

SpiceLEDTM

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 SpiceLEDTM 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 0805 package outline. Copper lead-frame construction.
- > Excellent ESD threshold; > 2000V (HBM).
- > 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.
- > Signage: full colour display video notice board, signage
- > Industry: white goods (eg: Oven, microwave, etc.).



Optical Characteristics at Tj=25°C

Part Ordering Number	Color	Viewing Angle°	Luminous Intensity @ 20mA IV (mcd)		
			Min.	Typ.	Max.
SMS-CLD-N2P-1	Super Red, 632 nm	160	35.5	56.0	71.5
SMR-CLD-PQ1-1	Red, 625 nm	160	45.0	71.5	90.0
SMO-CLD-P2Q-1	Orange, 605 nm	160	56.0	90.0	112.5
SMY-CLD-P2Q-1	Yellow, 587 nm	160	56.0	90.0	112.5
SMG-CLD-M2N-1	Green, 570 nm	160	22.4	35.5	45.0

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 $\pm 11\%$.
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	Typ. (V)	Vf @ If = 20mA		Vr @ Ir = 10uA	
		Max. (V)		Min. (V)	
SMx-CLD	1.8	2.4		12	

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

Absolute Maximum Ratings

	Maximum Value		Unit
	SMS; SMR; SMO 30	SMY; SMG 20	
DC forward current			mA
Peak pulse current; ($t_p \leq 10\mu s$, Duty cycle = 0.1)	250		mA
Reverse voltage; $I_{r_{max}} = 10\mu A$	12		V
ESD threshold (HBM)	2000		V
LED junction temperature	125		°C
Operating temperature	-40 ... +105		°C
Storage temperature	-40 ... +105		°C
Power dissipation (at room temperature)	80		mW
Thermal resistance			
- Junction / ambient, $R_{th JA}$	400		K/W
- Junction / solder point, $R_{th JS}$	250		K/W
(Mounting on FR4 PCB, pad size $\geq 16 \text{ mm}^2$ per pad)			

Wavelength Grouping at Tj=25°C

Color	Group	Wavelength distribution (nm)
SMS; Super Red	Full	625 - 640
SMR; Red	Full	620 - 630
SMO; Orange	Full	600 - 612
	W	600 - 603
	X	603 - 606
	Y	606 - 609
	Z	609 - 612
SMY; Yellow	Full	582 - 594
	W	582 - 585
	X	585 - 588
	Y	588 - 591
	Z	591 - 594
SMG; Green	Full	564.5 - 576.5
	W	564.5 - 567.5
	X	567.5 - 570.5
	Y	570.5 - 573.5
	Z	573.5 - 576.5

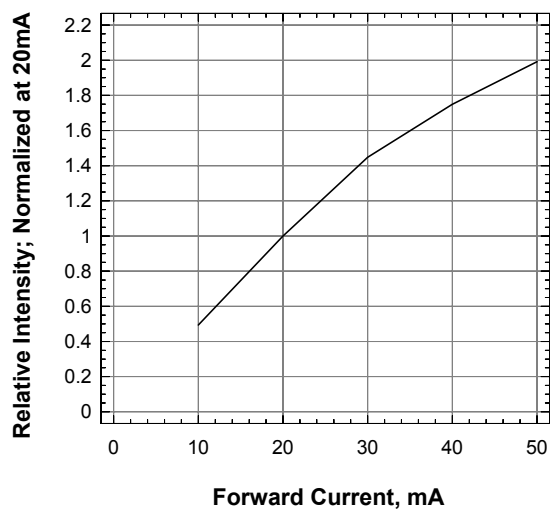
Dominant wavelength is measured with an accuracy of $\pm 1\text{nm}$.

Luminous Intensity Group at Tj=25°C

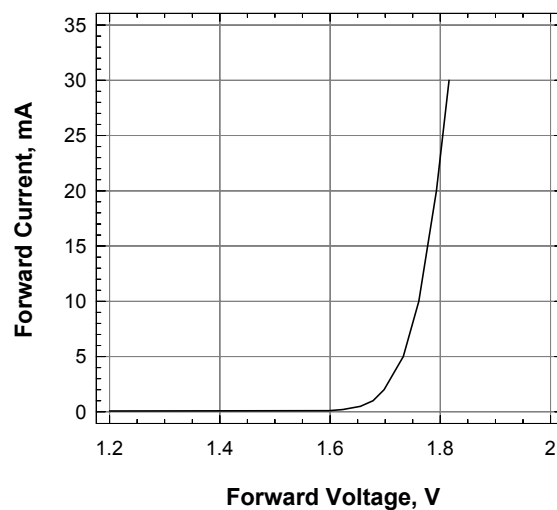
Brightness Group	Luminous Intensity IV (mcd)
M2	22.4...28.5
N1	28.5...35.5
N2	35.5...45.0
P1	45.0...56.0
P2	56.0...71.5
Q1	71.5...90.0
Q2	90.0...112.5

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

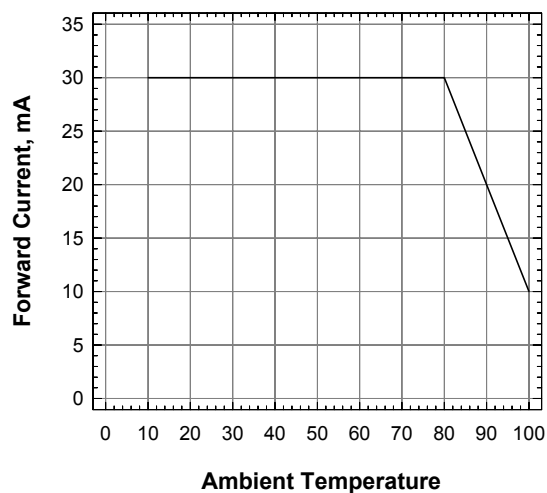
Relative Intensity Vs Forward Current



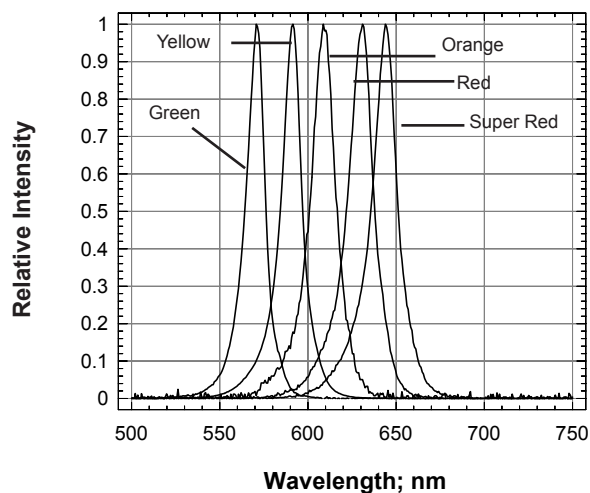
Forward Current Vs Forward Voltage



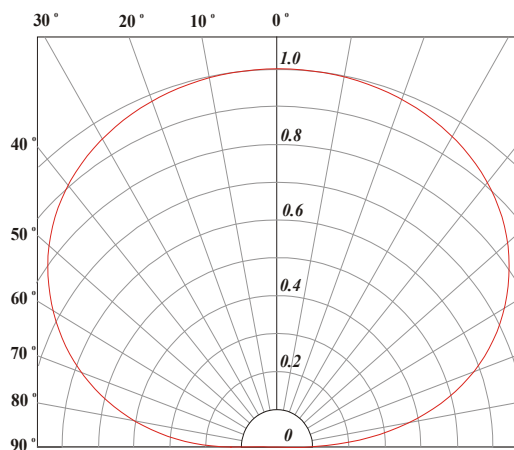
Maximum Current Vs Ambient Temperature



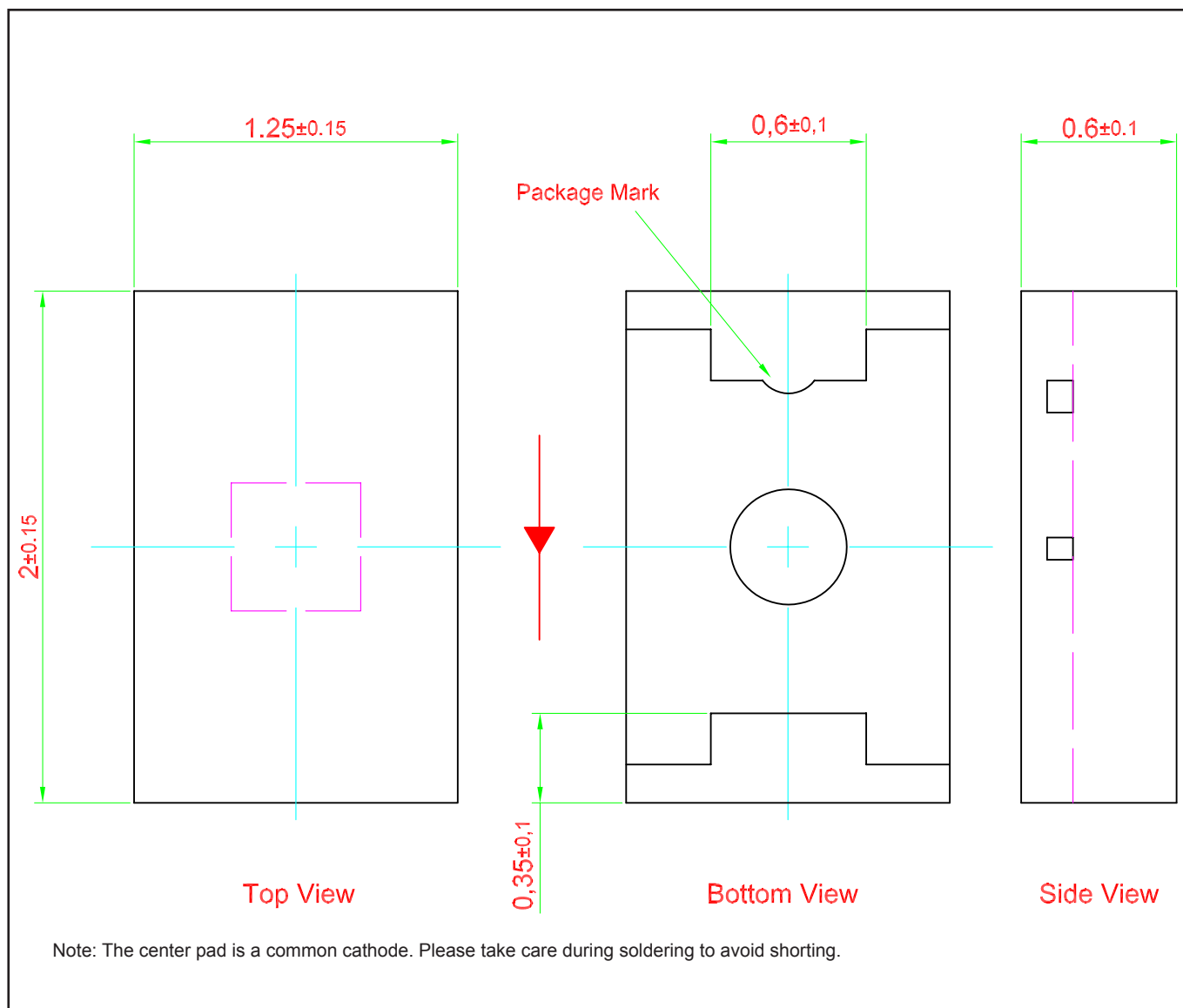
Relative Intensity Vs Wavelength



Radiation Pattern



SpiceLED™ • AlInGaP M-Spice : SMx-CLD Package Outlines

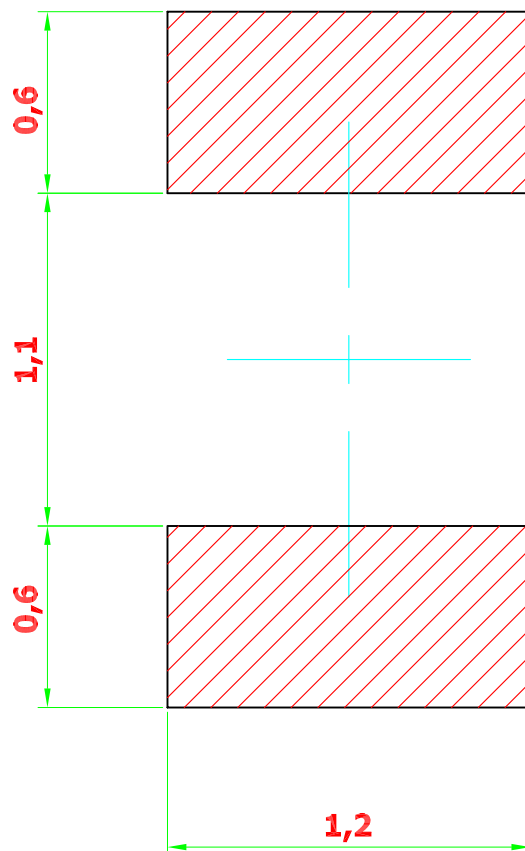


Material

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

Note: product is Pb free

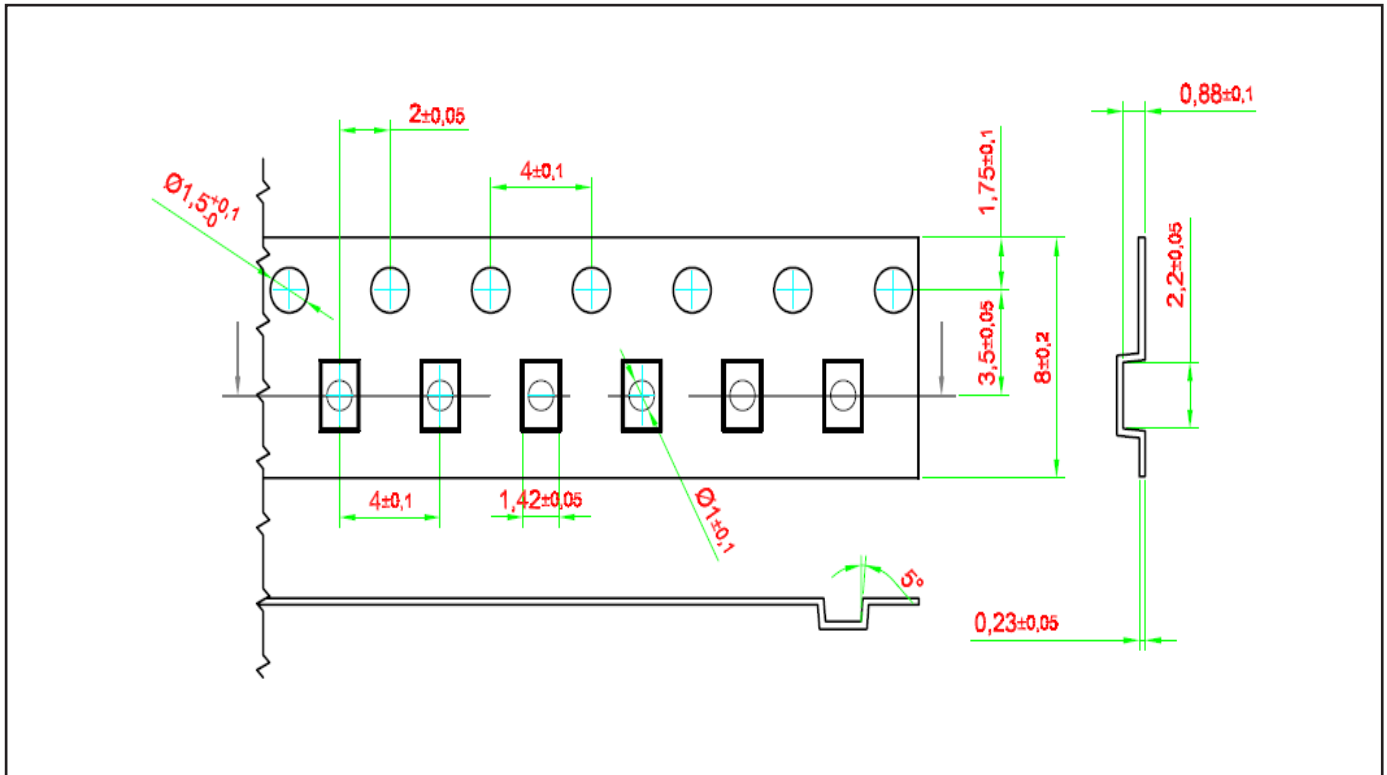
Recommended Solder Pad



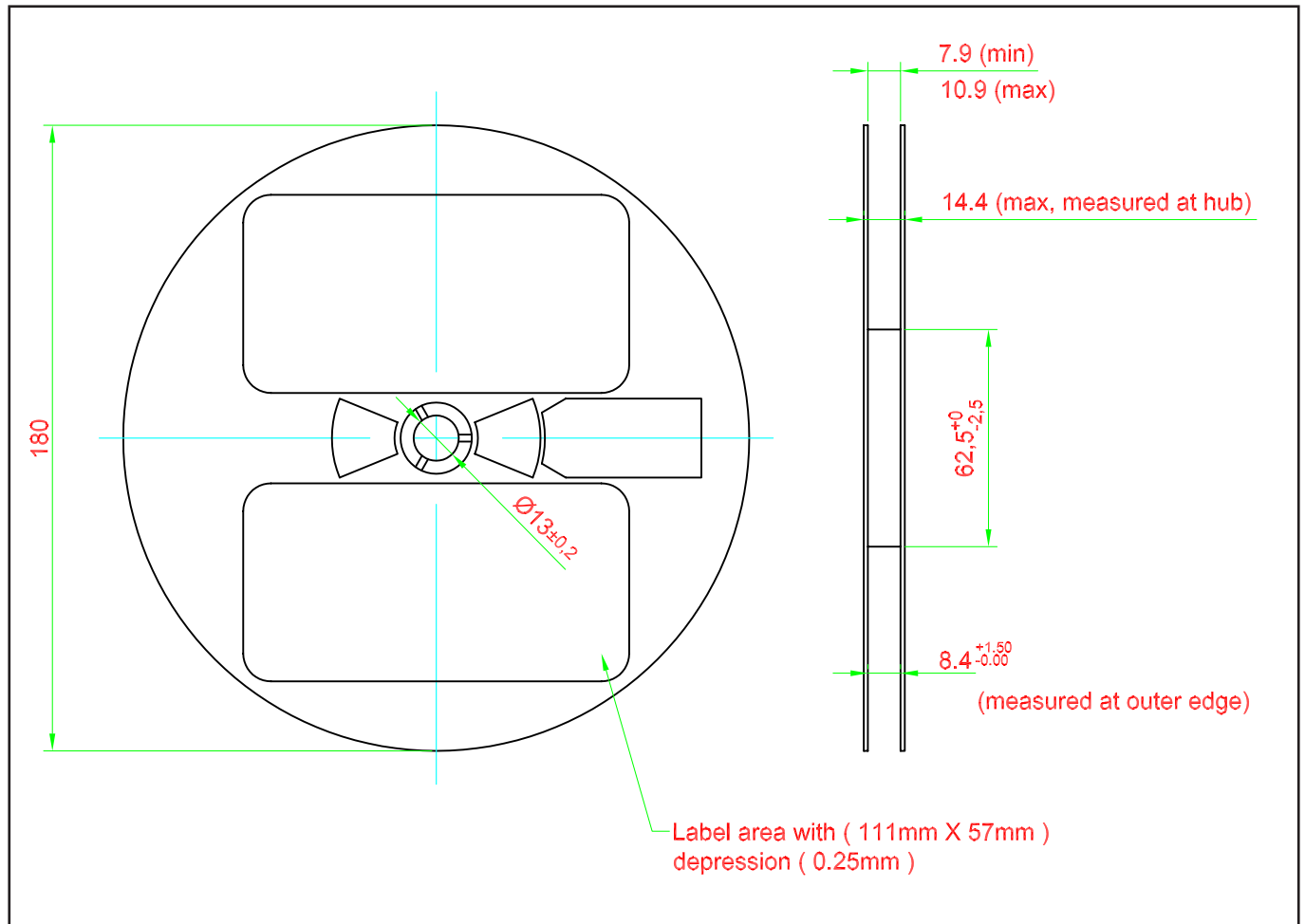
Note: Component is based on a new package platform, which features "Bottom Only Terminations". Solder joints are only formed at the bottom of the component and solder fillet will not be observable as the sides of the component.

Taping and orientation

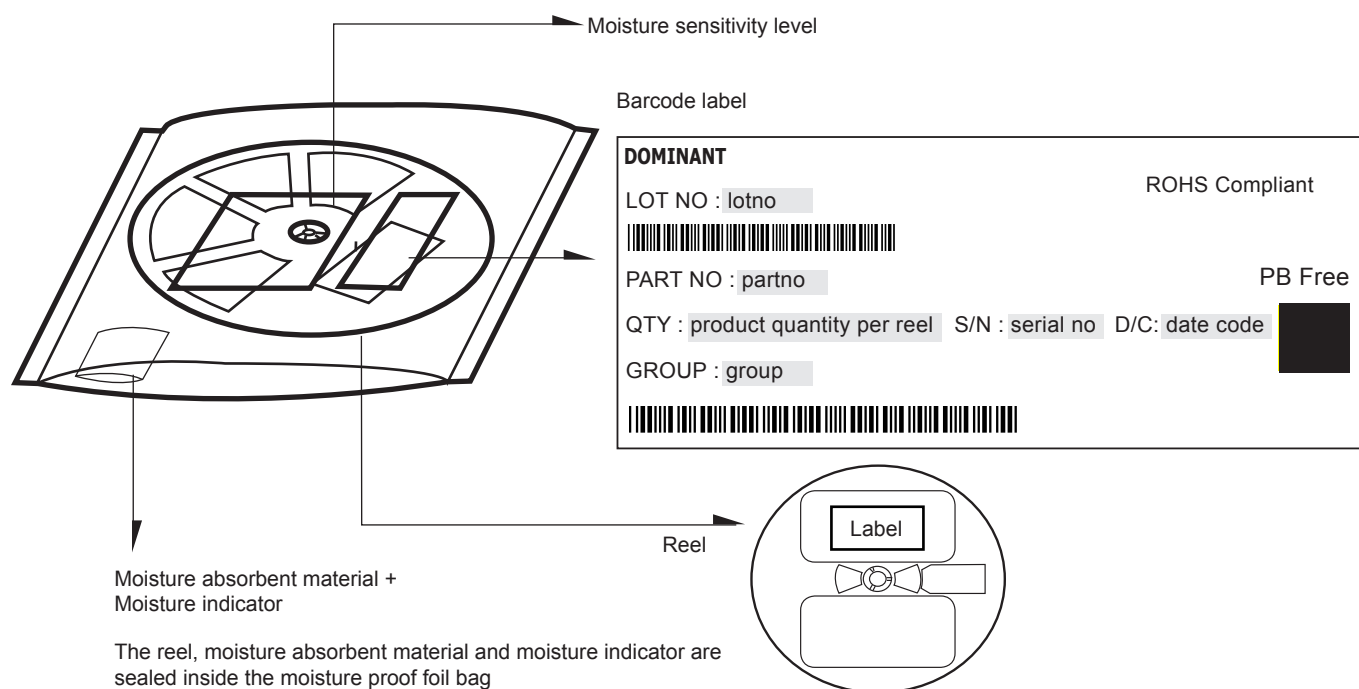
- Reels come in quantity of 3000 units.
- Reel diameter is 180 mm.



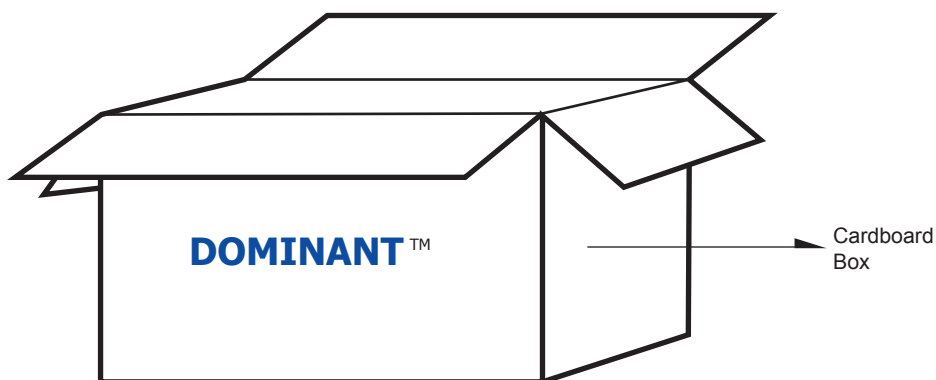
Packaging Specification



Packaging Specification



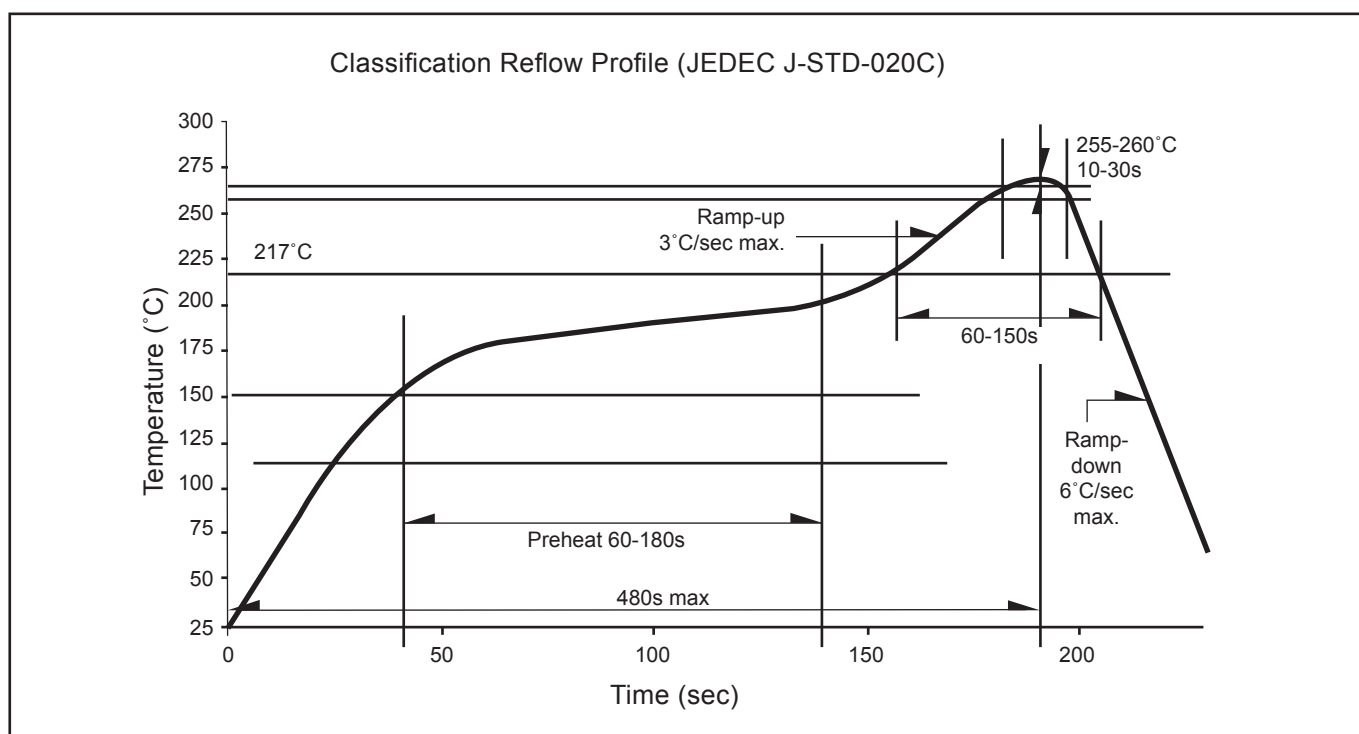
	Average 1pc SpiceLED	1 completed bag (3000pcs)
Weight (gram)	0.001	140 ± 10



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	04 Jun 2009
-	Update company name	29 Mar 2010
3	Update Thermal Resistance	28 Dec 2011
4	Typo error on wavelength grouping	02 Jul 2012
8	Update Carrier Tape	21 Nov 2012

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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