DOMINANT™
Opto Technologies
Innovating Illumination

DATA SHEET:

Power DomiLED

AlInGaP : DWx-MKG

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:
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).

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Optical Characteristics at Tj=25˚C

Part Number	Color	Viewing Angle˚	Luminous Flux @ IF = 50mA (lm) Appx. 1.2		
			Min.	Typ.	Max.
● DWS-MKG-F3J2-1	Super Red, 632nm	120	3.22	5.10	7.15
DWS-MKG-GJ3-1	Super Red, 632nm	120	3.68	5.50	8.20
DWA-MKG-KL2-4	Amber, 624nm	120	8.20	9.35	12.20
DWA-MKG-K3L-2	Amber, 615nm	120	9.35	10.70	13.90
● 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

● Not for new design

Electrical Characteristics at Tj=25˚C

Part Number	Vf @ If = 50mA Appx. 3.1			V_r @ I_r = 10uA Appx. 6.1
	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; (Ts=55 ˚C, tp ≤ 100µs, Duty cycle = 0.03)	100	mA
Reverse voltage *Appx. 6.1*	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 (Rated current = 50mA, Ts = 25 ˚C)		
- Real Thermal Resistance		
Junction / ambient, $R_{th\ JA\ real}$	300	K/W
Junction / solder point, $R_{th\ JS\ real}$	90	K/W
- Electrical Thermal Resistance		
Junction / ambient, $R_{th\ JA\ el}$	240	K/W
Junction / solder point, $R_{th\ JS\ el}$	65	K/W

Wavelength Grouping at Tj= 25˚C

Color	Group	Wavelength distribution (nm) *Appx.2.2*
DWS; Super Red	Full	627 - 639
DWA; Amber	Full	612 - 627
	W	612 - 616
	X	616 - 620
	Y	620 - 624
	Z	624 - 627
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 *Appx. 1.2* (lm)
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

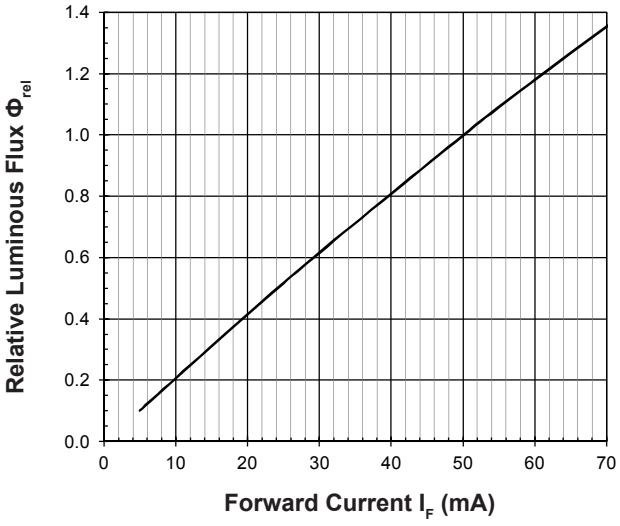
Vf Bining (Optional)

Vf @ If = 50mA	Forward Voltage (V) *Appx. 3.1*
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.

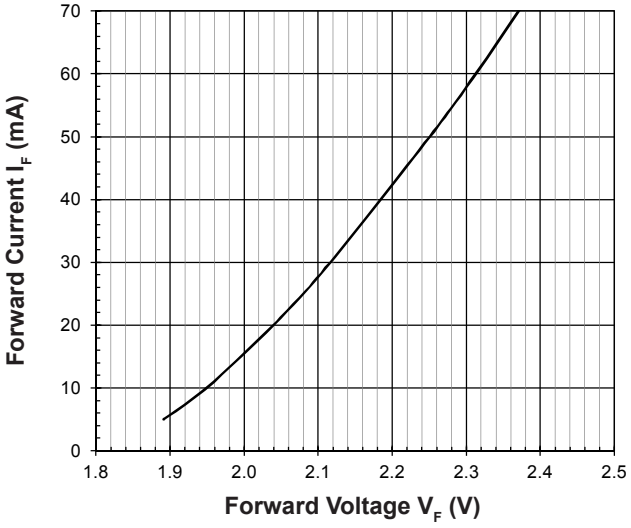
Relative Luminous Flux Vs Forward Current *Appx. 4.1*

$\Phi_V/\Phi_V(50mA) = f(I_F)$; $T_j = 25°C$



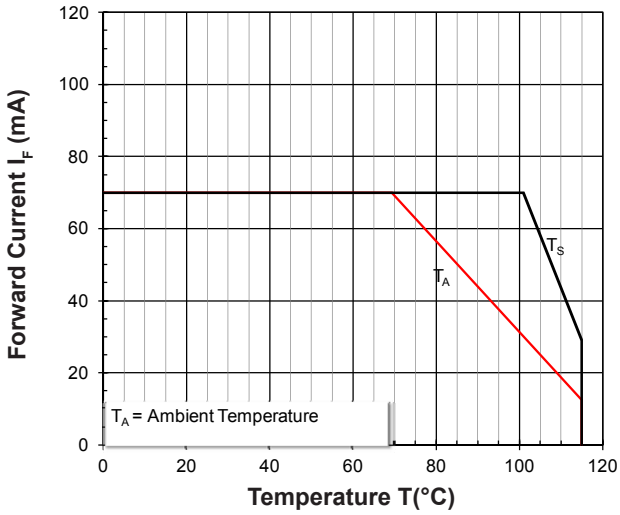
Forward Current Vs Forward Voltage *Appx. 4.1*

$I_F = f(V_F)$; $T_j = 25°C$



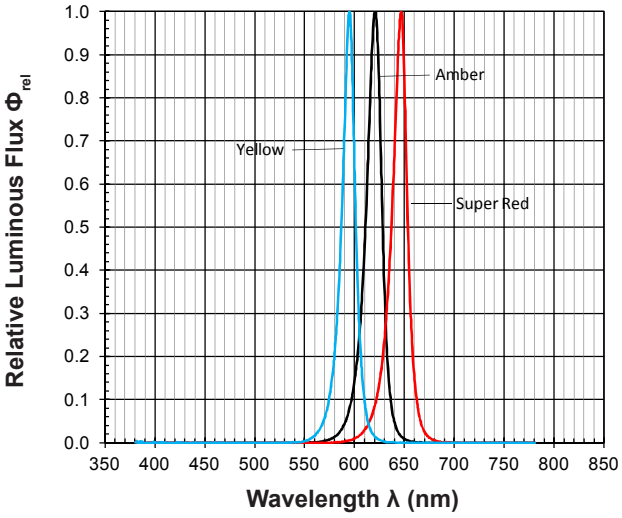
Maximum Current Vs Temperature

$I_F = f(T)$



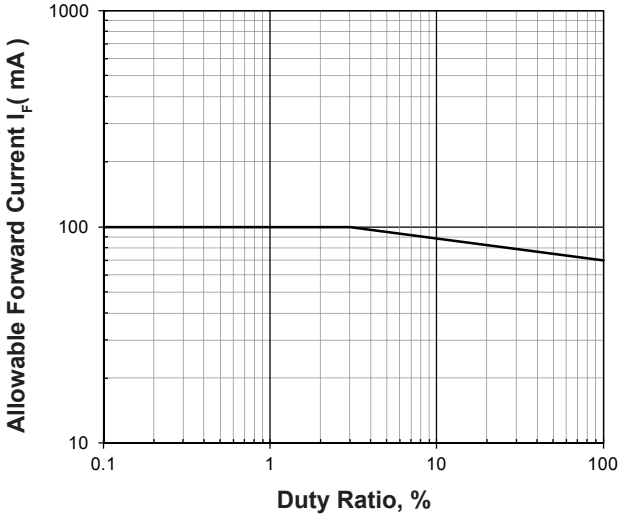
Relative Spectral Emission *Appx. 4.1*

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

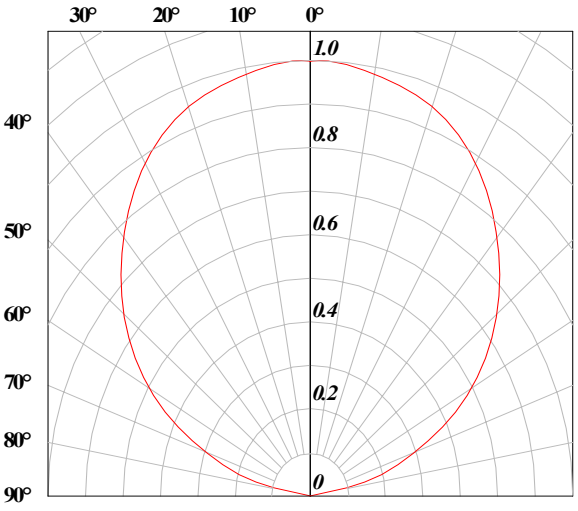


Allowable Forward Current Vs Duty Ratio

(Ts = 55°C; tp ≤ 100µs)

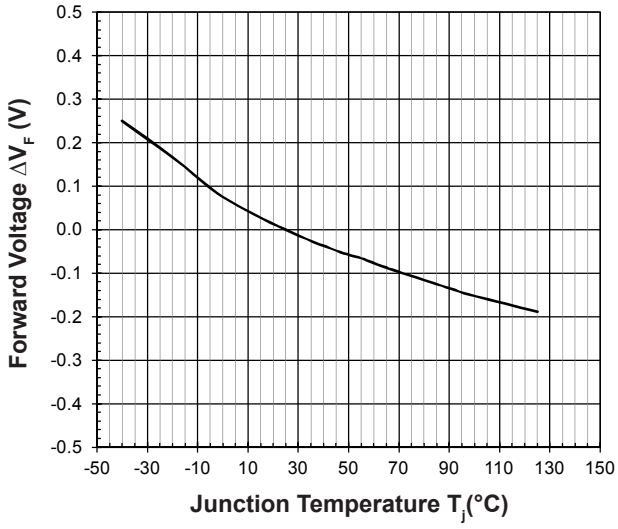


Radiation Pattern *Appx. 4.1*



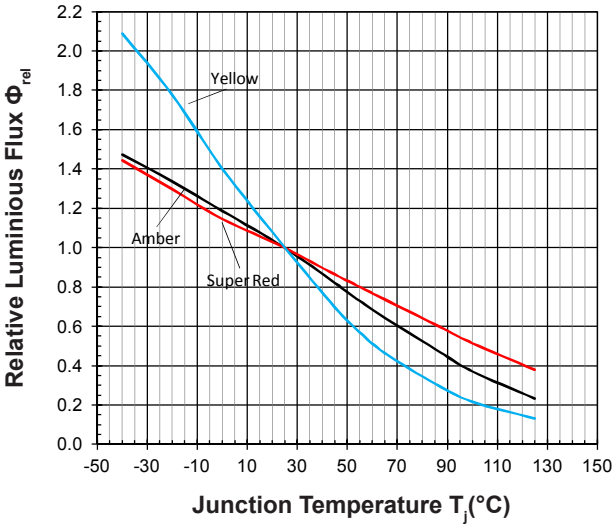
Forward Voltage Vs Junction Temperature *Appx. 4.1*

$\Delta V_F = V_F - V_F(25°C) = f(T_j)$; I_F =50mA



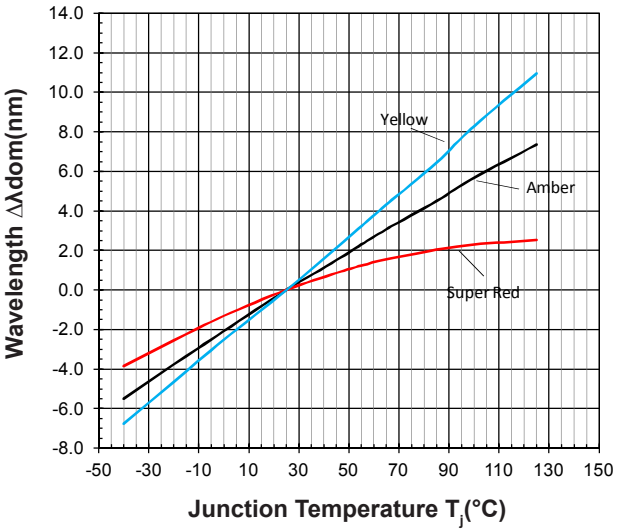
Relative Luminious Flux Vs Junction Temperature *Appx. 4.1*

$\Phi V/\Phi V(25°C) = f(T_j)$; I_F = 50mA

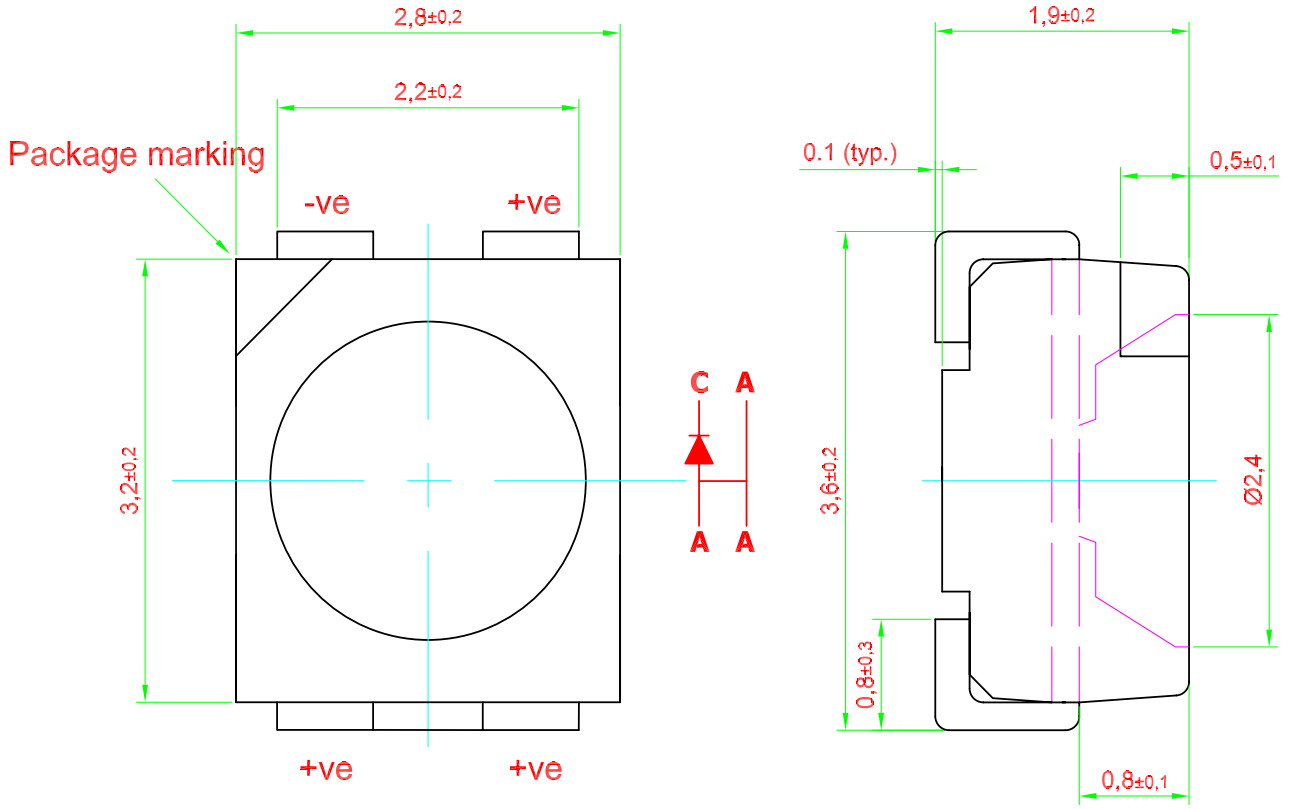


Wavelength Vs Junction Temperature *Appx. 4.1*

$\Delta\lambda dom = \lambda dom - \lambda dom\ (25°C) = f(T_j)$; I_F = 50mA



Power DomiLED • AlInGaP : DWx-MKG Package Outlines *Appx. 5.1*

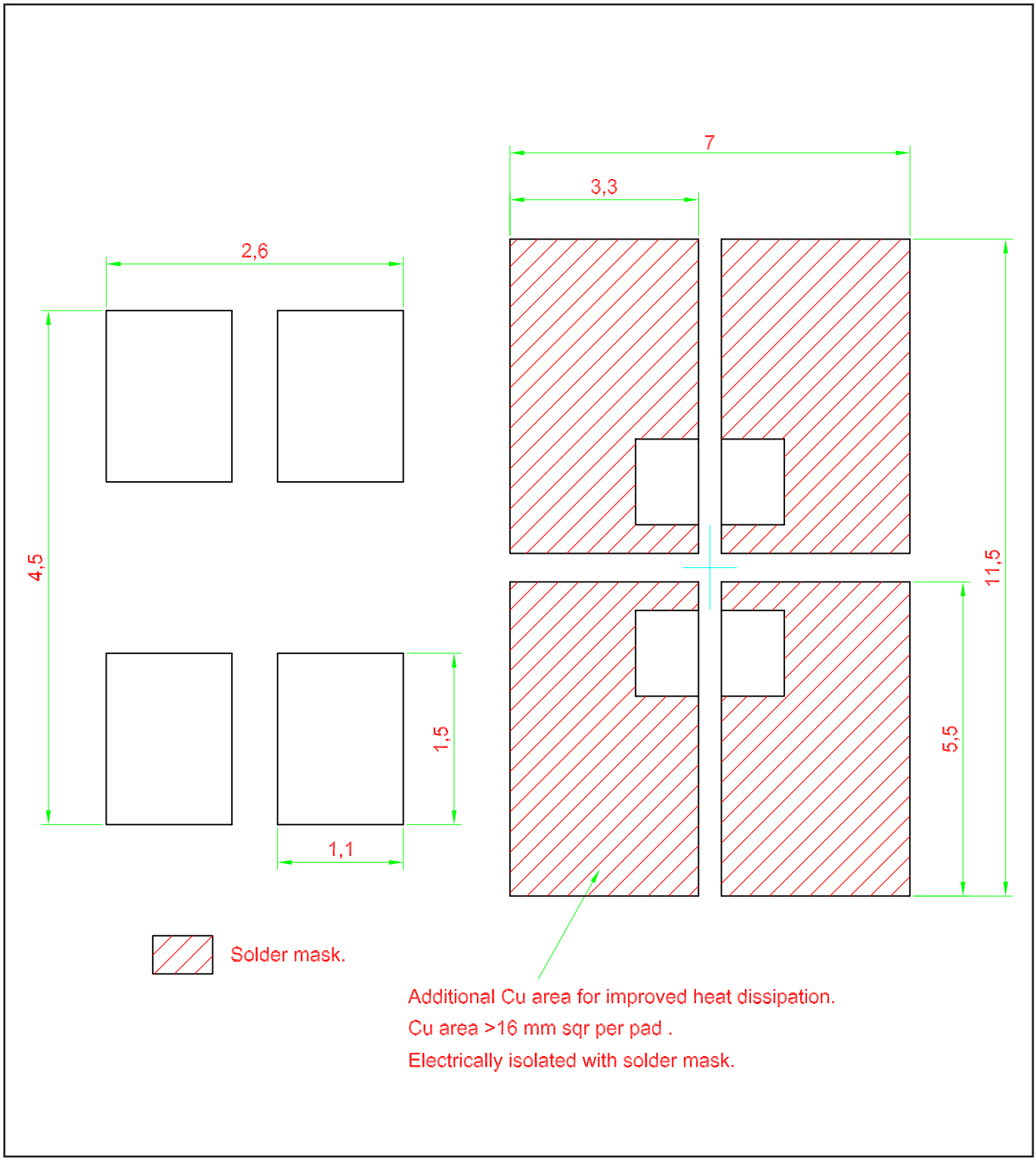


Note : Primary thermal path is through Anode lead of LED package.

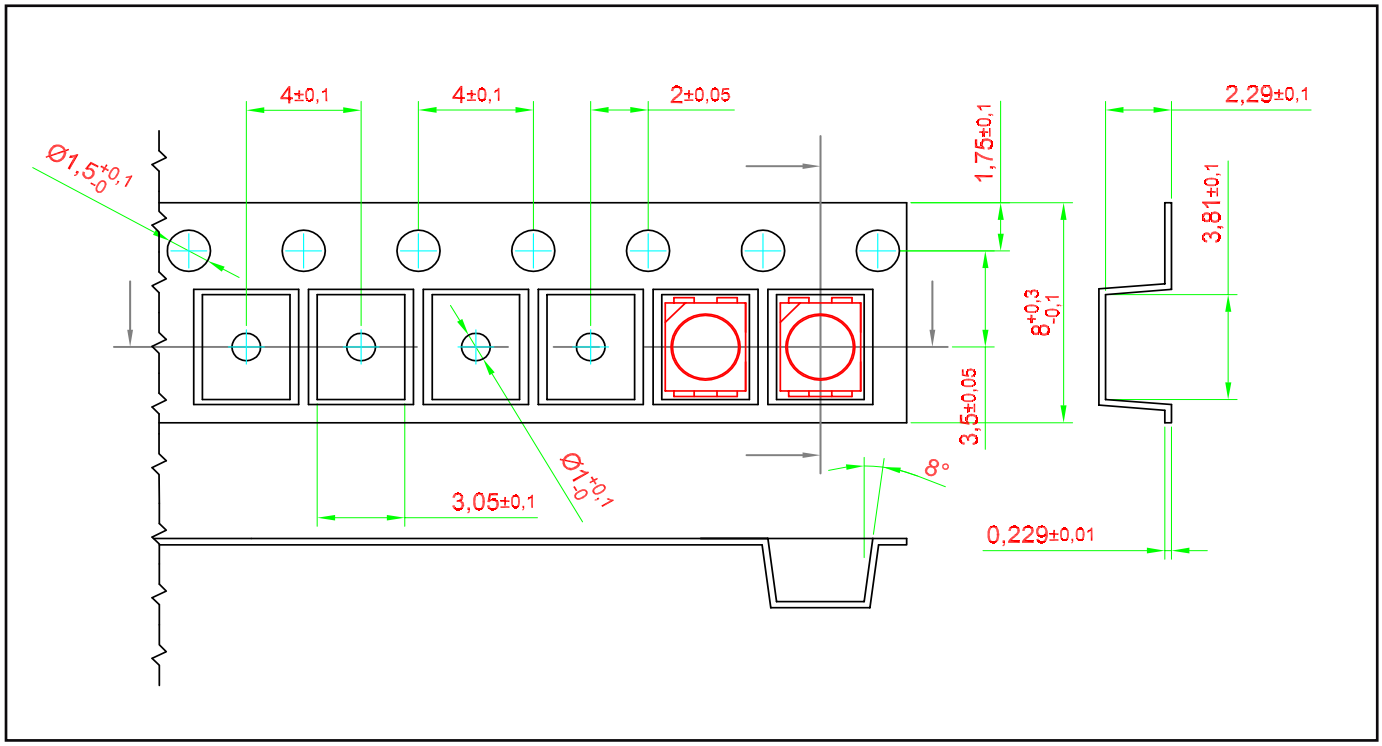
Material

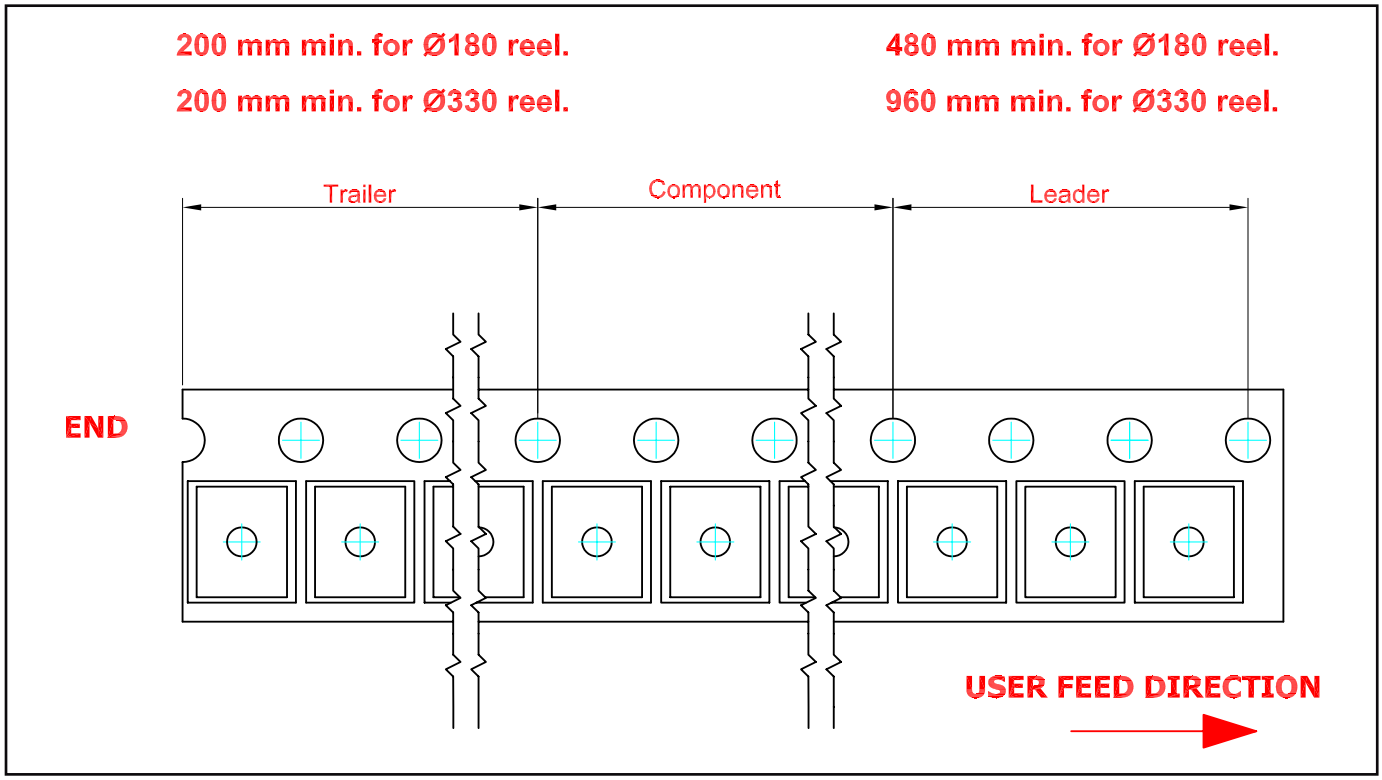
	Material
Lead-frame	Cu Alloy With Au Plating
Package	High Temperature Resistant Plastic
Encapsulant	Silicone Resin
Soldering Leads	Au Plating

Recommended Solder Pad *Appx. 5.1*

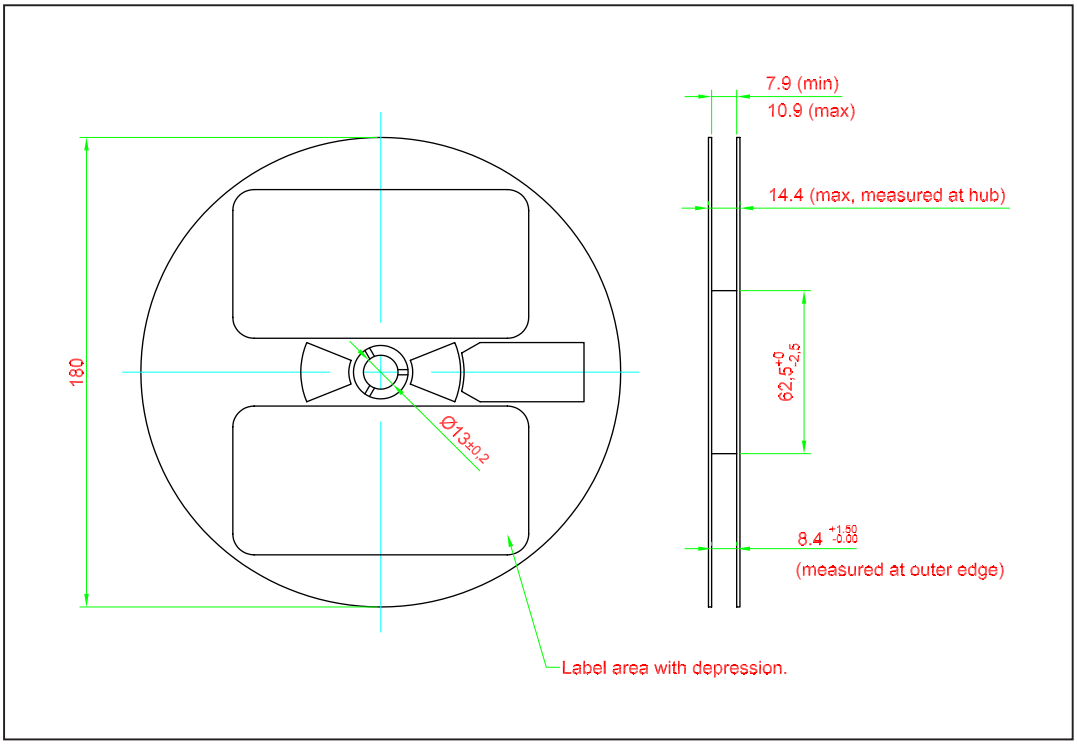


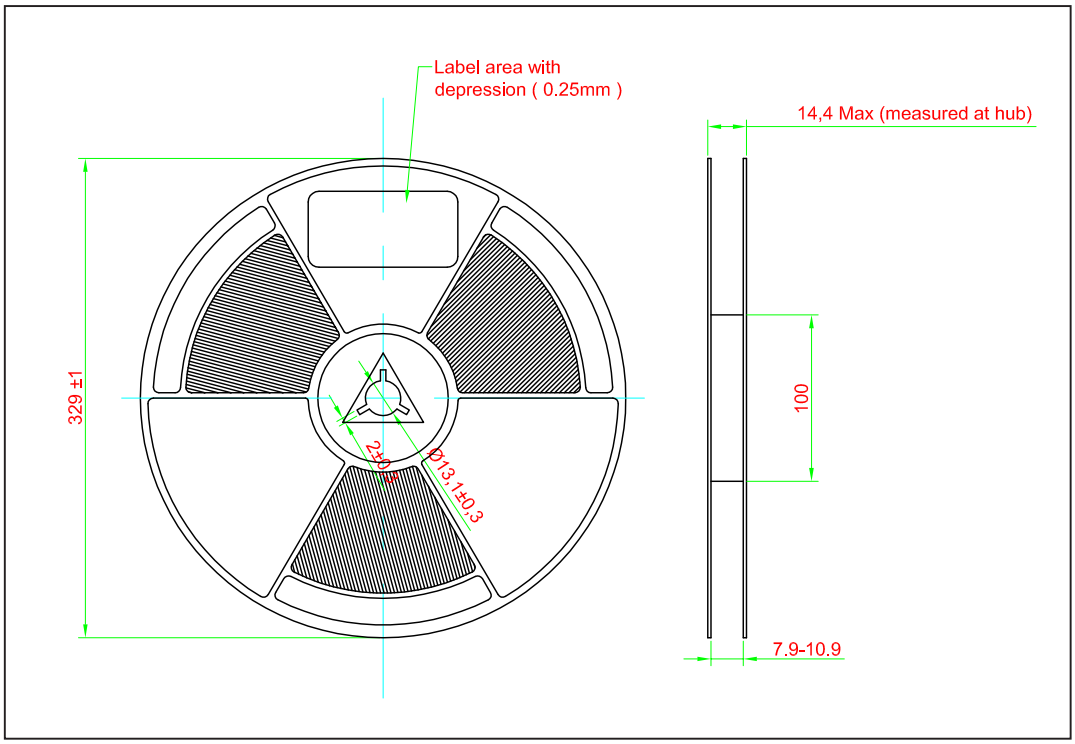
Taping and orientation *Appx. 5.1*





Packaging Specification



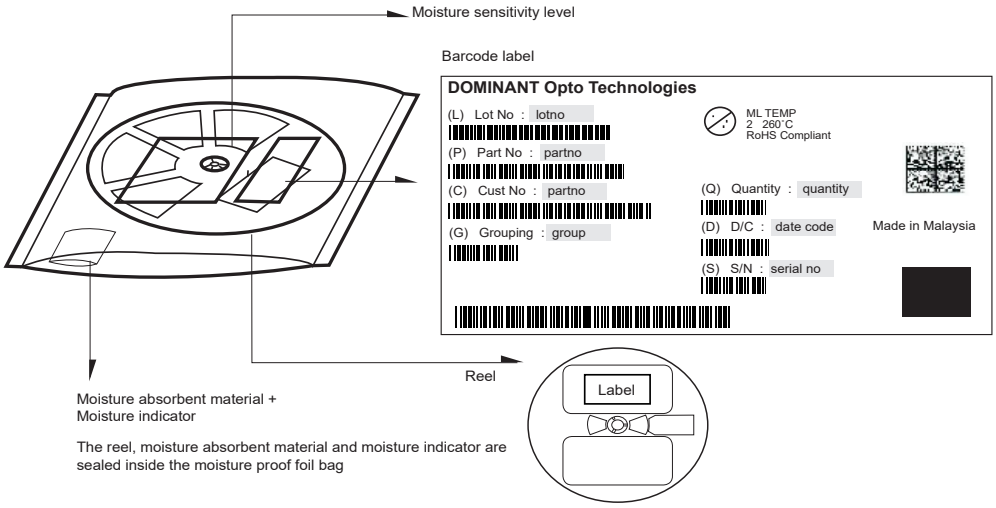


	Reel Diameter (mm)	Quantity (pcs)	*Ordering Number
Standard Packing	180	2000	DWx-MKG-xxx-x
Optional Packing	329	8000	DWx-MKG-xxx-x-8

Notes:

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

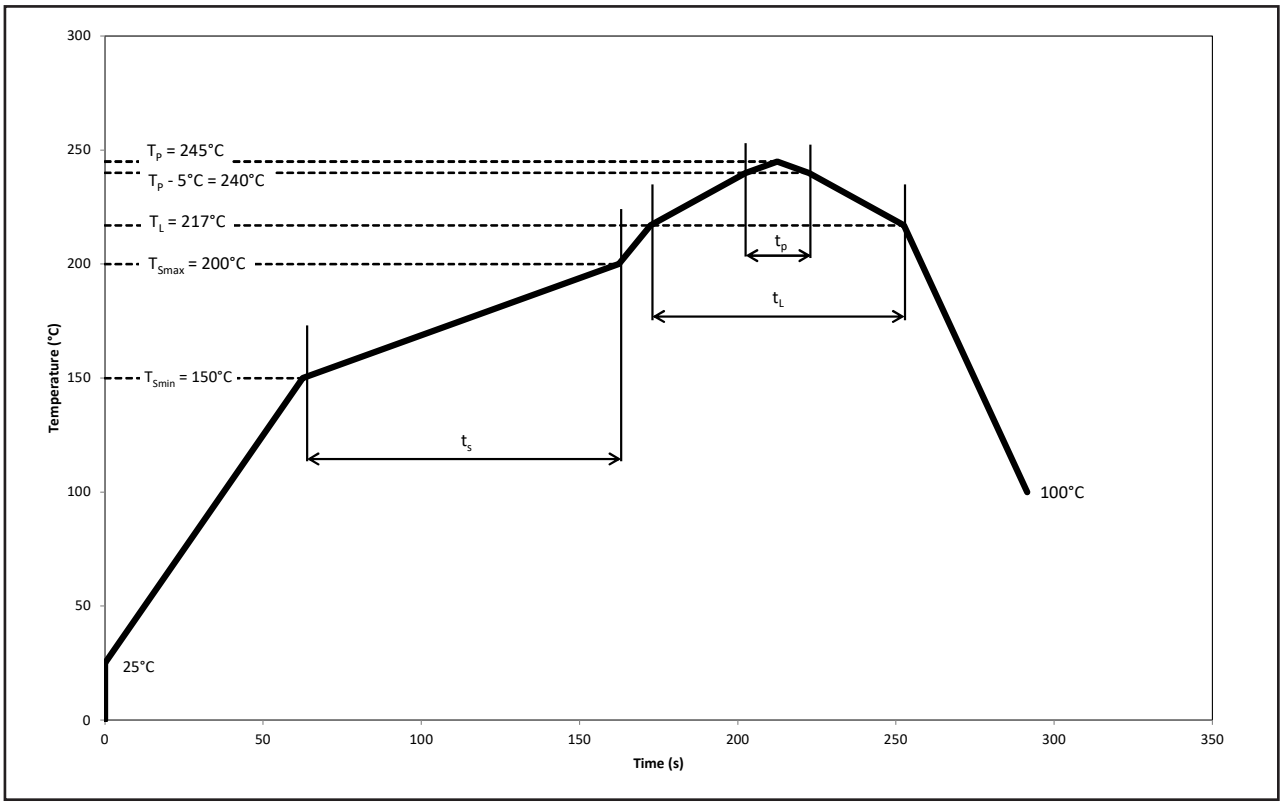
Packaging Specification



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

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°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 ± 8 % and an expanded uncertainty of ± 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 ± 8 % and an expanded uncertainty of ± 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 ± 8 % and an expanded uncertainty of ± 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 ± 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 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 ± 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 when a current pulse of 8 ms(typ) with an internal reproducibility of ± 0.05V and an expanded uncertainty of ± 0.1V (accordingly to GUM with a coverage factor of k=3).

4) Typical Values:

4.1 Due to the specific conditions of semiconductor devices' manufacturing processes, the provided typical data and calculated correlations of technical parameters should only be considered as statistical values. It is important to note that the actual parameters of individual devices may deviate from these typical data, calculated correlations or the typical characteristic line. Dominant reserves the right to update this typical data without prior notice, particularly in response to technical enhancements.

5) Tolerance of Measure

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

6) Reverse Voltage:

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

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
2, 3, 13	Not For New Design: DWA-MKG-KL3-1 & DWA-MKG-K3M-1 Add New Part No: DWA-MKG-K3L-2 & DWA-MKG-KL2-4 Update Wavelength Grouping Update Appendix	13 Apr 2018
1, 2, 10, 11, 12	Update Product Photo Update Thermal Resistance Update Packaging Specification	09 Apr 2019
1, 2, 5	Update Features: AEC-Q101 to AEC-Q102 Update Peak Pulse Current Test Condition Update Graph: Allowable Forward Current Vs Duty Ratio	13 May 2020
2, 13	Not for New Design: DWS-MKG-F3J2-1 Add New Partno: DWS-MKG-GJ3-1 Update Recommended Pb-free Soldering Profile	04 Sep 2020
11	Update Packaging Specification	21 Feb 2025

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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