

SPNovaLED[™]

Featuring a staggering brilliance and significant flux output, the SPNovaLED[™] showcases the latest technological advent in this range. With its extremely high level of brightness and the ultra low high profile, which is only 1.5 mm are highly suitable for both conventional lighting and specialized application such as automotive signal lights, traffic lights, channel lights, tube lights and garden lights among others.



Features:

- > Super high brightness surface mount LED.
- > High flux output.
- > 125° viewing angle.
- > Compact package outline (LxWxH) of 6.0 x 6.0 x 1.5mm.
- > Ultra low height profile - 1.5 mm.
- > Designed for high current drive; typically 250 mA.
- > Low junction-to-solder point thermal resistance; $R_{TH\ j\ s} = 50\ K/W$.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.

Applications:

- > Signage: full colour display video notice board, signage, special effect lighting.
- > Lighting: architecture lighting, general lighting, garden light, channel light.

Optical Characteristics at Tj=25°C

| Part Number | IV Bin | Intensity @ If=250mA (mcd) | | | Viewing Angle° |
|---------------------------------|--------|----------------------------|---------|---------|----------------|
| | | Min. | Typ. | Max. | |
| NMRTB-USD-AAB+ADE+Y2Z1-1 | | | | | |
| • Red | AAB | 7150.0 | 9000.0 | 11250.0 | 125 |
| • True Green | ADE | 14000.0 | 18000.0 | 22400.0 | |
| • Blue | Y2Z1 | 3550.0 | 4500.0 | 5600.0 | |

Radiant intensity is measured with an accuracy of ± 11%.

Electrical Characteristics at Tj=25°C

| Part Number | Vf @ If = 250mA | | | Vf @ If = 350mA |
|---------------------------------|-----------------|----------|----------|-----------------|
| | Min. (V) | Typ. (V) | Max. (V) | Typ. (V) |
| NMRTB-USD-AAB+ADE+Y2Z1-1 | | | | |
| • Red | 2.0 | 2.3 | 2.8 | 2.3 |
| • True Green | 3.0 | 3.5 | 3.8 | 3.6 |
| • Blue | 3.0 | 3.3 | 3.8 | 3.4 |

Forward voltage, Vf is measured with a current pulse of 1 ms and an accuracy of ± 0.1V.

Absolute Maximum Ratings

| | Maximum Value | Unit |
|--|-------------------------------------|------|
| DC forward current (per chip) | 250 | mA |
| Peak pulse current (per chip). (D ≤ 10%; Tp ≤ 10 msec) | 500 | mA |
| Reverse voltage | Not designed for reverse bias drive | V |
| ESD threshold (HBM) | 2000 | V |
| LED junction temperature | 125 | °C |
| Operating temperature | -40 ... +100 | °C |
| Storage temperature | -40 ... +100 | °C |

Characteristics

| | Symbol | | Value | Unit |
|---|---|------------|-------|---------|
| Temperature coefficient of λ_{dom} (typ) $I_F = 250\text{mA}; 0^\circ\text{C} \leq T \leq 100^\circ\text{C}$ | $TC_{\lambda_{dom}}$ (λ_{dom} (typ)) | Red | 0.06 | nm / K |
| | | True Green | 0.03 | nm / K |
| | | Blue | 0.03 | nm / K |
| Temperature coefficient of V_F (typ) $I_F = 20\text{mA}; 0^\circ\text{C} \leq T \leq 100^\circ\text{C}$ | TC_V | Red | -3.60 | mV / K |
| | | True Green | -2.40 | mV / K |
| | | Blue | -3.00 | mV / K |
| Temperature coefficient of I_V (typ) $I_F = 20\text{mA}; 0^\circ\text{C} \leq T \leq 100^\circ\text{C}$ | TC_{I_V} | Red | -38.2 | mcd / K |
| | | True Green | -15.6 | mcd / K |
| | | Blue | 1.6 | mcd / K |

Wavelength Grouping at $T_j=25^\circ\text{C}$

| Color | Group | Wavelength distribution (nm) |
|------------|-------|------------------------------|
| Red | Full | 620 - 630 |
| | A | 521 - 526 |
| | B | 526 - 531 |
| True Green | C | 531 - 536 |
| | A | 460 - 465 |
| | B | 465 - 470 |

Dominant wavelength is measured with an accuracy of ± 1 nm.

Luminous Intensity Group at Tj=25°C

| Brightness Group | Luminous Intensity @ IV (mcd) |
|------------------|-------------------------------|
| Y2 | 3550.0...4500.0 |
| Z1 | 4500.0...5600.0 |
| AA | 7150.0...9000.0 |
| AB | 9000.0...11250.0 |
| AD | 14000.0...18000.0 |
| AE | 18000.0...22400.0 |

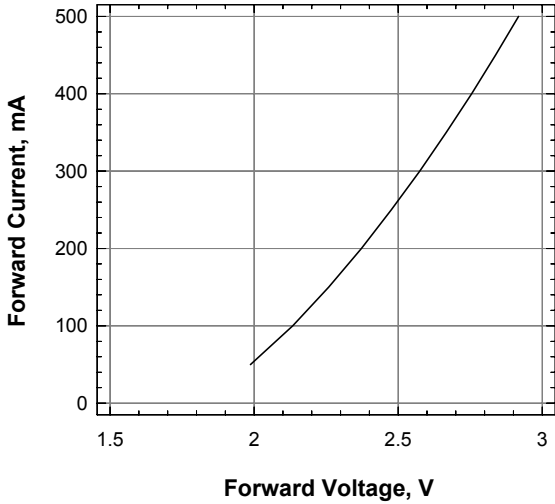
Luminous intensity is measured with an accuracy of ± 11%.

Correlation Between Luminous Intensity And Luminous Flux

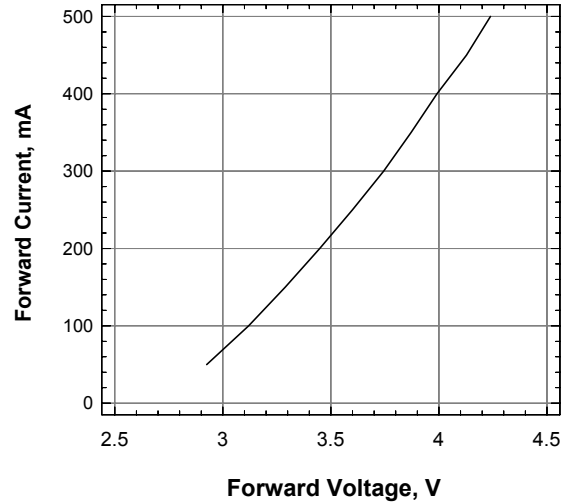
| Color | IV Bins | Luminous Intensity (mcd) | | Luminous Flux (lm) | |
|------------|---------|--------------------------|-------|--------------------|------|
| | | Min. | Max. | Min. | Max. |
| Red | AA | 7150 | 9000 | 21.1 | 26.6 |
| | AB | 9000 | 11250 | 26.6 | 33.2 |
| True Green | AD | 14000 | 18000 | 44.1 | 56.7 |
| | AE | 18000 | 22400 | 56.7 | 70.6 |
| Blue | Y2 | 3550 | 4500 | 10.8 | 13.7 |
| | Z1 | 4500 | 5600 | 13.7 | 17.1 |

Note: Data provided above is based on approximation

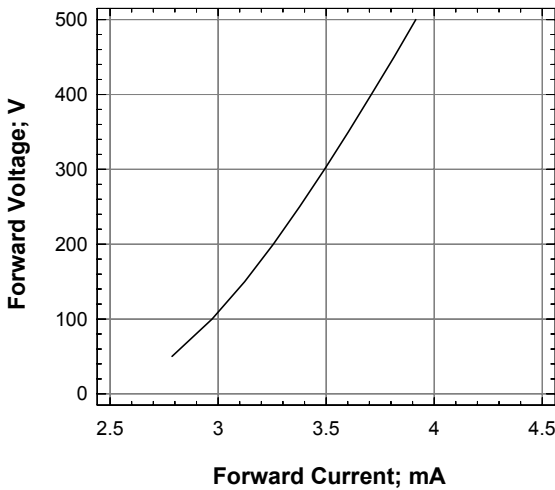
Forward Current Vs Forward Voltage (Red)



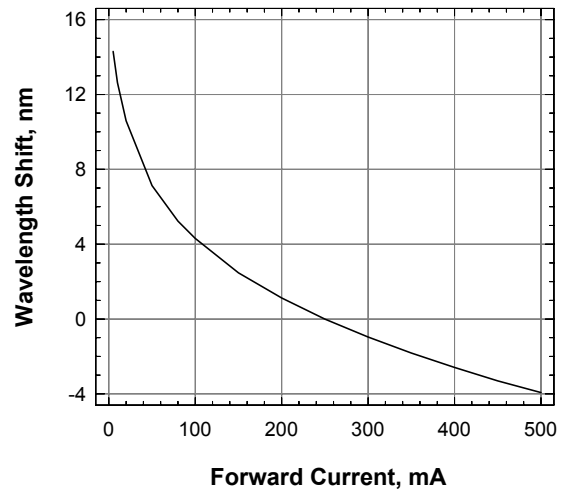
Forward Current Vs Forward Voltage (True Green)



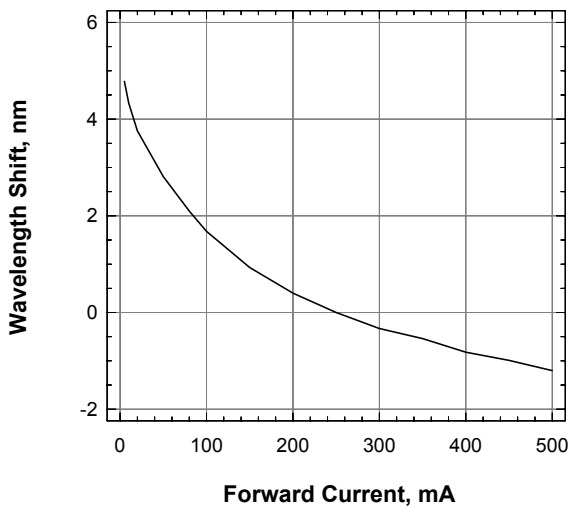
Forward Voltage Vs Forward Current (Blue)



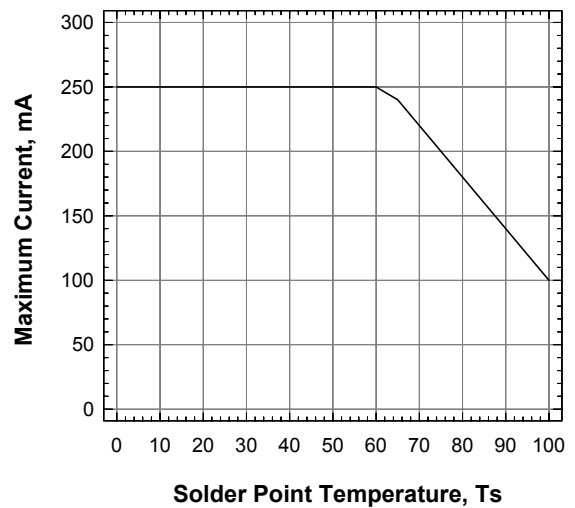
Wavelength Shift Vs Forward Current (True Green)



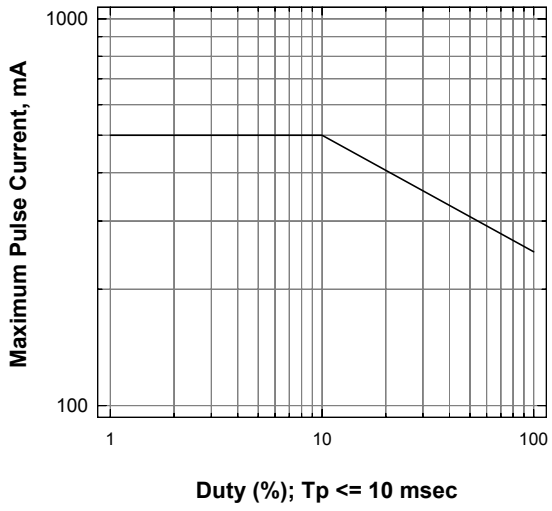
Wavelength Shift Vs Forward Current (Blue)



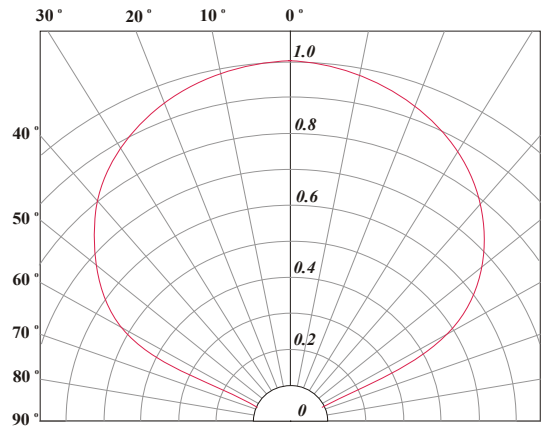
Maximum Current Vs Solder Point Temperature



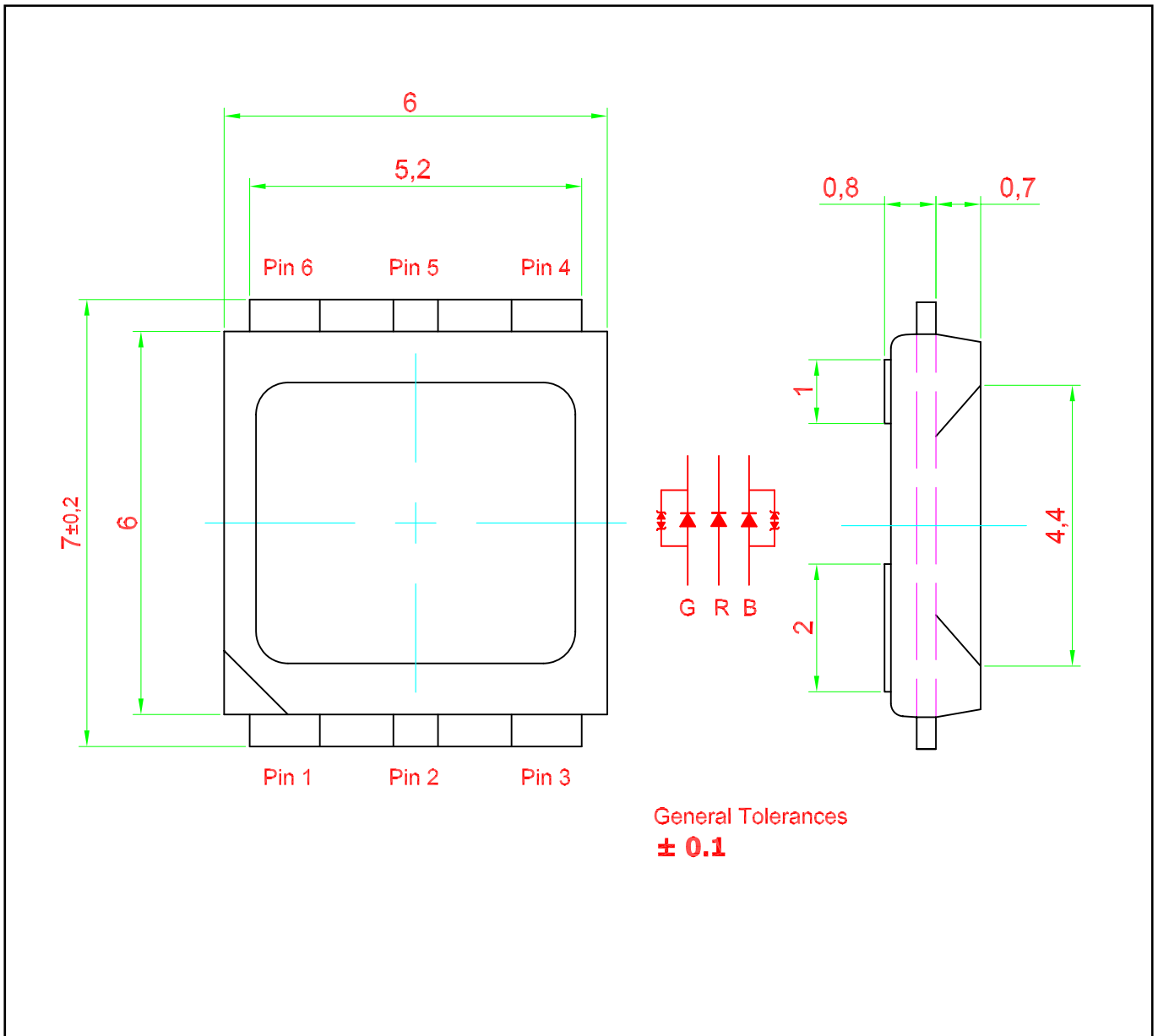
Maximum Pulse Current Vs Duty Cycle



Radiation Pattern



SPNovaLED™ • RGB : NMRTB-USD-AAB+ADE+Y2Z1-1 Package Outlines



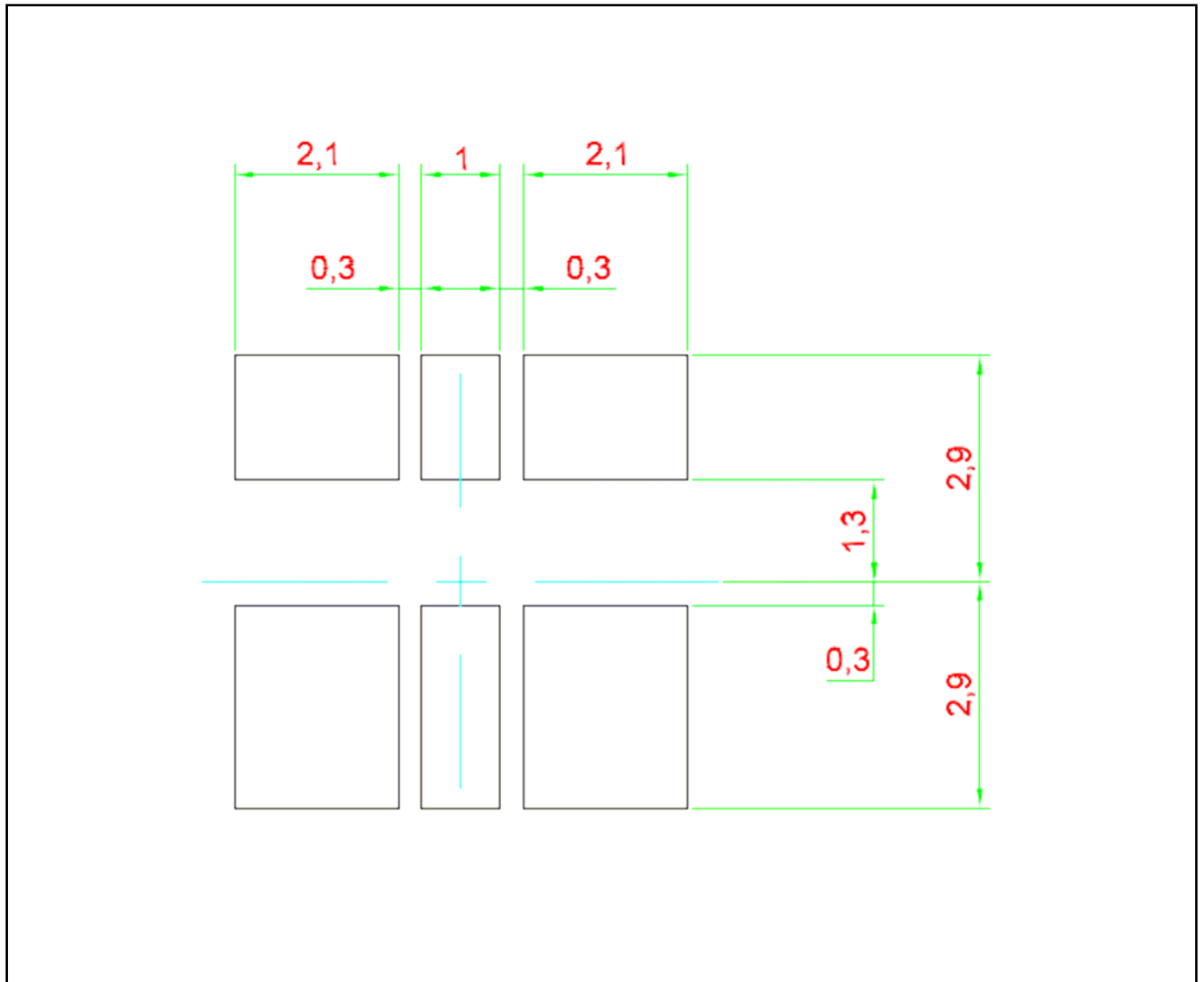
Material

| Material | |
|-----------------|---|
| Lead-frame | Cu Alloy With Ag Plating |
| Package | High Temperature Resistant Plastic, PPA |
| Encapsulate | Silicone Resin |
| Soldering Leads | Sn-Sn Plating |

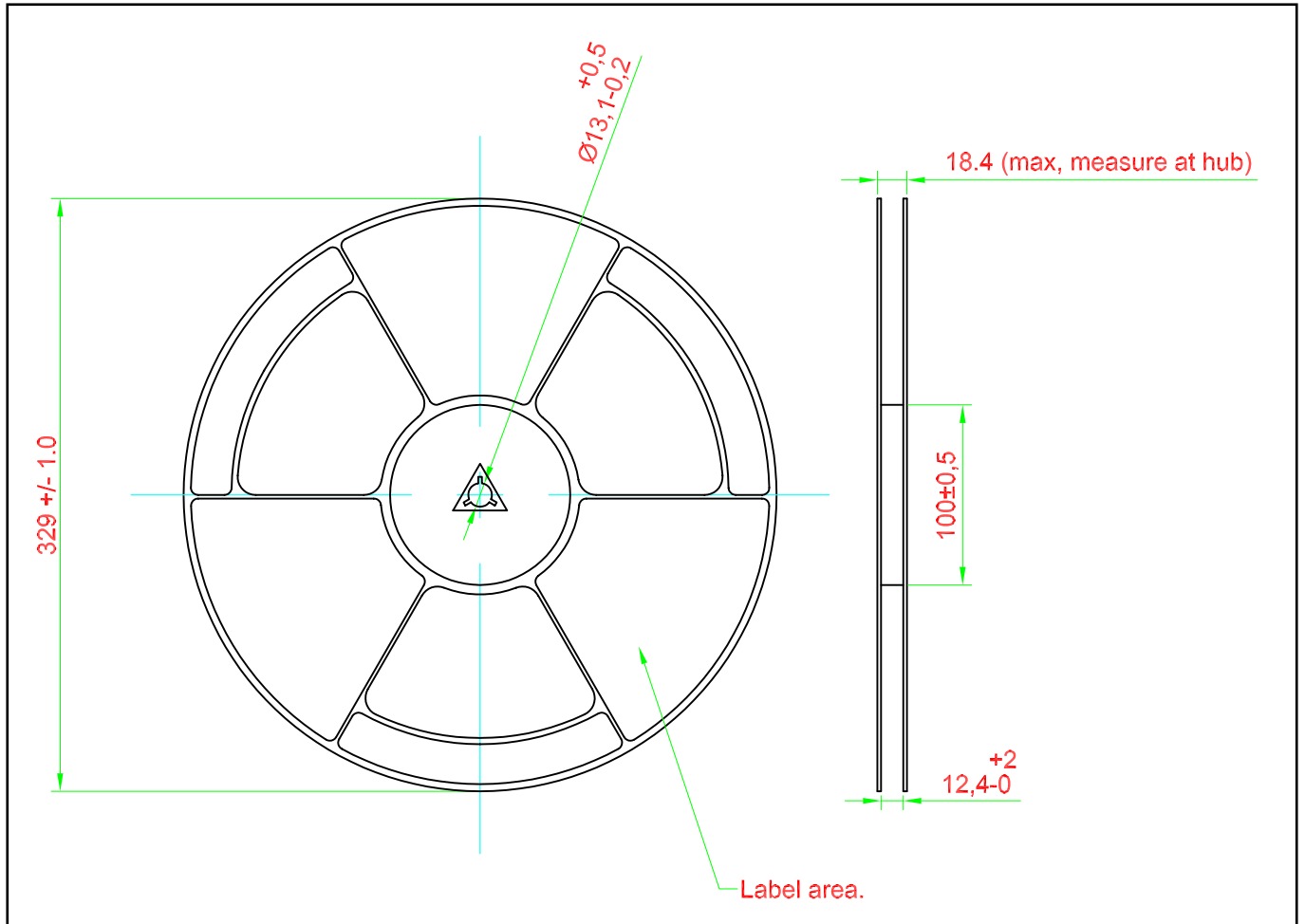
Note: Product has no lead (Pb) content.

Solder Pad Design

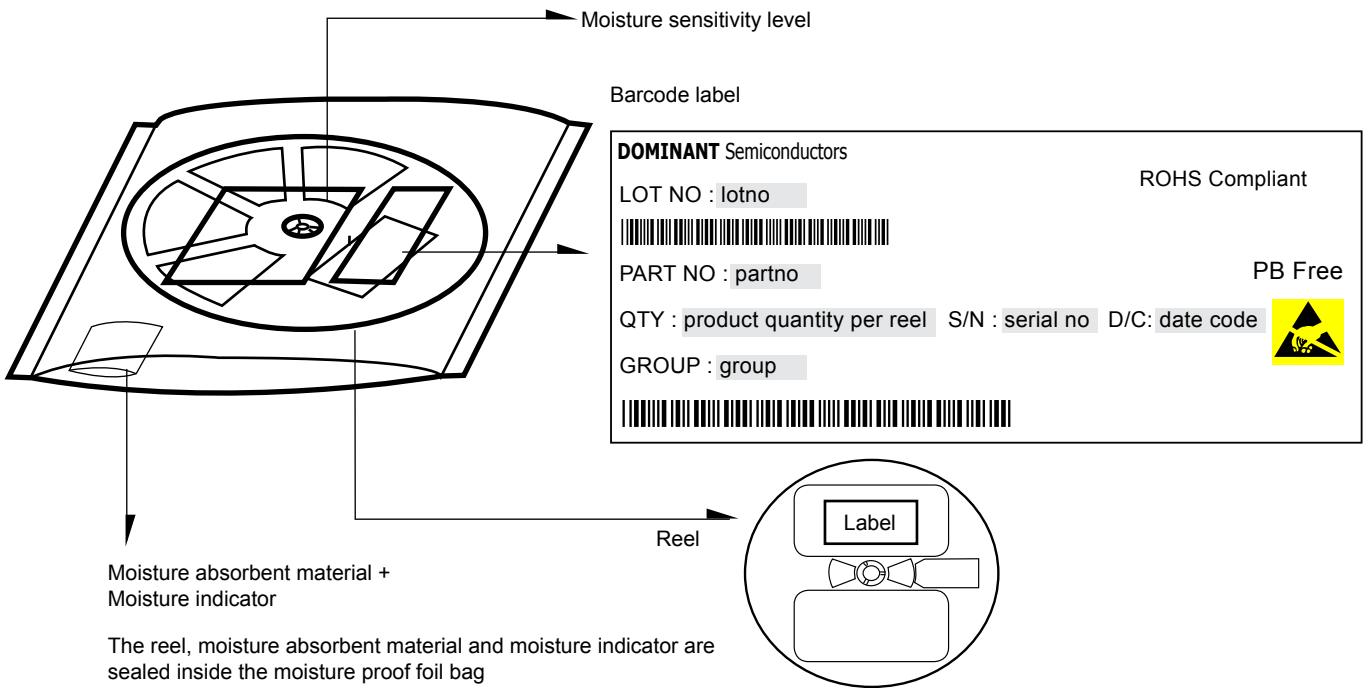
Note: Metal core circuit board (MCPCB) is highly recommended for applications. Please consult sales and marketing for additional information.



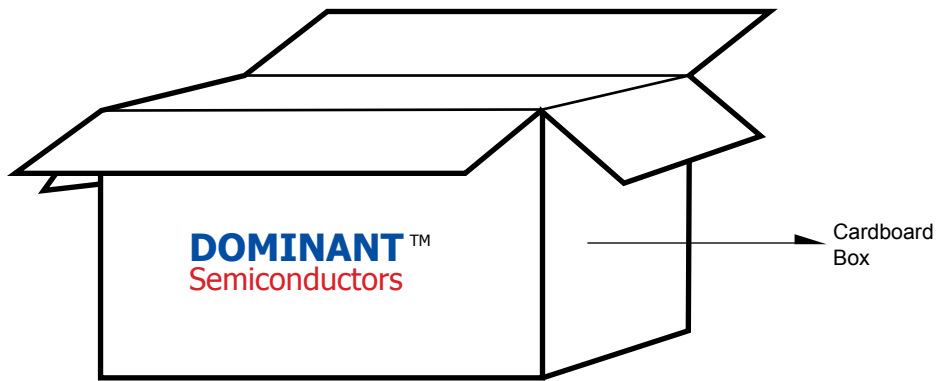
Packaging Specification



Packaging Specification



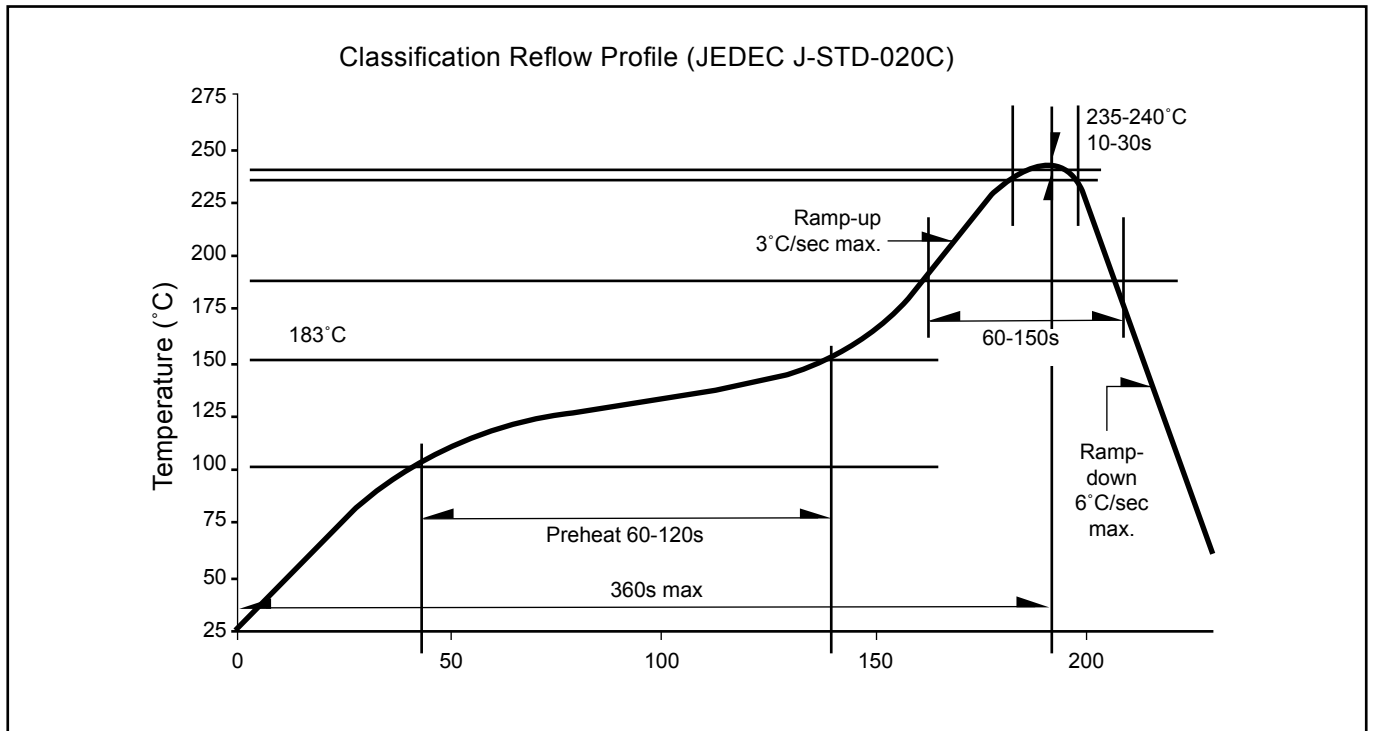
| | Average 1pc SPNovaLED | 1 completed bag (1000pcs) |
|---------------|-----------------------|---------------------------|
| Weight (gram) | 0.188 | 600 ± 10 |



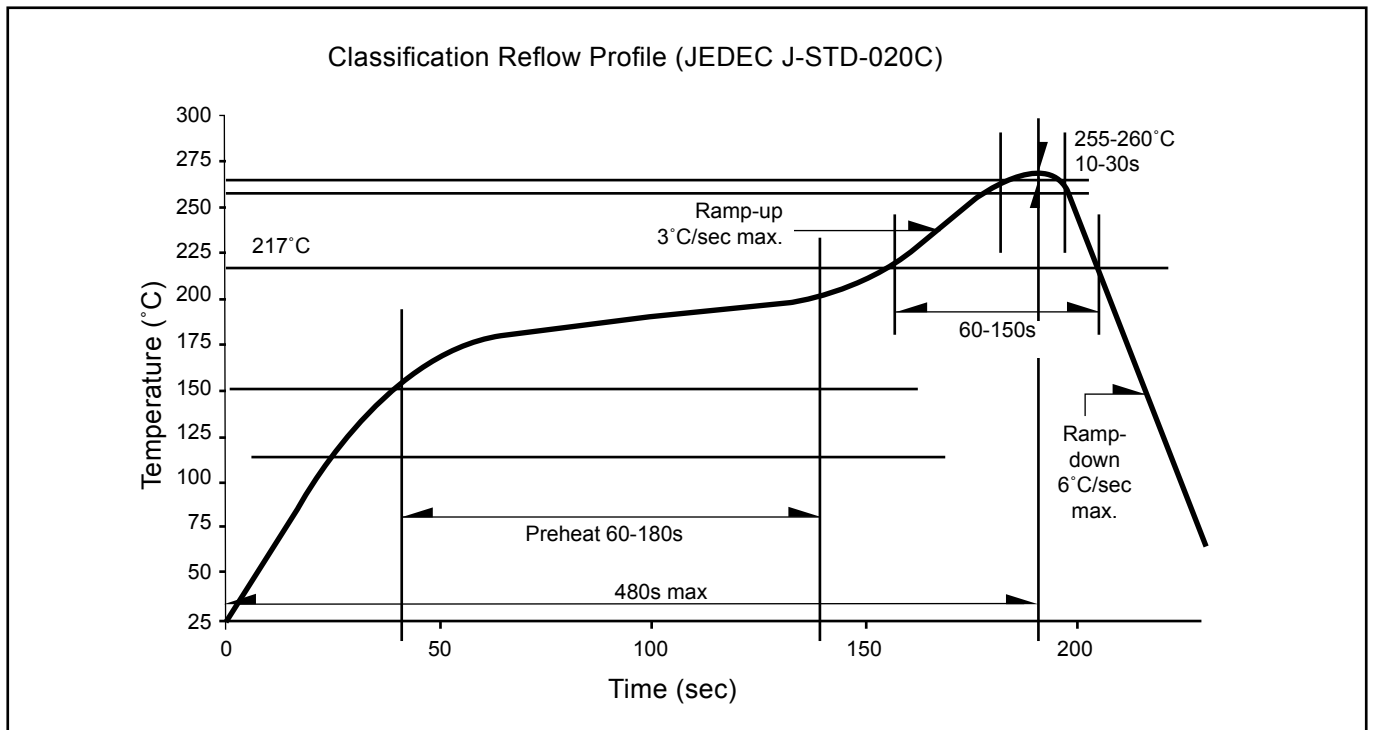
For SPNovaLED™

| Cardboard Box Size | Dimensions (mm) | Empty Box Weight (kg) | Reel / Box | Quantity / Box (pcs) |
|--------------------|-----------------|-----------------------|--------------|----------------------|
| Large | 416 x 516 x 476 | 1.74 | 20 reels MAX | 20,000 MAX |

Recommended Sn-Pb IR-Reflow Soldering Profile



Recommended Pb-free Soldering Profile



Revision History

| Page | Subjects | Date of Modification |
|------|-----------------|----------------------|
| - | Initial release | 06 Jul 2009 |
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NOTE

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About Us

DOMINANT Semiconductors is a dynamic Malaysian Corporation that is among the world's leading SMT LED Manufacturers. An excellence – driven organization, it offers a comprehensive product range for diverse industries and applications. Featuring an internationally certified quality assurance acclaim, DOMINANT's extra bright LEDs are perfectly suited for various lighting applications in the automotive, consumer and communications as well as industrial sectors. With extensive industry experience and relentless pursuit of innovation, DOMINANT's state-of-art manufacturing, research and testing capabilities have become a trusted and reliable brand across the globe. More information about DOMINANT Semiconductors can be found on the Internet at <http://www.dominant-semi.com>.

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