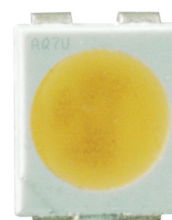


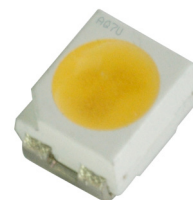
Power DomiLED

With its significant power in terms brightness, viewing angle and variety of application possibilities, Power DomiLEDTM 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.
- > 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.
- > Built in ESD protection.
- > Compliance to automotive standard; AEC-Q101.
- > Superior Corrosion Resistant. *Appx. 6.1*



Applications:

- > Automotive:
Exterior applications, eg: position lamp, license plate lamp, backup lamp, and DRL.



Optical Characteristics (Tj=25°C)

Part Ordering Number	Color	Viewing Angle°	Luminous Intensity @ 60mA IV (mcd) <i>Appx. 1.1</i>		
			Min.	Typ.	Max.
DWF-KZKG-Y2Z-1	Warm White	120	3550.0	5600.0	7150.0

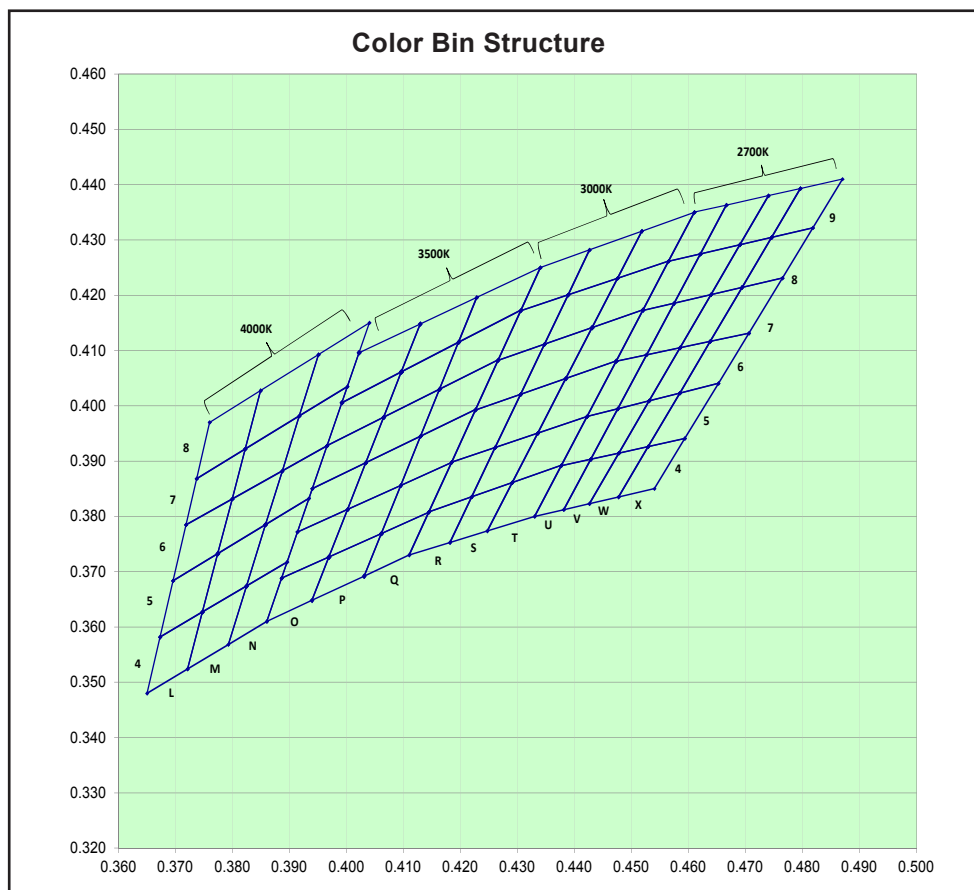
Electrical Characteristics at Tj=25°C

Part Number	Vf @ If = 60mA <i>Appx. 3.1</i>		
	Min. (V)	Typ. (V)	Max. (V)
DWF-KZKG	2.90	3.10	3.50

Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	80	mA
Peak pulse current; (tp ≤ 10μs, Duty cycle = 0.1)	120	mA
Reverse voltage; Ir (max) = 10μA	Not designed for reverse bias	V
ESD threshold (HBM)	4000	V
LED junction temperature	150	°C
Operating temperature	-40 ... +110	°C
Storage temperature	-40 ... +125	°C
Power dissipation (at room temperature)	300	mW
Thermal resistance		
- Real Thermal Resistance		
Junction / ambient, Rth JA real	280	K/W
Junction / solder point, Rth JS real	130	K/W
- Electrical Thermal Resistance		
Junction / ambient, Rth JA el	220	K/W
Junction / solder point, Rth JS el	100	K/W
(Mounting on DOMINANT standard PCB)		

DWF, Warm White Color Grouping *Appx. 2.1*



Bin		1	2	3	4
4U	Cx	0.4330	0.4370	0.4430	0.4380
	Cy	0.3800	0.3890	0.3910	0.3810
5U	Cx	0.4370	0.4420	0.4480	0.4430
	Cy	0.3890	0.3980	0.4000	0.3910
6U	Cx	0.4420	0.4470	0.4530	0.4480
	Cy	0.3980	0.4080	0.4090	0.4000
7U	Cx	0.4470	0.4510	0.4580	0.4530
	Cy	0.4080	0.4170	0.4180	0.4090
8U	Cx	0.4510	0.4560	0.4620	0.4580
	Cy	0.4170	0.4260	0.4270	0.4180
9U	Cx	0.4560	0.4610	0.4670	0.4620
	Cy	0.4260	0.4350	0.4370	0.4270
4V	Cx	0.4380	0.4430	0.4480	0.4430
	Cy	0.3810	0.3910	0.3920	0.3830
5V	Cx	0.4430	0.4480	0.4530	0.4480
	Cy	0.3910	0.4000	0.4010	0.3920
6V	Cx	0.4480	0.4530	0.4590	0.4530
	Cy	0.4000	0.4090	0.4100	0.4010
7V	Cx	0.4530	0.4580	0.4640	0.4590
	Cy	0.4090	0.4180	0.4200	0.4100
8V	Cx	0.4580	0.4620	0.4690	0.4640
	Cy	0.4180	0.4270	0.4290	0.4200
9V	Cx	0.4620	0.4670	0.4740	0.4690
	Cy	0.4270	0.4370	0.4380	0.4290

Bin		1	2	3	4
4W	Cx	0.4430	0.4480	0.4540	0.4480
	Cy	0.3830	0.3920	0.3930	0.3840
5W	Cx	0.4480	0.4530	0.4590	0.4540
	Cy	0.3920	0.4010	0.4020	0.3930
6W	Cx	0.4530	0.4590	0.4640	0.4590
	Cy	0.4010	0.4100	0.4120	0.4020
7W	Cx	0.4590	0.4640	0.4700	0.4640
	Cy	0.4100	0.4200	0.4210	0.4120
8W	Cx	0.4640	0.4690	0.4750	0.4700
	Cy	0.4200	0.4290	0.4300	0.4210
9W	Cx	0.4690	0.4740	0.4800	0.4750
	Cy	0.4290	0.4380	0.4400	0.4300
4X	Cx	0.4480	0.4540	0.4590	0.4540
	Cy	0.3840	0.3930	0.3940	0.3850
5X	Cx	0.4540	0.4590	0.4650	0.4590
	Cy	0.3930	0.4020	0.4040	0.3940
6X	Cx	0.4590	0.4640	0.4700	0.4650
	Cy	0.4020	0.4120	0.4130	0.4040
7X	Cx	0.4640	0.4700	0.4760	0.4700
	Cy	0.4120	0.4210	0.4230	0.4130
8X	Cx	0.4700	0.4750	0.4810	0.4760
	Cy	0.4210	0.4300	0.4320	0.4230
9X	Cx	0.4750	0.4800	0.4870	0.4810
	Cy	0.4300	0.4400	0.4410	0.4320
4R	Cx	0.4110	0.4150	0.4220	0.4180
	Cy	0.3730	0.3810	0.3840	0.3750
5R	Cx	0.4150	0.4190	0.4260	0.4220
	Cy	0.3810	0.3900	0.3930	0.3840
6R	Cx	0.4190	0.4220	0.4300	0.4260
	Cy	0.3900	0.3990	0.4020	0.3930
7R	Cx	0.4220	0.4260	0.4350	0.4300
	Cy	0.3990	0.4080	0.4110	0.4020
8R	Cx	0.4260	0.4300	0.4390	0.4350
	Cy	0.4080	0.4170	0.4200	0.4110
9R	Cx	0.4300	0.4340	0.4430	0.4390
	Cy	0.4170	0.4250	0.4290	0.4200
4S	Cx	0.4180	0.4220	0.4300	0.4250
	Cy	0.3750	0.3840	0.3870	0.3780
5S	Cx	0.4220	0.4260	0.4340	0.4300
	Cy	0.3840	0.3930	0.3960	0.3870
6S	Cx	0.4260	0.4300	0.4390	0.4340
	Cy	0.3930	0.4020	0.4050	0.3960
7S	Cx	0.4300	0.4350	0.4430	0.4390
	Cy	0.4020	0.4110	0.4140	0.4050
8S	Cx	0.4350	0.4390	0.4470	0.4430
	Cy	0.4110	0.4200	0.4230	0.4140
9S	Cx	0.4390	0.4430	0.4520	0.4470
	Cy	0.4200	0.4290	0.4320	0.4230
4T	Cx	0.4250	0.4300	0.4370	0.4330
	Cy	0.3780	0.3870	0.3890	0.3800

Bin		1	2	3	4
5T	Cx	0.4300	0.4340	0.4420	0.4370
	Cy	0.3870	0.3960	0.3980	0.3890
6T	Cx	0.4340	0.4390	0.4470	0.4420
	Cy	0.3960	0.4050	0.4080	0.3980
7T	Cx	0.4390	0.4430	0.4510	0.4470
	Cy	0.4050	0.4140	0.4170	0.4080
8T	Cx	0.4430	0.4470	0.4560	0.4510
	Cy	0.4140	0.4230	0.4260	0.4170
9T	Cx	0.4470	0.4520	0.4610	0.4560
	Cy	0.4230	0.4320	0.4350	0.4260
4O	Cx	0.3860	0.3890	0.3980	0.3940
	Cy	0.3610	0.3690	0.3730	0.3650
5O	Cx	0.3890	0.3910	0.4010	0.3980
	Cy	0.3690	0.3770	0.3810	0.3730
6O	Cx	0.3910	0.3940	0.4040	0.4010
	Cy	0.3770	0.3850	0.3900	0.3810
7O	Cx	0.3940	0.3970	0.4070	0.4040
	Cy	0.3850	0.3930	0.3980	0.3900
8O	Cx	0.3970	0.4000	0.4100	0.4070
	Cy	0.3930	0.4010	0.4060	0.3980
9O	Cx	0.4000	0.4030	0.4130	0.4100
	Cy	0.4010	0.4100	0.4150	0.4060
4P	Cx	0.3940	0.3980	0.4060	0.4030
	Cy	0.3650	0.3730	0.3770	0.3690
5P	Cx	0.3980	0.4010	0.4100	0.4060
	Cy	0.3730	0.3810	0.3860	0.3770
6P	Cx	0.4010	0.4040	0.4130	0.4100
	Cy	0.3810	0.3900	0.3940	0.3860
7P	Cx	0.4040	0.4070	0.4160	0.4130
	Cy	0.3900	0.3980	0.4030	0.3940
8P	Cx	0.4070	0.4100	0.4200	0.4160
	Cy	0.3980	0.4060	0.4120	0.4030
9P	Cx	0.4100	0.4130	0.4230	0.4200
	Cy	0.4060	0.4150	0.4200	0.4120
4Q	Cx	0.4030	0.4060	0.4150	0.4110
	Cy	0.3690	0.3770	0.3810	0.3730
5Q	Cx	0.4060	0.4100	0.4190	0.4150
	Cy	0.3770	0.3860	0.3900	0.3810
6Q	Cx	0.4100	0.4130	0.4220	0.4190
	Cy	0.3860	0.3940	0.3990	0.3900
7Q	Cx	0.4130	0.4160	0.4260	0.4220
	Cy	0.3940	0.4030	0.4080	0.3990
8Q	Cx	0.4160	0.4200	0.4300	0.4260
	Cy	0.4030	0.4120	0.4170	0.4080
9Q	Cx	0.4200	0.4230	0.4340	0.4300
	Cy	0.4120	0.4200	0.4250	0.4170
4L	Cx	0.3650	0.3670	0.3750	0.3720
	Cy	0.3480	0.3580	0.3620	0.3520
5L	Cx	0.3670	0.3690	0.3770	0.3750
	Cy	0.3580	0.3680	0.3730	0.3620

Bin		1	2	3	4
6L	Cx	0.3690	0.3710	0.3800	0.3770
	Cy	0.3680	0.3780	0.3830	0.3730
7L	Cx	0.3710	0.3740	0.3830	0.3800
	Cy	0.3780	0.3870	0.3930	0.3830
8L	Cx	0.3740	0.3760	0.3850	0.3830
	Cy	0.3870	0.3970	0.4030	0.3930
4M	Cx	0.3720	0.3750	0.3820	0.3790
	Cy	0.3520	0.3620	0.3670	0.3560
5M	Cx	0.3750	0.3770	0.3850	0.3820
	Cy	0.3620	0.3730	0.3780	0.3670
6M	Cx	0.3770	0.3800	0.3880	0.3850
	Cy	0.3730	0.3830	0.3880	0.3780
7M	Cx	0.3800	0.3830	0.3920	0.3880
	Cy	0.3830	0.3930	0.3990	0.3880
8M	Cx	0.3830	0.3850	0.3950	0.3920
	Cy	0.3930	0.4030	0.4090	0.3990
4N	Cx	0.3790	0.3820	0.3900	0.3860
	Cy	0.3560	0.3670	0.3720	0.3610
5N	Cx	0.3820	0.3850	0.3930	0.3900
	Cy	0.3670	0.3780	0.3830	0.3720
6N	Cx	0.3850	0.3880	0.3970	0.3930
	Cy	0.3780	0.3880	0.3930	0.3830
7N	Cx	0.3880	0.3920	0.4010	0.3970
	Cy	0.3880	0.3990	0.4040	0.3930
8N	Cx	0.3920	0.3950	0.4040	0.4010
	Cy	0.3990	0.4090	0.4150	0.4040

InGaN wavelength is very sensitive to drive current. Operating at lower current is not recommended and may yield unpredictable performance current pulsing should be used for dimming purposed.

Luminous Intensity Group at Tj=25°C

Brightness Group	Luminous Intensity ^{Appx. 1.1} IV (mcd)
Y2	3550.0 ... 4500.0
Z1	4500.0 ... 5600.0
Z2	5600.0 ... 7150.0

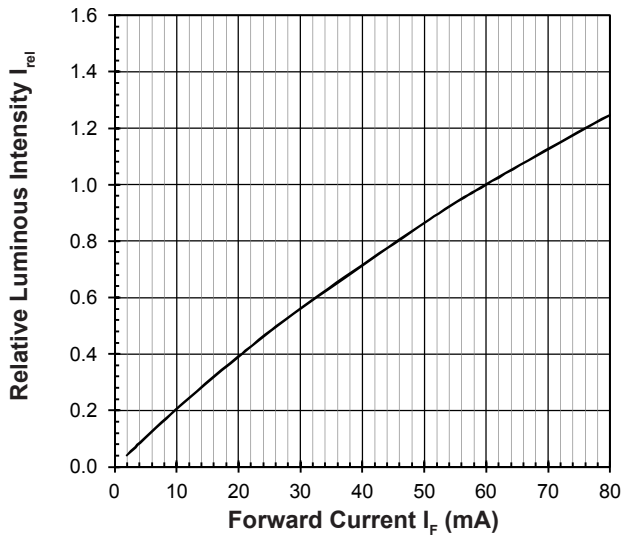
Vf Bining (Optional)

Vf Bin @ 60 mA	Forward Voltage (V) ^{Appx. 3.1}
V0	2.70 ... 3.00
V1	3.00 ... 3.30
V2	3.30 ... 3.60

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

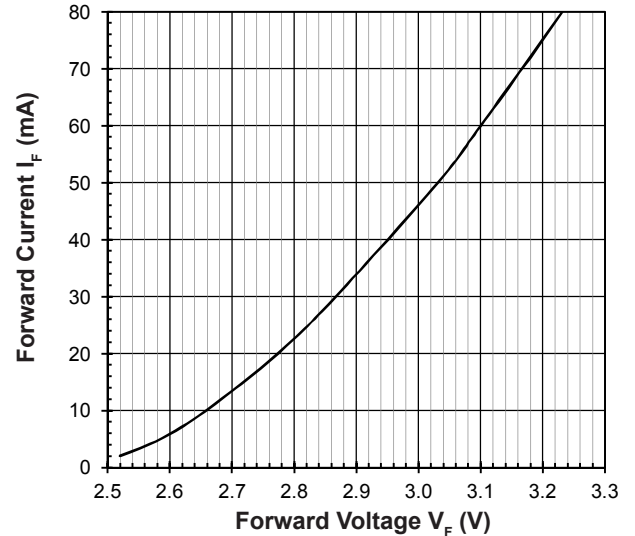
Relative Luminous Intensity Vs Forward Current

$$I_v/I_v(60\text{mA}) = f(I_F); T_j = 25^\circ\text{C}$$



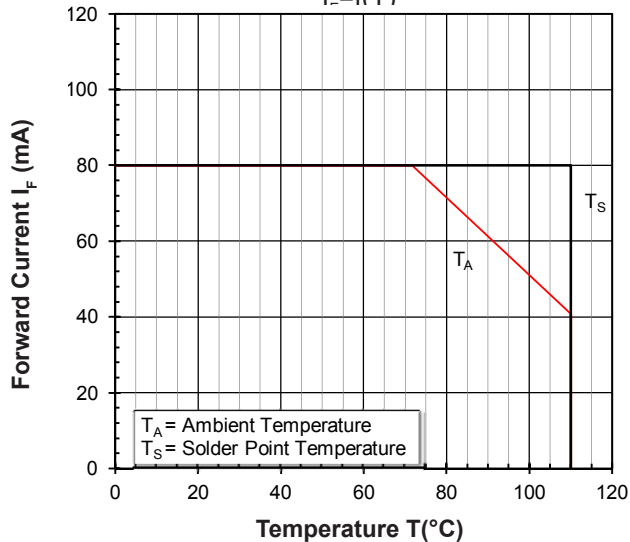
Forward Current Vs Forward Voltage

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



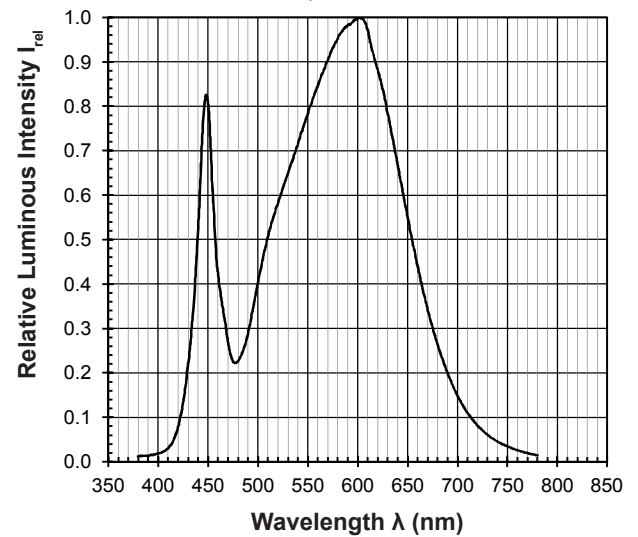
Maximum Current Vs Temperature

$$I_{max} = f(T)$$



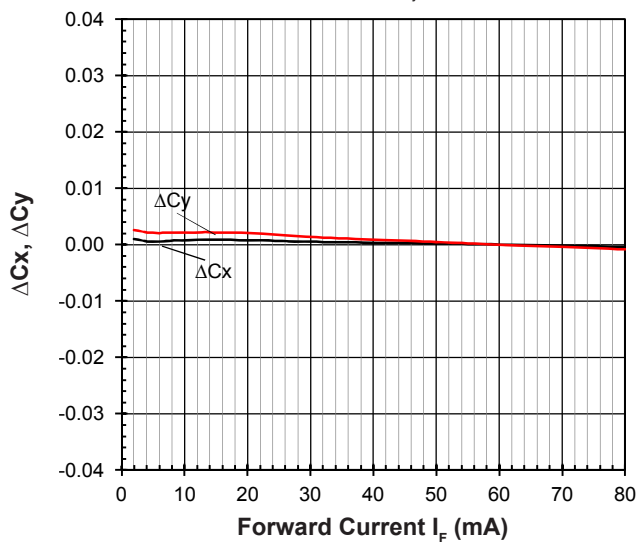
Relative Spectral Emission

$$I_{rel} = f(\lambda); T_j = 25^\circ\text{C}; I_F = 60\text{mA}$$



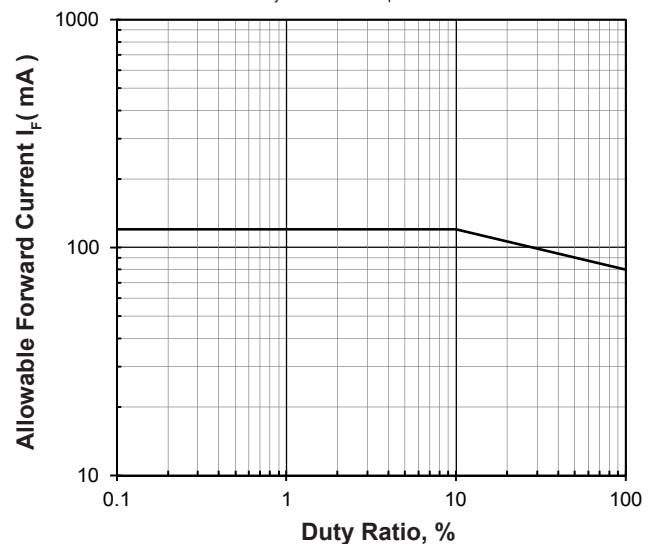
Chromaticity Coordinate Shift Vs Forward Current

$$\Delta Cx, \Delta Cy = f(I_F); T_j = 25^\circ\text{C}$$

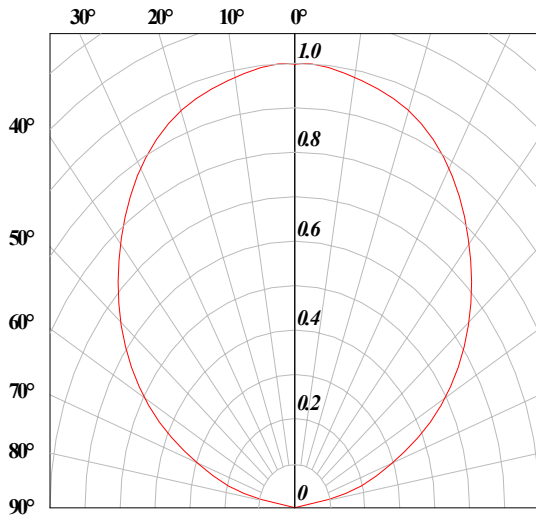


Allowable Forward Current Vs Duty Ratio

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

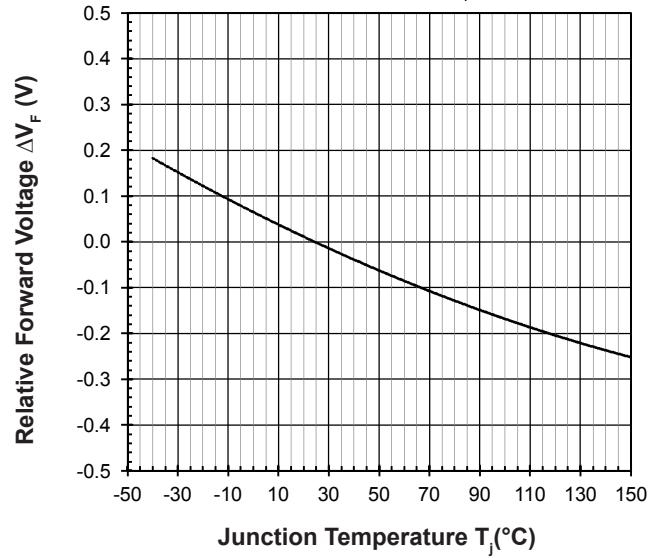


Radiation Pattern



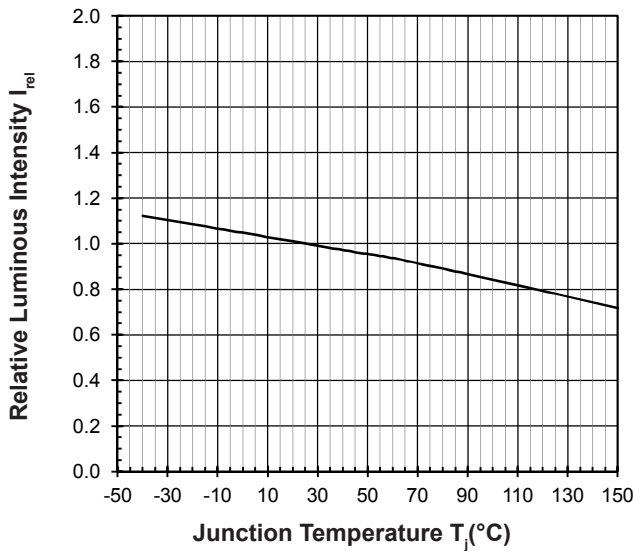
Relative Forward Voltage Vs Junction Temperature

$$\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j); I_F = 60\text{mA}$$



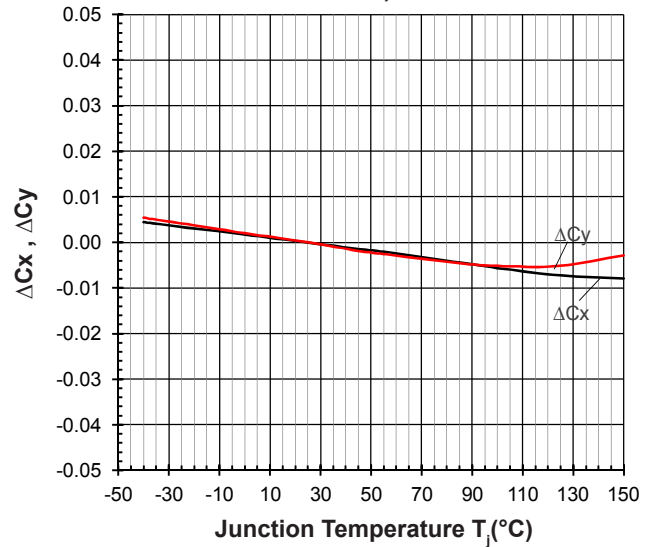
Relative Luminous Intensity Vs Junction Temperature

$$I_v/I_v(25^\circ\text{C}) = f(T_j); I_F = 60\text{mA}$$

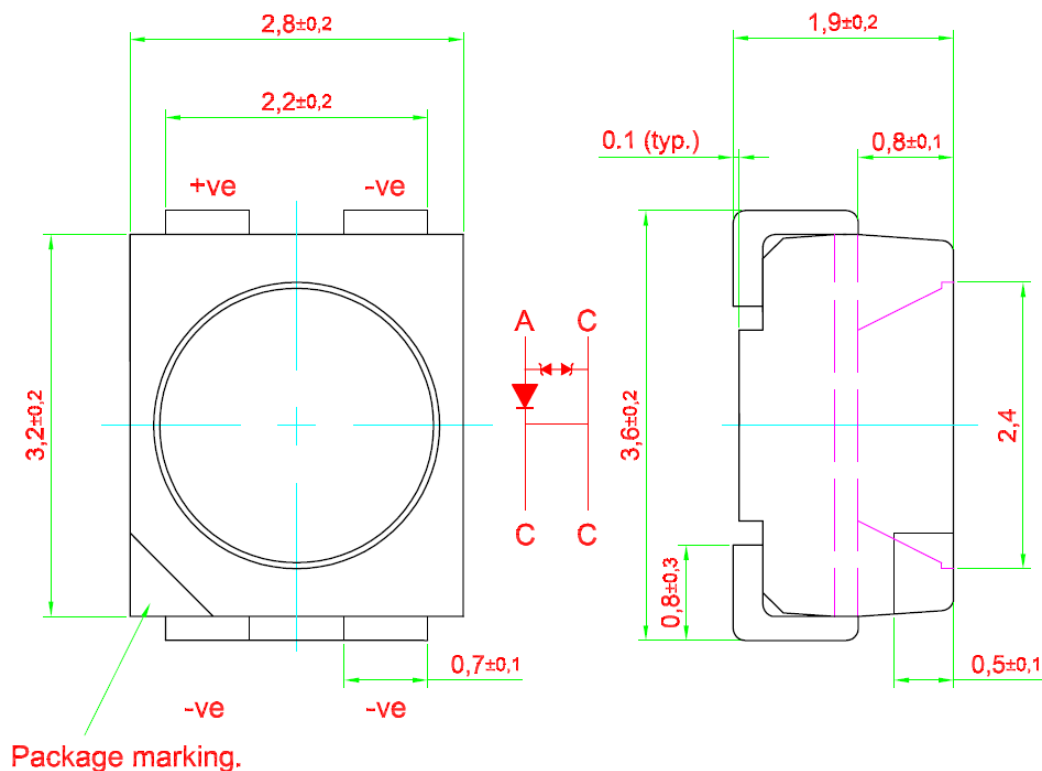


Chromaticity Coordinate Shift Vs Junction Temperature

$$\Delta C_x, \Delta C_y = f(T_j); I_F = 60\text{mA}$$



Power DomiLED • InGaN Warm White : DWF-KZKG Package Outlines

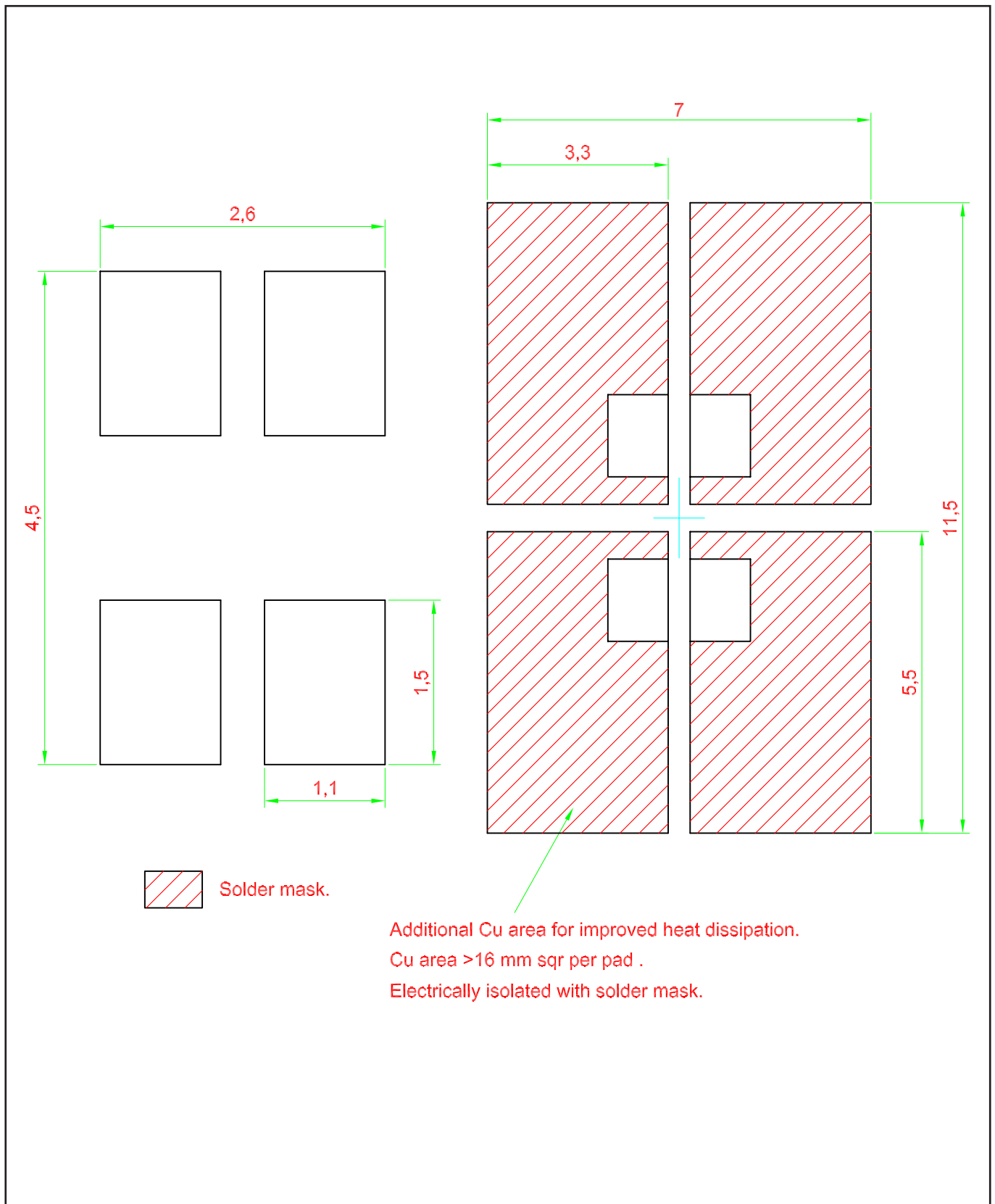


Note : Primary thermal path is through Cathode lead of LED package.

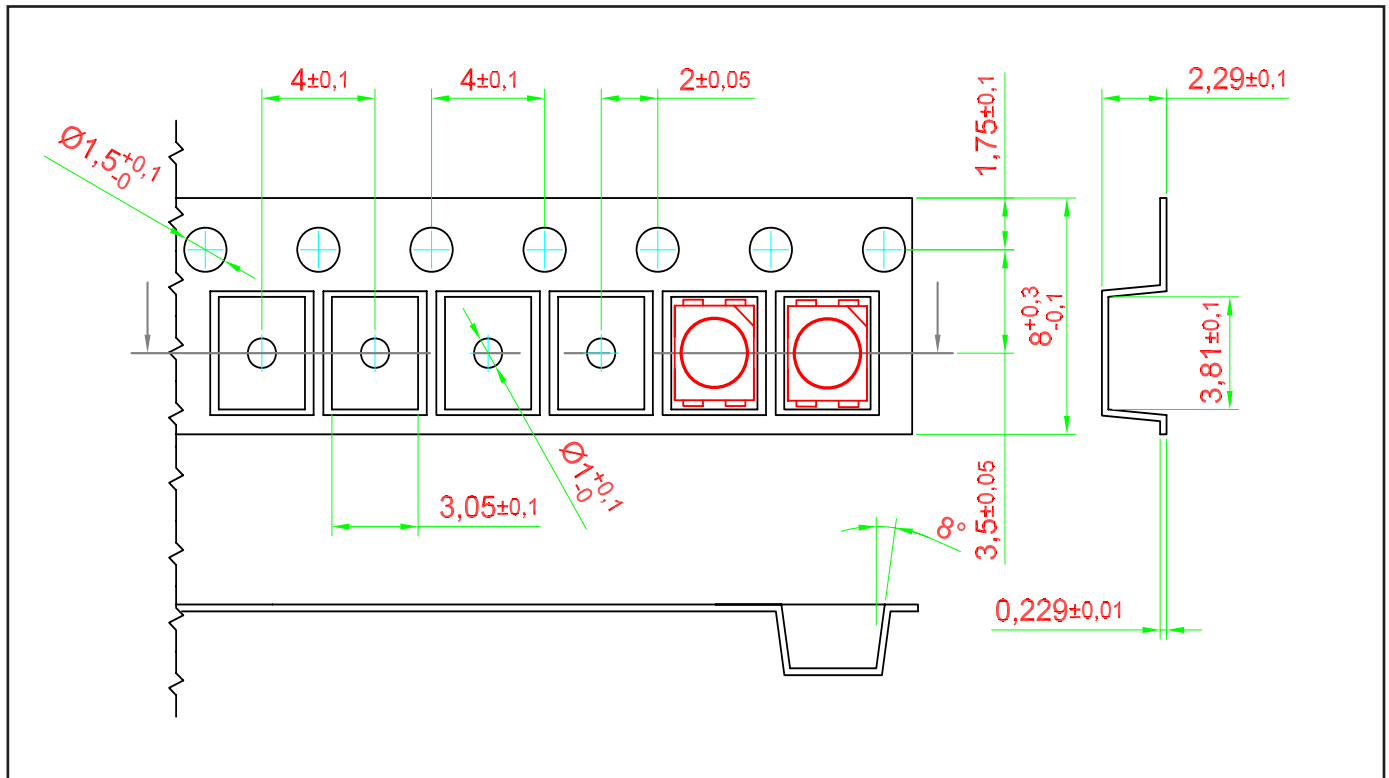
Material

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

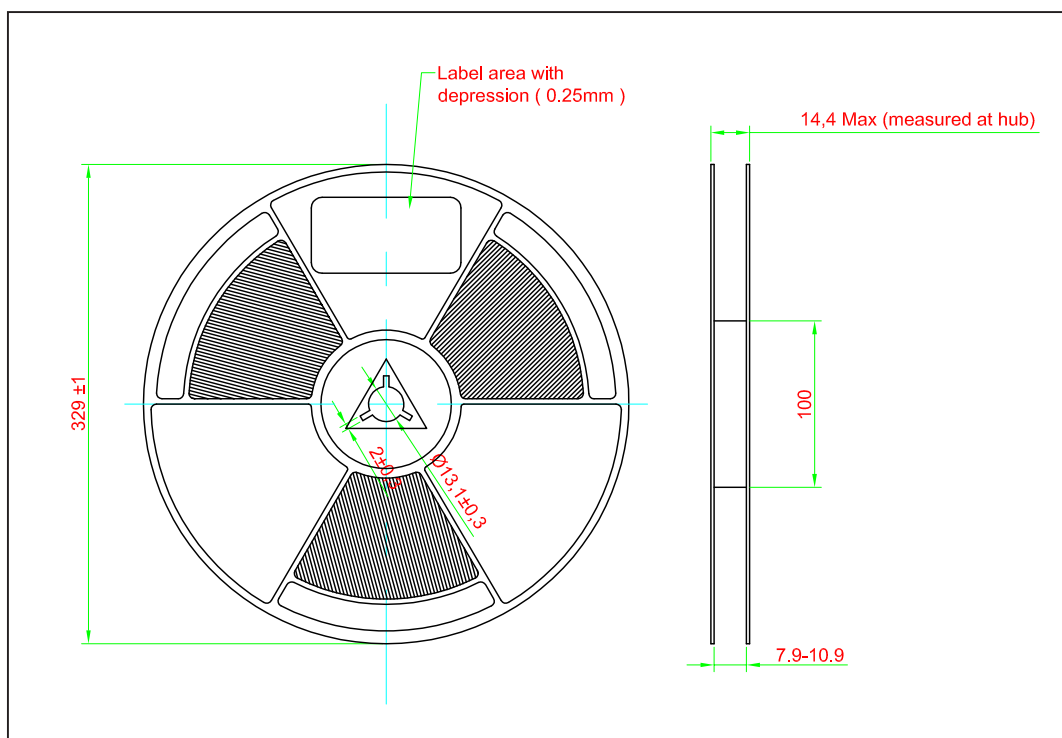
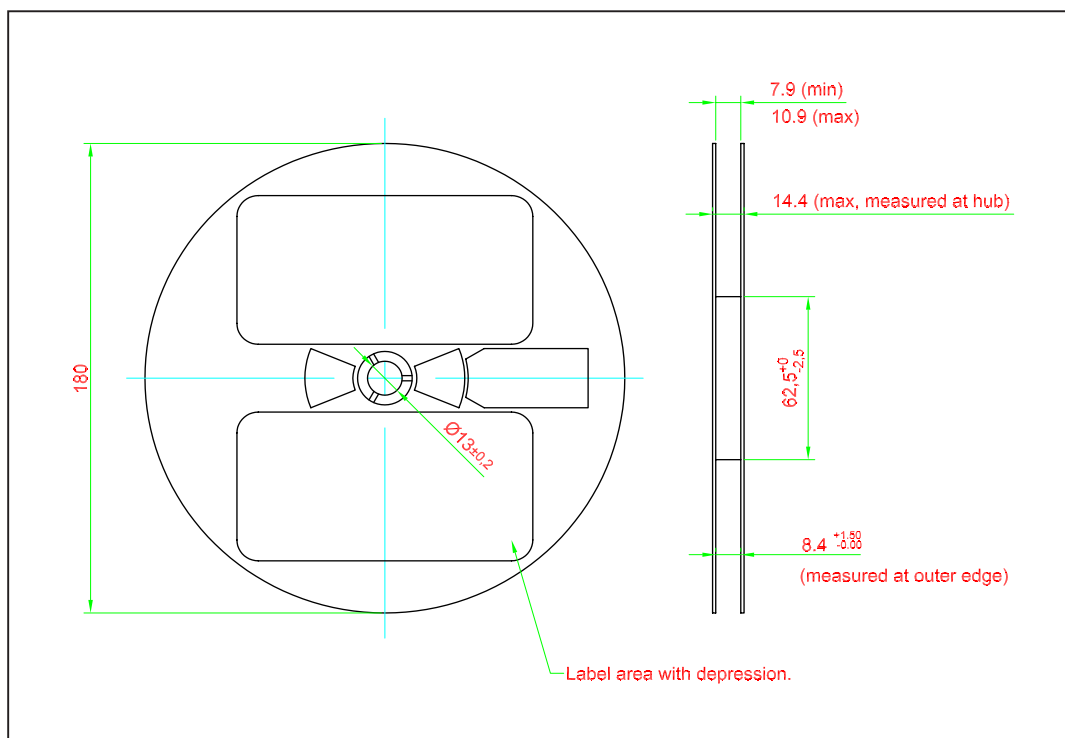
Recommended Solder Pad



Taping and orientation

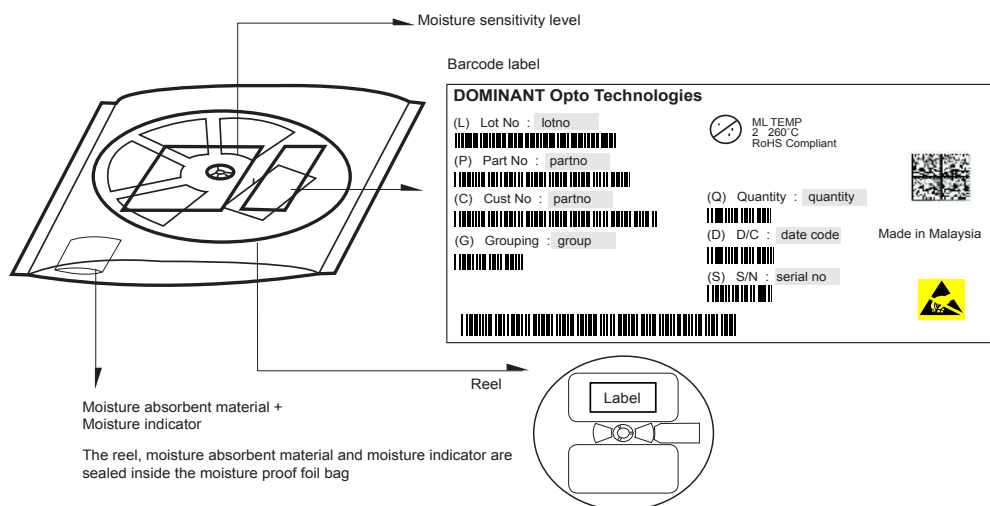


Packaging Specification

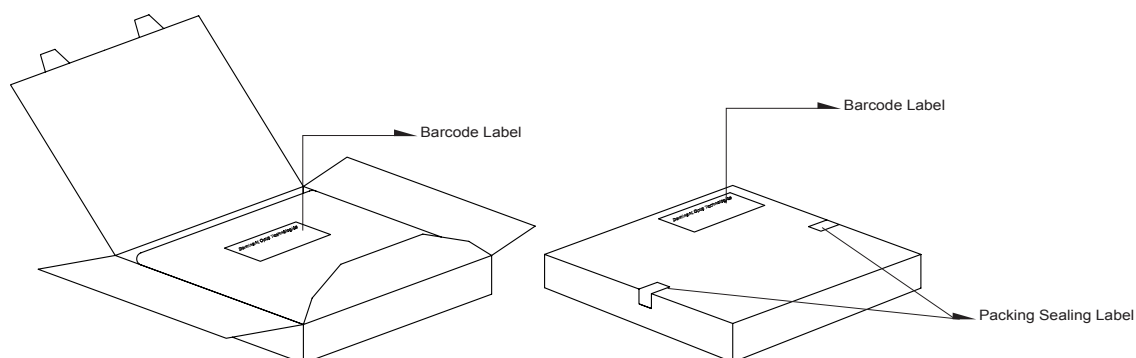


	Reel Diameter (mm)	Quantity (pcs)	Partno
Standard Packing	180	2000	DWF-KZKG-xxx-x
Optional Packing	329	8000	DWF-KZKG-xxx-x-8

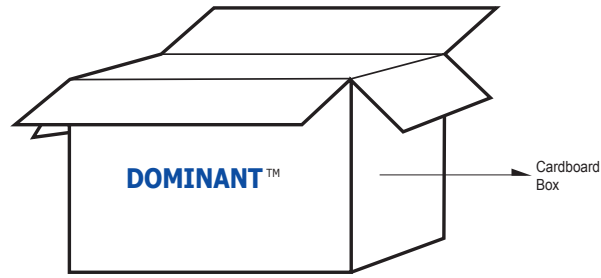
Packaging Specification



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

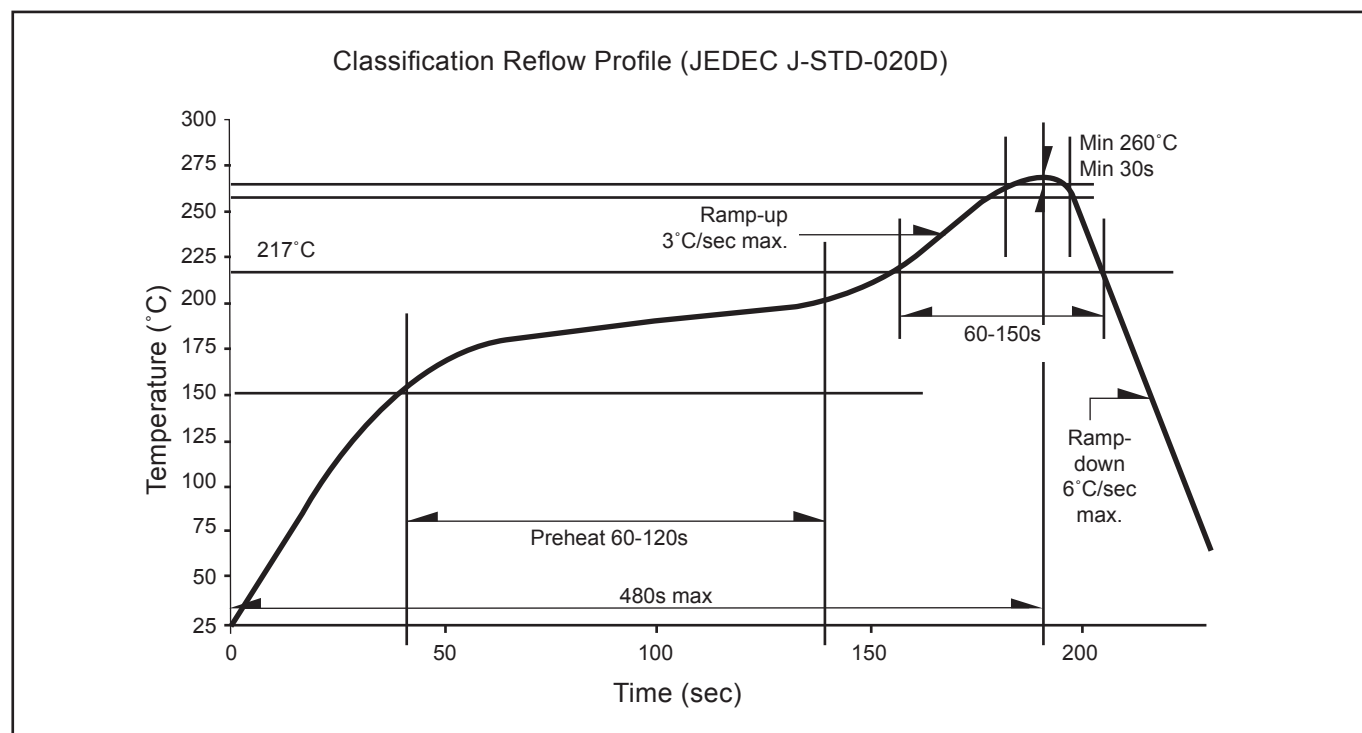


Reel Diameter (mm)	Packing Box Dimensions (mm)
180	210 x 210 x 16
329	345 x 345 x 16



Reel Diameter (mm)	Cardboard Box Size	Dimensions (mm)	Empty Box Weight (kg)	Reel / Box
180	Super Small	325 x 225 x 190	0.38	9 reels MAX
180	Small	325 x 225 x 280	0.54	15 reels MAX
180	Medium	570 x 440 x 230	1.46	60 reels MAX
180	Large	570 x 440 x 460	1.92	120 reels MAX
329	Medium	373 x 373 x 285	1.02	13 reels MAX
329	Large	580 x 373 x 405	1.50	30 reels MAX

Recommended Pb-free Soldering Profile



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) Corrosion Robustness:

- 6.1 Test conditions: 40°C / 90% rh / $15\text{ ppm H}_2\text{S}$ / 336 h .
= Stricter than IEC 60068-2-43 (H_2S) [25°C / 75% rh / $10\text{ ppm H}_2\text{S}$ / 21 days].

Revision History

Page	Subjects	Date of Modification
-	Initial Release	31 Dec 2014
1, 2, 8, 9, 10, 14, 16	Update Features and Applications Add Electrical Thermal Resistance Update Graph Update Package Outline and Materials Update Package Specification Add Appendix	07 Oct 2016
13, 14, 15, 17	Update Package Specification Update Appendix	18 Jun 2020

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>.

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