

Primax™

Synonymous with function and performance, enter the Primax, the new era of high intensity illumination in LED. With its high flux output and high luminous intensity, Primax transcends today LED lightings technology and how we perceive it. The small package outline (3.5 x 3.5 x 1.2 mm) and high intensity make it an ideal choice for backlighting, signage, exterior automotive lighting and decorative lighting.

Features:

- > Super high brightness surface mount LED
- > 120° viewing angle.
- > Compact package outline (LxW) of 3.5 x 3.5 mm.
- > Ultra low height profile - 1.2mm.
- > Low thermal resistance.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.
- > Superior corrosion resistance.
- > Excellent reliability with new state-of-the-art phosphor system.



Applications:

- > Automotive: exterior 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 @ 150mA (lm)		
			Min.	Typ.	Max.
NAW-BHG-PQ-1	White	120	23.5	30.6	39.8
NAW-BHG-QR-1	White	120	30.6	39.8	51.7

NOTE

1. Luminous intensity is measured with an accuracy of $\pm 11\%$.
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 = 150 mA		
	Min. (V)	Typ. (V)	Max. (V)
NAW-BHG	3.0	3.4	3.9

Forward Voltages are tested using a current pulse of 1 ms and has an accuracy of ± 0.1 V.

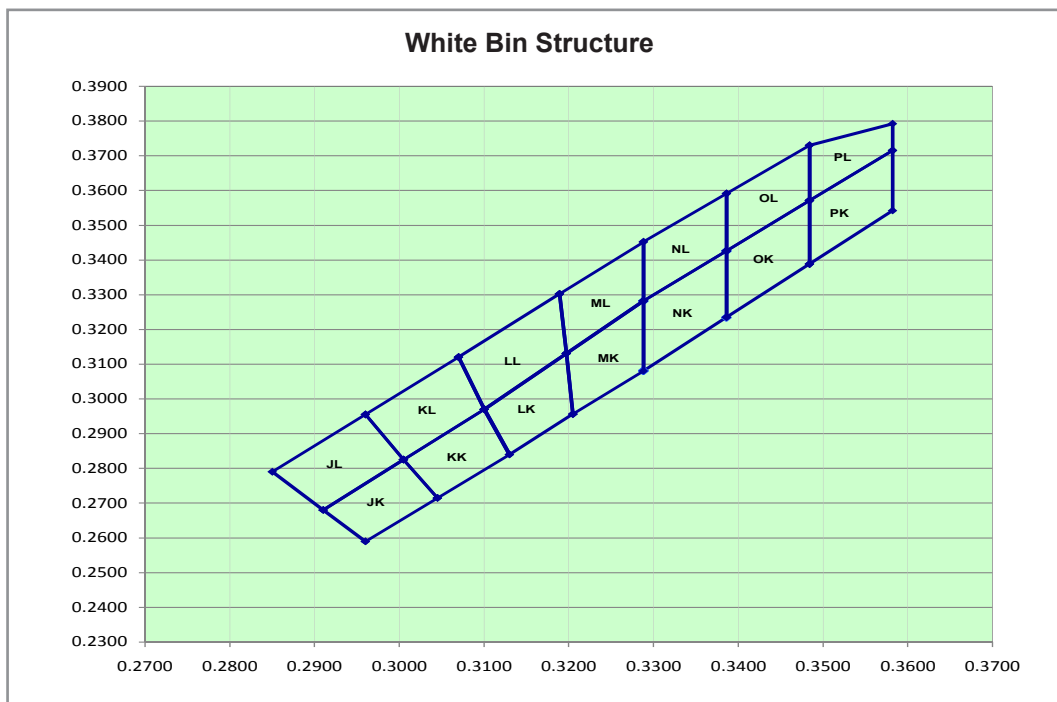
Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	180	mA
Peak pulse current	350	mA
Reverse voltage	Not designed for reverse bias	V
ESD threshold (HBM)	2000	V
LED junction temperature	125	°C
Operating temperature	-40 ... +100	°C
Storage temperature	-40 ... +100	°C
Thermal resistance		
- Junction / ambient, R _{th JA}	125	K/W
- Junction / solder point, R _{th JS}	45	K/W
(Mounted on dual-sided FR4 in-house PCB ; total Cu area > 900 mm²)		

Characteristics

	Symbol	Part Number	Value	Unit
Temperature coefficient of V_F (typ) $I_F = 150\text{mA}$; $0\text{ }^{\circ}\text{C} \leq T \leq 85\text{ }^{\circ}\text{C}$	TC_V	NAW-BHG	-3.70	mV / K
Temperature coefficient of I_V (typ) $I_F = 150\text{mA}$; $0\text{ }^{\circ}\text{C} \leq T \leq 85\text{ }^{\circ}\text{C}$	TC_{IV}	NAW-BHG	-0.25	% / K
Temperature coefficient of C_x (typ) $I_F = 150\text{mA}$; $0\text{ }^{\circ}\text{C} \leq T \leq 85\text{ }^{\circ}\text{C}$	TC_{Cx}	NAW-BHG	-0.00022	
Temperature coefficient of C_y (typ) $I_F = 150\text{mA}$; $0\text{ }^{\circ}\text{C} \leq T \leq 85\text{ }^{\circ}\text{C}$	TC_{Cy}	NAW-BHG	-0.00016	

NAW-BHG, White Color Grouping



Chromaticity coordinate groups are measured with an accuracy of ± 0.01 .

Bin		1	2	3	4
JK	Cx	0.2960	0.2910	0.3005	0.3045
	Cy	0.2590	0.2680	0.2825	0.2715
JL	Cx	0.291	0.2850	0.2960	0.3005
	Cy	0.2680	0.2790	0.2955	0.2825
KK	Cx	0.3045	0.3005	0.3100	0.3130
	Cy	0.2715	0.2825	0.2970	0.2840
KL	Cx	0.3005	0.2960	0.3070	0.3100
	Cy	0.2825	0.2955	0.3120	0.2970
NK	Cx	0.3288	0.3288	0.3386	0.3386
	Cy	0.3081	0.3282	0.3426	0.3235
NL	Cx	0.3288	0.3288	0.3386	0.3386
	Cy	0.3282	0.3453	0.3591	0.3426
OK	Cx	0.3386	0.3386	0.3484	0.3484
	Cy	0.3235	0.3426	0.3571	0.3388
OL	Cx	0.3386	0.3386	0.3484	0.3484
	Cy	0.3426	0.3591	0.3730	0.3571
LK	Cx	0.3100	0.3197	0.3205	0.3130
	Cy	0.2970	0.3131	0.2956	0.2840
LL	Cx	0.3070	0.3189	0.3197	0.3100
	Cy	0.3120	0.3302	0.3131	0.2970
MK	Cx	0.3197	0.3288	0.3288	0.3205
	Cy	0.3131	0.3282	0.3081	0.2956
ML	Cx	0.3189	0.3288	0.3288	0.3197
	Cy	0.3302	0.3452	0.3282	0.3131

Bin		1	2	3	4
PK	Cx	0.3484	0.3484	0.3582	0.3582
	Cy	0.3388	0.3571	0.3715	0.3542
PL	Cx	0.3484	0.3484	0.3582	0.3582
	Cy	0.3571	0.3730	0.3792	0.3715

Dominant color coordinate is measured with an accuracy of ± 0.01 .

Luminous Intensity Group at Tj=25°C

Brightness Group	Luminous Flux (lm)
P2	23.5...26.8
P3	26.8...30.6
Q2	30.6...34.8
Q3	34.8...39.8
R2	39.8...45.2
R3	45.2...51.7

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

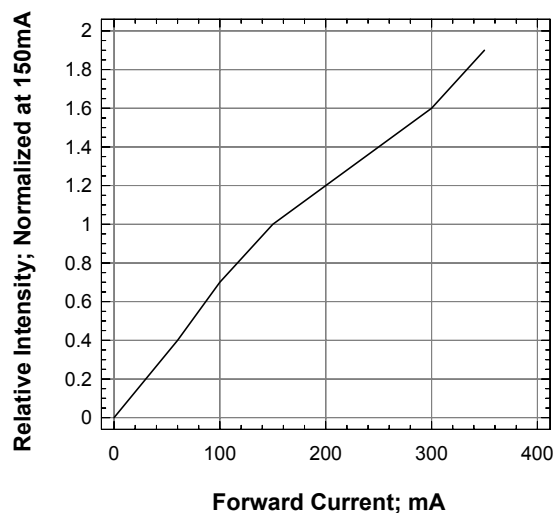
Vf Binning (Optional)

Vf Bin @ 150mA	Forward Voltage (V)
V1	3.00 ... 3.30
V2	3.30 ... 3.60
V3	3.60 ... 3.90

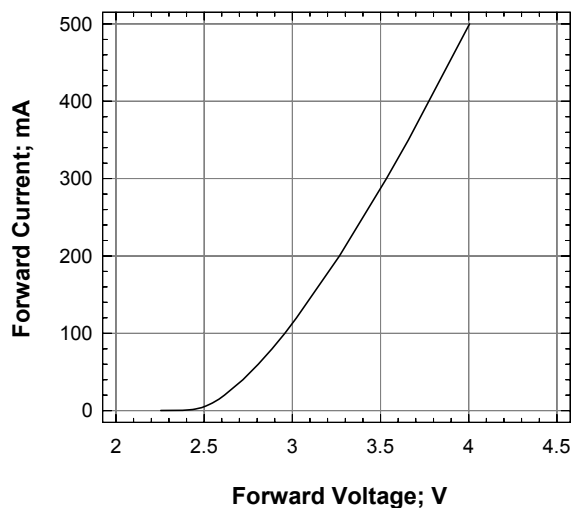
Forward voltage, Vf is measured with an accuracy of ± 0.1 V.

Please consult sales and marketing for special part number to incorporate Vf binning.

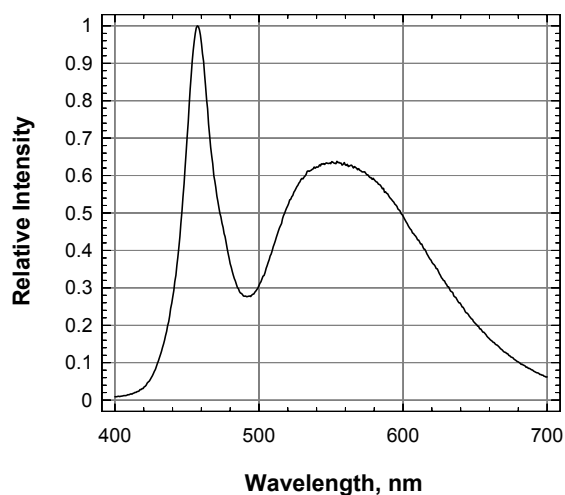
Relative Intensity Vs Forward Current



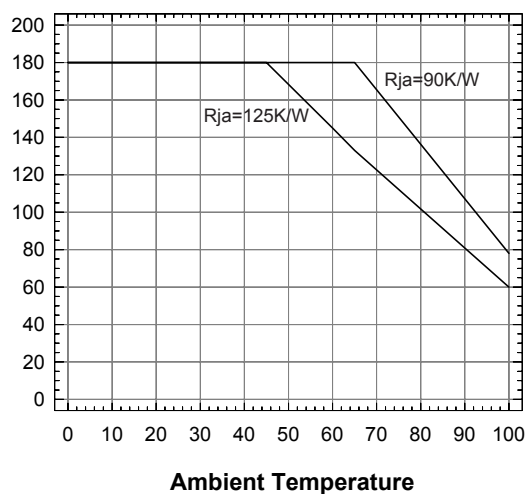
Forward Current vs Forward Voltage



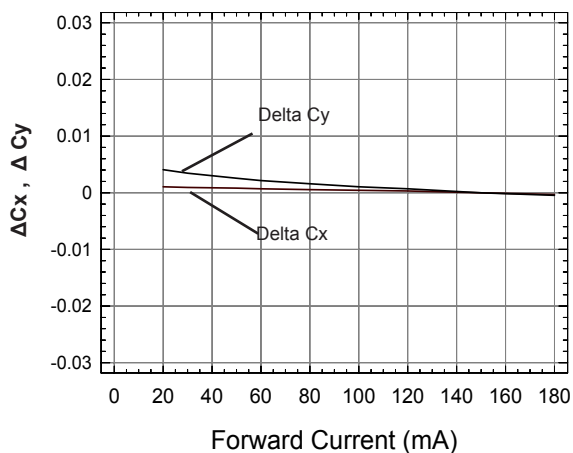
Relative Intensity Vs Wavelength



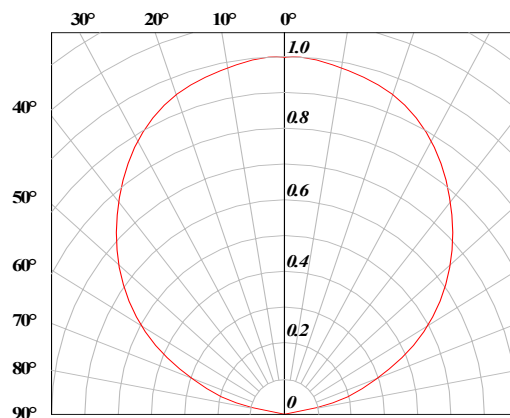
Forward Current Vs Ambient Temperature



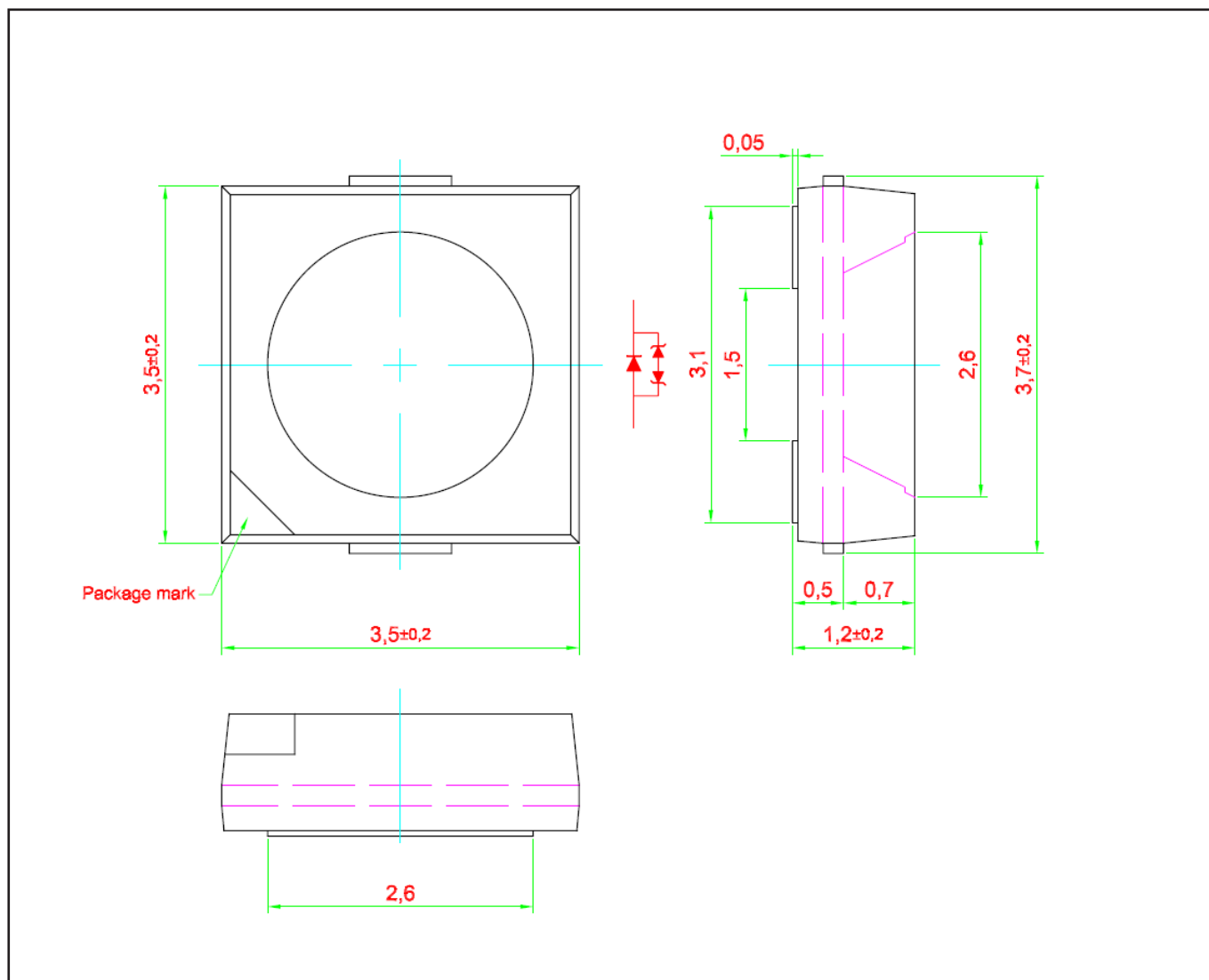
Chromaticity Vs Forward Current Test



Radiation Pattern



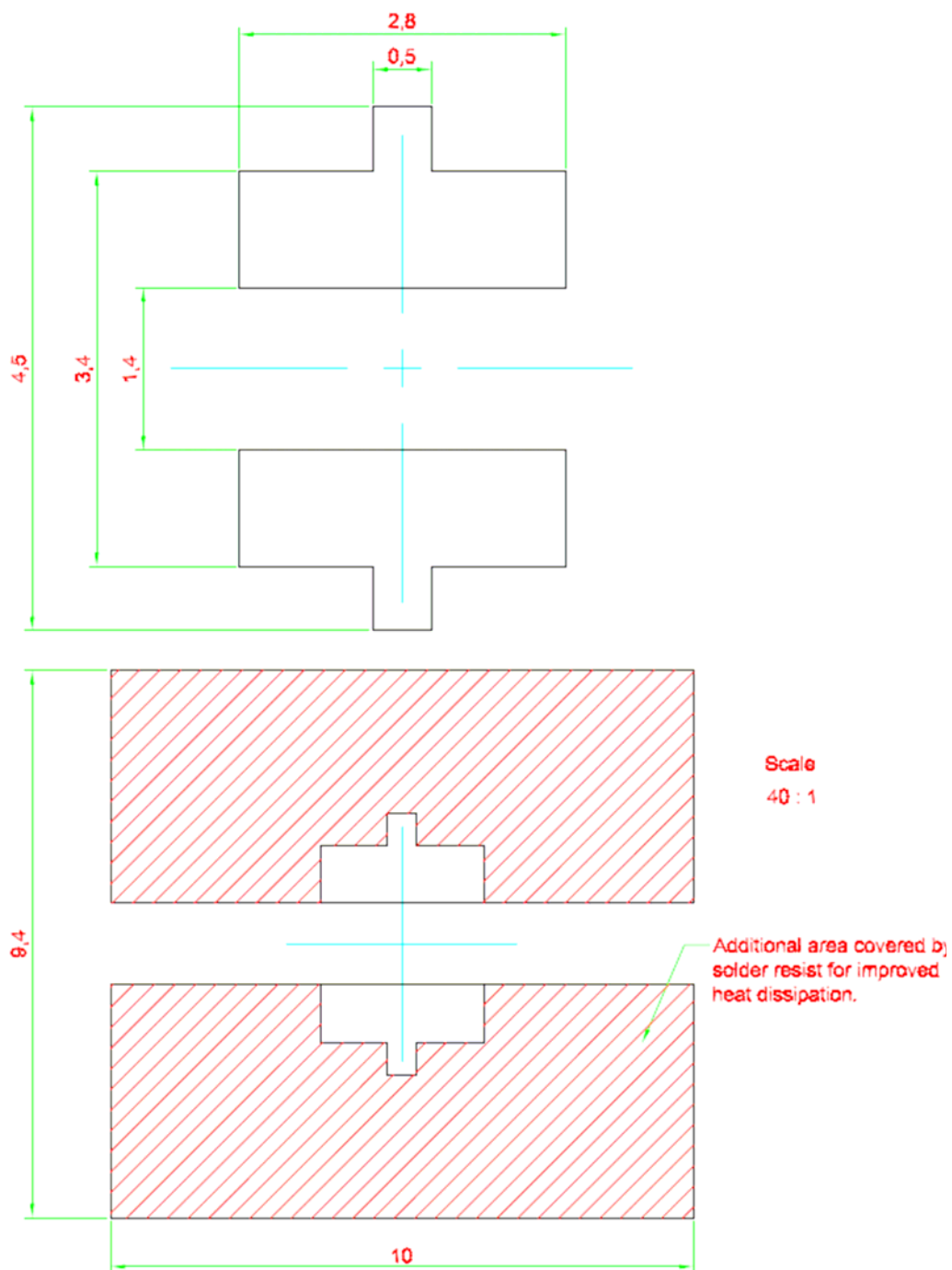
Primax™ • 150 InGaN White: NAW-BHG Package Outlines



Material

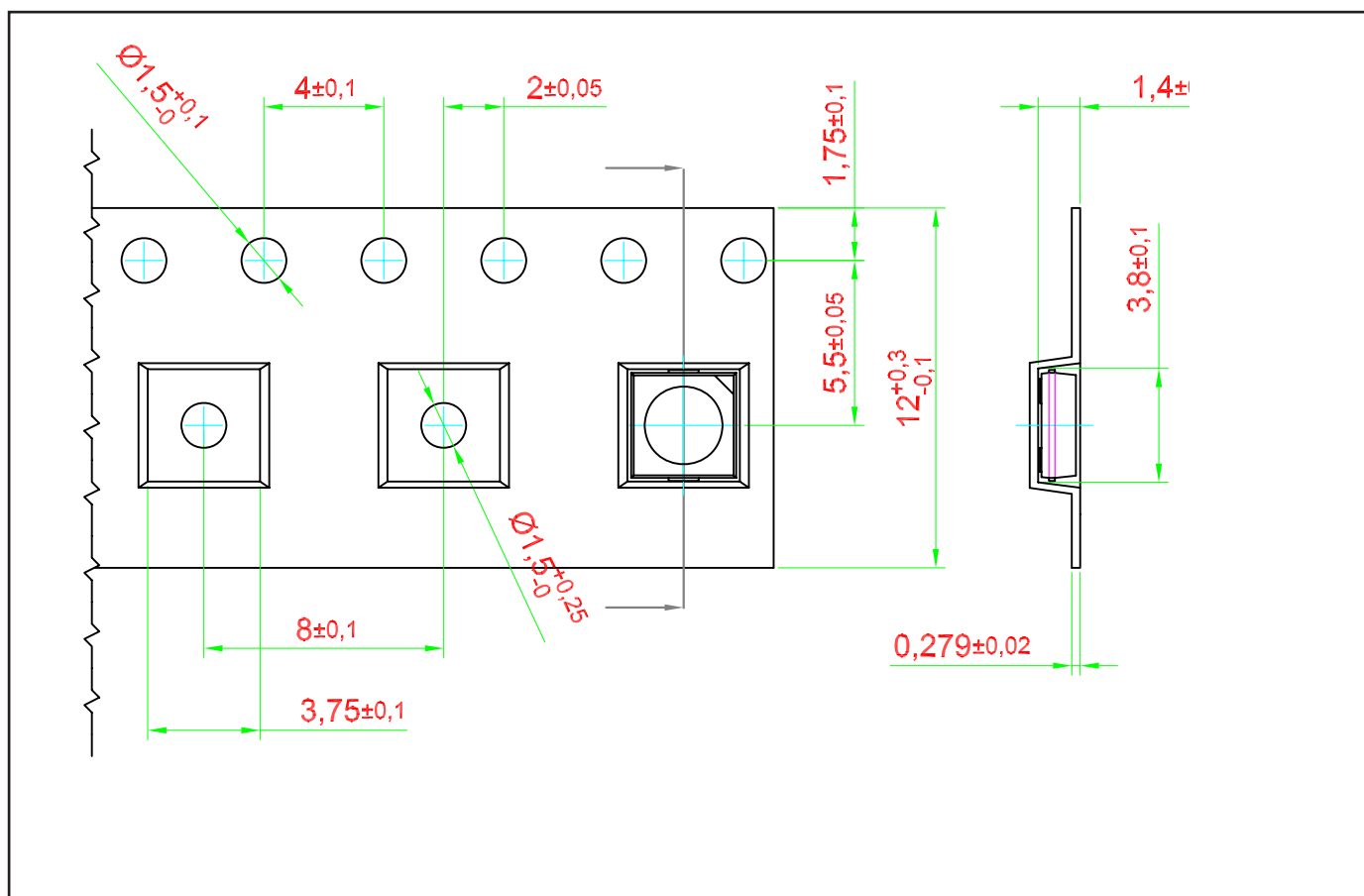
Material	
Lead-frame	Cu Alloy With Au Plating
Package	High Temperature Resistant Plastic, PPA
Encapsulant	Silicone Resin
Soldering Leads	Au Plating

Recommended Solder Pad

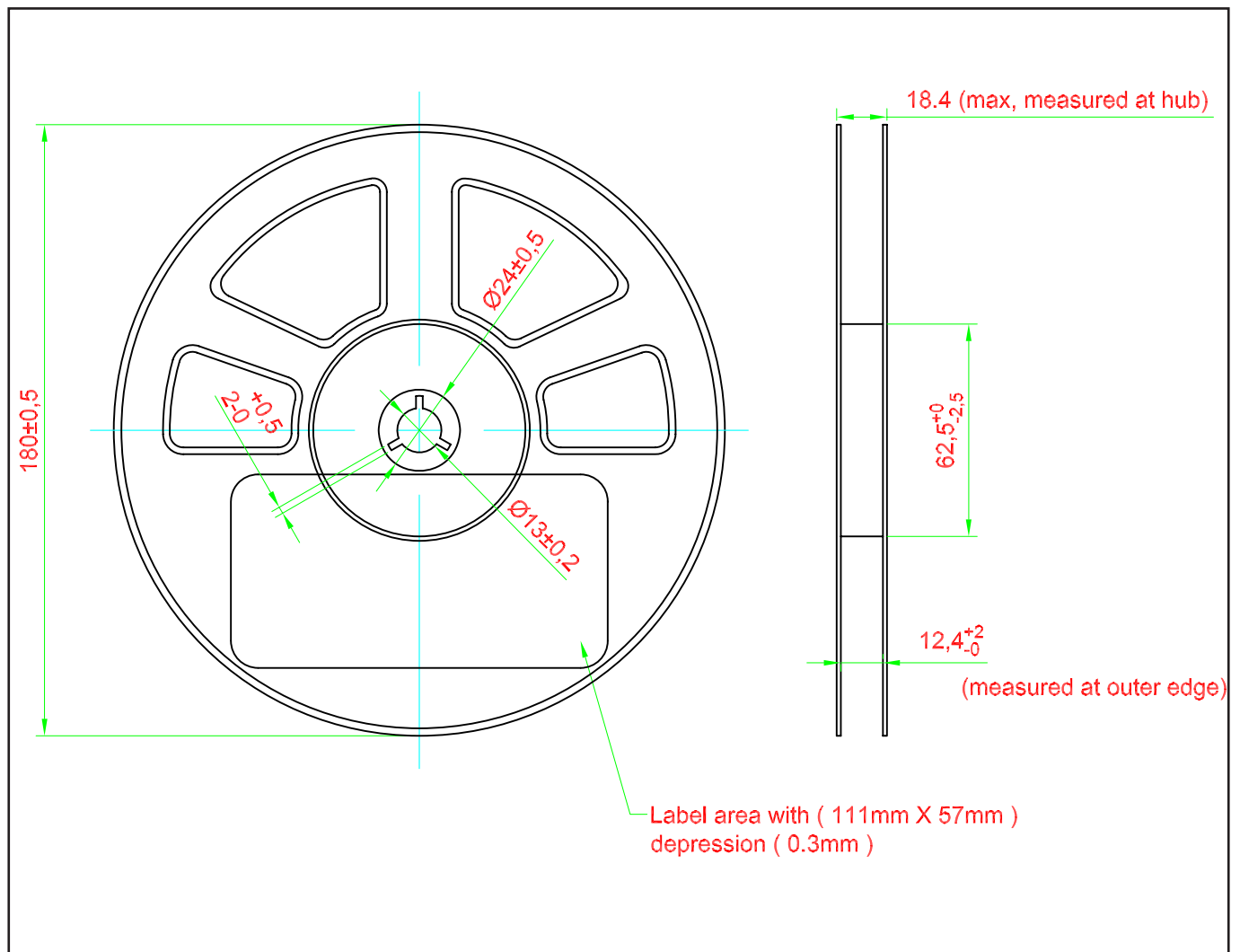


Taping and orientation

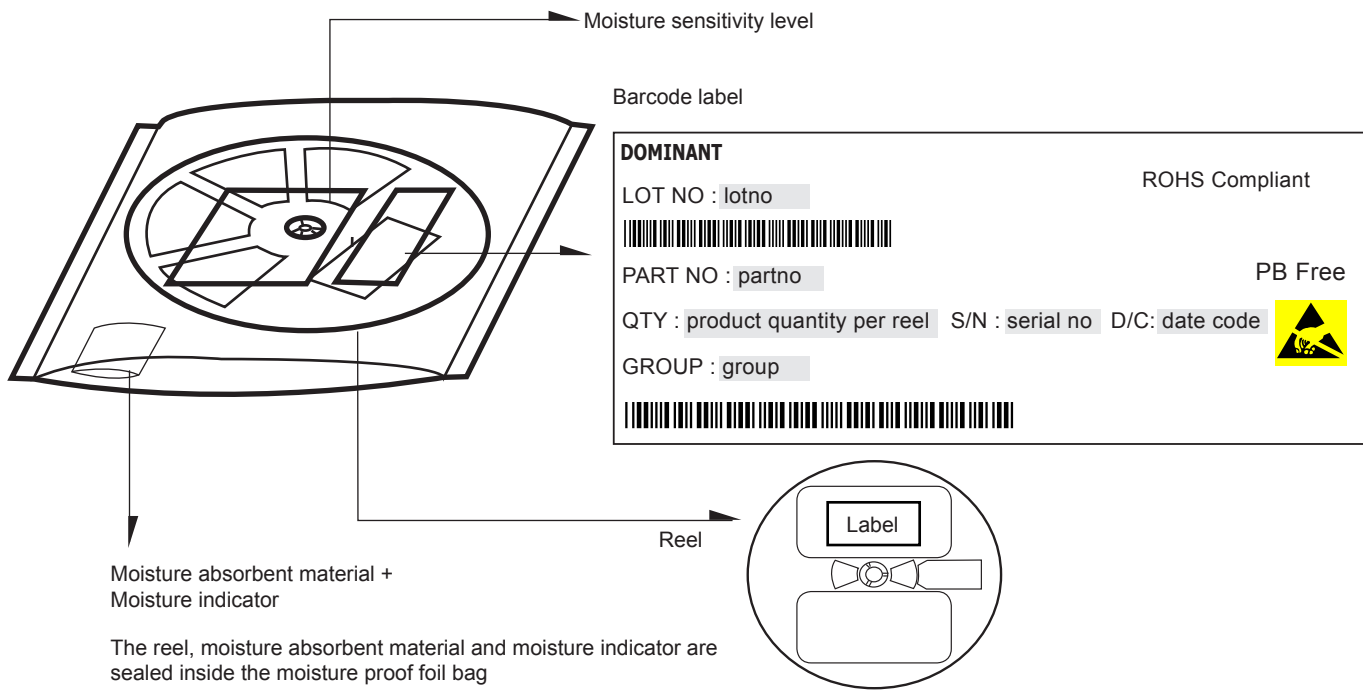
- Reels come in quantity of 1000 units.
- Reel diameter is 180 mm.



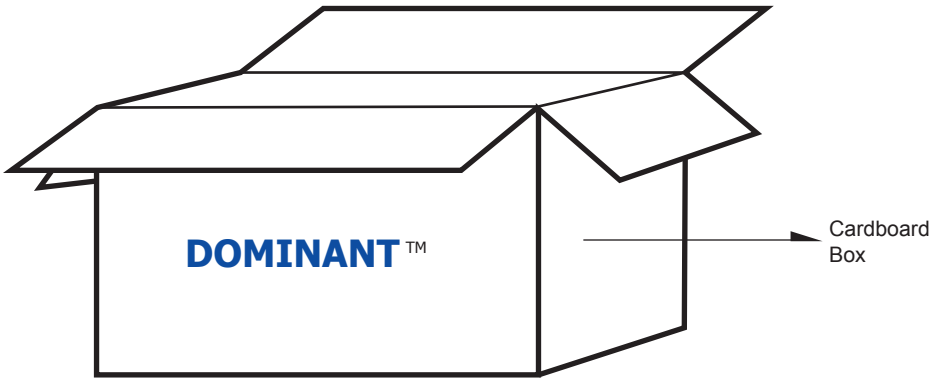
Packaging Specification



Packaging Specification



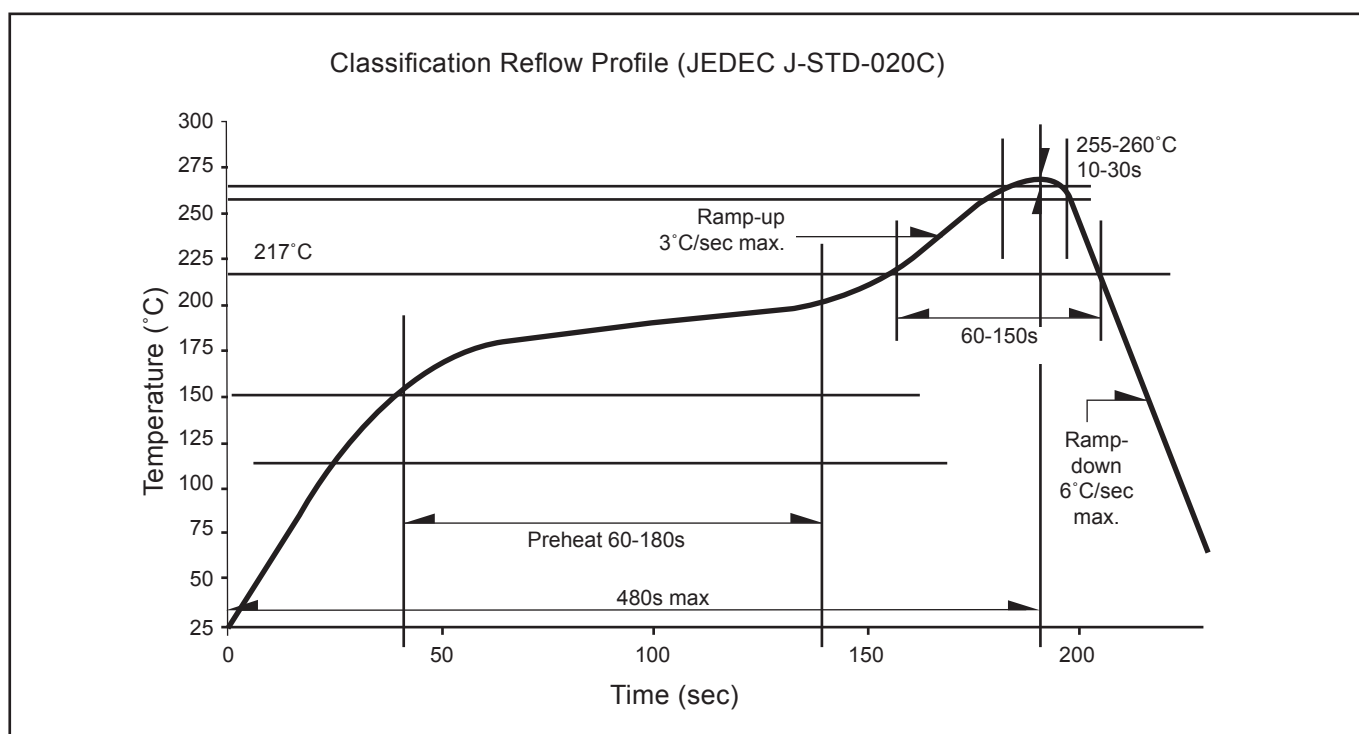
	Average 1pc Primax	1 completed bag (1000pcs)
Weight (gram)	0.041	160 ± 10



For Primax™

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	15,000 MAX
Large	416 x 516 x 476	1.74	96 reels MAX	96,000 MAX

Recommended Pb-free Soldering Profile



Revision History

Page	Subjects	Date of Modification
-	Initial Release	07 Feb 2012
7	Add graph: Chromaticity Vs Forward Current Test Result	24 Apr 2012
6	Update Vf Binning	23 Oct 2012
2	Add new partno: NAW-BHG-QR-1	26 Dec 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>.

Please contact us for more information:

Head Quarter

DOMINANT Opto Technologies Sdn. Bhd
Lot 6, Batu Berendam, FTZ Phase III, 75350 Melaka, Malaysia.
Tel: +606 283 3566 Fax: +606 283 0566
E-mail: sales@dominant-semi.com

DOMINANT Opto Technologies (Shanghai) Co., Ltd

Rm 305, Hongwell International Plaza No. 1600 Zhong Shan(W) Rd, Xuhui District, 200235 Shanghai, China
Tel: +86 21 5403 5655, Fax: +86 21 5403 6055
E-mail: sales_china@dominant-semi.com

DOMINANT Korea Sales Office

DOMINANT Semiconductors Korea Inc.
#211, Suntech City, 513-15, Sangdaewon 1-Dong, Jungwon-Gu, Seongnam-Si, Gyeonggi-Do, 462-725 Korea.
Tel: +82-31-701-5203 Fax: +82-31-701-5204
E-mail: sales_korea@dominant-semi.com

DOMINANT Europe Sales Office

DOMINANT Semiconductors Europe GmbH
Raiffeisenstr. 38, 74906 Bad Rappenau Germany
Tel: +49 (0) 7264-89010-0 Fax: +49 (0) 7264-89010-29
E-mail: info@dominant-semi.eu

DOMINANT U.S.A Sales Office

25 Rockaway Road, 08833 Lebanon, New Jersey, USA
Tel: +1(908) 439-9930 Cell: +1(908) 343-5810 Fax: +1(908) 439-9929
E-mail: don.wendel@dominant-semi.com

DOMINANT India Sales Office

C-11, Vesanth Business Centre, #86, TTK Road, Alwarpet Chennai - 600 018, India.
Tel: +91-44-42030616 / 516 Fax: +91-44-4920616 Cell: +91-9444 920 537
E-mail: pravat.behera@dominant-semi.com

