

# 1-Watt SMD 6 mm (120° Viewing Angle)

## OVSPxBCR4 Series



### Features:

- Robust energy-efficient design with long operating life
- Low thermal resistance
- High luminous intensity
- Optional optics to suit application



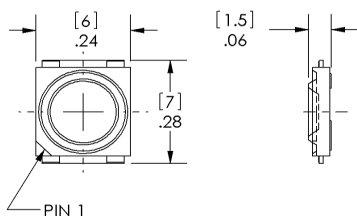
### Description:

The OVSPxBCR4 Series is an energy-efficient packaged LED source that offers high luminance, and a long operating lifespan. These devices offer a 120° viewing angle and an ultra-low profile (1.5mm) making them highly suitable for conventional lighting and specialized applications. Optional optics are offered to suit application. Please contact OPTEK for more information.

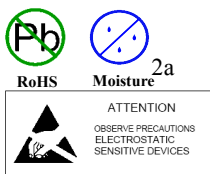
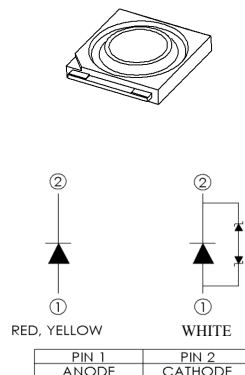
### Applications:

- Automotive exterior and interior lighting
- Architectural indoor and outdoor lighting
- General lighting
- Electronic signs and signals

Part Number	Viewing Angle	Material	Emitted Color	Typical Luminous Flux (lm)	Lens Color
OVSPRBCR4	120°	AllnGaP	Red	42	Water Clear
OVSPYBCR4		AllnGaP	Yellow	34	Water Clear
OVSPW1BCR4		InGaN	White	90	Water Clear



DIMENSIONS ARE IN INCHES [MM]  
GENERAL TOLERANCES ±.004 [0.10]



**DO NOT LOOK DIRECTLY AT LED WITH UNSHIELDED EYES OR DAMAGE TO RETINA MAY**

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### Electrical Specifications

Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)		
	Red, Yellow	White
DC Forward Current	400mA	350mA
Peak Pulsed Forward Current <sup>1</sup>	500mA	1000mA
Reverse Voltage	12V	Not designed for reverse bias
Junction Temperature <sup>2</sup>	125°C	150°C
Power Dissipation	1200mW	1200mW
Storage and Operating Temperature	-40° ~ +100 ° C	-40° ~ +100 ° C
MSL Level (IPC/JEDEC J-STD-020C)	2a / 672 Hrs	2a / 672 Hrs
ESD Threshold (HBM)	Class 2	Class 2

#### Optical and Electrical Characteristics—Red, Yellow ( $I_F = 400\text{ mA}$ , $T_A = 25^\circ\text{C}$ )

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	
$V_F$	Forward Voltage	2.2	2.5	2.8	V	
$\Phi$	Luminous Flux	Red	33	42	54	lm
		Yellow	27	34	42	lm
$\lambda_D$	Dominant Wavelength	Red	620	625	630	nm
		Yellow	585	591	597	nm
$I_R$	Reverse Current	----	100	----	$\mu\text{A}$	
$2\theta_{\frac{1}{2}}$	50% Power Angle	----	120	----	deg	

#### Optical and Electrical Characteristics—White ( $I_F = 350\text{ mA}$ , $T_A = 25^\circ\text{C}$ )

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS
$V_F$	Forward Voltage	3.0	3.5	4.0	V
$\Phi$	Luminous Flux	67	90	113	lm
$2\theta_{\frac{1}{2}}$	50% Power Angle	----	120	----	deg

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## OVSPxBCR4 Series

### Standard Bins

LEDs are sorted to the luminous flux ( $\Phi$ ) and the dominant wavelength (nm) bins shown. Each reel consists of a single intensity bin and a single color bin. Orders are filled utilizing all of the intensity bins or color bins listed in the following tables. Optek will not accept orders for single intensity bins or single color bins.

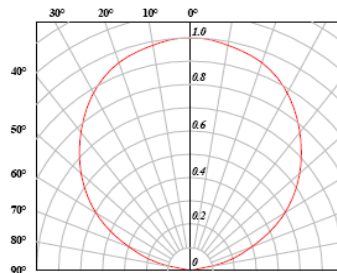
#### Luminous Intensity ( $I_v$ ) @ 400mA

Red: OVSPRBCR4		
IV Code	Min (lm)	Max (lm)
AC	33	42
AD	42	54
Yellow: OVSPYBCR4		
IV Code	Min (lm)	Max (lm)
AB	27	34
AC	34	42

#### Dominant Wavelength (nm)

Red: OVSPRBCR4		
nm Code	Min (nm)	Max (nm)
Full	620	630
Yellow: OVSPYBCR4		
nm Code	Min (nm)	Max (nm)
A	585	588
B	588	591
C	591	594
D	594	597

### Beam Angle — All Colors



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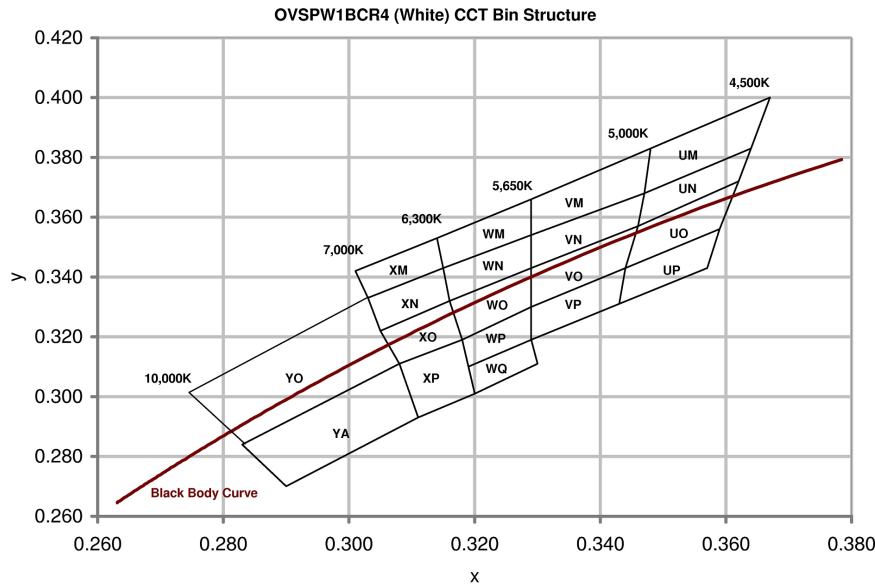
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Bin	$\Phi$ Luminous Flux (lm)	
	Min	Max
T2	67	76
T3	76	87
U2	87	99
U3	99	113

### Chromaticity Coordinates (x, y)

Rank	YO				YA			
	Cx	0.274	0.303	0.308	0.283	0.283	0.308	0.311
Cy	0.301	0.333	0.311	0.284	0.284	0.311	0.293	0.270

Rank	XM				XN				XO				XP			
	Cx	0.301	0.314	0.315	0.303	0.303	0.315	0.316	0.305	0.305	0.316	0.318	0.308	0.308	0.318	0.320
Cy	0.342	0.353	0.343	0.333	0.333	0.343	0.332	0.322	0.322	0.332	0.319	0.311	0.311	0.319	0.301	0.293

Rank	WM				WN				WO				WP				WQ			
	Cx	0.314	0.329	0.329	0.315	0.315	0.329	0.329	0.316	0.316	0.329	0.329	0.318	0.318	0.329	0.329	0.319	0.319	0.329	0.330
Cy	0.353	0.366	0.354	0.343	0.343	0.354	0.343	0.332	0.332	0.343	0.330	0.319	0.319	0.330	0.319	0.310	0.310	0.319	0.311	0.301

Rank	VM				VN				VO				VP			
	Cx	0.329	0.348	0.347	0.329	0.329	0.347	0.346	0.329	0.329	0.346	0.344	0.329	0.329	0.344	0.343
Cy	0.366	0.383	0.368	0.354	0.354	0.368	0.357	0.343	0.343	0.357	0.343	0.330	0.330	0.343	0.331	0.319

Rank	UM				UN				UO				UP			
	Cx	0.348	0.367	0.364	0.347	0.347	0.364	0.362	0.346	0.346	0.362	0.359	0.344	0.344	0.359	0.357
Cy	0.383	0.400	0.383	0.368	0.368	0.383	0.372	0.357	0.357	0.372	0.356	0.343	0.343	0.356	0.343	0.331

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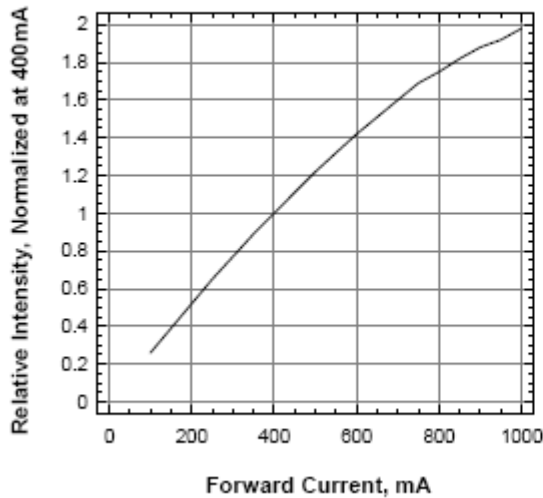
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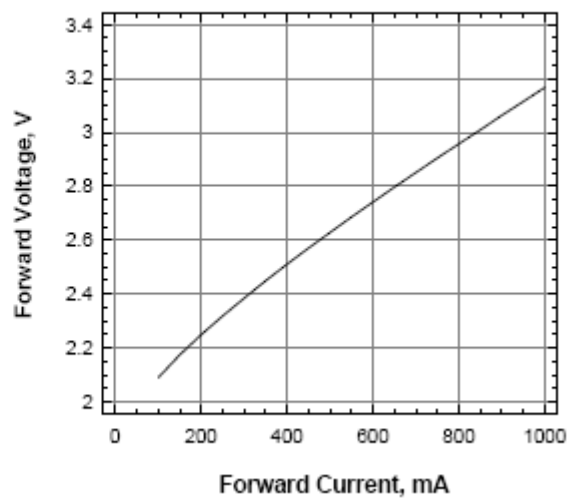
## OVSPxBCR4 Series

### Typical Electro-Optical Characteristics Curves—Red, Yellow

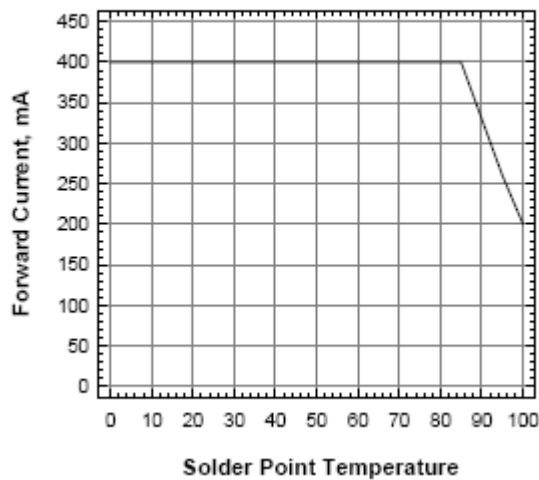
Relative Intensity Vs Forward Current



Forward Voltage Vs Forward Current



Maximum Current Vs Solder Point Temperature



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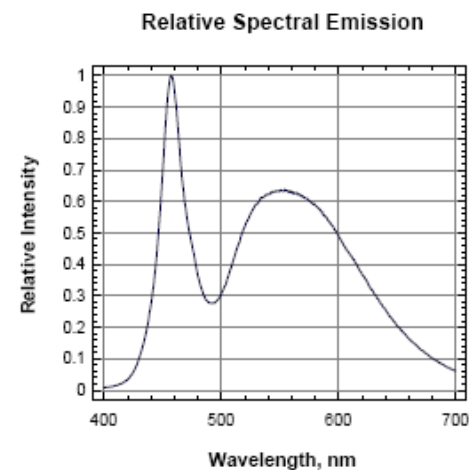
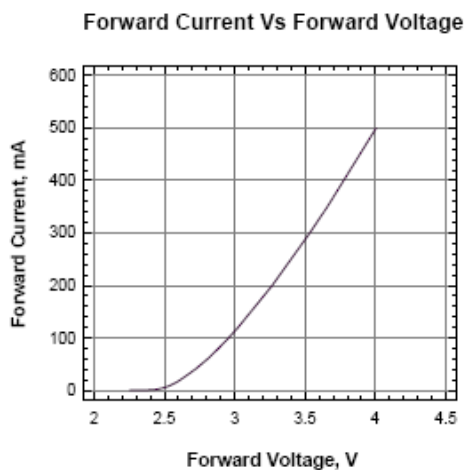
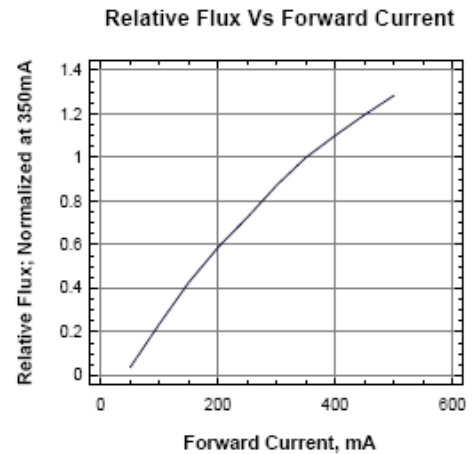
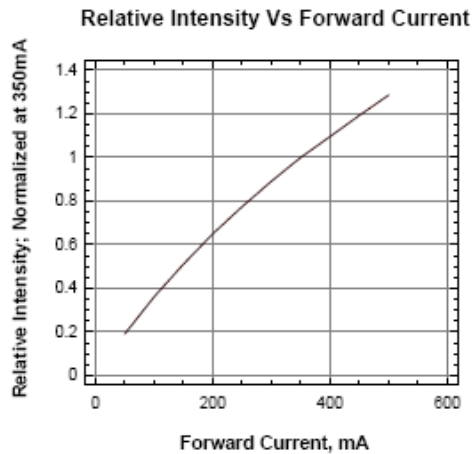
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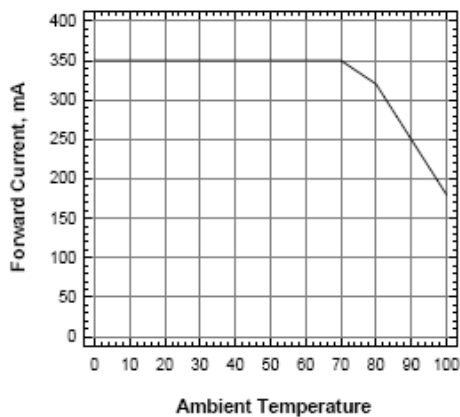
## OVSPxBCR4 Series



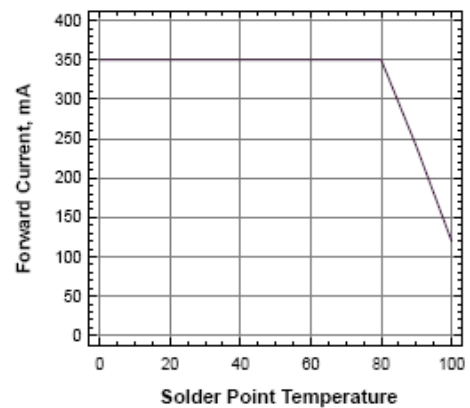
### Typical Electro-Optical Characteristics Curves—White



**Forward Current Vs Ambient Temperature (Rja=40K/W)**



**Forward Current Vs Solder Point Temperature**



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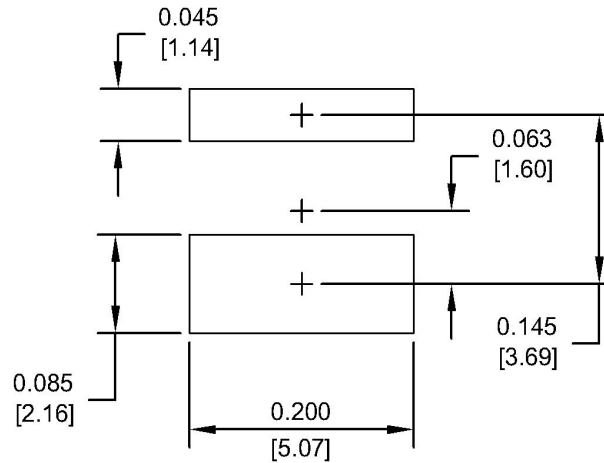
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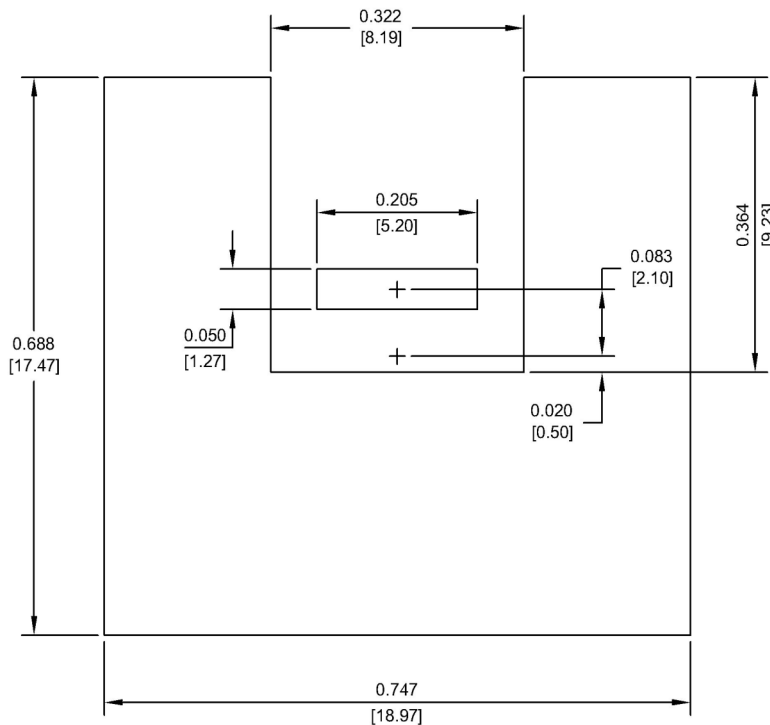
## OVSPxBCR4 Series

### Solder Pad Design

Metal core circuit board (MCPCB) is highly recommended for high density applications.



### Solder Paste Pattern



### Copper Pattern

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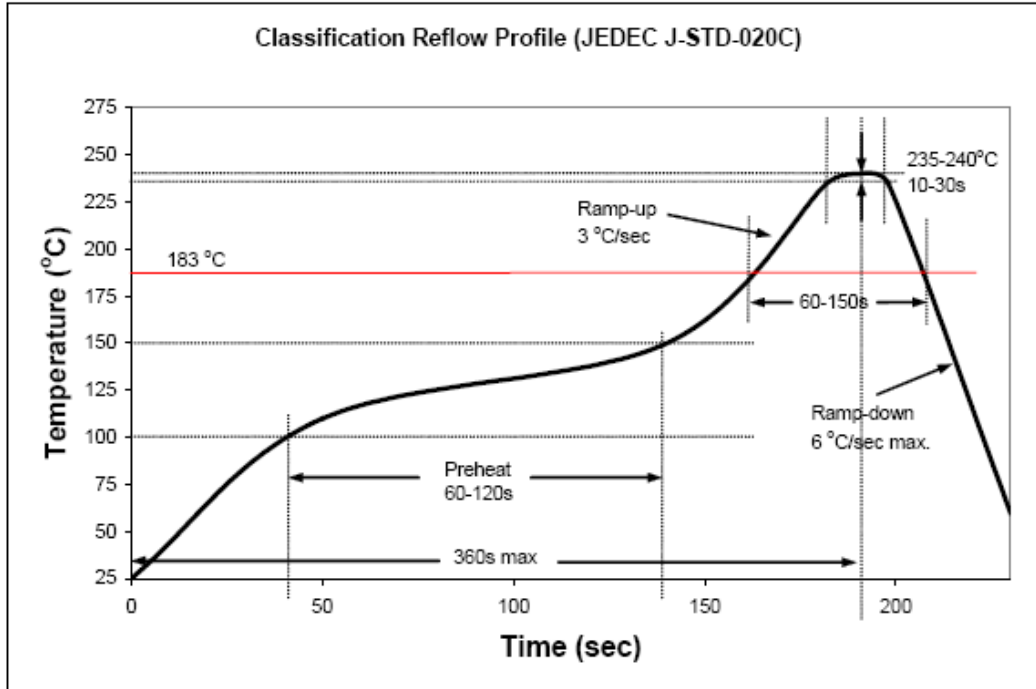
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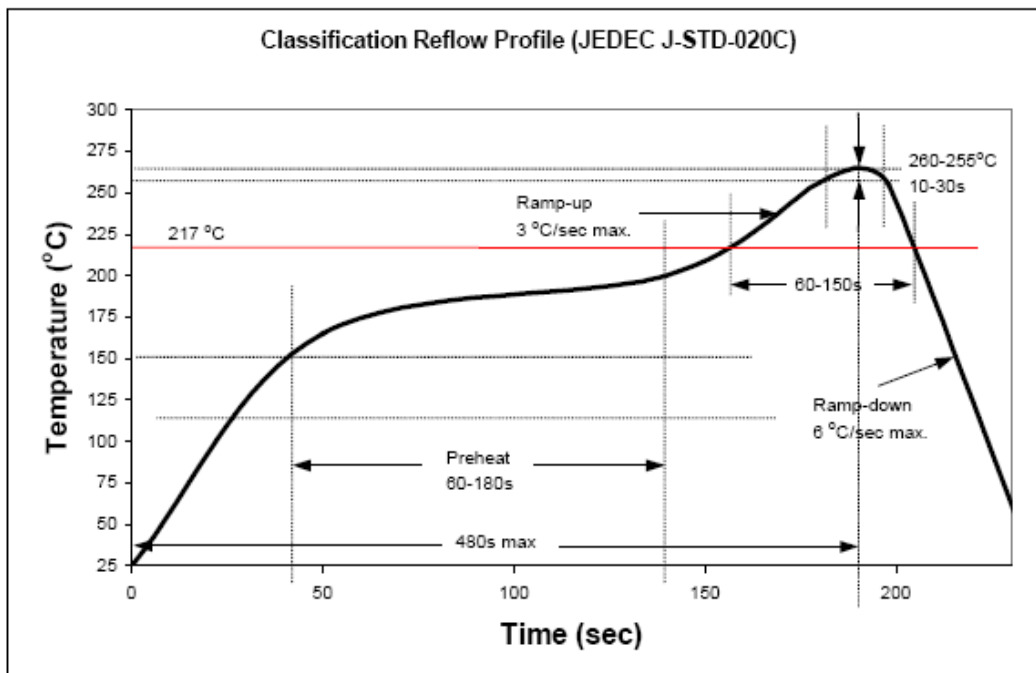


## OVSPxBCR4 Series

### Recommended Sn-Pb IR-Reflow Soldering Profile.



### Recommended Pb Free IR-Reflow Soldering Profile.



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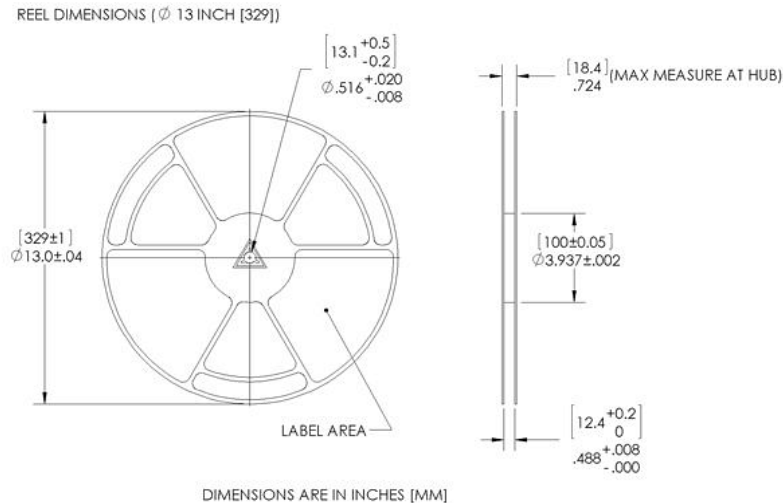


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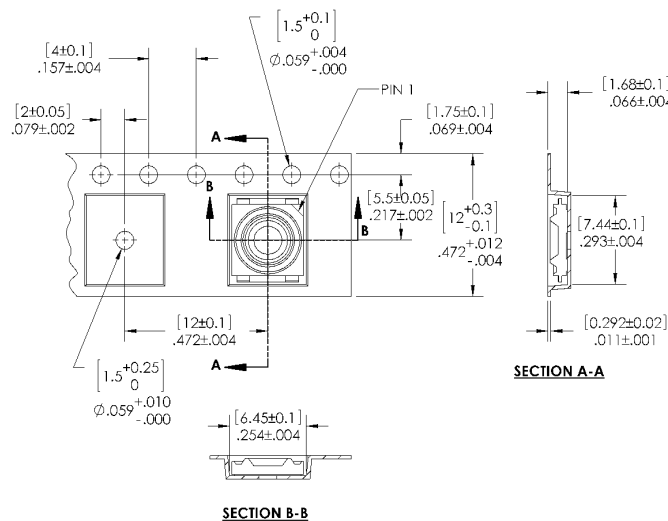


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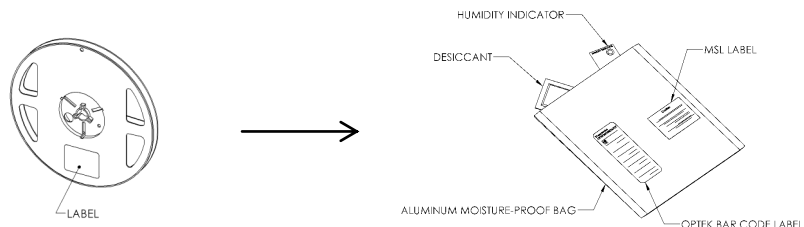
### Reel Dimensions: 13 - inch reel



### Carrier Tape Dimensions: Loaded quantity 2000 pieces per reel



### Moisture Resistant Packaging



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