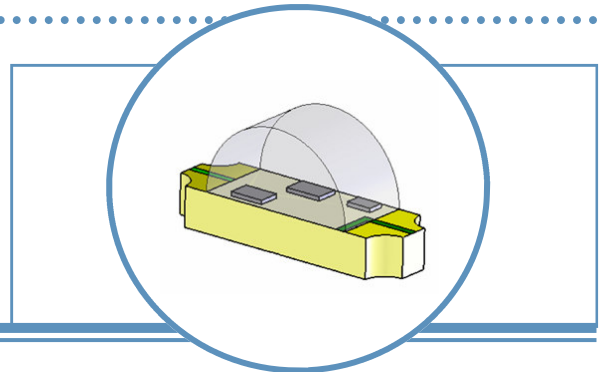


# Full-Color 1204 SMD (150° Viewing Angle)

## OVSRRGBCC3

- Full-color RGB
- Top-view or side-view mounting options
- Compatible with automatic placement equipment
- Compatible with infrared and vapor phase reflow solder process

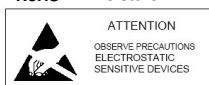
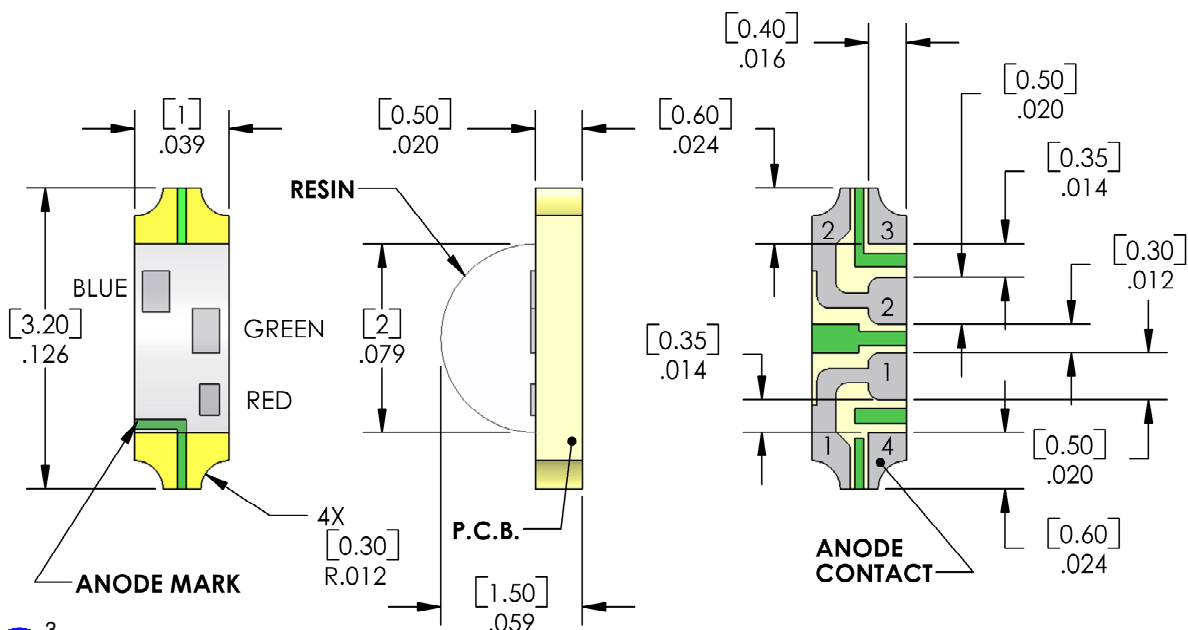


The **OVSRRGBCC3** is a compact full-color (RGB) in a miniature surface mount package with a 150° viewing angle. This 1204 package provides the option to mount it as a top-emitting or side-emitting (right angle) device. The device can be used on smaller boards with a higher packing density and is ideal for handheld applications.

## Applications

- Automotive backlighting for dashboard and switches
- Telecommunications (backlighting for telephones and faxes)
- Flat backlight for LCD, switch and symbol

Part Number	Material	Emitted Color	Intensity Typ. mcd	Lens Color
OVSRRGBCC3	AllInGaP	Red	125	White Diffused
	InGaN	Green	300	
	InGaN	Blue	75	



DIMENSIONS ARE IN INCHES  
AND [MILLIMETERS]

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

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

# Full-Color 1204 SMD

## OVSRRGBCC3



### Absolute Maximum Ratings

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

Parameter	Red	Green / Blue	Unit
Continuous Forward Current	30	20	mA
Peak Forward Current (10% Duty Cycle, 0.1ms pulse width)	100	80	mA
Power Dissipation	78	84	mW
Reverse Voltage	5		V
Operating Temperature Range	-40 to +85		°C
Storage Temperature Range	-55 to +100		°C
Soldering Temperature (for 10 seconds)	260		°C
Electrostatic Discharge Classification (HBM)	±2000		V

### Electrical Characteristics at T<sub>A</sub> = 25° C

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
<b>RED</b>						
I <sub>V</sub>	Luminous Intensity* (axial direction)	100	125	150	mcd	I <sub>F</sub> = 20 mA
2 Θ <sub>1/2</sub>	Viewing Angle	140	150	160	deg	
λ <sub>D</sub>	Dominant Wavelength	615	625	635	nm	
V <sub>F</sub>	Forward Voltage	1.8	2.0	2.4	V	
I <sub>R</sub>	Reverse Current	----	----	50	μA	V <sub>R</sub> = 5 V

<b>GREEN</b>						
I <sub>V</sub>	Luminous Intensity* (axial direction)	250	300	350	mcd	I <sub>F</sub> = 20 mA
2 Θ <sub>1/2</sub>	Viewing Angle	140	150	160	deg	
λ <sub>D</sub>	Dominant Wavelength	520	530	535	nm	
V <sub>F</sub>	Forward Voltage	2.8	3.3	3.6	V	
I <sub>R</sub>	Reverse Current	----	----	50	μA	V <sub>R</sub> = 5 V

<b>BLUE</b>						
I <sub>V</sub>	Luminous Intensity* (axial direction)	50	75	100	mcd	I <sub>F</sub> = 20 mA
2 Θ <sub>1/2</sub>	Viewing Angle	140	150	160	deg	
λ <sub>D</sub>	Dominant Wavelength	465	470	475	nm	
V <sub>F</sub>	Forward Voltage	2.8	3.3	3.6	V	
I <sub>R</sub>	Reverse Current	----	----	50	μA	V <sub>R</sub> = 5 V

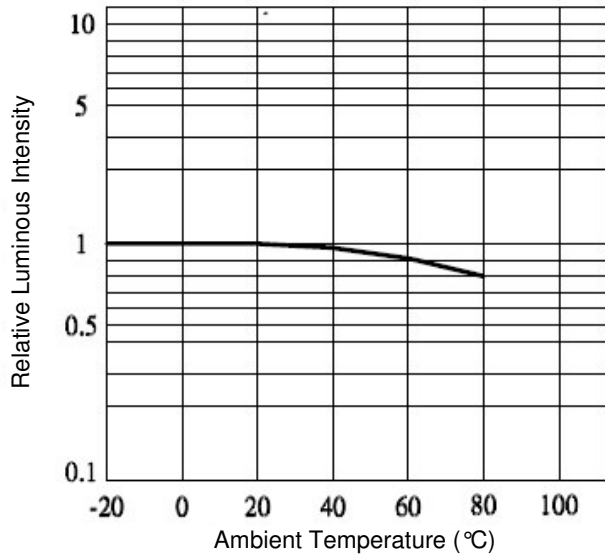
\*CIE 127 Condition B

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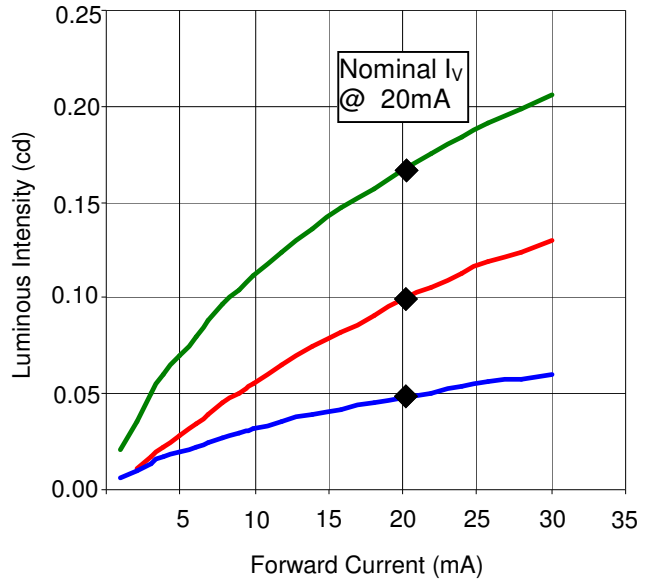
Typical Electro-Optical Characteristics Curves

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

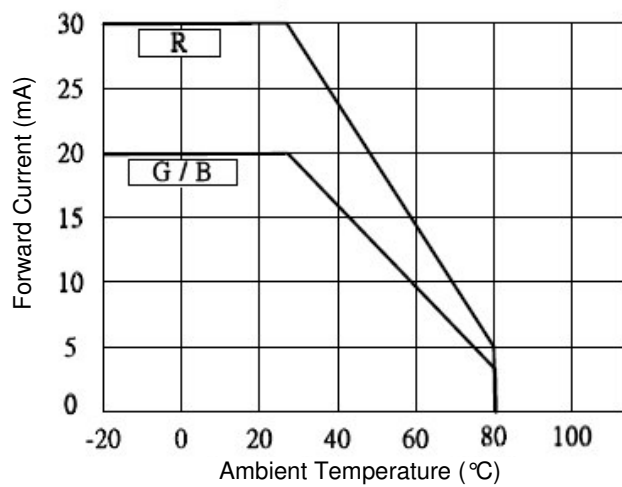
Luminous Intensity vs. Ambient Temperature



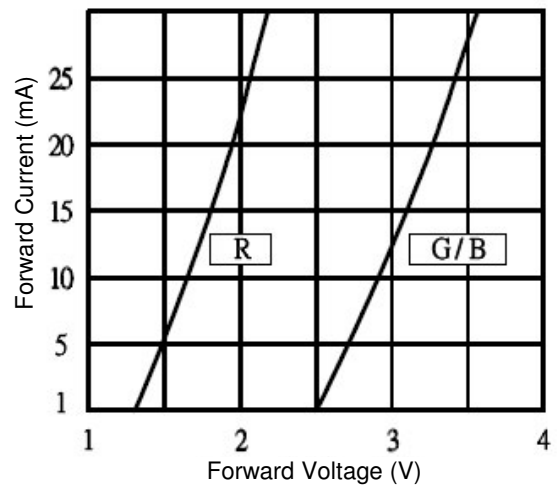
Luminous Intensity vs. Forward Current



Derating Curve



Forward Current vs. Forward Voltage

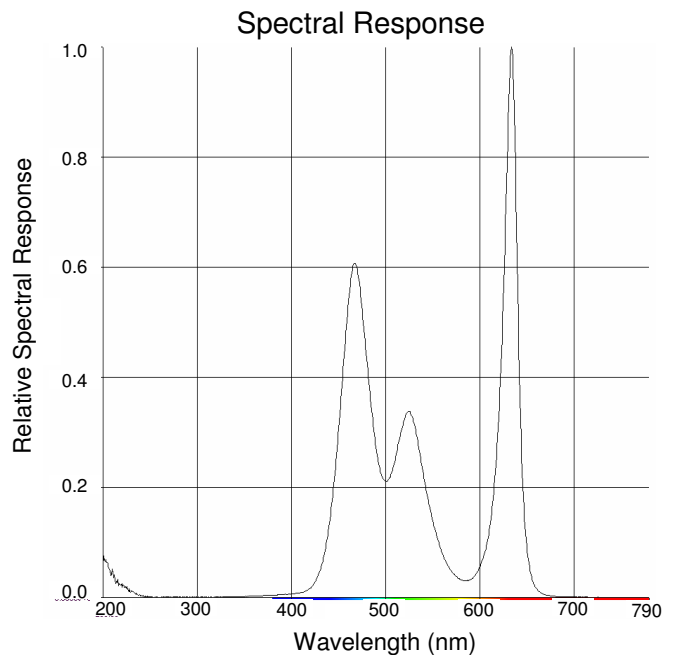
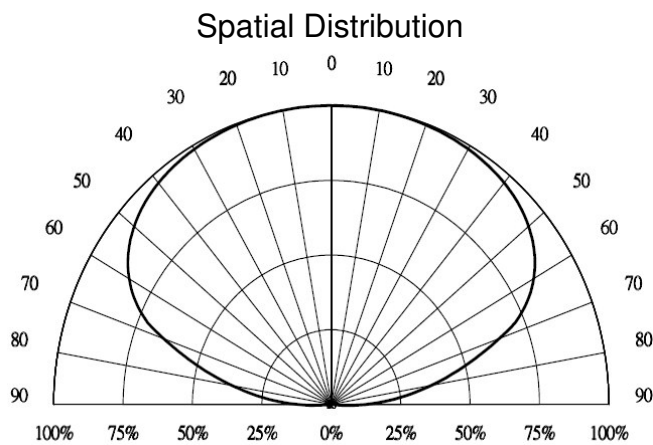
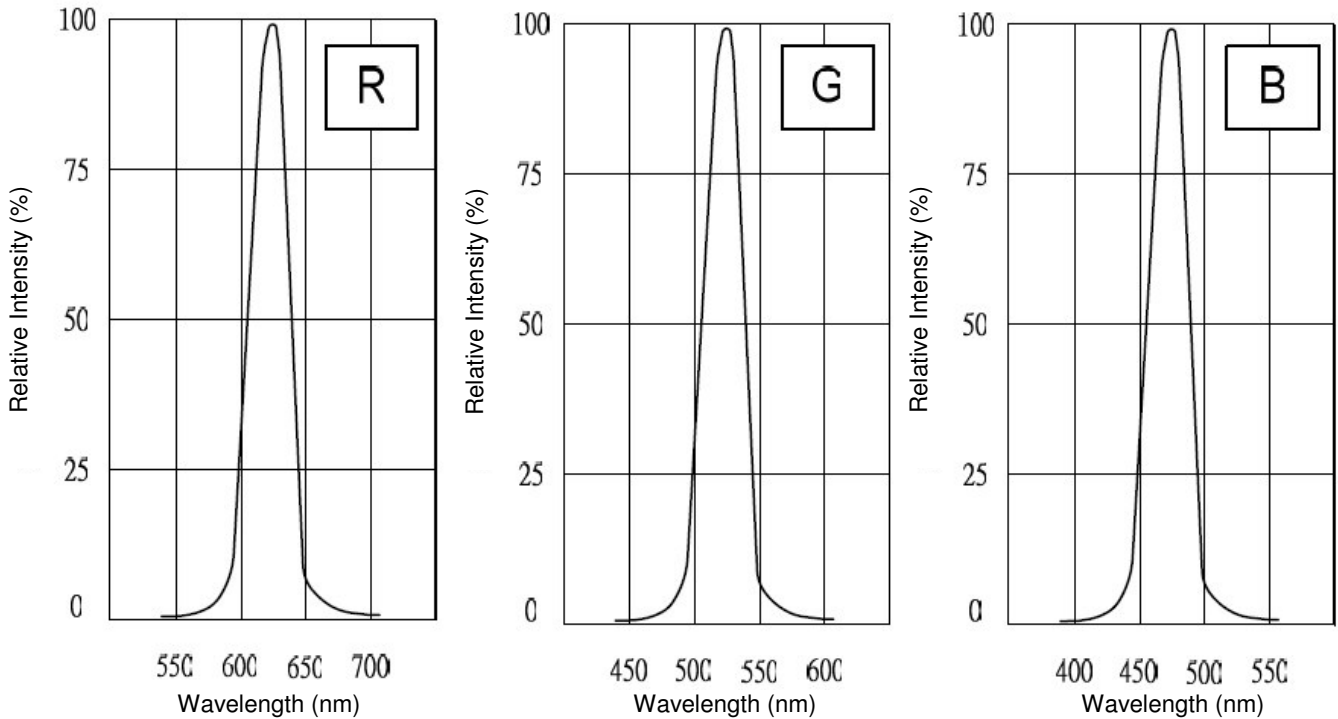


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### Typical Electro-Optical Characteristics Curves

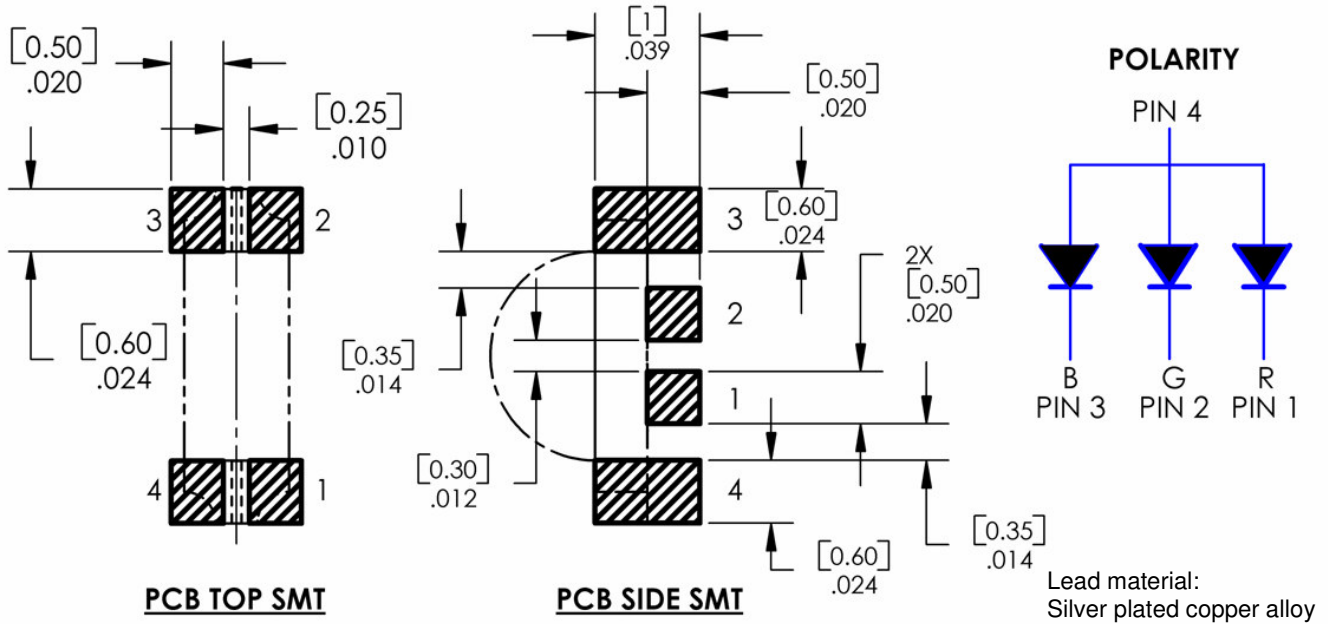
$T_A = 25^\circ\text{C}$  unless otherwise noted

Relative Intensity vs. Wavelength

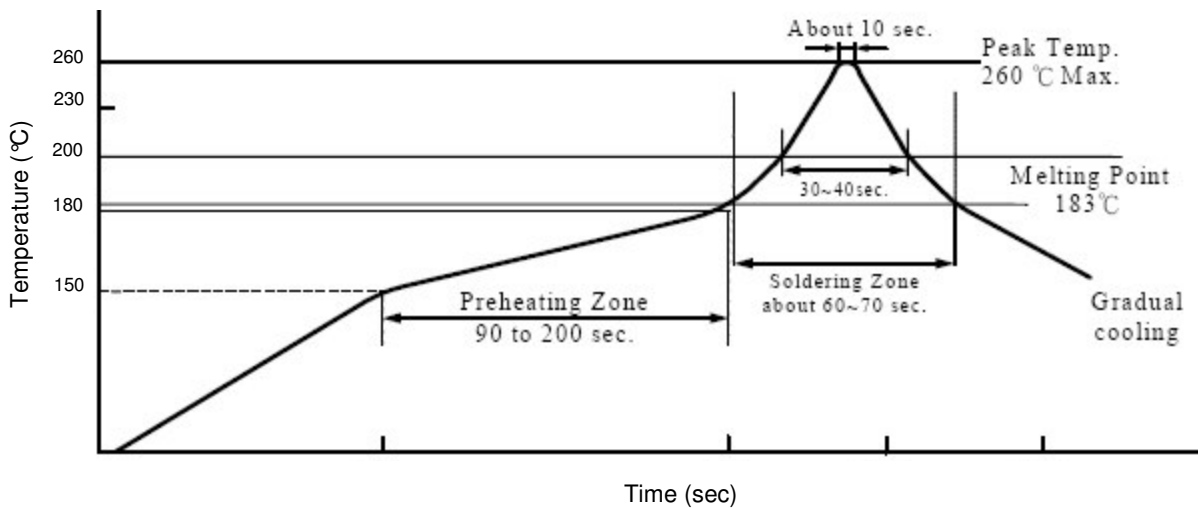


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Recommended Solder Patterns



Recommended Pb Free IR-Reflow Solder Profile



Notes:

1. Exceeding the recommended temperatures and accelerating the heating and cooling processes may cause electrical and/or optical failure.
2. Solder dipping method is not recommended. Optek cannot guarantee the LEDs after assembly using the solder dipping method.

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## Reliability Test Items and Conditions

- Results of Reliability Test

No	Item	Test Condition	Test Hours/Cycles	Sample No	Ac / Re
1	DC Operating Life	R- $I_F$ : 30mA, G/B- $I_F$ : 20mA	1,000 HRS	50 PCS	0 / 1
2	High Temperature Storage	Temp : 100°C	1,000 HRS	50 PCS	0 / 1
3	Low Temperature Storage	Temp : -55°C	1,000 HRS	50 PCS	0 / 1
4	Thermal Shock Test	-40°C $\longleftrightarrow$ 80°C 5min 8secs 5min	100 CYCLES	50 PCS	0 / 1
5	Temperature Cycle	-40°C~25°C~100°C~25°C 30min 5min 30min 5min	300 CYCLES	50 PCS	0 / 1
6	Temp. & Humidity bias	$T_A=85^\circ\text{C}$ , RH=85%, $I_F=5\text{mA}^*$	1,000 HRS	50 PCS	0 / 1

\*Values are based on single-die performance

- Reliability Criteria

Item	Symbol	Test Condition	Limit	
			Min.	Max.
Forward Voltage	$V_F$	$I_F$ : 20mA	-	U.S.L.*1.2
Reverse Current	$I_R$	$V_R$ : 5V	-	U.S.L.*2
Power	$P_O$	$I_F$ : 20mA	L.S.L.*0.5	

\*U.S.L.: Upper Standard Level \*L.S.L.: Lower Standard Level

### Precautions:

#### Cleaning

- Optek recommends isopropyl alcohol be used as a solvent for cleaning the LEDs. When using other solvents, it should be confirmed beforehand whether the solvents will dissolve the package and/or the resin. Freon solvents should not be used to clean LEDs because of worldwide regulations.
- Do not use ultrasonic methods.

#### Safety

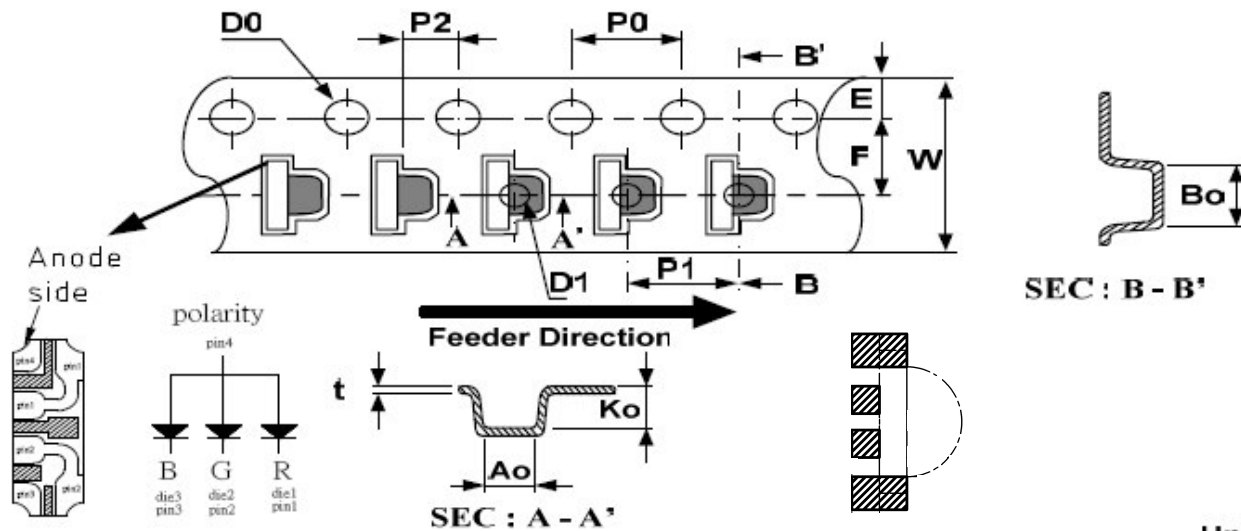
- LED light output is strong enough to cause injury to the human eye. Precaution must be taken to avoid looking directly into the LEDs with unprotected eyes for more than a few seconds.
- Flashing lights have been known to cause discomfort in people. This can be prevented by taking precautions during operation.

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# Full-Color 1204 SMD OVSRRGBCC3

## Taping and Orientation

Loaded quantity 2000 pieces per reel



Unit:mm

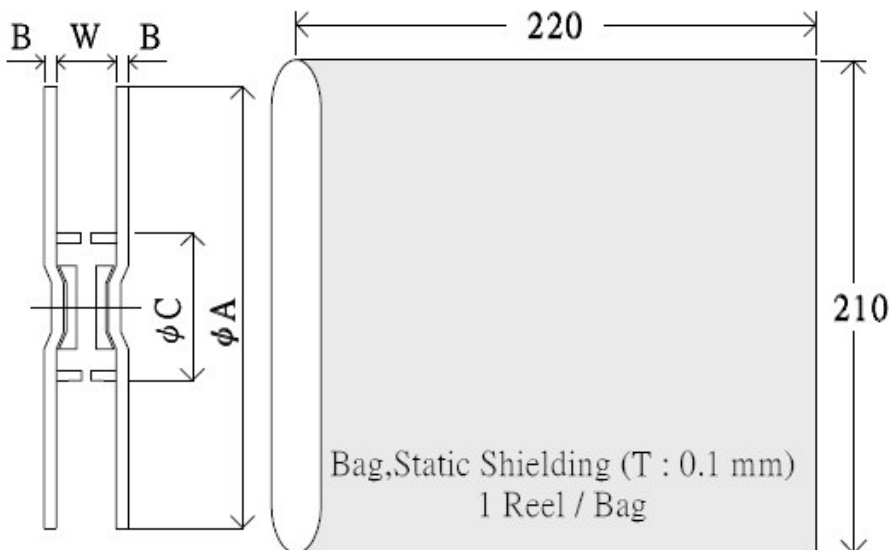
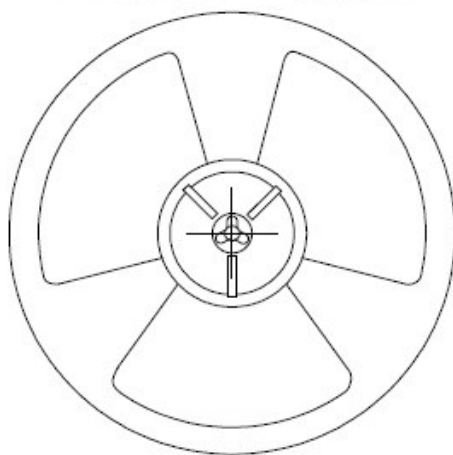
ITEM	W	P1	E	F	D0	D1	P0	t	P2	Ko	Ao	Bo
<b>SPEC</b>	<b>8.0</b>	<b>4.0</b>	<b>1.75</b>	<b>3.5</b>	<b>1.50</b>	<b>1.0</b>	<b>4.0</b>	<b>0.2</b>	<b>2.0</b>	<b>1.25</b>	<b>1.75</b>	<b>3.4</b>
<b>TOL</b>	<b>+0.3 -0.1</b>	<b>±0.1</b>	<b>±0.1</b>	<b>±0.05</b>	<b>+0.1 -0.0</b>	<b>+0.25 -0.0</b>	<b>±0.1</b>	<b>±0.02</b>	<b>±0.05</b>	<b>±0.1</b>	<b>±0.1</b>	<b>±0.1</b>

## Reel and Static Shielding Bag Dimensions

SPEC. : 7" x 8 mm

$\phi A$  : 178 mm  $\phi C$  : 60 mm

B : 1.5 mm W : 9.0 mm



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