

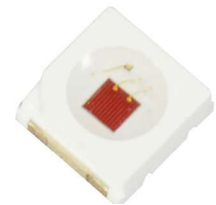
Primax

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 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.
- > Superior corrosion resistant.
- > Environmental friendly; RoHS compliance.
- > Compliance to automotive standard; AEC-Q101.



Applications:

- > Automotive: exterior applications, eg: signal lighting, Center High Mounted Stop Light (CHMSL), Rear Combination Lamp (RCL), Rear Fog Lamp.

Optical Characteristics at Tj=25°C

Part Ordering Number	Color	Viewing Angle°	Luminous Flux @ 350mA (lm) <i>Appx. 1.2</i>		
			Min.	Typ.	Max.
● MAS-WZHG-R2S-2	Super Red, 630nm	120	39.8	59.0	67.2
● MAS-WZHG-Q2R-3	Super Red, 633nm	120	30.6	45.2	51.7
● MAA-WZHG-TU2-2	Amber, 615nm	120	67.2	76.5	99.4
● MAA-WZHG-ST3-4	Amber, 624nm	120	51.7	67.2	87.4
● MAY-WZHG-R3T-1	Yellow, 590nm	120	45.2	67.2	87.4
●	Not for new design.				

Electrical Characteristics at Tj=25°C

Part Number	Vf @ If = 350 mA <i>Appx. 3.1</i>		
	Min. (V)	Typ. (V)	Max. (V)
MAx-WZHG	1.90	2.30	2.65

Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	1	A
Peak pulse current (tp<=10µs , Duty cycle=0.10)	1.5	A
Reverse Voltage	Not designed for reverse bias	V
ESD threshold (HBM)	8	kV
LED junction temperature	150	°C
Operating temperature	-40 ... +125	°C
Storage temperature	-40 ... +125	°C
Thermal resistance (Rated current = 350mA, Ts = 25 °C)		
- Real Thermal Resistance		
Junction / solder point, R _{th JS real} (Typ = 8K/W)	11	K/W
- Electrical Thermal Resistance		
Junction / solder point, R _{th JS el} (Typ = 6K/W)	7	K/W

Wavelength Grouping at T_j=25°C

Color	Group	Wavelength distribution (nm) <i>Appx. 2.2</i>
MAS; Super Red	Full	627 - 637
	W	627 - 630
	X	630 - 634
	Y	634 - 637
MAA; Amber	Full	612 - 627
	W	612 - 616
	X	616 - 620
	Y	620 - 624
	Z	624 - 627
MAY; Yellow	Full	586 - 595
	X	586 - 589
	Y	589 - 592
	Z	592 - 595

Luminous Flux at T_j=25°C

Brightness Group	Luminous Flux @ I _f =350mA (lm) <i>Appx. 1.2</i>
Q2	30.6 ... 34.8
Q3	34.8 ... 39.8
R2	39.8 ... 45.2
R3	45.2 ... 51.7
S2	51.7 ... 59.0
S3	59.0 ... 67.2
T2	67.2 ... 76.5
T3	76.5 ... 87.4
U2	87.4 ... 99.4

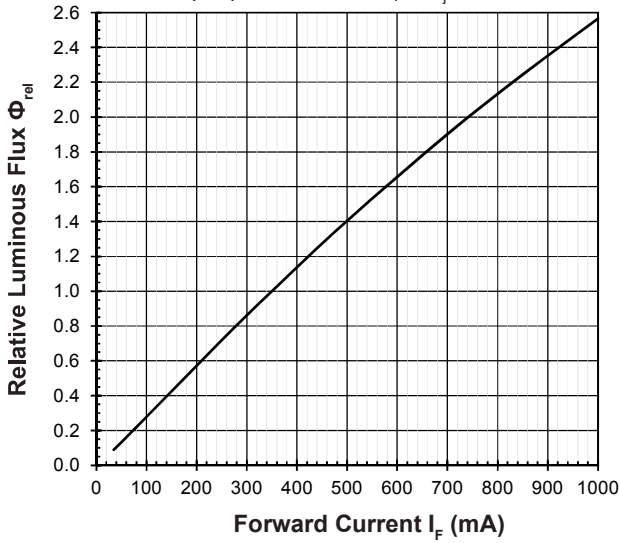
V_f Binning (Optional)

V _f Bin @ 350mA	Forward Voltage (V) <i>Appx. 3.1</i>
V43	1.90 ... 2.05
V44	2.05 ... 2.20
V45	2.20 ... 2.35
V46	2.35 ... 2.50
V47	2.50 ... 2.65

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

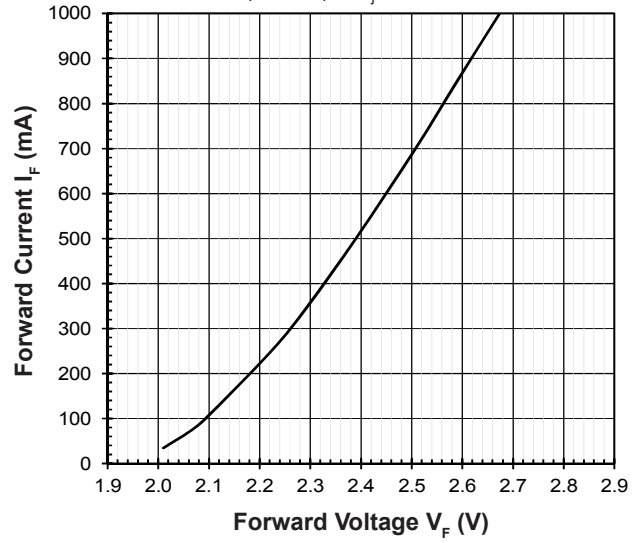
Relative Luminous Flux Vs Forward Current

$\Phi_V/\Phi_V(350\text{mA}) = f(I_F); T_j = 25^\circ\text{C}$



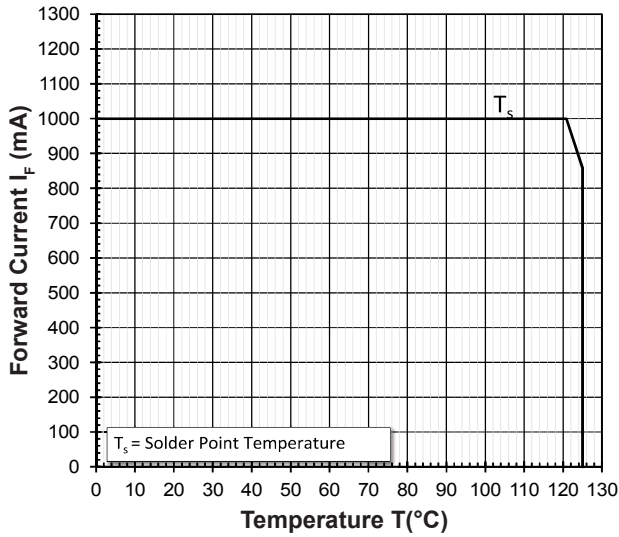
Forward Current Vs Forward Voltage

$I_F = f(V_F); T_j = 25^\circ\text{C}$



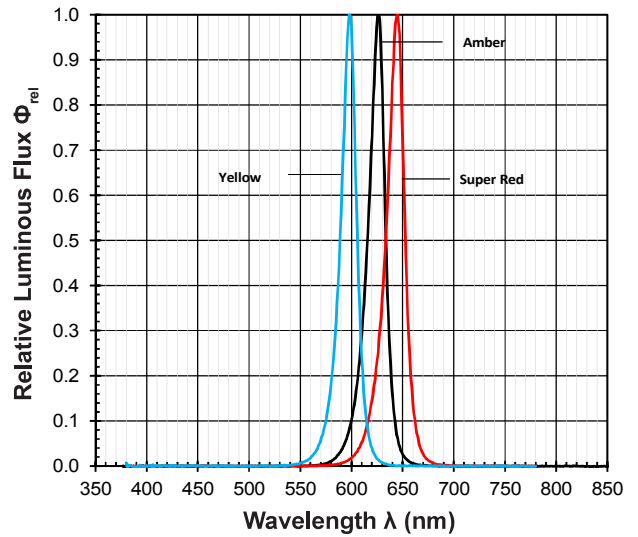
Maximum Current Vs Temperature

$I_F = f(T)$



Relative Spectral Emission

$\Phi_{rel} = f(\lambda); T_j = 25^\circ\text{C}; I_F = 350\text{mA}$

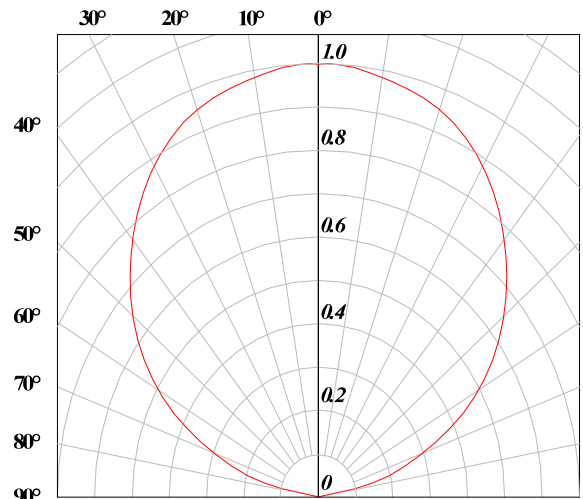


Allowable Forward Current Vs Duty Ratio

$(T_j = 25^\circ\text{C}; t_p \leq 10\mu\text{s})$

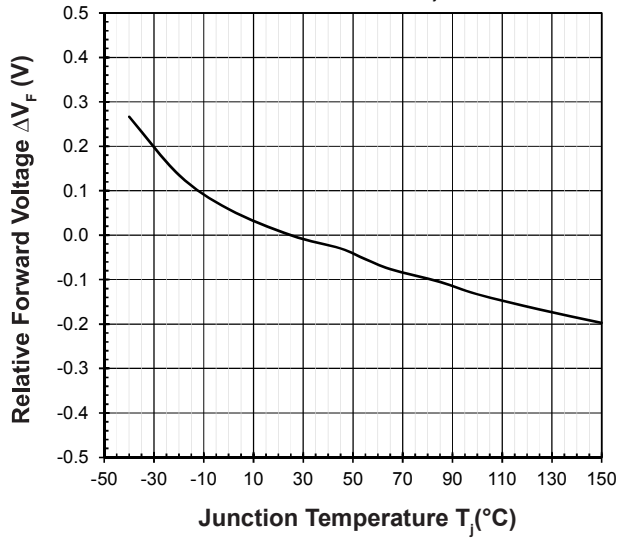


Radiation Pattern



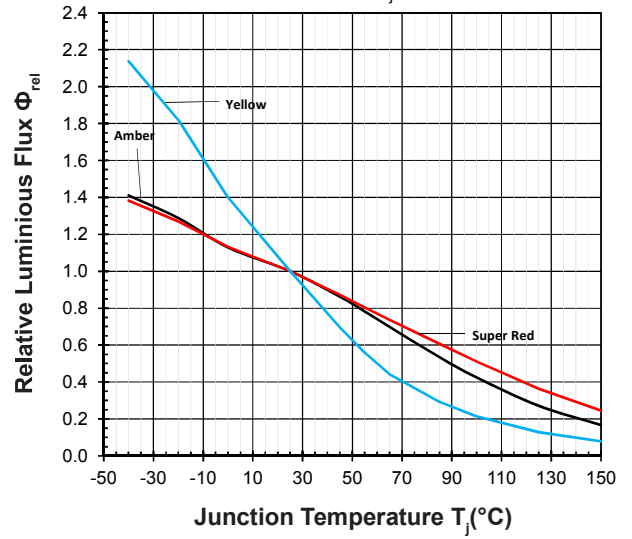
Relative Forward Voltage Vs Junction Temperature

$\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j); I_F = 350\text{mA}$



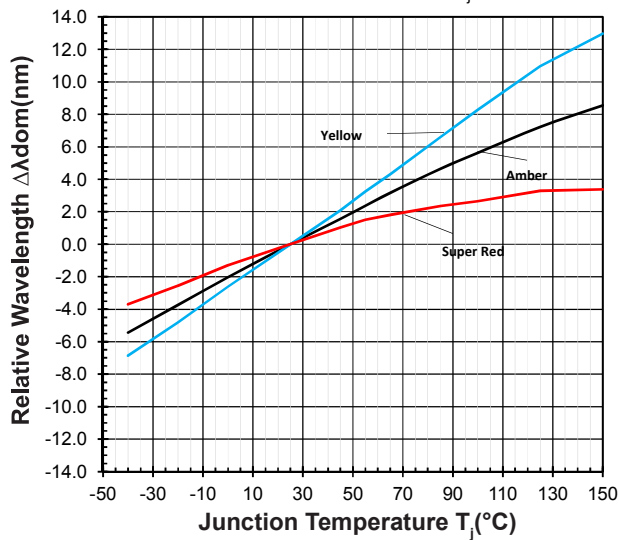
Relative Luminous Flux Vs Junction Temperature

$\Phi V / \Phi V(25^\circ\text{C}) = f(T_j); I_F = 350\text{mA}$

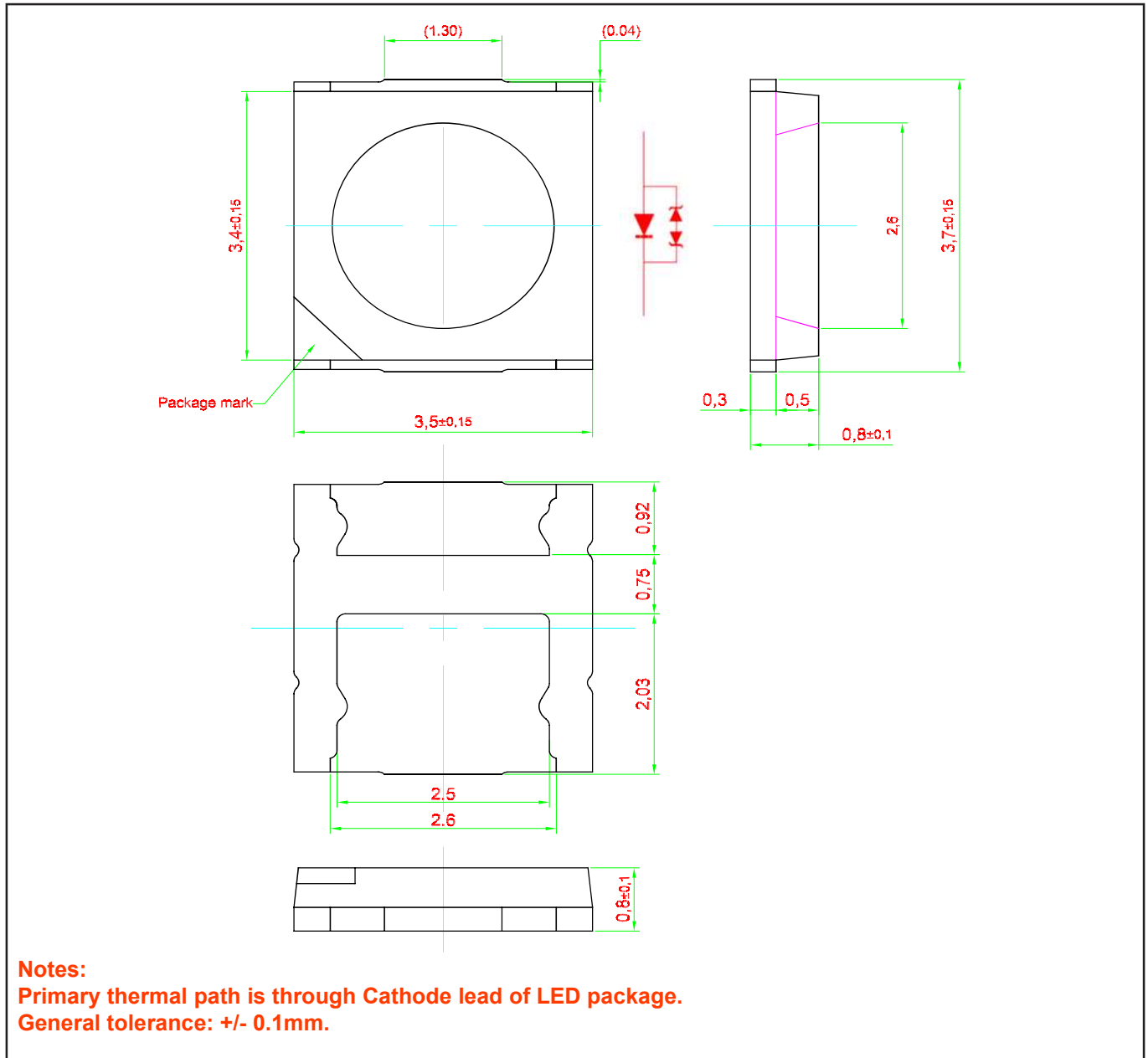


Relative Wavelength Vs Junction Temperature

$\Delta \lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25^\circ\text{C}) = f(T_j); I_F = 350\text{mA}$



PrimaxPlus • AllnGaP: Mx-WZHG Package Outlines

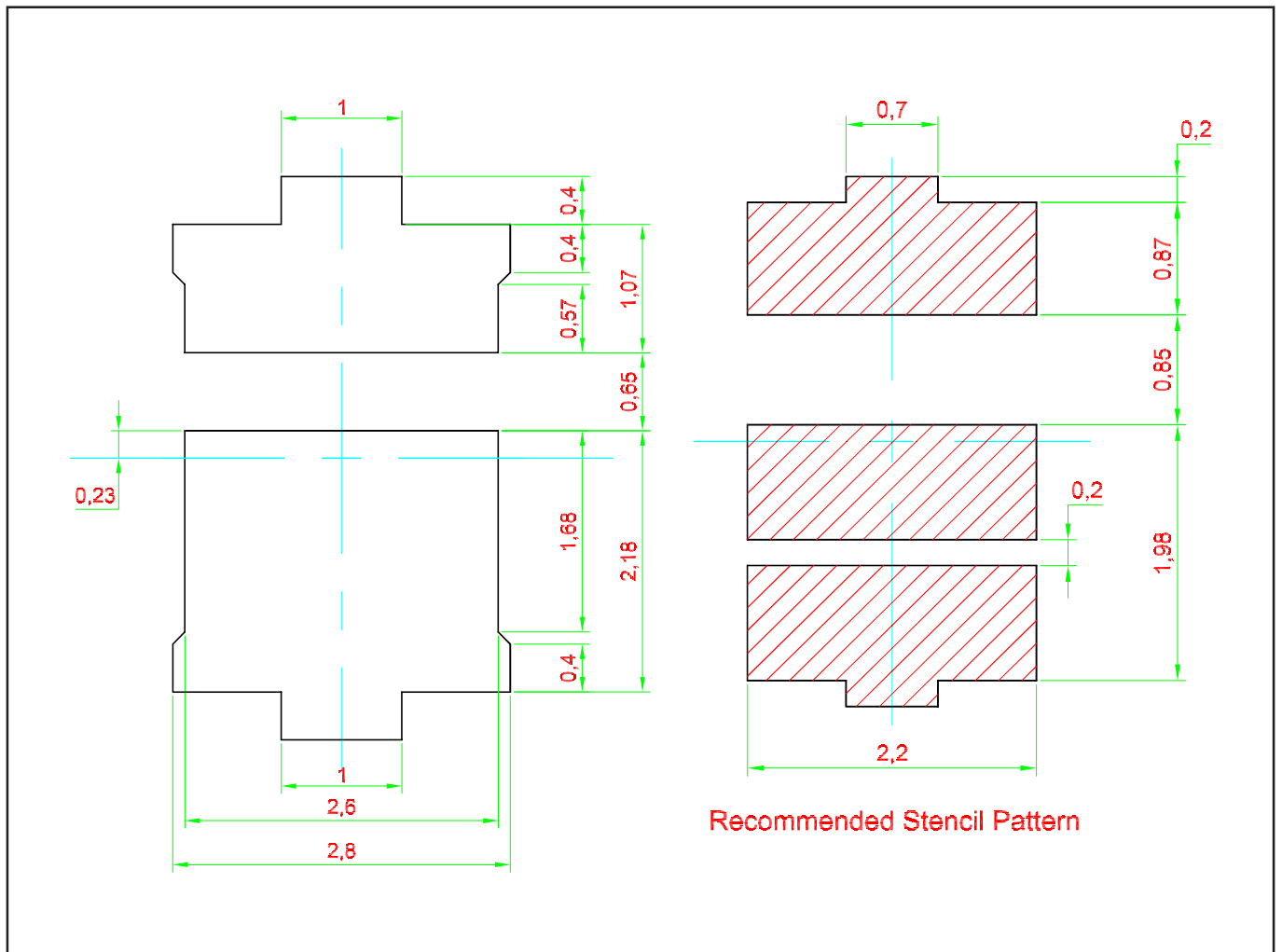


Material

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

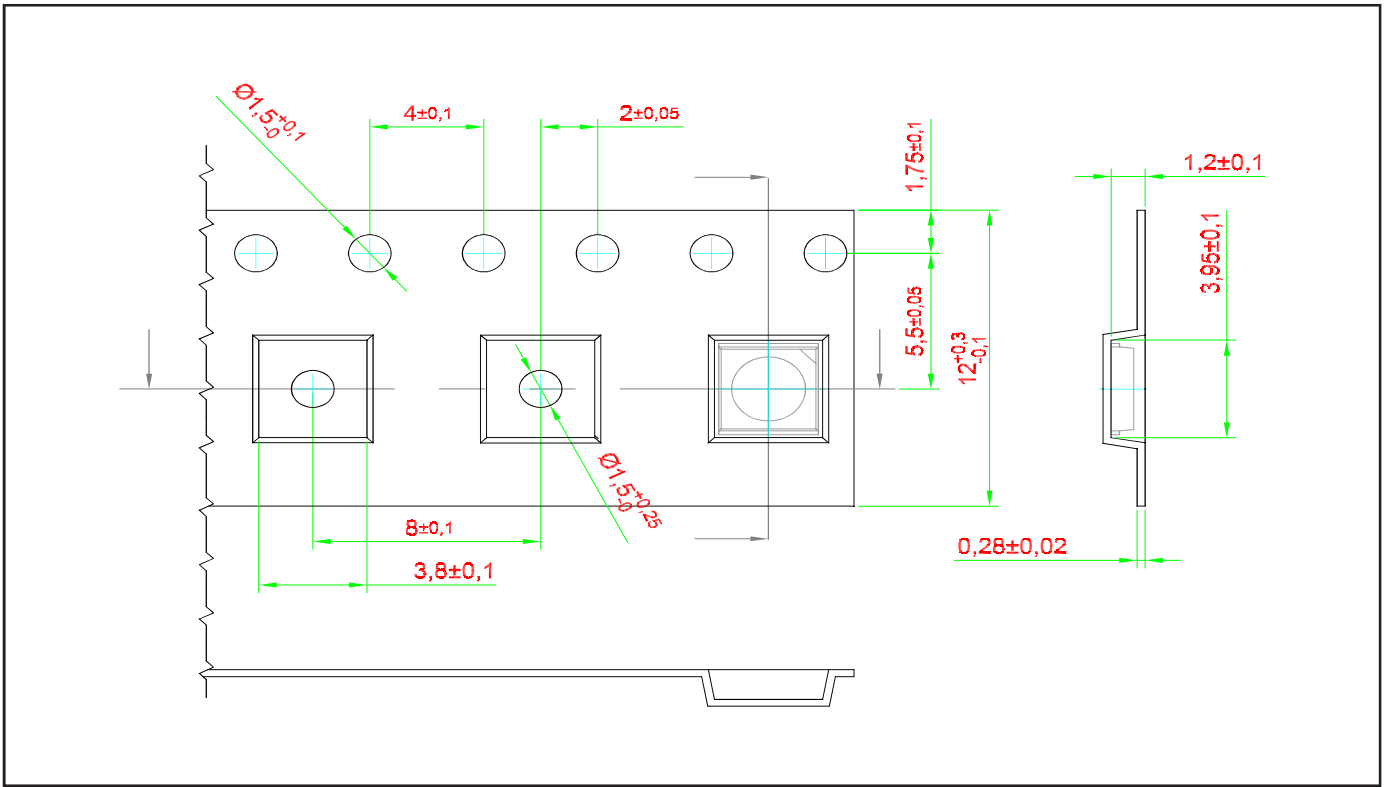
Note: This product is Pb free

Recommended Solder Pad

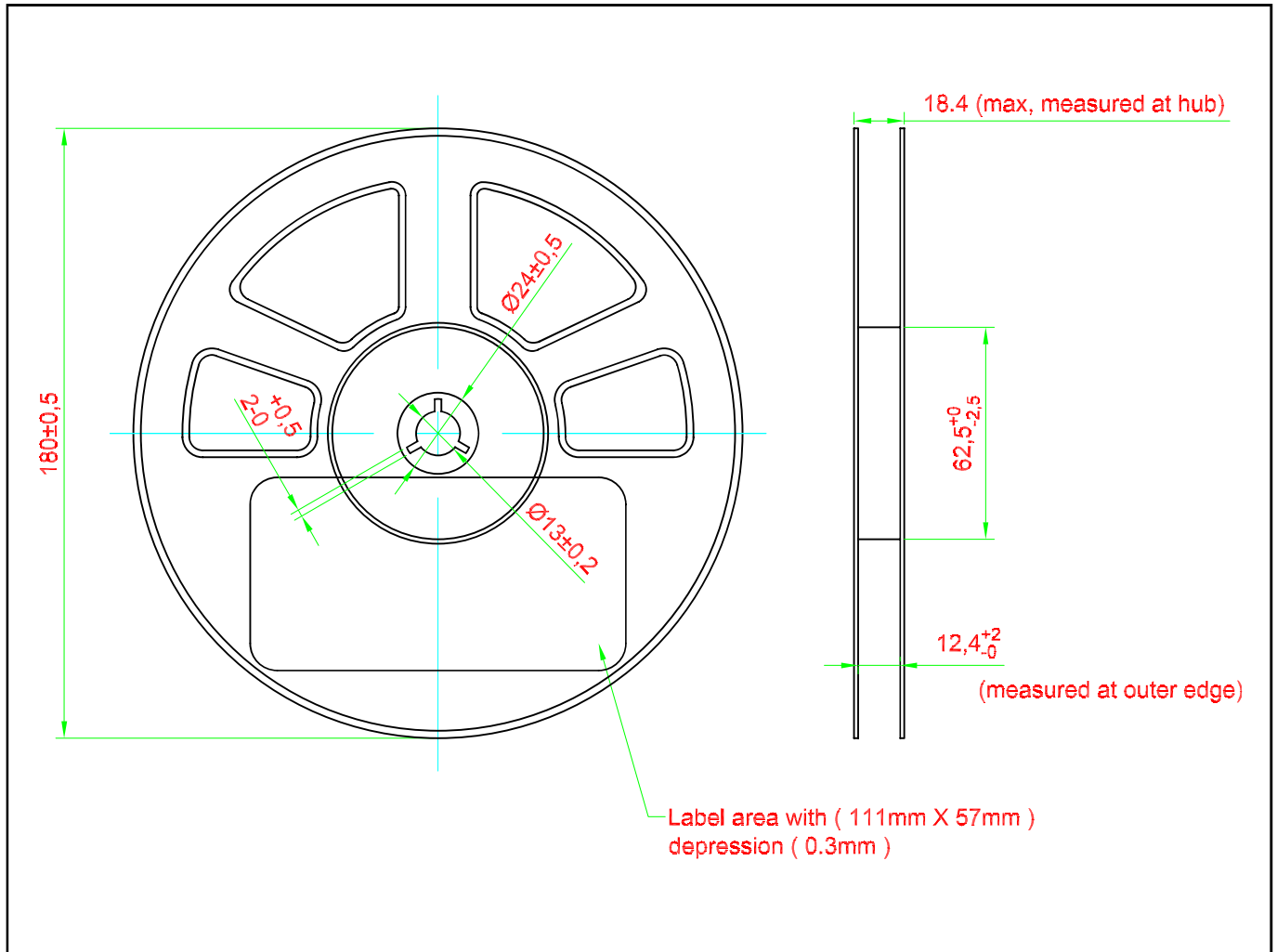


Taping and orientation

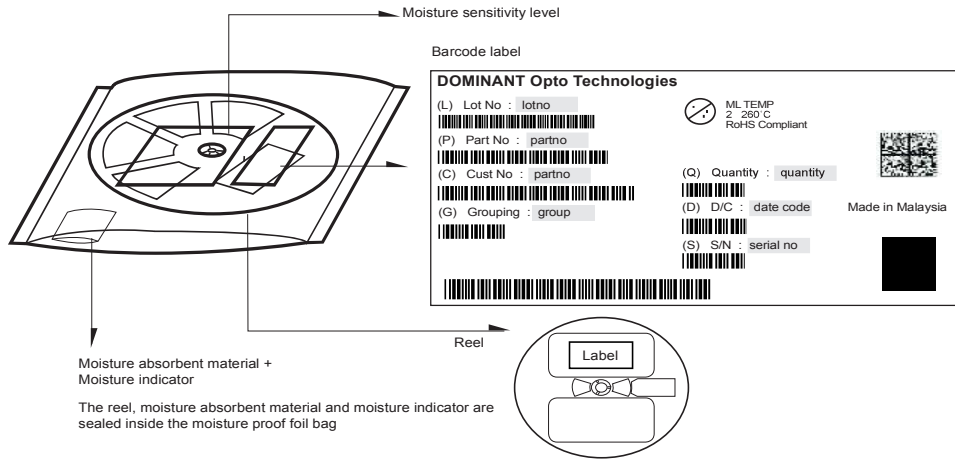
- Reels come in quantity of 1000 units.
- Reel diameter is 180 mm.



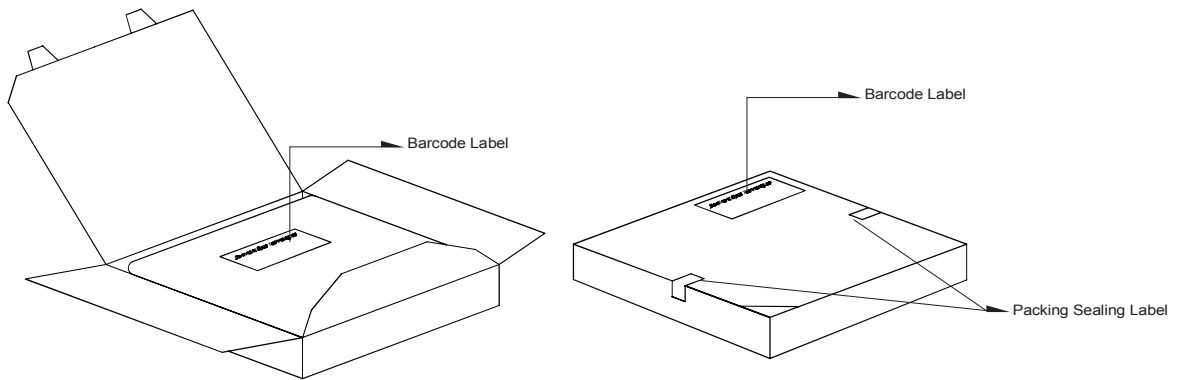
Packaging Specification



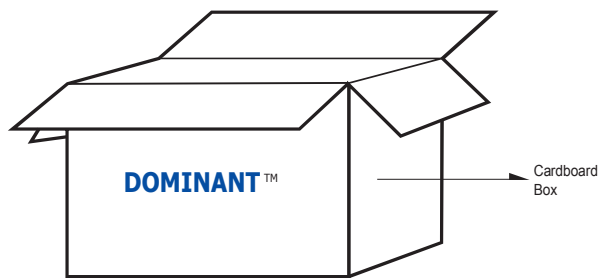
Packaging Specification



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



Dimensions (mm)	
Packing Box	210 x 210 x 20

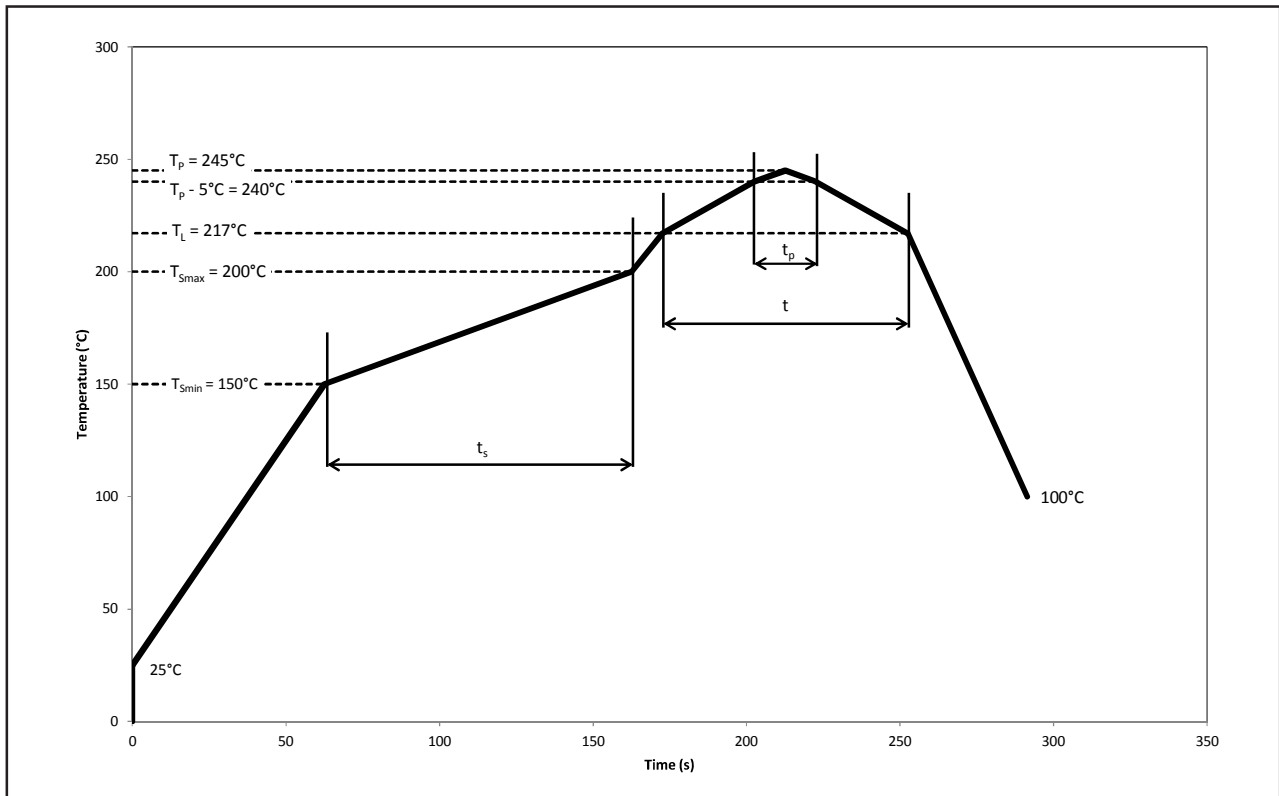


For PrimaxPlus

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

Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



Profile Feature	Symbol	Pb-Free Assembly			Unit
		Min.	Recommended	Max.	
Ramp-up rate to preheat 25°C to T_{smin}	-	-	2	3	°C/s
Time t_s T_{smin} to T_{smax}	t_s	60	100	120	s
Ramp-up rate to peak T_L to T_p	-	-	2	3	°C/s
Liquidous temperature	T_L	-	217	-	°C
Time above liquidous temperature	t	60	80	150	s
Peak temperature	T_p	-	245	260	°C
Time within 5°C of the specified peak temperature $T_p - 5^\circ\text{C}$	T_p	10	20	30	s
Ramp-down rate T_p to 100°C	-	-	3	6	°C/s
Time 25°C to T_p	-	-	-	480	s

Appendix

1) **Brightness:**

- 1.1 Luminous intensity is measured at current pulse 25 ms(typ) with an internal reproducibility of $\pm 8\%$ and an expanded uncertainty of $\pm 11\%$ (according to GUM with a coverage factor of $k=3$).
- 1.2 Luminous flux is measured at current pulse 25 ms(typ) with an internal reproducibility of $\pm 8\%$ and an expanded uncertainty of $\pm 11\%$ (according to GUM with a coverage factor of $k=3$).
- 1.3 Radiant intensity is measured at current pulse 25 ms(typ) with an internal reproducibility of $\pm 8\%$ and an expanded uncertainty of $\pm 11\%$ (according to GUM with a coverage factor of $k=3$).
- 1.4 Radiant flux is measured at current pulse 25 ms(typ) with an internal reproducibility of $\pm 8\%$ and an expanded uncertainty of $\pm 11\%$ (according to GUM with a coverage factor of $k=3$).

2) **Color:**

- 2.1 Chromaticity coordinate groups are measured at current pulse 25 ms(typ) 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 at current pulse 25 ms(typ) with an internal reproducibility of $\pm 0.5\text{nm}$ and an expanded uncertainty of $\pm 1\text{nm}$ (accordingly to GUM with a coverage factor of $k=3$).

3) **Voltage:**

- 3.1 Forward Voltage, V_f is measured when a current pulse of 8 ms(typ) with an internal reproducibility of $\pm 0.05\text{V}$ and an expanded uncertainty of $\pm 0.1\text{V}$ (accordingly to GUM with a coverage factor of $k=3$).

4) **Typical Values:**

- 4.1 At special conditions of LED manufacturing processes, typical data or calculated correlations of technical parameters only reflect the statistical figures. But not necessarily correspond to the actual parameters of each single product, which could differ from the typical data or calculated correlations or the typical characteristic line. These typical data may change whenever technical improvements happen.

5) **Tolerance of Measure**

- 5.1 Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimension are specific in mm.

Revision History

Page	Subjects	Date of Modification
-	Initial Release	23 Aug 2017
2, 3, 4, 5	Update Color Update Graph	12 Dec 2017
1, 10, 12	Error on Product Photo Update Package Specification Update Appendix	26 Jun 2018
2, 11	Not for New Design: MAS-WZHG-R2S-2, MAS-WZHG-Q2R-3, MAA-WZHG-TU2-2, MAA-WZHG-ST3-4 & MAY-WZHG-R3T-1 Update Recommended Pb-free Soldering Profile	25 Feb 2021

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.

DOMINANT Opto Technologies reserves the right to make changes to any products in order to improve reliability, function or design.

DOMINANT Opto Technologies products are not authorized for use as critical components in life support devices or systems without the express written approval from the Managing Director of DOMINANT Opto Technologies.

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>.

Please contact us for more information:

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
