

Full-Color 1204 SMD (150° Viewing Angle)

OVSRRGBCC3 / OVSRRGBCC3TM



Features:

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



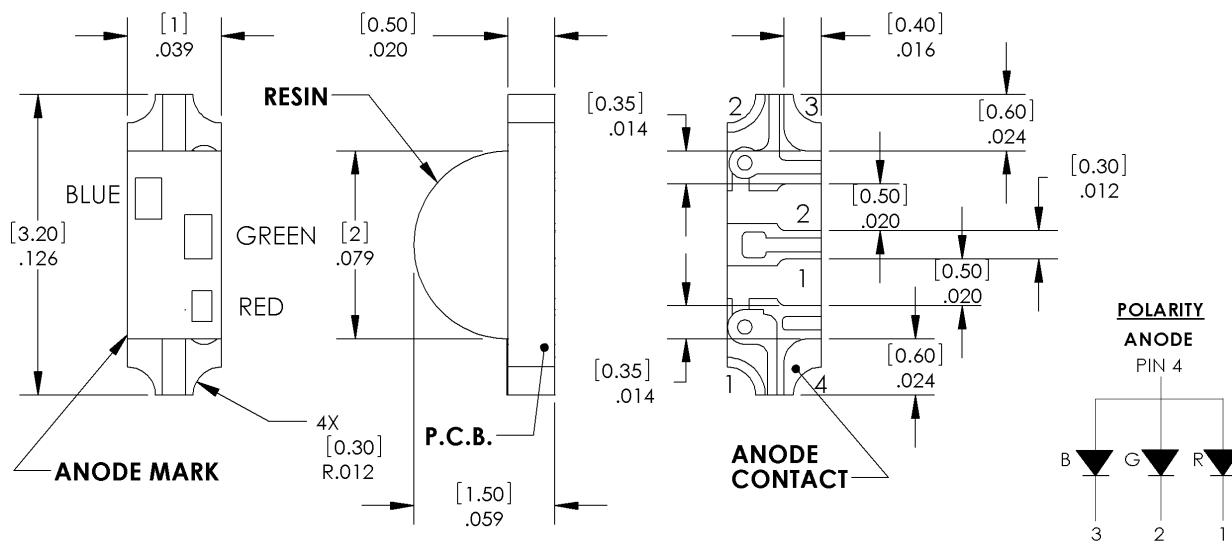
Description:

The OVSRRGBCC3 & OVSRRGBCC3TM 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.

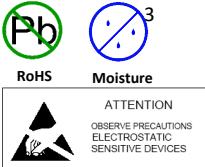
Applications:

- Automotive backlighting for dashboard and switches
- Telecommunications (backlighting for telephones and faxes)

| Part Number | Material | Emitted Color | Intensity Typ. mcd | Lens Color |
|----------------------------|----------|---------------|--------------------|----------------|
| OVSRRGBCC3 OVSRRGBCC3TM | AllInGaP | Red | 105 | White Diffused |
| | InGaN | Green | 330 | |
| | InGaN | Blue | 200 | |



Note: Maximum burr from saw singulation to be < 50 um from metallization surface.



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

General Note

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Electrical Specifications

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise noted)

| PARAMETER | RED | GREEN / BLUE | UNIT |
|--|-------------|--------------|-----------|
| Continuous Forward Current | 30 | 20 | mA |
| Peak Forward Current (10% Duty Cycle, 10 ms pulse width) | 100 | 80 | mA |
| Power Dissipation | 72 | 72 | mW |
| Reverse Voltage | 5 | 5 | V |
| Operating Temperature Range | -40 to +85 | -40 to +85 | °C |
| Storage Temperature Range | -55 to +100 | -55 to +100 | °C |
| Soldering Temperature (for 10 seconds) | 260 | 260 | °C |
| Electrostatic Discharge Classification (HBM) | ±2000 | ±2000 | V |
| Moisture Sensitivity Level (IPC/JEDEC J-STD-020C) | 3 | 3 | 168 hours |

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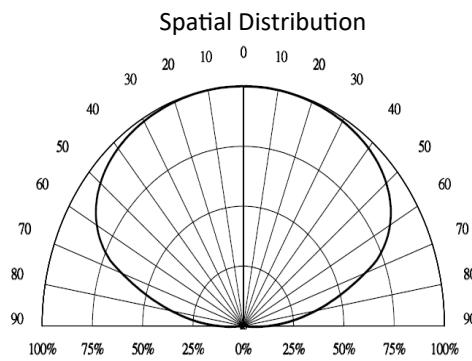
OVSRRGBCC3 / OVSRRGBCC3TM



Electrical Specifications

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| SYMBOL | PARAMETER | COLOR | MIN | TYP | MAX | UNITS | CONDITIONS |
|-----------------|---|-------|------|------|-----|---------------|-----------------------|
| I_V | Luminous Intensity (axial direction) | Red | 60 | 105 | 150 | mcd | $I_F = 20 \text{ mA}$ |
| | | Green | 210 | 330 | 450 | | |
| | | Blue | 150 | 200 | 250 | | |
| $2\theta_{1/2}$ | Viewing Angle | Red | 140 | 150 | 160 | deg | $I_F = 20 \text{ mA}$ |
| | | Green | | | | | |
| | | Blue | | | | | |
| λ_D | Dominant Wavelength | Red | 615 | 625 | 635 | nm | $I_F = 20 \text{ mA}$ |
| | | Green | 520 | 530 | 535 | | |
| | | Blue | 465 | 475 | 485 | | |
| V_F | Forward Voltage | Red | 1.8 | 2.0 | 2.4 | V | $I_F = 20 \text{ mA}$ |
| | | Green | 3.0 | 3.3 | 3.6 | | |
| | | Blue | 3.0 | 3.3 | 3.6 | | |
| I_R | Reverse Current | Red | ---- | ---- | 50 | μA | $V_R = 5 \text{ V}$ |
| | | Green | ---- | ---- | | | |
| | | Blue | ---- | ---- | | | |



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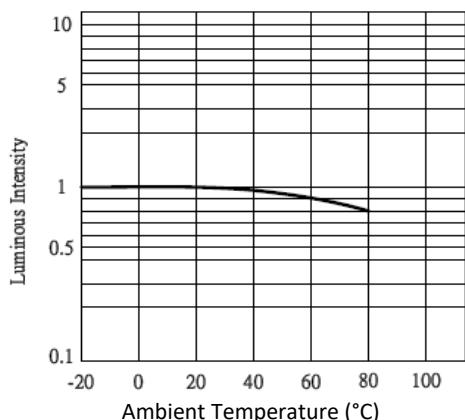
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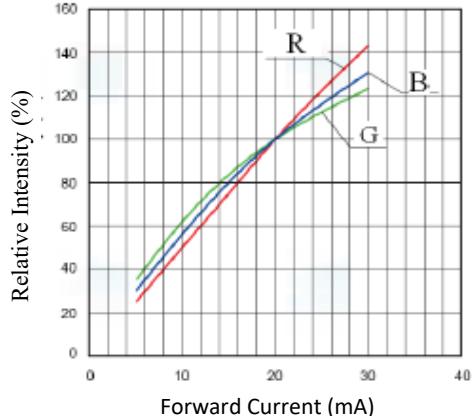


Typical Electro-Optical Characteristics Curves ($T_A = 25^\circ C$ unless otherwise noted)

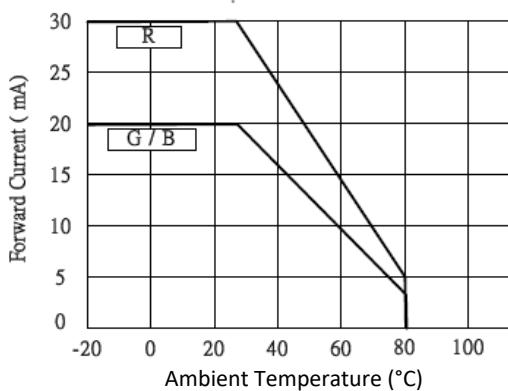
Luminous Intensity vs. Ambient Temperature



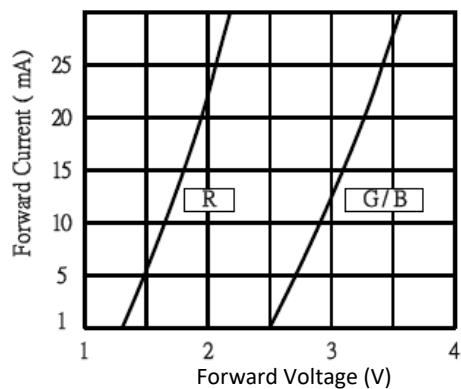
Relative Intensity vs. Forward Current



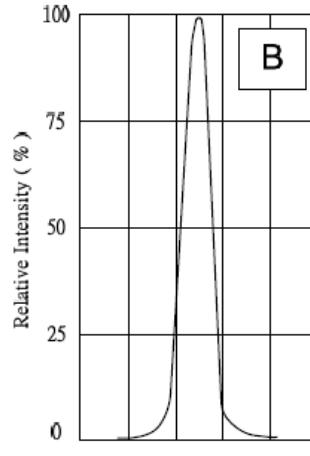
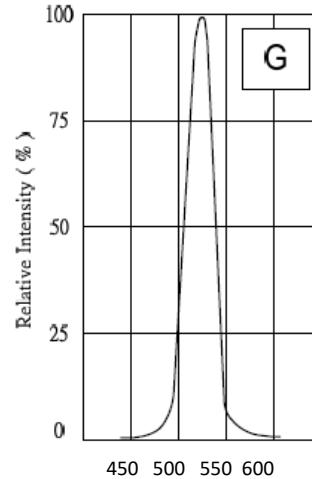
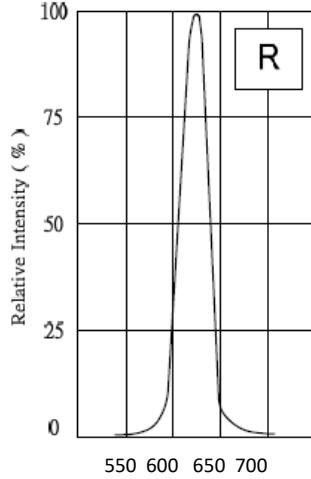
Forward Current vs. Ambient Temperature



Forward Current vs. Forward Voltage



Relative Intensity vs. Wavelength



General Note

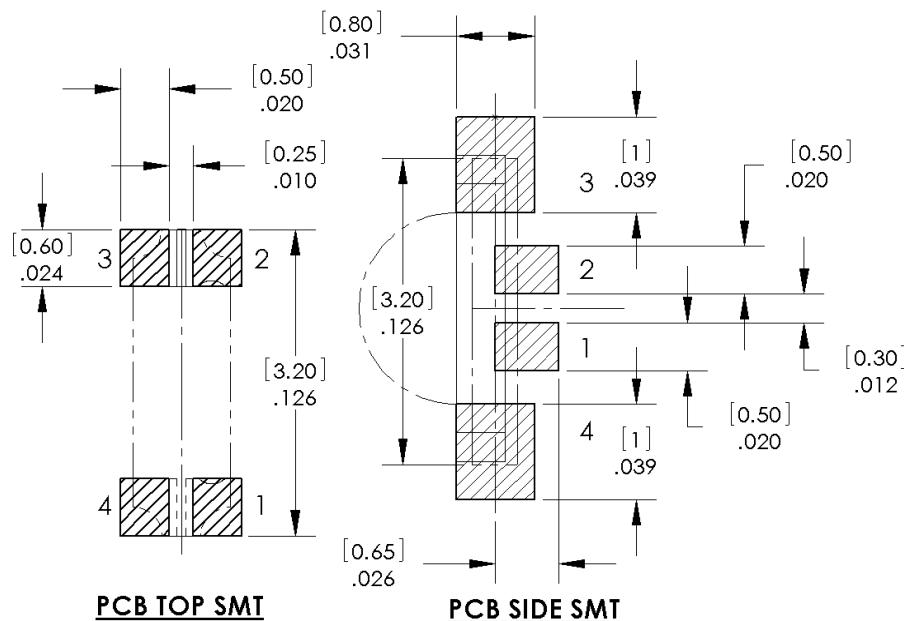
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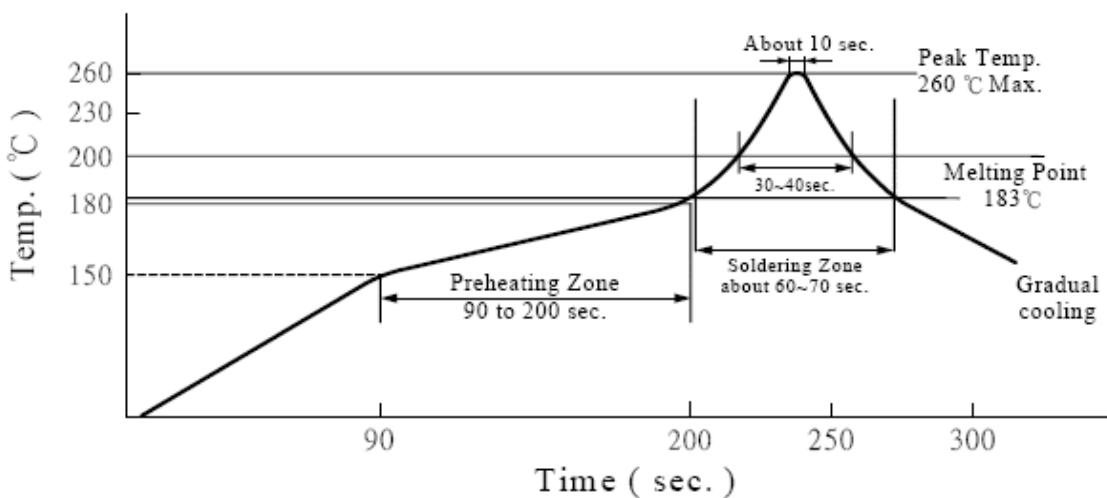
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Recommended Solder Patterns



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

| No | Item | Test Condition | Test Hours/Cycles | Sample No. | Ac / Re |
|----|--------------------------|--|-------------------|------------|---------|
| 1 | DC Operating Life | R~I _F : 30mA, G/B~I _F : 20 mA | 1,000 Hours | 50 pcs | 0 / 1 |
| 2 | High Temperature Storage | Temp: 100° C | 1,000 Hours | 50 pcs | 0 / 1 |
| 3 | Low Temperature Storage | Temp: -55° C | 1,000 Hours | 50 pcs | 0 / 1 |
| 4 | Thermal Shock Test | -40° C 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° C, RH = 85%, I _F = 5 mA* | 1,000 Hours | 50 pcs | 0 / 1 |

• Reliability Criteria

| Item | Symbol | Test Conditions | Limit | |
|-----------------|----------------|------------------------|-------------|-------------|
| | | | Min. | Max. |
| Forward Voltage | V _F | I _F : 20 mA | | U.S.L. *1.2 |
| Reverse Current | I _R | V _R : 5 V | | U.S.L. *2 |
| Power | P _O | I _F : 20 mA | 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.

General Note

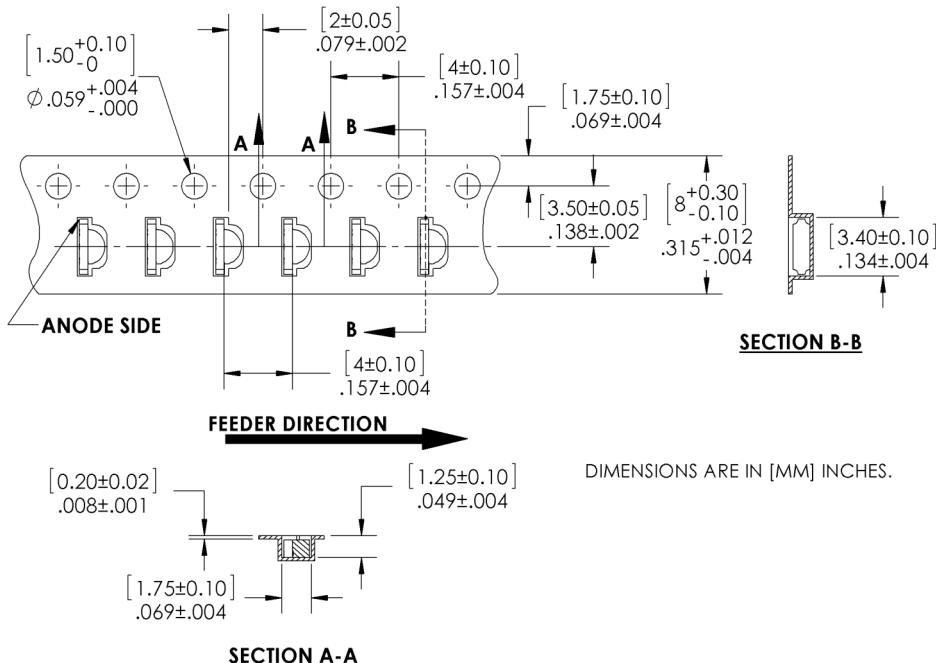
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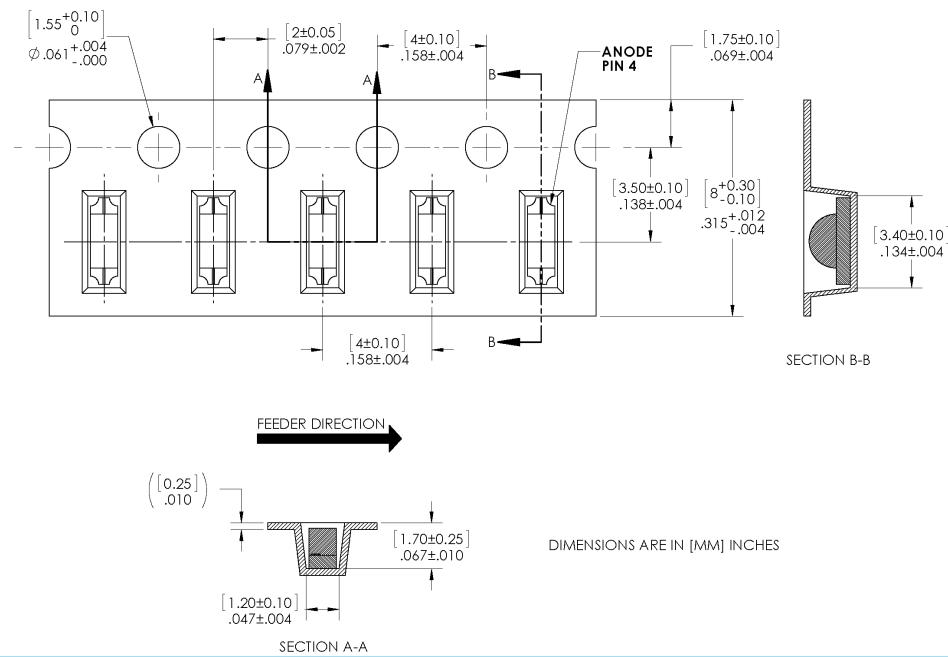
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Carrier Tape Dimensions OVSRRGBCC3: Loaded quantity 2000 pieces per reel



Carrier Tape Dimensions OVSRRGBCC3TM: Loaded quantity 1,500 pieces per reel



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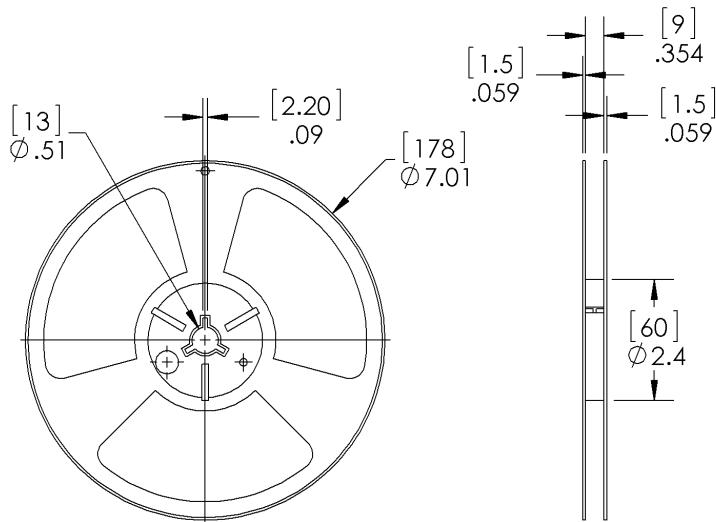
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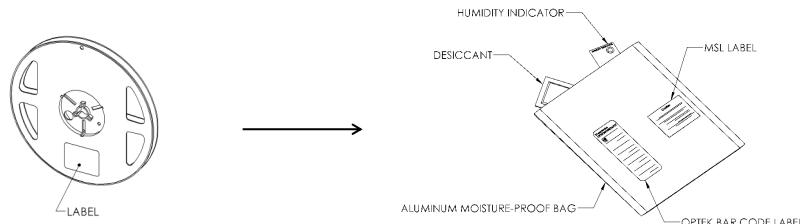
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Reel Dimensions: 7-inch reel



Moisture Resistant Packaging



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