

SpiceLED™

Like spice, its diminutive size is a stark contrast to its standout performance in terms of brightness, durability and reliability. Despite being the smallest in size yet the SpiceLED™ packs a powerful performance and is a highly reliable design device. Its versatility enables its application in automotive appliances, key-pad illumination, hand-held devices such as PDAs, notebooks, compact back-lighting applications, consumer appliances, office equipment, audio and video equipment.



Features:

- > High brightness surface mount LED.
- > Super wide viewing angle of 160°.
- > Equivalent to 0603 package outline. Copper lead-frame construction.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.



Applications:

- > Automotive: interior applications, eg: switches, telematics, climate control system, dashboard, etc.
- > Consumer Appliances: LCD illumination as in PDAs, LCD TV.
- > Communication: indicator and backlight in mobilephone.
- > Industrial: white goods (eg: Oven, microwave, etc.).



Optical Characteristics at Tj=25°C

| Part Ordering Number | Color | Viewing Angle° | Luminous Intensity @ 2mA IV (mcd) | | |
|----------------------|-------------------|----------------|-----------------------------------|------|-------|
| | | | Min. | Typ. | Max. |
| SSS-CLD-HJ2-1-I2 | Super Red, 632 nm | 160 | 2.80 | 4.50 | 7.20 |
| SSO-CLD-JK2-1-I2 | Orange, 605 nm | 160 | 4.50 | 7.20 | 11.20 |
| SSY-CLD-JK2-1-I2 | Yellow, 587 nm | 160 | 4.50 | 7.20 | 11.20 |

NOTE

1. All part number above comes in a quantity of 3000 units per reel.
2. Other luminous intensity groups are also available upon request
3. Luminous intensity is measured with an accuracy of ± 11%.
4. 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 = 2mA | | | Vr @ Ir = 10uA |
|-------------|---------------|----------|----------|----------------|
| | Min. (V) | Typ. (V) | Max. (V) | Min. (V) |
| SSx-CLD | 1.6 | 1.8 | 2.4 | 5 |

Forward voltage, Vf is measured with an accuracy of ± 0.1 V.

Absolute Maximum Ratings

| | Maximum Value | Unit |
|--------------------------------------------------------------|---------------|------|
| DC forward current | 30 | mA |
| Peak pulse current; (tp ≤ 10µs, Duty cycle = 0.1) | 100 | mA |
| Reverse voltage; Ir _{max} = 10µA | 5 | V |
| ESD threshold (HBM) | 2000 | V |
| LED junction temperature | 110 | °C |
| Operating temperature | -40 ... +100 | °C |
| Storage temperature | -40 ... +100 | °C |
| Power dissipation (at room temperature) | 40 | mW |
| Thermal resistance | | |
| - Junction / ambient, R _{th JA} | 450 | K/W |
| - Junction / solder point, R _{th JS} | 250 | K/W |
| (Mounting on FR4 PCB, pad size ≥ 16 mm ² per pad) | | |

Characteristics

| | Symbol | Part Number | Value | Unit |
|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------|-------|--------|
| Temperature coefficient of λ_{dom} (typ) $I_F = 2\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 85\text{ }^\circ\text{C}$ | $TC_{\lambda_{dom}}$ (typ) | SSS-CLD | 0.04 | nm / K |
| | | SSO-CLD | 0.08 | |
| | | SSY-CLD | 0.09 | |
| Temperature coefficient of V_F (typ) $I_F = 2\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 85\text{ }^\circ\text{C}$ | TC_V | SSS-CLD | -2.4 | mV / K |
| | | SSO-CLD | -2.4 | |
| | | SSY-CLD | -3.3 | |
| Temperature coefficient of I_V (typ) $I_F = 2\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 85\text{ }^\circ\text{C}$ | TC_{I_V} | SSS-CLD | -0.55 | % / K |
| | | SSO-CLD | -0.65 | |
| | | SSY-CLD | -1.05 | |

Wavelength Grouping at Tj=25°C

| Color | Group | Wavelength distribution (nm) |
|----------------|-------|------------------------------|
| SSS; Super Red | Full | 625 - 640 |
| SSO; Orange | Full | 600 - 612 |
| | W | 600 - 603 |
| | X | 603 - 606 |
| | Y | 606 - 609 |
| | Z | 609 - 612 |
| SSY; Yellow | Full | 582 - 594 |
| | W | 582 - 585 |
| | X | 585 - 588 |
| | X | 588 - 591 |
| | Y | 591 - 594 |

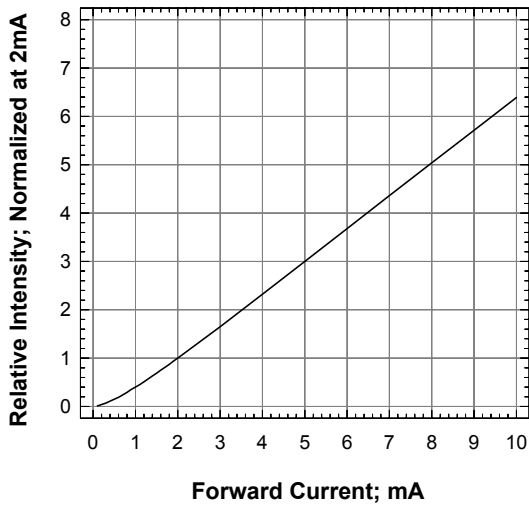
Dominant wavelength is measured with an accuracy of ± 1nm .

Luminous Intensity Group at Tj=25°C

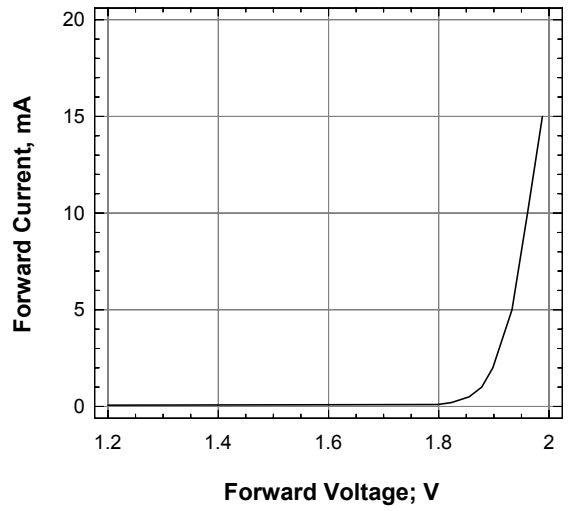
| Brightness Group | Luminous Intensity IV (mcd) |
|------------------|-----------------------------|
| H1 | 2.80 ... 3.55 |
| H2 | 3.55 ... 4.50 |
| J1 | 4.50 ... 5.60 |
| J2 | 5.60 ... 7.20 |
| K1 | 7.20 ... 9.00 |
| K2 | 9.00 ... 11.20 |

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

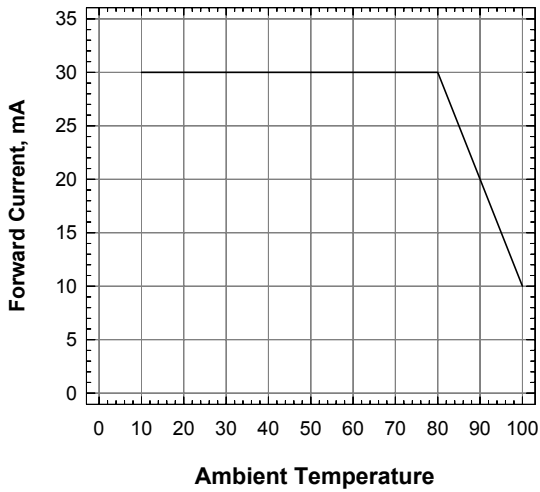
Relative Intensity vs Forward Current



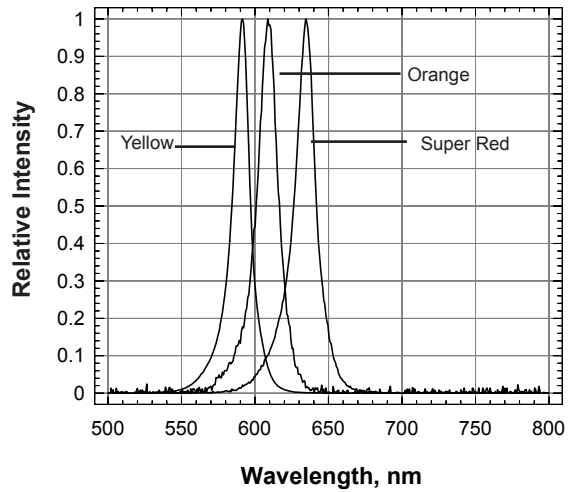
Forward Current Vs Forward Voltage



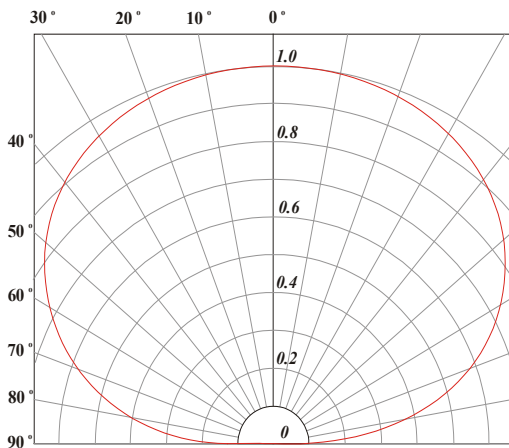
Maximum Current Vs Ambient Temperature



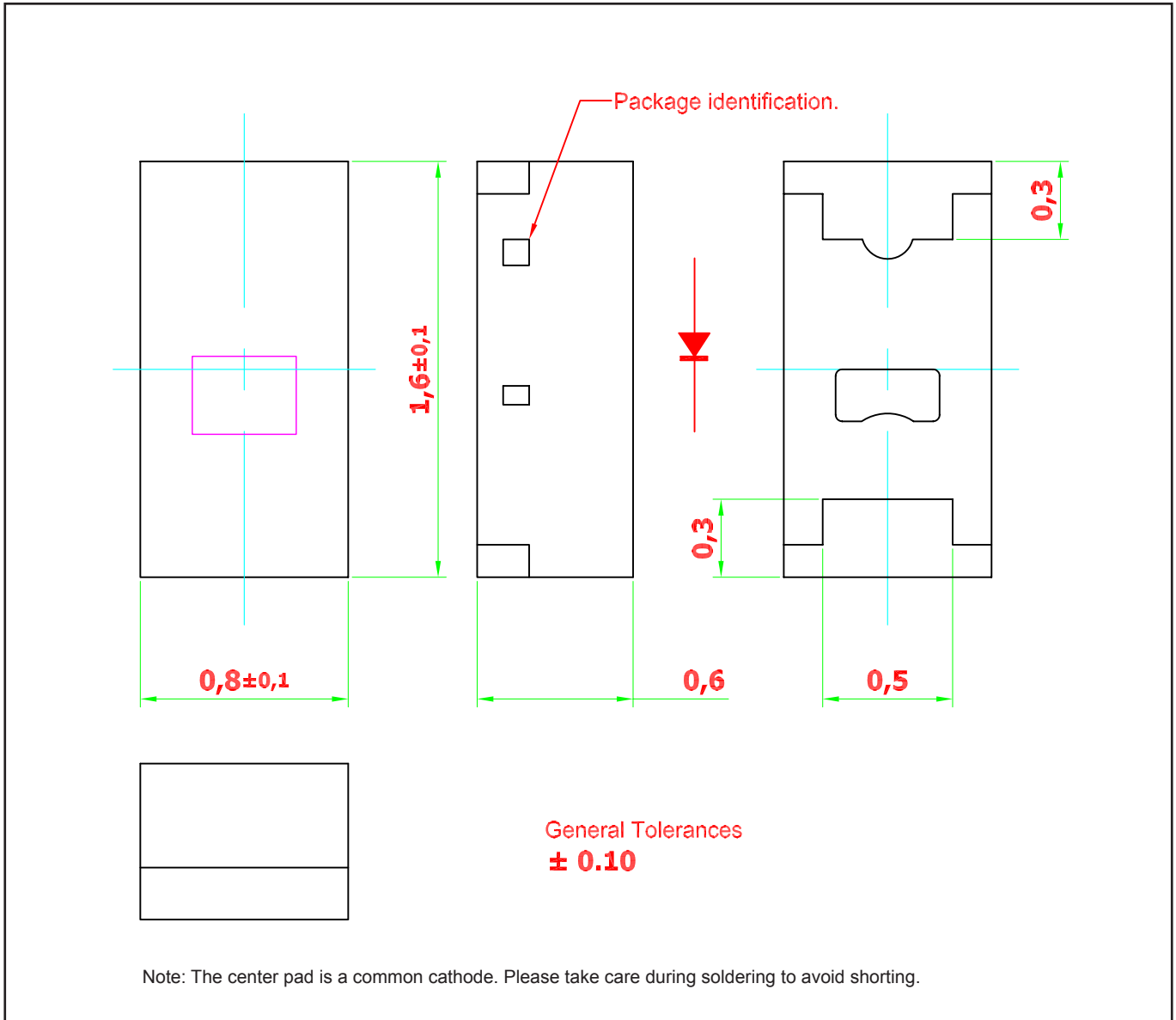
Relative Intensity vs Wavelength



Radiation Pattern



SpiceLED™ • AllInGaP S-Spice : SSx-CLD-I2 Package Outlines

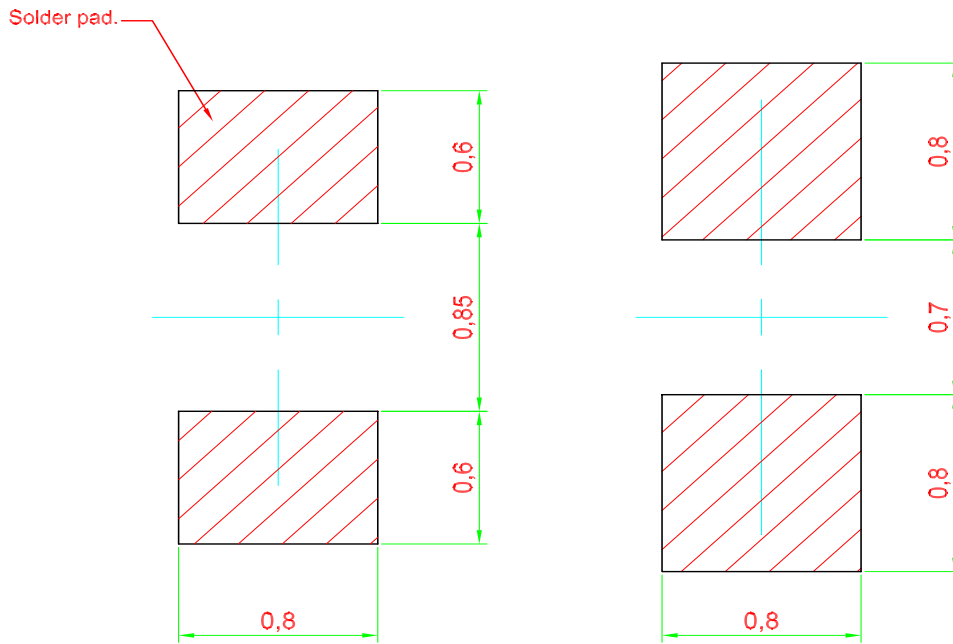


Material

| Material | |
|------------|----------------------------------------|
| Lead-frame | Cu Alloy With NiPdAu Plating |
| Package | High Temperature Resistant Epoxy Resin |

Note: product is Pb free

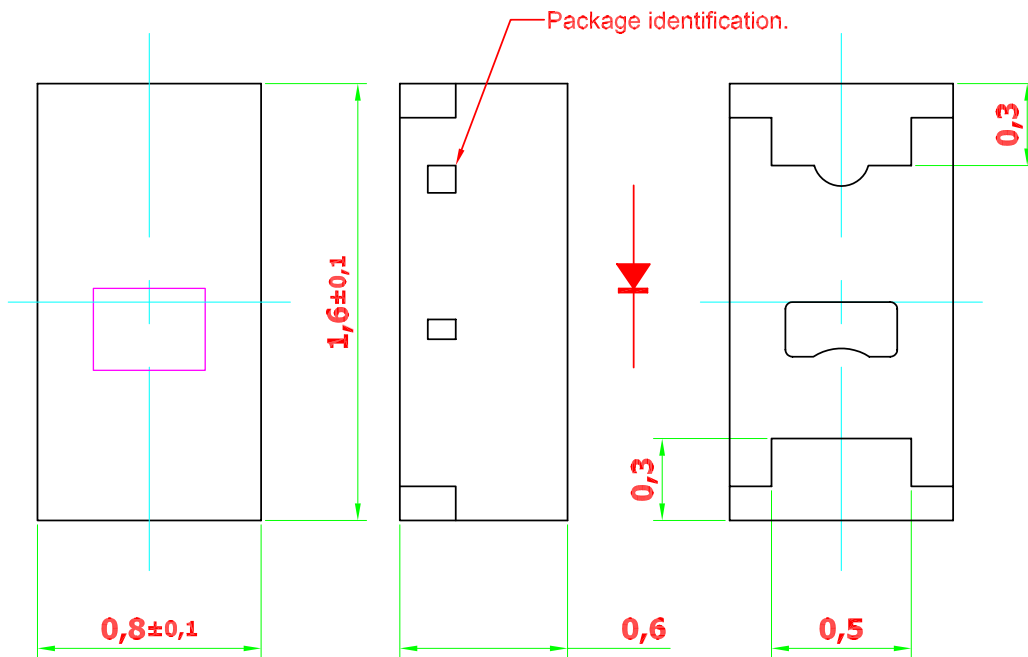
Recommended Solder Pad



Recommended Solder-pad

Alternative Solder-pad
 Compatible to ChipLED 0603

Note: Component is based on a new package platform, which features “Bottom Only Terminations”. Solder joints are only formed at the bottom of the component and solder fillet will not be observable as the sides of the component.

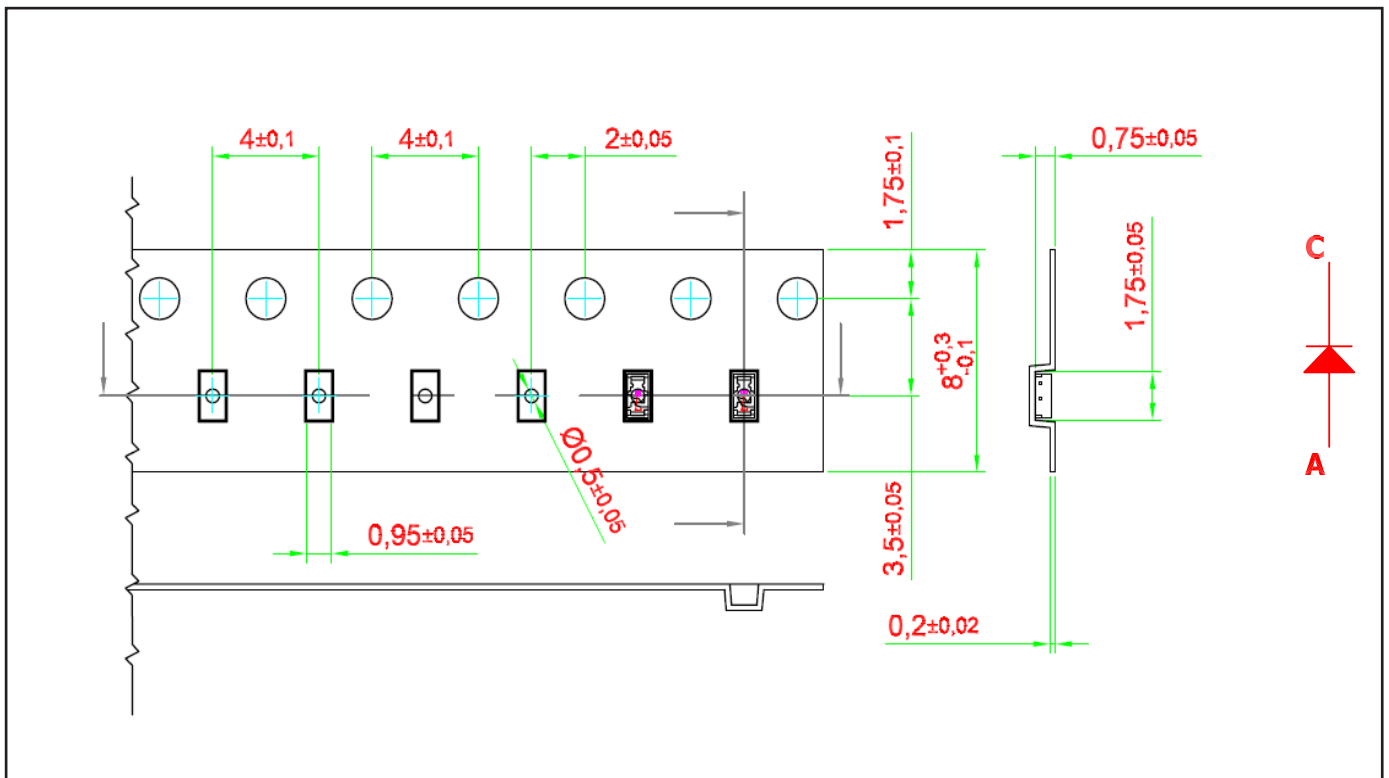


Surface are not intended for soldering

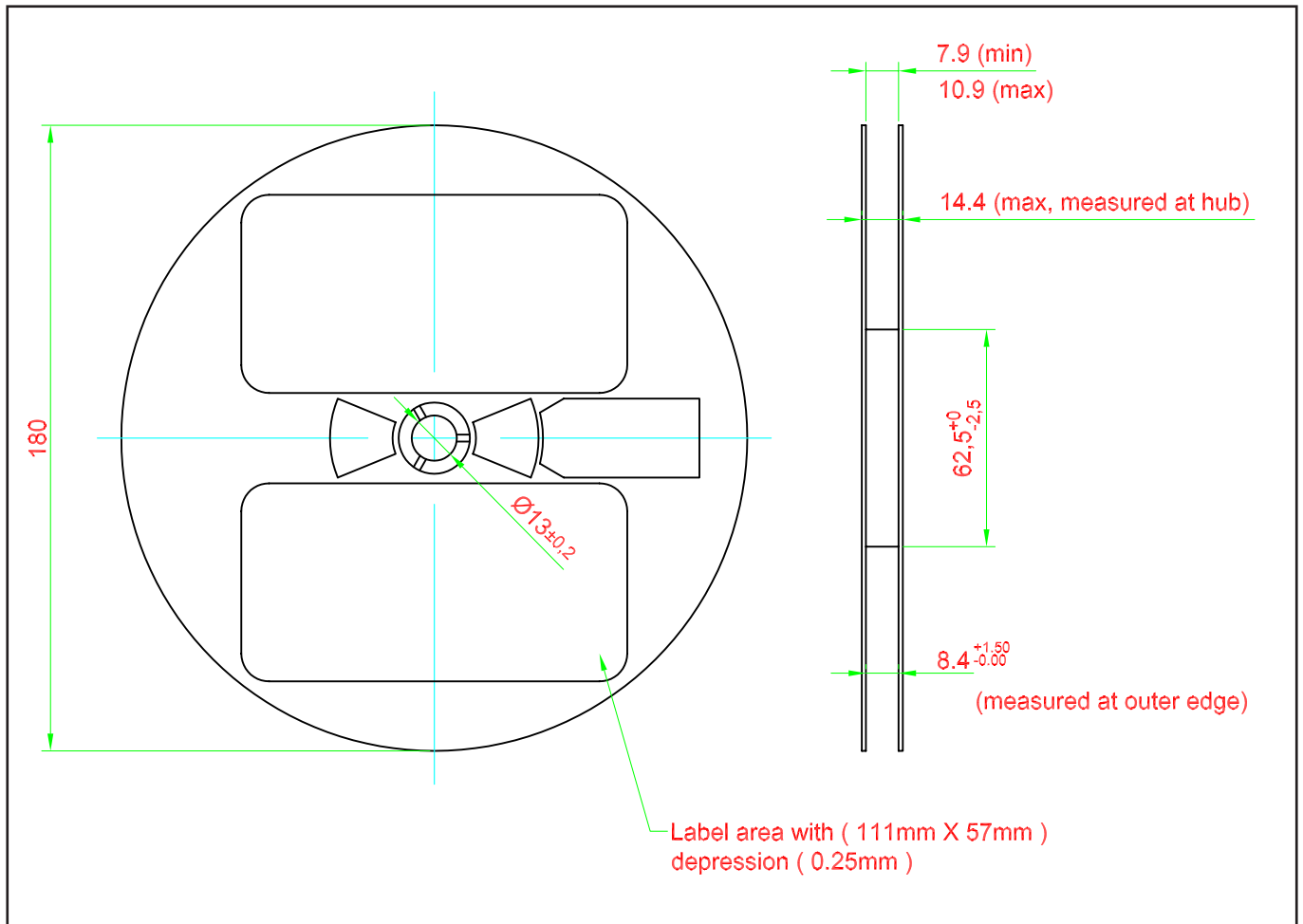
General Tolerances
± 0.10

Taping and orientation

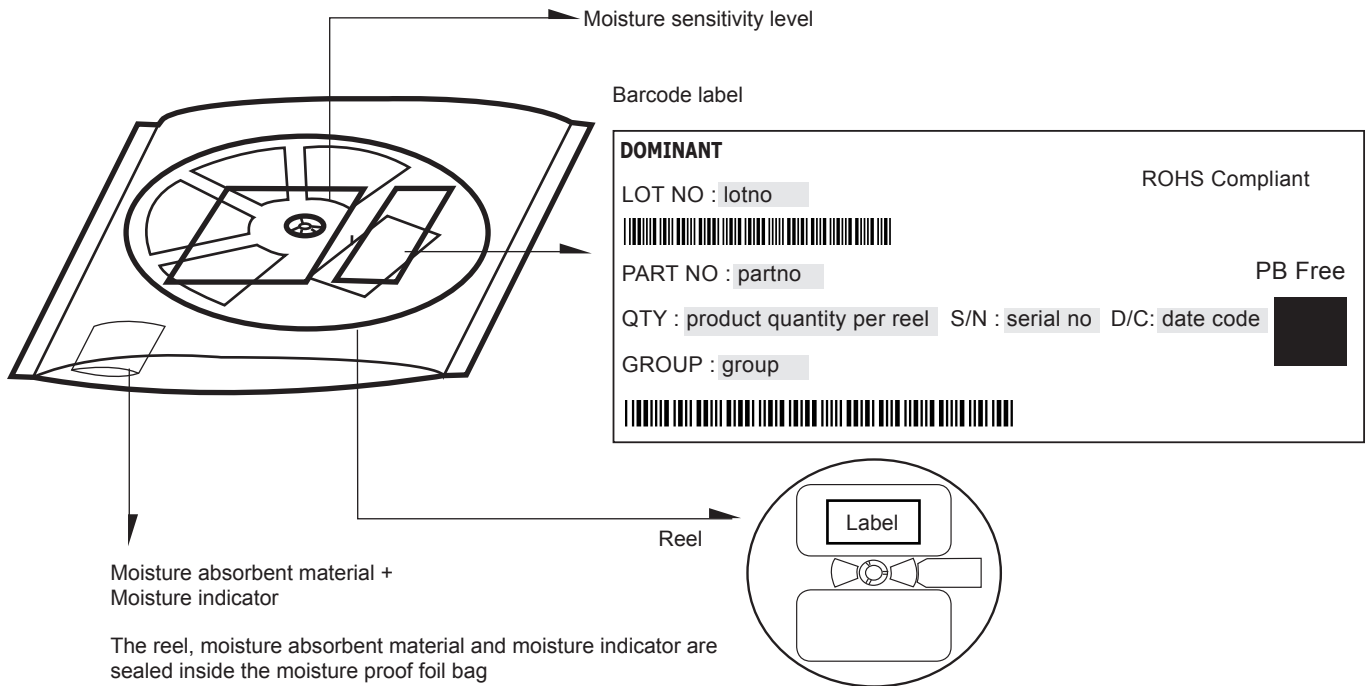
- Reels come in quantity of 3000 units.
- Reel diameter is 180 mm.



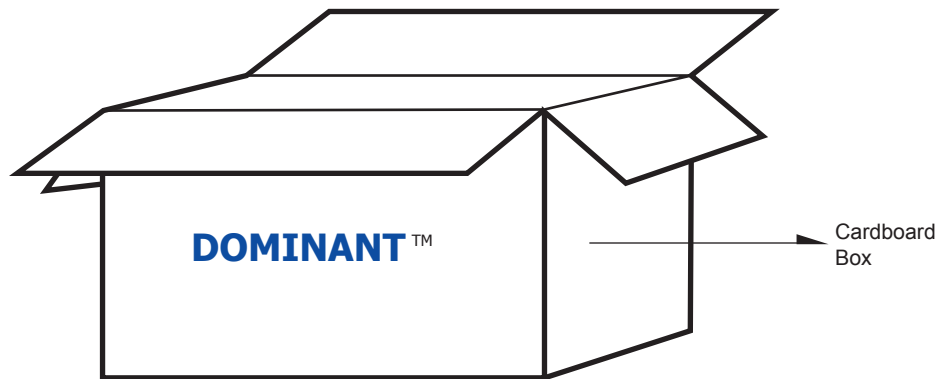
Packaging Specification



Packaging Specification



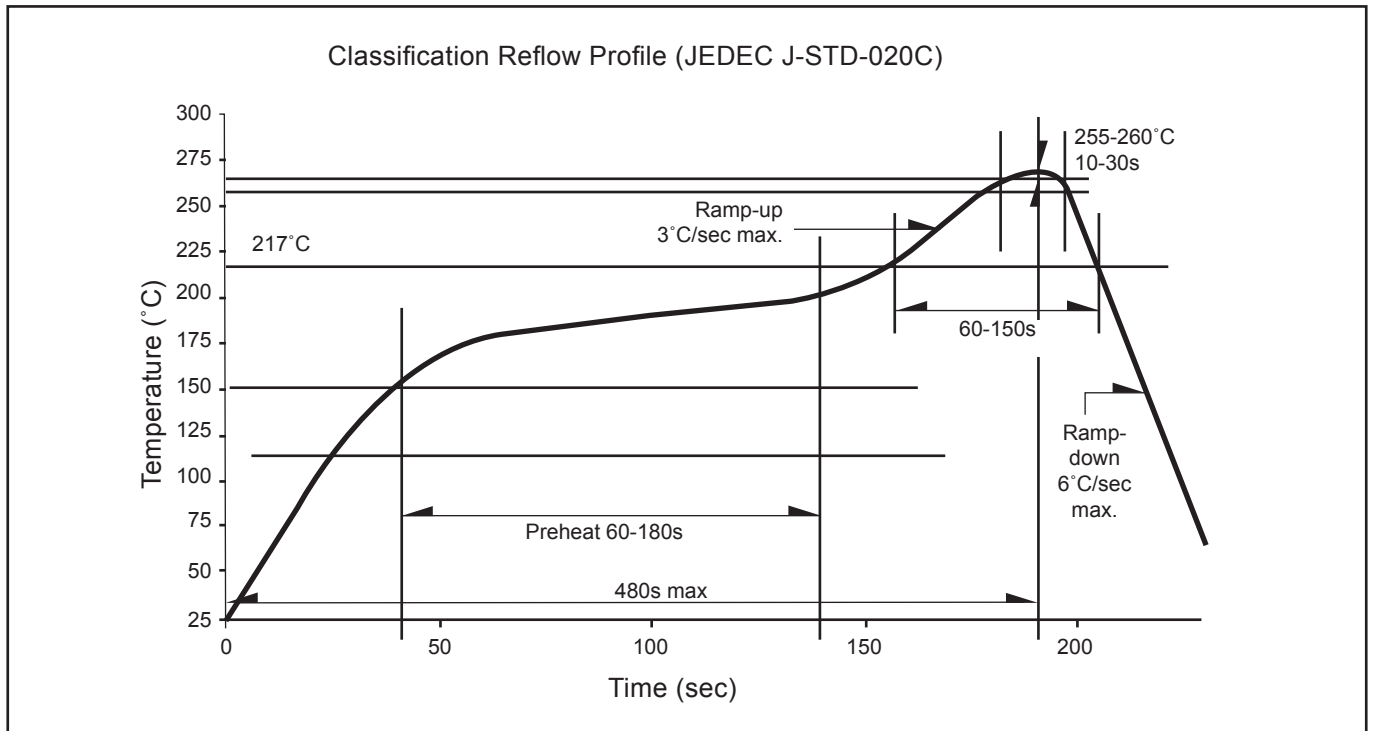
| | Average 1pc SpiceLED | 1 completed bag (3000pcs) |
|---------------|----------------------|---------------------------|
| Weight (gram) | 0.001 | 140 ± 10 |



For SpiceLED™

| Cardboard Box Size | Dimensions (mm) | Empty Box Weight (kg) | Reel / Box | Quantity / Box (pcs) |
|--------------------|-----------------|-----------------------|--------------|----------------------|
| Small | 300 x 250 x 250 | 0.58 | 15 reels MAX | 45,000 MAX |
| Large | 416 x 516 x 476 | 1.74 | 96 reels MAX | 288,000 MAX |

Recommended Pb-free Soldering Profile



Revision History

| Page | Subjects | Date of Modification |
|-------------|--------------------------------------------------------|-----------------------------|
| - | New Format | 10 Mar 2006 |
| 4 | Add Relative Intensity vs Forward Current Graph | 24 Jun 2008 |
| 2 | Update DC Forward Current --> 30mA | 10 Sep 2009 |
| - | Update Company Name | 29 Mar 2010 |
| 3 | Add Luminous Intensity Group Add Thermal Resistance | 23 Aug 2011 |
| 7 | Update Carrier Tape | 13 Feb 2014 |
| 3 | Add Characteristics | 24 Nov 2014 |
| | | |
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NOTE

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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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