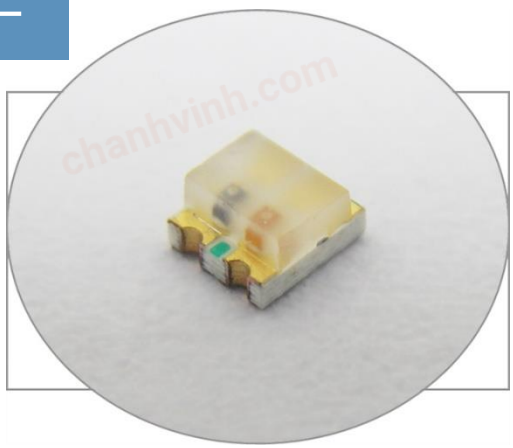
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# SURFACE MOUNT LED RED/GREEN/BLUE, 0807 PACKAGE

BIVAR

## SM0807RGB

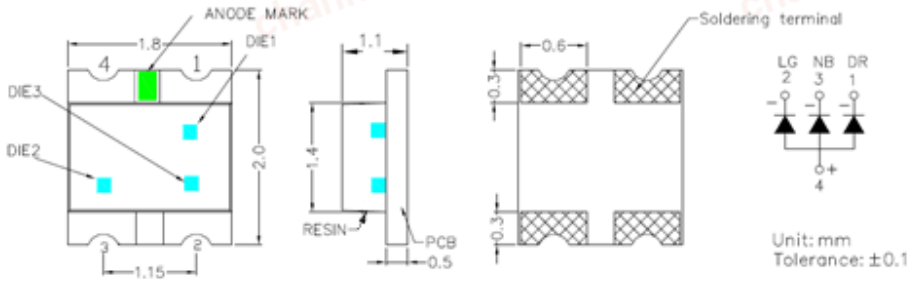
- Industry Standard 0807 Package
- RoHS Compliant
- Three Chips in One Package
- Water Clear Lens
- Wide Viewing Angle
- Ideal for Status Indication and Backlighting



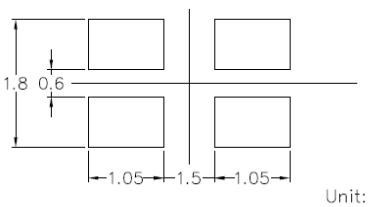
Bivar Surface Mount SM0807 RGB LED is offered in an industry standard package with high luminous intensity and wide viewing angles. The miniature package is ideal for reduced space applications such as general indication and backlighting. Low power consumption and excellent long-life reliability are suitable for battery powered equipment. The flexible three chip design allows for a wide variety of lighting options where the chips can be individually driven or mixed to create numerous color and intensity combinations. Bivar SM0807 LED is packaged in standard tape and reels for pick and place assemblies.

| Part Number | Emitted Color | Peak Wavelength λP (nm) TYP. | Dominant Wavelength λD (nm) TYP. | Lens Appearance | Luminous Intensity (mcd) TYP. | Viewing Angle |
|---|---|---|---|---|---|---|
| SM0807RGB | ULTRA HIGH RED | 639 | 630 | Water Clear | 75 | 120° |
| | BLUE | 458 | 462 | | 62 | |
| | GREEN | 518 | 522 | | 450 | |

# Outline Dimensions




1. Soldering terminal may shift in x, y direction.




RECOMMENDED SOLDERING PATTERN

ATTENTION OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES

RoHS Compliant

Moisture Sensitivity Level 4

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# SURFACE MOUNT LED
# RED/GREEN/BLUE, 0807 PACKAGE

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## Absolute Maximum Ratings

$T_A$ = 25°C unless otherwise noted

| Item | Symbol | Maximum | Unit |
|---|---|---|---|
| Peak Forward Current [1] | $I_{FP}$ | 100 | mA |
| Reverse Voltage | $V_R$ | 5 | V |
| Derating Linear from 25°C | - | 0.4 | mA/°C |
| Operating Temperature Range | $T_{opr}$ | -40 to 80 | °C |
| Storage Temperature Range | $T_{stg}$ | -40 to 85 | °C |

Notes: 1. 10% Duty Cycle, Pulse Width ≤ 0.1 msec.

## Electrical/Optical Characteristics

($T_a$ = 25°C)

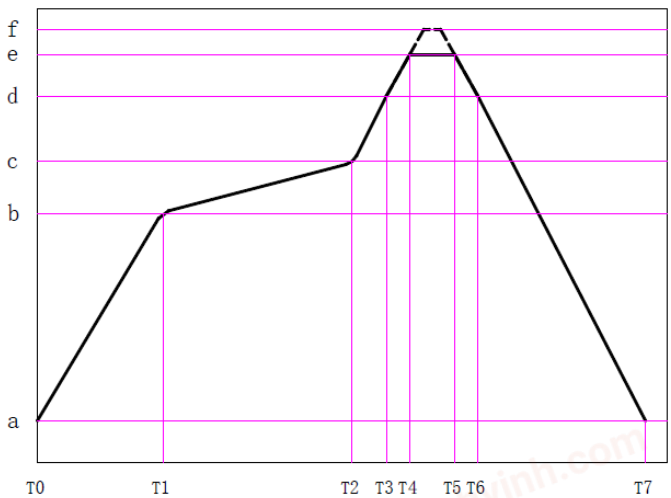
| Chip | | | Lens Appearance | Absolute Maximum Rating | | | Electro-Optical Data (at 20mA) | | | | Viewing Angle 2θ ½ (deg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Emitted Color | $\lambda_P$ (nm) | $\lambda_D$ (nm) | | Δλ (nm) | $P_d$ (mW) | $I_f$ (mA) | $V_f$ (V) Typ. | $V_f$ (V) Max. | $I_v$ (mcd) Min. | $I_v$ (mcd) Typ. | |
| Ultra High Red (Die 1) | 639 | 630 | Water Clear | 18 | 75 | 30 | 2.0 | 2.5 | 40 | 75 | 120° |
| Blue (Die 2) | 458 | 462 | | 25 | 111 | 30 | 3.2 | 3.7 | 32 | 62 | |
| Green (Die 3) | 518 | 522 | | 34 | 111 | 30 | 3.3 | 3.7 | 250 | 450 | |

## Recommended Reflow Temp/Time:

Please refer to the figure on the right:

| Temp. (℃) | | Time (sec) | |
|---|---|---|---|
| a | 25 | T0~T1 | Max. 3℃/sec |
| b | 150 | T1~T2 | 90~130 sec |
| c | 200 | T2~T4 | Max. 3℃/sec |
| d | 220 | T3~T6 | Max. 50 sec |
| e | 245 | | |
| f | Max. 260 | | Max. 5 sec |
| | | T5~T7 | Max. -3℃/sec |
| Belt Speed | | 70~90 cm/min | |

Note: Will vary based on equipment and process used.




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# Soldering Iron:

1. Temperature at tip of iron: 300℃ Max. (25W Max)
2. Soldering Time: 5 ± 1 sec.

# Precautions for Use:

Customer must apply resistors for protection otherwise slight voltage shift will cause big current change, causing burnout.

**Circuit Design**

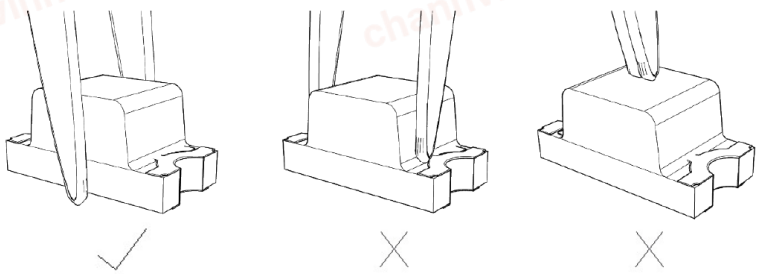
1. Customer must apply resistors for protection and stability. Circuit B in the diagram below is recommended. If Circuit A is used, the current through the LEDs may vary due to the variation in Forward Voltage characteristics of the LEDs, causing burn out to happen.




2. Current change may lead to LED color change. If there is a big difference among spectral color separation current and actual service current, a color difference may occur.
3. This product should be operated using forward current. Subjecting it to continuous reverse voltage may cause migration, which may cause damage to the LED die.

**Handling Precautions**

1. When handling the product with tweezers, be careful to not apply excessive force to the resin. Otherwise, the resin can be cut, chipped, delaminate, or deformed, causing wire-bond breaks.




2. Reflow Soldering must not be performed more than twice. Hand soldering must not be performed more than once.
3. When soldering, do not put stress on the LEDs during heating.
4. The product is sensitive to static electricity or surge voltage. ESD can damage a die and its reliability.
5. Do not stack assembled PCBs together. Stacking assembled PCBs can cause the resin to chip, delaminate, and/or deform. This may lead to failure.

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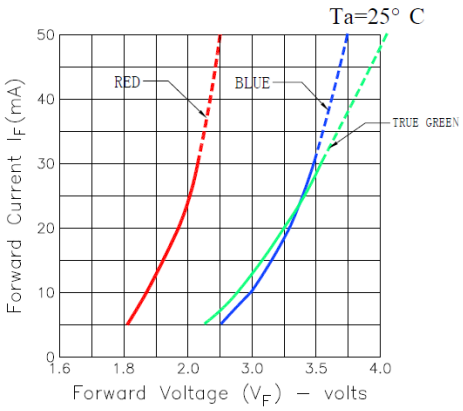
# SURFACE MOUNT LED
# RED/GREEN/BLUE, 0807 PACKAGE

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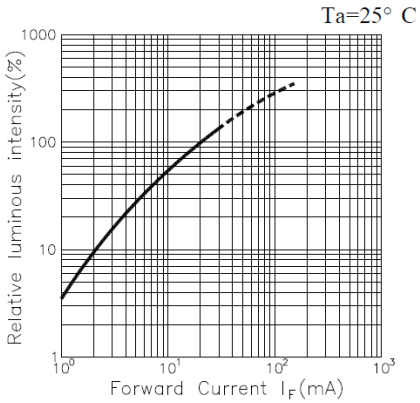
## Typical Electrical/Optical Characteristics

$T_A$ =25°C unless otherwise noted

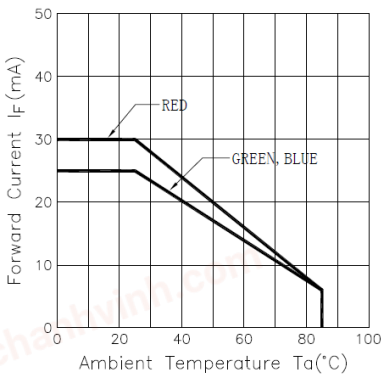
Forward Current Vs. Forward Voltage



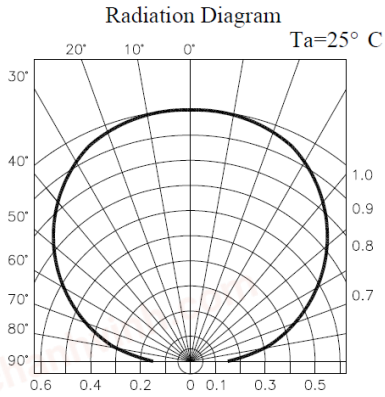

Luminous Intensity Vs. Forward Current



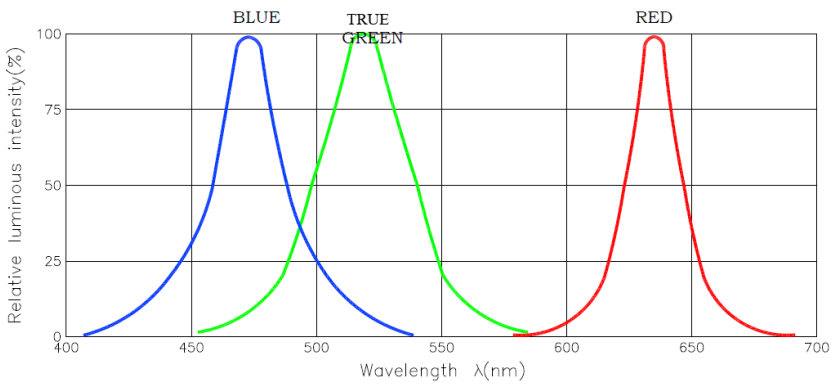

Forward Current Derating Curve




Radiation Diagram




Spectrum Distribution




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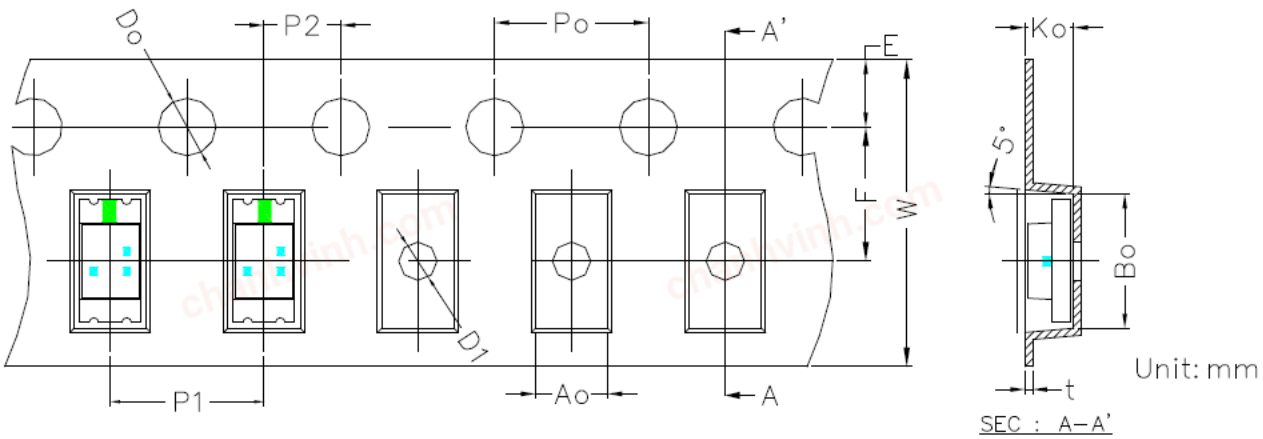
# SURFACE MOUNT LED
# RED/GREEN/BLUE, 0807 PACKAGE

## Storage:

1. The storage temperature and relative humidity range are: 5℃ ~ 30℃, R.H. 60 % max
2. Once the package is opened, products should be used within 72 hrs. Otherwise, they should be kept in a damp-proof box with a desiccating agent. Considering the tape life, we suggest using the product within 1 year of production date.
3. It's recommended to bake at 80℃ ± 5℃ for 24 hrs before soldering them when the package is unsealed for 72 hrs.

## Tape Specification: 3000 pcs per Reel

| Packing Size | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | W | P1 | E | F | Do | D1 | Po | 10Po | P2 | Ao | Bo | Ko | t |
| Spec. (mm) | 8.00 | 4.00 | 1.75 | 3.50 | 1.50 | 1.00 | 4.00 | 40.00 | 2.00 | 1.95 | 2.25 | 1.35 | 0.20 |
| Tolerance (mm) | +0.30 -0.10 | ±0.10 | ±0.10 | ±0.05 | +0.10 -0.00 | +0.25 -0.00 | ±0.05 | ±0.20 | ±0.05 | ±0.10 | ±0.10 | ±0.10 | ±0.05 |



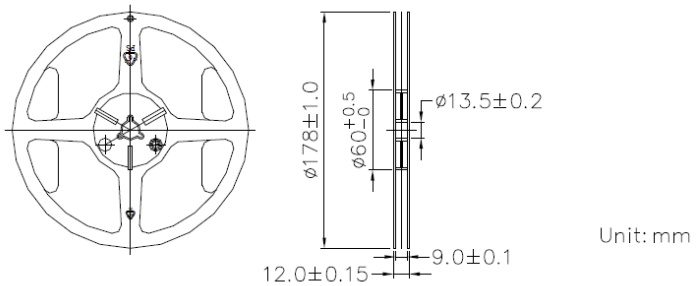

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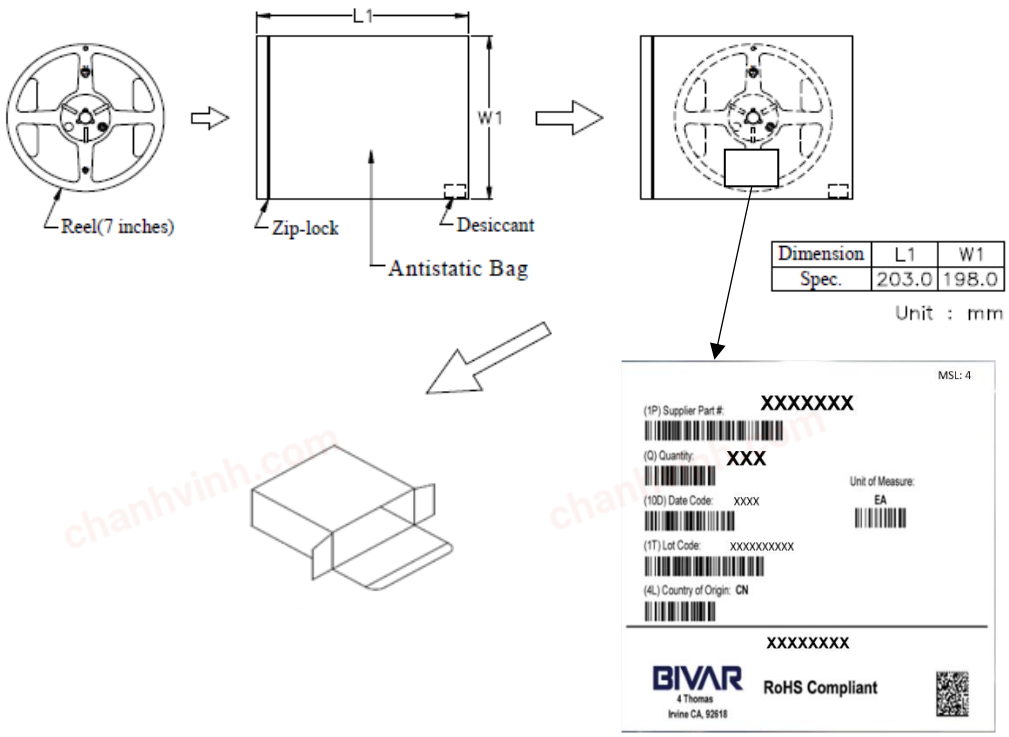
# SURFACE MOUNT LED
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## Dimensions of Reel and Packaging:




1 reel per bag.




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