

SPNova™

Featuring a staggering brilliance and significant flux output, the SPNova™ 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.
- > 120° viewing angle.
- > Peak wavelength of 660nm typical.
- > 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
- > Low thermal resistance; $R_{th}(js) = 20 \text{ K/W}$.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to IR reflow soldering.
- > Suitable for agriculture application.
- > Environmental friendly; RoHS compliance.

Applications:

- > Agriculture lighting
- > General lighting



Optical Characteristics at Tj=25°C

Part Ordering Number	Viewing Angle°	Radiant Power @ 400mA, ϕE (mW)		
		Min.	Typ.	Max.
NPH-USS-4S3T-1	120	250.0	315.0	400.0

NOTE

1. Radiant Power is measured with an accuracy of $\pm 11\%$ 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-USS	2.00	2.35	2.70	12

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

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

Characteristics

	Symbol	Part Number	Value	Unit
Temperature coefficient of λ_{dom} (typ) $I_F = 400\text{mA}; 0^\circ\text{C} \leq T \leq 85^\circ\text{C}$	$TC_{\lambda_{\text{dom}}} \text{ (typ)}$	NPH-USS	0.13	nm / K
Temperature coefficient of V_F (typ) $I_F = 400\text{mA}; 0^\circ\text{C} \leq T \leq 85^\circ\text{C}$	TC_V	NPH-USS	-5.60	mV / K
Temperature coefficient of ϕE (typ) $I_F = 400\text{mA}; 0^\circ\text{C} \leq T \leq 85^\circ\text{C}$	TC_{IV}	NPH-USS	-0.60	% / K

Wavelength Grouping at $T_j=25^\circ\text{C}$

Color	Group	Peak Wavelength (nm)
NPH; Hyper red	Full	645 - 665

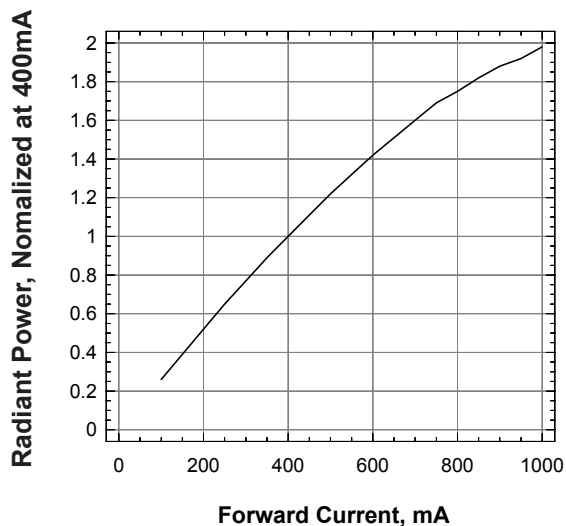
Dominant wavelength is measured with an accuracy of ± 1 nm.

Radiant Power Group at $T_j=25^\circ\text{C}$

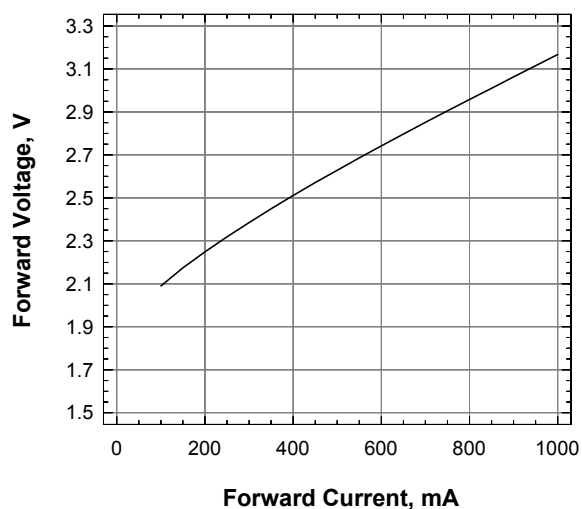
Brightness Group	Radiant Power ϕE (mW)
4S	250.0 - 280.0
1T	280.0 - 315.0
2T	315.0 - 355.0
3T	355.0 - 400.0

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

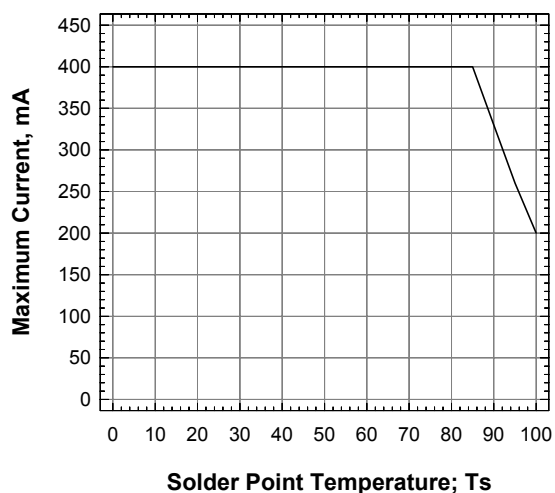
Radiant Power Vs Forward Current



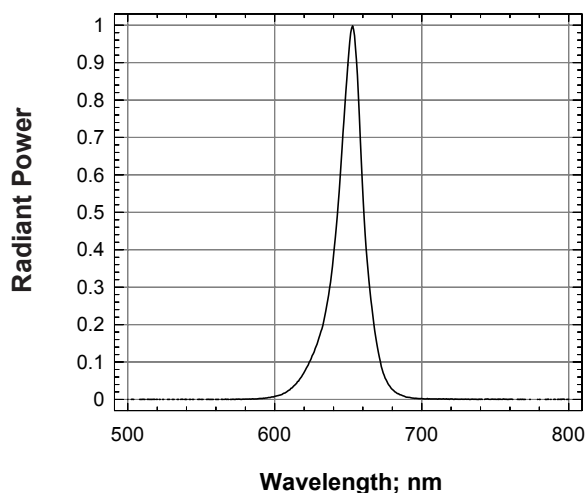
Forward Voltage Vs Forward Current



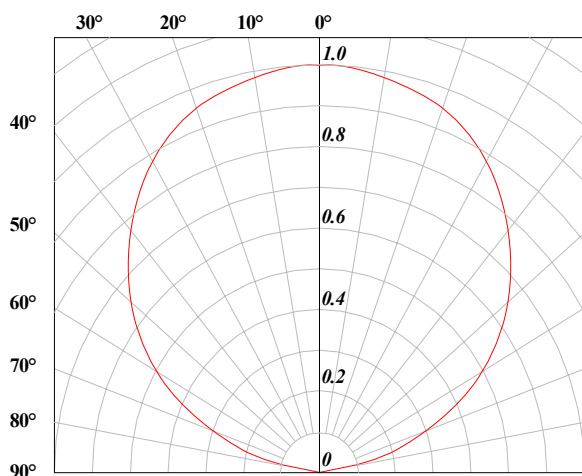
Maximum Forward Current Vs Solder Point Temperature



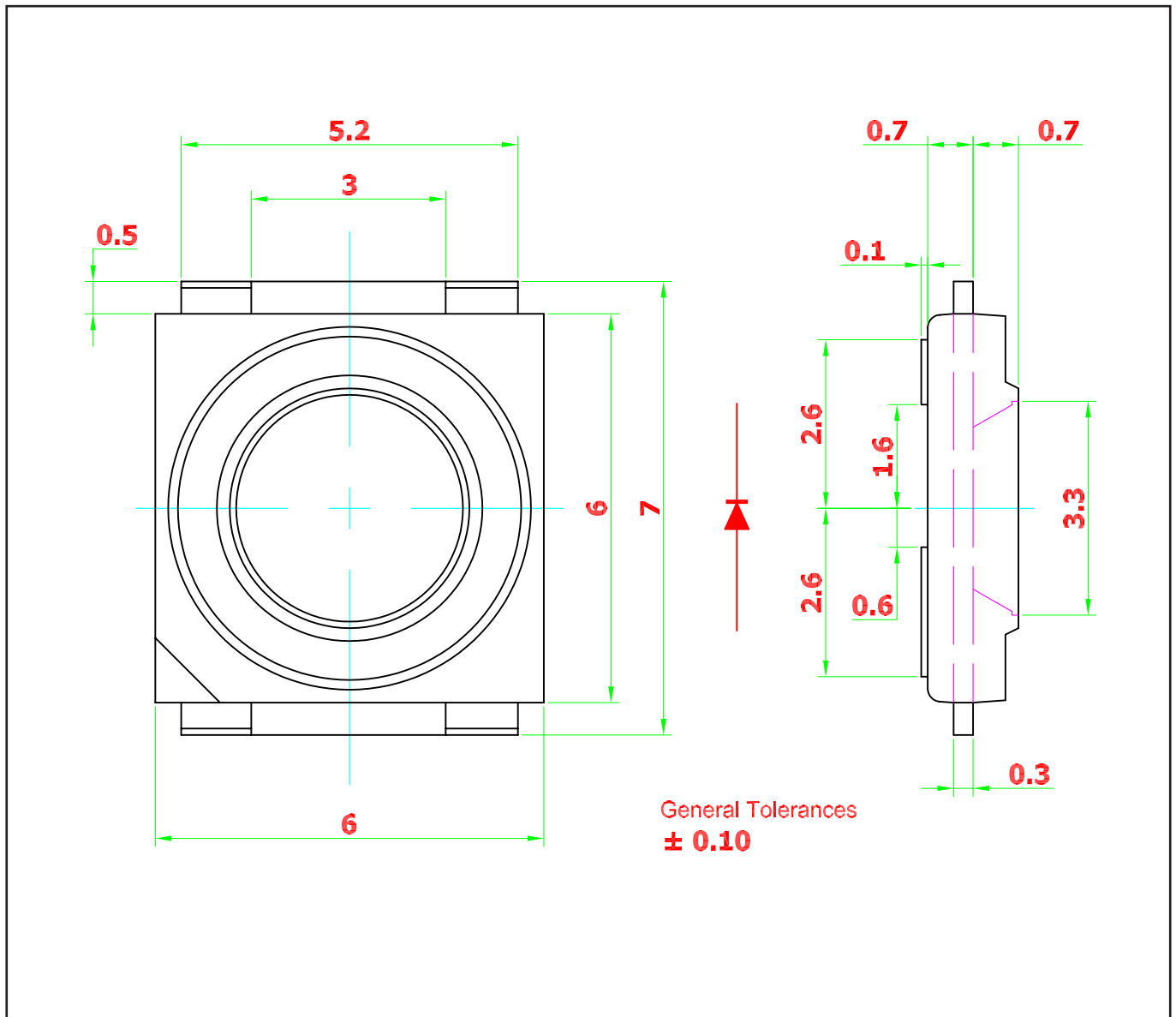
Radiant Power Vs Wavelength



Radiation Pattern



SPNova™ • AllnGaP : NPH-USS-4S3T-1 Package Outlines

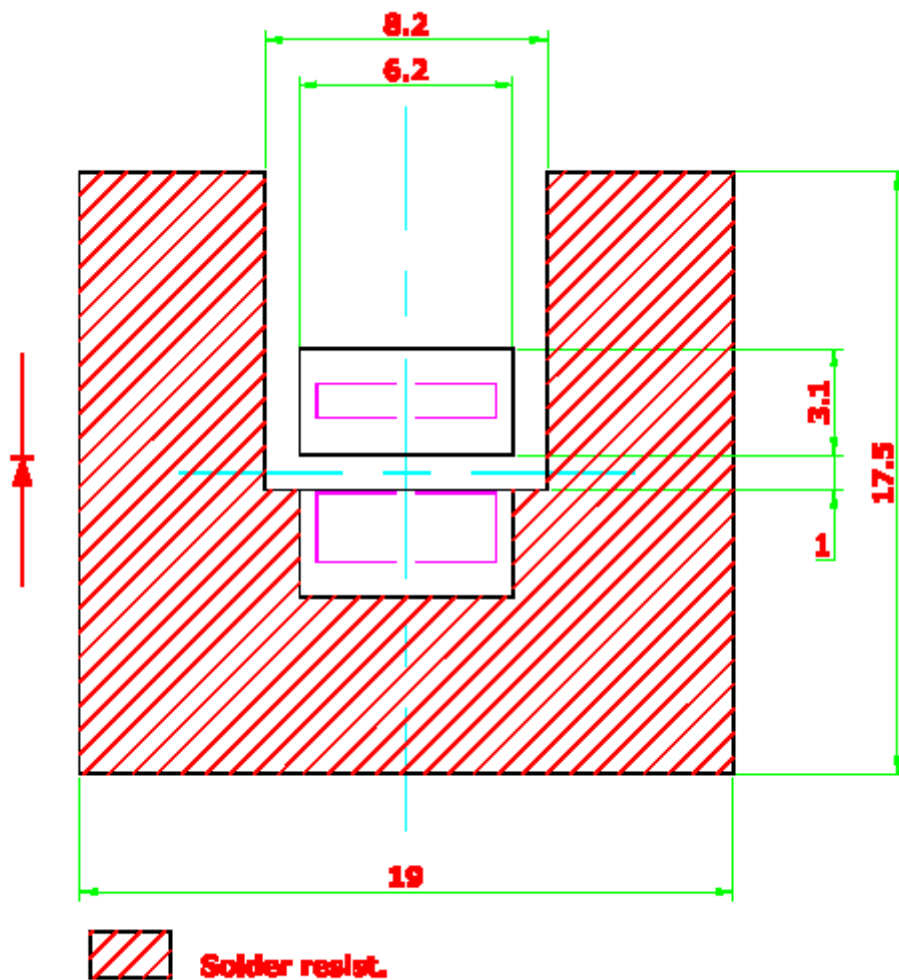


Material

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

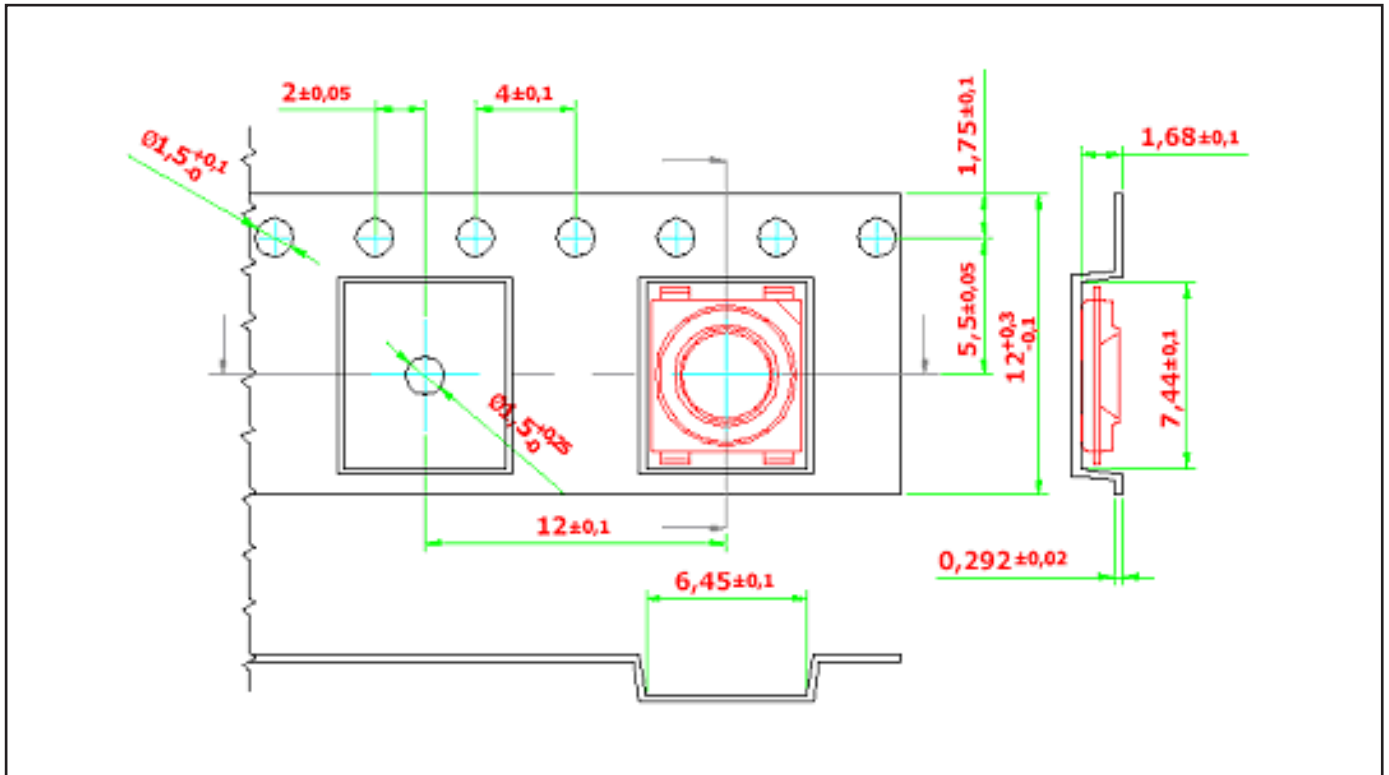
Solder Pad Design

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.

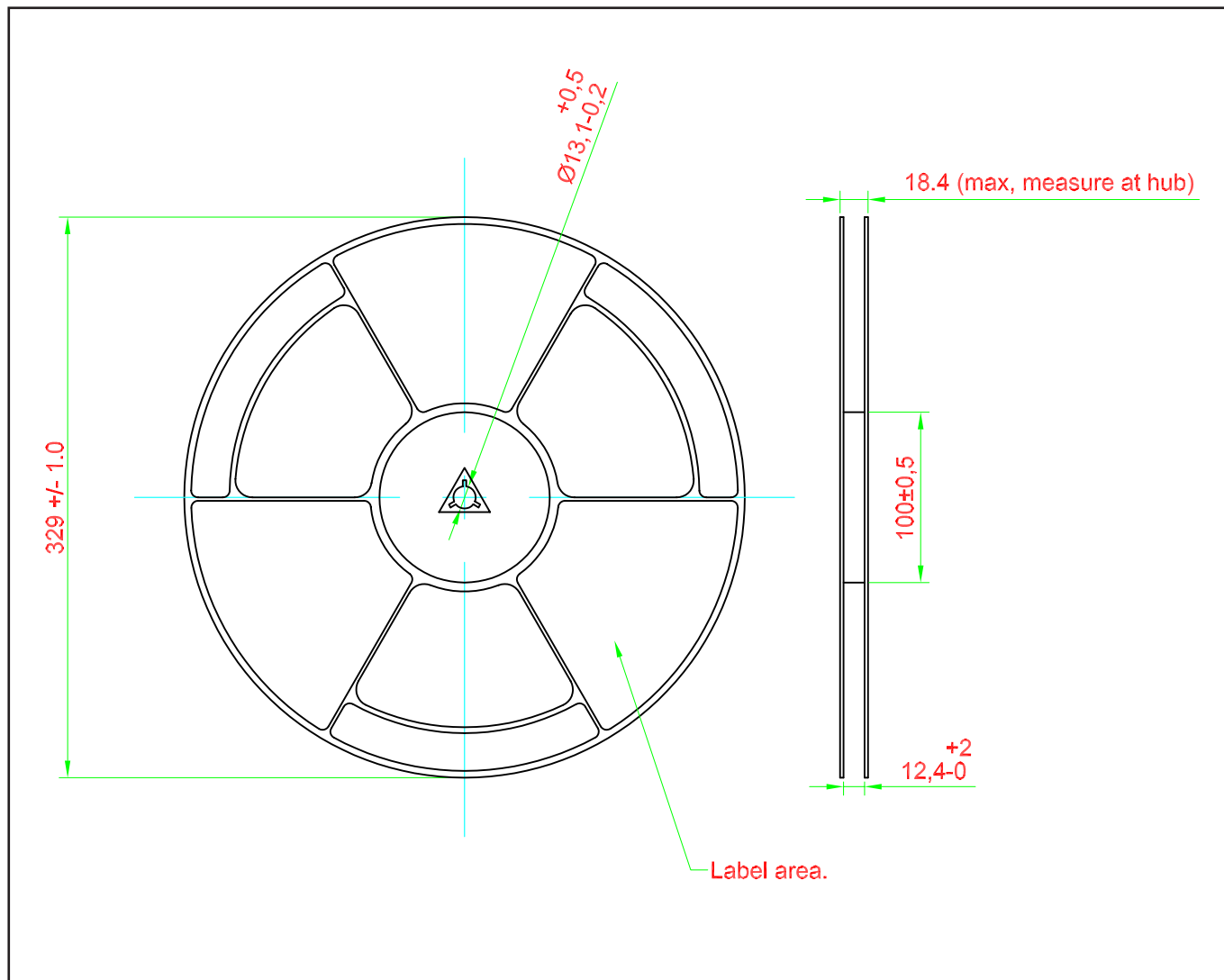


Taping and orientation

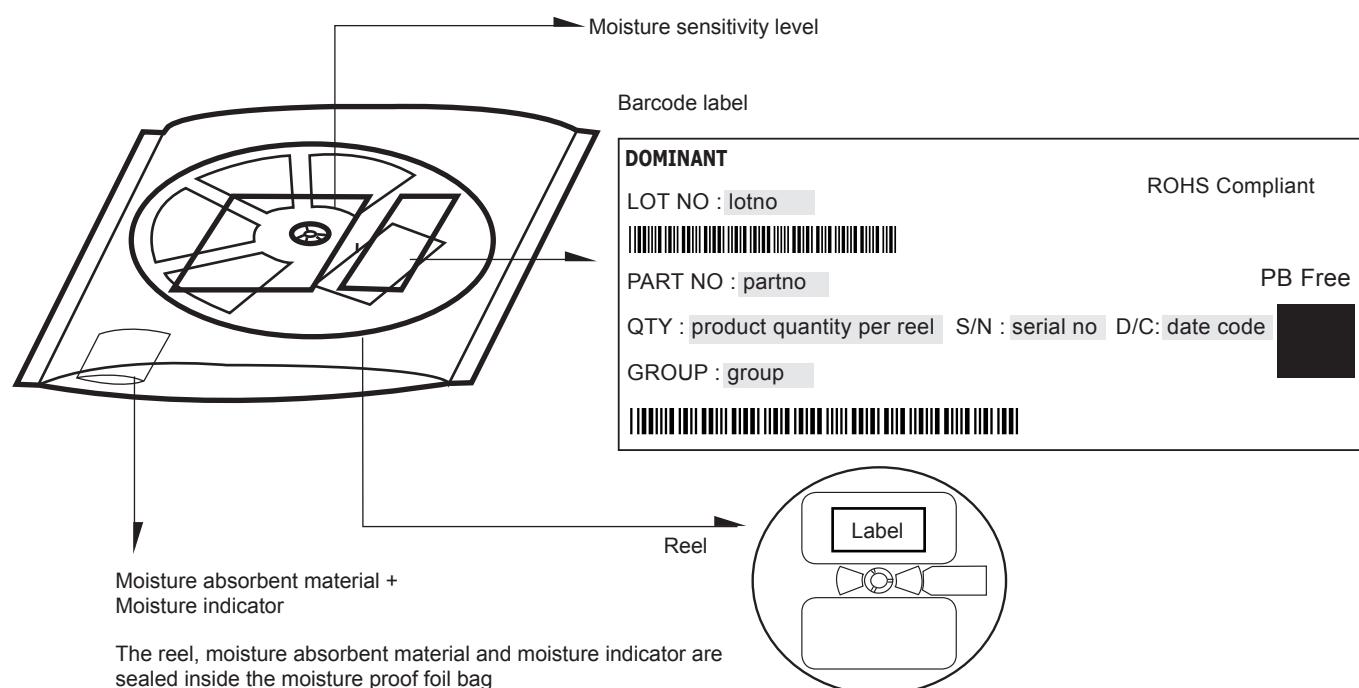
- Reels come in quantity of 2000 units.
- Reel diameter is 330 mm.



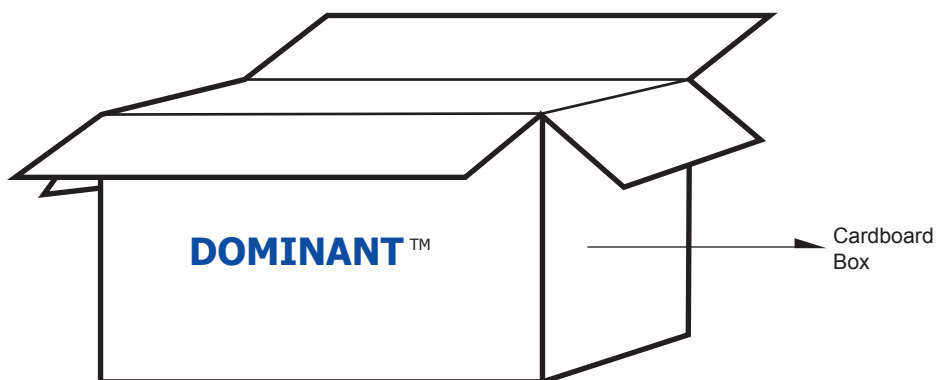
Packaging Specification



Packaging Specification



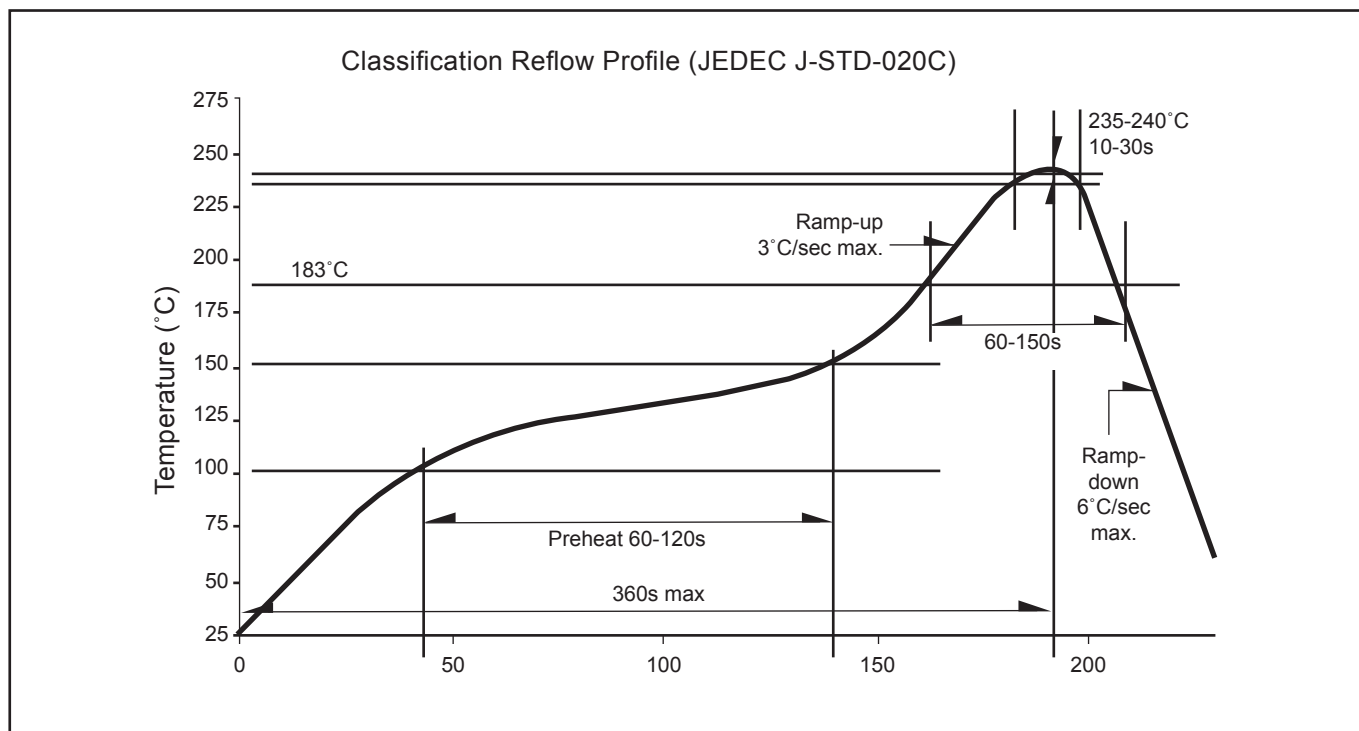
	Average 1pc SPNova	1 completed bag (2000pcs)
Weight (gram)	0.188	800 ± 10



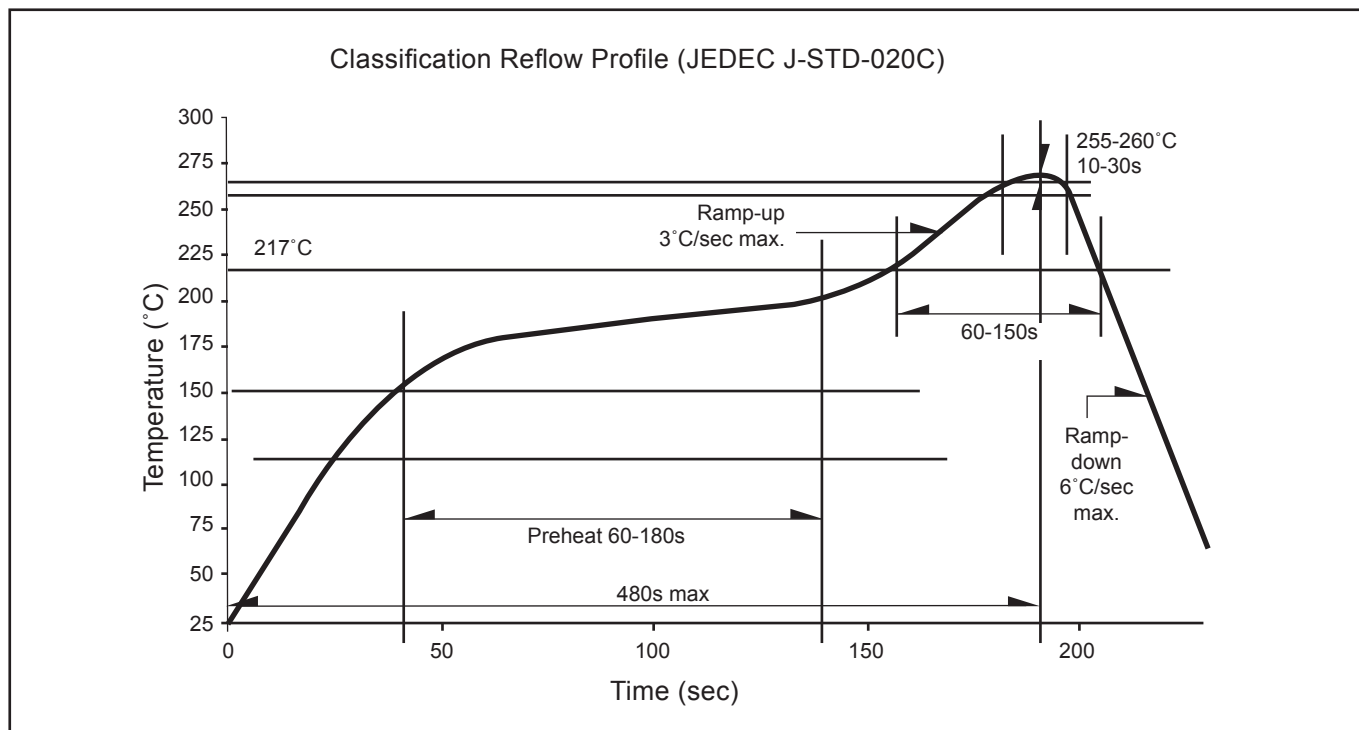
For SPNova™

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	40,000 MAX

Recommended Sn-Pb IR-Reflow Soldering Profile



Recommended Pb-free Soldering Profile



Revision History

Page	Subjects	Date of Modification
-	Initial Release	25 May 2011
-	Correction on SPNova	07 Jul 2011
2	Update VF spec	22 Jul 2011

NOTE

All the information contained in this document is considered to be reliable at the time of publishing. However, DOMINANT Opto Technologies does not assume any liability arising out of the application or use of any product described herein.

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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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