

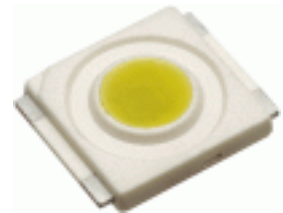
### SPNova<sup>™</sup>

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.
- > 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; maximum 180 mA.
- > Low thermal resistance;  $R_{th(jc)} = 18 \text{ K/W}$ .
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.



### Applications:

- > Lighting: garden light, architecture lighting, general lighting. etc
- > Backlighting (TFT LCD display), flash light, architectural lighting.



### Optical Characteristics at Tj=25°C

Part Ordering Number	Color	Viewing Angle°	Luminous Flux@ IF = 150mA (lm)		
			Min.	Typ.	Max.
● NPW-MSD-NP-1	White	120	18.1	21.0	30.5
NPW-MSD-PQ-1	White	120	23.5	30.5	39.8

- Not for new design

NOTE

1. Luminous flux 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 Tj=25°C

Part Number	Vf @ If = 150mA		
	Min. (V)	Typ. (V)	Max. (V)
NPW-MSD	3.0	3.2	4.1

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

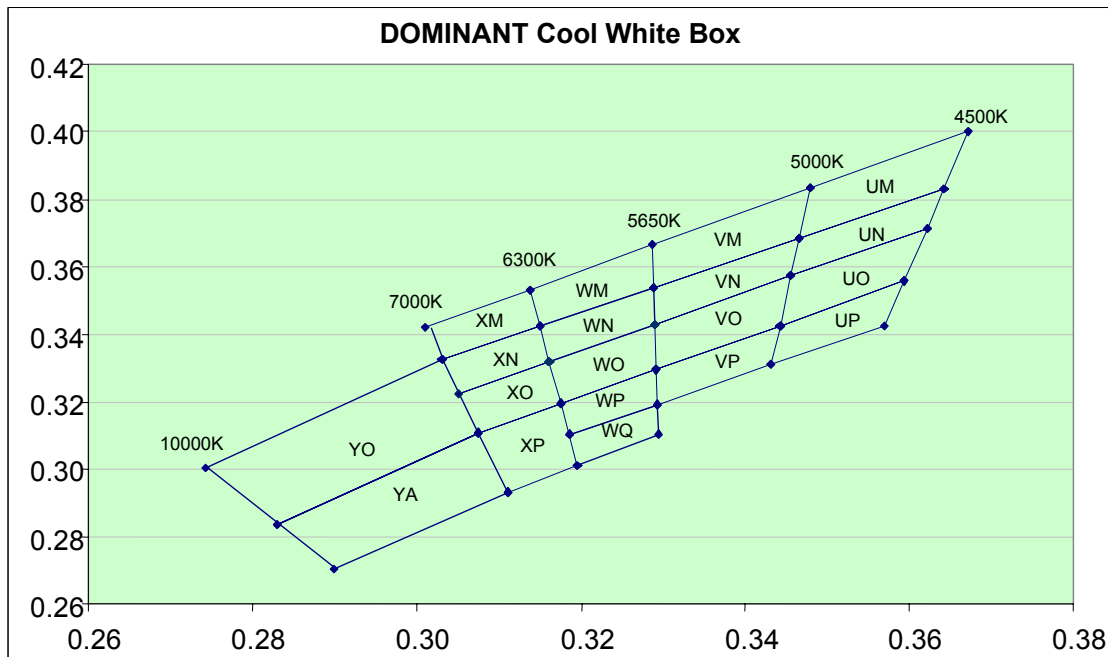
### Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	180	mA
Peak pulse current	500	mA
Reverse Voltage	5	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 $V_F$ (typ) $I_F = 350\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	$TC_V$	NPW-MSD	-4.90	mV / K
Temperature coefficient of $I_V$ (typ) $I_F = 350\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	$TC_{IV}$	NPW-MSD	-22.0	mcd / K
Temperature coefficient of $C_x$ (typ) $I_F = 350\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	$TC_{Cx}$	NPW-MSD	-0.0002	
Temperature coefficient of $C_y$ (typ) $I_F = 350\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	$TC_{Cy}$	NPW-MSD	-0.0001	

**Color Bin**



Chromaticity coordinate groups are measured with an accuracy of  $\pm 0.01$ .

Bin		1	2	3	4
YO	Cx	0.274	0.303	0.308	0.283
	Cy	0.301	0.333	0.311	0.284
YA	Cx	0.283	0.308	0.311	0.290
	Cy	0.284	0.311	0.293	0.270
XM	Cx	0.301	0.314	0.315	0.303
	Cy	0.342	0.353	0.343	0.333
XN	Cx	0.303	0.315	0.316	0.305
	Cy	0.333	0.343	0.332	0.322
XO	Cx	0.305	0.316	0.318	0.308
	Cy	0.322	0.332	0.319	0.311
XP	Cx	0.308	0.318	0.320	0.311
	Cy	0.311	0.319	0.301	0.293
WM	Cx	0.314	0.329	0.329	0.315
	Cy	0.353	0.366	0.354	0.343
WN	Cx	0.315	0.329	0.329	0.316
	Cy	0.343	0.354	0.343	0.332
WO	Cx	0.316	0.329	0.329	0.318
	Cy	0.332	0.343	0.330	0.319
WP	Cx	0.318	0.329	0.329	0.319
	Cy	0.319	0.330	0.319	0.310
WQ	Cx	0.319	0.329	0.330	0.320
	Cy	0.310	0.319	0.311	0.301
VM	Cx	0.329	0.348	0.347	0.329
	Cy	0.366	0.383	0.368	0.354

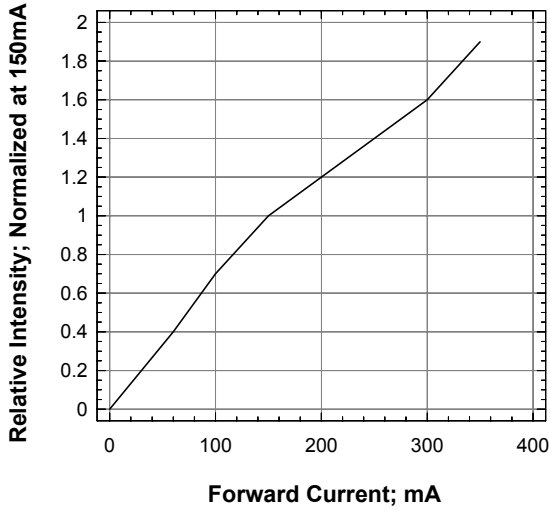
Bin		1	2	3	4
VN	Cx	0.329	0.347	0.346	0.329
	Cy	0.354	0.368	0.357	0.343
VO	Cx	0.329	0.346	0.344	0.329
	Cy	0.343	0.357	0.343	0.330
VP	Cx	0.329	0.344	0.343	0.329
	Cy	0.330	0.343	0.331	0.319
UM	Cx	0.348	0.367	0.364	0.347
	Cy	0.383	0.400	0.383	0.368
UN	Cx	0.347	0.364	0.362	0.346
	Cy	0.368	0.383	0.372	0.357
UO	Cx	0.346	0.362	0.359	0.344
	Cy	0.357	0.372	0.356	0.343
UP	Cx	0.344	0.359	0.357	0.343
	Cy	0.343	0.356	0.343	0.331

### Luminous Flux Group at Tj=25°C

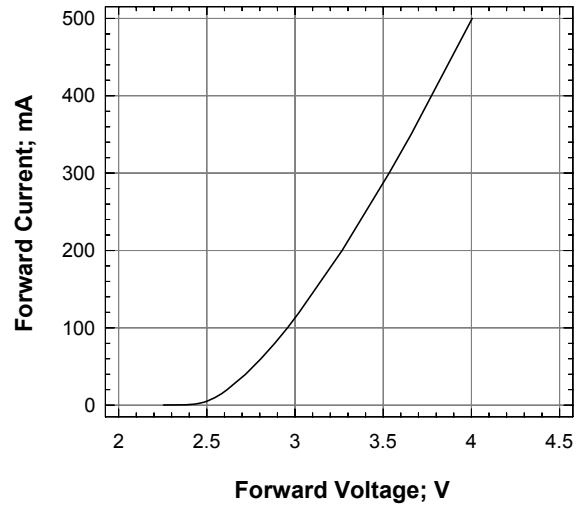
Brightness Group	Luminous Flux (lm)
N2	18.1...20.6
N3	20.6...23.5
P2	23.5...26.8
P3	26.8...30.5
Q2	30.5...34.8
Q3	34.8...39.8

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

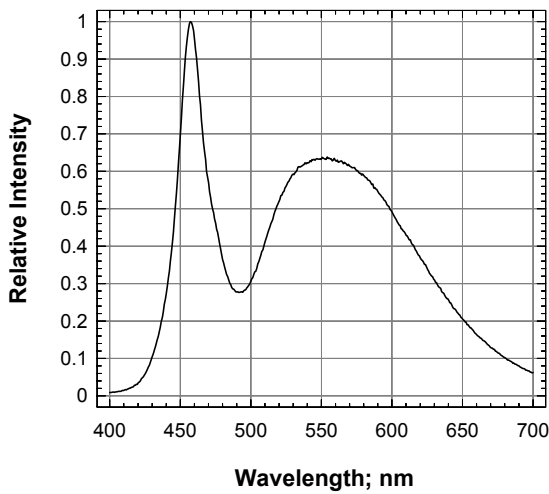
**Relative Intensity Vs Forward Current**



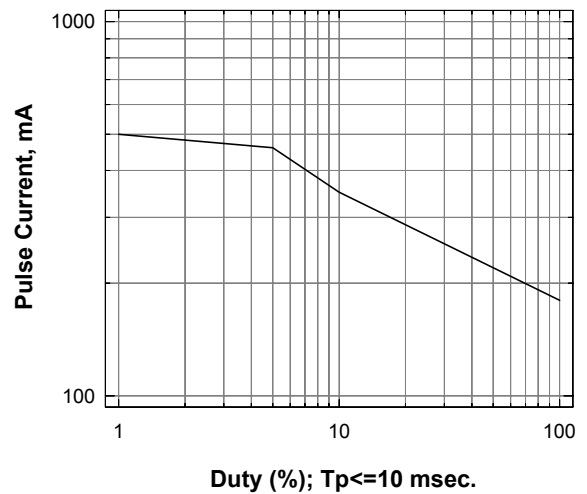
**Forward Current vs Forward Voltage**



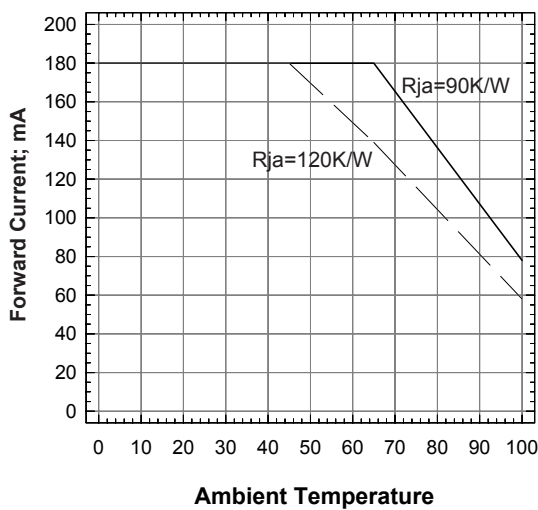
**Relative Intensity Vs Wavelength**



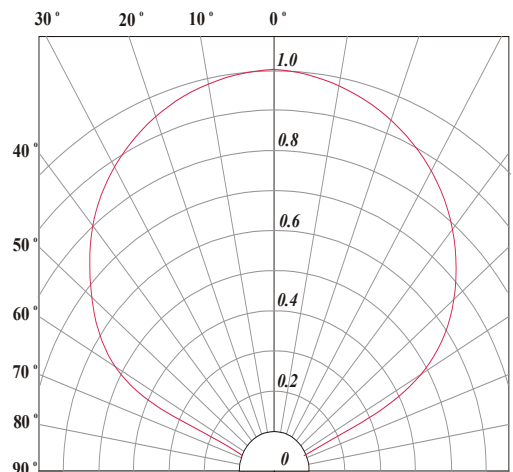
**Max. Pulse Current Vs Duty Cycle**



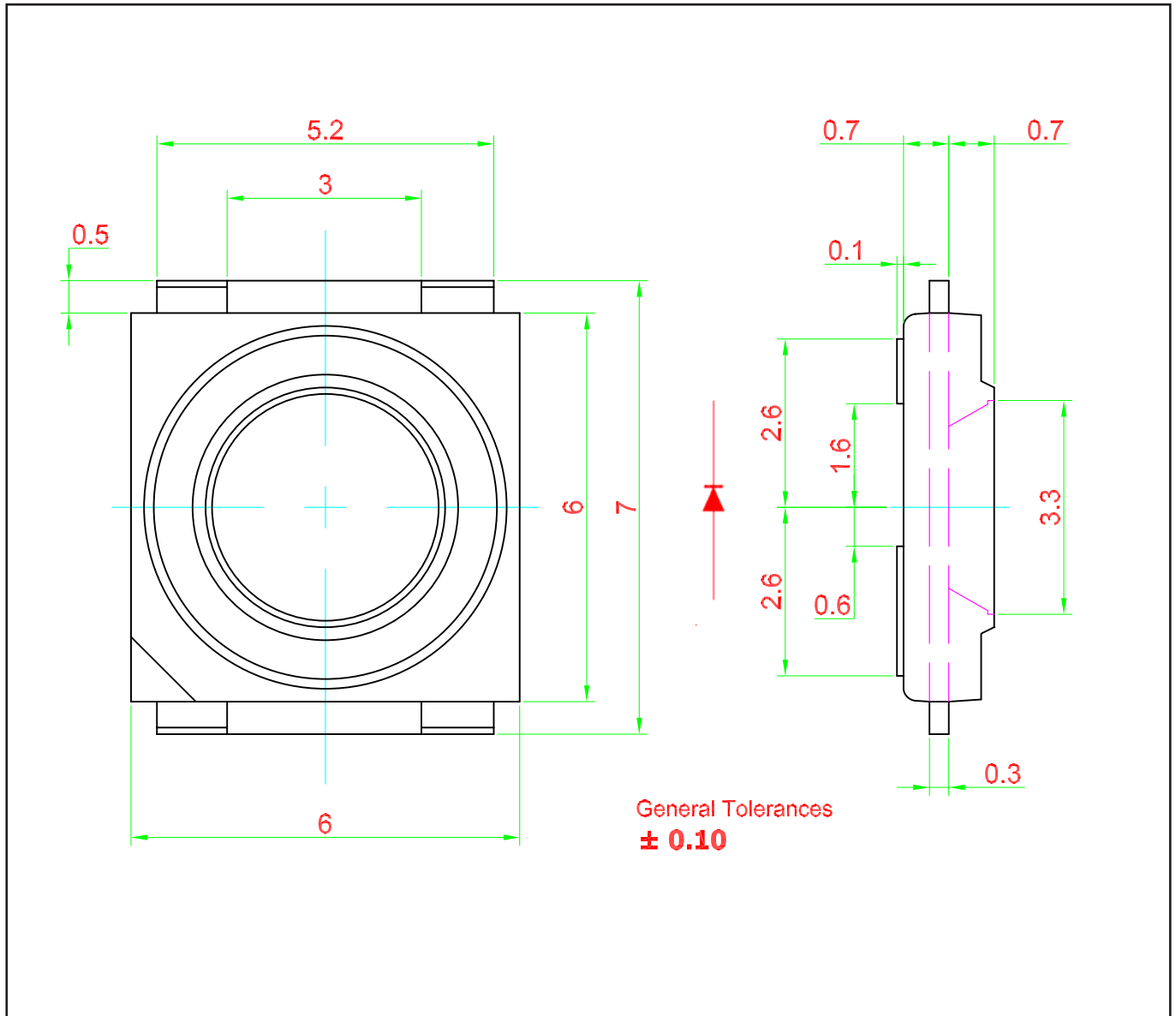
**Maximum Current vs Ambient Temperature**



**Radiation Pattern**



**SPNova™ • InGaN White : NPW-MSD Package Outlines**

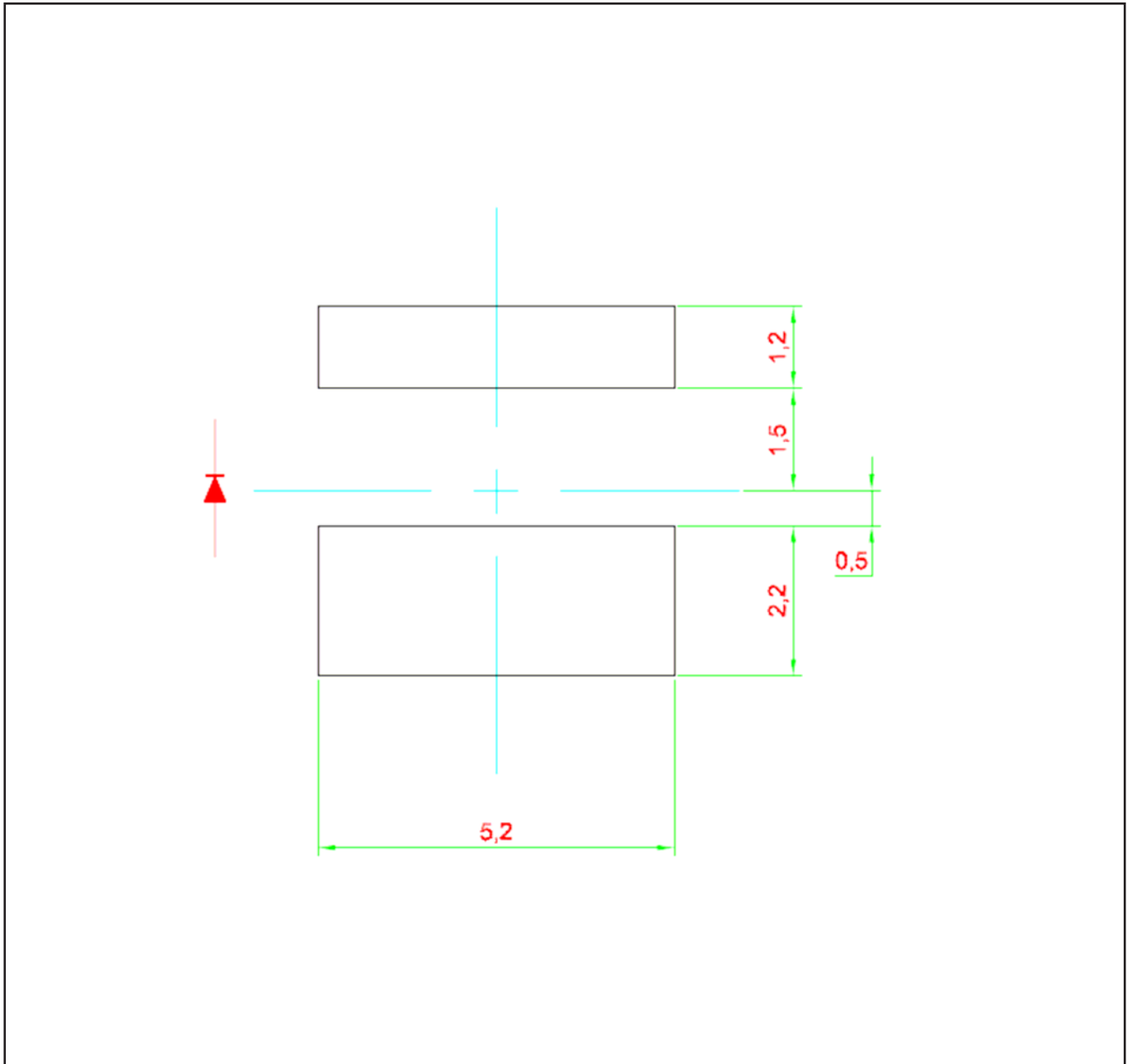


**Material**

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

## Solder Pad Design

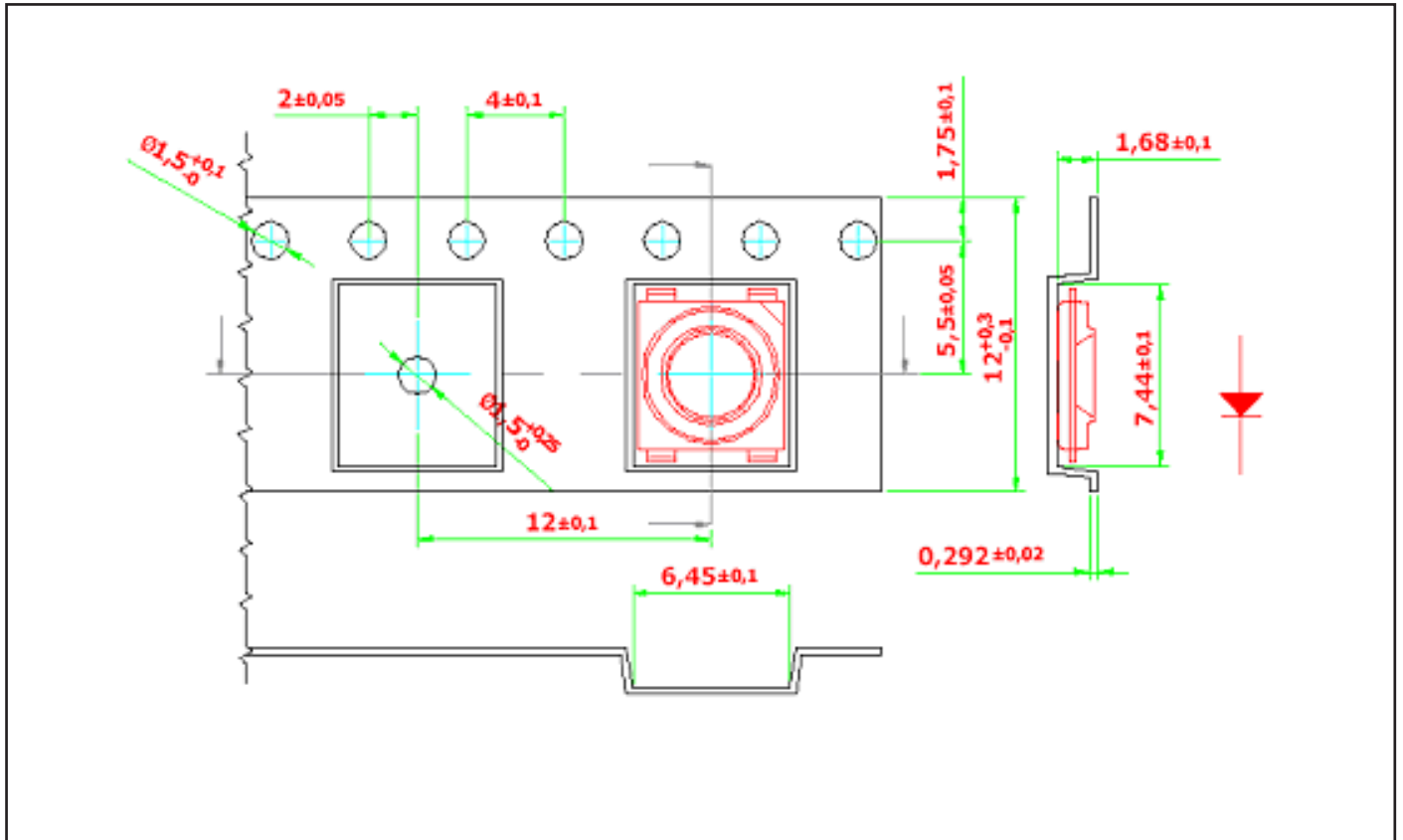
Note: Metal core circuit board (MCPCB) is highly recommended for applications.  
Please consult sales and marketing for additional information.



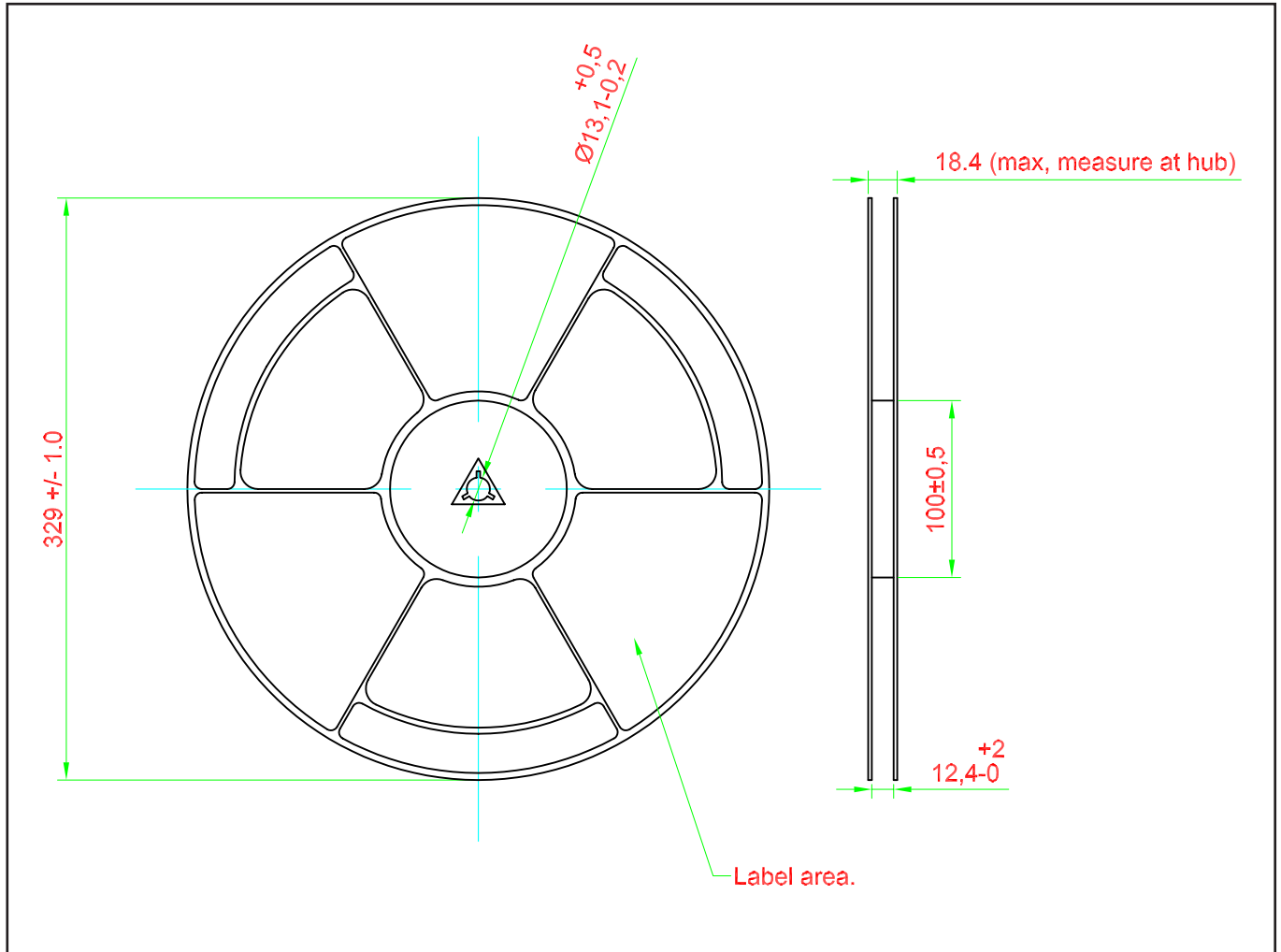


## Taping and orientation

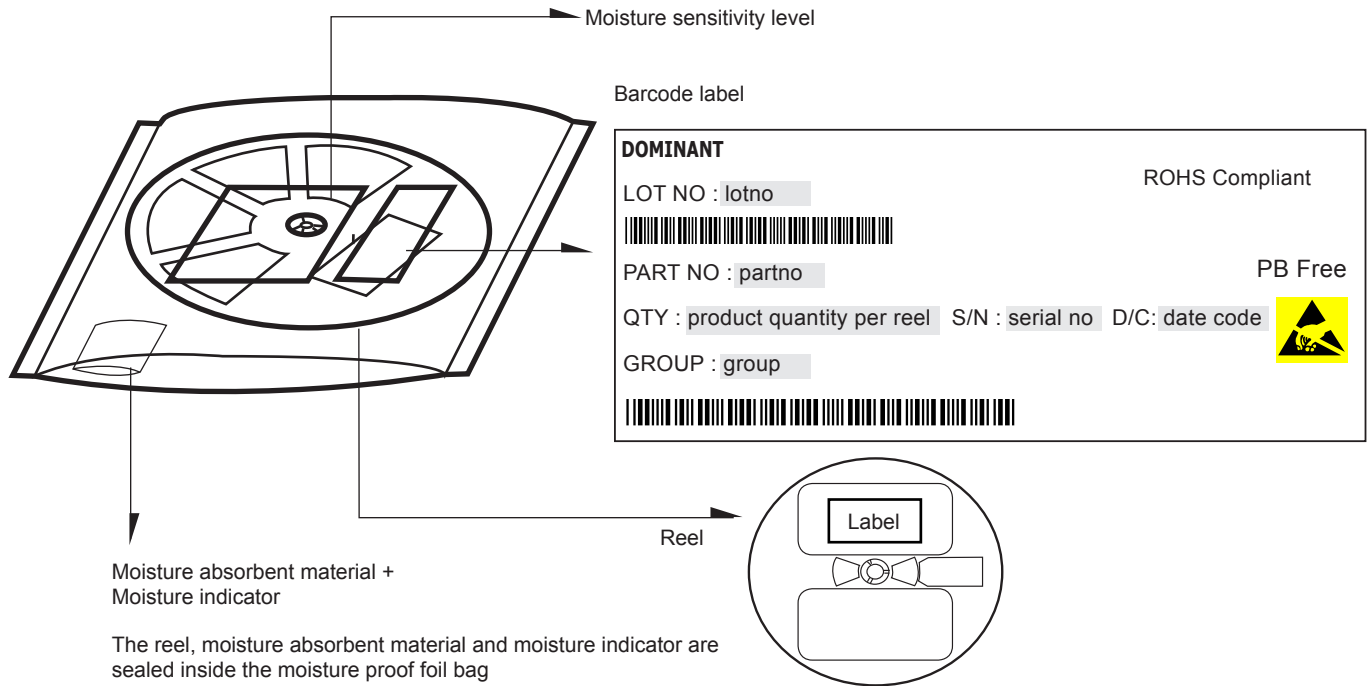
- Reels come in quantity of 2000 units.
- Reel diameter is 330 mm.



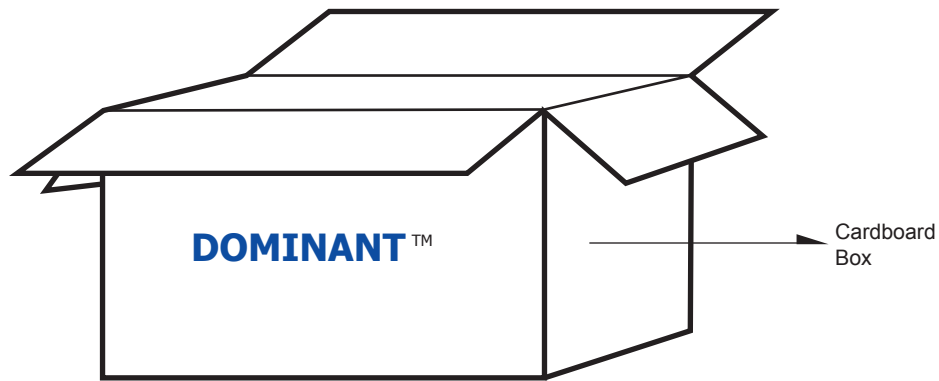
### Packaging Specification



**Packaging Specification**



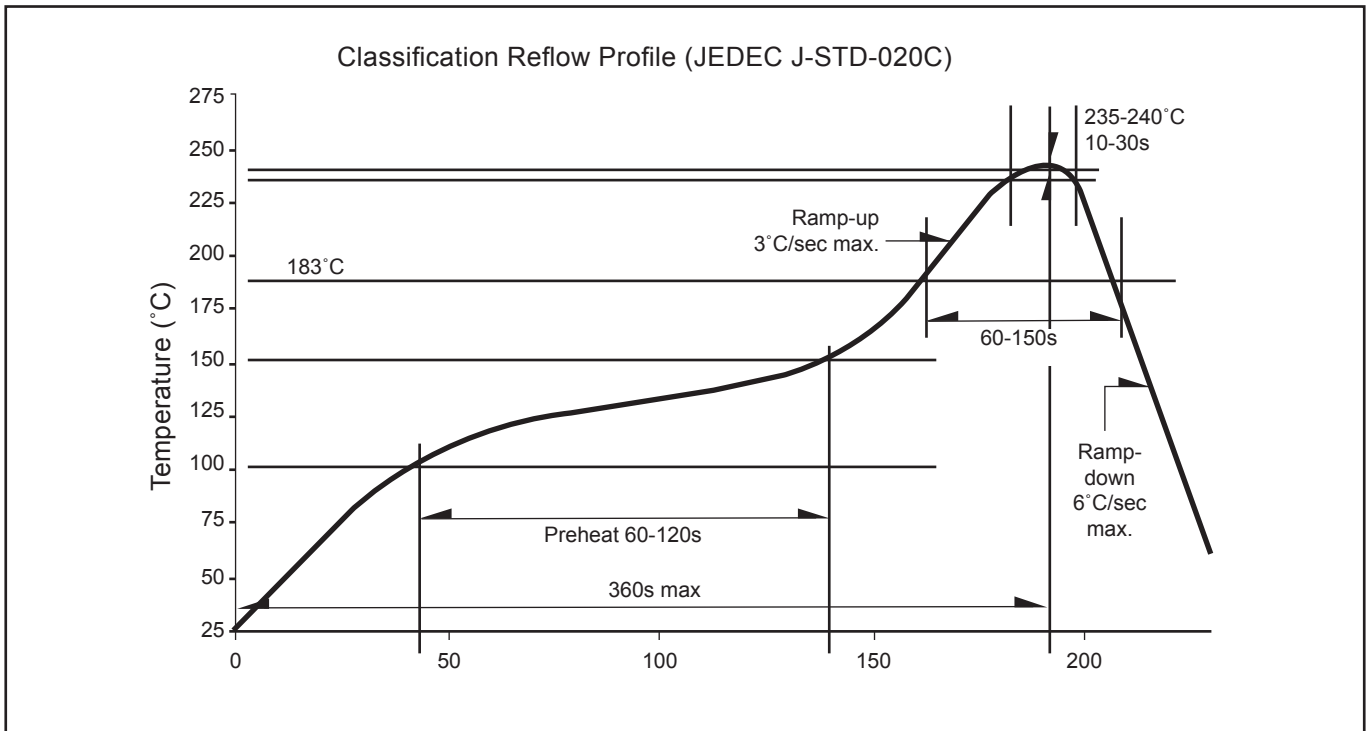
	Average 1pc SPNova	1 completed bag (2000pcs)
Weight (gram)	0.188	800 ± 10



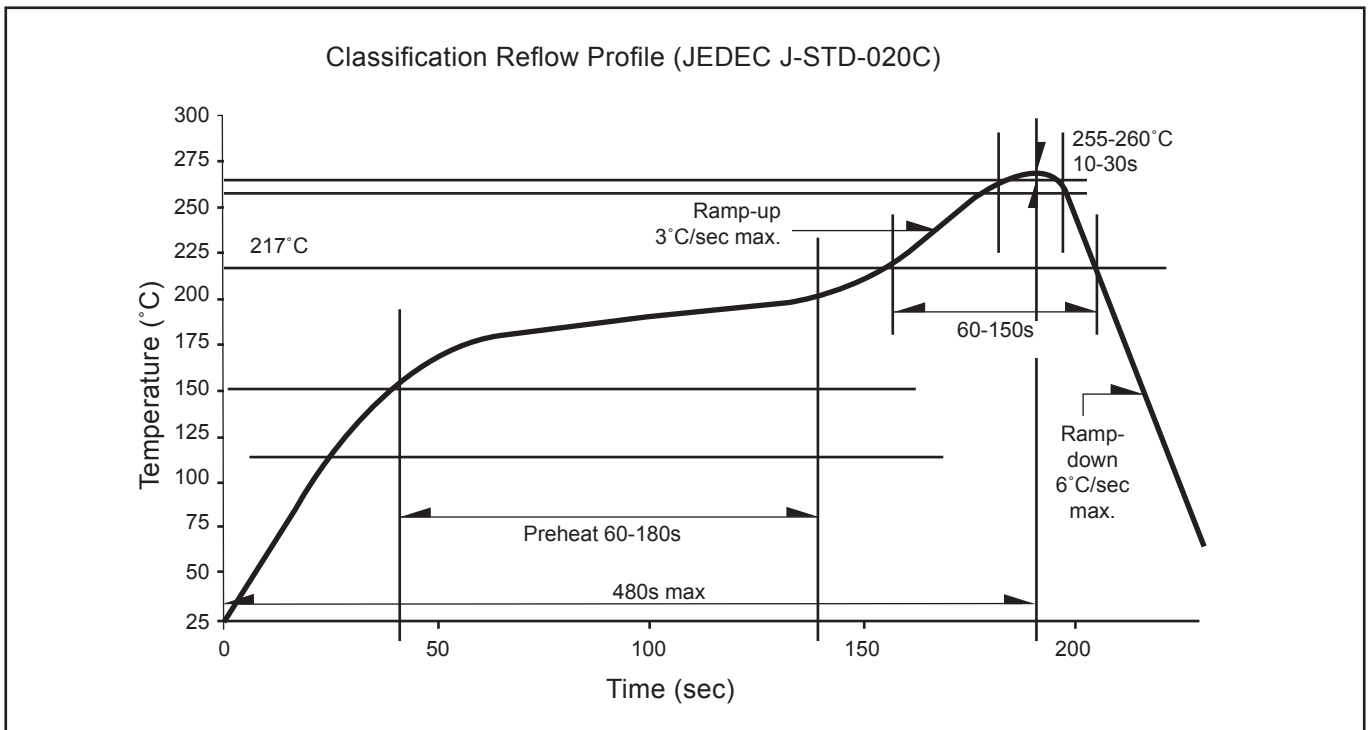
**For SPNova™**

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	28 Mar 2008
2	Update Vf max to 4.1V	19 Aug 2009
3	Add Characteristics	09 Oct 2009
-	Update company name	05 Apr 2010
2	Add new partno: NPW-MSD-PQ-1; Not for new design: NPW-MSD-NP-1	25 Nov 2010
2	Typo error on IV Bins	18 Jan 2011
-	Corrections on SPNova	7 Jul 2011

**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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