DOMINANT™ Semiconductors
Innovating Illumination

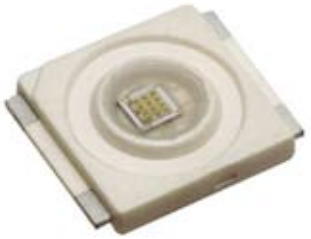
DATA SHEET:

SPNovaLED™

InGaN Blue : 1 Watt

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.
> 120° 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 350 mA.
> Low thermal resistance; Rth $_{(js)}$ = 20 K/W.
> Qualified according to JEDEC moisture sensitivity Level 2.
> Compatible to both IR reflow soldering.
> Environmental friendly; RoHS compliance.
> SP NovaLED are Class 1M LED products. Do not view directly with optical instrument.

Applications:

> Automotive: exterior applications, eg: Center High Mounted Stop Light (CHMSL), Rear Combination Lights (RCLs), Signal lighting, Fog-lamp, etc.
> Communication: indicator and backlight in mobilephone.
> Industry: white goods (eg: Oven, microwave, etc.).
> Lighting: garden light, architecture lighting, general lighting. etc

Optical Characteristics at Tj=25˚C

Part Ordering Number	Color	Viewing Angle°	Luminous Intensity @ 350mA (mcd)		
			Min.	Typ.	Max.
NPB-USS-Z1AA-1	Blue, 470	120	4500.0	6000.0	9000.0

NOTE
1. Luminous intensity is measured with an accuracy of ± 11%.
2. 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 Ta=25˚C

Part Number	Vf @ If = 350mA	
	Typ. (V)	Max. (V)
NPB-USS	3.6	4.0

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	350	mA
Pulse current	1000	mA
Reverse voltage	Not designed for reverse bias	V
ESD threshold (HBM)	2000	V
LED junction temperature	120	˚C
Operating temperature	-40 … +100	˚C
Storage temperature	-40 … +100	˚C

Characteristics

	Symbol	Part Number	Value	Unit
Temperature coefficient of λ_{dom} (typ) I_F = 350mA; 0 ˚C <= T <= 85 ˚C	$TC_{\lambda dom}$ (typ)	NPB-USS	0.026	nm / K
Temperature coefficient of V_F (typ) I_F = 350mA; 0 ˚C <= T <= 85 ˚C	TC_V	NPB-USS	-5.04	mV / K
Temperature coefficient of I_V (typ) I_F = 350mA; 0 ˚C <= T <= 85 ˚C	TC_{IV}	NPB-USS	-1.02	mcd / K

Wavelength Grouping

Color	Group	Wavelength distribution (nm)
NPB; Blue	Full	464 - 476
	A	464 - 470
	B	470 - 476

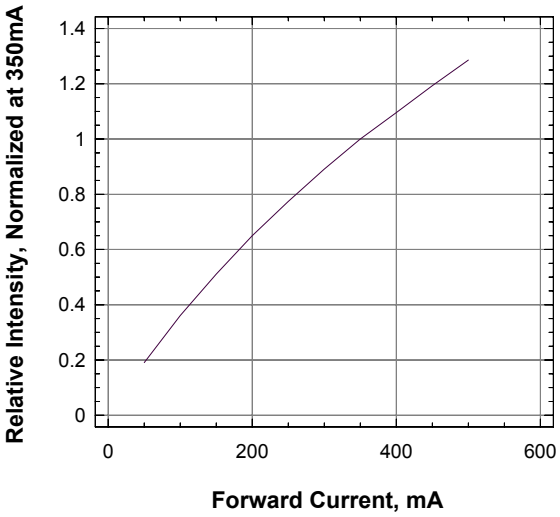
Dominant wavelength is measured with an accuracy of ± 1 nm.

Correlation Between Luminous Intensity And Luminous Flux

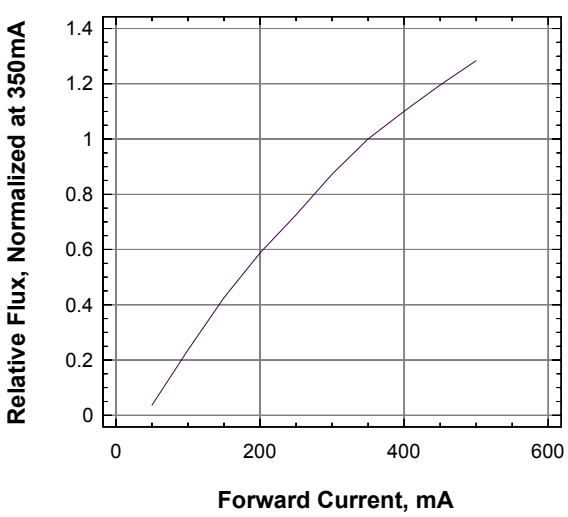
IV Bins	Luminous Intensity (mcd)	Luminous Flux (lm)
Z1	4500.0...5600.0	13.5...16.8
Z2	5600.0...7150.0	16.8...21.5
AA	7150.0...9000.0	21.5..27.0

1. Data provided above is based on approximation
2. Luminous intensity is measured with an accuracy of ± 11%.

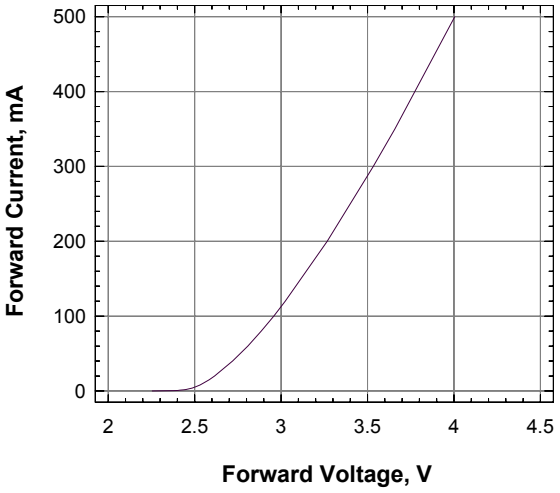
Wavelength Vs Forward Current



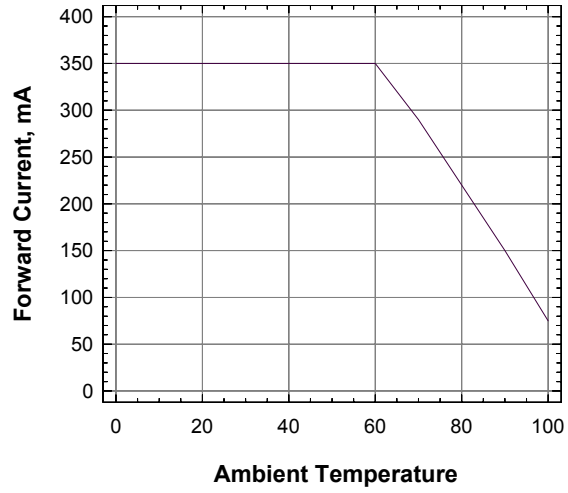
Relative Flux Vs Forward Current



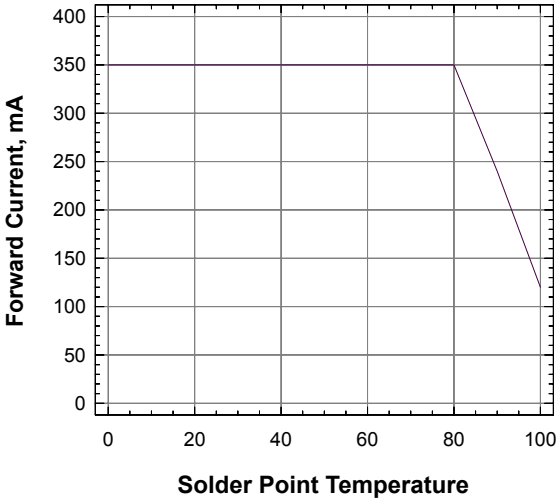
Forward Current Vs Forward Voltage



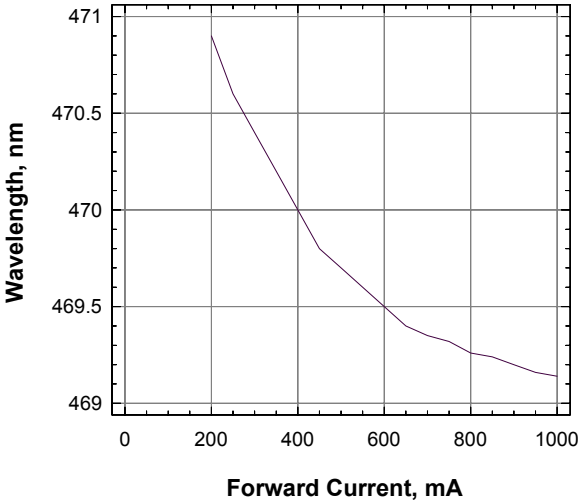
Forward Current Vs Ambient Temperature (Rja=40KW)



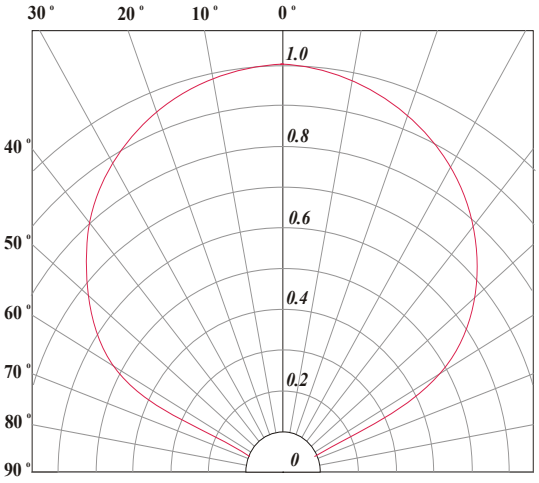
Forward Current Vs Solder Point Temperature



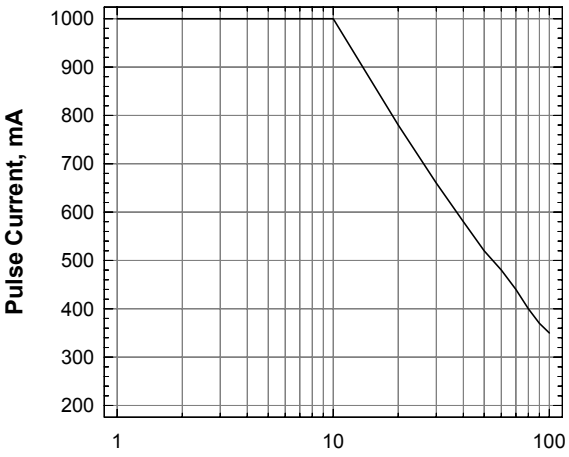
Wavelength Vs Forward Current



Radiation Pattern

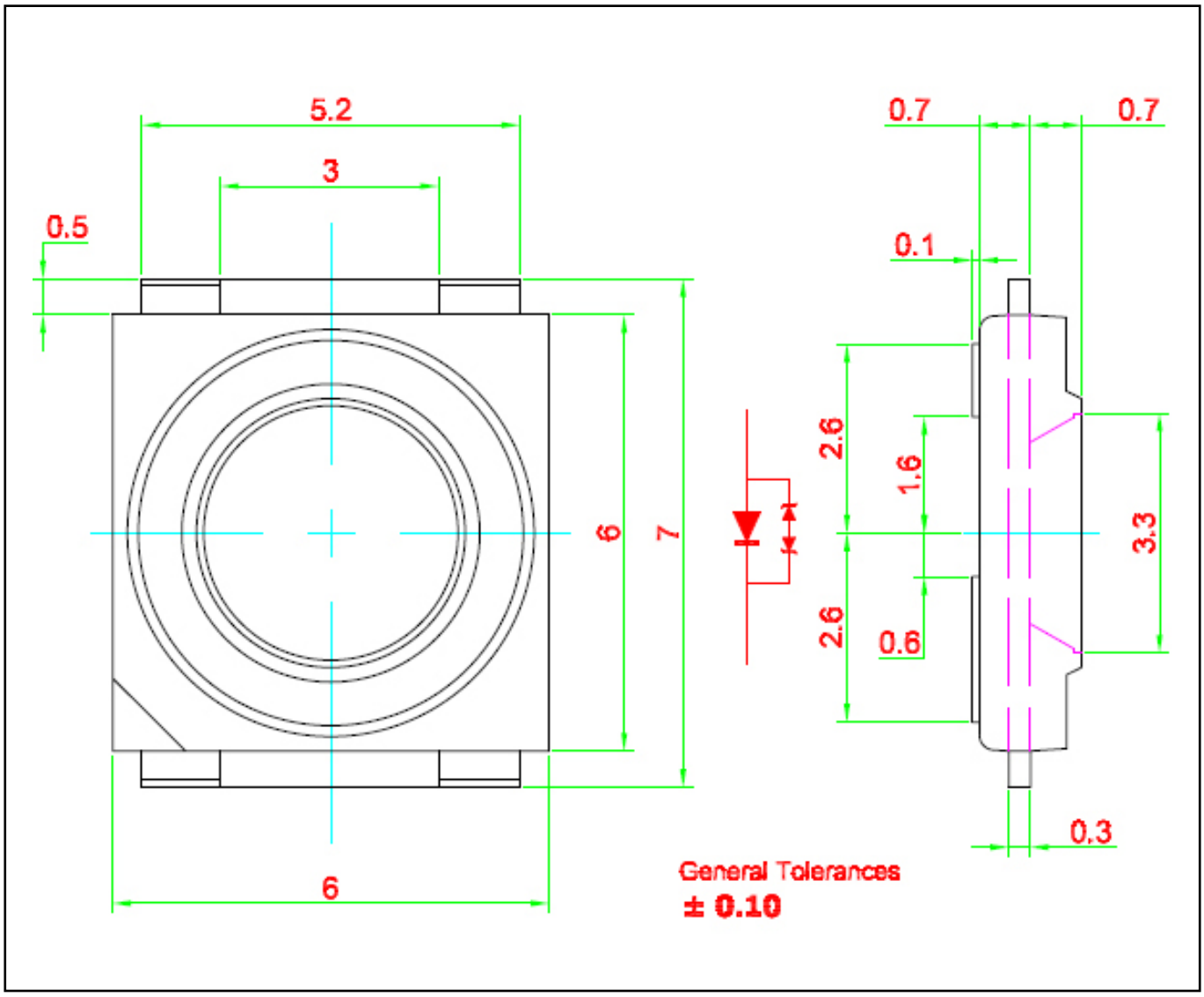


Maximum Permissible Pulse Current, Ta=25 °C



Duty (%); Tp<=0.01 sec

SPNovaLED™ • InGaN Blue : 1 Watt Package Outlines

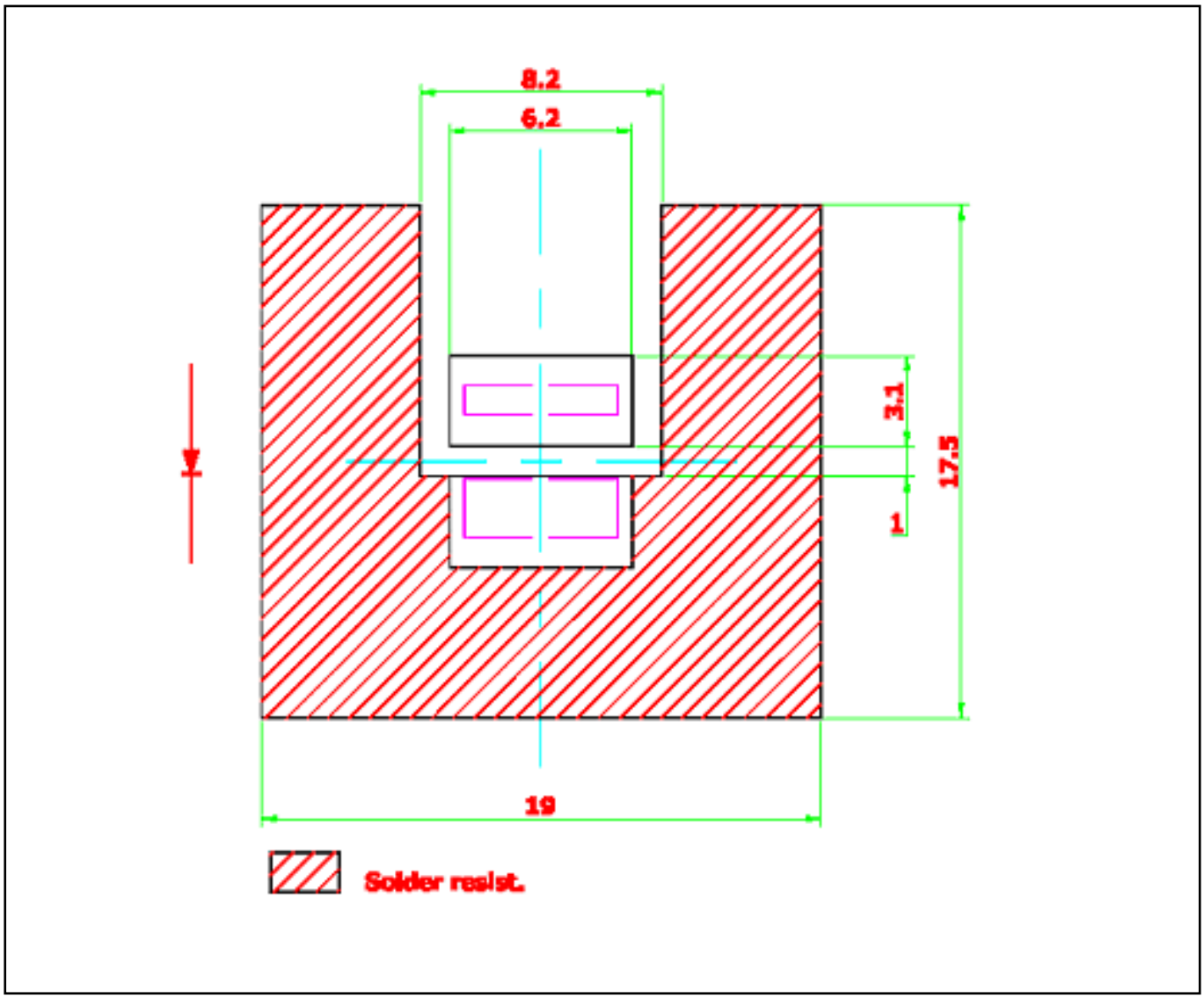


Material

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

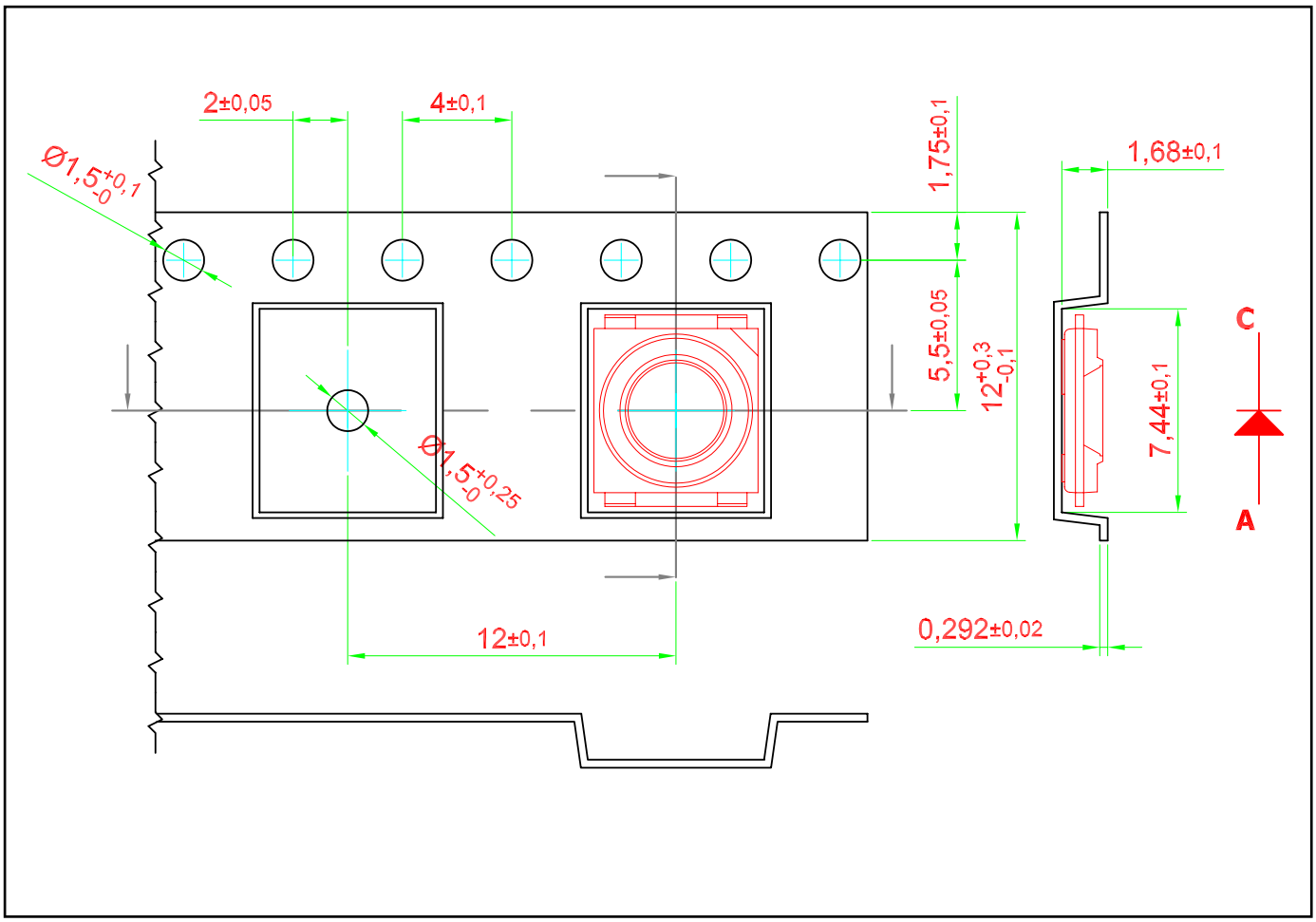
Recommended Solder Pad

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.

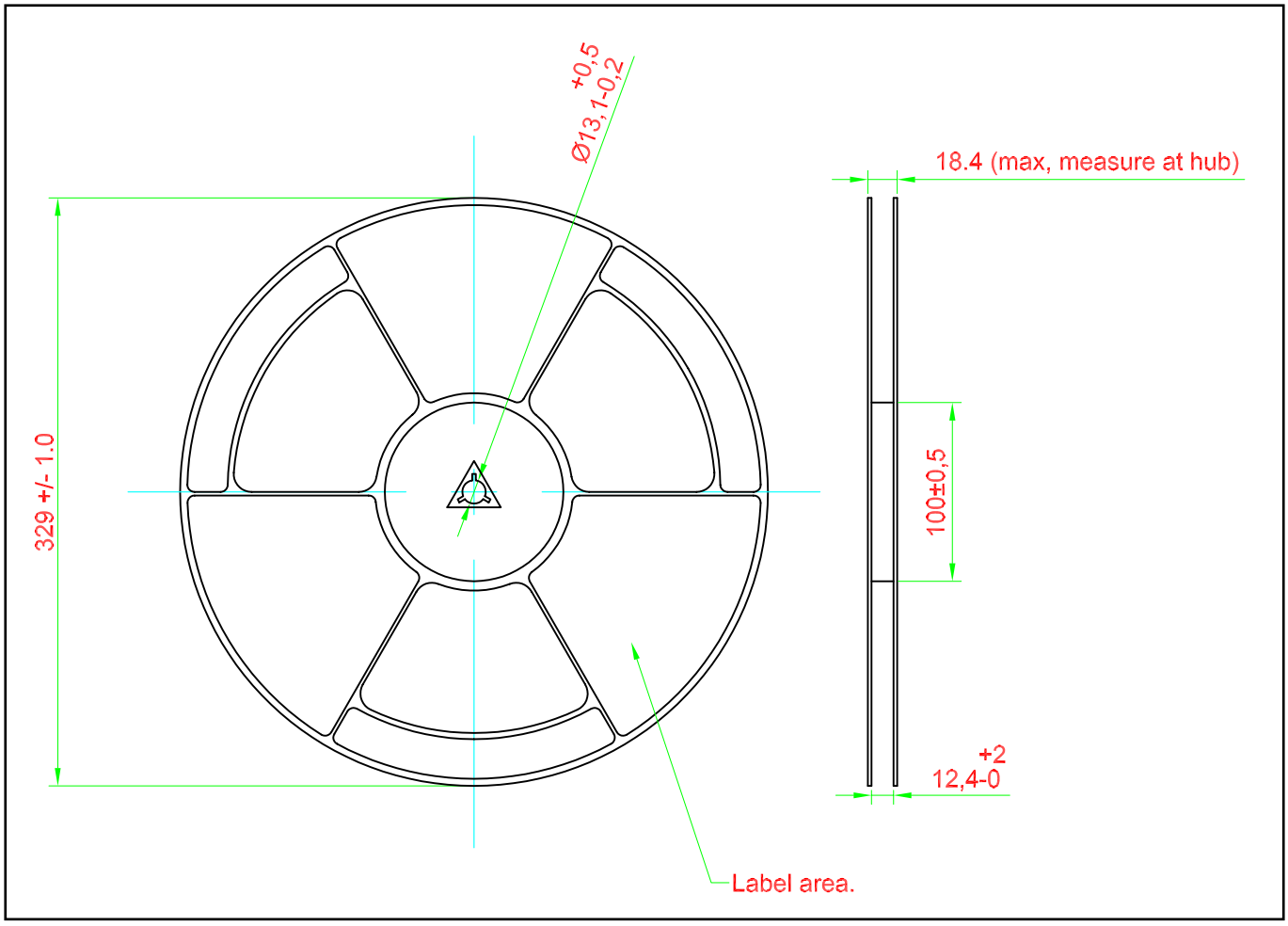


Taping and orientation

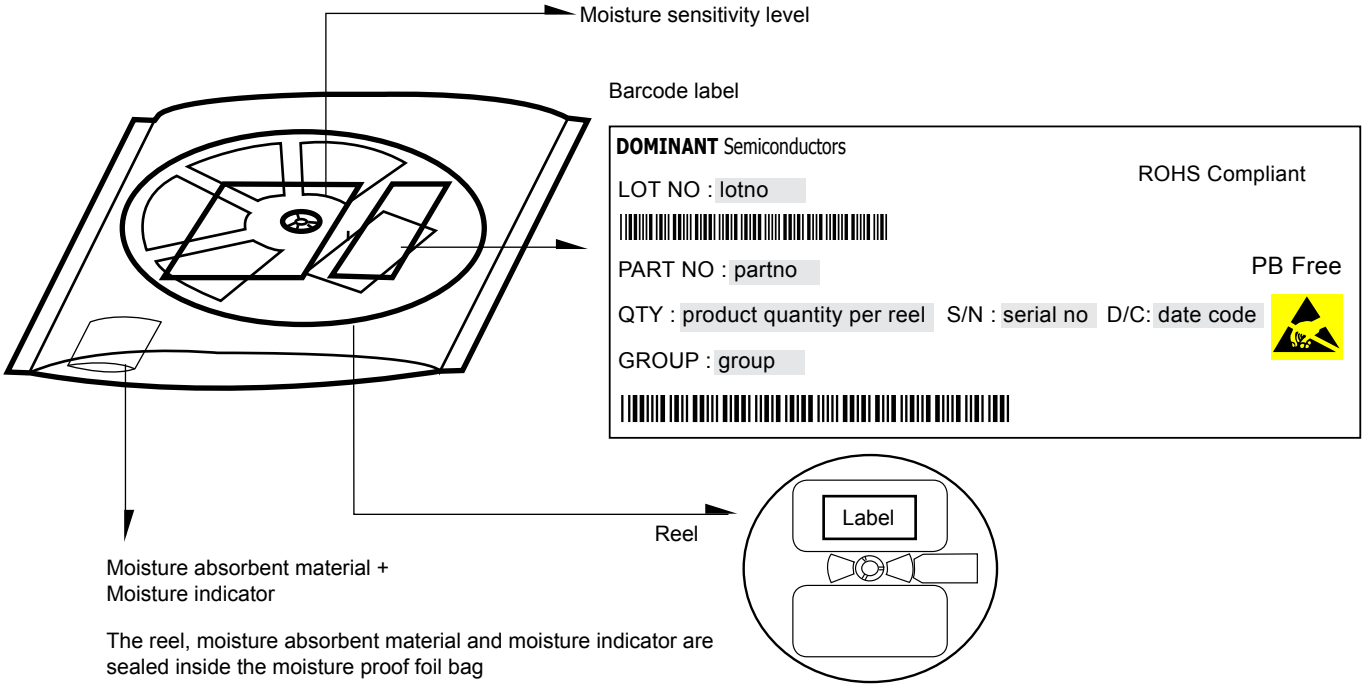
- Reels come in quantity of 2000 units.
- Reel diameter is 330 mm.



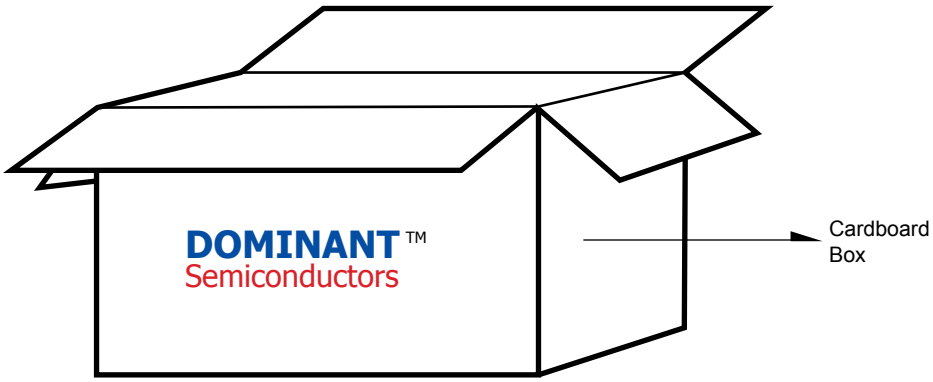
Packaging Specification



Packaging Specification



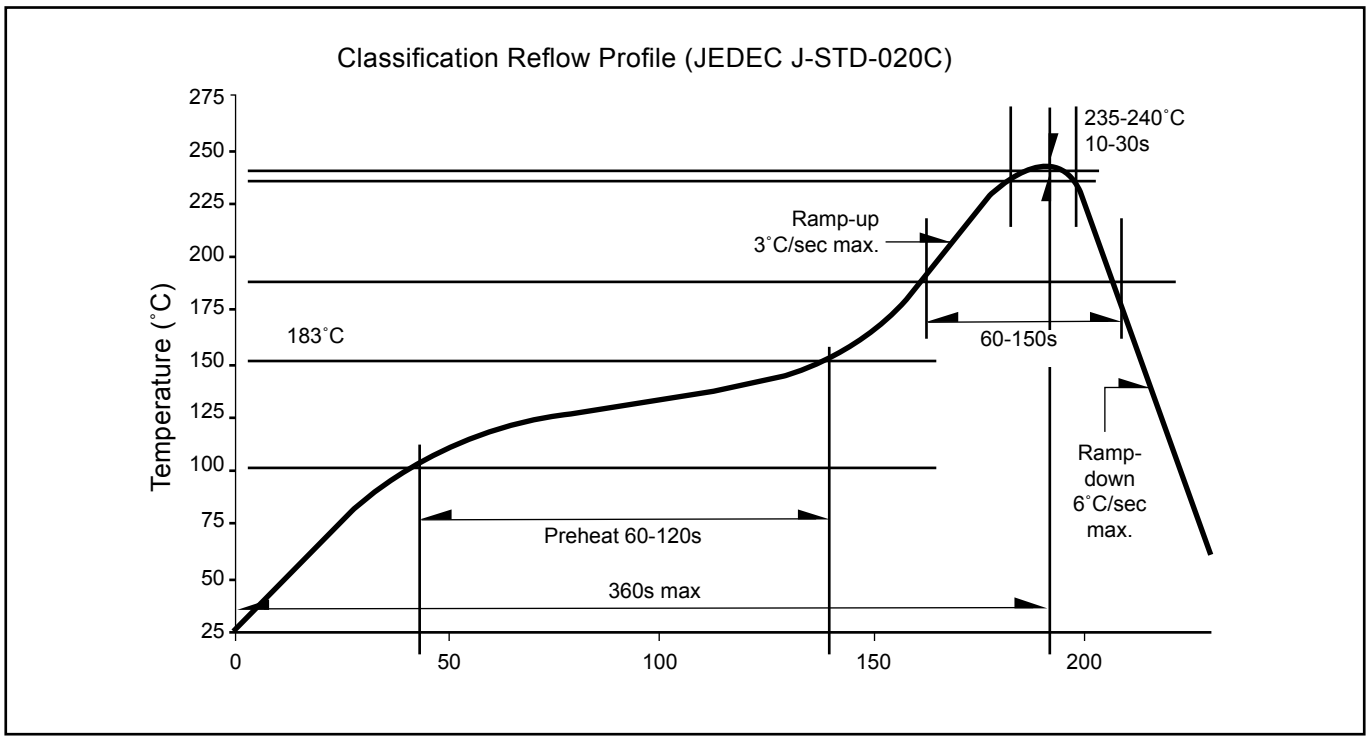
	Average 1pc SPNovaLED	1 completed bag (2000pcs)
Weight (gram)	**0.188**	**800 ± 10**



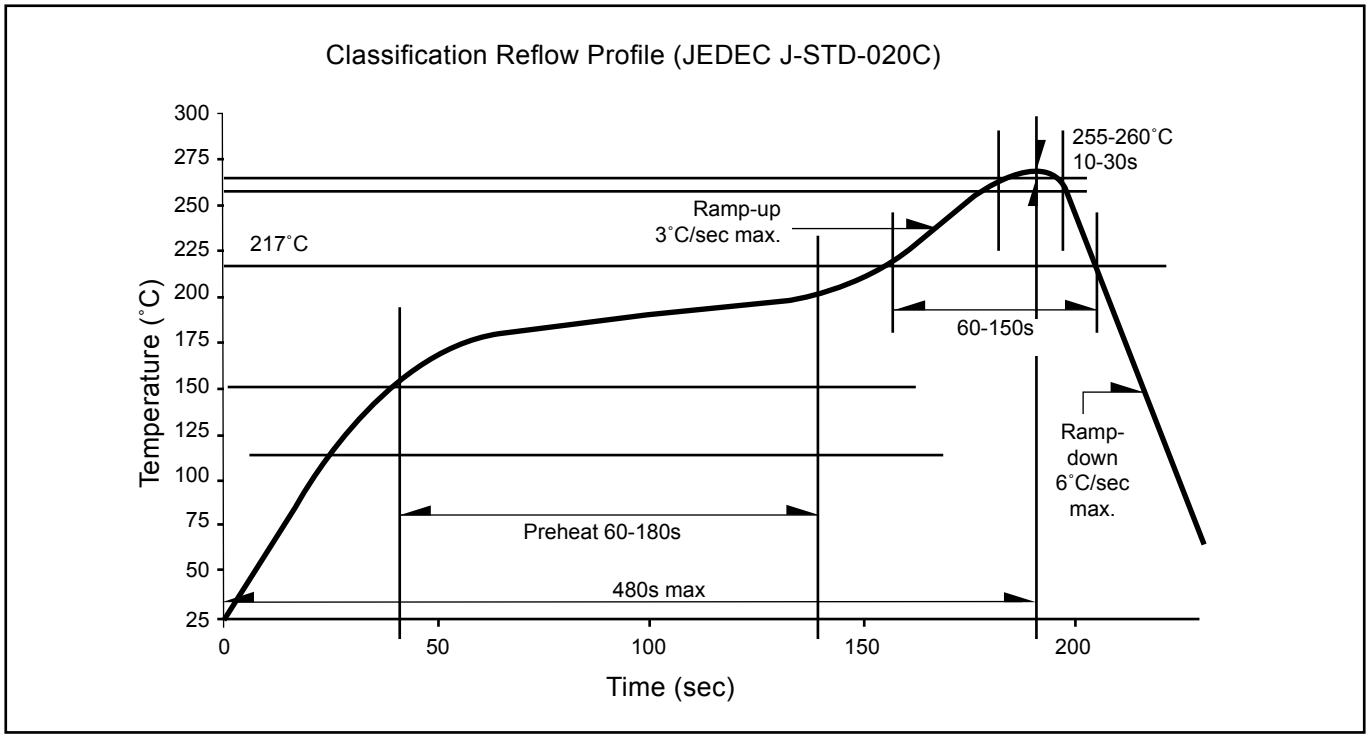
For SPNovaLED™

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	40,000 MAX

Recommended Sn-Pb IR-Reflow Soldering Profile



Recommended Pb-free Soldering Profile



Revision History

Page	Subjects	Date of Modification
-	Initial Release	20 Jun 2006
5	Add Maximum Permissible Pulse Current Graph	24 Aug 2006
2 and 3	Obsolete P/N: NPB-USS-X2Y-1	12 Sep 2007
3	Add Characteristics	20 May 2009

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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DOMINANT™ Semiconductors
Innovating Illumination

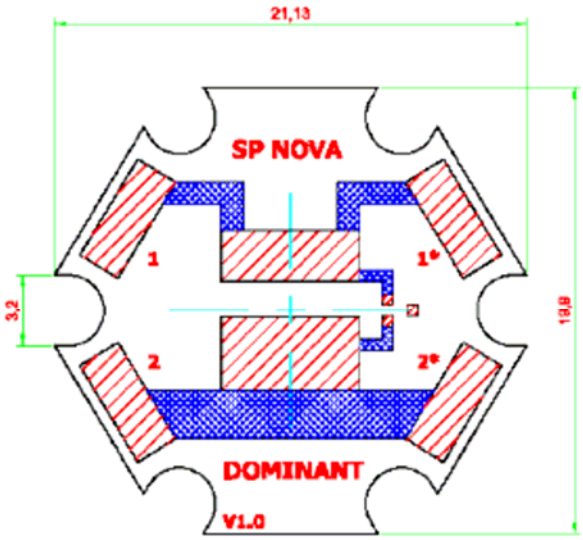
SPNovaLED MCPCB Module

- Customized for Dominant's SPNovaLED.
- Good light thermal conductivity with metal core PCB.
- Soldering points are provided for electrical connections.
- Easily mounted with the locating slots.

Material

	Material
Substrate	Metal core PCB with Al substrate
Solder Paste	SnCuAg (Pb free)

Dimension



Substrate thickness = 1.50 ± 0.05 mm. Slots on MC PCB for location with M3 screws.

Electrical connection pads are labeled with “1” and “2”. Two pads are available for each polarity. Polarity definition is as follows

	1 or 1*	2 or 2*
NPH-USS, NPR-MSS, NPA-MSS, NPY-MSS, NPW-TSD, NPW-WSD, NPW-RSD, NPW-RSZ, NPF-TSD, NPF-WSD, NPF-RSD, NPF-RSZ	-ve	+ve
NPT-USS, NPB-USS	+ve	-ve

NOTE: All electrical and optical characteristics of the LED are maintained the same as per committed by the corresponding datasheets.

Each module will be individually packed in an ESD shielded bag.

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