	160°	Water Clear
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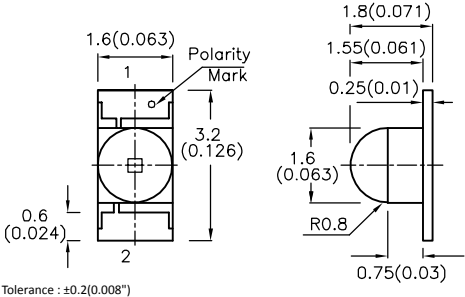
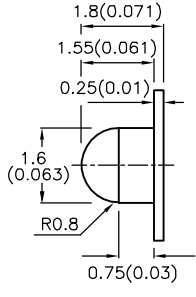
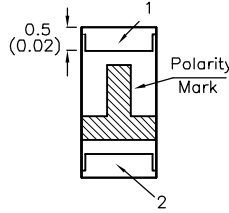
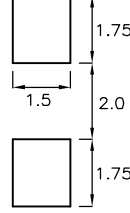
2.0x1.25x1.1mm (0805)

Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)$ Recommended Soldering Pattern

XZTN154W	GaAs	940	0.8	1.8	160°	Water Clear
XZTH154W	GaAlAs	880	0.8	1.3	160°	Water Clear


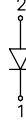
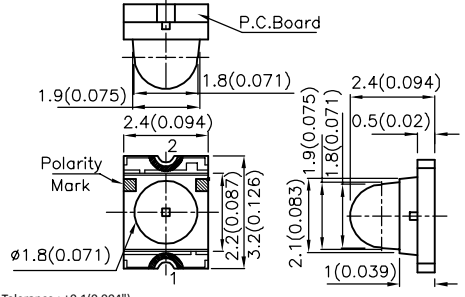
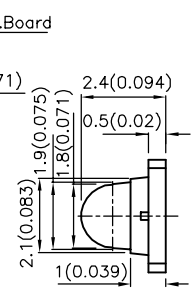
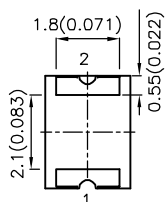
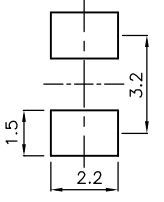
3.2x1.6x1.8mm (1206 Dome Lens)

Dimension Unit: mm(inches), Tolerance : $\pm 0.2(0.008)$ Recommended Soldering Pattern

XZTN155W-3	GaAs	940	2	4.8	40°	Water Clear
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3.2x2.4x2.4mm (Dome Lens)


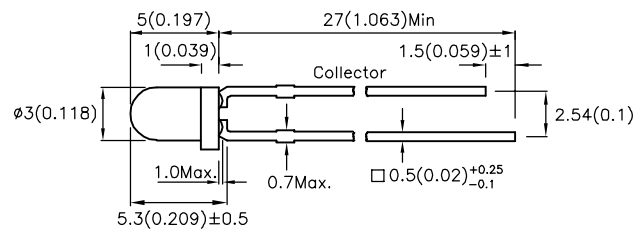
Dimension Unit: mm(inches), Tolerance : $\pm 0.1(0.004)$ Recommended Soldering Pattern

XZTH178W	GaAlAs	880	3	5	20°	Water Clear
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1. Soldering Pattern Dimension Unit : mm , Tolerance : $\pm 0.1mm$.
 2. Radiant intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Lens	Description
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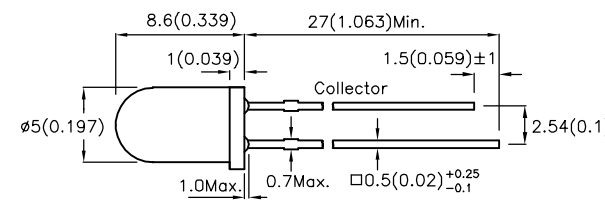
3mm

5(0.197) 27(1.063)Min
1(0.039) Collector 1.5(0.059)±1
ø3(0.118) 2.54(0.1)
1.0Max. 0.7Max. □0.5(0.02)^{+0.25}_{-0.1}
5.3(0.209)±0.5

XRNI30W-1	Water Clear	3mm
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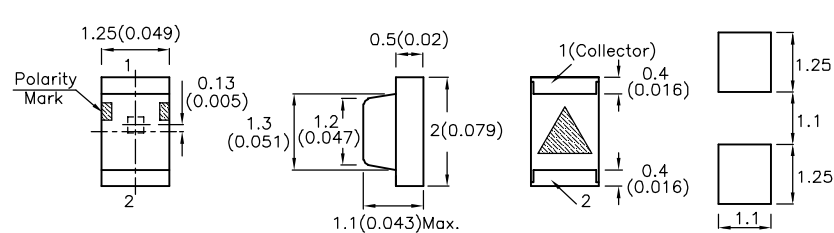
5mm

8.6(0.339) 27(1.063)Min.
1(0.039) Collector 1.5(0.059)±1
ø5(0.197) 2.54(0.1)
1.0Max. 0.7Max. □0.5(0.02)^{+0.25}_{-0.1}

XRNI12W	Water Clear	5mm
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2.0x1.25x1.1mm (0805)


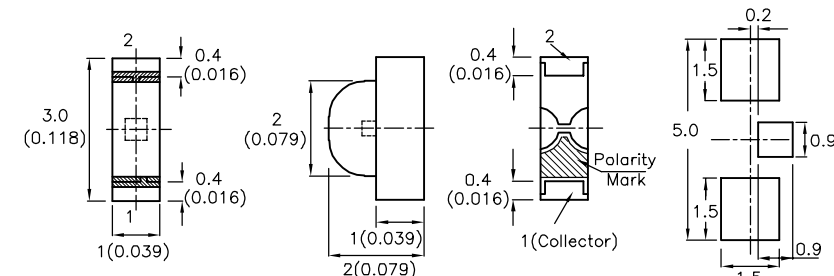



1.25(0.049) 0.5(0.02) 1(Collector) 1.25
1 0.13(0.005) 0.4(0.016)
Polarity Mark 1.3(0.051) 1.2(0.047) 2(0.079) 1.1
2 1.1(0.043)Max. 0.4(0.016) 1.1
2 0.4(0.016) 1.25

Dimension Unit: mm(inches), Tolerance : ±0.1(0.004") Recommended Soldering Pattern

XZRNI54W	Water Clear	2.0x1.25x1.1mm
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3.0x2.0x1.0mm (Right Angle)


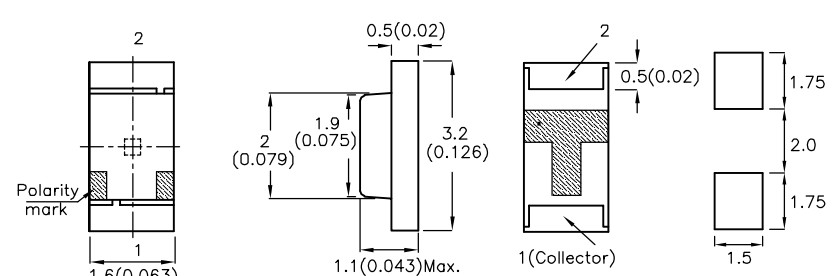



2 0.4(0.016) 0.2
3.0(0.118) 2(0.079) 0.4(0.016) 1.5
1 1(0.039) 2(0.079) 0.4(0.016) 5.0
1(Collector) 1.5
Polarity Mark 0.9
0.9

Dimension Unit: mm(inches), Tolerance : ±0.15(0.006") Recommended Soldering Pattern

XZRNI56W	Water Clear	3.0x2.0x1.0mm
XZRNI56BF	Blue transparent	3.0x2.0x1.0mm

3.2x1.6x1.1mm (1206)

2 0.5(0.02) 2 1.75
Polarity mark 1.9(0.075) 3.2(0.126) 0.5(0.02) 2.0
1 1.6(0.063) 1.1(0.043)Max. 1(Collector) 1.75
1.5

Dimension Unit: mm(inches), Tolerance : ±0.2(0.008") Recommended Soldering Pattern

XZRNI55W	Water Clear	3.2x1.6x1.1mm
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1. Dimension Unit: mm(inches), Tolerance: ±0.25mm (0.01"). Soldering Pattern Tolerance : ±0.1mm.
2. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

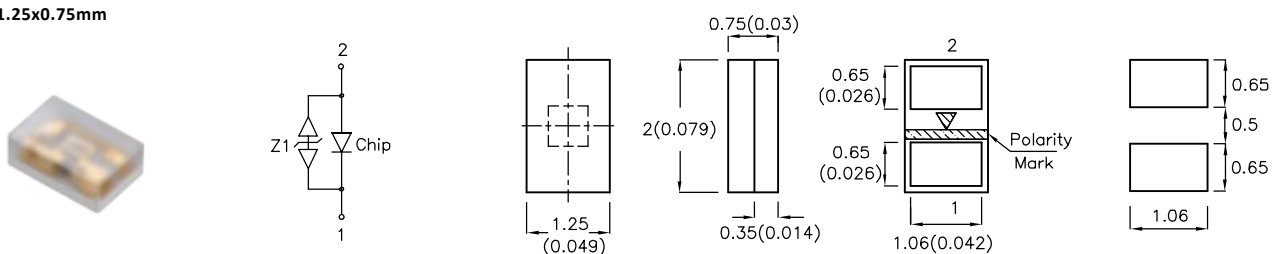
Electrical & Radiant Characteristics $T_a = 25^\circ\text{C}$

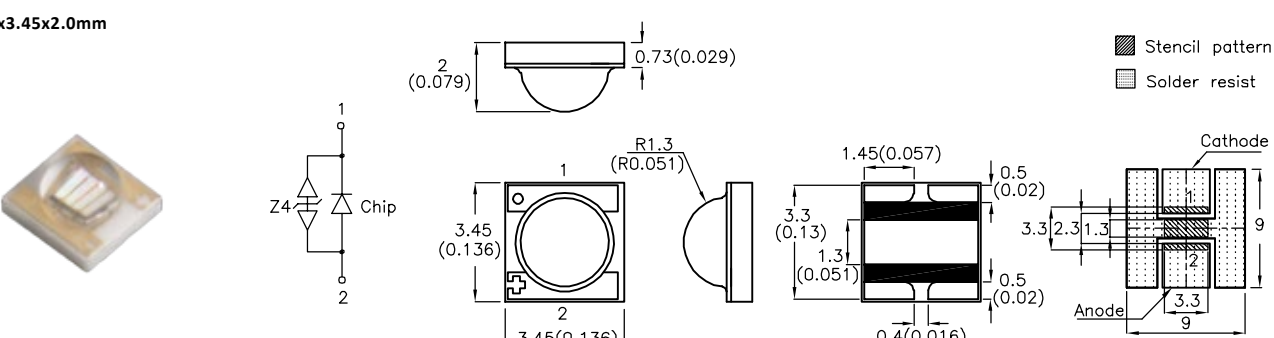
Symbol	Parameter	Part Number	Min.	Typ.	Max.	Unit	Test Condition
$I_{(ON)}$	On State Collector Current	XRNI30W-1	0.3	0.8	-	mA	$V_{ce}=5V, E_e=1\text{mW}/\text{cm}^2, \lambda=940\text{nm}$
		XRNI12W	0.5	2.5			
		XZRNI54W	0.2	0.4			
		XZRNI56W	0.2	0.4			
		XZRNI56BF	0.1	0.3			
		XZRNI55W	0.2	0.4			
$V_{BR\text{ CEO}}$	Collector-to-Emitter Breakdown Voltage	-	30	-	-	V	$I_c=100\mu\text{A}, E_e=0\text{mW}/\text{cm}^2$
$V_{BR\text{ ECO}}$	Emitter-to-Collector Breakdown Voltage	-	5	-	-	V	$I_c=100\mu\text{A}, E_e=0\text{mW}/\text{cm}^2$
$V_{CE(SAT)}$	Collector-to-Emitter Saturation Voltage	-	-	-	0.8	V	$I_c=2\text{mA}, E_e=20\text{mW}/\text{cm}^2$
I_{CEO}	Collector Dark Current	-	-	-	100	nA	$V_{ce}=10V, E_e=0\text{mW}/\text{cm}^2$
T_R	Rise Time (10% to 90%)	-	-	15	-	μs	$V_{ce}=5V, I_c=1\text{mA}, R_i=1\text{K}\Omega$
T_F	Fall Time (90% to 10%)	-	-	15	-	μs	$V_{ce}=5V, I_c=1\text{mA}, R_i=1\text{K}\Omega$

Absolute Maximum Rating $T_a = 25^\circ\text{C}$

Collector-to-Emitter Voltage	30V	Operating Temperature Range	$-40^\circ\text{C} \sim +85^\circ\text{C}$
Emitter-to-Collector Voltage	5V	Storage Temperature Range	$-40^\circ\text{C} \sim +85^\circ\text{C}$
Power Dissipation at (or below) 25°C Free Air Temperature	100mW	Lead Soldering Temperature(>5mm For 5sec)	260°C

ULTRAVIOLET

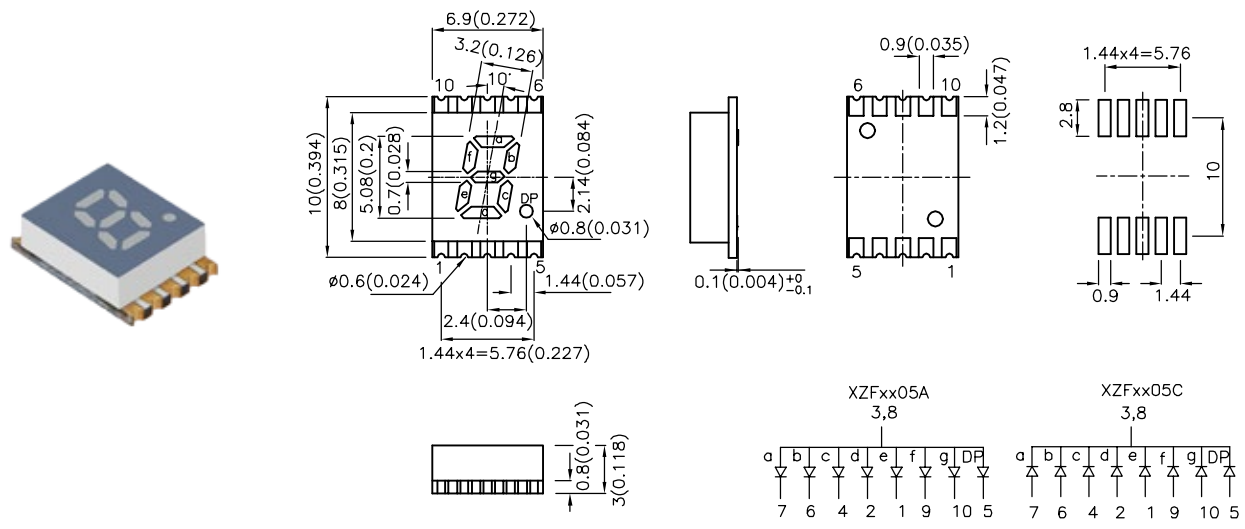
Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Pd(W)	$\Phi_e(\text{mW})$ @20mA	Viewing Angle 2 θ 1/2	Lens
				Typ.		
<p>2.0x1.25x0.75mm</p>  <p>Dimension Unit: mm(inches), Tolerance: $\pm 0.25\text{mm}$ (0.01")</p> <p>Recommended Soldering Pattern</p>						
XZVS54S-9A	InGaN (Ultraviolet)	365	0.12	12	150°	Water Clear
XZVS54S-9C	InGaN (Ultraviolet)	385	0.12	15	150°	Water Clear
XZVS54S-9D	InGaN (Ultraviolet)	395	0.12	15	150°	Water Clear
XZVS54S-9F	InGaN (Ultraviolet)	415	0.12	17	150°	Water Clear

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Pd(W)	$\Phi_e(\text{mW})$ @500mA	Viewing Angle 2 θ 1/2	Lens
				Typ.		
<p>3.45x3.45x2.0mm</p>  <p>Dimension Unit: mm(inches), Tolerance: $\pm 0.2(0.008")$</p> <p>Recommended Soldering Pattern</p>						
XZVS160S-A	InGaN (Ultraviolet)	365	1.95	617	120°	Water Clear
XZVS160S-D	InGaN (Ultraviolet)	395	2.8	795	120°	Water Clear
XZVS160S-E	InGaN (Ultraviolet)	405	2.8	795	120°	Water Clear

1. Soldering Pattern Dimension Unit : mm , Tolerance : $\pm 0.1\text{mm}$.
 2. Radiant flux value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

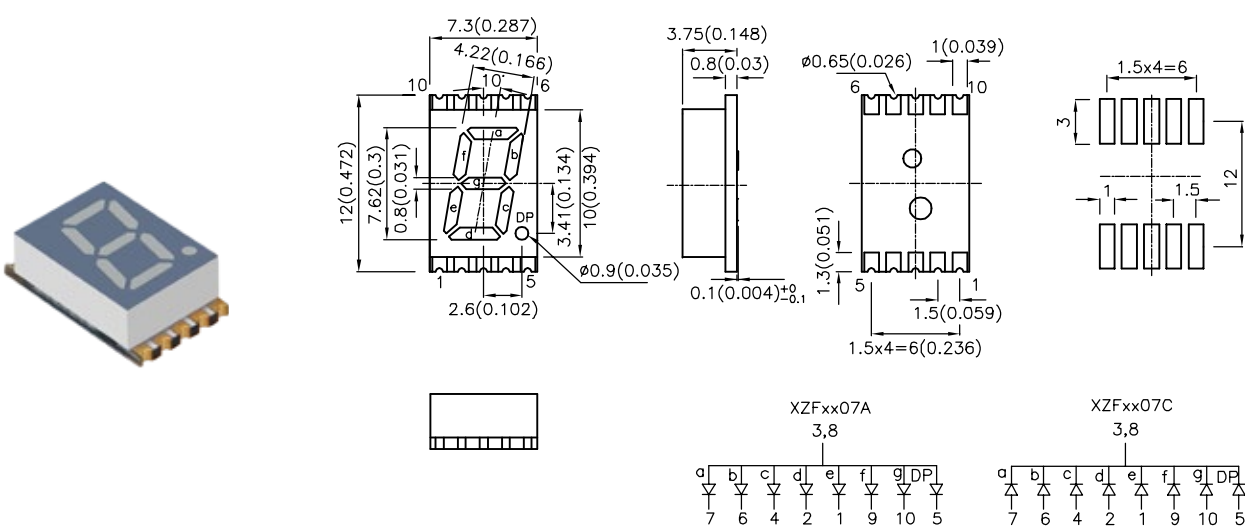
Part Number		Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(ucd) $I_f=10mA$	
Common Anode	Common Cathode			Min.	Typ.

0.2"(5.08mm)



XZFMOK05A	-	AlGaInP(Red)	645	3600	8090
-	XZFMOK05C	AlGaInP(Orange)	610	5600	11990
XZFGV05A	XZFGV05C	AlGaInP(Green)	574	2200	4290

0.3"(7.62mm)

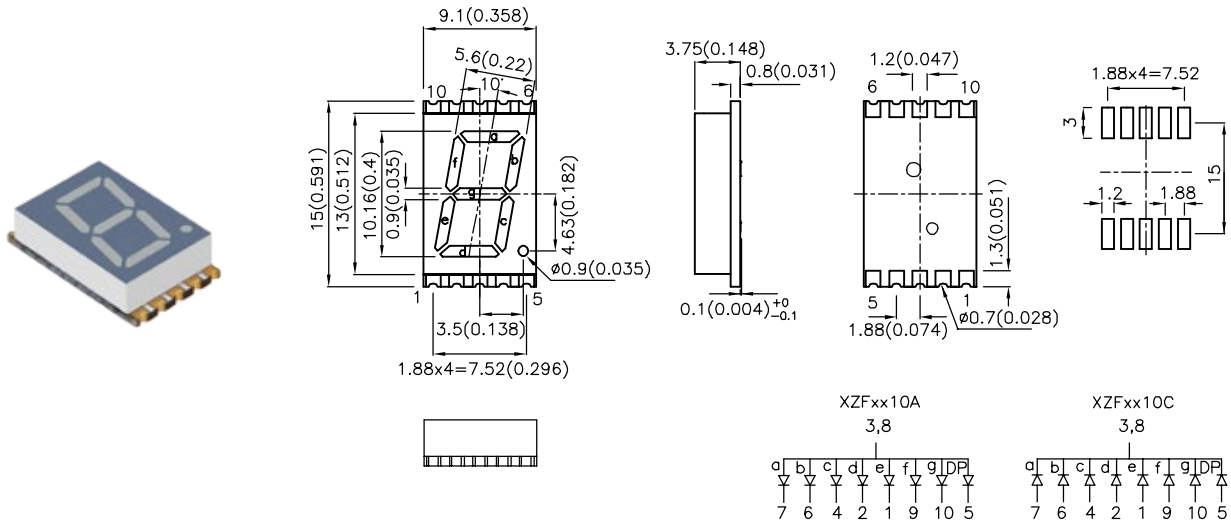


XZFMOK07A	XZFMOK07C	AlGaInP(Red)	645	3600	6390
XZFMOK07A	-	AlGaInP(Yellow)	590	5600	12990
XZFGV07A	XZFGV07C	AlGaInP(Green)	574	1400	3090
XZFBBA07A	-	InGaN(Blue)	468	1400	2490

1. Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm$ (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

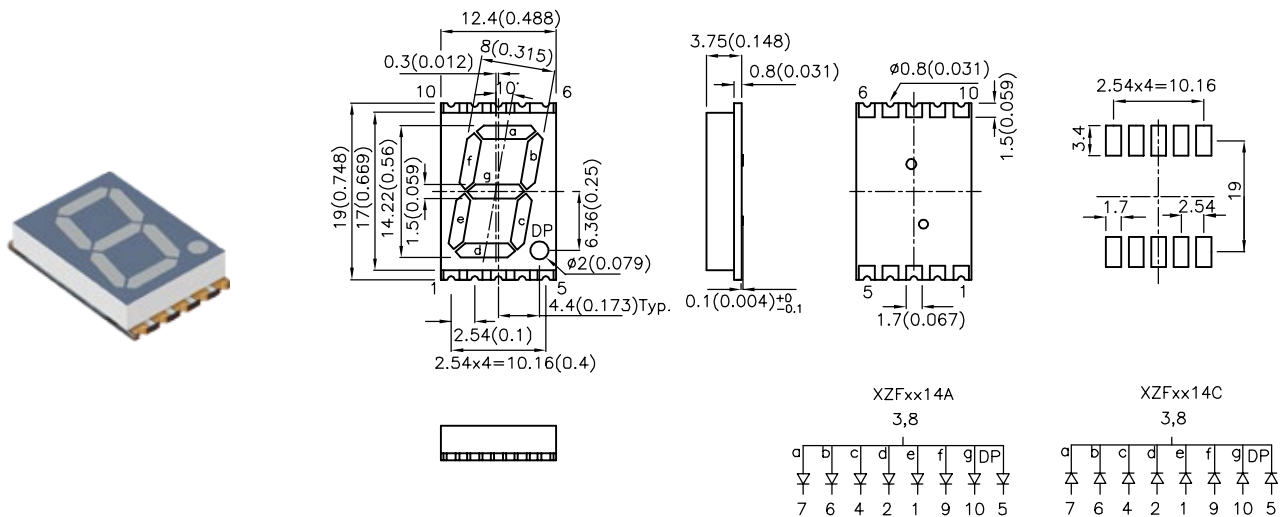
Part Number		Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(ucd) $I_f=10mA$	
Common Anode	Common Cathode			Min.	Typ.

0.4"(10.16mm)



XZFMDK10A	XZFMDK10C	◆ AlGaInP(Red)	645	9000	19990
XZFMOK10A	-	◆ AlGaInP(Orange)	610	9000	14990
XZFMYK10A	-	◆ AlGaInP(Yellow)	590	9000	22990
XZSVG10A	XZSVG10C	◆ AlGaInP(Green)	574	2200	4090

0.56"(14.22mm)

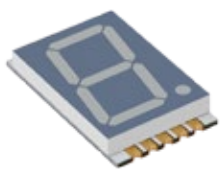
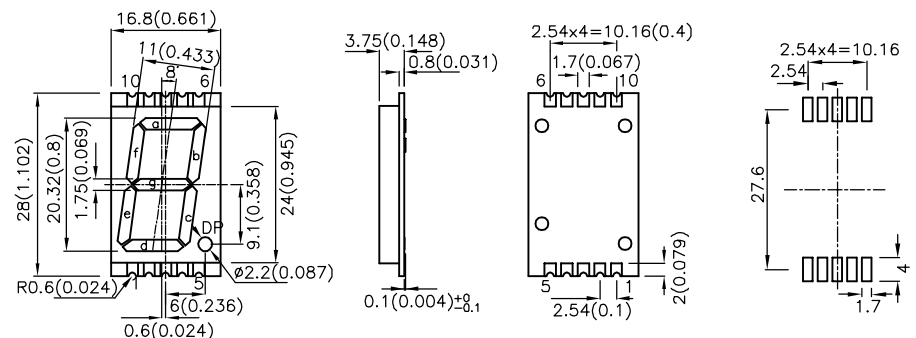


XZFMR14A	-	◆ GaAlAs(Red)	655	3600	7190
XZFMDK14A	XZFMDK14C	◆ AlGaInP(Red)	645	14000	28990
XZFMOK14A	-	◆ AlGaInP(Orange)	610	14000	22990
-	XZFMYK14C	◆ AlGaInP(Yellow)	590	14000	28990
XZSVG14A	-	◆ AlGaInP(Green)	574	2200	4590
XZFCBD14A	-	◆ InGaN(Blue)	460	5600	14990

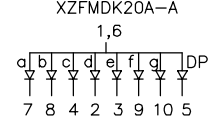
1. Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm$ (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number		Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(ucd) $I_f=10mA$	
Common Anode	Common Cathode			Min.	Typ.

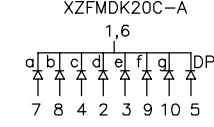
0.8" (20.32mm)

XZFMKD20A-A



XZFMKD20C-A


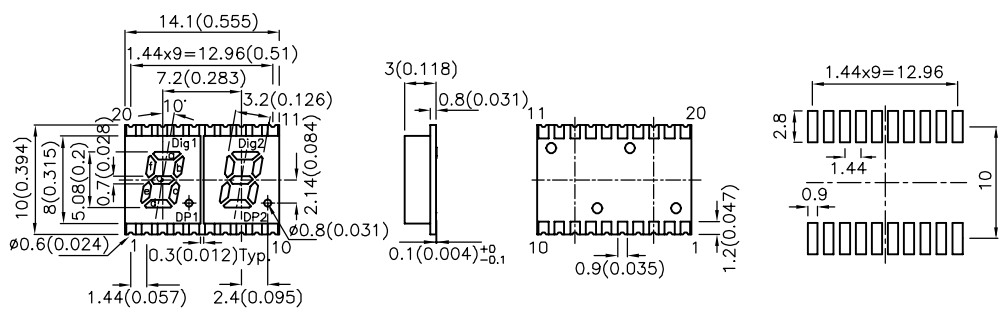


XZFMKD20A-A	XZFMKD20C-A	◆ AlGaInP(Red)	645	5600	11990
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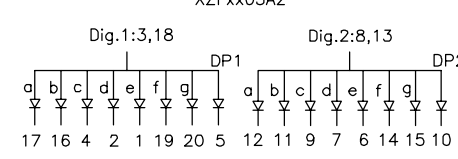
DUAL DIGIT SMD

Part Number		Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(ucd) $I_f=10mA$	
Common Anode	Common Cathode			Min.	Typ.

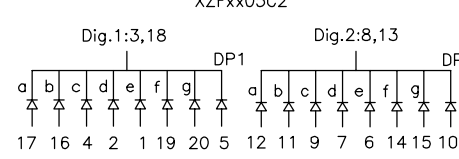
0.2" (5.08mm)

XZFxx05A2



XZFxx05C2


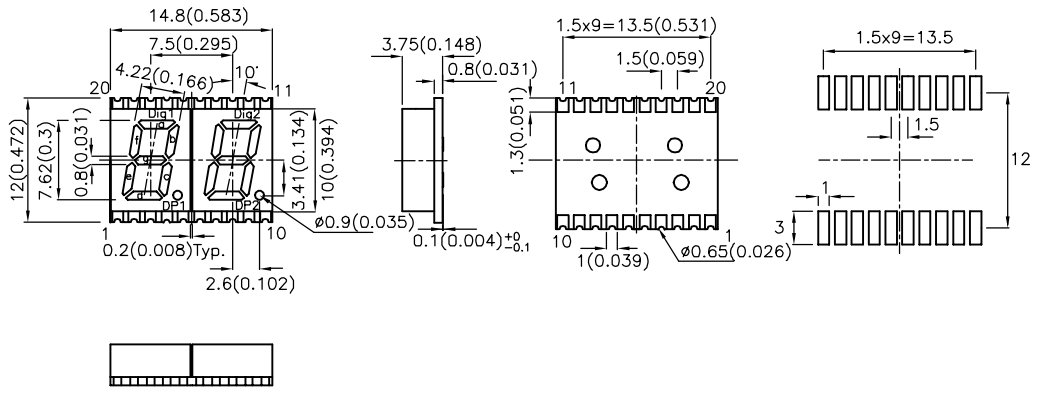
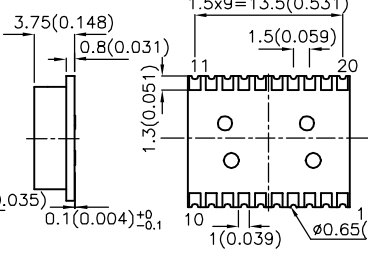
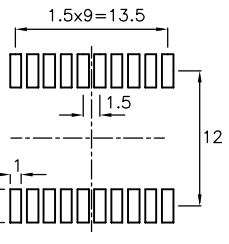


XZFMKD05A2	XZFMKD05C2	◆ AlGaInP(Red)	645	3600	8090
XZFMKY05A2	-	◆ AlGaInP(Yellow)	590	5600	14990
XZFMVG05A2	XZFMVG05C2	◆ AlGaInP(Green)	574	2200	4290

1. Dimension Unit: mm(inches), Tolerance: ±0.25mm (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

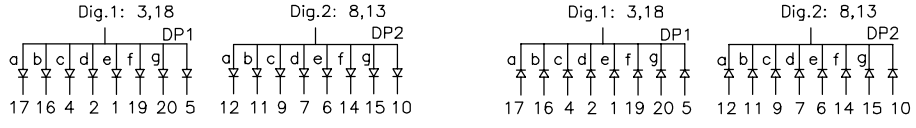
Part Number		Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(ucd) $I_f=10mA$	
Common Anode	Common Cathode			Min.	Typ.

0.3"(7.62mm)

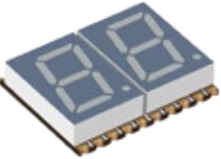
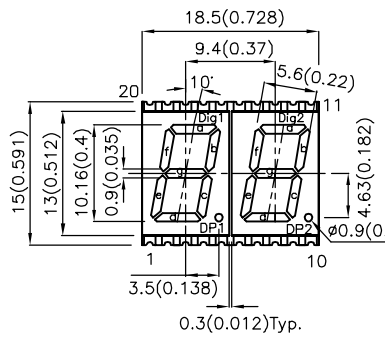
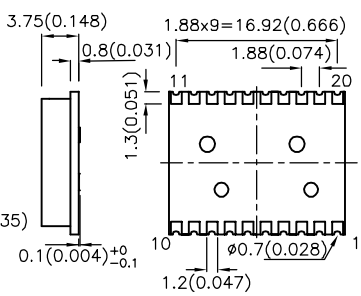
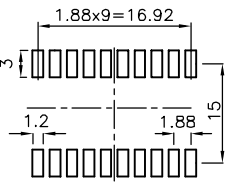
XZFxx07A2 **XZFxx07C2**

Dig.1: 3,18 Dig.2: 8,13 Dig.1: 3,18 Dig.2: 8,13



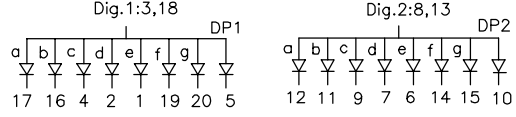
XZFMK07A2	XZFMK07C2	◆ AlGaInP(Red)	645	3600	6390
XZFG07A2	-	◆ AlGaInP(Green)	574	1400	3090

0.4"(10.16mm)

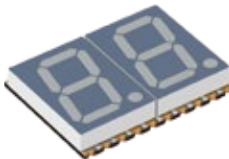
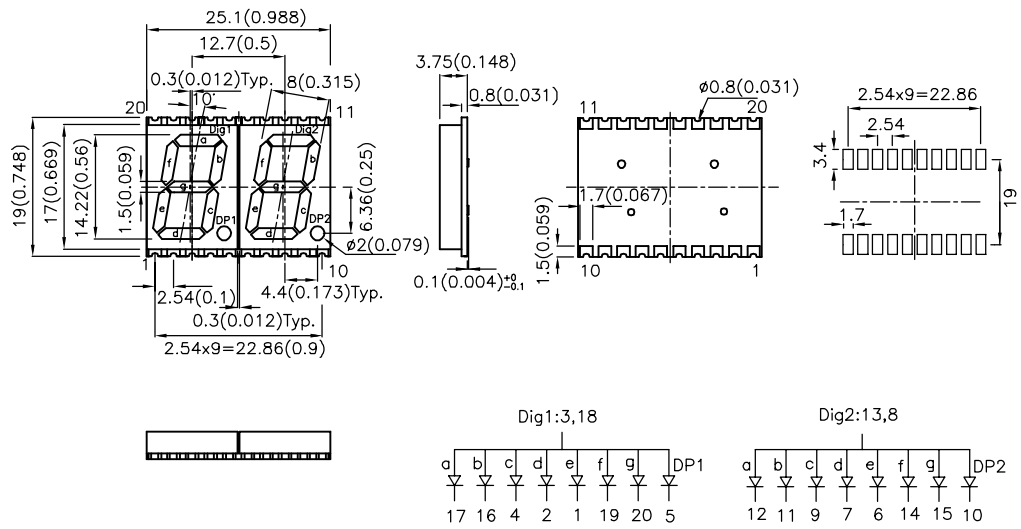
XZFxx10A2

Dig.1:3,18 Dig.2:8,13


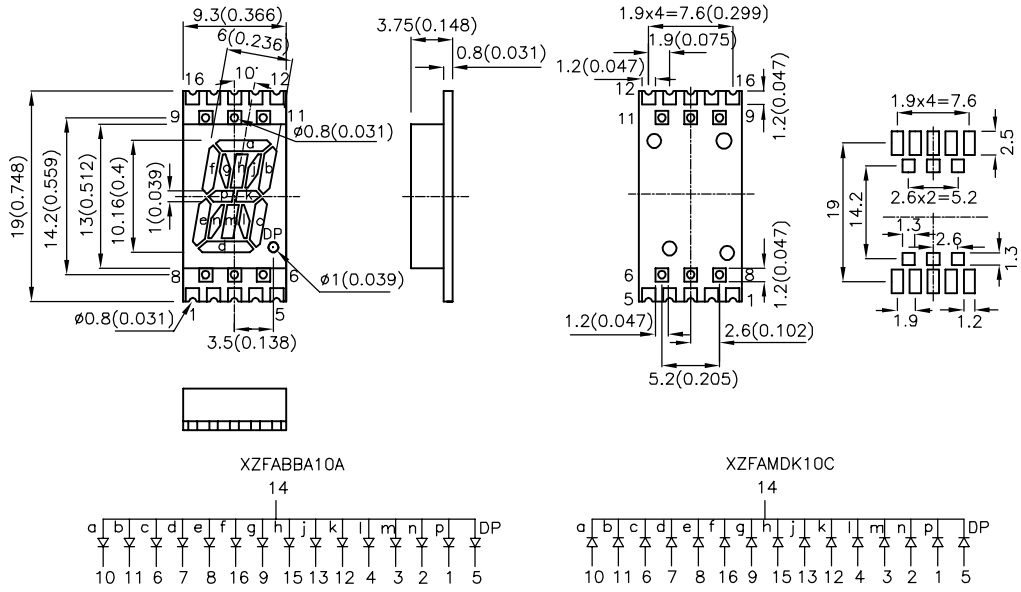


XZFMK10A2	-	◆ AlGaInP(Red)	645	9000	19990
XZFMOK10A2	-	◆ AlGaInP(Orange)	610	9000	14990
XZFG10A2	-	◆ AlGaInP(Green)	574	2200	4090

1. Dimension Unit: mm(inches), Tolerance: ±0.25mm (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number		Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(ucd) $I_f=10mA$	
Common Anode	Common Cathode			Min.	Typ.
0.56"(14.22mm)					
 					
XZFBV14A2	-	AlGaInP(Green)	574	2200	4590

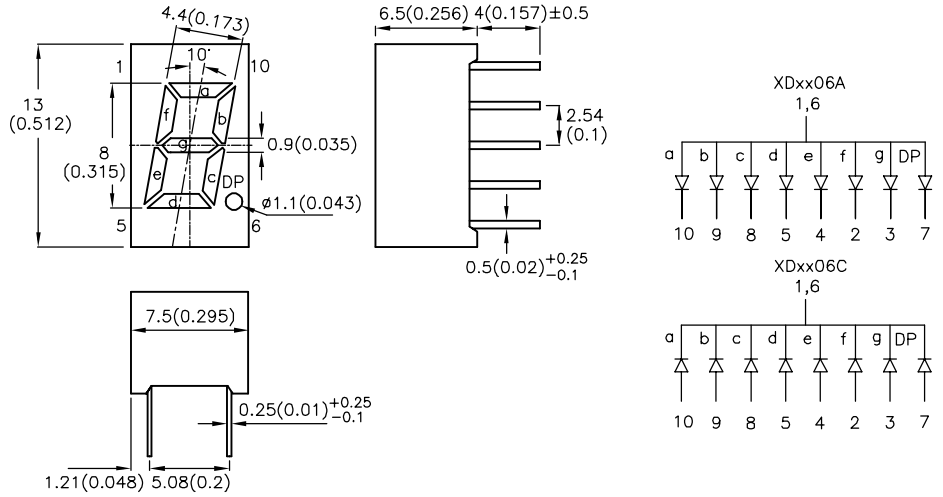
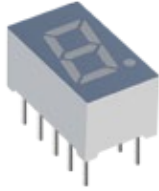
ALPHANUMERIC SMD

Part Number		Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(ucd) $I_f=10mA$	
Common Anode	Common Cathode			Min.	Typ.
0.4"(10.16mm)					
 					
-	XZFAMDK10C	AlGaInP(Red)	645	3600	8290
XZFABBA10A	-	InGaN(Blue)	468	1400	3090

1. Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm$ (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

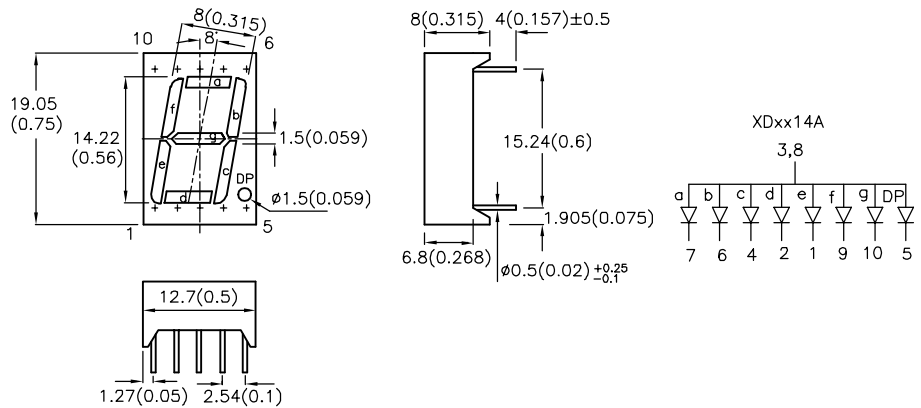
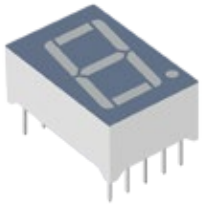
Part Number		Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(ucd) $I_f=10mA$	
Common Anode	Common Cathode			Min.	Typ.

0.32"(8mm)




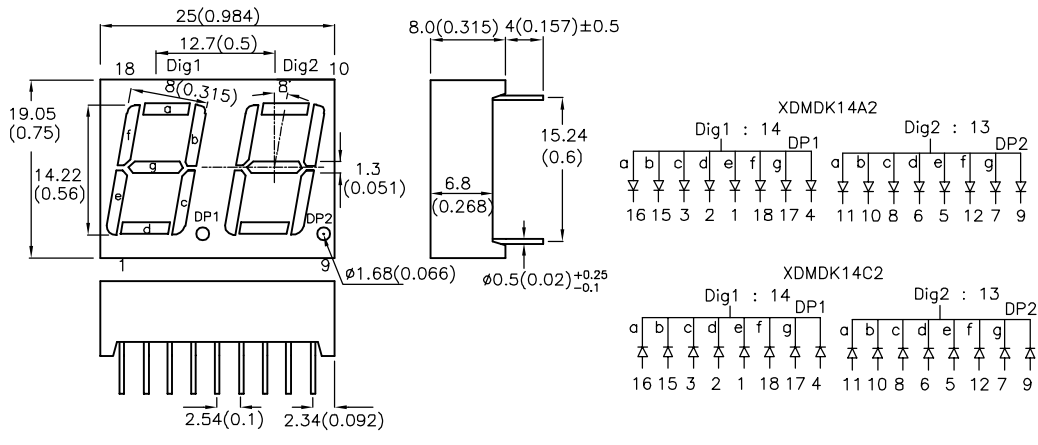
XDMR06A	XDMR06C	◆ GaAlAs(Red)	655	5600	9990
XDUR06A	-	◆ GaAsP/GaP(Red)	627	1400	3290
XDUG06A	-	◆ GaP(Green)	565	1400	2490

0.56"(14.22mm)

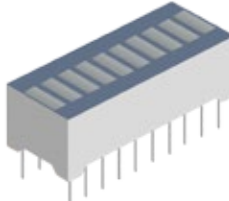
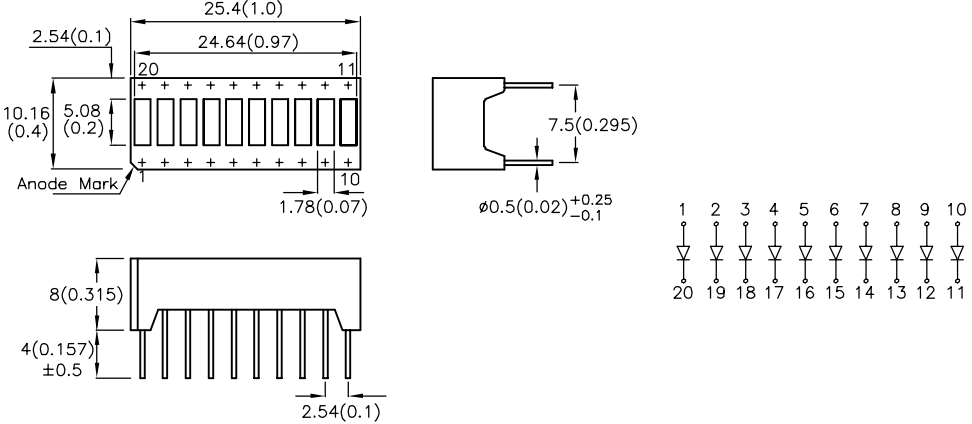


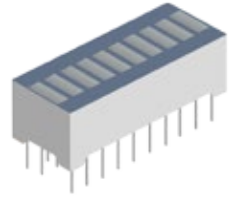
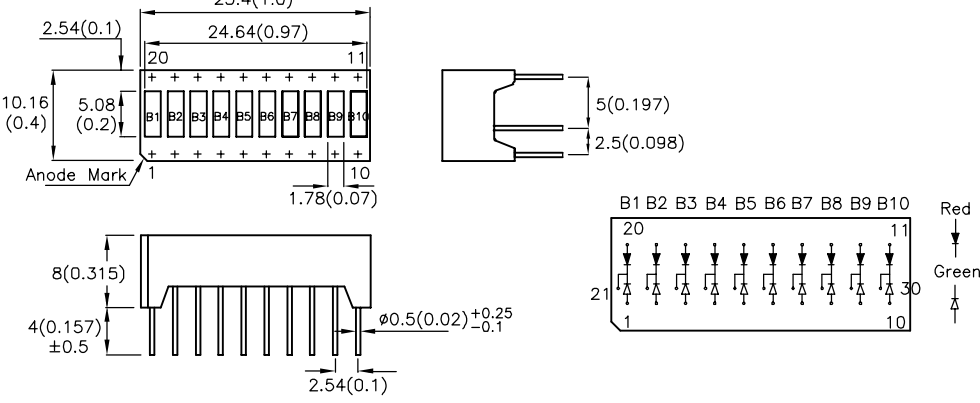
XDMDK14A	-	◆ AlGaInP(Red)	645	14000	26990
XDVG14A	-	◆ AlGaInP(Green)	574	5600	11990
XDCBD14A	-	◆ InGaN(Blue)	460	9000	23990

1. Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm$ (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number		Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(ucd) $I_f=10mA$	
Common Anode	Common Cathode			Min.	Typ.
0.56"(14.22mm)					
 					
XDMDK14A2	XDMDK14C2	◆ AlGaInP(Red)	645	9000	23990

BAR GRAPH ARRAY

Part Number	Chip Structure (Emitted Color)	λ_{peak} (nm)	Intensity(ucd) $I_f=10mA$	
			Min.	Typ.
10 Segment				
 				
XGMDKX10D	◆ AlGaInP(Red)	645	9000	24990
XGMYKX10D	◆ AlGaInP(Yellow)	590	9000	20990
XGVGX10D	◆ AlGaInP(Green)	574	3600	7990

10 Segment (Bi-Color)				
 				
XGMDKVGX10D	◆ AlGaInP(Red)	645	9000	24990
	◆ AlGaInP(Green)	574	3600	7990

1. Dimension Unit: mm(inches), Tolerance: $\pm 0.25mm$ (0.01").
 2. Luminous intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Intensity Code for Standard LEDs
(Ta=25°C Tolerance +/-15%)

Bin Code	Light intensity in mcd (IF<15mA)		Bin Code	Light intensity in mcd (IF<15mA)		Bin Code	Light intensity in mcd (IF<15mA)	
	min.	max.		min.	max.		min.	max.
F	0.1	0.2	R	15	20	ZB	550	700
G	0.2	0.35	S	20	30	ZC	700	1000
H	0.35	0.5	T	30	50	ZD	1000	1600
I	0.5	0.8	U	50	80	ZE	1600	2200
K	0.8	1.2	V	80	120	ZF	2200	2800
L	1.2	2	W	120	180	ZG	2800	3400
M	2	4	X	180	250	ZH	3400	4300
N	4	6	Y	250	320	ZM	4300	5200
P	6	10	Z	320	450	ZN	5200	6300
Q	10	15	ZA	450	550	ZP	6300	7400

Intensity Code for Displays
(Ta=25°C Tolerance +/-15%)

Bin Code	Light intensity in ucd (IF≤10mA)		Bin Code	Light intensity in ucd (IF≤10mA)	
	min.	max.		min.	max.
C	70	140	P	14000	21000
D	140	240	Q	21000	31000
E	240	360	R	31000	52000
F	360	560	S	52000	88000
G	560	900	T	88000	150000
H	900	1400	U	150000	255000
I	1400	2200	V	255000	433000
K	2200	3600	W	433000	736000
L	3600	5600	X	736000	1251000
M	5600	9000	Y	1251000	2126000
N	9000	14000	Z	2126000	3614000

Intensity Code for High Intensity LEDs
(Ta=25°C Tolerance +/-15%)

Bin Code	Light intensity in mcd (IF≥15mA)		Bin Code	Light intensity in mcd (IF≥15mA)	
	Min.	Max.		Min.	Max.
A	2	3	ZA	3100	3600
B	3	5	ZB	3600	4200
C	5	8	ZC	4200	5000
D	8	12	ZD	5000	6000
E	12	20	ZE	6000	7000
F	20	40	ZF	7000	8000
G	40	55	ZG	8000	9000
H	55	80	ZH	9000	11000
M	80	120	ZM	11000	14000
N	120	200	ZN	14000	18000
P	200	300	ZP	18000	22000
Q	300	400	ZQ	22000	27000
R	400	500	ZR	27000	35000
S	500	700	ZS	35000	43000
T	700	1000	ZT	43000	55000
U	1000	1300	ZU	55000	75000
V	1300	1600	ZV	75000	130000
W	1600	1900	ZW	130000	200000
X	1900	2300	ZX	200000	320000
Y	2300	2700	ZY	320000	490000
Z	2700	3100	ZZ	490000	800000

Intensity Codes for High Powered LEDs
(Ta=25°C Tolerance: +/-15%)

Bin Code	Luminous Flux in lm		Bin Code	Luminous Flux in lm	
	Min.	Max.		Min.	Max.
A1	0.5	0.6	B10	50	60
A2	0.6	0.7	B11	60	70
A3	0.7	0.8	B12	70	80
A4	0.8	1	B13	80	90
A5	1	1.2	B14	90	100
A6	1.2	1.4	C1	100	120
A7	1.4	1.7	C2	120	140
A8	1.7	2	C3	140	160
A9	2	2.4	C4	160	180
A10	2.4	2.9	C5	180	210
A11	2.9	3.5	C6	210	240
A12	3.5	4.2	C7	240	280
A13	4.2	5	C8	280	320
A14	5	6	C9	320	370
A15	6	7.2	C10	370	430
A16	7.2	8.6	C11	430	490
A17	8.6	10	C12	490	560
B1	10	12	C13	560	640
B2	12	14	C14	640	740
B3	14	17	C15	740	850
B4	17	20	C16	850	1000
B5	20	24	D1	1000	1200
B6	24	29	D2	1200	1400
B7	29	35	D3	1400	1600
B8	35	42	D4	1600	1800
B9	42	50	D5	1800	2100

Code for NPN Phototransistors
(Ta=25°C Tolerance +/-15%)

Bin Code	Photocurrent in mA		Bin Code	Photocurrent in mA	
	min.	max.		min.	max.
F	0.1	0.2	L	1.2	2
G	0.2	0.35	M	2	4
H	0.35	0.5	N	4	6
I	0.5	0.8	P	6	10
K	0.8	1.2			

Code for Infrared Emitting Diodes
(Ta=25°C Tolerance +/-15%)

Bin Code	Radiant intensity in mW/sr (IF=20mA)		Bin Code	Radiant intensity in mW/sr (IF=20mA)	
	min.	max.		min.	max.
AK	0.8	1.2	D	8	12
AL	1.2	2	E	12	20
A	2	3	F	20	40
B	3	5	G	40	55
C	5	8	H	55	80

WAVELENGTH CODES

Color Code for LEDs and Displays (Ta=25°C Tolerance: +/-1nm)

Bin Code	Dominant Wavelength in nm							
	Green		Aqua Green		True Green		Yellow	
	min.	max.	min.	max.	min.	max.	min.	max.
0	556	559			510	515		
1	559	561	497	501	515	520	581	584
2	561	563	501	504	520	525	584	586
3	563	565	504	506	525	530	586	588
4	565	567	506	508	530	535	588	590
5	567	569	508	510	535	540	590	592
6	569	571	510	512			592	594
7	571	573	512	515			594	597
8	573	575					597	600

Color Code for LEDs and Displays (Ta=25°C Tolerance: +/-1nm)

Bin Code	Dominant Wavelength in nm				
	Blue		Bin Code	Blue	
	min.	max.		min.	max.
1	445	450	3A	471	473
2	450	455	3B	473	475
3	455	460	4A	475	477
1A	460	463	4B	477	479
1B	463	466	5A	479	481
2A	466	469	5B	481	483
2B	469	471	5C	483	486

SunLED white LEDs are color sorted based on either CIE (coordinates) or CCT (Kelvin). Refer to below diagram (Fig. 1).

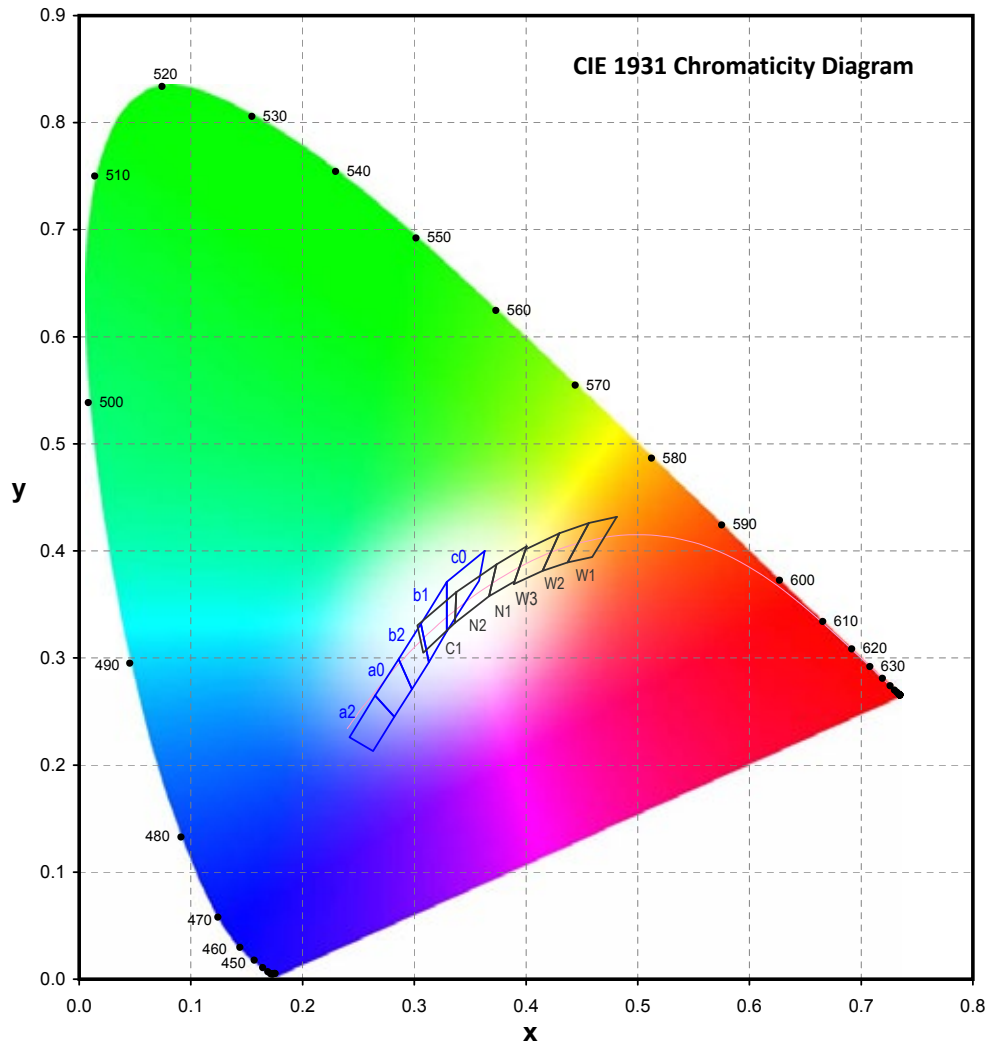


Fig. 1

a2				
x	0.263	0.282	0.265	0.242
y	0.213	0.245	0.265	0.226
CCT: 15000K~				

a0				
x	0.282	0.298	0.286	0.265
y	0.245	0.271	0.299	0.265
CCT: 9000~15000K				

b2				
x	0.298	0.313	0.306	0.286
y	0.271	0.296	0.332	0.299
CCT: 6800~9000K				

b1				
x	0.313	0.329	0.329	0.306
y	0.296	0.325	0.371	0.332
CCT: 5600~6800K				

c0				
x	0.329	0.358	0.363	0.329
y	0.325	0.372	0.400	0.371
CCT: 4600~5600K				

W1				
x	0.4373	0.4593	0.4813	0.4562
y	0.3893	0.3944	0.4319	0.4260
CCT: 2580~2870K				

W2				
x	0.4147	0.4373	0.4562	0.4299
y	0.3814	0.3893	0.4260	0.4165
CCT: 2870~3220K				

W3				
x	0.3889	0.4147	0.4299	0.3996
y	0.3690	0.3814	0.4165	0.4015
CCT: 3220~3710K				

N1				
x	0.3670	0.3898	0.4006	0.3736
y	0.3578	0.3716	0.4044	0.3874
CCT: 3710~4260K				

N2				
x	0.3364	0.3670	0.3736	0.3376
y	0.3328	0.3578	0.3874	0.3616
CCT: 4260~5310K				

C1				
x	0.3081	0.3364	0.3376	0.3028
y	0.3049	0.3328	0.3616	0.3304
CCT: 5310~7040K				

SMD LED Products

Test Item	Test Conditions	Description	Reference Standard
Continuous operating	Ta=25°C T=1000hrs	The purpose of this test is to determine the resistance of the device when operating under electrical stress	EIAJ ED-4701 100 101
	RH<75%RH, IF(Max)		
High temperature storage	Ta=100°C T=1000hrs	The purpose of this test is to evaluate the product durability after long-term storage in high temperature	EIAJ ED-4701 200 201
Low temperature storage	Ta=-40°C T=1000hrs	The purpose of this test is to evaluate the product durability after long-term storage in low temperature	EIAJ ED-4701 200 202
High temperature and humidity storage	Ta=60°C T=1000hrs	The purpose of this test is to evaluate product durability under long-term high temperature and high humidity storage	EIAJ ED-4701 100 103
	RH=90%RH		
High temperature and humidity operating	Ta=60°C T=1000hrs	The purpose of this test is to determine the resistance of the device under electrical and thermal stress	EIAJ ED-4701 100 102
	RH=90%RH, IF(Max)		
Solderability	Ta=245°C T=5sec	The purpose of this test is to evaluate solderability on leads of device	EIAJ ED-4701 300 303
Soldering resistance	Ta=260°C T=5sec	The purpose of this test is to determine the thermal resistance characteristics of the device to sudden exposures at extreme changes in temperature during Tin-dipping	EIAJ ED-4701 300 301
Temperature cycling	Ta=-40°C~25°C~100°C~25°C	The purpose of this test is to determine the resistance of the device to storage under extreme temperature for hours	EIAJ ED-4701 100 105
	T=(30min~5min~30min~5min)×10cycles		
Temperature cycling operating	Ta=-40°C~25°C~100°C~25°C IF(Max)	The purpose of this test is to determine the resistance of the device under extreme temperature for hours	N/A
	T=(30min~5min~30min~5min)×10cycles		
Thermal shock	Ta=-40°C~100°C	The purpose of this test is to determine the resistance of the device to sudden extreme changes in high and low temperature	EIAJ ED-4701 300 307
	T=15min~15min×100cycles		

LED Displays

Test Item	Test Conditions	Description	Reference Standard
Continuous operating	Ta=25°C T=1000hrs	The purpose of this test is to determine the resistance of the device when operating under electrical stress	EIAJ ED-4701 100 101
	RH<75%RH, IF(Max)		
High temperature storage	Ta=100°C T=1000hrs	The purpose of this test is to evaluate the product durability after long-term storage in high temperature	EIAJ ED-4701 200 201
Low temperature storage	Ta=-40°C T=1000hrs	The purpose of this test is to evaluate the product durability after long-term storage in low temperature	EIAJ ED-4701 200 202
High temperature and humidity storage	Ta=60°C T=1000hrs	The purpose of this test is to evaluate product durability under long-term high temperature and high humidity storage	EIAJ ED-4701 100 103
	RH=90%RH		
Solderability	Ta=245°C T=5sec	The purpose of this test is to evaluate solderability on leads of device	EIAJ ED-4701 300 303
Soldering resistance	Ta=260°C T=5sec	The purpose of this test is to determine the thermal resistance characteristics of the device to sudden exposures at extreme changes in temperature during Tin-dipping	EIAJ ED-4701 300 301
Temperature cycling	Ta=-40°C~25°C~100°C~25°C	The purpose of this test is to determine the resistance of the device to storage under extreme temperature for hours	EIAJ ED-4701 100 105
	T=(30min~5min~30min~5min)×10cycles		
Thermal shock	Ta=-40°C~100°C	The purpose of this test is to determine the resistance of the device to sudden extreme changes in high and low temperature	EIAJ ED-4701 300 307
	T=15min~15min×100cycles		

Through-Hole LEDs

Test Item	Test Conditions	Description	Reference Standard
Continuous operating	Ta=25°C T=1000hrs	The purpose of this test is to determine the resistance of the device when operating under electrical stress	EIAJ ED-4701 100 101
	RH<75%RH, IF(Max)		
High temperature storage	Ta=100°C T=1000hrs	The purpose of this test is to evaluate the product durability after long-term storage in high temperature	EIAJ ED-4701 200 201
Low temperature storage	Ta=-40°C T=1000hrs	The purpose of this test is to evaluate the product durability after long-term storage in low temperature	EIAJ ED-4701 200 202
High temperature and humidity storage	Ta=60°C T=1000hrs	The purpose of this test is to evaluate product durability under long-term high temperature and high humidity storage	EIAJ ED-4701 100 103
	RH=90%RH		
High temperature and humidity operating	Ta=60°C T=1000hrs	The purpose of this test is to determine the resistance of the device under electrical and thermal stress	EIAJ ED-4701 100 102
	RH=90%RH, IF(Max)		
Lead frame bending	Bend 90°C T=3 cycles	The purpose of this test is to evaluate products durability against mechanical stress applied to leads	N/A
Lead frame pulling	W=1kg T=30sec	The purpose of this test is to evaluate products durability against mechanical stress	N/A
Solderability	Ta=245°C T=5sec	The purpose of this test is to evaluate solderability on leads of device	EIAJ ED-4701 300 303
Soldering resistance	Ta=260°C T=5sec	The purpose of this test is to determine the thermal resistance characteristics of the device to sudden exposures at extreme changes in temperature during Tin-dipping	EIAJ ED-4701 300 302
Temperature cycling	Ta=-40°C~25°C~100°C~25°C	The purpose of this test is to determine the resistance of the device to storage under extreme temperature for hours	EIAJ ED-4701 100 105
	T=(30min~5min~30min~5min)×10cycles		
Temperature cycling operating	Ta=-40°C~25°C~100°C~25°C IF(Max)	The purpose of this test is to determine the resistance of the device under extreme temperature for hours	N/A
	T=(30min~5min~30min~5min)×10cycles		
Thermal shock	Ta=-40°C~100°C	The purpose of this test is to determine the resistance of the device to sudden extreme changes in high and low temperature	EIAJ ED-4701 300 307
	T=15min~15min×100cycles		

- Manual soldering operations should only be for repairs and reworks unless otherwise noted on product specifications.
- Maximum soldering iron temperatures for manual soldering:
 - Pb-Sn solder: 300°C
 - Pb-Free solder: 350°C
 - All LEDs using InGaN material (e.g. Blue, Green, White): 280°C
- The soldering iron should never touch the epoxy lens. Contact duration with the component should not exceed 3 seconds.
- Do not apply stress or pressure to the leads when the component is heated above 80°C as possible damage to the internal wire bonds may occur.
- During soldering, component covers and holders should leave enough clearance to avoid any stress applied to the LED. Refer to below diagram (Fig. 2) for examples of proper method.

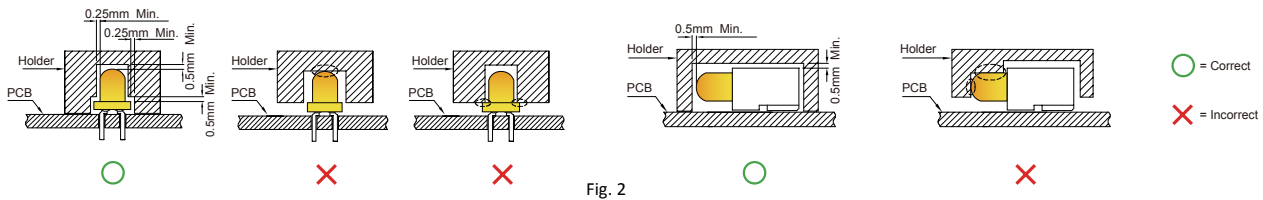
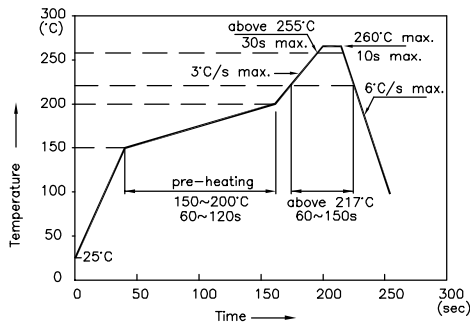


Fig. 2

- Refer to below diagrams for recommended soldering profiles.
 - SMD LEDs: Reflow Soldering – Pb-Free Solder (Fig. 3) | Pb-Sn Solder (Fig. 4)
 - No more than two soldering passes except SMD CBIs which should not exceed one pass
 - Through-hole LEDs: Wave Soldering – Pb-Free Solder (Fig. 5) | Pb-Sn Solder (Fig. 6)
 - No more than one soldering pass

Reflow Soldering Profile for SMD Products (Pb-Free Components)



Notes:

- All temperatures refer to the center of the package, measured on the package body surface facing up during reflow.
- Do not apply any stress to the LED during high temperature conditions.
- Maximum number of soldering passes: 2

Fig. 3

Reflow Soldering Profile (Pb-Sn Solder)

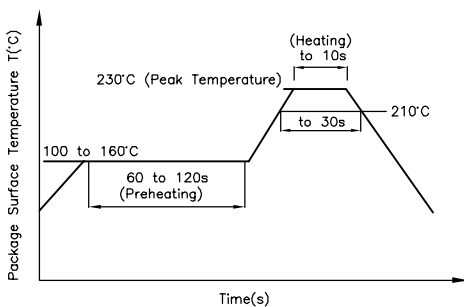
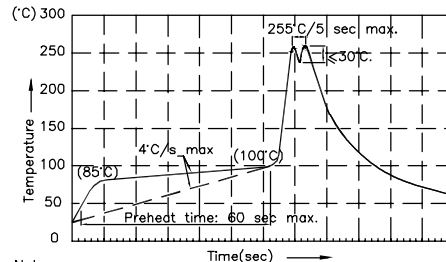


Fig. 4

Wave Soldering Profile (Pb-Free Solder)



Notes:

- Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 280°C
- Peak wave soldering temperature between 245°C ~ 255°C for 3 sec (5 sec max).
- Do not apply stress to the epoxy resin while the temperature is above 85°C.
- Fixtures should not incur stress on the component when mounting and during soldering process.
- SAC 305 solder alloy is recommended.
- No more than one wave soldering pass.
- During wave soldering, the PCB top-surface temperature should be kept below 105°C.

Fig. 5

Wave Soldering Profile (Pb-Sn Solder)

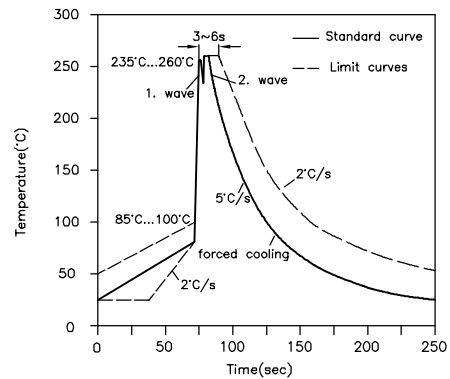


Fig. 6

7. Refer to the appropriate product datasheet for details on specific soldering pay layout. To ensure proper bonding and setting of the LED, solder paste must be evenly applied to each soldering pad. Refer to below diagram (Fig. 7) for example of improper solder application.

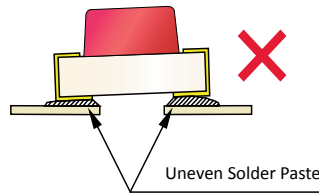


Fig. 7

8. After soldering, allow at least three minutes for the component to cool to room temperature before further processing.

9. Refer to below table for summary of soldering instructions for dip, wave, and manual solder. Note that these are considered general instructions and all soldering notes indicated above should take precedence.

Types	Dip soldering / *Wave Soldering			Iron soldering (with 1.5mm iron tip)		
	Temperature of the soldering bath	Maximum soldering time	Distance from solder joint to package	Temperature of soldering iron	Maximum soldering time	Distance from solder joint to package
LEDs	<=260°C	3s	>=2mm	<=350°C	3s	>2mm
	<=260°C	5s	>=5mm	<=350°C	5s	>5mm
SMDs	/	/	/	<=350°C	3s (one time only)	/
DISPLAYs	*<=260°C	*3s	*>2mm	<=350°C	3s	>2mm

APPLICATION NOTES

Cleaning

1. Do not use harsh organic solvents such as acetone, trichloroethylene, Chlorsan, and/or diflon solvent for cleaning as they may cause damage or hazing to the LED lens.
2. Do not use acidic solvents or unknown chemicals for cleaning as they may damage or degrade the LED. Always check the properties of the chemical to ensure it will not corrode or damage epoxy resin, silicone resin, silver plating, or organosilicates.
3. Recommended solvents for cleaning: deionized water or isopropyl alcohol.
4. Special attention should be taken if other chemicals are used for cleaning as they may damage the epoxy lens or housing.
5. Any cleaning should take place at room temperature and the wash duration should not exceed one minute.
6. Use forced-air drying immediately following water wash to remove excess moisture.

Lead Forming

1. Any lead forming or bending must be done prior to soldering.
2. Avoid bending leads at the same point more than once as it may compromise the integrity of the leads.
3. Minimum clearance of 3mm is required between the base of the LED lens and the bend location. Refer to below diagram (Fig. 8).

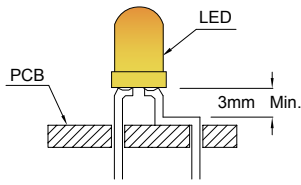
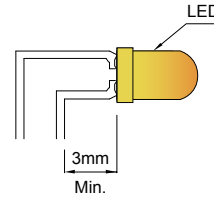


Fig. 8



4. Lead forming should only be done with proper tools such as a jig and/or radio pliers. The upper section of the leads should be secured firmly such that the bending force is not exerted on the LED body. Refer to below diagram (Fig. 9) for recommended lead bending method.

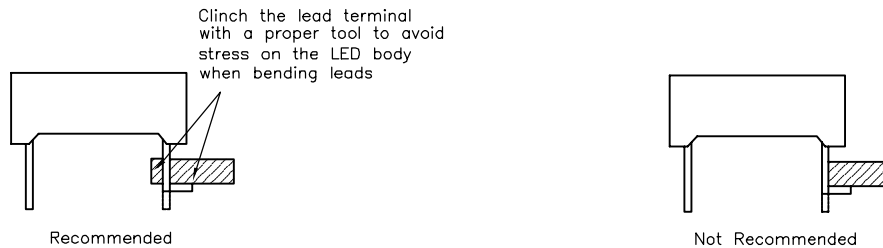


Fig. 9

ESD Precautions

InGaN/GaN material LEDs are sensitive to electrostatic discharge (ESD) and other transient voltage spikes. ESD and voltage spikes can affect the component's performance due to increased reverse current and/or decreased forward voltage. This may result in reduced light intensity and/or component failure. Static discharge may occur when static sensitive LEDs come in contact with the user or other conductive devices. ESD sensitive LEDs must incorporate protective circuitry to prevent ESD and to control voltage spikes in order to stay within the maximum voltage specified.

SunLED products are stored in anti-static bags for protection during transportation and storage. However, below anti-static measures should always be noted when handling static sensitive components.

1. Operators must wear anti-static wristbands.
2. Operators must wear anti-static suits when entering work areas with conductive machinery and materials.
3. All test instruments and production machinery must be grounded.
4. Avoid static build up by minimizing friction between the LED and its surroundings.
5. Relative Humidity between 40% ~ 60% is recommended in ESD-protected work areas to reduce static build up.
Reference JEDEC/J-STD-033 and JEDEC/JESD625-A standards.
6. All workstations that handle ESD sensitive components must maintain an electrostatic condition of 150V or less.
7. Anti-static material/packaging should be used when parts are being stored and/or transported.
8. All anti-static measures noted above should be periodically checked and inspected to ensure proper functionality.

Design Notes

1. Protective current-limiting resistors should be used in conjunction with LEDs to ensure parts are operating within specified current range.
2. The driving circuit should be designed to avoid reverse voltages and transient voltage spikes when the circuit is in both on & off states. Prolonged reverse bias may cause metal migration leading to an increase in leakage current or causing a short circuit.

- 3. Prevent exposure of LEDs to environments containing high moisture or corrosive gases.
- 4. Excess operating temperature and/or forward current should be avoided as it may lead to accelerated degradation or failure of the LED. Always refer to the most updated datasheet for driving conditions.
- 5. When LEDs are mounted in a parallel configuration, there should be individual current-limiting resistors in series with each LED. Refer to below diagram (Fig.10) for an example of a recommended set up.

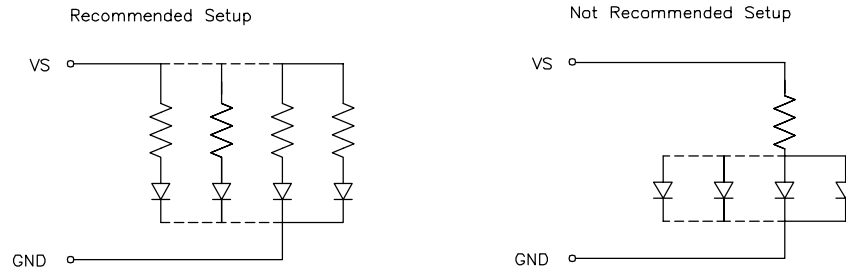


Fig. 10

- 6. Mounting direction of SMD components should be placed perpendicular to the direction of PCB travel. This will ensure the solder wets on each lead simultaneously during reflow and prevent shifting of LEDs. Refer to below diagram (Fig.11) for examples of recommended mounting direction.

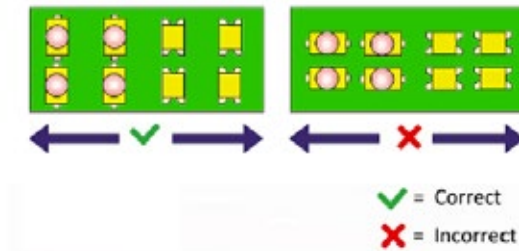


Fig. 11

- 7. High-power LED devices require optimization of heat dissipation. Increasing the size of metal mounting surface and proper application of thermal conductive paste will help improve heat dissipation. Refer to below diagram (Fig.12) and product datasheets for specific design recommendations.

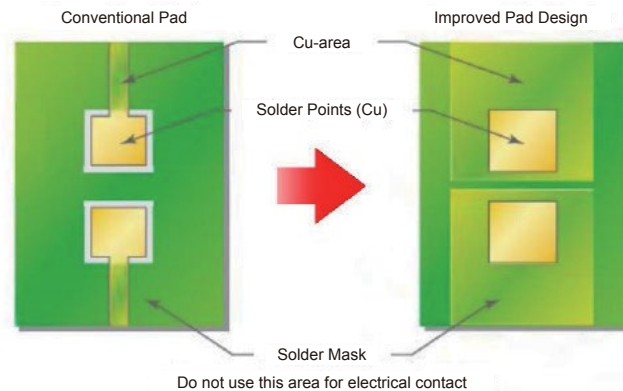


Fig. 12

- 8. High temperatures may reduce component's performance and reliability. Please refer to individual product datasheets for specific details on operable temperature range and effects of temperature on the LED.

Storage, MSL, and Humidity Conditions

SMD LEDs are considered moisture sensitive and storage/usage precautions must be taken to prevent damage to the internal materials. Excess moisture trapped within the component may cause internal vapor pressure during solder reflow leading to possible delamination of the die or wire bond.

1. Do not store or expose LEDs in an environment where high levels of moisture or corrosive gases are present and keep away from rapid transitions in ambient temperature.

Recommended storage conditions for each type of LED product as per below:

Product Type	Temperature	Humidity
SMD LED	< 40°C	< 90%RH
Through-hole LED	≤ 30°C	< 60%RH
LED Displays	5°C to 30°C	< 60%RH

Note: Above conditions are based on products in original sealed packaging

2. All SMD LEDs are packaged in moisture barrier bags (MBB) with a label indicating the moisture sensitivity level (MSL).
 - a. Storage conditions for unopened MBB: Temperature < 40°C, Humidity < 90%RH with shelf life of 24 months.
 - b. Floor life for opened MBB follows the corresponding MSL as per below:

IPC/JEDEC J-STD-020

MSL	Floor Life	
	Time	Conditions
1	Unlimited	≤30°C / 85%RH
2	1 Year	≤30°C / 60%RH
2a	4 Weeks	≤30°C / 60%RH
3	168 Hours	≤30°C / 60%RH
4	72 Hours	≤30°C / 60%RH
5	48 Hours	≤30°C / 60%RH
5a	24 Hours	≤30°C / 60%RH
6	Time indicated on label	≤30°C / 60%RH

3. All SMD LEDs are packaged with desiccants and a humidity indicator card (HIC). If the LEDs are not used within the specific floor life or if the HIC has indicated presence of moisture, the following baking procedure must be taken:

Condition	Temperature	Humidity	Bake Duration
LED inside carrier	60°C ± 3°C	<5% RH	100 hours
LED outside carrier tape	110°C	-	10 hours

*Not more than once

Additional Notes

1. LED devices may contain Gallium Arsenide (GaAs). GaAs dust and fumes are toxic and harmful if ingested. Do not expose LEDs to chemical solvents and/or break open LED devices.
2. The light output from UV, blue, and high-power LEDs may cause injury to the human eye when viewed directly.
3. Semiconductor devices can fail or malfunction due to their sensitivity to electrical fluctuation and physical stress. In design development, please make certain that SunLED products are used within the specified operating conditions as indicated on our most current product datasheets. The user is responsible to observe and follow all safety measures to avoid situations where the failure or malfunction of a SunLED product could cause injury, property damage, or the loss of human life.
4. Reference <https://www.SunLEDusa.com/TechnicalNotes.asp> for complete technical notes.

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CBI LEDs

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