

### SPNova<sup>™</sup>

Featuring a staggering brilliance and significant flux output, the SPNova<sup>™</sup> 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.
- > 40° viewing angle.
- > Peak wavelength of 660nm typical.
- > Compact package outline (LxWxH) of 7.0 x 6.0 x 4.8mm.
- > Ultra low height profile - 1.5 mm.
- > Designed for high current drive
- > Low thermal resistance;  $R_{th(jc)} = 20 \text{ K/W}$ .
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.



### Applications:

- > Agriculture lighting
- > General lighting

**Optical Characteristics at Tj=25°C**

| Part Ordering Number | Viewing Angle° | Luminous Intensity @ 400mA (mcd) |         |         |
|----------------------|----------------|----------------------------------|---------|---------|
|                      |                | Min.                             | Typ.    | Max.    |
| NPH-US4-AEF-1        | 40             | 18000.0                          | 22400.0 | 28500.0 |

NOTE

1. Luminous intensity is measured with an accuracy of ± 11% with a current pulse of 25ms.
2. All optical and electrical data are measured at 25°C.
3. Wavelength binning is carried for all units as per the wavelength-binning table. Only one wavelength group is allowed for each reel.

**Electrical Characteristics at Tj=25°C**

| Part Number | Vf @ If = 400mA |          |          | Vr @ Ir = 10uA |
|-------------|-----------------|----------|----------|----------------|
|             | Min. (V)        | Typ. (V) | Max. (V) | Min. (V)       |
| NPH-US4     | 2.2             | 2.5      | 2.8      | 12             |

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

**Absolute Maximum Ratings**

|                          | Maximum Value | Unit |
|--------------------------|---------------|------|
| DC forward current       | 400           | mA   |
| Peak pulse current       | 1000          | mA   |
| Reverse voltage          | 12            | V    |
| ESD threshold (HBM)      | 2000          | V    |
| LED junction temperature | 125           | °C   |
| Operating temperature    | -40 ... +100  | °C   |
| Storage temperature      | -40 ... +100  | °C   |

### Wavelength Grouping at Tj=25°C

| Color     | Group | Peak Wavelength (nm) |
|-----------|-------|----------------------|
| Hyper red | Full  | 635 - 665            |

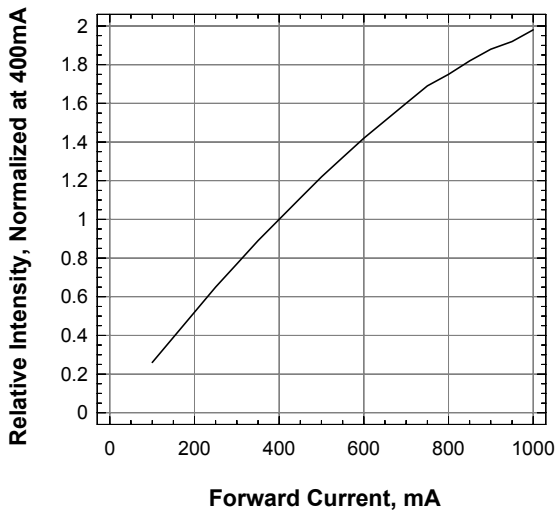
Dominant wavelength is measured with an accuracy of ±1 nm.

### Luminous Intensity Group at Tj=25°C

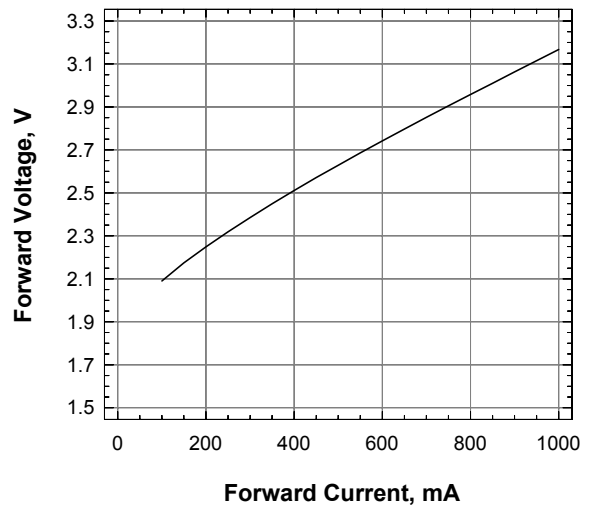
| Brightness Group | Luminous Intensity IV (mcd) |
|------------------|-----------------------------|
| AE               | 18000.0...22400.0           |
| AF               | 22400.0...28500.0           |

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

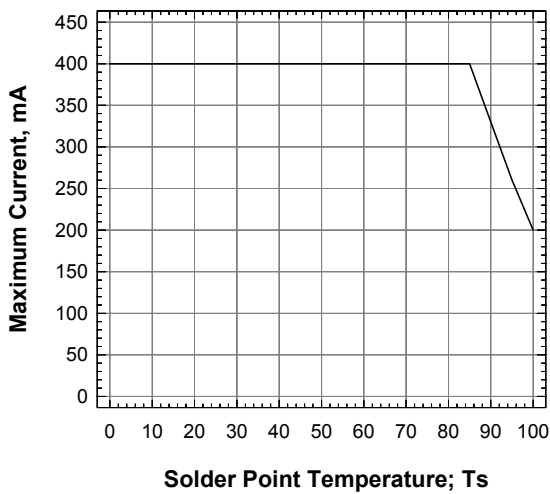
**Relative Intensity Vs Forward Current**



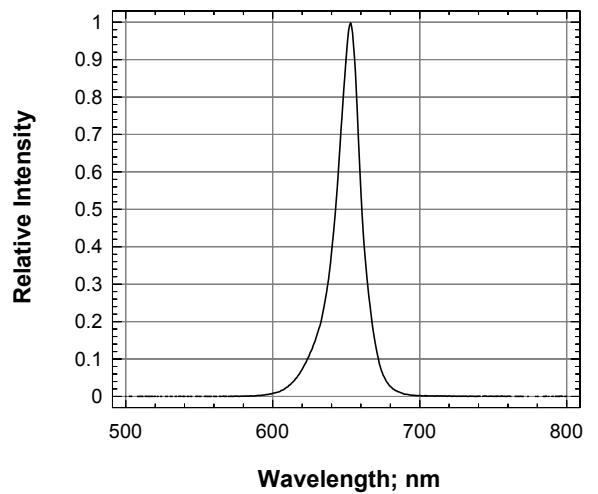
**Forward Voltage Vs Forward Current**



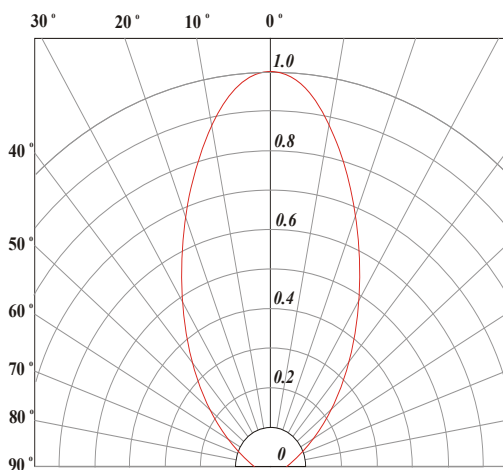
**Maximum Forward Current Vs Solder Point Temperature**



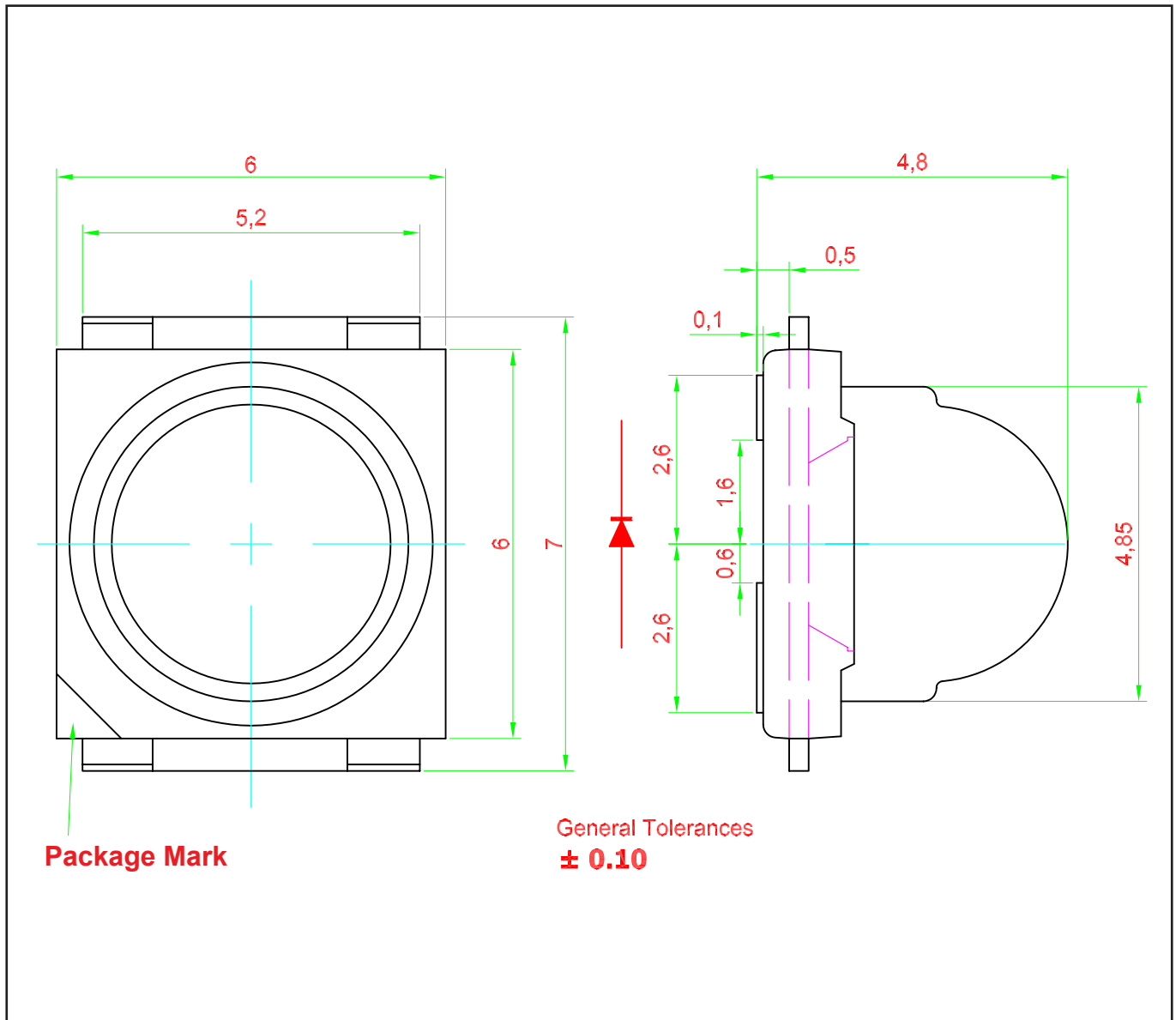
**Relative Intensity Vs Wavelength**



**Radiation Pattern**



**SPNova™ • AllnGaP : NPH-US4 Package Outlines**

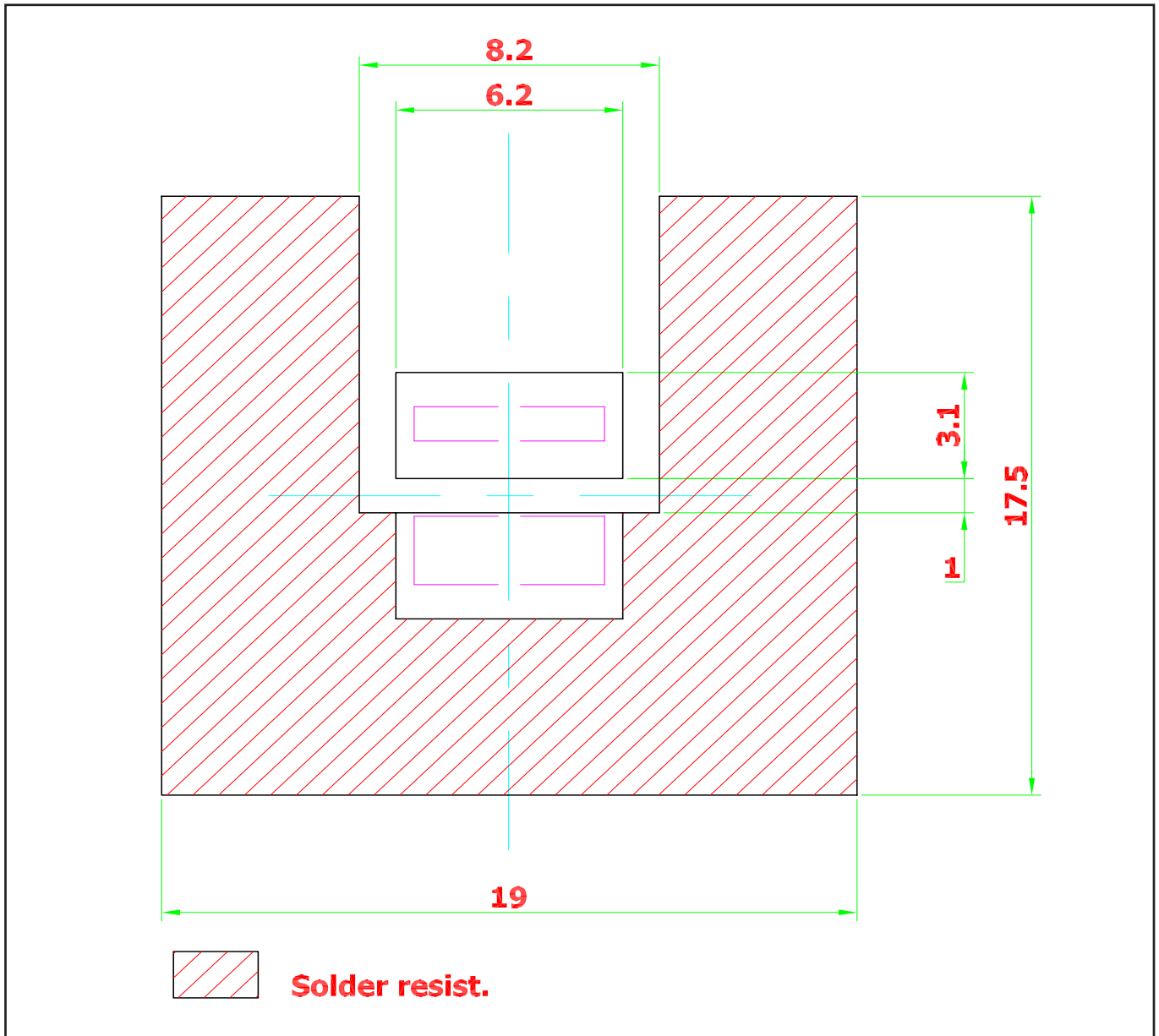


**Material**

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

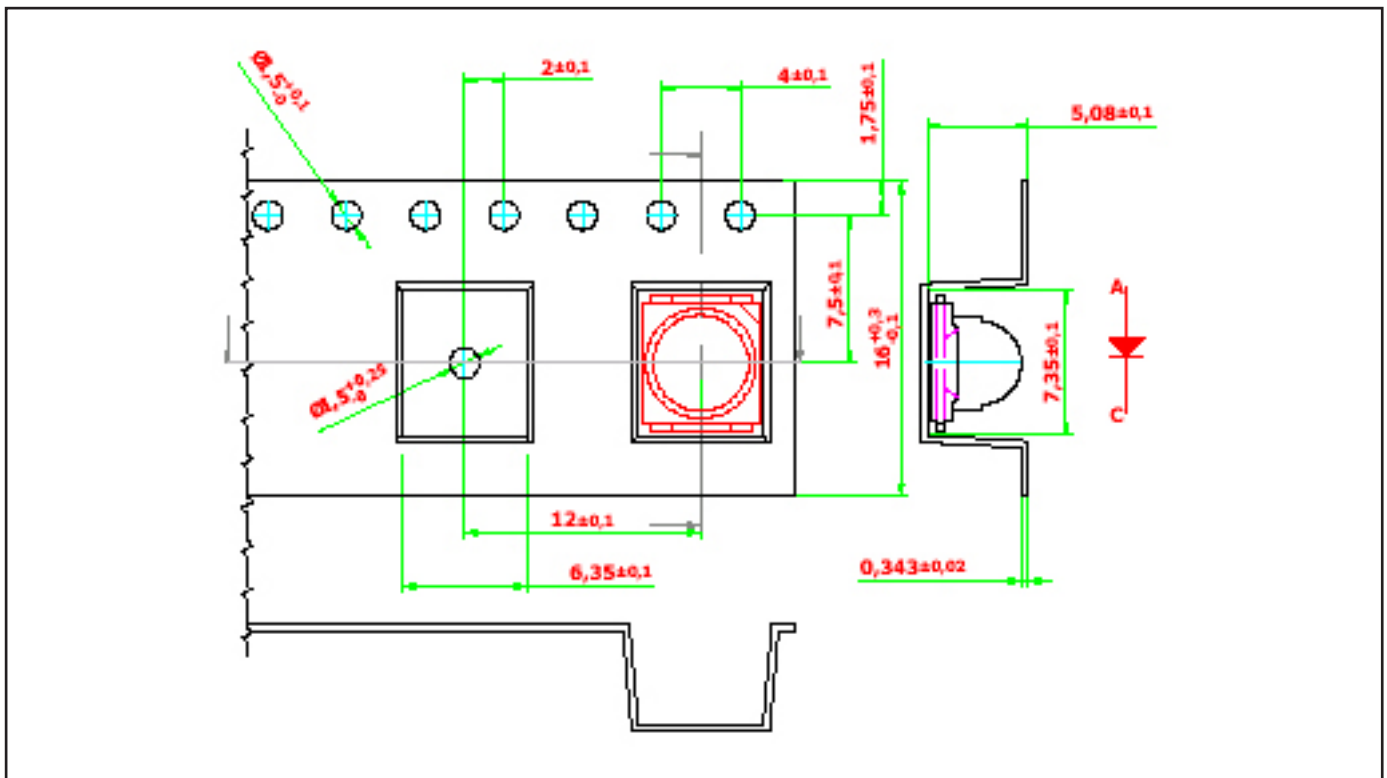
### Solder Pad Design

Note: Unit to unit pitching must not be less than 25 mm. Metal core circuit board (MCPCB) is highly recommended for high density applications. Please consult sales and marketing for additional information.

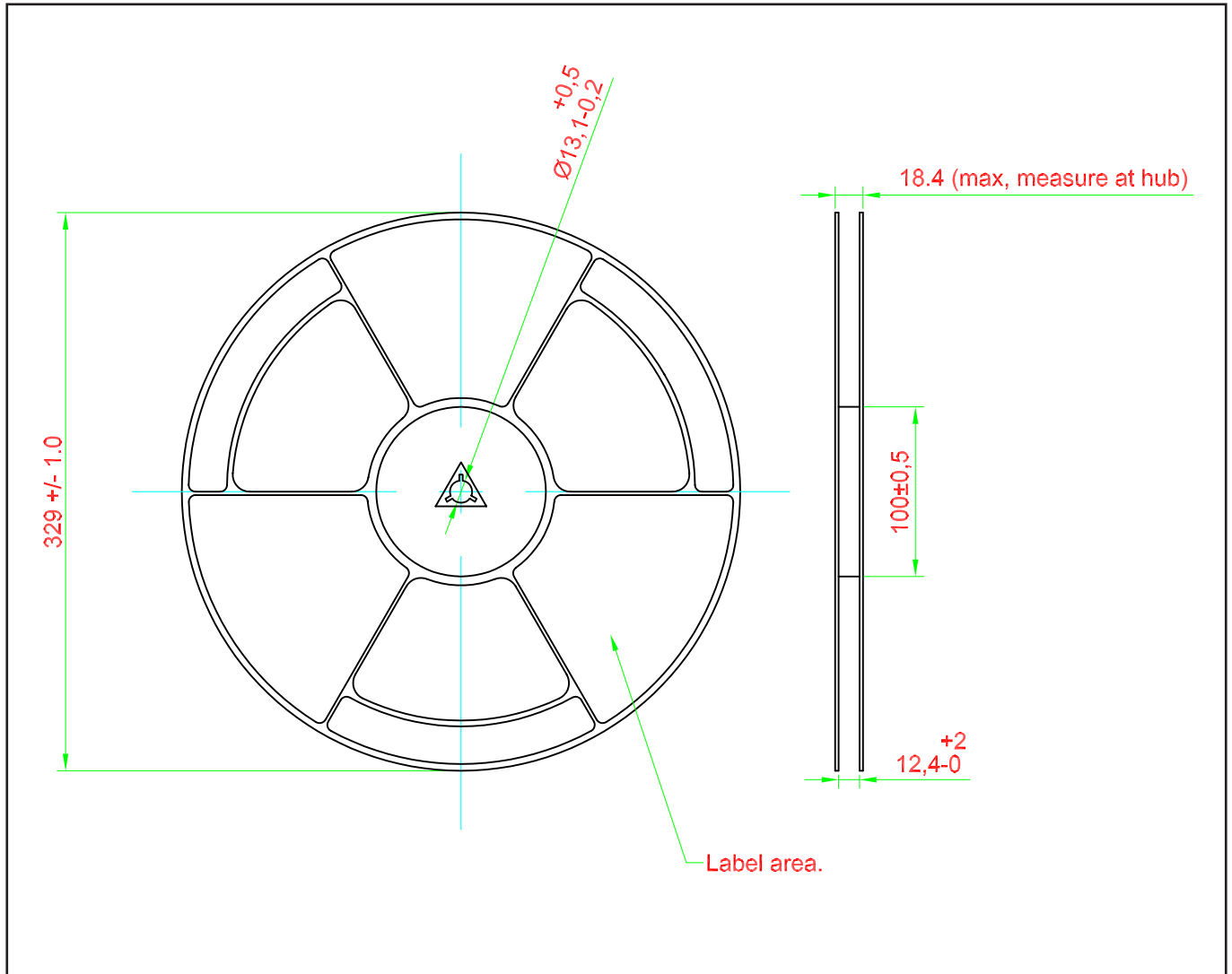


### Taping and orientation

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

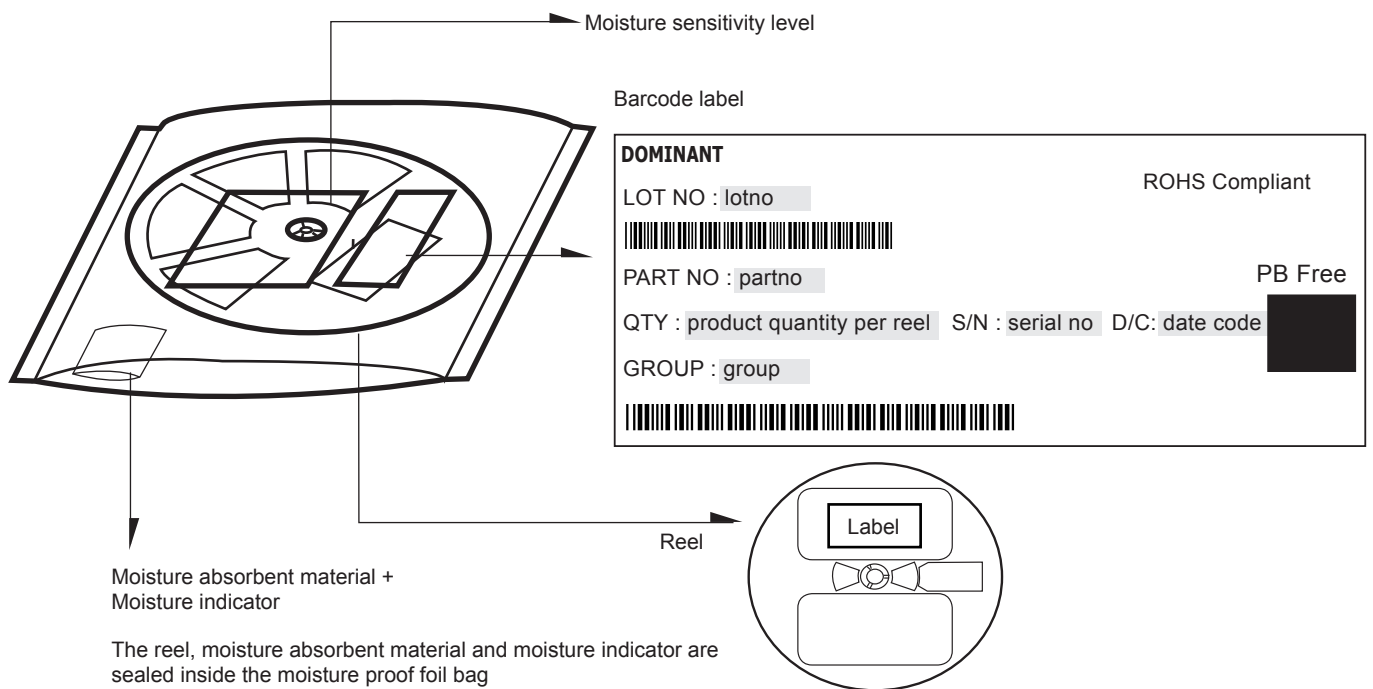


### Packaging Specification

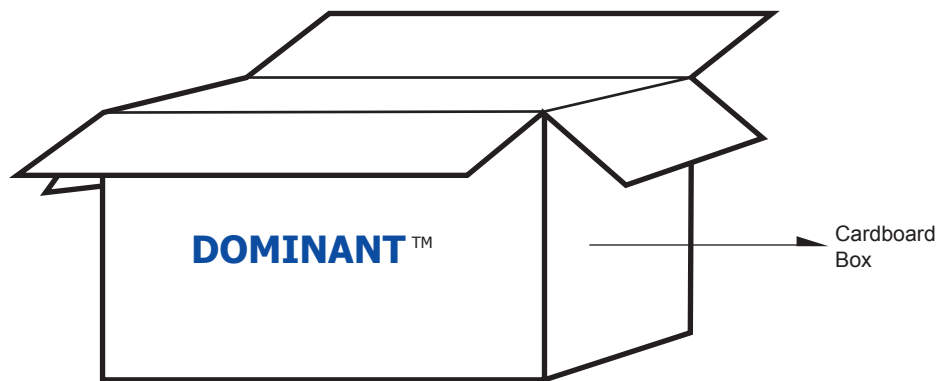




**Packaging Specification**



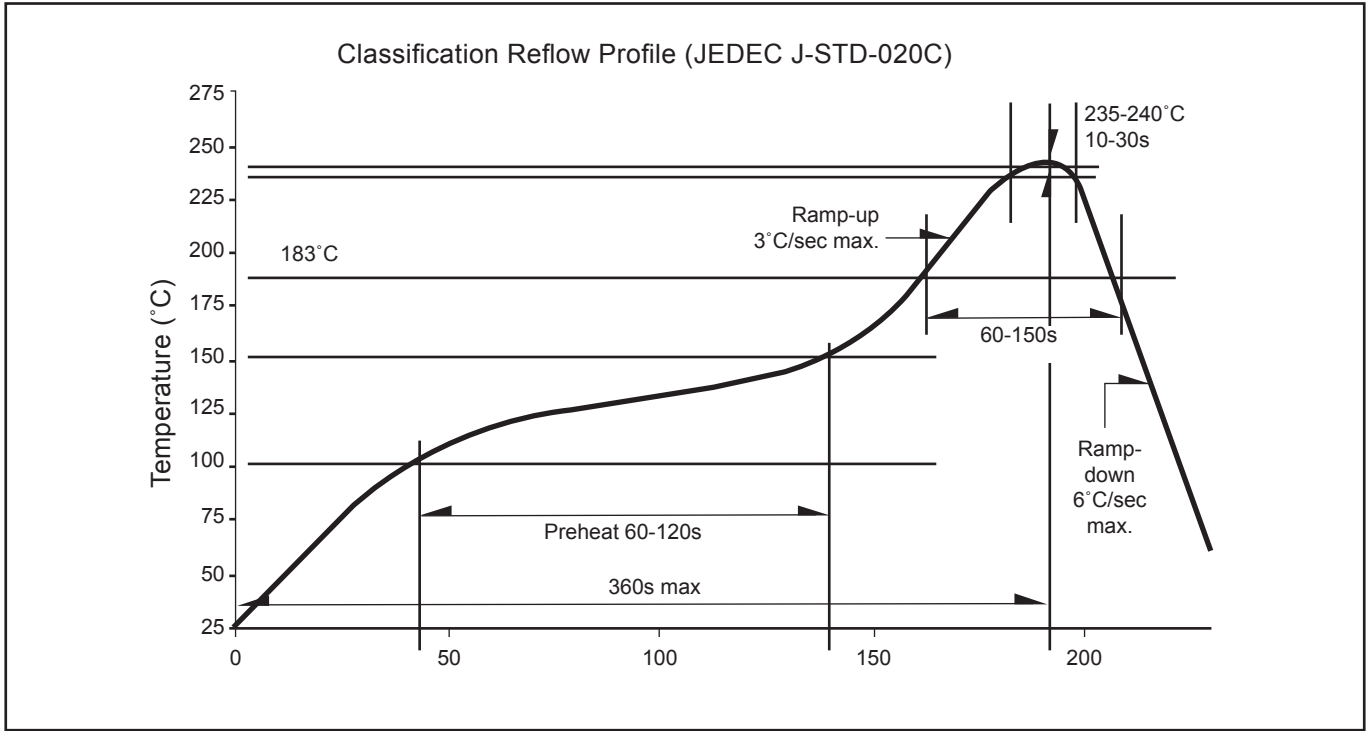
|                      | Average 1pc SPNova | 1 completed bag (1000pcs) |
|----------------------|--------------------|---------------------------|
| <b>Weight (gram)</b> | <b>0.188</b>       | <b>800 ± 10</b>           |



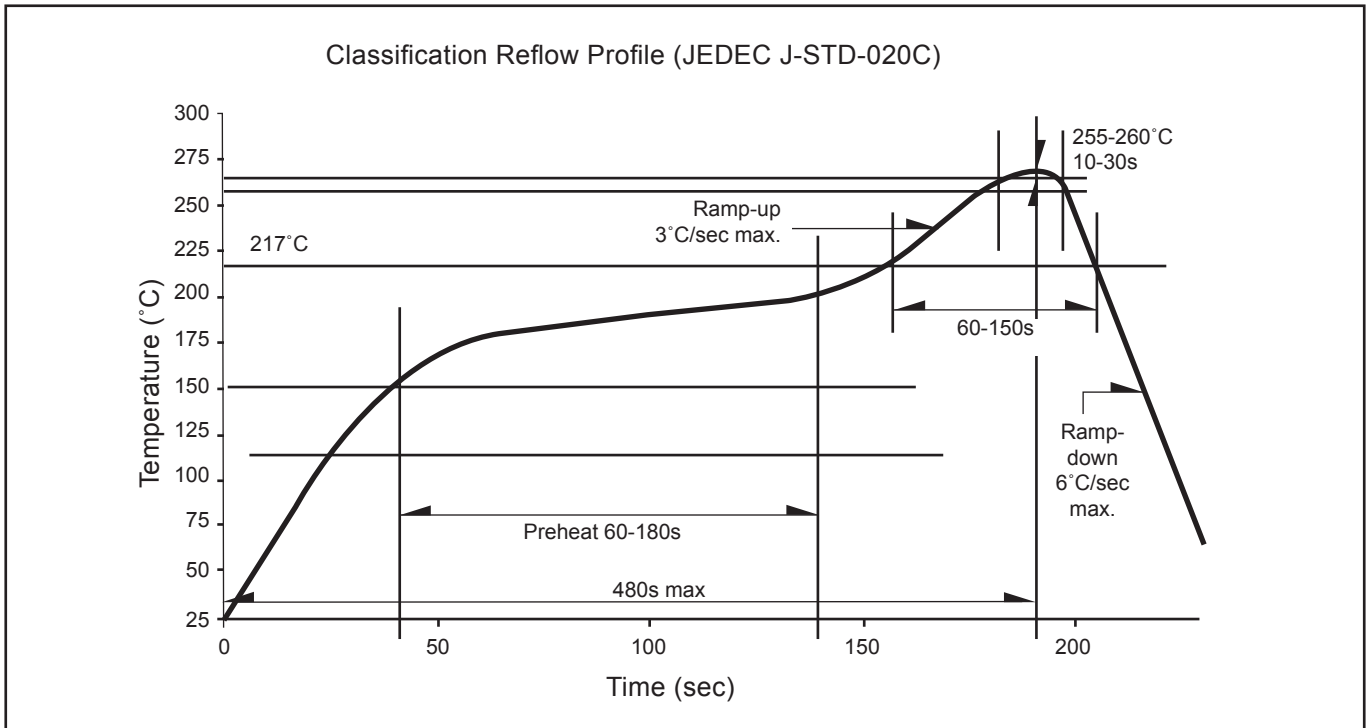
**For SPNova™**

| 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         | 23 Dec 2009          |
| -    | Update company name     | 05 Apr 2010          |
| 5    | Update package outlines | 10 Nov 2010          |
| -    | Correction on SPNova    | 07 Jul 2011          |
|      |                         |                      |
|      |                         |                      |
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|      |                         |                      |

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## About Us

DOMINANT Opto Technologies 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 Opto Technologies can be found on the Internet at <http://www.dominant-semi.com>.

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