

## Power DomiLED

With its significant power in terms brightness, viewing angle and variety of application possibilities, Power DomiLED truly is a standout performer! Ideal for automotive interior lighting as well as home, office and industrial applications, it is also a proven performer in electronic signs and signals.



## Features:

- > High brightness surface mount LED using thin film technology.
- > 120° viewing angle.
- > Small package outline (LxWxH) of 3.2 x 2.8 x 1.8mm.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.
- > Passed Corrosion Resistant Test. *Appx. 6.1*
- > Compliance to automotive standard, AEC-Q102.



## Applications:

> Automotive:

Interior applications, eg: switches, climate control system, dashboard, etc.

Exterior applications, eg: signal lighting, Center High Mounted Stop Light (CHMSL)



**Optical Characteristics at Tj=25°C**

Part Number	Color	Viewing Angle°	Luminous Intensity <i>Appx. 1.1</i> IF = 50mA IV (mcd)			Luminous Flux <i>Appx. 1.2</i> IF = 50mA IV (lm)
			Min.	Typ.	Max.	Typ.
DWS-MJS-XY1-1	Super Red, 632nm	120	1800.0	2850.0	3550.0	7.8
● DWS-MJS-WX1-1	Super Red, 632nm	120	1125.0	1800.0	2240.0	5.0
DWR-MJS-X2Y-1	Red, 625nm	120	2240.0	3550.0	4500.0	9.8
● DWR-MJS-W2X-1	Red, 625nm	120	1400.0	2240.0	2850.0	6.2
DWA-MJS-YZ1-1	Amber, 615nm	120	2850.0	4500.0	5600.0	12.4
● DWA-MJS-W2X-1	Amber, 615nm	120	1400.0	2240.0	2850.0	6.2
● DWO-MJS-W2X-1	Orange, 605nm	120	1400.0	2240.0	2850.0	6.2
DWO-MJS-XY2-1	Orange, 605nm	120	1800.0	2850.0	4500.0	7.8
DWY-MJS-X2Y-3	Yellow, 588nm	120	2240.0	3550.0	4500.0	9.8
DWY-MJS-YZ1-4	Yellow, 591nm	120	2850.0	4500.0	5600.0	12.4
● DWY-MJS-WX1-1	Yellow, 587nm	120	1125.0	1800.0	2240.0	5.0
● DWY-MJS-W2X-1	Yellow, 587nm	120	1400.0	2240.0	2850.0	6.2
● Not for new design.						

**Electrical Characteristics at Tj=25°C**

Part Number	Vf @ If = 50mA <i>Appx. 3.1</i>			Vr @ Ir = 10uA <i>Appx. 7.1</i>
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DWx-MJS	1.90	2.10	2.50	12

## Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	70	mA
Peak pulse current; (Ts = 55°C, tp ≤ 100µs, Duty cycle = 0.03)	100	mA
Reverse voltage <i>Appx. 7.1</i>	12	V
ESD threshold (HBM)	2000	V
LED junction temperature	125	°C
Operating temperature	-40 ... +110	°C
Storage temperature	-40 ... +110	°C
Power dissipation (at room temperature)	200	mW
Thermal resistance (Rated current = 50mA, Ts = 25 °C)		
- Junction / ambient, R <sub>th JA</sub>	300	K/W
- Junction / solder point, R <sub>th JS</sub>	130	K/W
(Mounting on FR4 PCB, pad size ≥ 16 mm <sup>2</sup> per pad)		

## Wavelength Grouping at Tj= 25°C

Color	Group	Wavelength distribution (nm) <i>Appx. 2.2</i>
DWS; Super Red	Full	625 - 640
DWR; Red	Full	620 - 630
DWA; Amber	Full	610 - 621
	W	610 - 615
	X	615 - 621
DWO; Orange	Full	600 - 612
	W	600 - 603
	X	603 - 606
	Y	606 - 609
	Z	609 - 612
DWY; Yellow	Full	582 - 594
	W	582 - 585
	X	585 - 588
	Y	588 - 591
	Z	591 - 594

**Luminous Intensity Group at Tj=25°C**

Brightness Group	Luminous Intensity <small>Appx. 1.1</small> IV (mcd)
W1	1125.0 ... 1400.0
W2	1400.0 ... 1800.0
X1	1800.0 ... 2240.0
X2	2240.0 ... 2850.0
Y1	2850.0 ... 3550.0
Y2	3550.0 ... 4500.0
Z1	4500.0 ... 5600.0

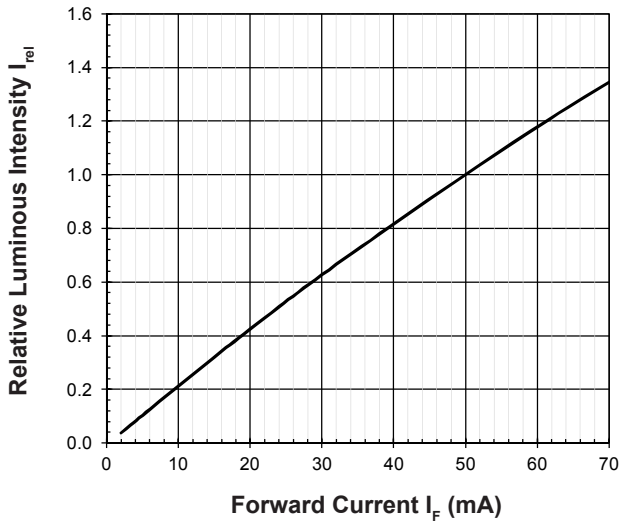
**Vf Bining (Optional) at Tj= 25°C**

Vf @ If = 50mA	Forward Voltage (V) <small>Appx. 3.1</small>
V4D	1.90 ... 2.05
V5A	2.05 ... 2.20
V5B	2.20 ... 2.35
V5C	2.35 ... 2.50

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

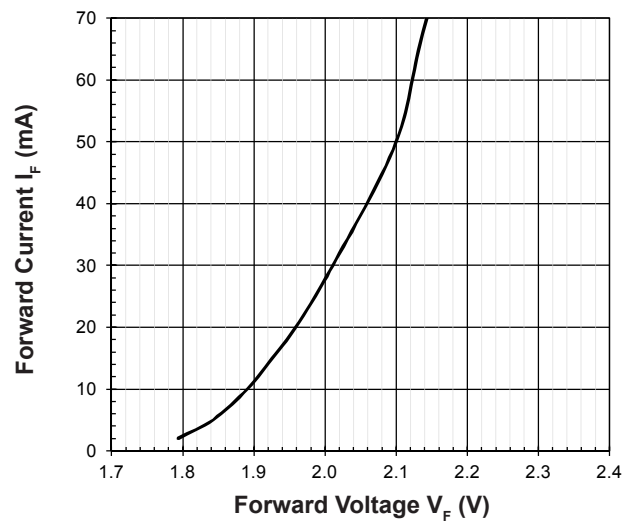
**Relative Luminous Intensity Vs Forward Current**

$I_v/I_v(50\text{mA}) = f(I_F); T_j = 25^\circ\text{C}$



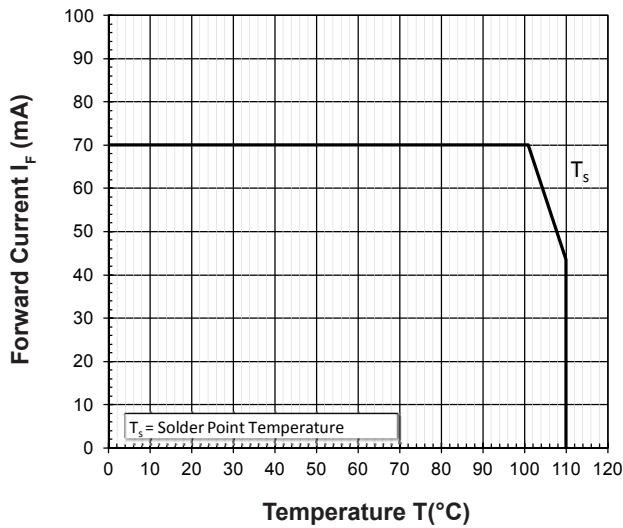
**Forward Current Vs Forward Voltage**

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



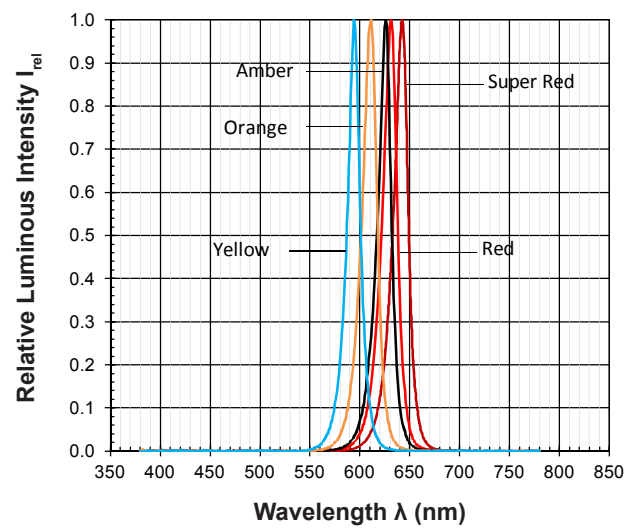
**Maximum Current Vs Temperature**

$I_F = f(T)$



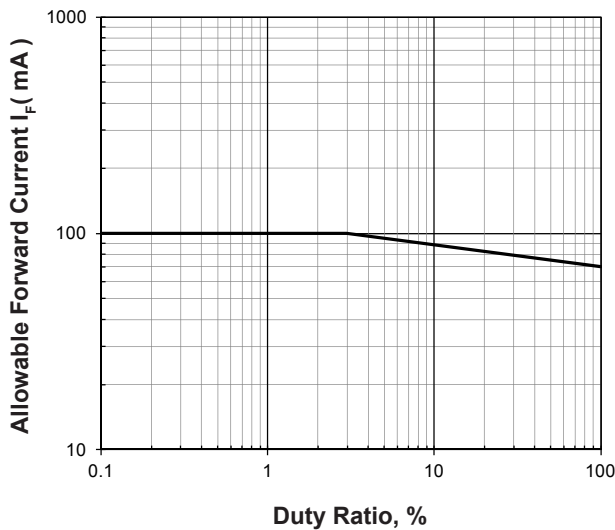
**Relative Spectral Emission**

$I_{rel} = f(\lambda); T_j = 25^\circ\text{C}; I_F = 50\text{mA}$

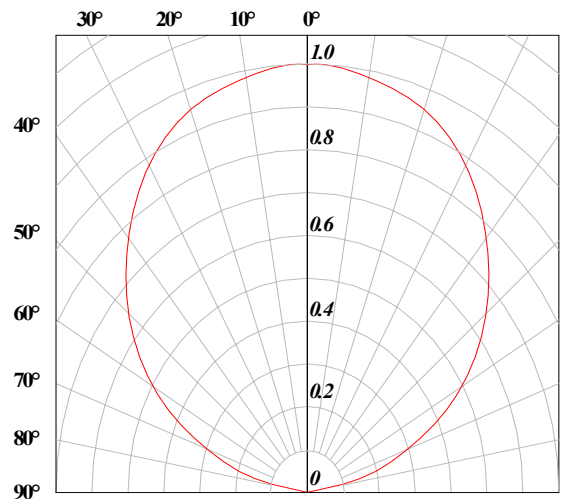


**Allowable Forward Current Vs Duty Ratio**

$(T_s = 55^\circ\text{C}; t_p \leq 100\mu\text{s})$

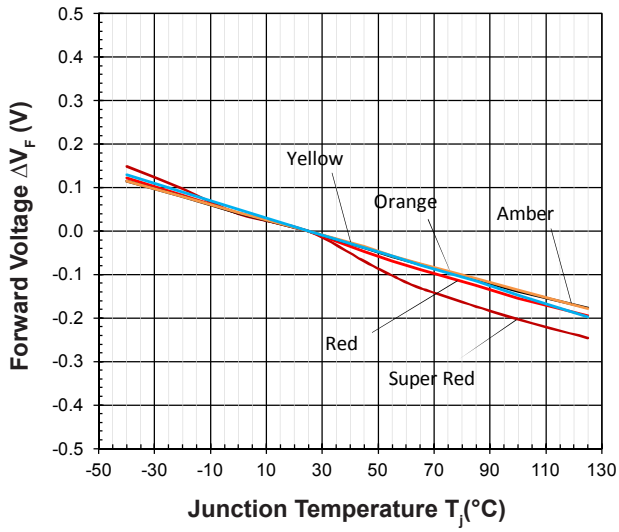


**Radiation Pattern**



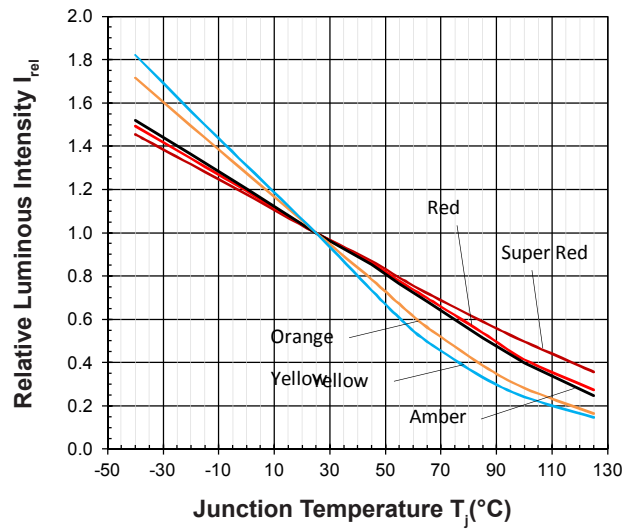
**Forward Voltage Vs Junction Temperature**

$\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j); I_F = 50\text{mA}$



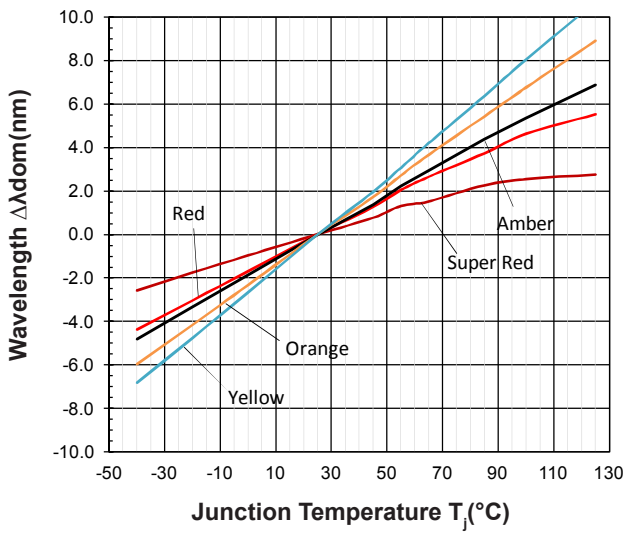
**Relative Luminous Intensity Vs Junction Temperature**

$I_v/I_v(25^\circ\text{C}) = f(T_j); I_F = 50\text{mA}$

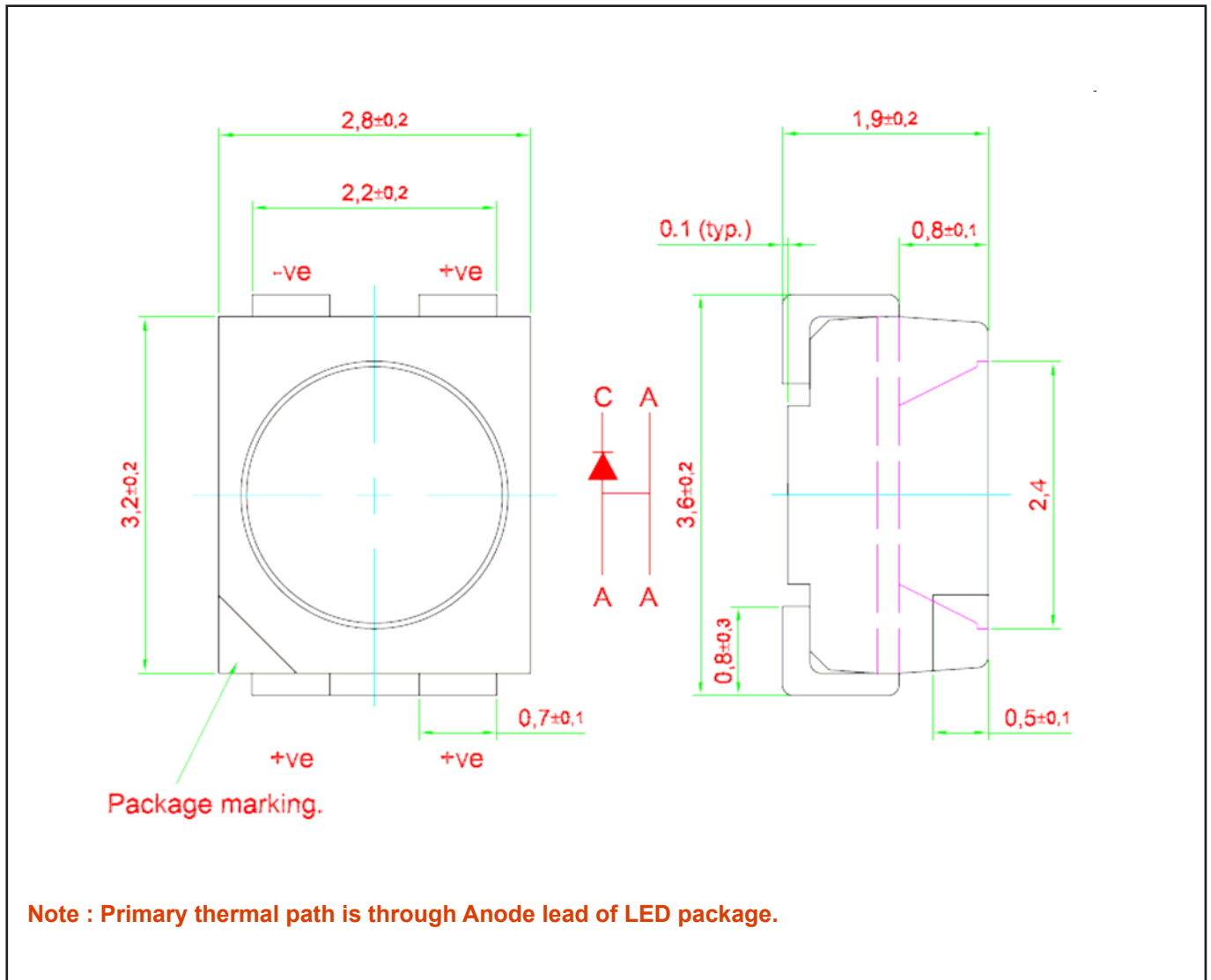


**Wavelength Vs Junction Temperature**

$\Delta \lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25^\circ\text{C}) = f(T_j); I_F = 50\text{mA}$



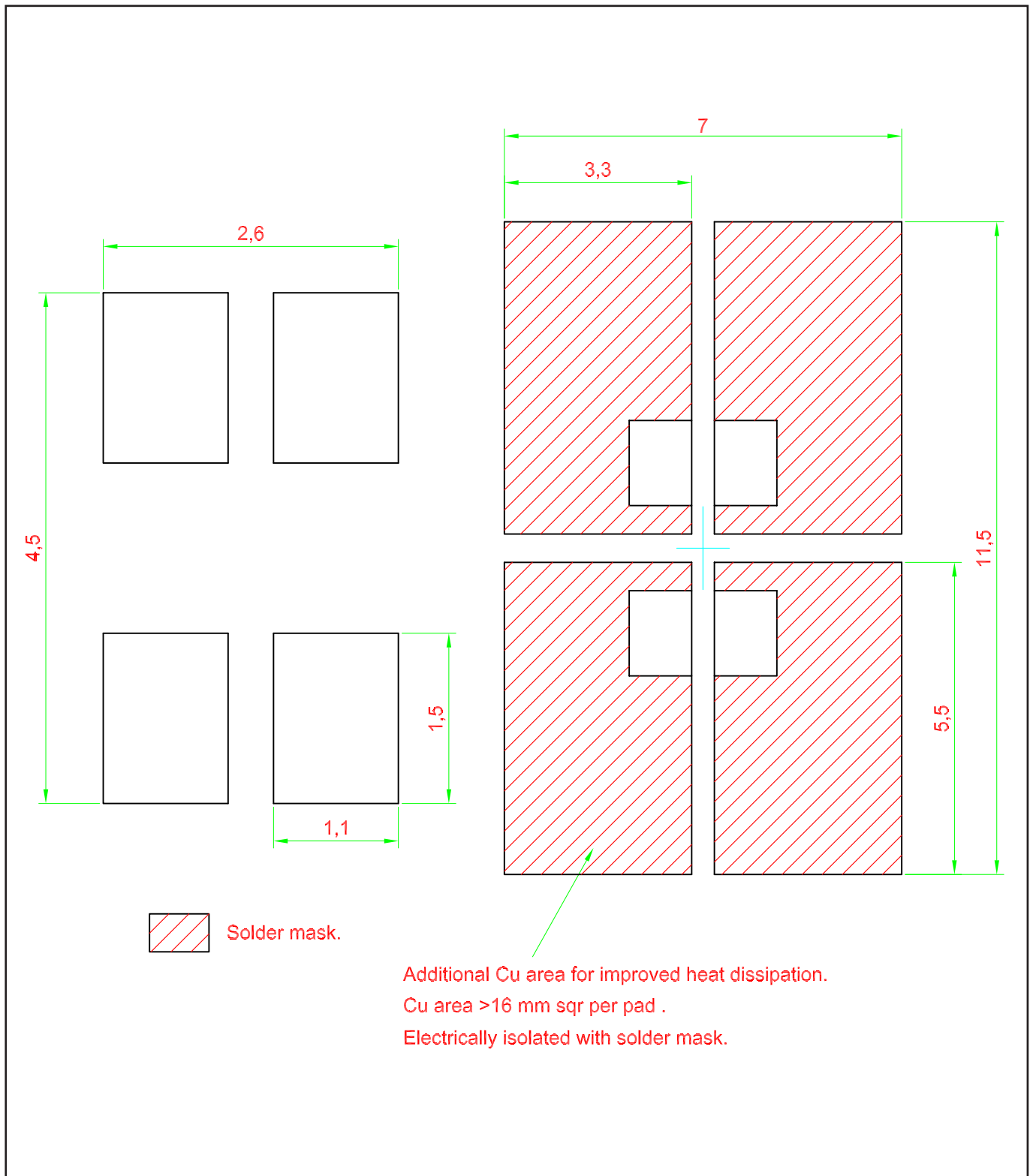
**Power DomiLED • AllnGaP : DWx-MJS Package Outlines**



**Material**

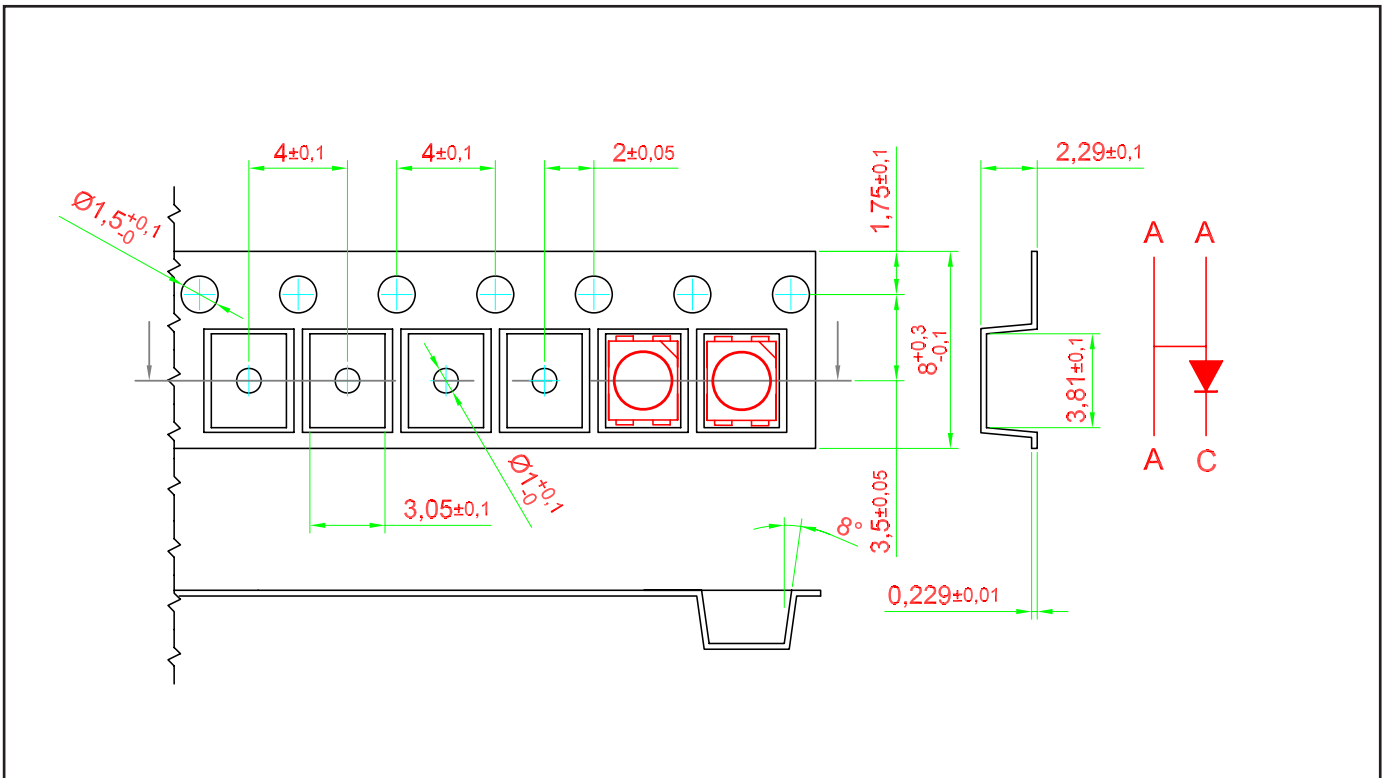
Material	
Lead-frame	Cu Alloy With Ag Plating
Package	High Temperature Resistant Plastic
Encapsulant	Epoxy Resin
Soldering Leads	Sn Plating

**Recommended Solder Pad**



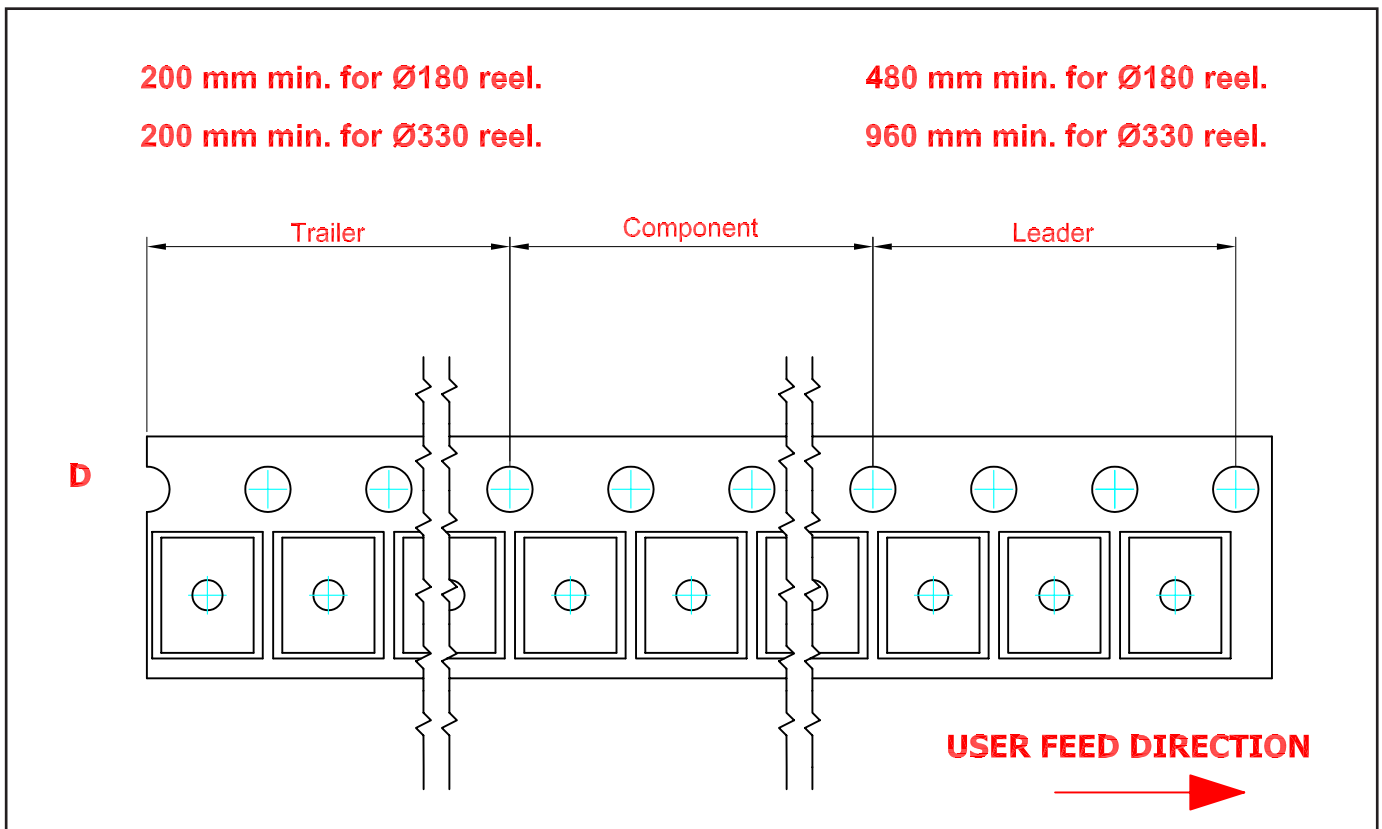


**Taping and orientation**

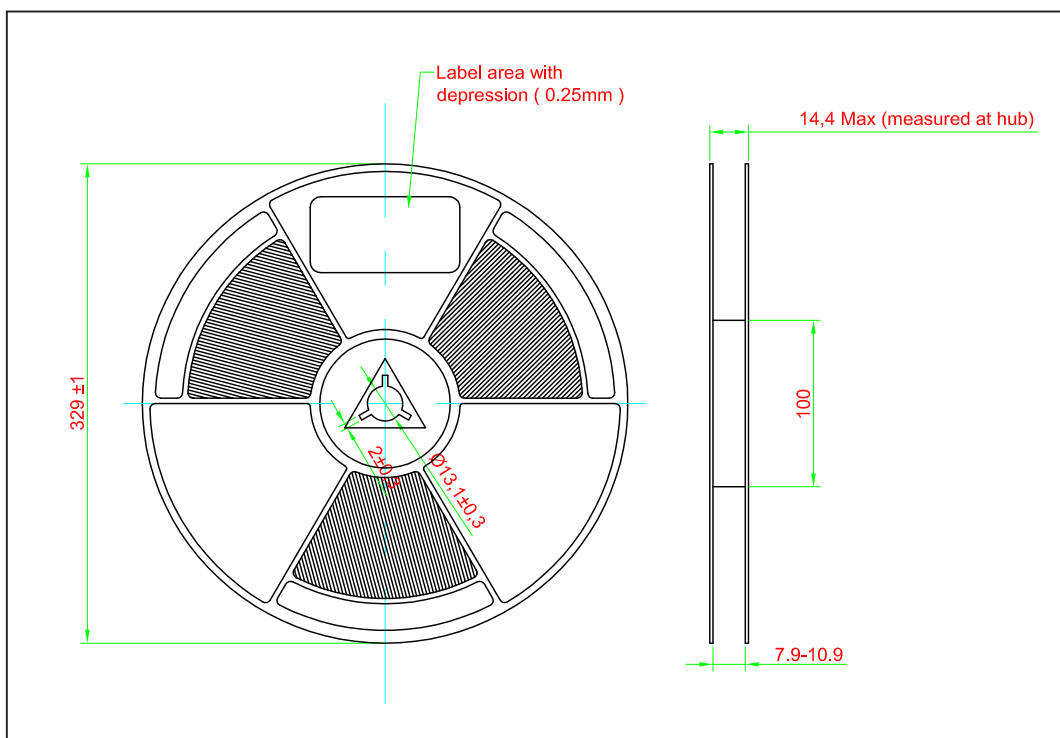
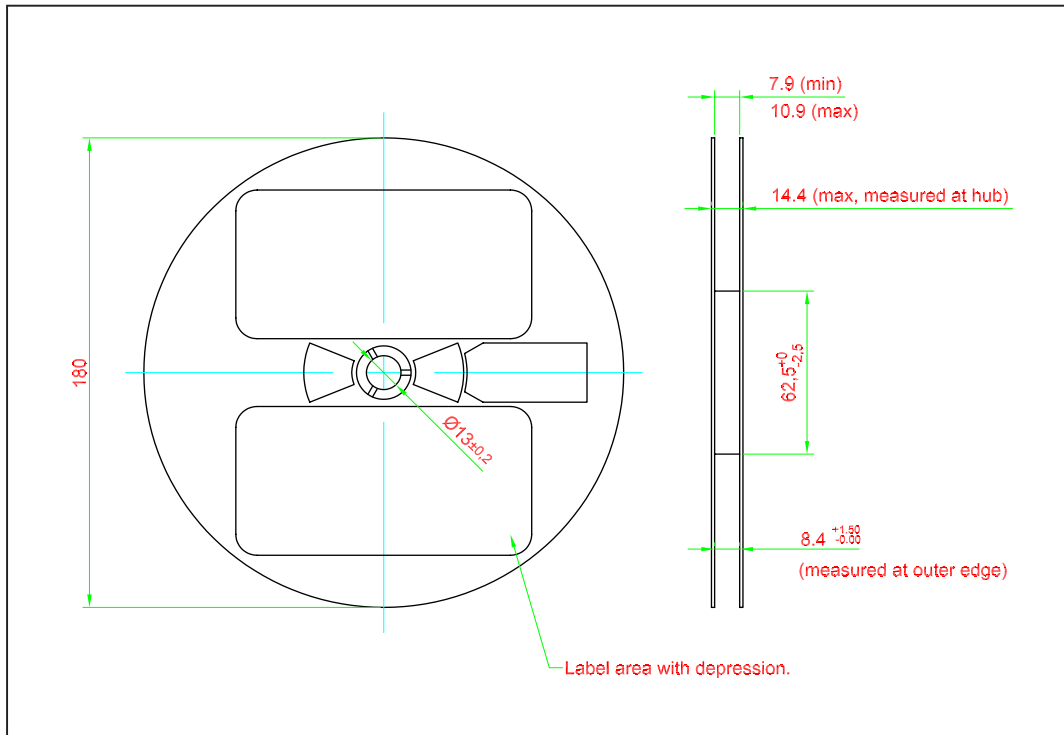


**200 mm min. for Ø180 reel.**  
**200 mm min. for Ø330 reel.**

**480 mm min. for Ø180 reel.**  
**960 mm min. for Ø330 reel.**



**Packaging Specification**

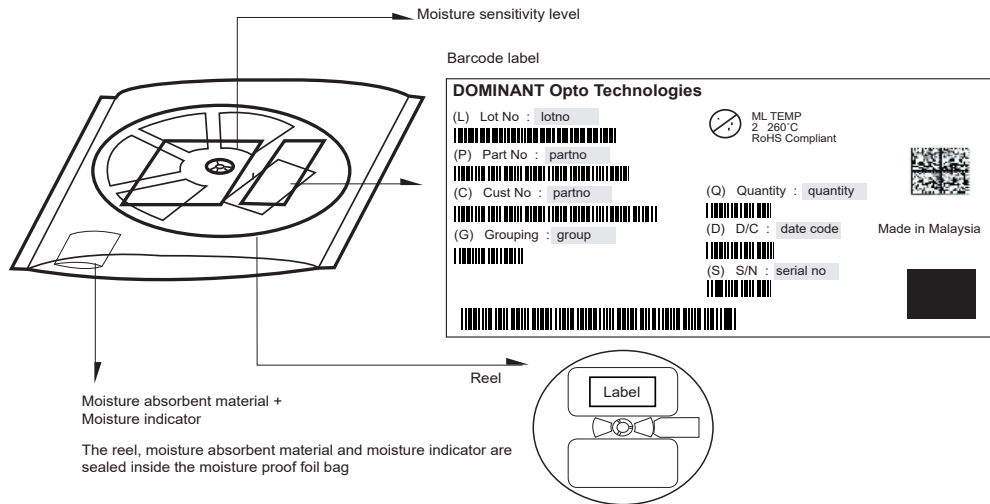


	Reel Diameter (mm)	Quantity (pcs)	*Ordering Number
Standard Packing	180	2000	DWx-MJS-xxx-x
Optional Packing	329	8000	DWx-MJS-xxx-x-8

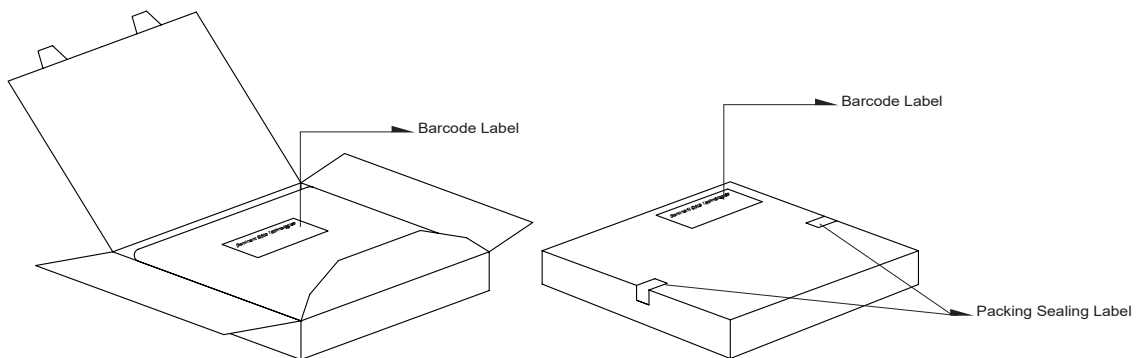
Notes:

\* For ordering purpose only. Please consult sales and marketing for details.

**Packaging Specification**



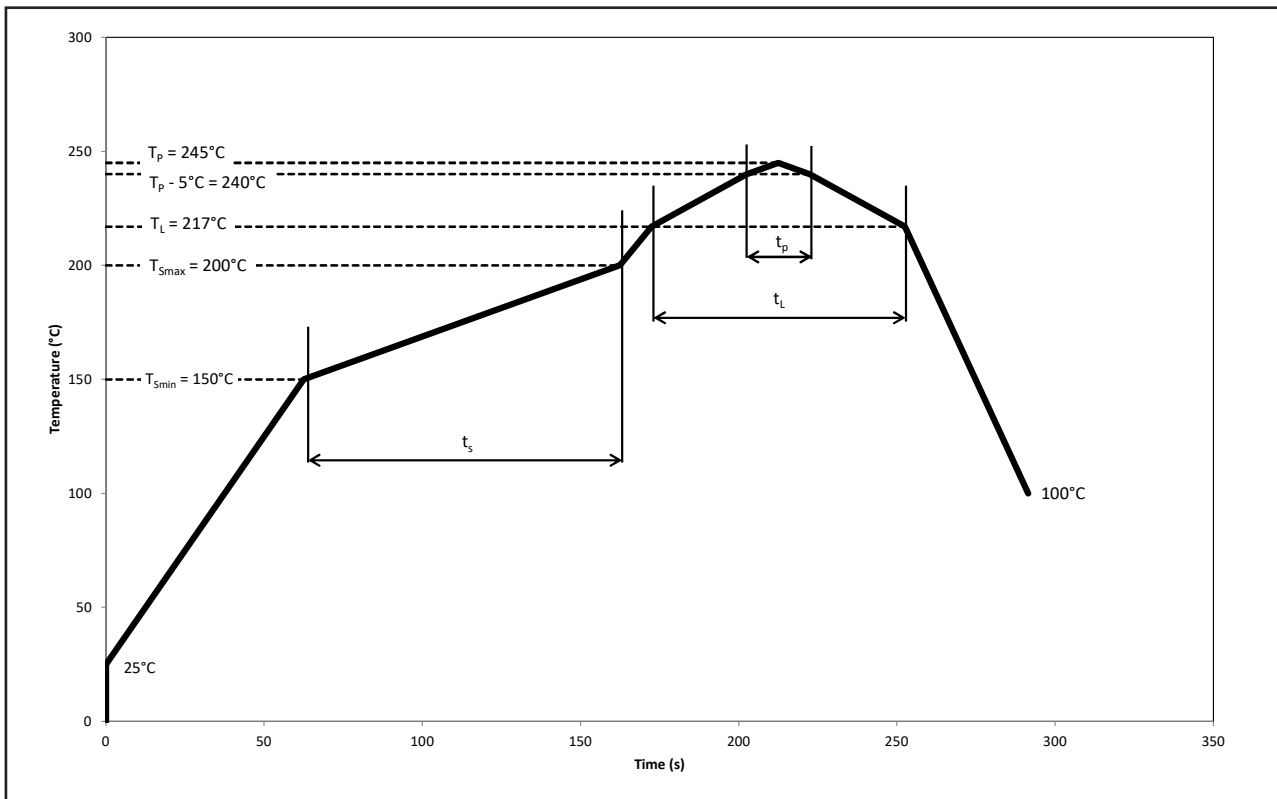
Quantity per bag (pcs)	Average 1pc Power DomiLED (gram)	1 completed bag (gram)
2000	0.034	240 ± 10
8000	0.034	750 ± 10



Reel Diameter (mm)	Packing Box Dimensions (mm)
180	210 x 210 x 16
329	345 x 345 x 16

## 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	$t_L$	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

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## 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  $\pm 0.005$  and an expanded uncertainty of  $\pm 0.01$  (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  $\pm 0.1$  and dimension are specified in mm.

### 6) **Corrosion Robustness:**

- 6.1 Test conditions: 40 °C / 90 % rh / 15 ppm  $\text{H}_2\text{S}$  / 336 h.  
= Stricter than IEC 60068-2-43 ( $\text{H}_2\text{S}$ ) [25 °C / 75% rh / 10 ppm  $\text{H}_2\text{S}$  / 21 days].

### 7) **Reverse Voltage:**

- 7.1 Not designed for reverse operation. Continuous reverse voltage can cause migration and LED damage.

**Revision History**

Page	Subjects	Date of Modification
4	Typo Error on Vf Binning Naming	03 Jul 2017
2, 13	Not for New Design: DWS-MJS-WX1-1, DWR-MJS-W2X-1, DWA-MJS-W2X-1, DWY-MJS-W2X-1, DWY-MJS-WX1-1 Update Appendix	16 Mar 2018
1, 2, 4, 11	Update Features Add Vf Binning Add New Partno: DWS-MJS-XY1-1, DWR-MJS-X2Y-1, DWA-MJS-YZ1-1, DWY-MJS-X2Y-3, DWY-MJS-YZ1-4 Update Packaging Specification	27 Mar 2019
1, 2, 3, 5, 10, 11, 12	Update Features: AEC-Q101 to AEC-Q102 Add Luminous Flux Typ Update Test Condition for Peak Pulse Current Update Operating & Storage Temperature Update Graph: Allowable Forward Current Vs Duty Ratio & Maximum Current Vs Temperature Update Packaging Specification	20 May 2020
1, 2, 4, 5, 6, 13	Update Application Update Vf Remove VF bin V5D Update Graph Update Recommended Pb-free Soldering Profile	12 Mar 2021
2	Not for New Design: DWO-MJS-W2X-1	04 Nov 2022

**NOTE**

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Dispose of product is in accordance with local, regional, national and international regulations.

## 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, an IATF 16949 and ISO 14001 certified company, can be found under <http://www.dominant-semi.com>.

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