

### Power DomiLED

With its significant power in terms brightness, viewing angle and variety of application possibilities, Power DomiLED



### 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.
- > Superior corrosion resistance
- > Compliance to automotive standard; AEC-Q101.



### Applications:

> Automotive:

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

Exterior applications, eg: Turn Signal, Center High Mounted Stop Light (CHMSL), Rear Combination Lamp (RCL).



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

Part Ordering Number	Color	Viewing Angle°	Luminous Flux @ IF = 50mA (lm) <i>Appx. 1.2</i>		
			Min.	Typ.	Max.
DWS-MKG-F3J2-1	Super Red, 632nm	120	3.22	5.10	7.15
DWA-MKG-KL3-1	Amber, 615m	120	8.20	10.70	13.90
DWA-MKG-K3M-1	Amber, 615m	120	9.35	13.90	18.10
DWY-MKG-JL3-1	Yellow, 587nm	120	6.30	9.35	13.90

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

Part Number	Vf @ If = 50mA <i>Appx. 3.1</i>			Vr @ Ir = 10uA
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DWx-MKG	1.90	2.25	2.65	12

**Absolute Maximum Ratings**

	Maximum Value	Unit
DC forward current	70	mA
Peak pulse current; (tp ≤ 10µs, Duty cycle = 0.1)	100	mA
Reverse voltage	12	V
ESD threshold (HBM)	2	kV
LED junction temperature	125	°C
Operating temperature	-40 ... +115	°C
Storage temperature	-40 ... +125	°C
Power dissipation (at room temperature)	200	mW
Thermal resistance		
- Real Thermal Resistance		
Junction / ambient, R <sub>th JA real</sub>	300	K/W
Junction / solder point, R <sub>th JS real</sub>	90	K/W
- Electrical Thermal Resistance		
Junction / ambient, R <sub>th JA el</sub>	240	K/W
Junction / solder point, R <sub>th JS el</sub>	65	K/W
(Mounting on FR4 PCB, pad size ≥ 16 mm <sup>2</sup> per pad)		

**Wavelength Grouping at Tj= 25°C**

<b>Color</b>	<b>Group</b>	<b>Wavelength distribution (nm) <small>Appx. 3.1</small></b>
DWS; Super Red	Full	627 - 639
DWA; Amber	Full	612 - 624
	W	612 - 616
	X	616 - 620
	Y	620 - 624
DWY; Yellow	Full	586 - 595
	X	586 - 589
	Y	589 - 592
	Z	592 - 595

**Luminous Flux Group at Tj=25°C**

Brightness Group	Luminous Flux (lm) <small>Appx. 1.2</small>
F3	3.22 ... 3.68
G2	3.68 ... 4.20
G3	4.20 ... 4.80
H2	4.80 ... 5.50
H3	5.50 ... 6.30
J2	6.30 ... 7.15
J3	7.15 ... 8.20
K2	8.20 ... 9.35
K3	9.35 ... 10.70
L2	10.70 ... 12.20
L3	12.20 ... 13.90
M2	13.90 ... 15.80
M3	15.80 ... 18.10

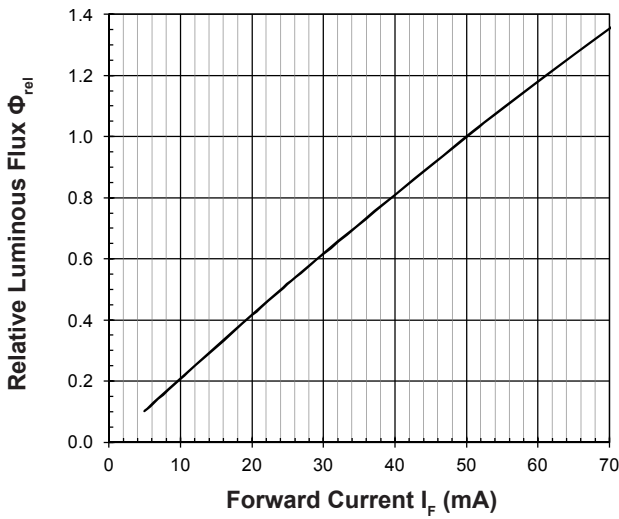
**Vf Bining (Optional)**

Vf @ If = 50mA	Forward Voltage (V) <small>Appx. 3.1</small>
V5A	1.90 ... 2.05
V5B	2.05 ... 2.20
V5C	2.20 ... 2.35
V5D	2.35 ... 2.50
V5E	2.50 ... 2.65

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

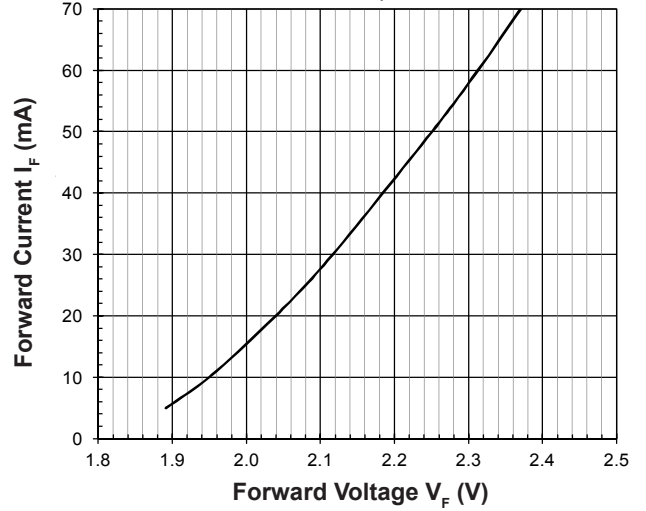
**Relative Luminous Flux Vs Forward Current**

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



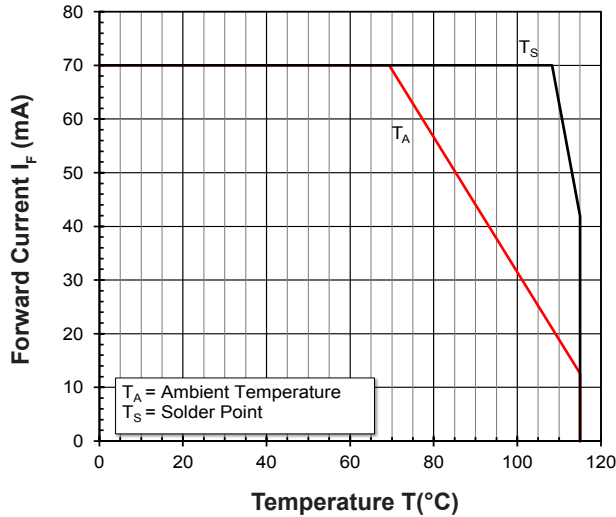
**Forward Current Vs Forward Voltage**

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



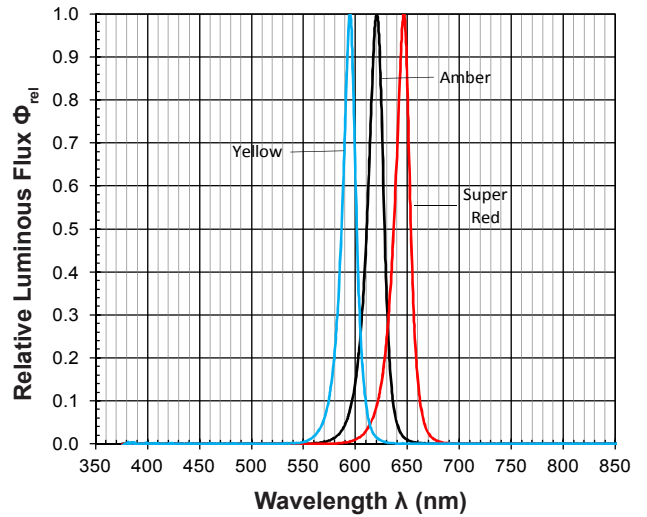
**Maximum Current Vs Temperature**

$I_F = f(T)$



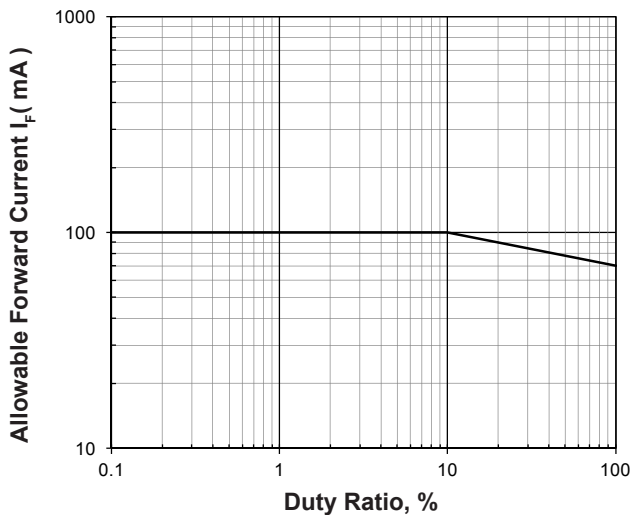
**Relative Spectral Emission**

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

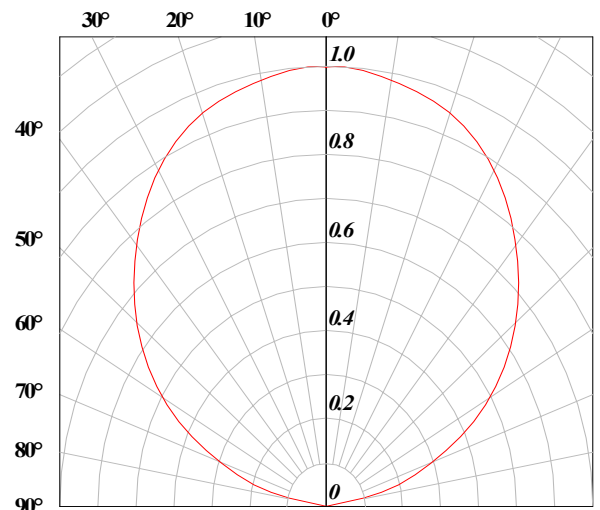


**Allowable Forward Current Vs Duty Ratio**

$(T_j = 25^\circ C; t_p \le 10\mu s)$

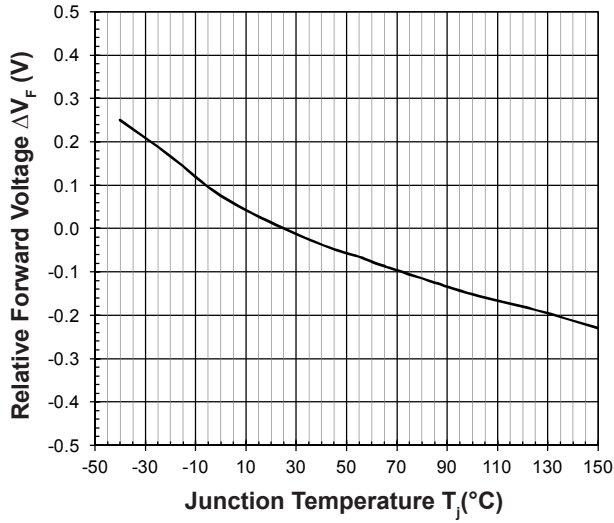


**Radiation Pattern**



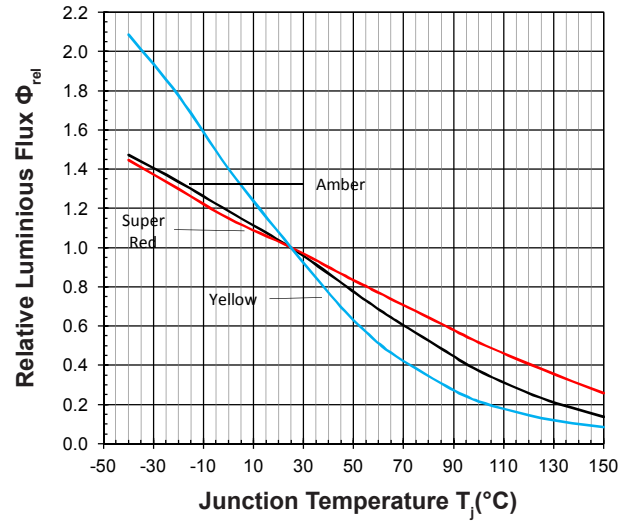
**Relative Forward Voltage Vs Junction Temperature**

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



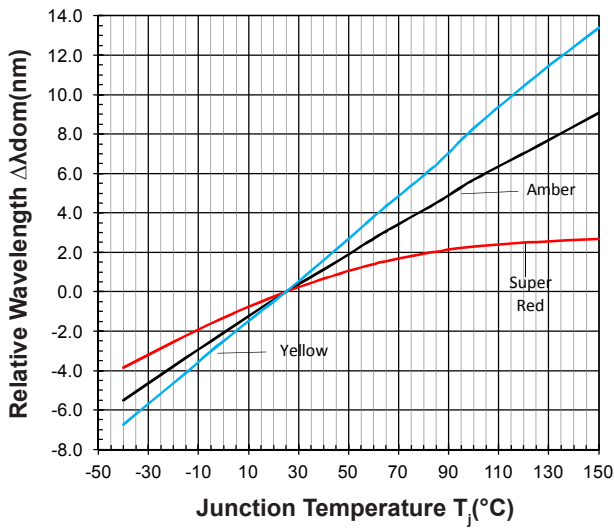
**Relative Luminous Flux Vs Junction Temperature**

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

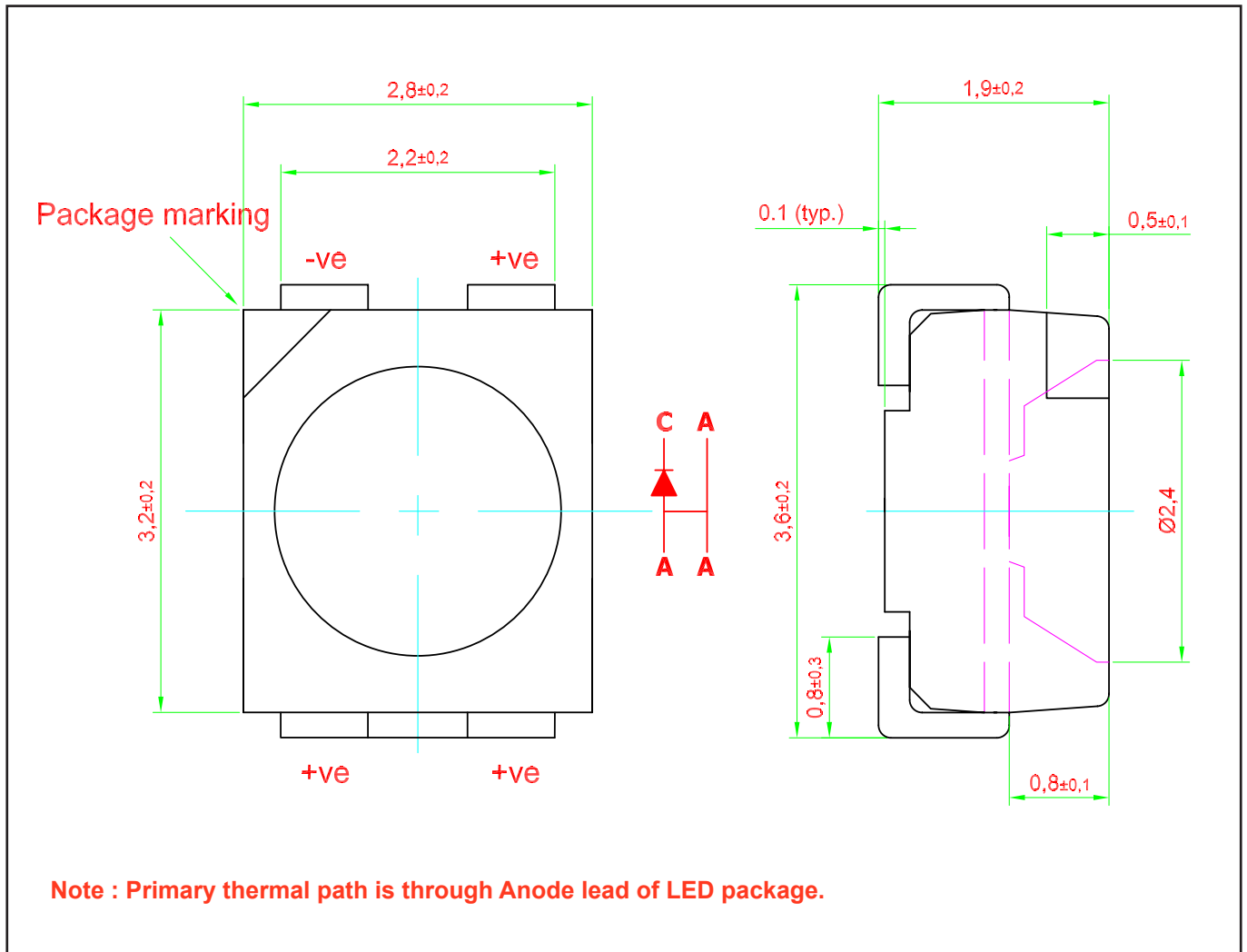


**Relative Wavelength Vs Junction Temperature**

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



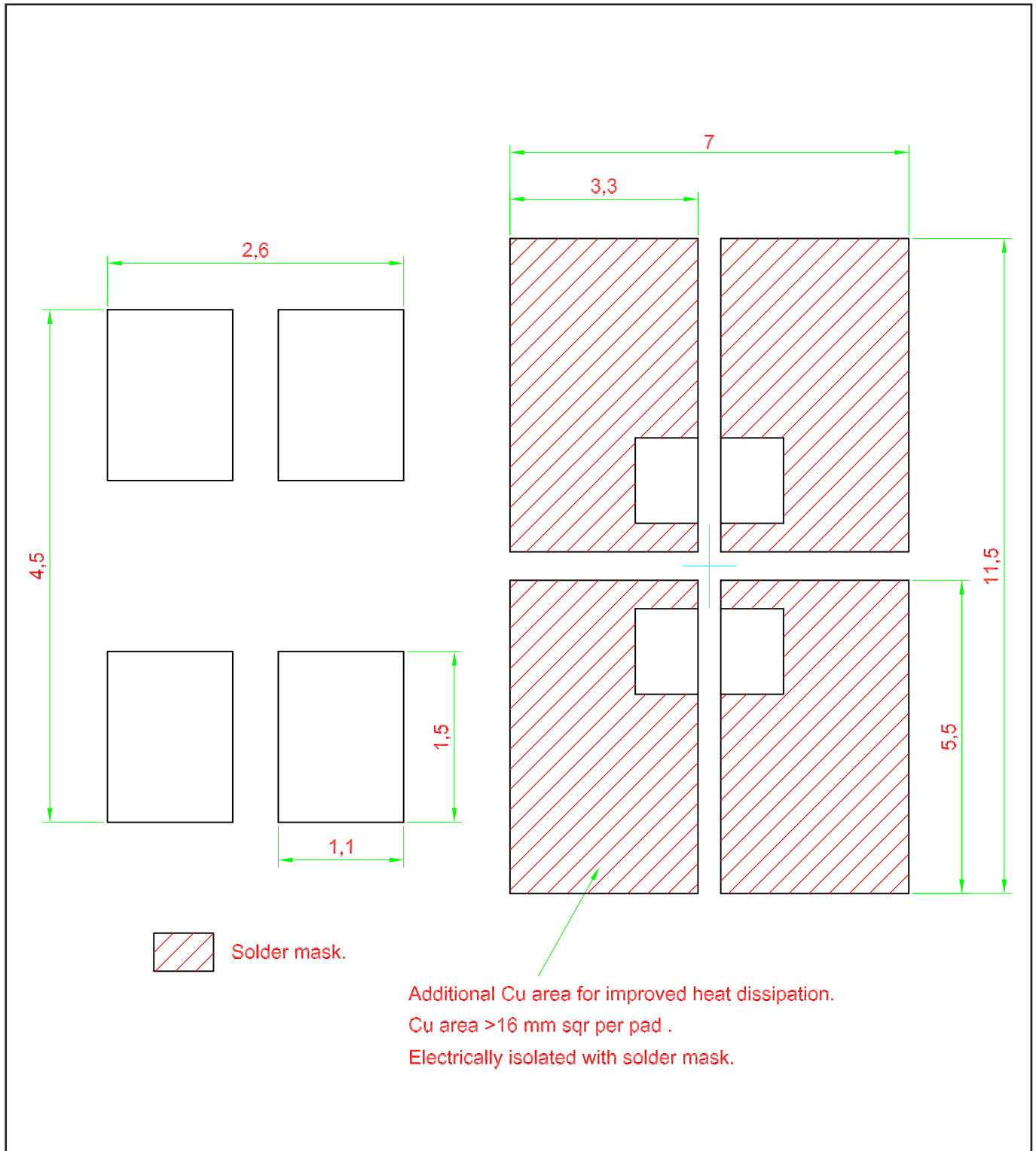
**Power DomiLED • AllnGaP : DWx-MKG Package Outlines**



**Material**

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

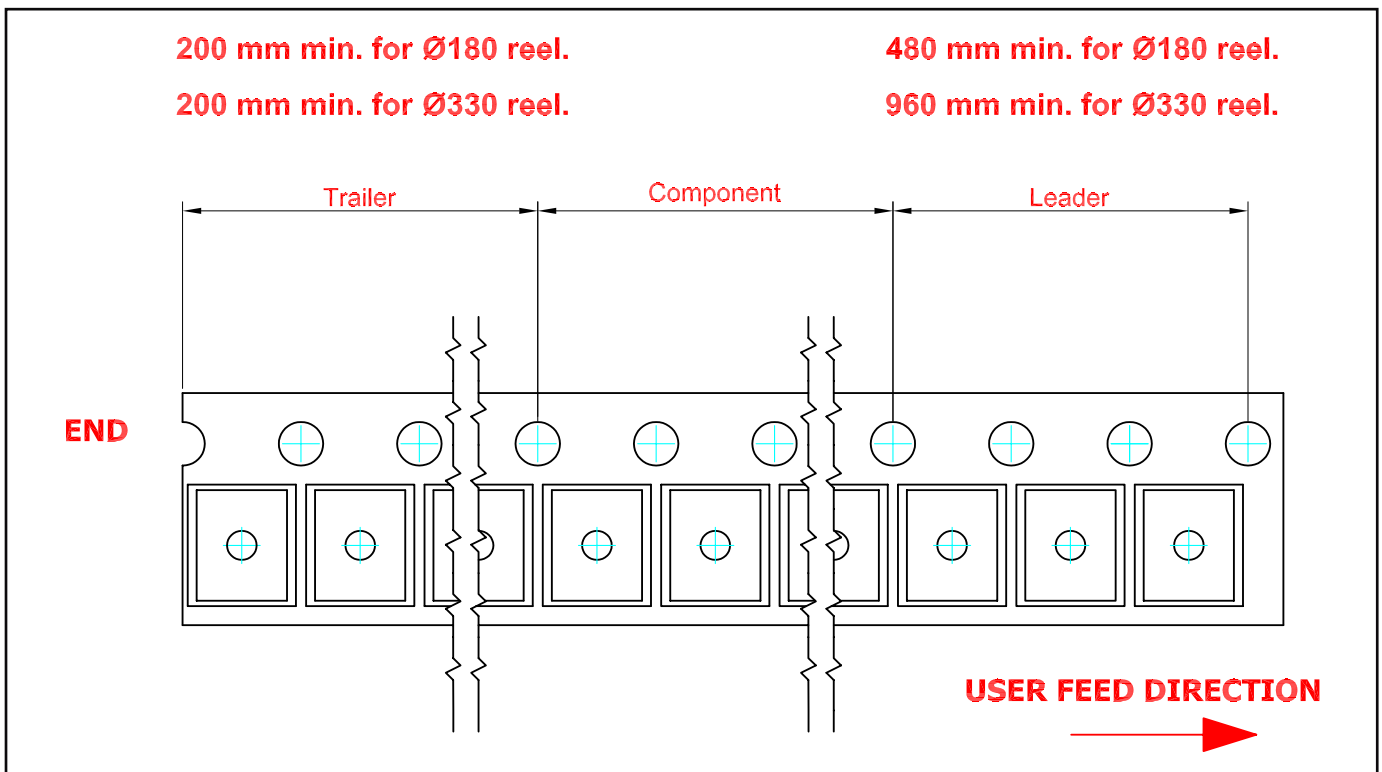
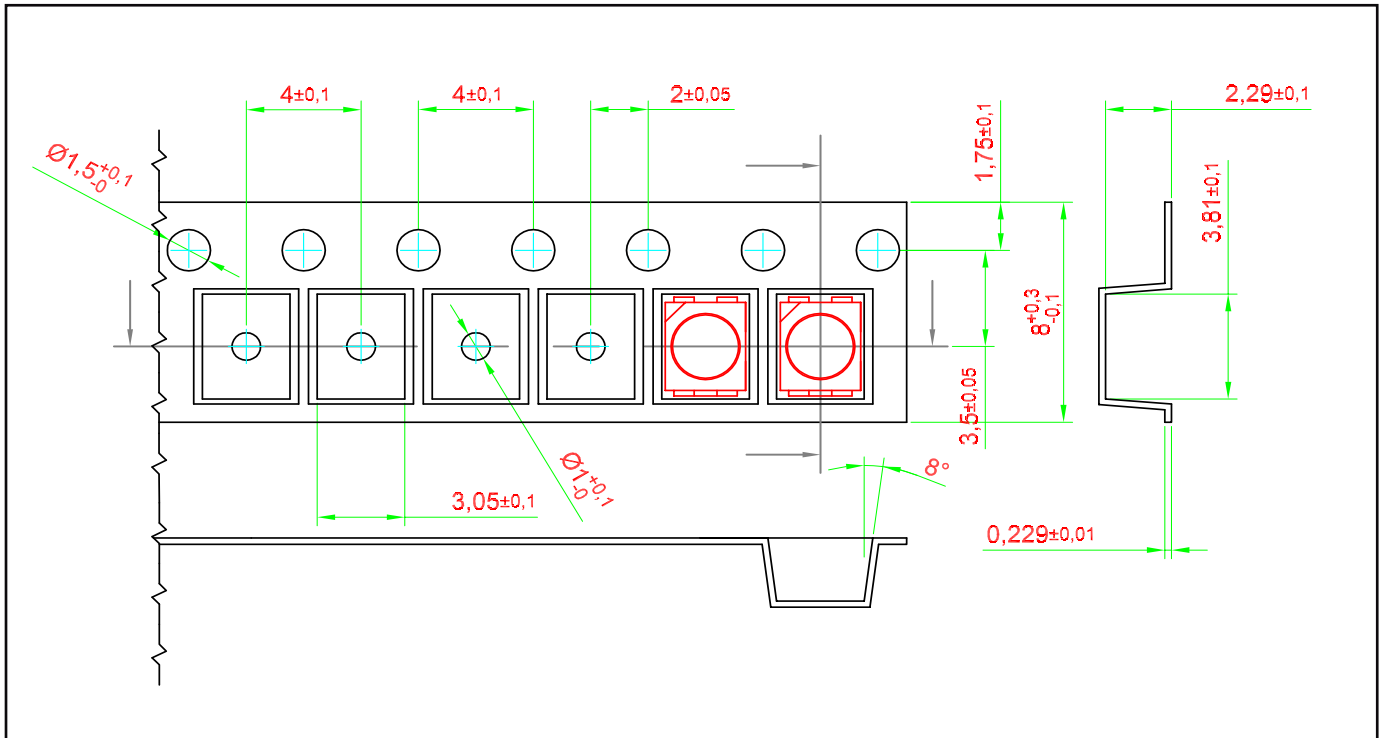
### Recommended Solder Pad



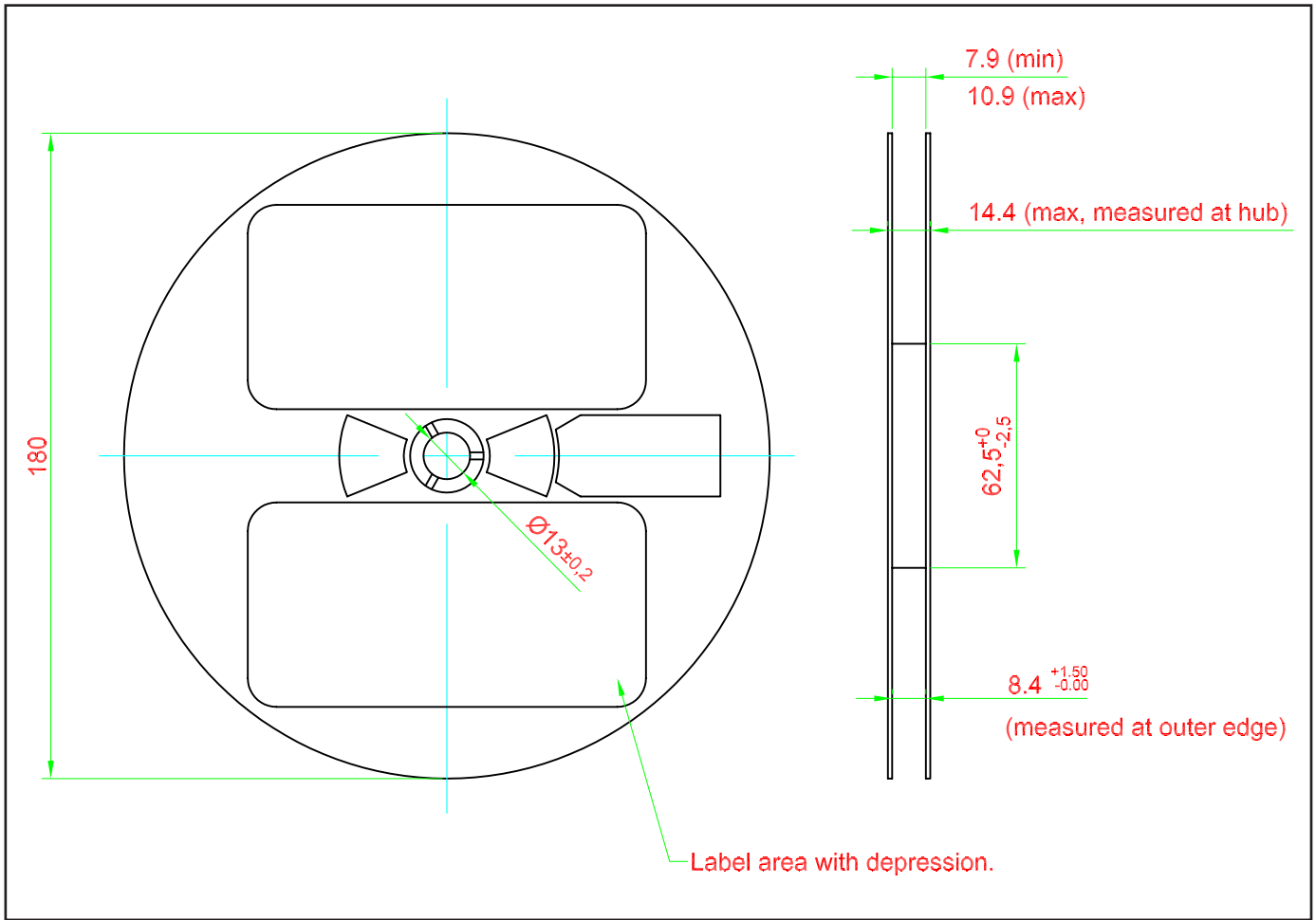


**Taping and orientation**

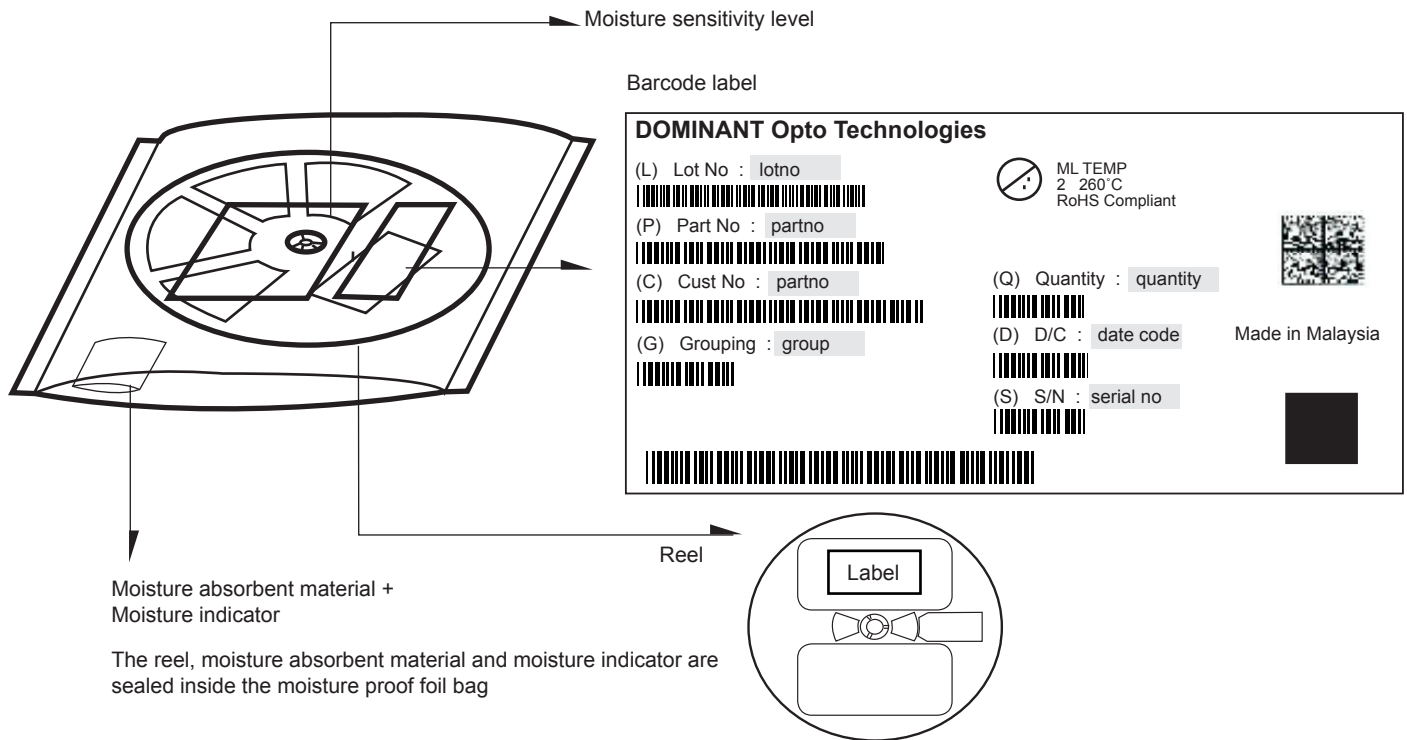
- Reels come in quantity of 2000 units.
- Reel diameter is 180 mm.



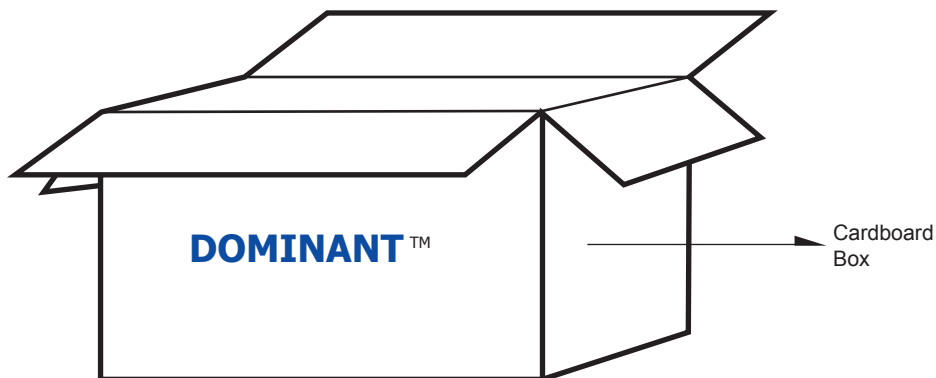
**Packaging Specification**



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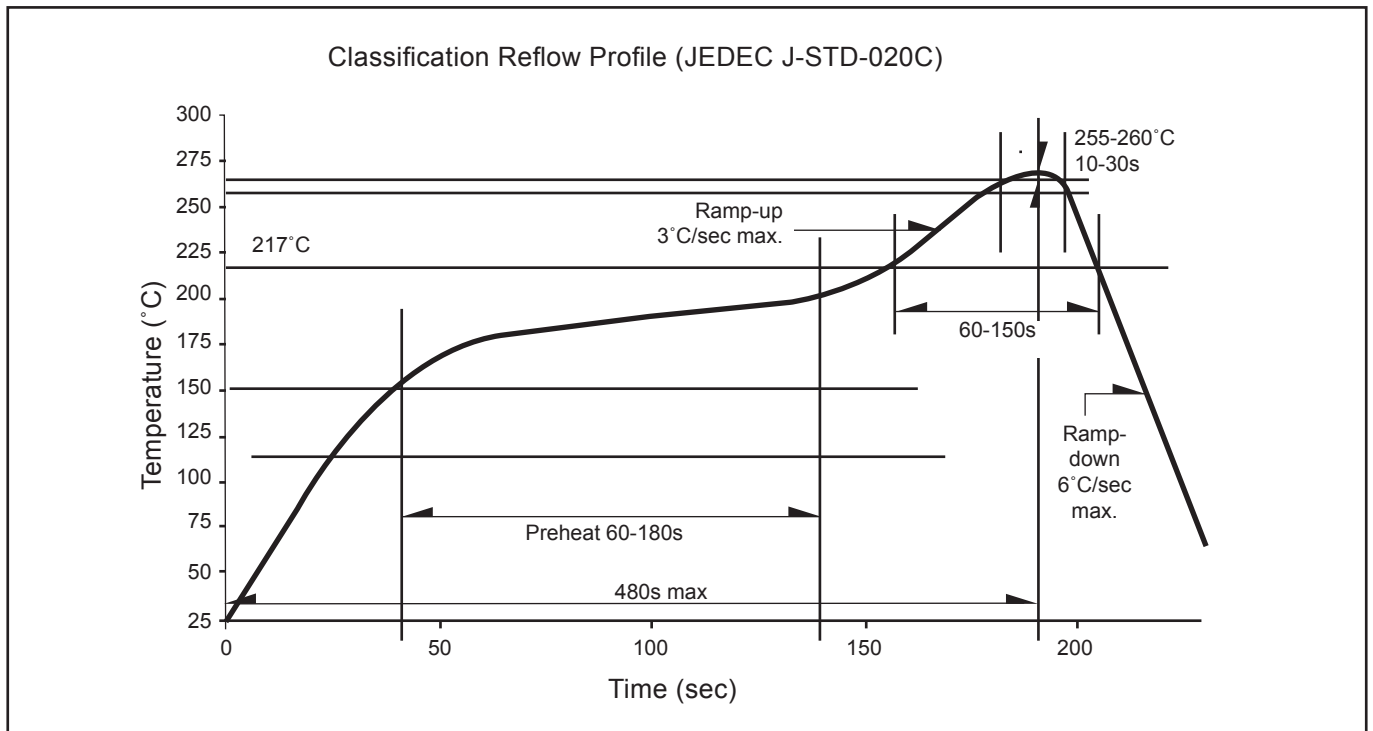
	Average 1pc Power DomiLED	1 completed bag (2000pcs)
Weight (gram)	0.034	240 ± 10



**For Power DomiLED**

Cardboard Box Size	Dimensions (mm)	Empty Box Weight (kg)	Reel / Box
Super Small	325 x 225 x 190	0.38	9 reels MAX
Small	325 x 225 x 280	0.54	15 reels MAX
Medium	570 x 440 x 230	1.46	60 reels MAX
Large	570 x 440 x 460	1.92	120 reels MAX

**Recommended Pb-free Soldering Profile**



## Appendix

### 1) **Brightness:**

- 1.1 Luminous intensity is measured 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 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 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 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 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  $k=3$ ).

**Revision History**

Page	Subjects	Date of Modification
-	Initial Release	31 Oct 2016
2, 3	Add New Partno: DWA-MKG-KL3-1 Update Wavelength Grouping for Super Red	22 Aug 2017
2, 5	Update Thermal Resistance Update Thermal Resistance Graph	21 Dec 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>.

**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](mailto:sales@dominant-semi.com)

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