

### 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.
- > 130° viewing angle.
- > Compact package outline (LxW) of 6.0 x 6.0 mm.
- > Ultra low height profile - 1.5 mm.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.

### Applications:

- > Lighting: backlighting, garden light, architecture lighting, general lighting. etc



## Optical Characteristics at Ta=25°C, If = 20mA

| Part Number                | IV Bin | Intensity @ If=20mA (mcd) |        | Viewing Angle° |
|----------------------------|--------|---------------------------|--------|----------------|
|                            |        | Min.                      | Max.   |                |
| NMRTB-CSS-T3U3+U3V3+R3S3-1 |        |                           |        | 130            |
| • Red                      | T3     | 320.0                     | 450.0  |                |
|                            | U3     | 450.0                     | 637.5  |                |
| • True Green               | U3     | 715.0                     | 1012.0 |                |
|                            | V3     | 1012.0                    | 1400.0 |                |
| • Blue                     | R3     | 140.0                     | 202.0  |                |
|                            | S3     | 202.0                     | 285.0  |                |

Radiant intensity is measured with an accuracy of  $\pm 11\%$ .

## Wavelength Grouping at Ta=25°C

| Color      | Group | Wavelength distribution (nm) |
|------------|-------|------------------------------|
| Red        | Full  | 619 - 630                    |
| True Green | A     | 520 - 525                    |
|            | B     | 525 - 530                    |
|            | C     | 530 - 535                    |
| Blue       | A     | 460 - 465                    |
|            | B     | 465 - 470                    |

Dominant wavelength is measured with an accuracy of  $\pm 1$  nm.

## Electrical Characteristics at Ta=25°C

| Part Number      | Vf @ If = 20mA |          |          |
|------------------|----------------|----------|----------|
|                  | Min. (V)       | Typ. (V) | Max. (V) |
| <b>NMRTB-CSS</b> |                |          |          |
| • Red            | 1.9            | 2.0      | 2.5      |
| • True Green     | 3.0            | 3.2      | 3.6      |
| • Blue           | 3.0            | 3.2      | 3.6      |

Forward voltages are measure using a current pulse of 1 ms and with an accuracy of  $\pm 0.1V$ .

## Correlation Between Luminous Intensity And Luminous Flux

| Color      | IV Bins | Luminous Intensity (mcd) |        | Luminous Flux (lm) |      |
|------------|---------|--------------------------|--------|--------------------|------|
|            |         | Min.                     | Max.   | Min.               | Max. |
| Red        | T3      | 320.0                    | 450.0  | 0.90               | 1.26 |
|            | U3      | 450.0                    | 637.5  | 1.26               | 1.79 |
| True Green | U3      | 715.0                    | 1012.0 | 1.93               | 2.73 |
|            | V3      | 1012.0                   | 1400.0 | 2.73               | 3.78 |
| Blue       | R3      | 140.0                    | 202.0  | 0.35               | 0.51 |
|            | S3      | 202.0                    | 285.0  | 0.51               | 0.71 |

Note: Data provided above is based on approximation

## Material

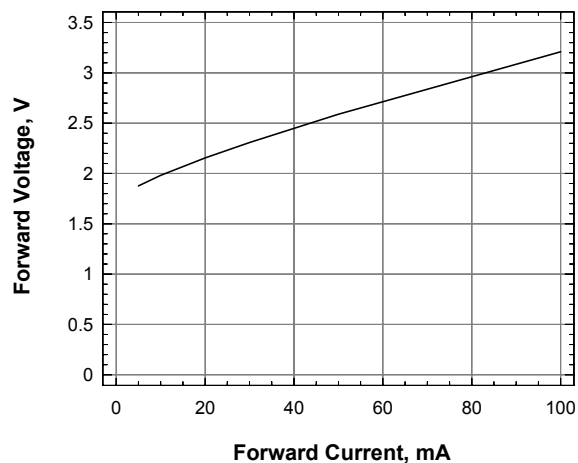
| Material        |                                         |
|-----------------|-----------------------------------------|
| Lead-frame      | Cu Alloy With Ag Plating                |
| Package         | High Temperature Resistant Plastic, PPA |
| Encapsulate     | Silicone Resin                  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

Note: Product has no lead (Pb) content.

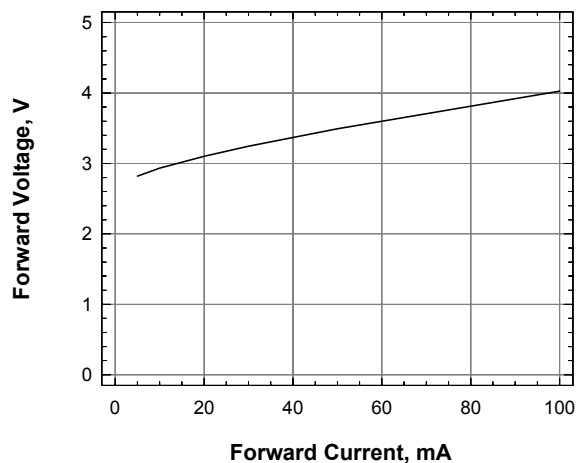
## Absolute Maximum Ratings

|                               | Maximum Value                 |                         | Unit |
|-------------------------------|-------------------------------|-------------------------|------|
| DC forward current (per chip) | Red<br>50                     | True Green, Blue<br>30  | mA   |
| Peak pulse current (per chip) | Red<br>200                    | True Green, Blue<br>100 | mA   |
| Reverse Voltage               | Not designed for reverse bias |                         | V    |
| ESD Threshold (HBM)           | 2                             |                         | kV   |
| LED junction temperature      | 125                           |                         | °C   |
| Operating temperature         | -40 ... +100                  |                         | °C   |
| Storage temperature           | -40 ... +100                  |                         | °C   |

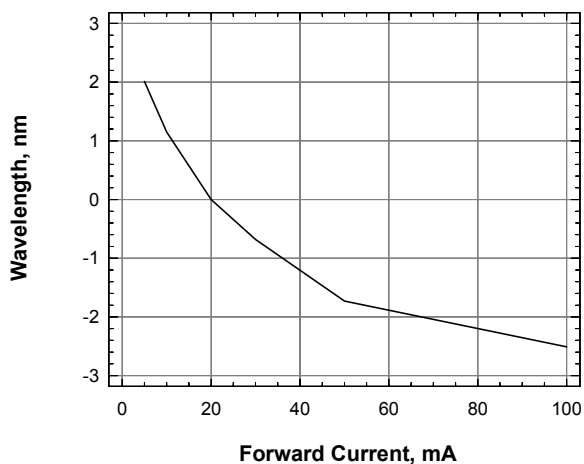
Forward Current Vs Forward Voltage (Red)



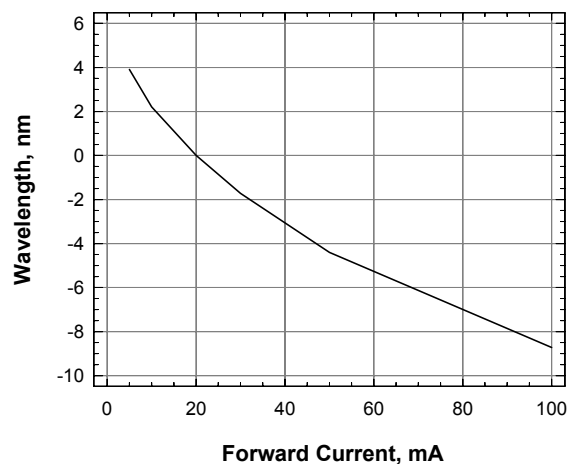
Forward Current Vs Forward Voltage (Blue and True Green)



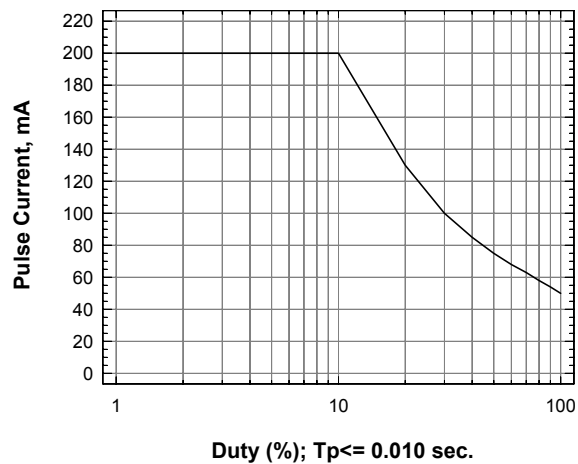
Wavelength Shift Vs Forward Current (Blue)



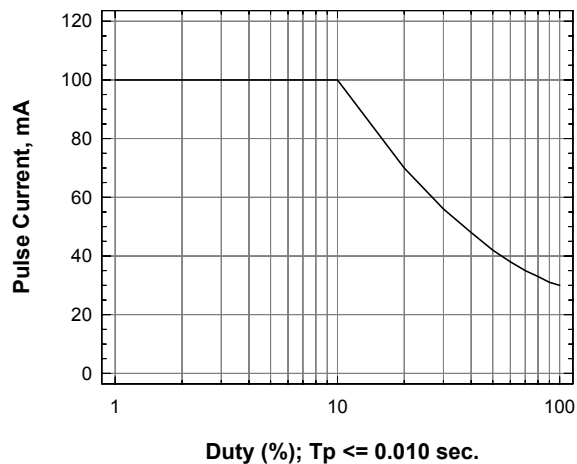
Wavelength Shift Vs Forward Current (True Green)



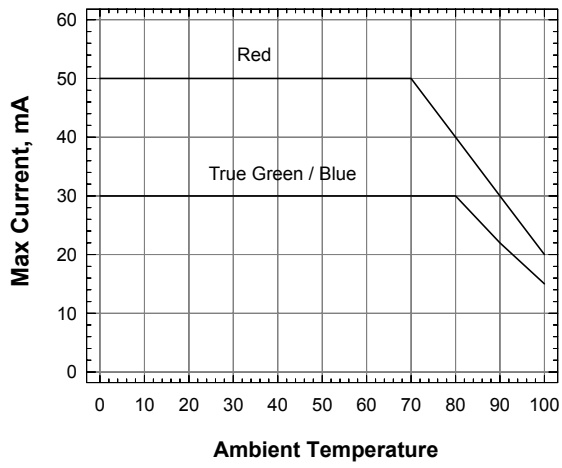
Max Pulse Current Vs Duty Cycle (Red)



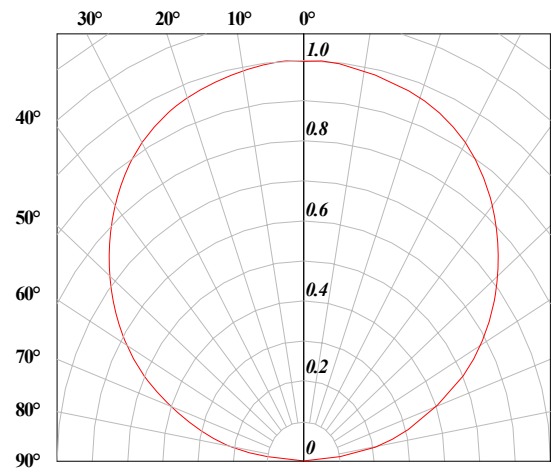
Max Pulse Current Vs Duty Cycle (True Green, Blue)



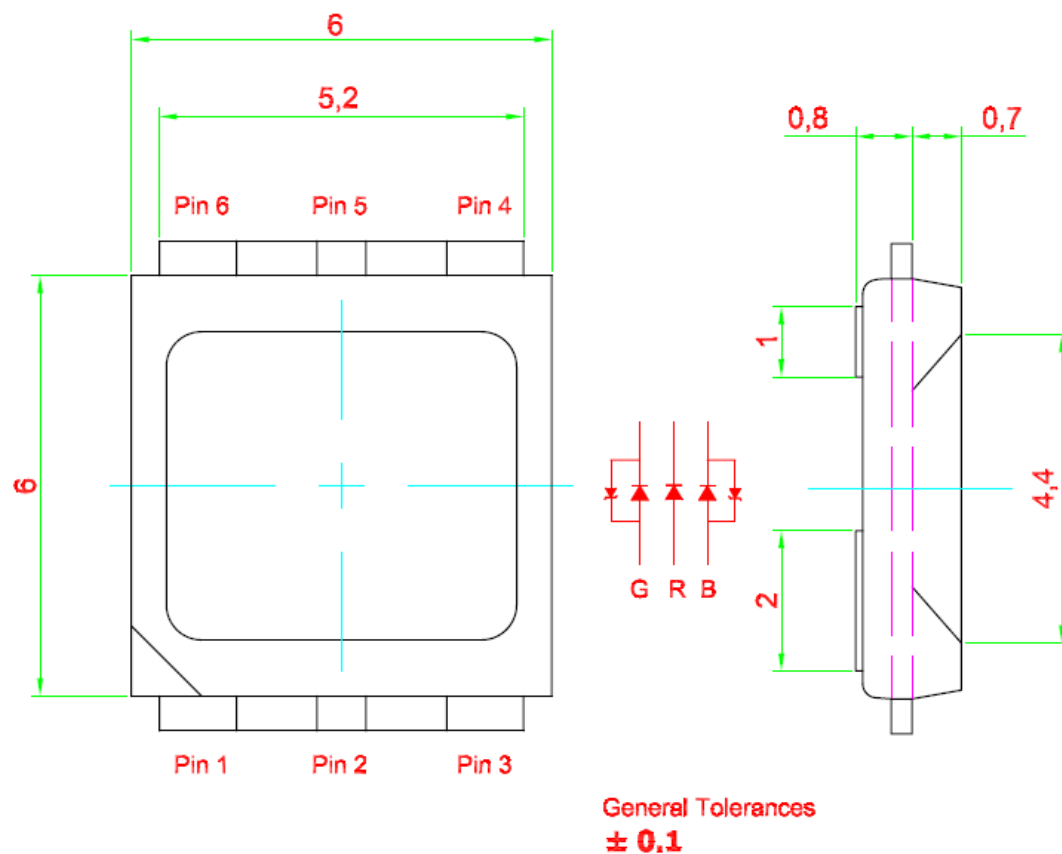
**Max Current Vs Ambient Temperature**



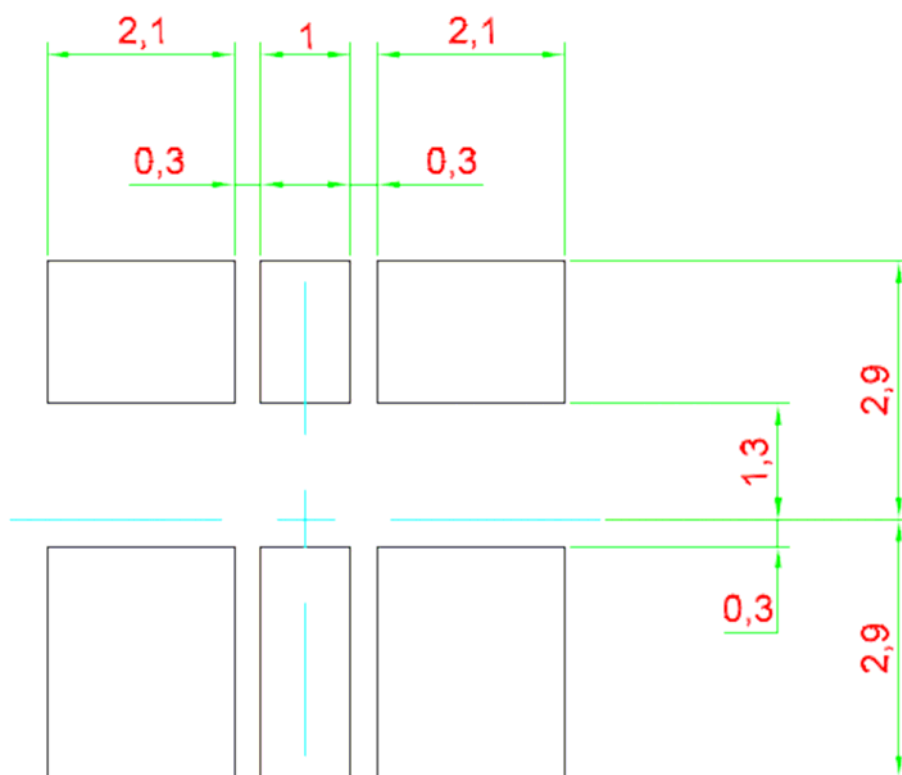
**Radiation Pattern**



**SPNovaLED™ • RGB : 20mA Package Outlines**

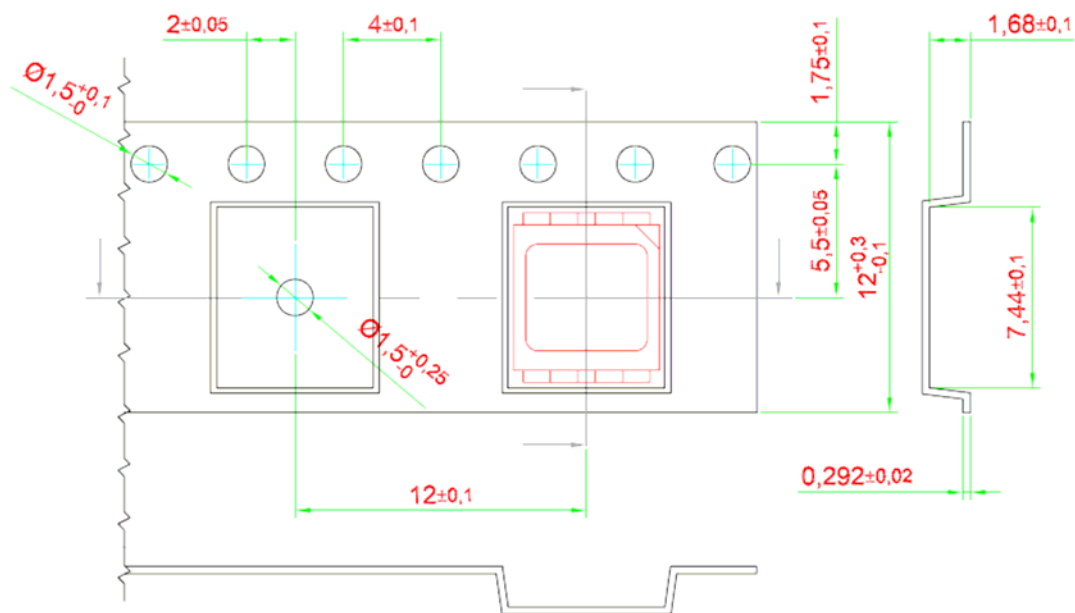


## Solder Pad Design

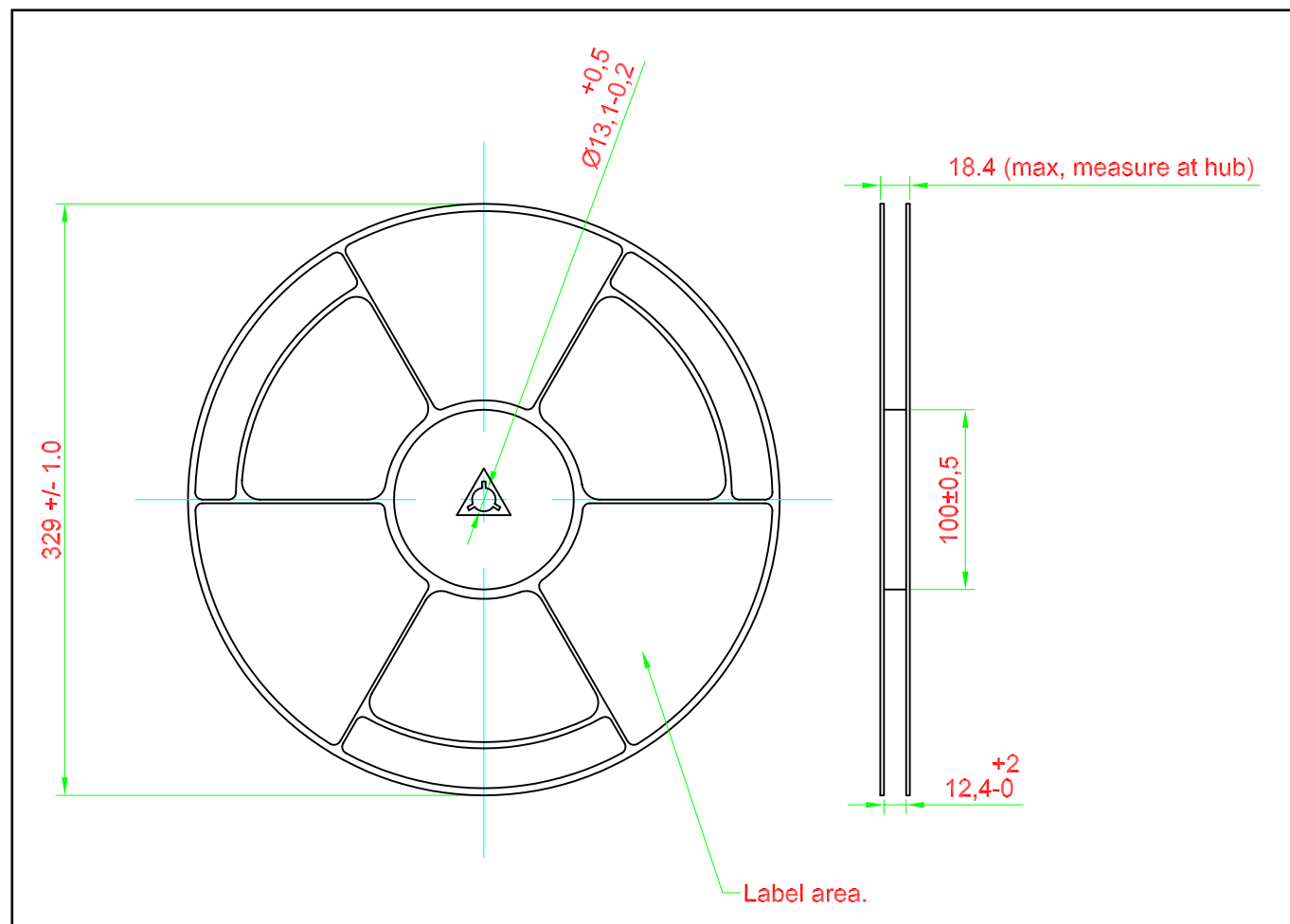


## Taping and orientation

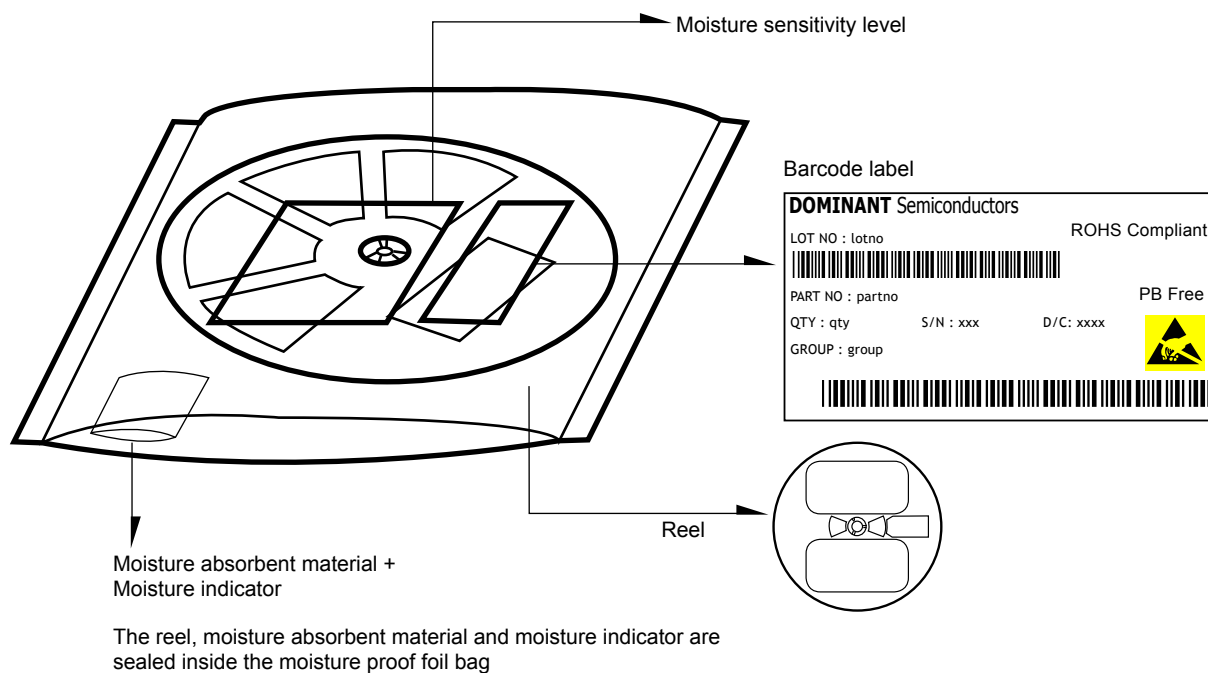
- Reels come in quantity of 1000 units.
- Reel diameter is 330 mm.



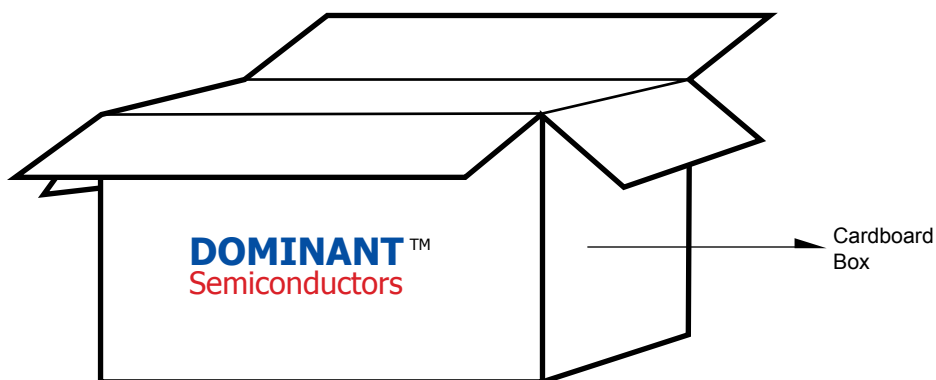
## Packaging Specification



## Packaging Specification



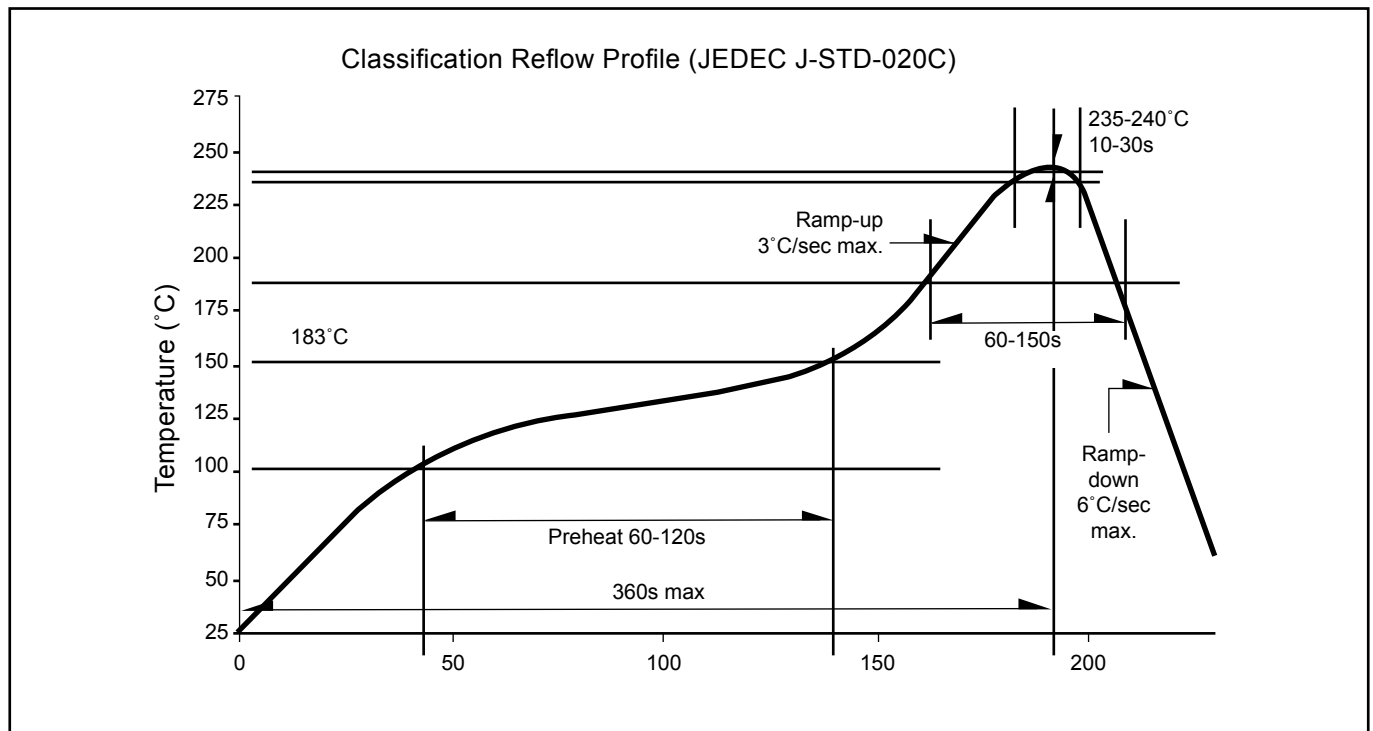
|               | Average 1pc SPNovaLED | 1 completed bag (1000pcs) |
|---------------|-----------------------|---------------------------|
| Weight (gram) | 0.188                 | 600 ± 10                  |



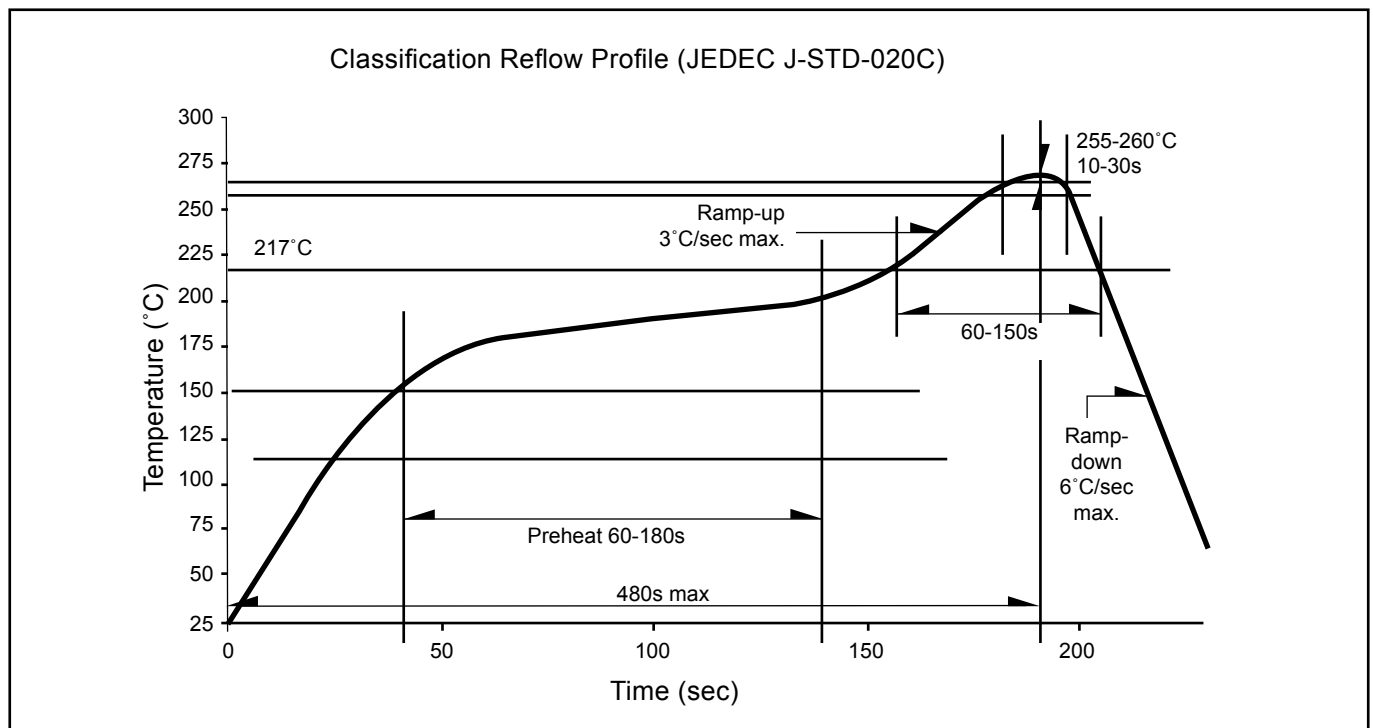
### For SPNovaLED™

| 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 | 18 Jan 2007          |
|      |                 |                      |
|      |                 |                      |
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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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