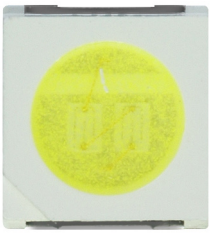
DOMINANT™
Opto Technologies
Innovating Illumination

DATA SHEET :

PrimaxPlus

175 InGaN White : MBWW-FSC



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 (3.7 x 3.5 x 0.8 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 3.7 x 3.5 mm.
> Ultra low height profile - 0.8mm.
> Low thermal resistance.
> Compatible to IR reflow soldering.
> Environmental friendly; RoHS compliance.

Applications:

> General lighting.

Optical Characteristics at Tj=25°C

Part Ordering Number	Color	Viewing Angle°	CRI Typ.	Luminous Flux @ 175mA (lm) Appx. 1.2		
				Min.	Typ.	Max.
MBWW-FSC-9U8V-1	White	120	84	106.5	121.4	138.4
MBWW-FSC-6V6W-1	White	120	84	113.6	138.4	157.8

NOTE
1. High color rendering index (CRI). Minimum CRI of 80.

Electrical Characteristics at Tj=25°C

Part Number	Vf @ If = 175 mA Appx. 3.1			V_r @ I_r = 10uA
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
MBWW-FSC	6.0	6.6	7.4	5

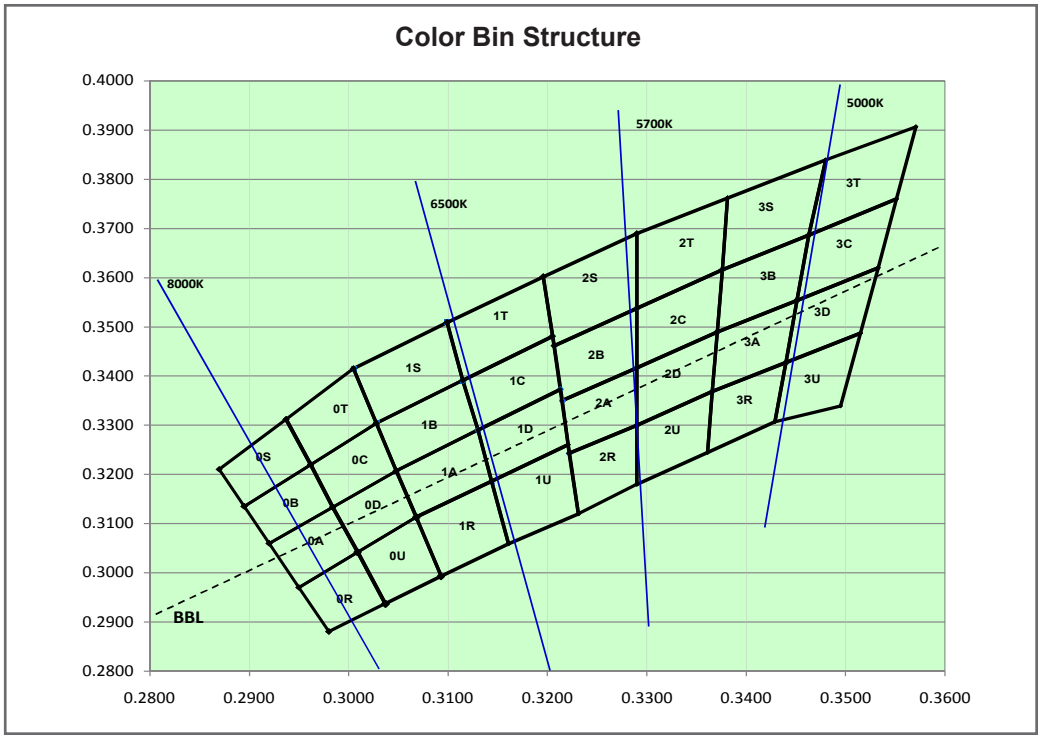
Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	180	mA
Peak pulse current	250	mA
Reverse voltage	5	V
ESD threshold (HBM)	1000	V
LED junction temperature	150	˚C
Operating temperature	-40 … +125	˚C
Storage temperature	-40 … +125	˚C
Thermal resistance - Junction / ambient, $R_{th\ JA}$ - Junction / solder point, $R_{th\ JS}$ (Mounted on dual sided FR4 in house PCB, total Cu area >900mm^2)	 90 18	 K/W K/W

Characteristics

	Symbol	Part Number	Value	Unit
Temperature coefficient of V_F (typ) I_F = 175mA; 0 ˚C <= T <= 100 ˚C	TC_V	MBWW-FSC	-7.0	mV / K
Temperature coefficient of I_V (typ) I_F = 175mA; 0 ˚C <= T <= 100 ˚C	TC_{IV}	MBWW-FSC	-0.19	% / K
Temperature coefficient of Cx (typ) I_F = 175mA; 0 ˚C <= T <= 100 ˚C	TC_{Cx}	MBWW-FSC	-0.00007	/ ˚C
Temperature coefficient of Cy (typ) I_F = 175mA; 0 ˚C <= T <= 100 ˚C	TC_{Cy}	MBWW-FSC	-0.00014	/ ˚C

MBWW-FSC, Color Grouping *Appx. 2.1*



Bin		1	2	3	4
0A	Cx	0.2950	0.2920	0.2984	0.3009
	Cy	0.2970	0.3060	0.3133	0.3042
0R	Cx	0.2980	0.2950	0.3009	0.3037
	Cy	0.2880	0.2970	0.3042	0.2937
1A	Cx	0.3048	0.3130	0.3144	0.3068
	Cy	0.3207	0.3290	0.3186	0.3113
1R	Cx	0.3068	0.3144	0.3161	0.3093
	Cy	0.3113	0.3186	0.3059	0.2993
2A	Cx	0.3215	0.3290	0.3290	0.3222
	Cy	0.3350	0.3417	0.3300	0.3243
2R	Cx	0.3222	0.3290	0.3290	0.3231
	Cy	0.3243	0.3300	0.3180	0.3120
3A	Cx	0.3371	0.3451	0.3440	0.3366
	Cy	0.3490	0.3554	0.3427	0.3369
3R	Cx	0.3366	0.3440	0.3429	0.3361
	Cy	0.3369	0.3428	0.3307	0.3245
0B	Cx	0.2920	0.2895	0.2962	0.2984
	Cy	0.3060	0.3135	0.3220	0.3133
0S	Cx	0.2895	0.2870	0.2937	0.2962
	Cy	0.3135	0.3210	0.3312	0.3220
1B	Cx	0.3028	0.3115	0.3130	0.3048
	Cy	0.3304	0.3391	0.3290	0.3207
1S	Cx	0.3005	0.3099	0.3115	0.3028
	Cy	0.3415	0.3509	0.3391	0.3304

Bin		1	2	3	4
2B	Cx	0.3207	0.3290	0.3290	0.3215
	Cy	0.3462	0.3538	0.3417	0.3350
2S	Cx	0.3196	0.3290	0.3290	0.3207
	Cy	0.3602	0.3690	0.3538	0.3462
3B	Cx	0.3376	0.3463	0.3451	0.3371
	Cy	0.3616	0.3687	0.3554	0.3490
3S	Cx	0.3381	0.3480	0.3463	0.3376
	Cy	0.3762	0.3840	0.3687	0.3616
0C	Cx	0.2984	0.2962	0.3028	0.3048
	Cy	0.3133	0.3220	0.3304	0.3207
0T	Cx	0.2962	0.2937	0.3005	0.3028
	Cy	0.3220	0.3312	0.3415	0.3304
1C	Cx	0.3115	0.3205	0.3213	0.3130
	Cy	0.3391	0.3481	0.3373	0.3290
1T	Cx	0.3099	0.3196	0.3205	0.3115
	Cy	0.3509	0.3602	0.3481	0.3391
2C	Cx	0.3290	0.3376	0.3371	0.3290
	Cy	0.3538	0.3616	0.3490	0.3417
2T	Cx	0.3290	0.3381	0.3376	0.3290
	Cy	0.3690	0.3762	0.3616	0.3538
3C	Cx	0.3463	0.3551	0.3533	0.3451
	Cy	0.3687	0.3760	0.3620	0.3554
3T	Cx	0.3480	0.3571	0.3551	0.3463
	Cy	0.3840	0.3907	0.3760	0.3687
0D	Cx	0.2984	0.3048	0.3068	0.3009
	Cy	0.3133	0.3207	0.3113	0.3042
0U	Cx	0.3037	0.3009	0.3068	0.3093
	Cy	0.2937	0.3042	0.3113	0.2993
1D	Cx	0.3130	0.3213	0.3221	0.3144
	Cy	0.3290	0.3373	0.3261	0.3186
1U	Cx	0.3144	0.3221	0.3231	0.3161
	Cy	0.3186	0.3261	0.3120	0.3059
2D	Cx	0.3290	0.3371	0.3366	0.3290
	Cy	0.3417	0.3490	0.3369	0.3300
2U	Cx	0.3290	0.3366	0.3361	0.3290
	Cy	0.3300	0.3369	0.3245	0.3180
3D	Cx	0.3451	0.3533	0.3515	0.3440
	Cy	0.3554	0.3620	0.3487	0.3427
3U	Cx	0.3440	0.3515	0.3495	0.3429
	Cy	0.3428	0.3487	0.3339	0.3307

InGaN wavelength is very sensitive to drive current. Operating at lower current is not recommended and may yield unpredictable performance current pulsing should be used for dimming purposed.

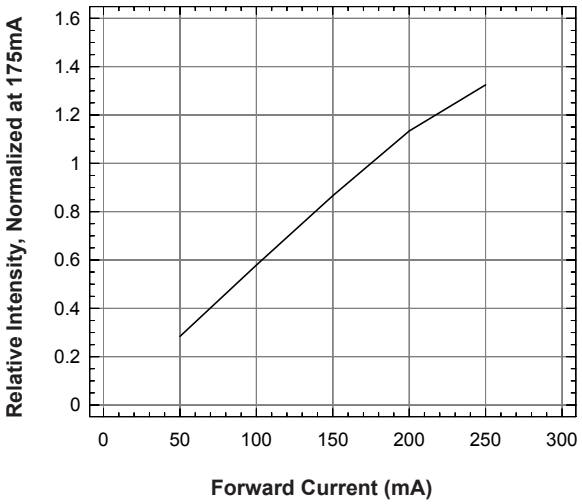
Luminous Intensity Group at Tj=25^{0}C

Brightness Group	Luminous Flux (lm) *Appx. 1.2*
9U	106.5 ... 113.6
6V	113.6 .. 121.4
7V	121.4 ... 129.2
8V	129.2 ... 138.4
9V	138.4 ... 147.7
6W	147.7 ... 157.8

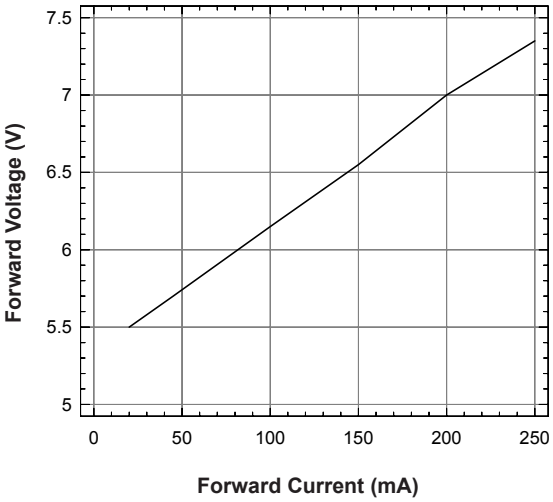
Vf Binning

Vf Bin @ 175mA	Forward Voltage (V) *Appx. 3.1*
V0	6.00 ... 6.20
V1	6.20 ... 6.40
V2	6.40 ... 6.60
V3	6.60 ... 6.80
V4	6.80 ... 7.00
V5	7.00 ... 7.20
V6	7.20 ... 7.40

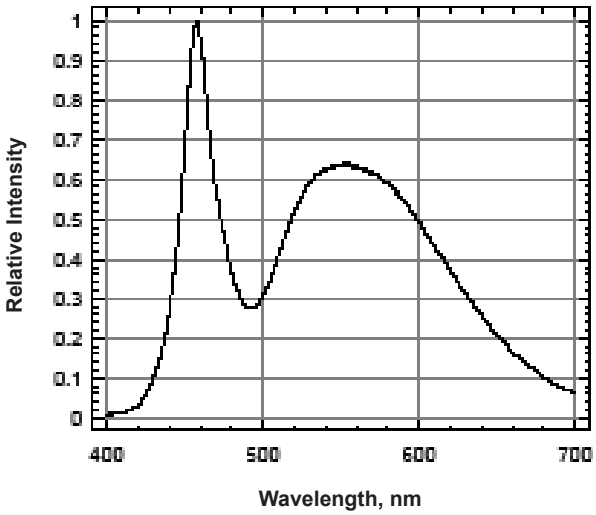
Relative Intensity Vs Forward Current



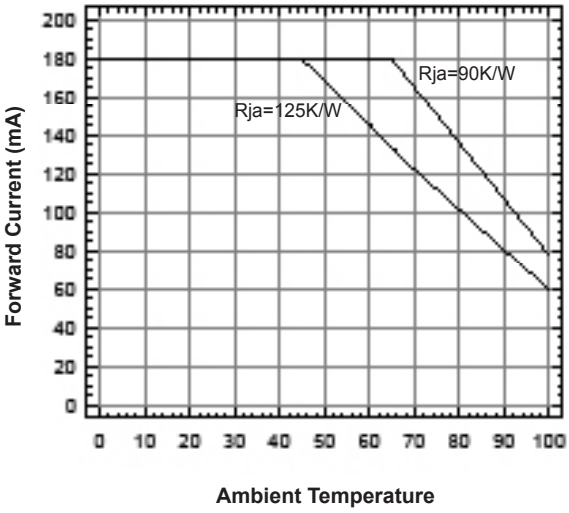
Forward Voltage Vs Forward Current



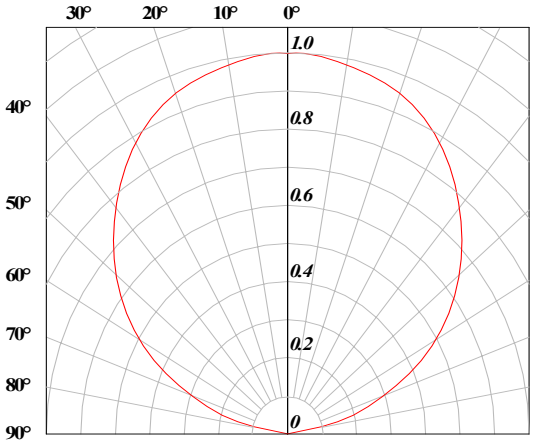
Relative Intensity Vs Wavelength



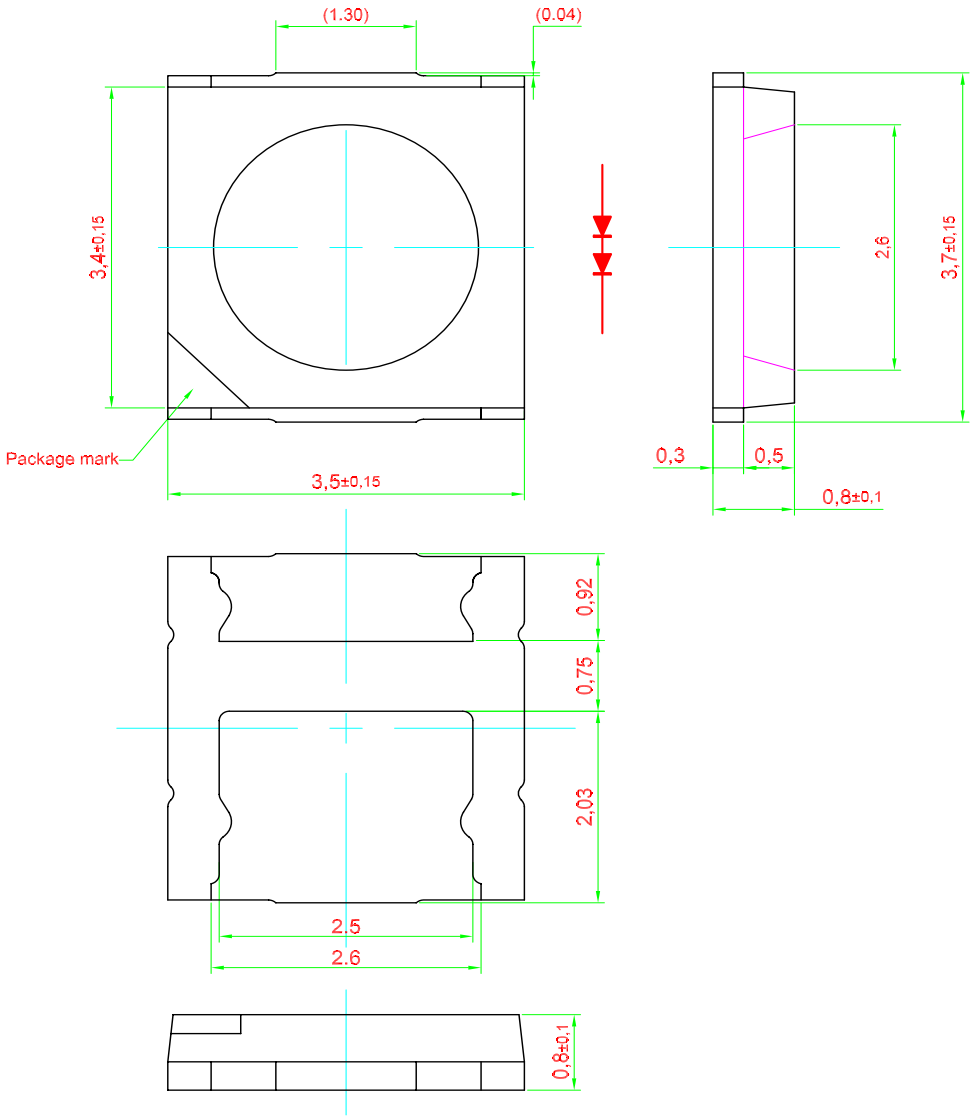
Forward Current Vs Ambient Temperature



Radiation Pattern



PrimaxPlus • 175 InGaN White: MBWW-FSC Package Outlines



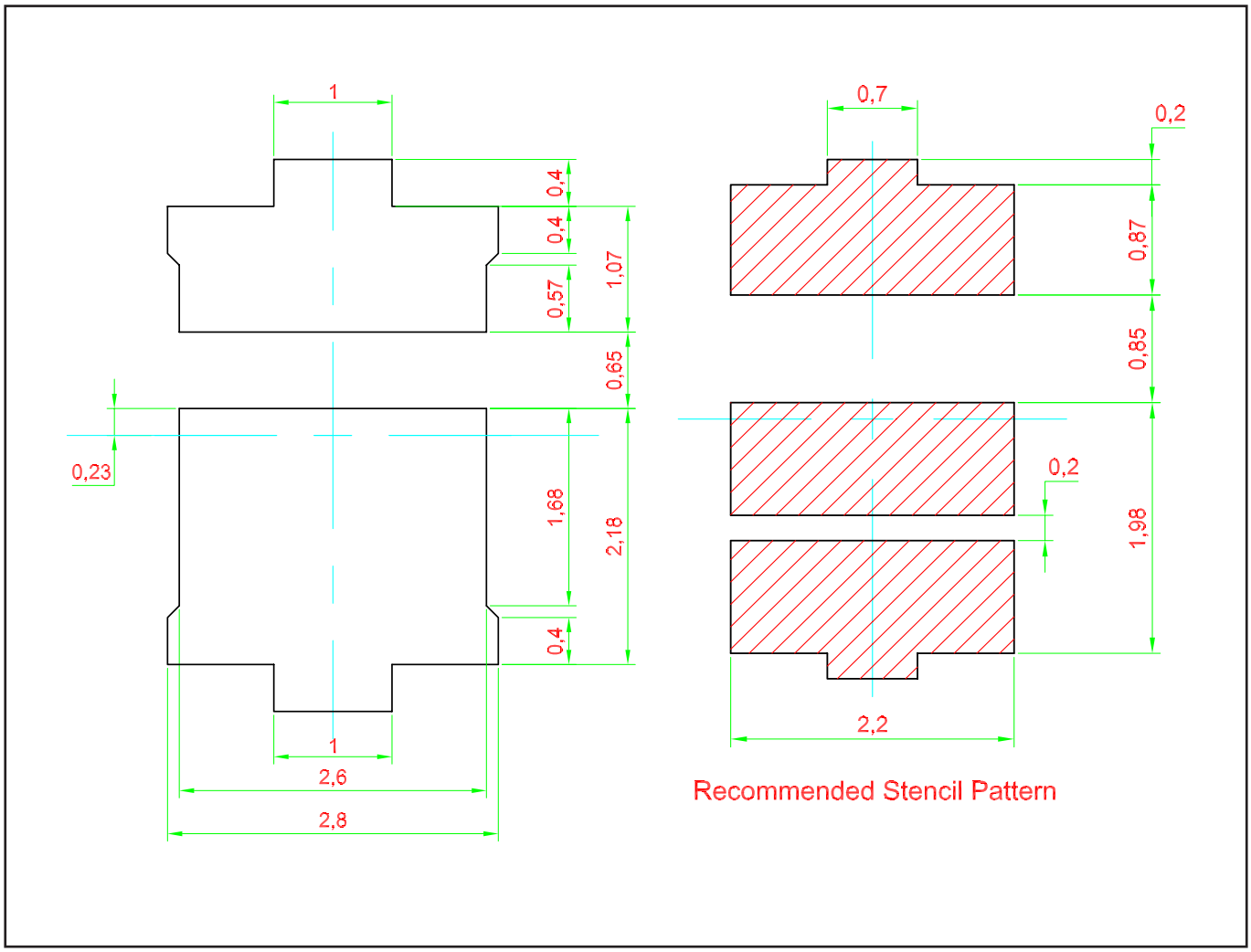
Notes:
Primary thermal path is through Cathode lead of LED package.
General tolerance: +/- 0.1mm.

Material

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

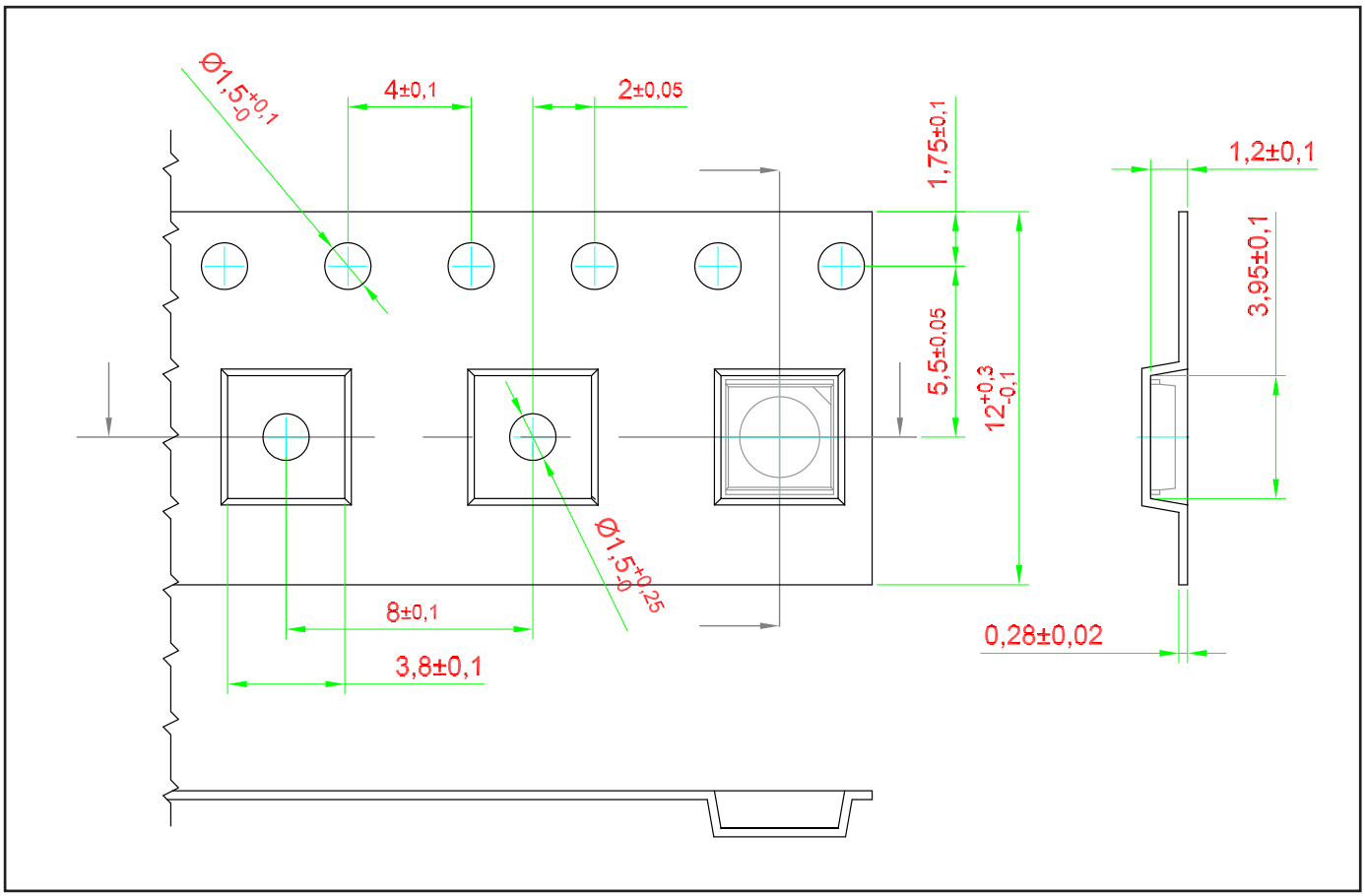
Note: This product is Pb free

Recommended Solder Pad

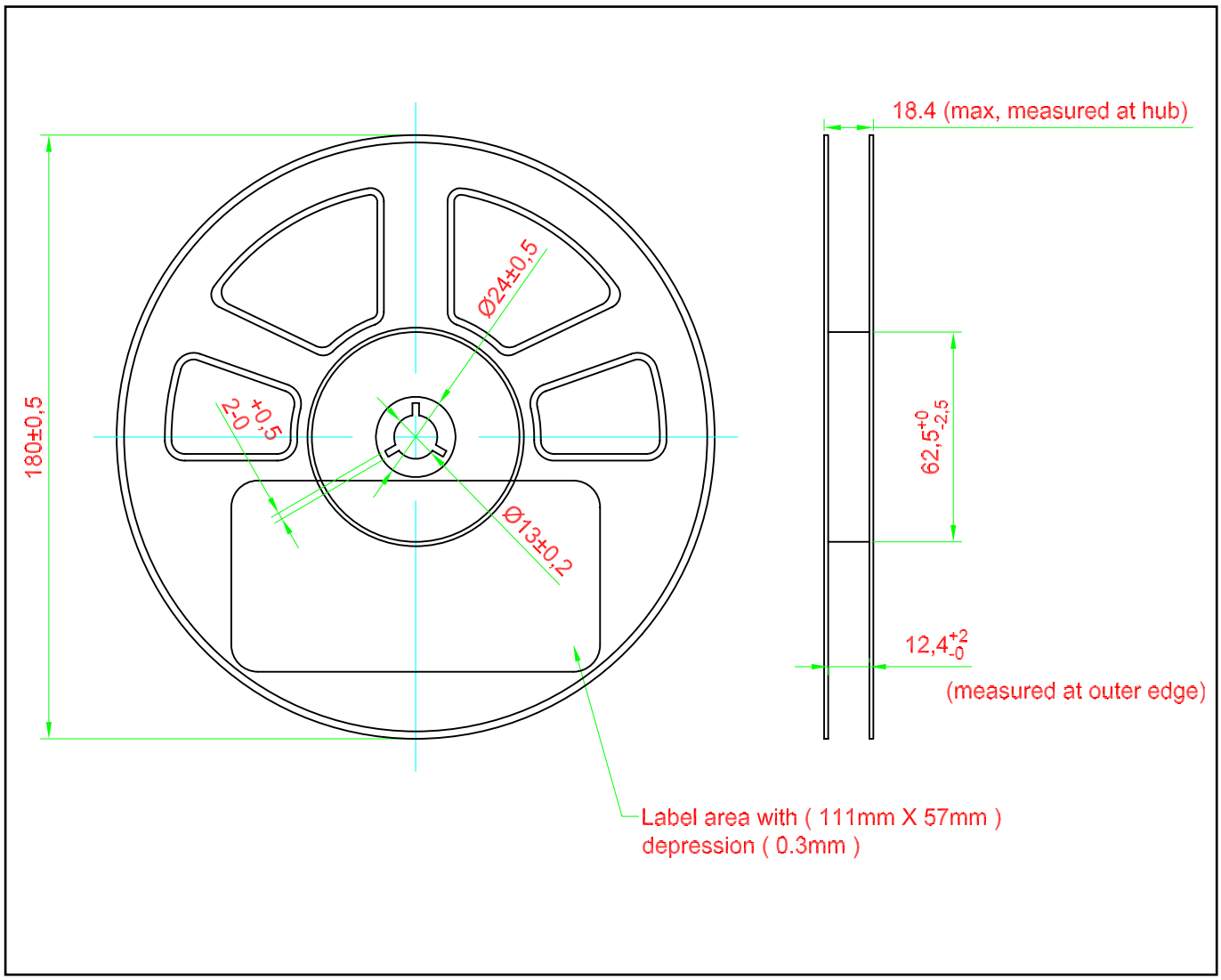


Taping and orientation

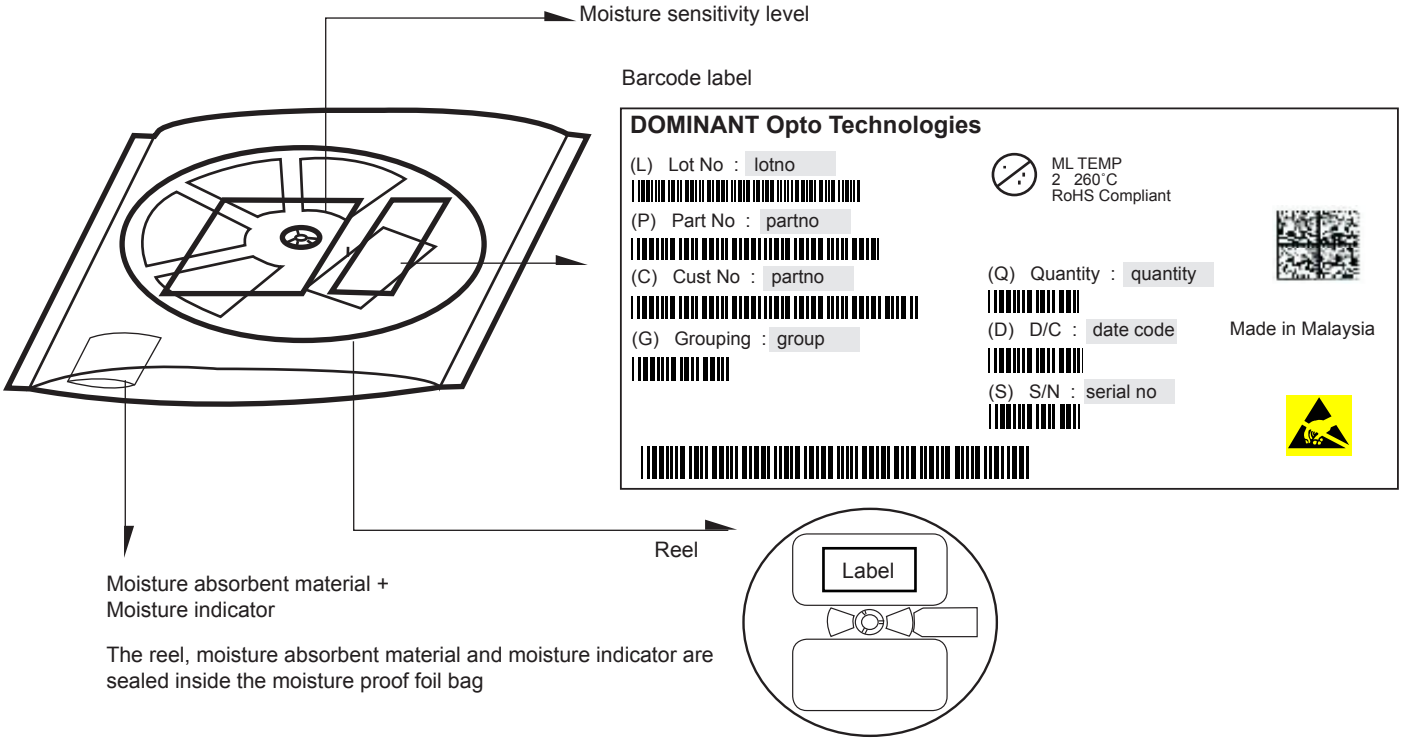
- Reels come in quantity of 1000 units.
- Reel diameter is 180 mm.



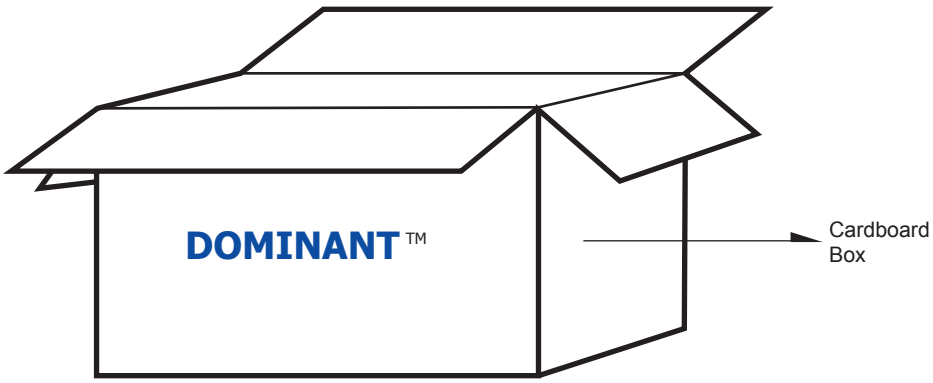
Packaging Specification



Packaging Specification



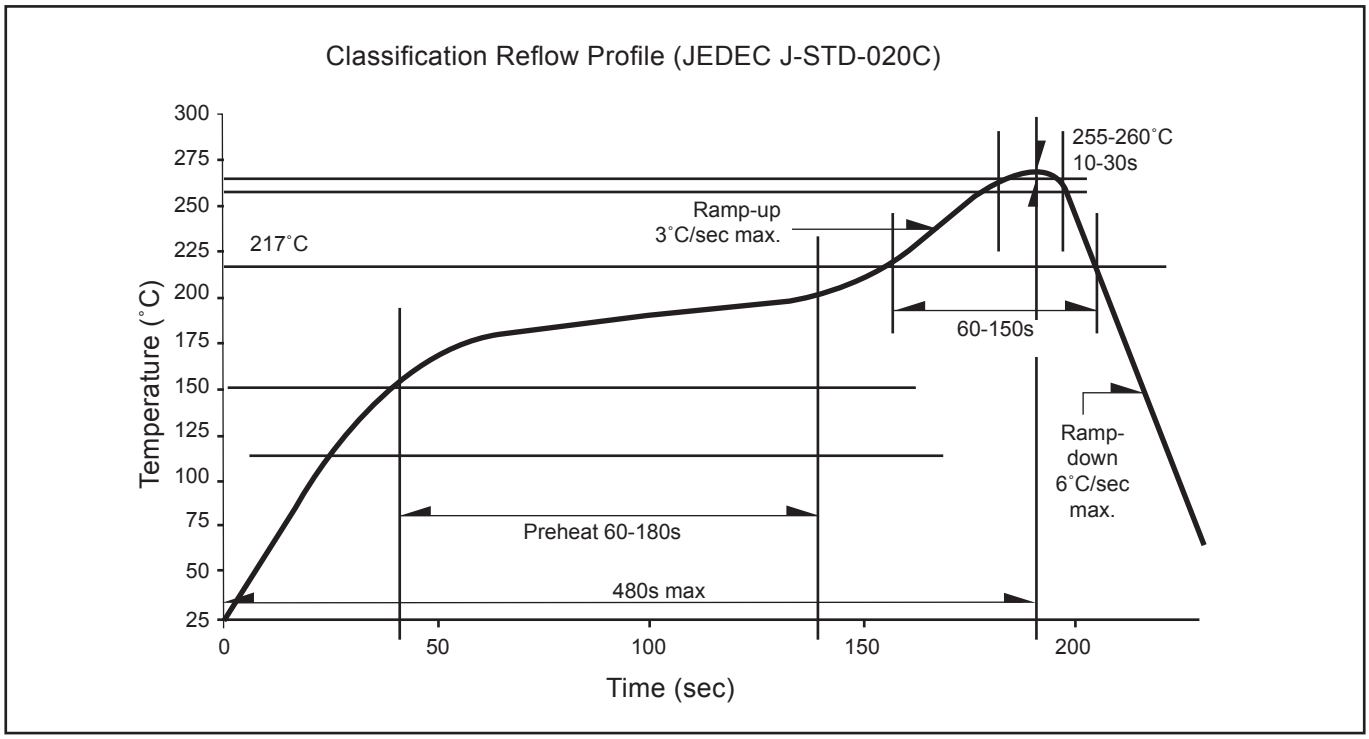
	Average 1pc PrimaxPlus	1 completed bag (1000pcs)
Weight (gram)	**0.034**	**230 ± 10**



For PrimaxPlus

Cardboard Box Size	Dimensions (mm)	Empty Box Weight (kg)	Reel / Box
Super Small	325 x 225 x 190	0.38	7 reels MAX
Small	325 x 225 x 280	0.54	11 reels MAX
Medium	570 x 440 x 230	1.46	48 reels MAX
Large	570 x 440 x 460	1.92	96 reels MAX

Recommended Pb-free Soldering Profile



Appendix

1) Brightness:

1.1 Luminous intensity is measured with an internal reproducibility of ± 8 % and an expanded uncertainty of ± 11 % (according to GUM with a coverage factor of k=3).

1.2 Luminous flux is measured with an internal reproducibility of ± 8 % and an expanded uncertainty of ± 11 % (according to GUM with a coverage factor of k=3).

2) Color:

2.1 Chromaticity coordinate groups are measured with an internal reproducibility of ± 0.005 and an expanded uncertainty of ± 0.01 (accordingly to GUM with a coverage factor of k=3).

2.2 DOMINANT wavelength is measured with an internal reproducibility of ± 0.5nm and an expanded uncertainty of ± 1nm (accordingly to GUM with a coverage factor of k=3).

3) Voltage:

3.1 Forward Voltage, Vf is measured with an internal reproducibility of ± 0.05V and an expanded uncertainty of ± 0.1V (accordingly to GUM with a coverage factor of k=3).

Revision History

Page	Subjects	Date of Modification
-	Initial Release	31 May 2013
2, 3	Add Thermal Resistance Add Characteristic	23 Jul 2013
10	Update Carrier Tape	14 Nov 2013
2, 6	Amend Vf Min and Add Vf Binning	27 Mar 2015
2, 12	Add New Partno: MBWW-FSC-6V6W-1 Update Packaging Specification	19 Oct 2015
8, 9, 14	Update Package Outline Update Recommended Solder Pad Add Appendix	17 Mar 2017
8	Update Package Outline	17 May 2017

NOTE

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About Us

DOMINANT Opto Technologies is a dynamic company that is amongst the world's leading automotive LED manufacturers. With an extensive industry experience and relentless pursuit of innovation, DOMINANT's state-of-art manufacturing and development capabilities have become a trusted and reliable brand across the globe. More information about DOMINANT Opto Technologies, a ISO/TS 16949 and ISO 14001 certified company, can be found under http://www.dominant-semi.com.

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