

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.
- > Superior corrosion resistance.
- > Compliance to automotive standard; AEC-Q102.



Applications:

- > Automotive: Driver Monitoring, Seat Occupancy Detection.
- > Infrared Illumination for cameras.
- > Machine Vision Systems.
- > Surveillance Systems.
- > Eye Tracking Systems.



Optical Characteristics at Tj=25°C

Part Ordering Number	Peak Wavelength	Viewing Angle°	Radiant Intensity <small>Appx. 1.3</small>		Total Radiant Flux (mW) Typ.
			IF = 100mA Min.	Ie(mW/sr) Max.	
DW8-MKS-DD-1	850nm	120	28.0	45.0	120.0

Electrical Characteristics at Tj=25°C

Part Number	Vf @ If = 100mA <small>Appx. 3.1</small>			Vr @ Ir = 10uA <small>Appx. 6.1</small>
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DW8-MKS	2.9	3.1	3.5	12

Absolute Maximum Ratings

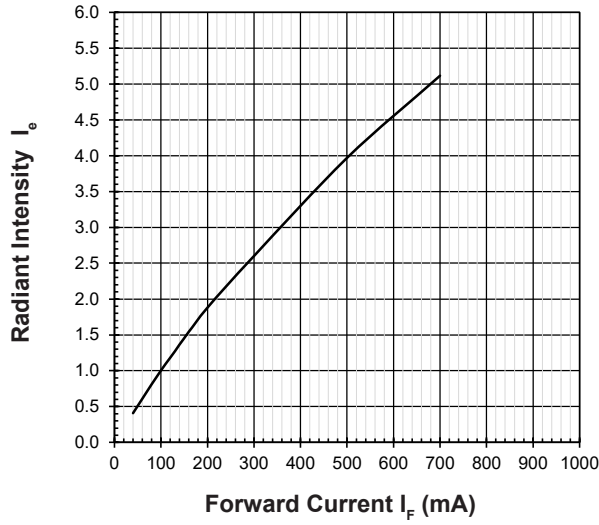
	Maximum Value	Unit
DC forward current	100	mA
Peak pulse current; (Ts=55°C, tp<=100µs, Duty cycle=0.03)	700	mA
Reverse voltage <small>Appx. 6.1</small>	12	V
ESD threshold (HBM)	2	kV
LED junction temperature	125	°C
Operating temperature	-40 ... +110	°C
Storage temperature	-40 ... +125	°C
Power dissipation (at room temperature)	350	mW
Thermal resistance (Rated current = 100mA, Ts = 25 °C)		
- Real Thermal Resistance		
Junction / ambient, Rth JA real	280	K/W
Junction / solder point, Rth JS real	120	K/W
(Mounting on FR4 PCB, pad size >= 16 mm ² per pad)		

Radiant Intensity at Tj=25°C

Brightness Group	Radiant Intensity (mW/sr) <i>Appx. 1.3</i>
DD	28.0 ... 45.0

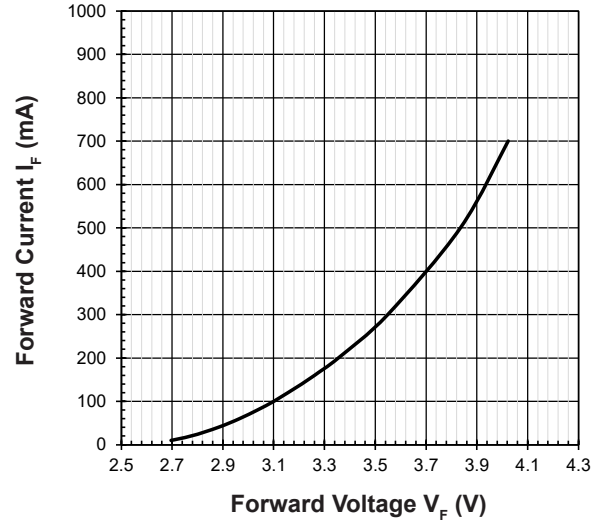
Radiant Intensity Vs Forward Current

$I_e/I_e(100mA) = f(I_F); T_j = 25^\circ C$



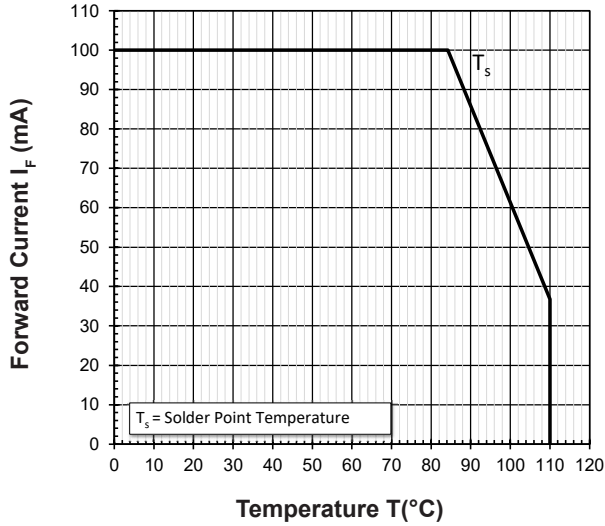
Forward Current Vs Forward Voltage

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



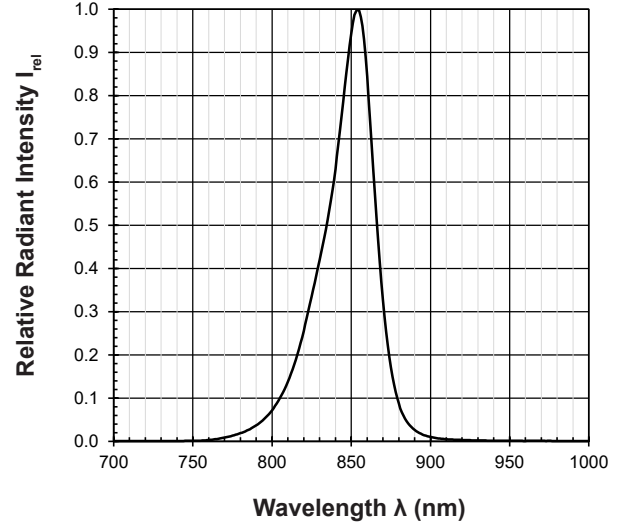
Maximum Current Vs Temperature

$I_F = f(T)$

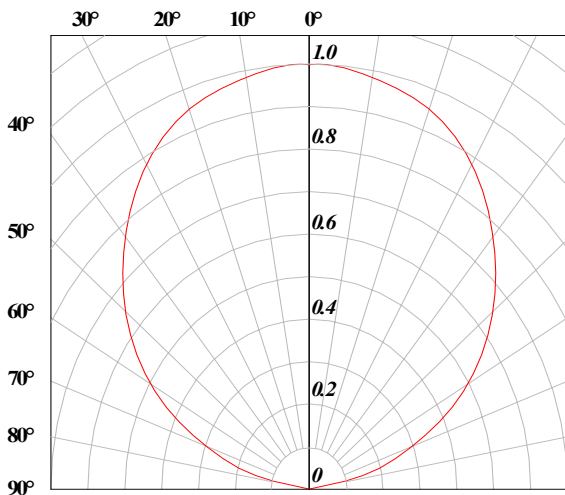


Relative Spectral Emission

$I_{rel} = f(\lambda); T_j = 25^\circ C; I_F = 100mA$

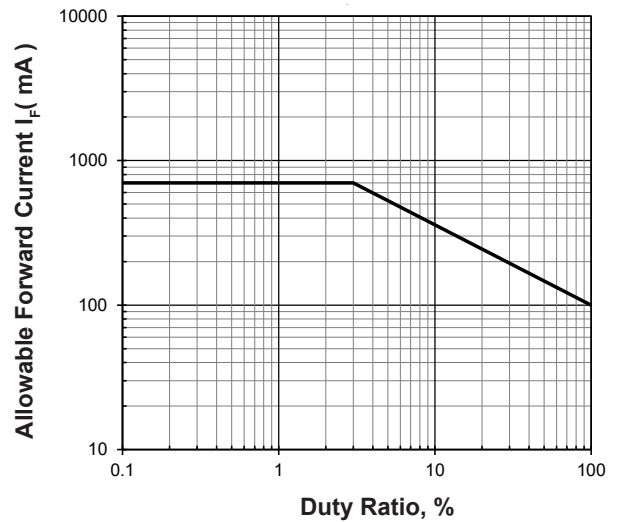


Radiation Pattern



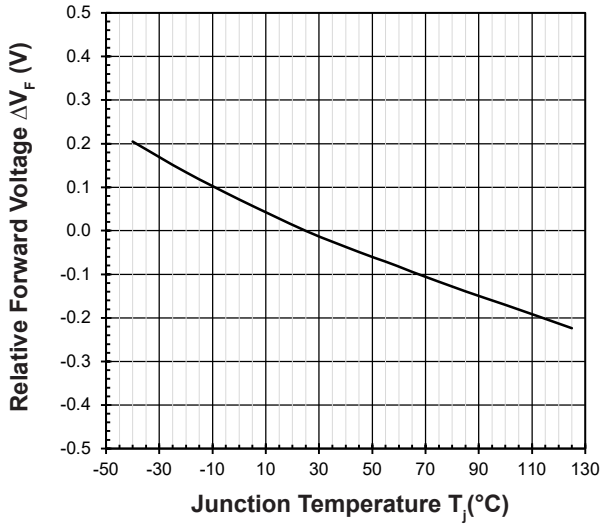
Allowable Forward Current Vs Duty Ratio

($T_s = 55^\circ C; t_p \le 100\mu s$)



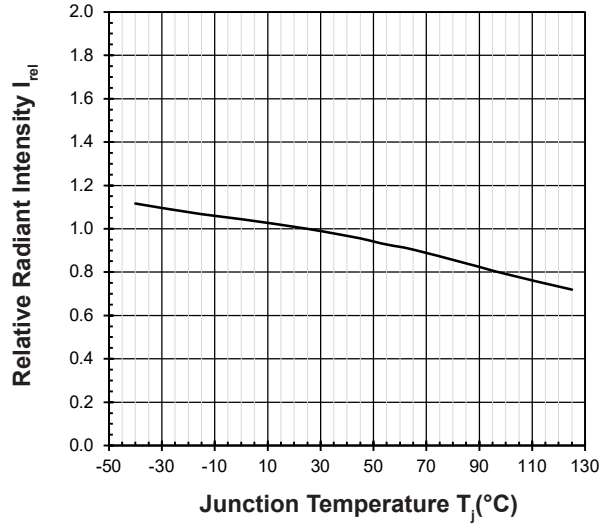
Relative Forward Voltage Vs Junction Temperature

$\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j); I_F = 100\text{mA}$



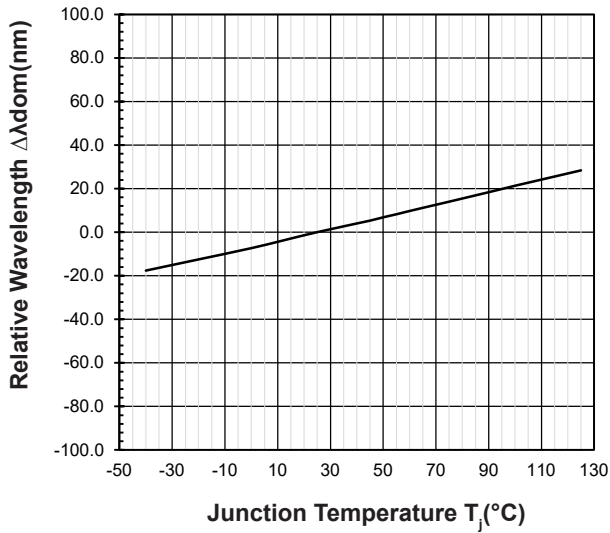
Relative Radiant Intensity Vs Junction Temperature

$I_e/I_e(25^\circ\text{C}) = f(T_j); I_F = 100\text{mA}$

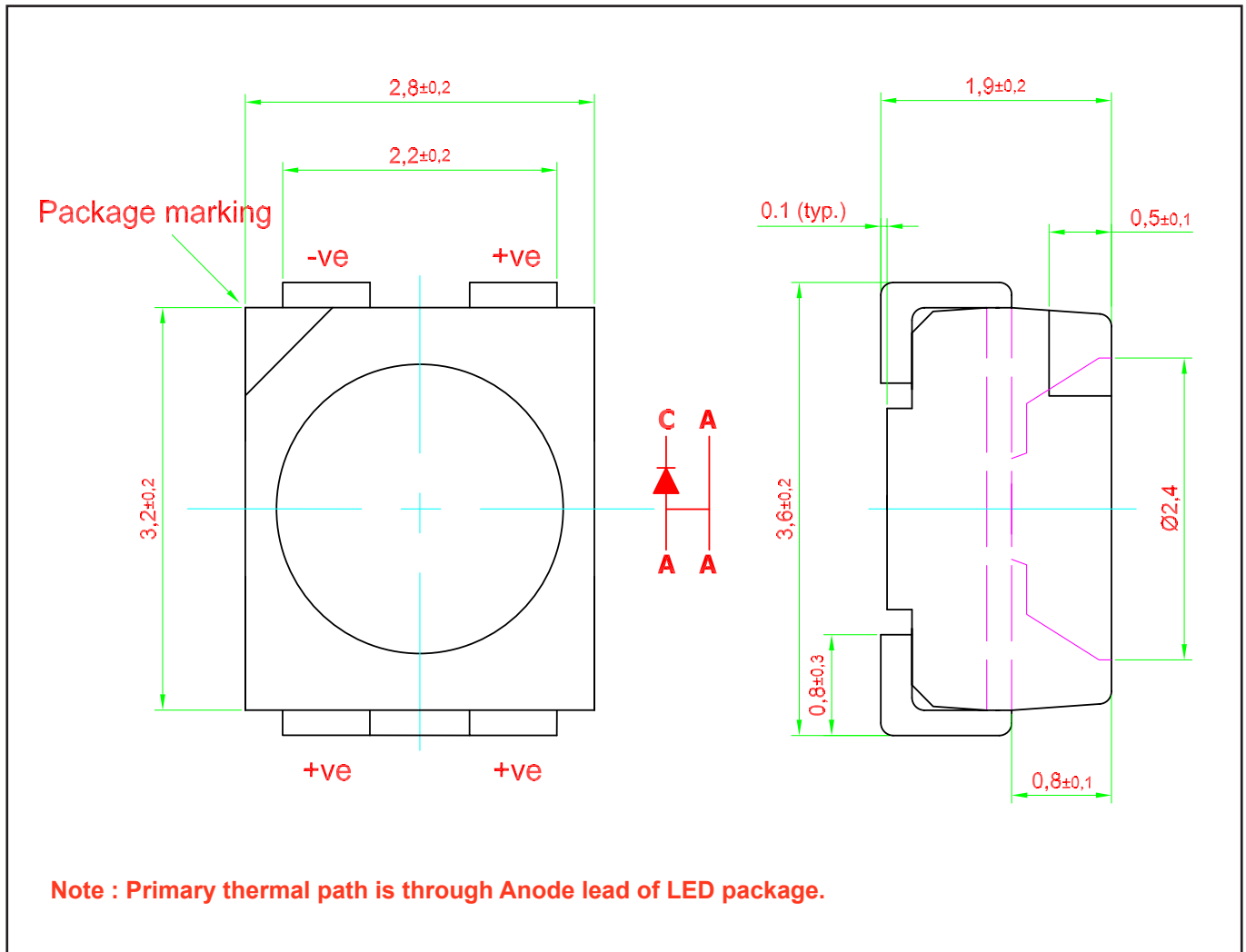


Relative Wavelength Vs Junction Temperature

$\Delta \lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25^\circ\text{C}) = f(T_j); I_F = 100\text{mA}$



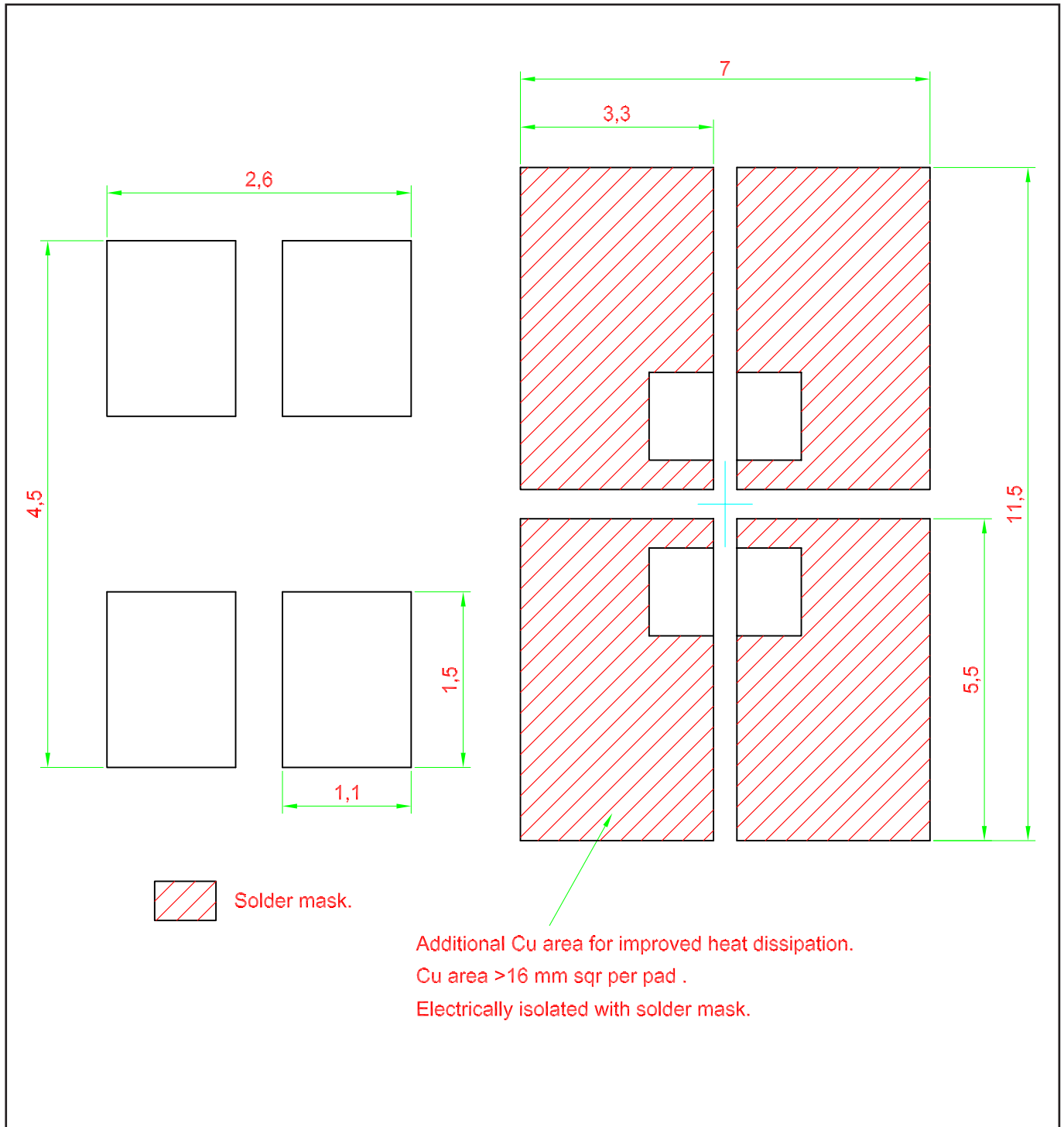
Power DomiLED • Infra Red : DW8-MKS Package Outlines



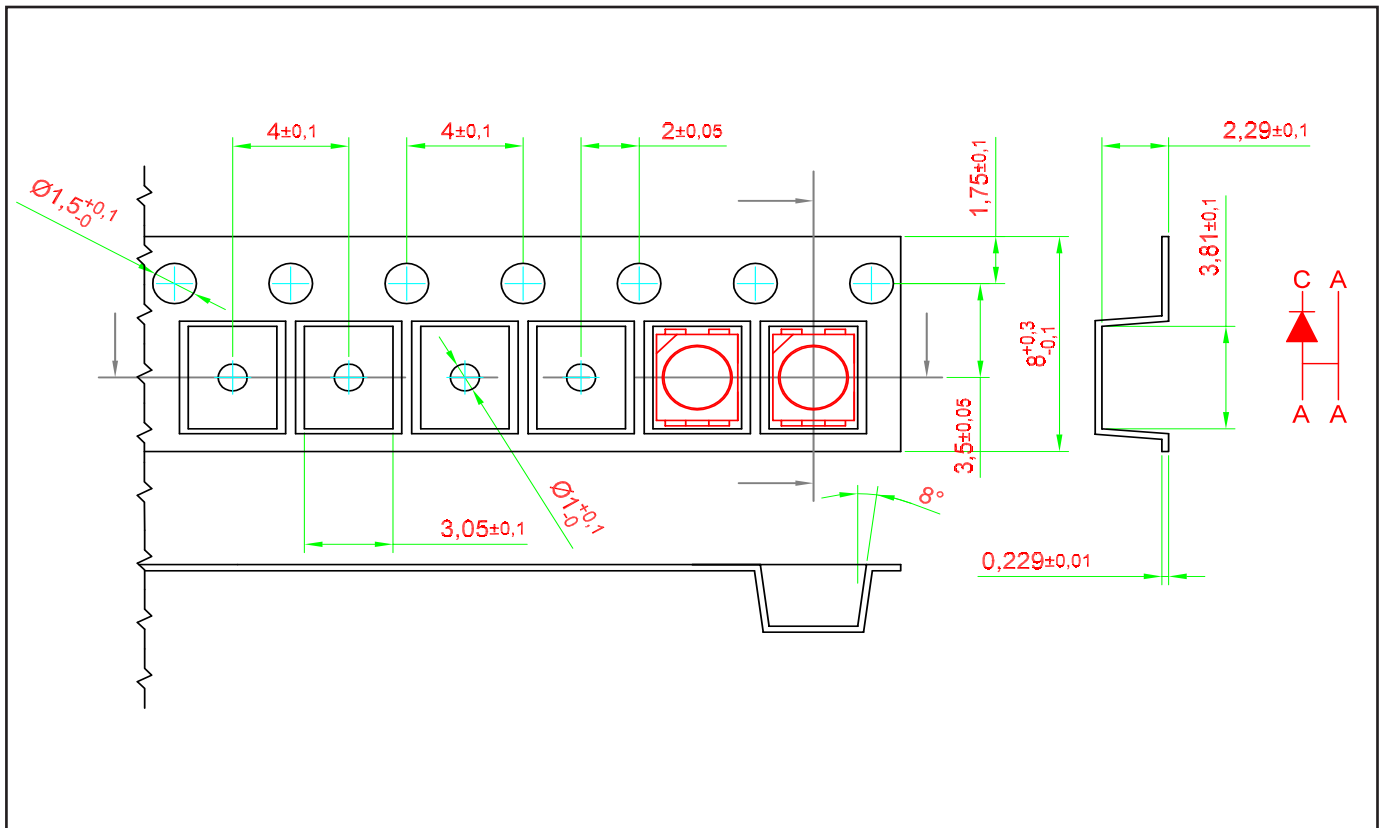
Material

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

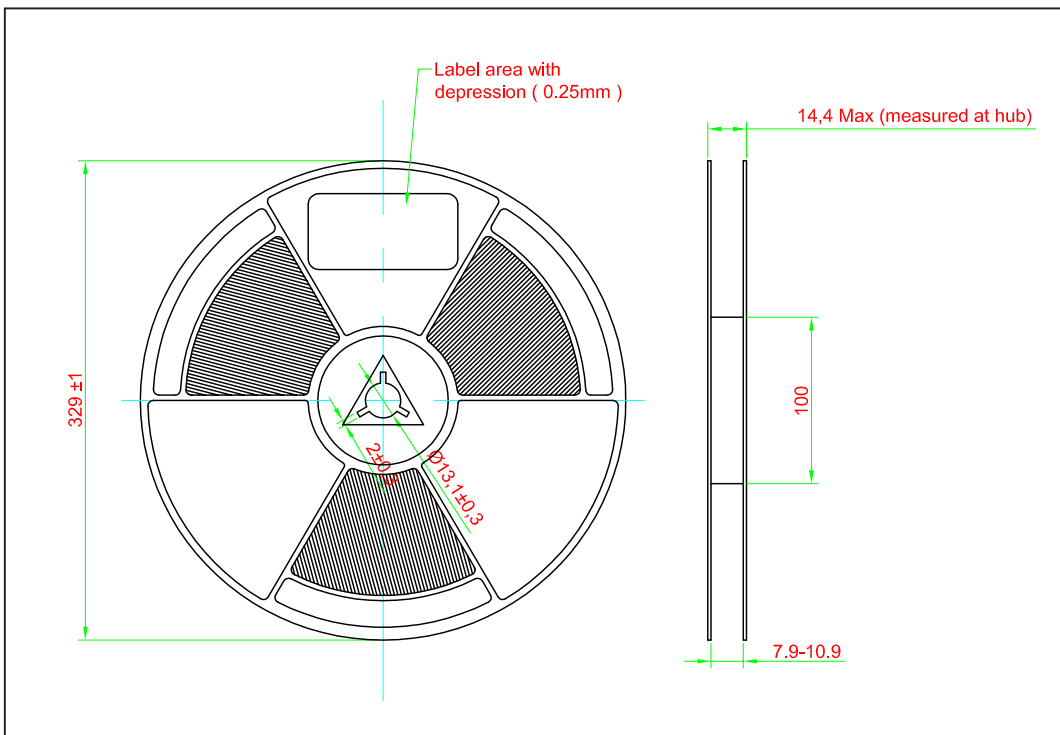
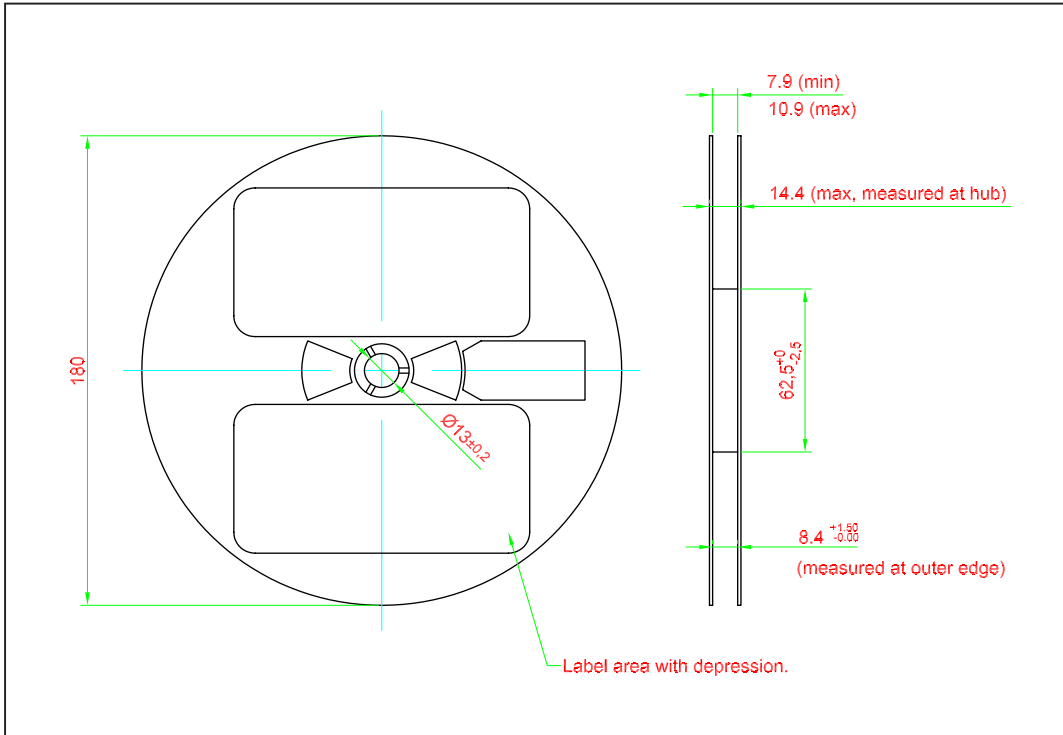
Recommended Solder Pad



Taping and orientation

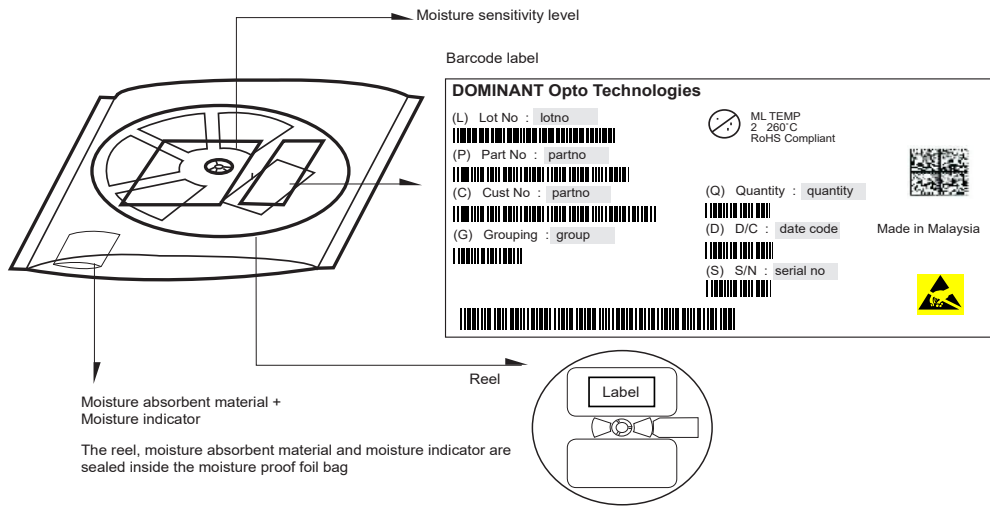


Packaging Specification

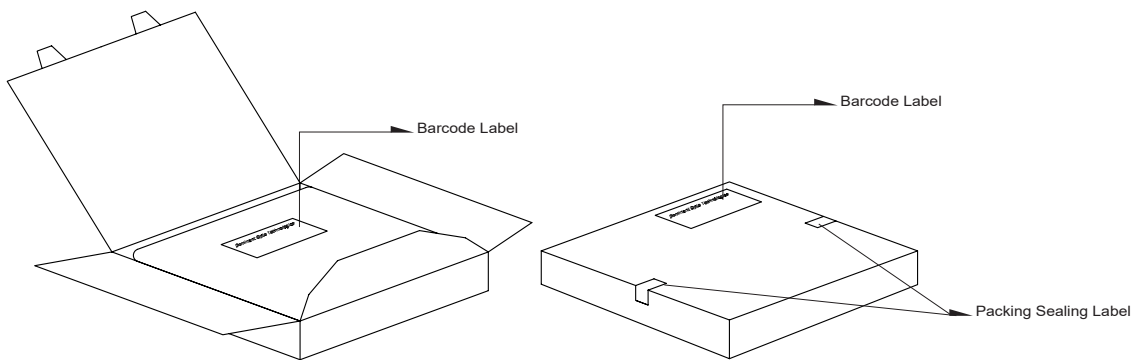


	Reel Diameter (mm)	Quantity (pcs)	Partno
Standard Packing	180	2000	DW8-MKS-xxx-x
Optional Packing	329	8000	DW8-MKS-xxx-x-8

Packaging Specification



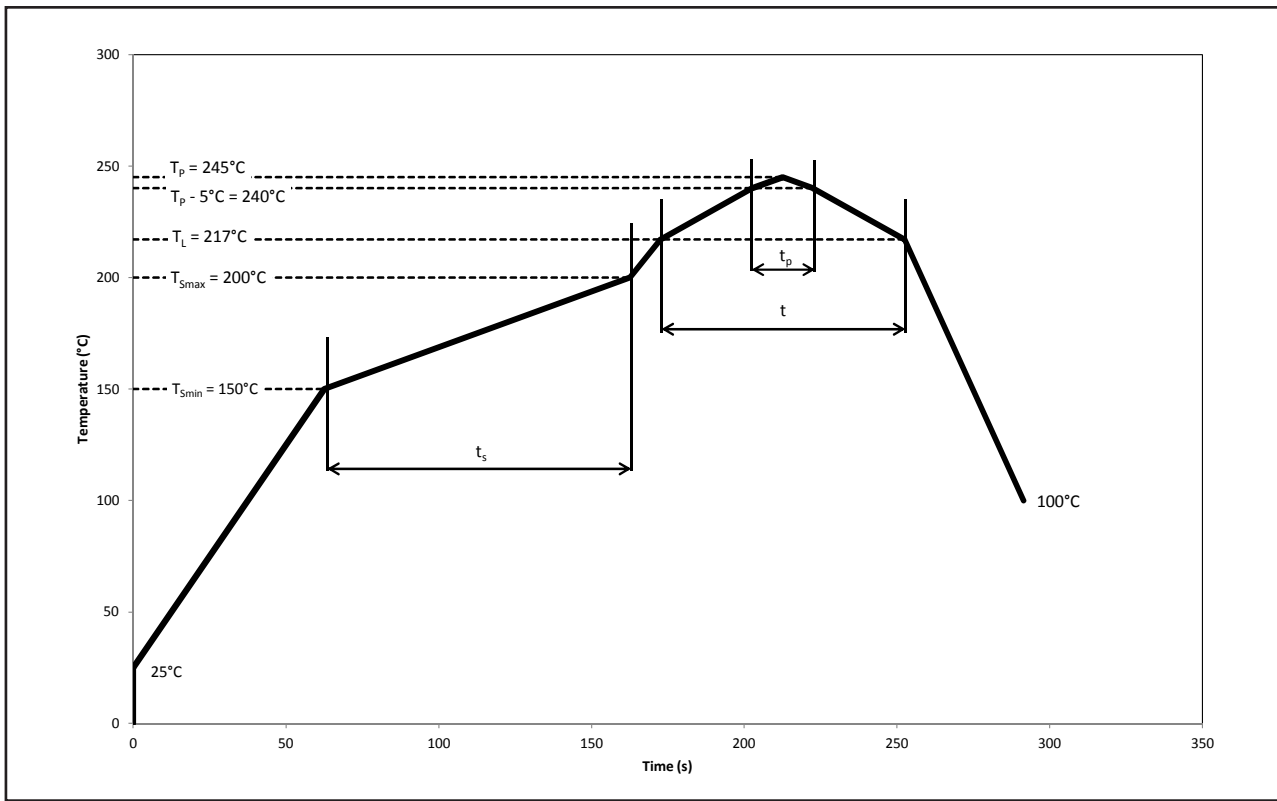
Quantity per bag (pcs)	Average 1pc Power DomiLED (gram)	1 completed bag (gram)
2000	0.034	240 ± 10
8000	0.034	750 ± 10



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	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 specified in mm.

6) **Characteristic Curve:**

- 6.1 In the range where the line of the graph is broken, there could have higher differences for those LEDs within one packing unit.

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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