

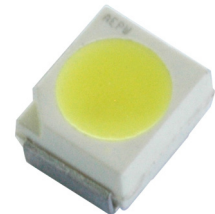
### Domiled

With the intense colors that seem to glow with energy and its significant brightness, Domiled white LED is a highly reliable design device. Its dynamic nature makes it perfect choice for lighthing applications, office and home applications and standard industrial applications.



### Features:

- > High brightness surface mount LED.
- > 120° viewing angle.
- > Small package outline.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to both IR reflow soldering.
- > Environmental friendly; RoHS compliance.
- > Compliance to automotive standard; AEC-Q101.
- > Minimum CRI of 90.



### Applications:

- > Automotive: Interior applications, eg: switches, telematics, climate control system, dashboard, etc



### Optical Characteristics at Tj=25°C

Part Ordering Number	Color	Viewing Angle°	Luminous Intensity @ IF = 20mA		IV (mcd) <i>Appx. 1.1</i> Max.
			Min.	Typ.	
DDW-NJJ-W2X-5D8I	Cool White	120	1400.0	2240.0	2850.0

NOTE

1. High color rendering index (CRI). Minimum CRI of 90 and min R9 of 65.

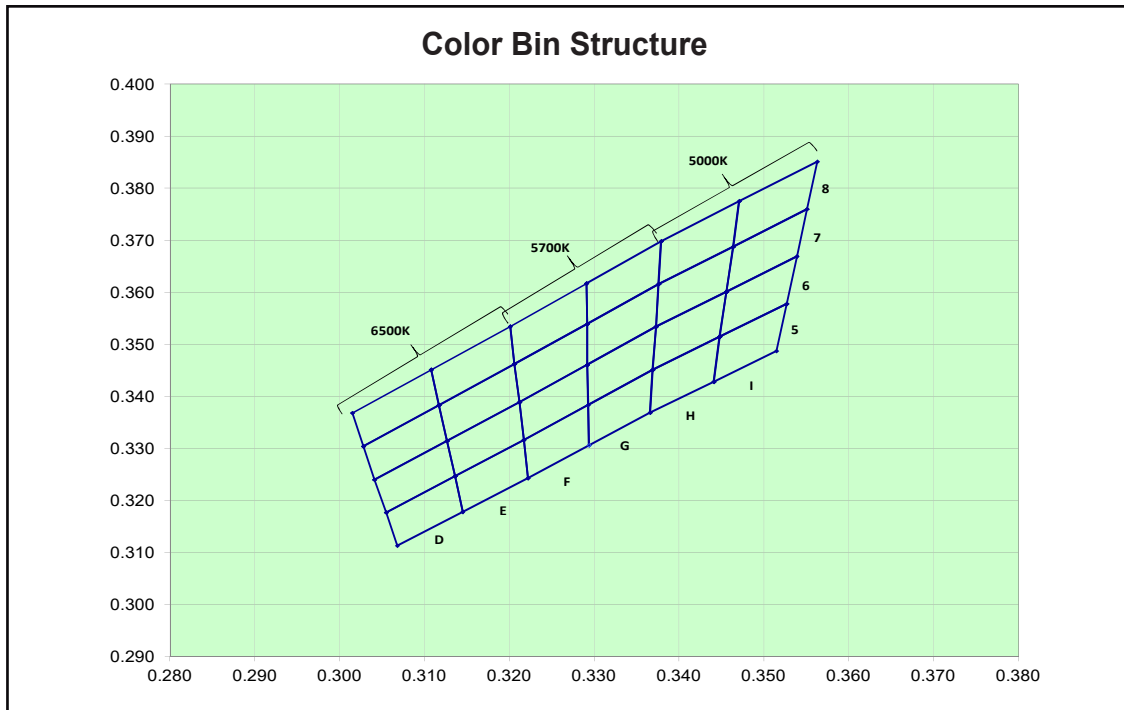
### Electrical Characteristics at Tj=25°C

Part Number	Vf @ If = 20 mA <i>Appx. 3.1</i>			Vr @ Ir = 10 µA <i>Appx. 6.1</i>
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DDW-NJJ	2.8	3.2	3.5	5.0

### Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	50	mA
Peak pulse current; (tp ≤ 10µs, Duty cycle = 0.005)	100	mA
Reverse voltage; Ir max = 10µA <i>Appx. 6.1</i>	5	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)	180	mW
Thermal resistance (Rated current = 20mA, Ts = 25 °C)		
- Real Thermal Resistance	315	K/W
Junction / ambient, R <sub>th JA real</sub>	145	K/W
Junction / solder point, R <sub>th JS real</sub>		
(Mounting on FR4 PCB, pad size ≥ 16mm <sup>2</sup> per pad)		

**DDW-NJJ, Color Grouping** *Appx. 2.1*



Bin		1	2	3	4
5F	Cx	0.3217	0.3293	0.3294	0.3222
	Cy	0.3316	0.3384	0.3306	0.3243
6F	Cx	0.3212	0.3292	0.3293	0.3217
	Cy	0.3389	0.3461	0.3384	0.3316
7F	Cx	0.3206	0.3212	0.3292	0.3292
	Cy	0.3462	0.3389	0.3461	0.3539
8F	Cx	0.3201	0.3291	0.3292	0.3206
	Cy	0.3534	0.3617	0.3539	0.3462
5G	Cx	0.3293	0.3294	0.3366	0.3369
	Cy	0.3384	0.3306	0.3369	0.3451
6G	Cx	0.3292	0.3293	0.3369	0.3373
	Cy	0.3461	0.3384	0.3451	0.3534
7G	Cx	0.3292	0.3292	0.3376	0.3373
	Cy	0.3461	0.3539	0.3616	0.3534
8G	Cx	0.3291	0.3292	0.3376	0.3379
	Cy	0.3617	0.3539	0.3616	0.3698
5H	Cx	0.3366	0.3369	0.3448	0.3441
	Cy	0.3369	0.3451	0.3515	0.3428
6H	Cx	0.3369	0.3373	0.3456	0.3448
	Cy	0.3451	0.3534	0.3601	0.3515
7H	Cx	0.3373	0.3376	0.3464	0.3456
	Cy	0.3534	0.3616	0.3688	0.3601
8H	Cx	0.3376	0.3379	0.3471	0.3464
	Cy	0.3616	0.3698	0.3775	0.3688

Bin		1	2	3	4
5I	Cx	0.3441	0.3448	0.3527	0.3515
	Cy	0.3428	0.3515	0.3578	0.3487
6I	Cx	0.3448	0.3456	0.3539	0.3527
	Cy	0.3515	0.3601	0.3669	0.3578
7I	Cx	0.3456	0.3464	0.3551	0.3539
	Cy	0.3601	0.3688	0.3760	0.3669
8I	Cx	0.3464	0.3471	0.3563	0.3551
	Cy	0.3688	0.3775	0.3851	0.3760
8E	Cx	0.3108	0.3201	0.3206	0.3117
	Cy	0.3451	0.3534	0.3462	0.3383
7E	Cx	0.3117	0.3206	0.3212	0.3127
	Cy	0.3383	0.3462	0.3389	0.3315
6E	Cx	0.3127	0.3212	0.3217	0.3136
	Cy	0.3315	0.3389	0.3316	0.3247
5E	Cx	0.3136	0.3217	0.3222	0.3145
	Cy	0.3247	0.3316	0.3243	0.3178
8D	Cx	0.3015	0.3108	0.3117	0.3028
	Cy	0.3368	0.3451	0.3383	0.3304
7D	Cx	0.3028	0.3117	0.3127	0.3041
	Cy	0.3304	0.3383	0.3315	0.3240
6D	Cx	0.3041	0.3127	0.3136	0.3055
	Cy	0.3240	0.3315	0.3247	0.3177
5D	Cx	0.3055	0.3136	0.3145	0.3068
	Cy	0.3177	0.3247	0.3178	0.3113

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 <i>Appx. 1.1</i> IV (mcd)
W2	1400.0 ... 1800.0
X1	1800.0 ... 2240.0
X2	2240.0 ... 2850.0

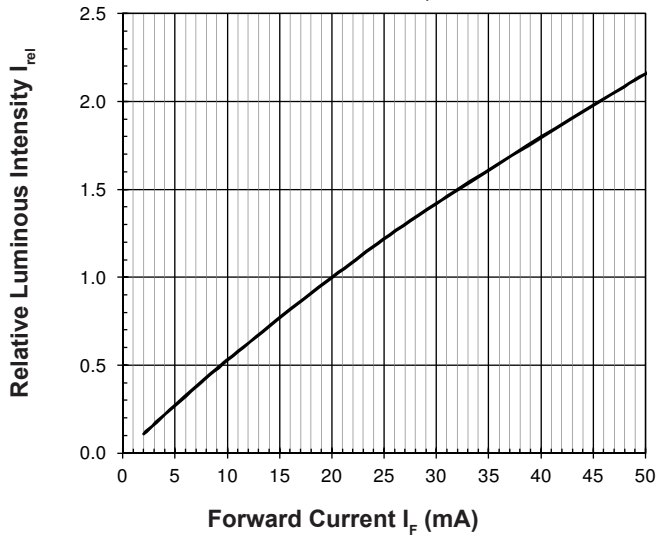
**Vf Binning (Optional)**

Vf Bin @ 20mA	Forward Voltage (V) <i>Appx. 3.1</i>
V1	2.70 ... 3.00
V2	3.00 ... 3.30
V3	3.30 ... 3.60

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

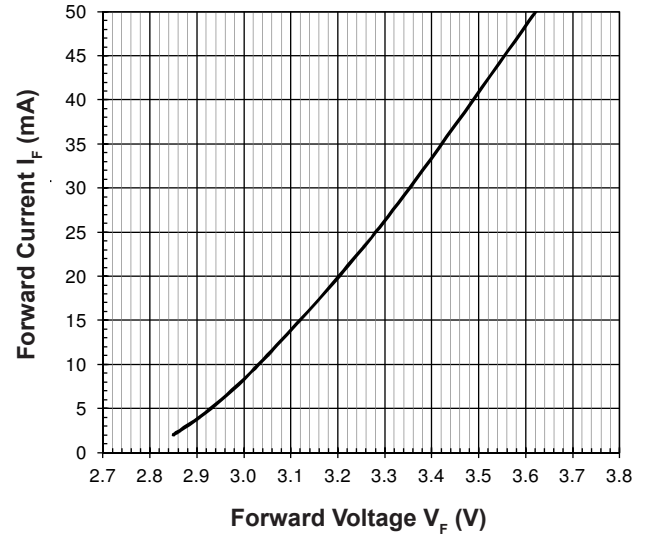
**Relative Luminous Intensity Vs Forward Current**

$$I_v/I_v(20\text{mA}) = f(I_F); T_j = 25^\circ\text{C}$$



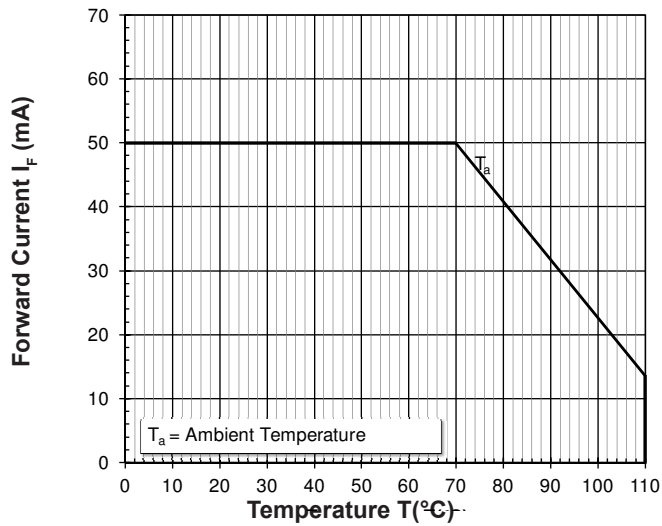
**Forward Current Vs Forward Voltage**

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



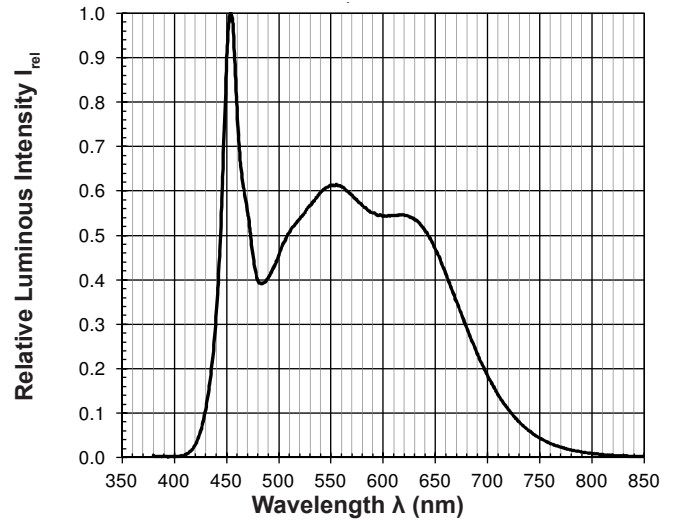
**Maximum Current Vs Temperature**

$$I_F = f(T)$$



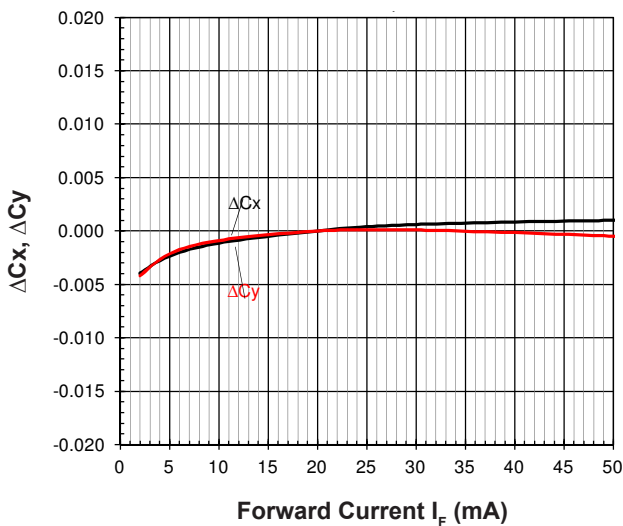
**Relative Spectral Emission**

$$I_{rel} = f(\lambda); T_j = 25^\circ\text{C}; I_F = 20\text{mA}$$



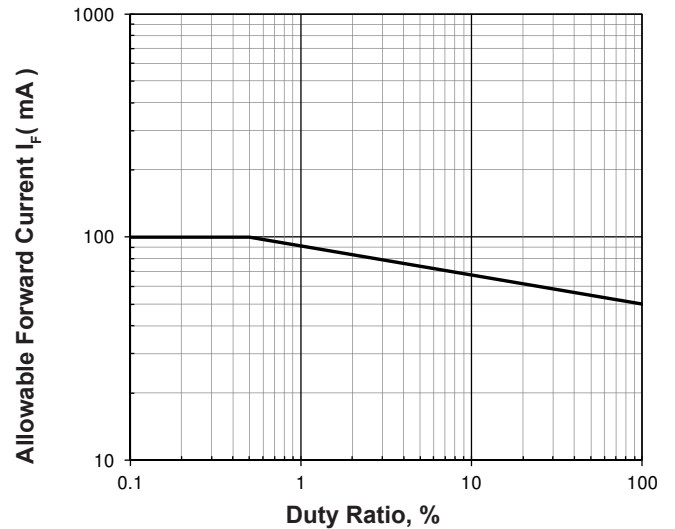
**Chromaticity Coordinate Shift Vs Forward Current**

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

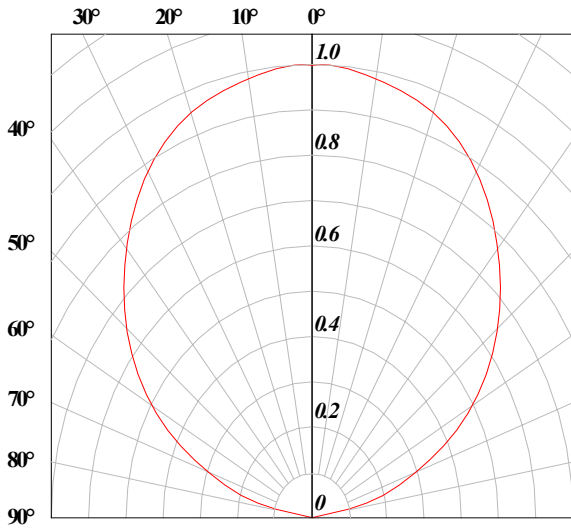


**Allowable Forward Current Vs Duty Ratio**

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

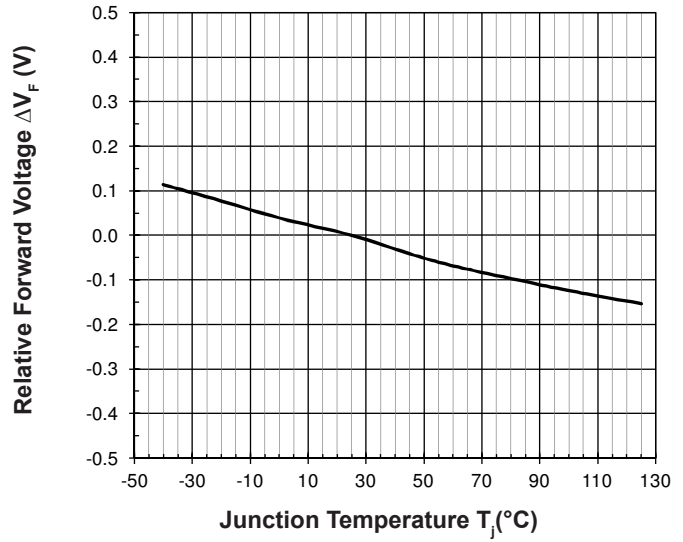


**Radiation Pattern**



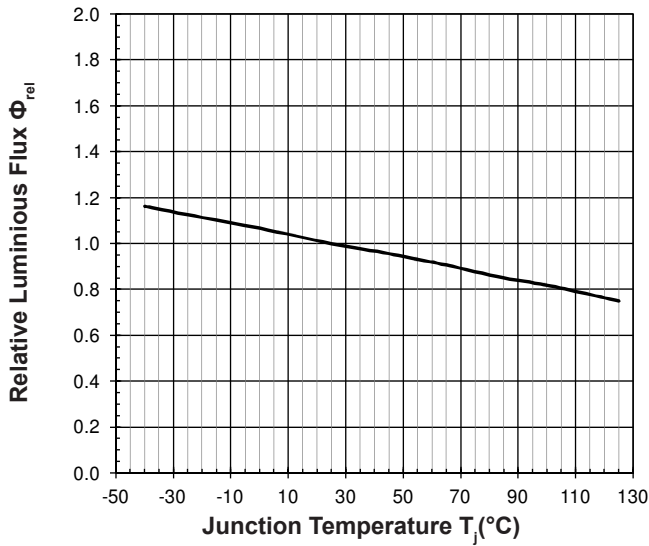
**Relative Forward Voltage Vs Junction Temperature**

$$\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j); I_F = 20\text{mA}$$



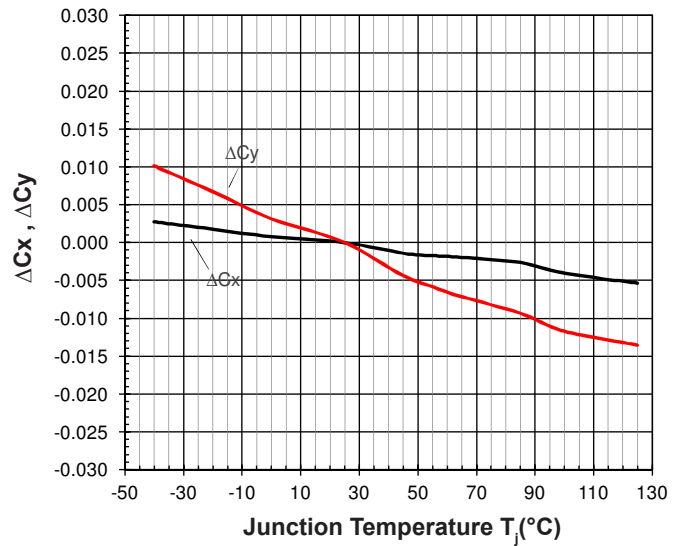
**Relative Luminous Intensity Vs Junction Temperature**

$$I_v/I_v(25^\circ\text{C}) = f(T_j); I_F = 20\text{mA}$$

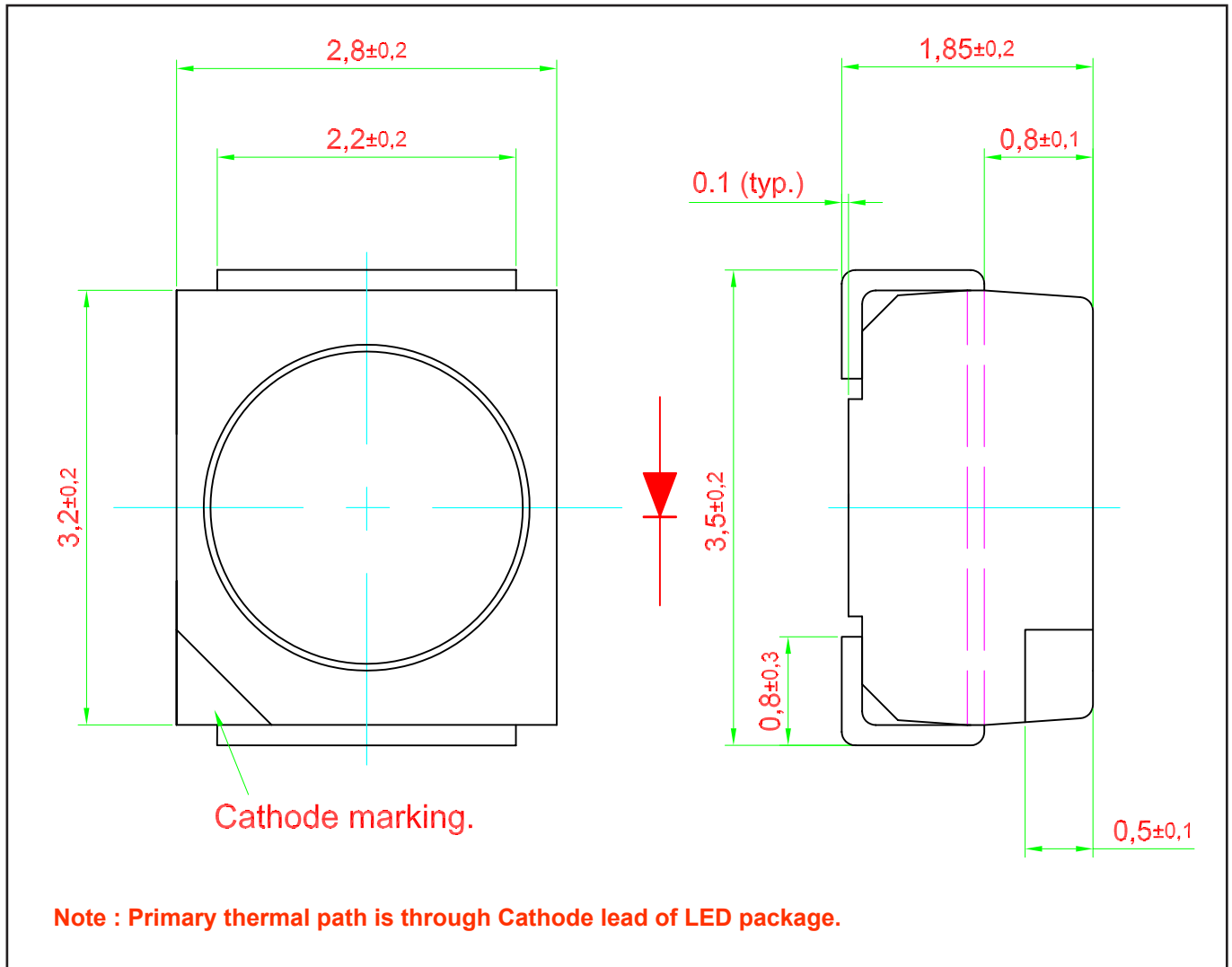


**Chromaticity Coordinate Shift Vs Junction Temperature**

$$\Delta Cx, \Delta Cy = f(T_j); I_F = 20\text{mA}$$



**DomiLED • InGaN: DDW-NJJ Package Outlines**

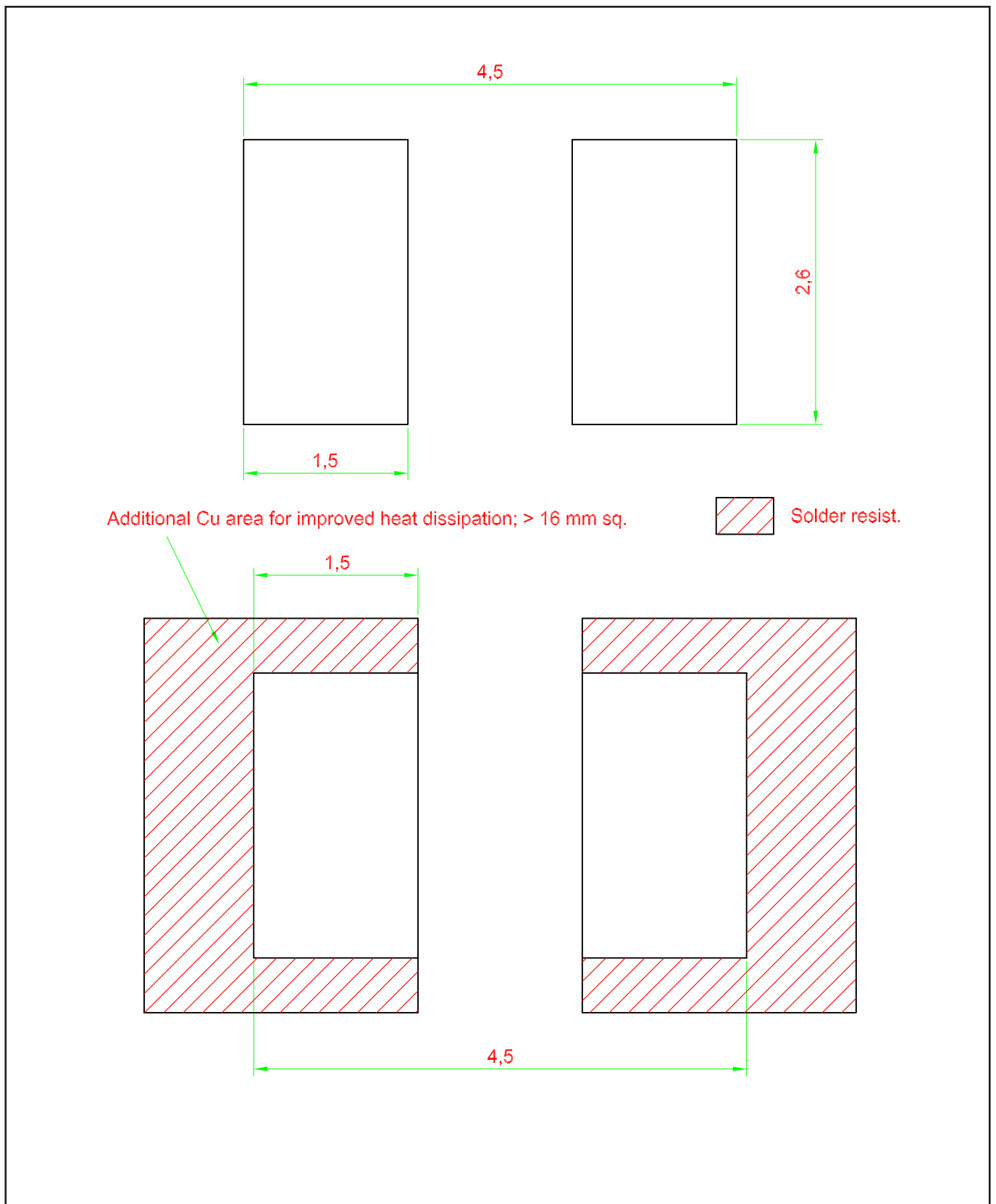


**Material**

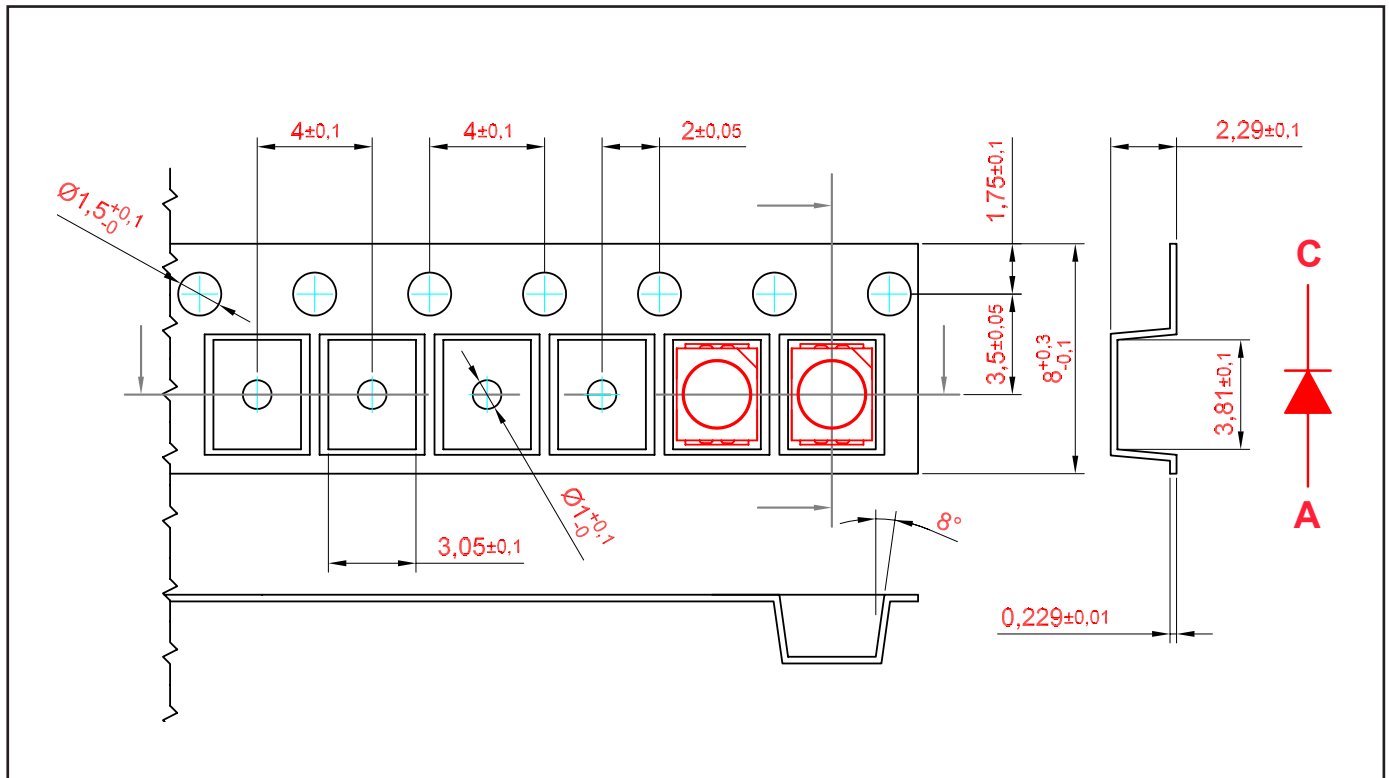
	Material
Lead-frame	Cu Alloy With Ag Plating
Package	High Temperature Resistant Plastic, PPA
Encapsulant	Silicone Resin
Soldering Leads	Sn Plating



**Recommended Solder Pad**

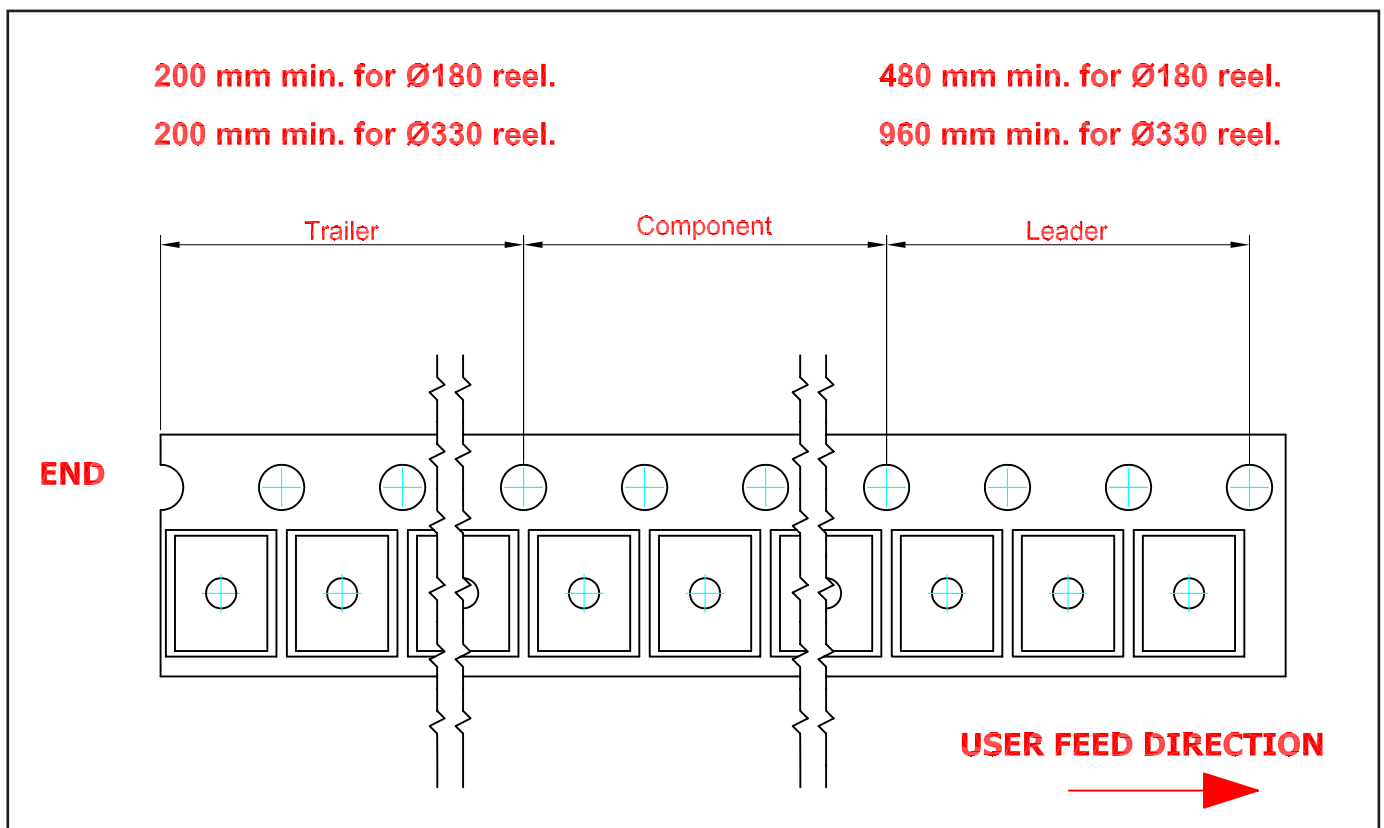


**Taping and orientation**

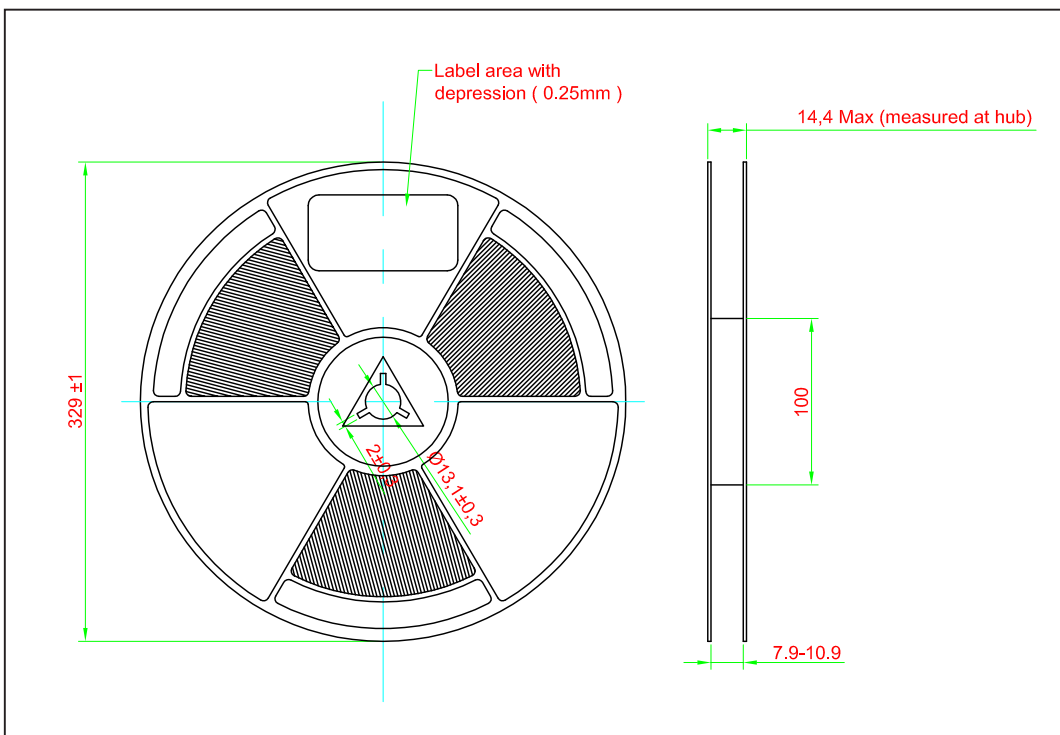
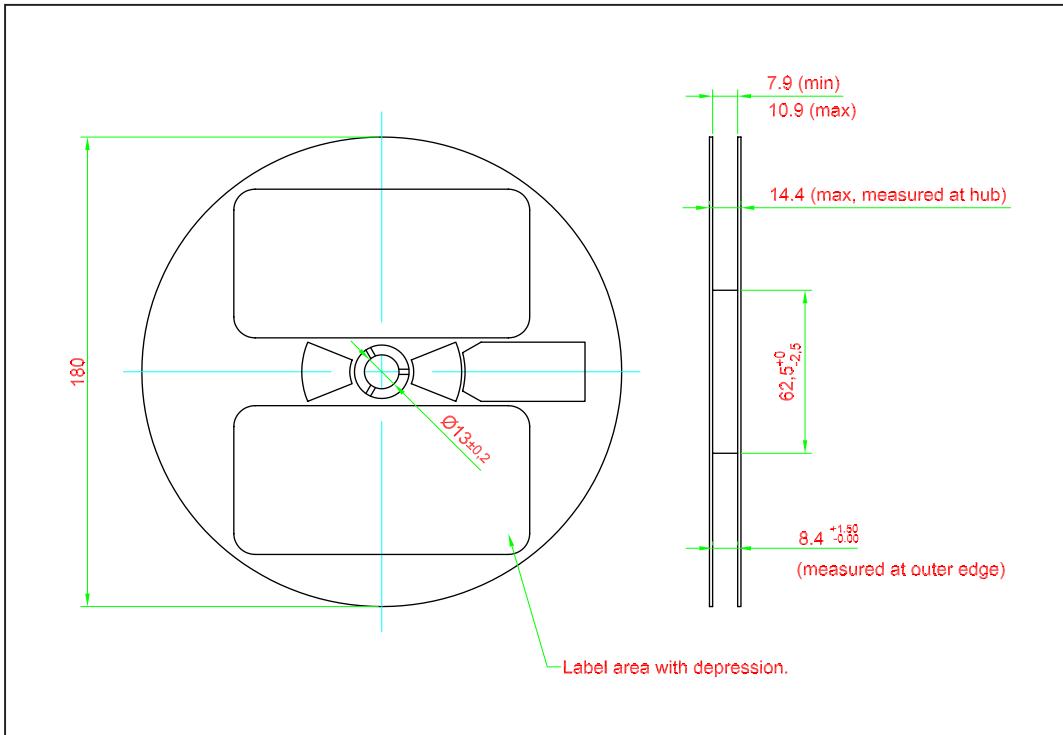


**200 mm min. for Ø180 reel.**  
**200 mm min. for Ø330 reel.**

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

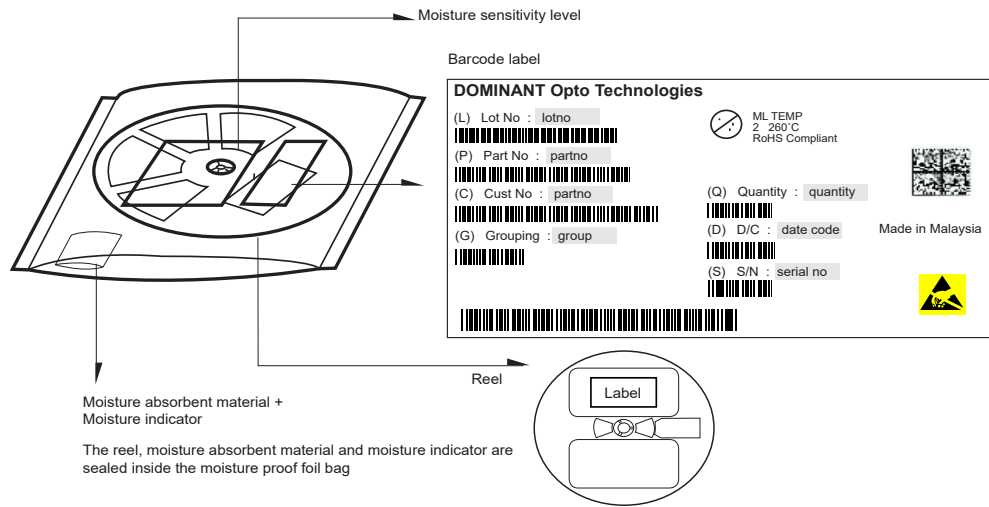


**Packaging Specification**

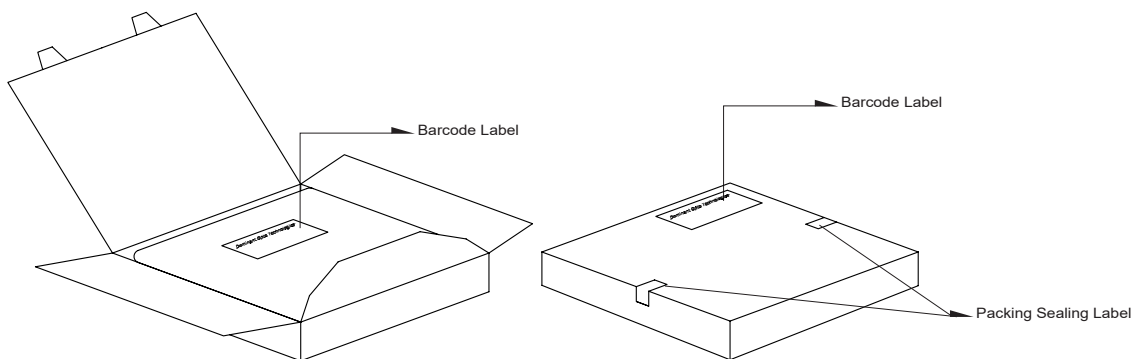


	Reel Diameter (mm)	Quantity (pcs)	Partno
Standard Packing	180	2000	DDW-NJJ-xxx-x
Optional Packing	329	8000	DDW-NJJ-xxx-x-8

**Packaging Specification**



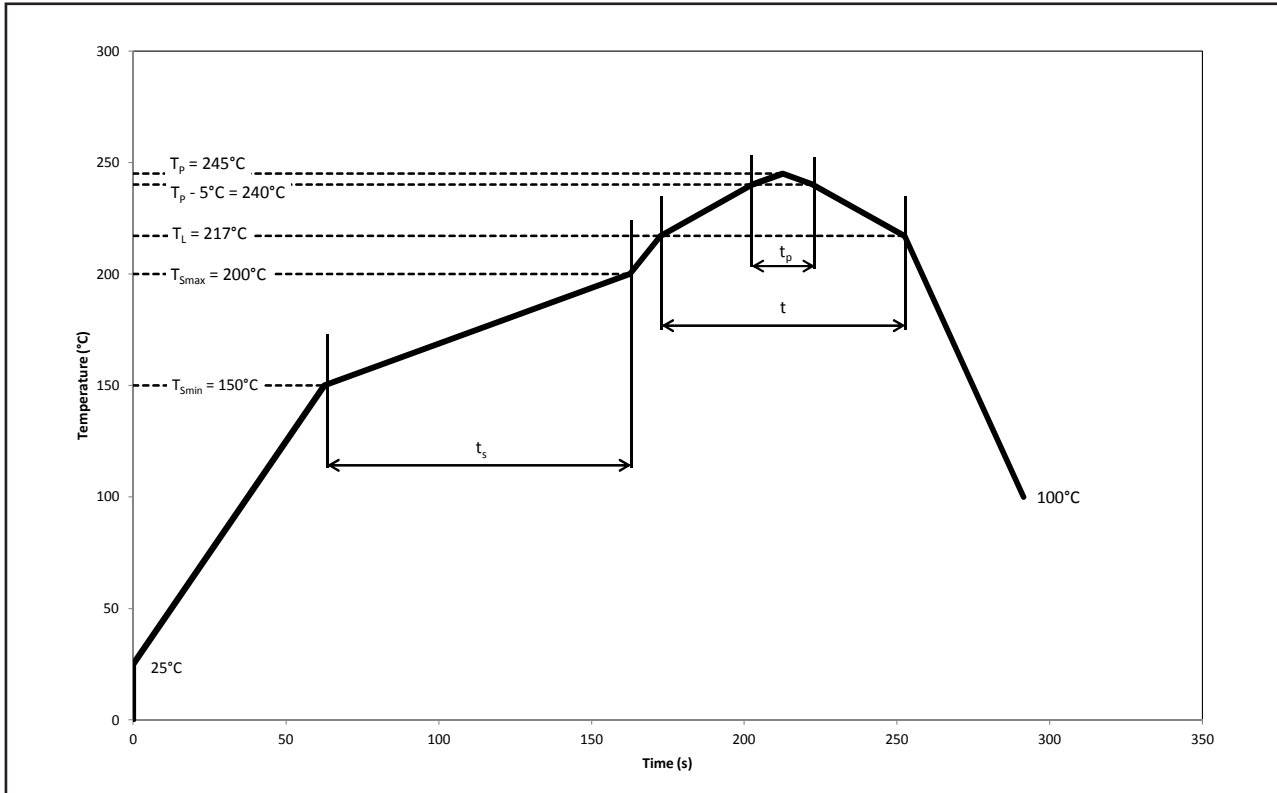
Quantity per bag (pcs)	Average 1pc DomiLED (gram)	1 completed bag (gram)
2000	0.034	240 ± 10
8000	0.034	750 ± 10



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

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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 specific in mm.

### 6) **Reverse Voltage:**

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



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

### **Please contact us for more information:**

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