

### Mini DomiLED

Synonymous with function and performance, the Mini DomiLED series is perfectly suited for a variety of cross-industrial applications due to its small package outline, durability and superior brightness.



### Features:

- > High brightness surface mount LED.
- > 120° viewing angle.
- > Small package outline (LxWxH) of 2.0 x 1.4 x 1.3mm.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.
- > Compliance to automotive standard; AEC-Q102.



### Applications:

- > Automotive: interior applications, eg: switches, telematics, climate control system, dashboard, etc.
- > Backlighting: button, LCD display



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

Part Number	Color	Viewing Angle°	Luminous Intensity @ IF = 30mA IV (mcd) <i>Appx. 1.1</i>		
			Min.	Typ.	Max.
DNS-MJS-V2W-1	Super Red, 632nm	120	900.0	1400.0	1800.0
● DNS-MJS-UV1-1	Super Red, 632nm	120	450.0	715.0	900.0
DNR-MJS-V2W-1	Red, 625nm	120	900.0	1400.0	1800.0
DNA-MJS-WX1-1	Amber, 615nm	120	1125.0	1800.0	2240.0
● DNA-MJS-U2V-1	Amber, 615nm	120	560.0	900.0	1125.0
● DNO-MJS-VW1-1	Orange, 605nm	120	715.0	1125.0	1400.0
● DNO-MJS-WX1-1	Orange, 605nm	120	1125.0	1800.0	2240.0
DNY-MJS-VW1-2	Yellow, 585nm	120	715.0	1125.0	1400.0
DNY-MJS-WX1-3	Yellow, 588nm	120	1125.0	1800.0	2240.0
DNY-MJS-WX1-4	Yellow, 591nm	120	1125.0	1800.0	2240.0
● DNY-MJS-U2V-1	Yellow, 587nm	120	560.0	900.0	1125.0
● DNY-MJS-V2W-1	Yellow, 587nm	120	900.0	1400.0	1800.0

● Not for new design

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

Part Number	Vf @ If = 30mA <i>Appx. 3.1</i>			Vr @ Ir = 10uA
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DNx-MJS	1.9	2.1	2.7	12

**Absolute Maximum Ratings**

	Maximum Value	Unit
DC forward current	50	mA
Peak pulse current; (Ts = 55°C, tp ≤ 100µs, Duty cycle = 0.03)	210	mA
Reverse voltage <i>Appx. 6.1</i>	12	V
ESD threshold (HBM)	2000	V
LED junction temperature	125	°C
Operating temperature	-40 ... +105	°C
Storage temperature	-40 ... +105	°C
Power dissipation (at room temperature)	135	mW
Thermal resistance (Rated current = 30mA, Ts = 25 °C)		
- Junction / ambient, R <sub>th JA</sub>	350	K/W
- Junction / solder point, R <sub>th JS</sub>	150	K/W

**Wavelength Grouping at Tj=25°C**

Color	Group	Wavelength distribution (nm) <i>Appx. 2.2</i>
DNS; Super-red	Full	625 - 640
DNR; Red	Full	620 - 630
DNA; Amber	Full	610 - 621
	W	610 - 615
	X	615 - 621
DNO; Orange	Full	600 - 612
	W	600 - 603
	X	603 - 606
	Y	606 - 609
	Z	609 - 612
DNY; Yellow	Full	582 - 594
	W	582 - 585
	X	585 - 588
	Y	588 - 591
	Z	591 - 594

**Luminous Intensity Group at Tj=25°C**

Brightness Group	Luminous Intensity <small>Appx. 1.1</small> IV (mcd)
U1	450.0 ... 560.0
U2	560.0 ... 715.0
V1	715.0 ... 900.0
V2	900.0 ... 1125.0
W1	1125.0 ... 1400.0
W2	1400.0 ... 1800.0
X1	1800.0 ... 2240.0

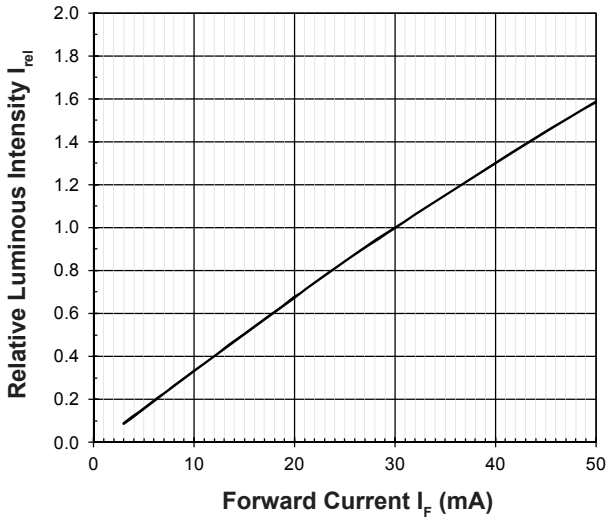
**Vf Binning (Optional)**

Vf @ If = 30mA	Forward Voltage (V) <small>Appx. 3.1</small>
VA4	1.9 ... 2.0
VA5	2.0 ... 2.1
VA6	2.1 ... 2.2
VA7	2.2 ... 2.3
VA8	2.3 ... 2.4
VA9	2.4 ... 2.5
VB1	2.5 ... 2.6
VB2	2.6 ... 2.7

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

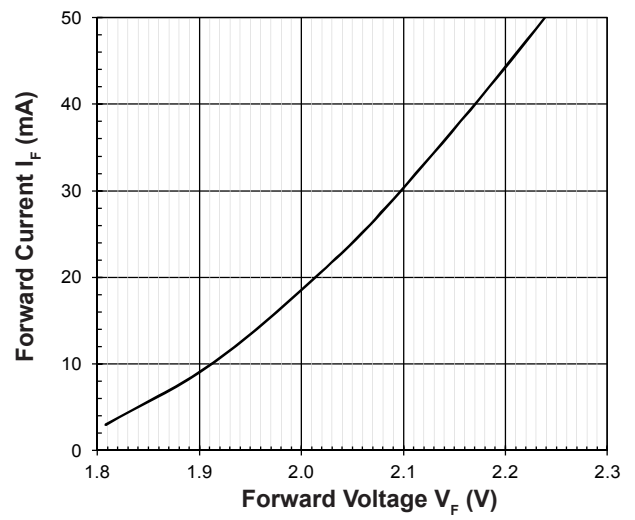
**Relative Luminous Intensity Vs Forward Current** *Appx. 4.1*

$I_v/I_v(30mA) = f(I_F); T_j = 25^\circ C$



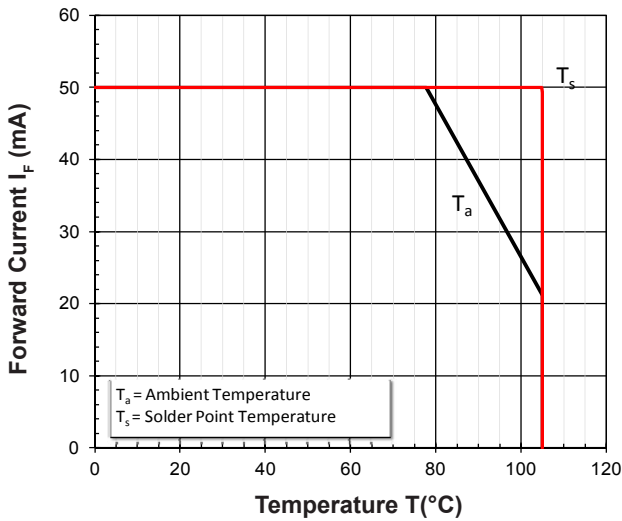
**Forward Current Vs Forward Voltage** *Appx. 4.1*

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



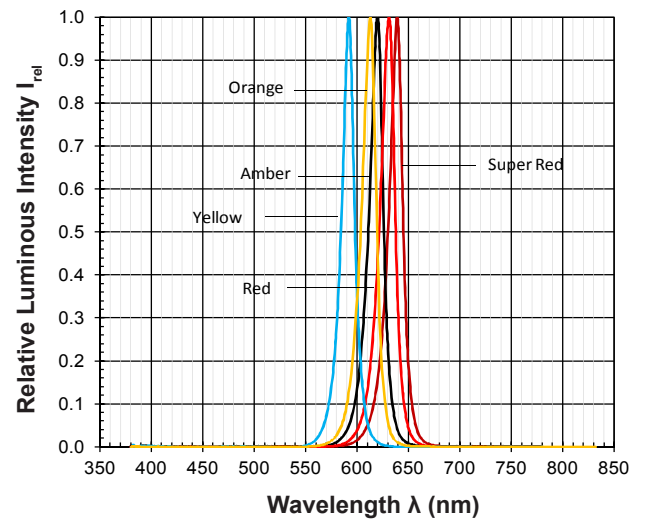
**Maximum Current Vs Temperature**

$I_F = f(T)$



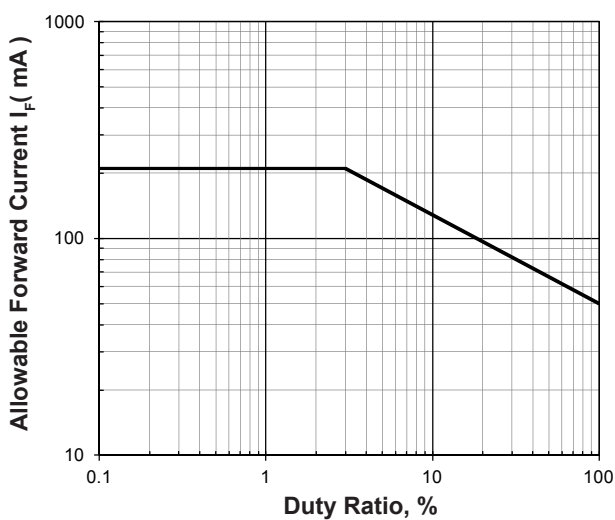
**Relative Spectral Emission** *Appx. 4.1*

$I_{rel} = f(\lambda); T_j = 25^\circ C; I_F = 30mA$

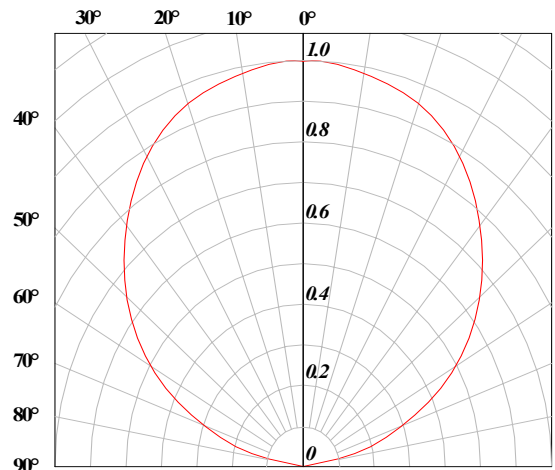


**Allowable Forward Current Vs Duty Ratio**

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

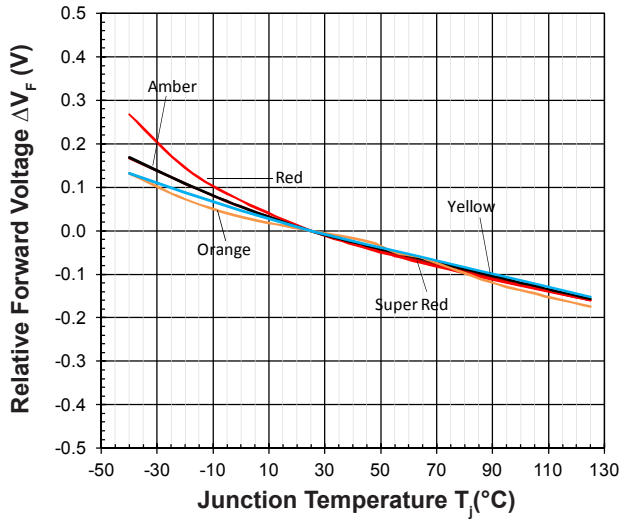


**Radiation Pattern** *Appx. 4.1*



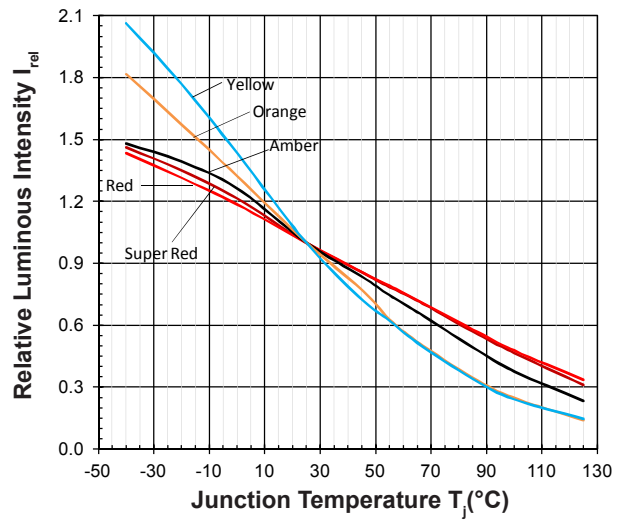
**Forward Voltage Vs Junction Temperature** *Appx. 4.1*

$$\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j); I_F = 30\text{mA}$$



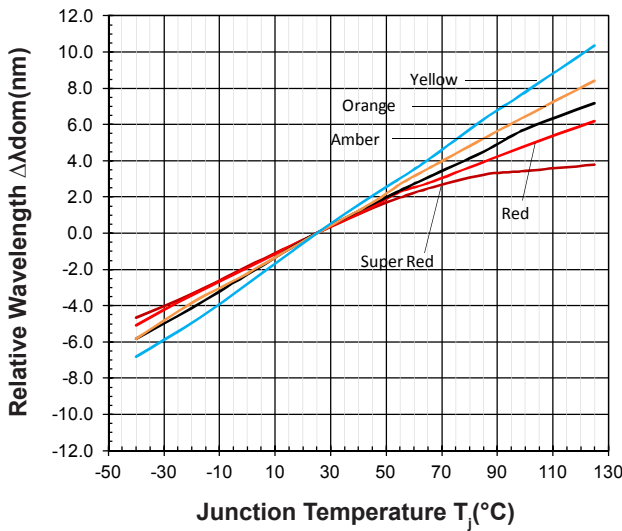
**Relative Luminous Intensity Vs Junction Temperature** *Appx. 4.1*

$$I_V/I_V(25^\circ\text{C}) = f(T_j); I_F = 30\text{mA}$$

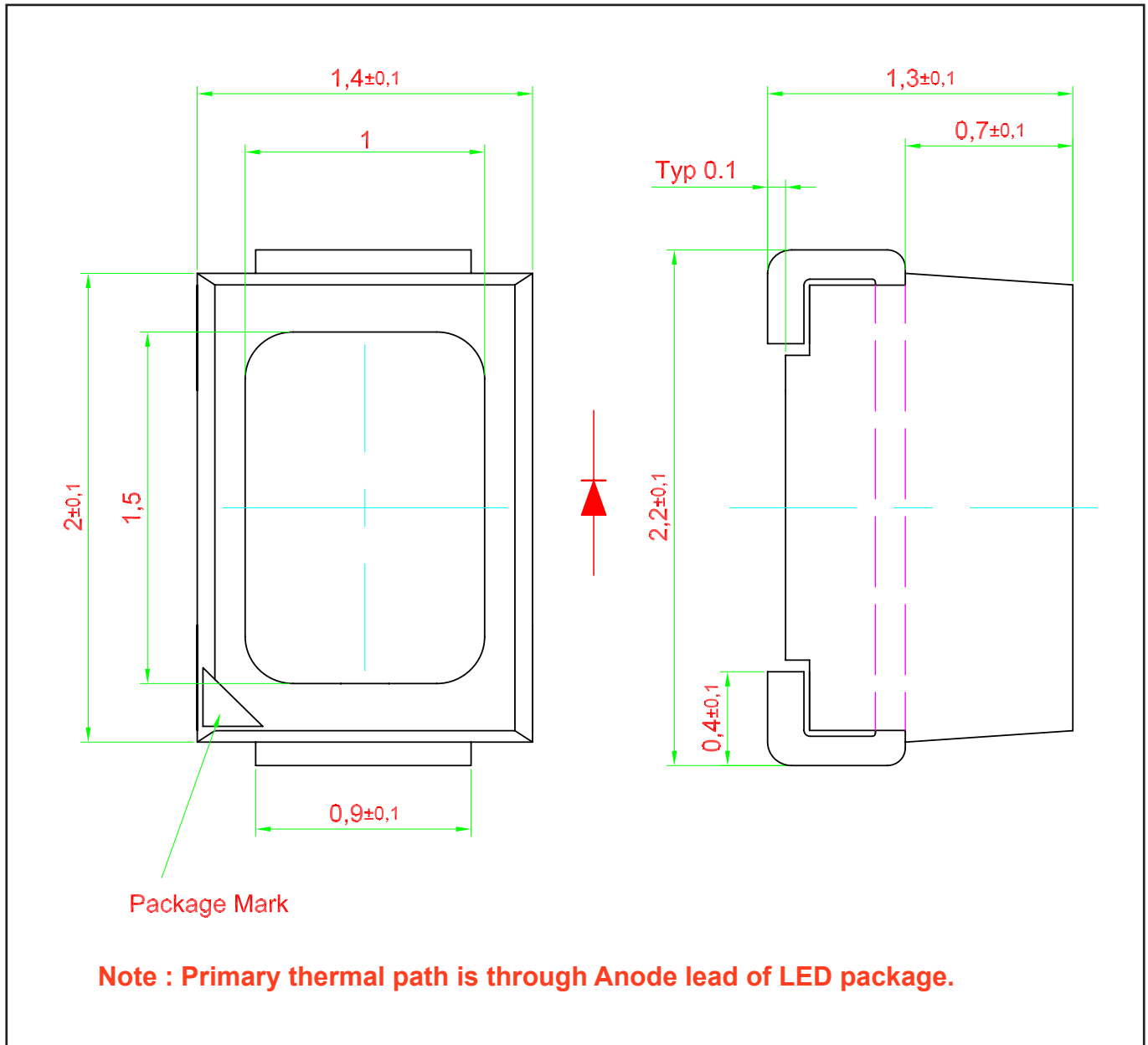


**Wavelength Vs Junction Temperature** *Appx. 4.1*

$$\Delta \lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25^\circ\text{C}) = f(T_j); I_F = 30\text{mA}$$



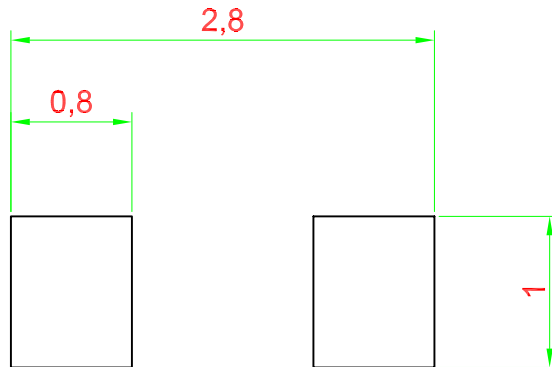
**Mini DomiLED • AllInGaP : DNx-MJS Package Outlines** *Appx. 5.1*



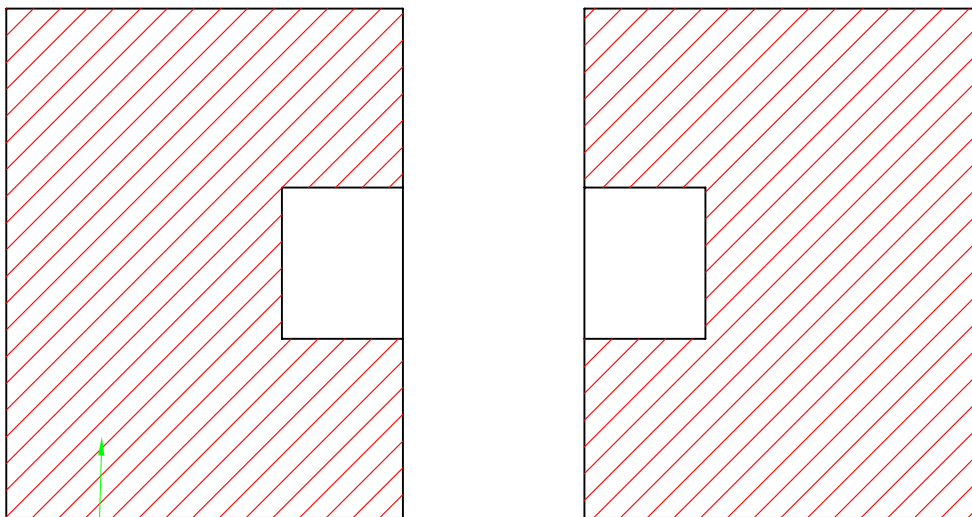
**Material**

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

**Recommended Solder Pad** *Appx. 5.1*



Improved Design For Better Heat Dissipation

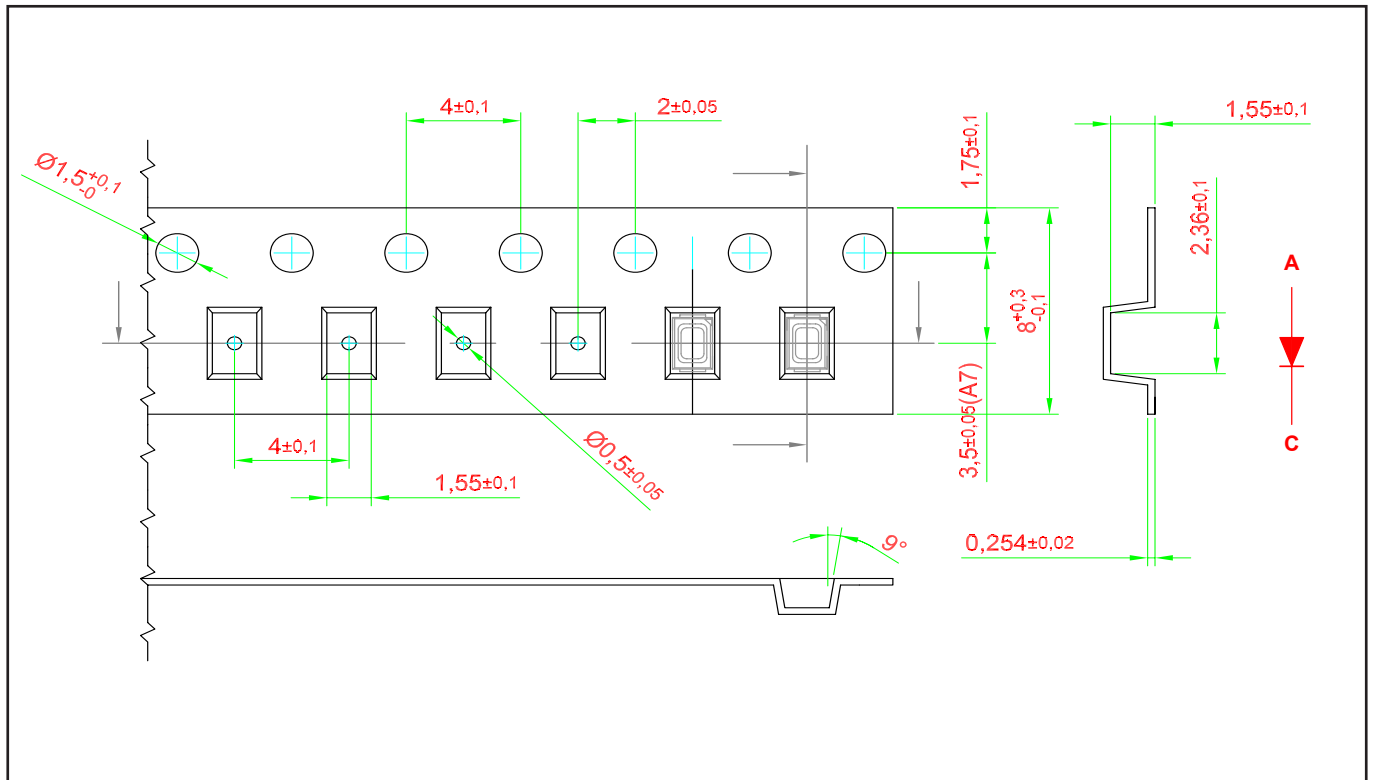


Additional Cu area for improved heat dissipation, > 16mm sq.

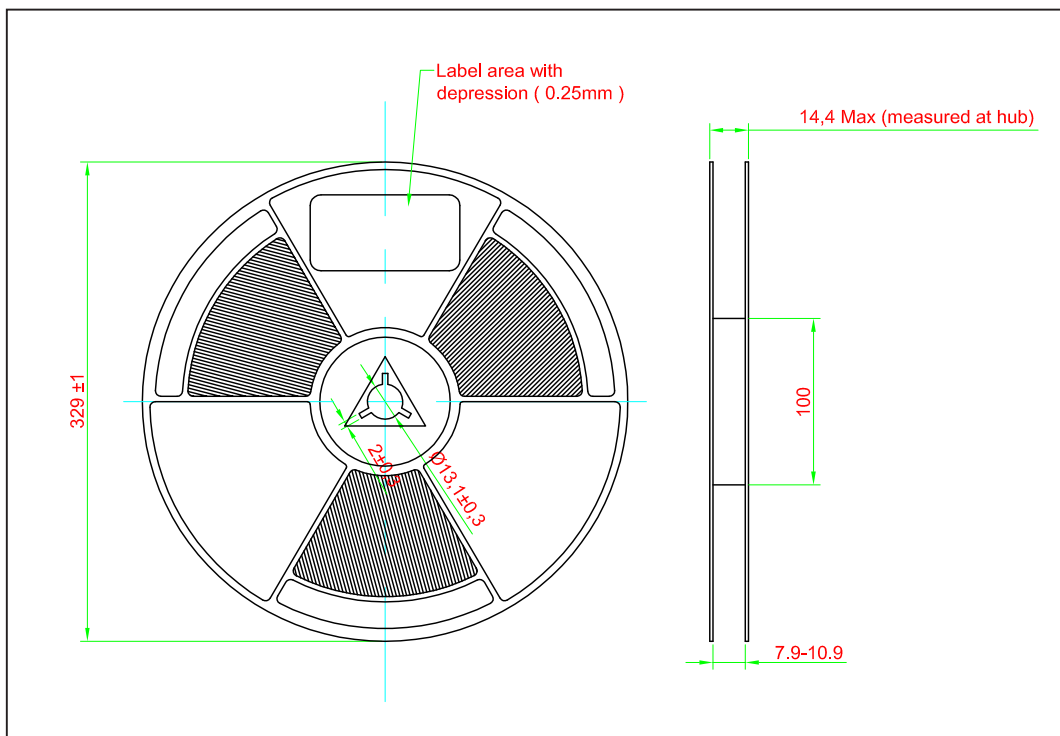
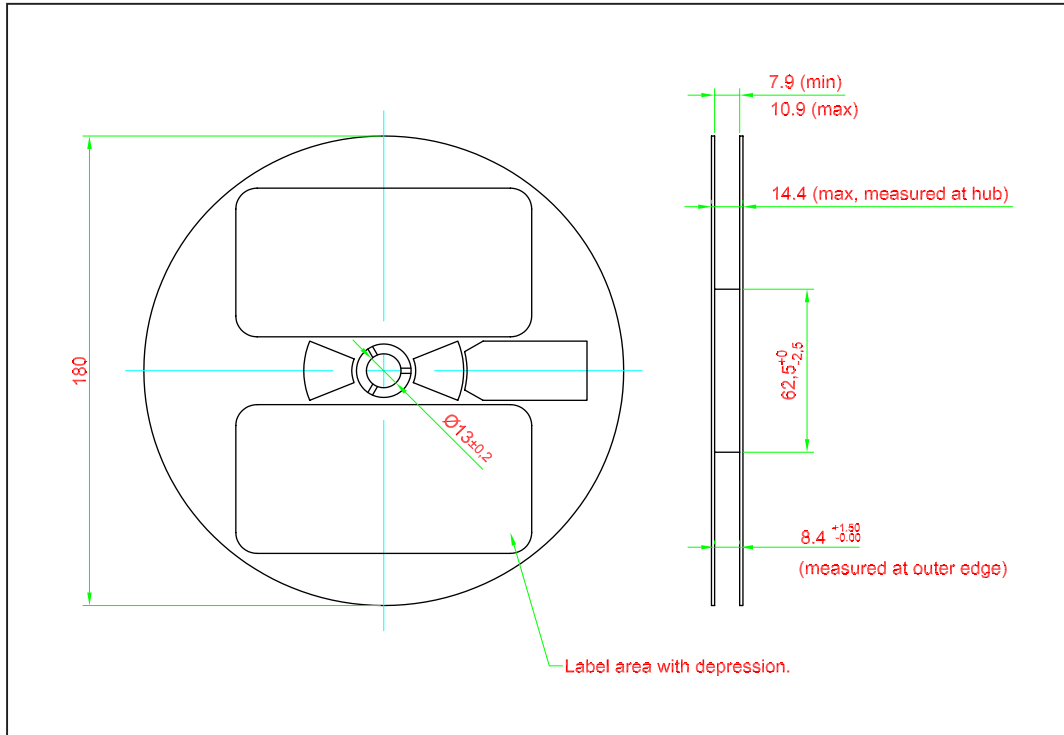
 Solder resist.



**Taping and orientation** *Appx. 5.1*



**Packaging Specification**

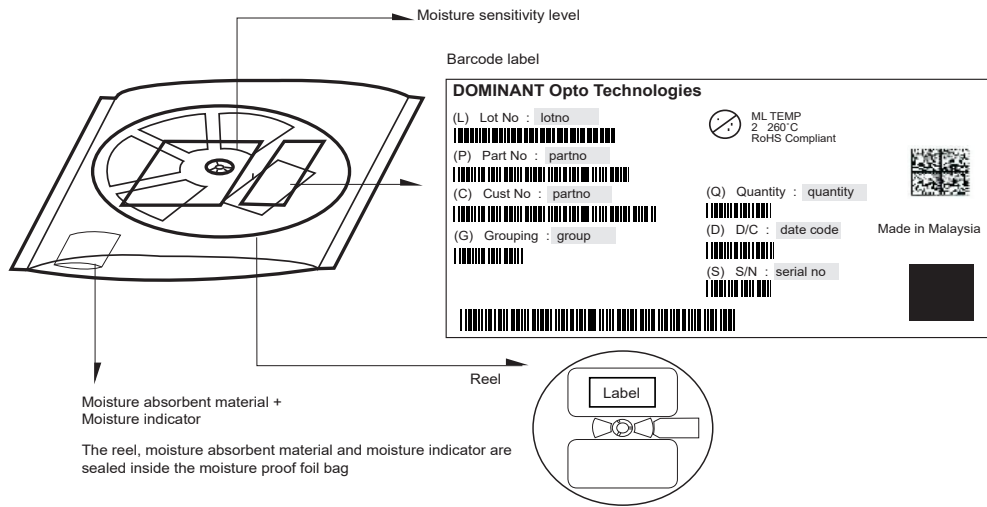


	Reel Diameter (mm)	Quantity (pcs)	*Ordering Number
Standard Packing	180	3000	DNx-MJS-xxx-x
Optional Packing	329	10000	DNx-MJS-xxx-x-J

Notes:

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

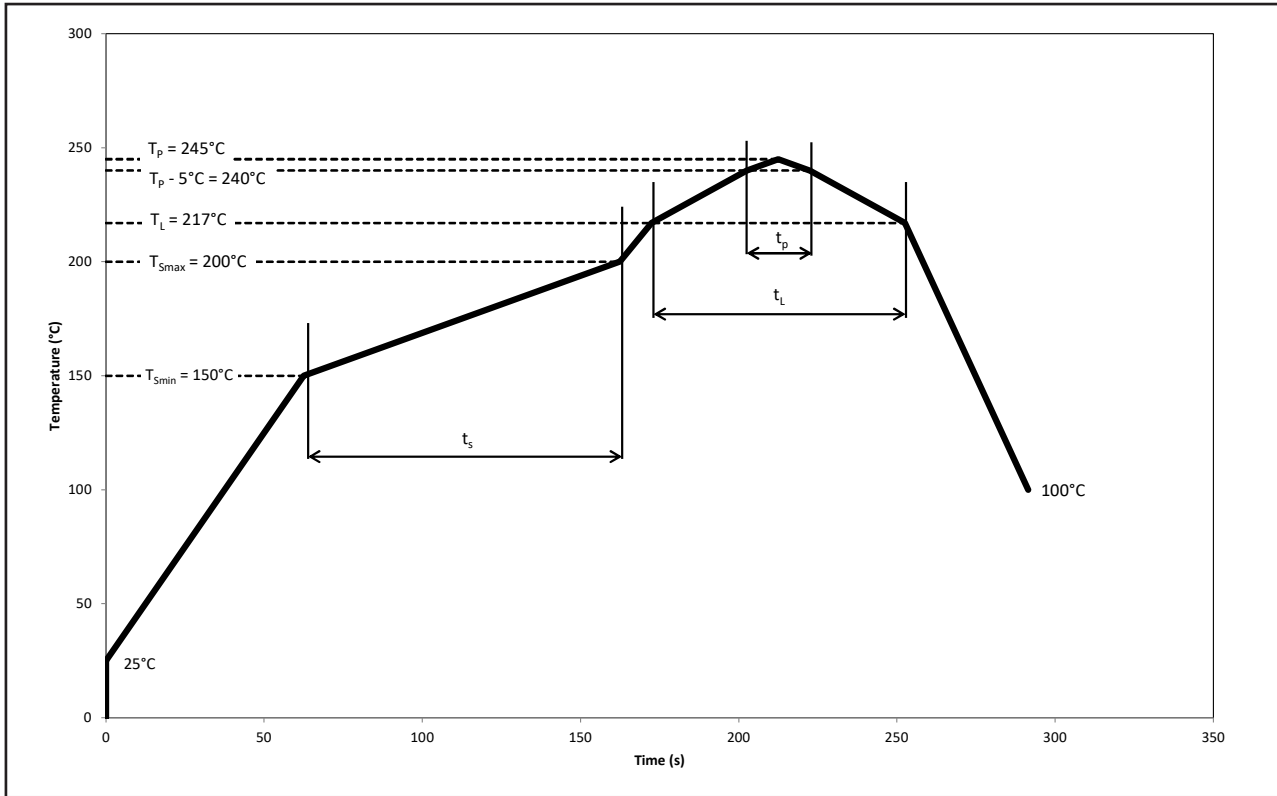
## Packaging Specification



Quantity per bag (pcs)	Average 1pc Mini DomiLED (g)	1 completed bag (g)
3000	0.007	200 ± 10
10000	0.007	550 ± 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 $T_p - 5^\circ\text{C}$	$t_p$	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 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  $\pm 0.1$  and dimension are specified in mm.

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

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

**Revision History**

<b>Page</b>	<b>Subjects</b>	<b>Date of Modification</b>
2, 10, 12	Not for New Design: DNS-MJS-UV1-1, DNA-MJS-U2V-1, DNO-MJS-VW1-1, DNO-MJS-WX1-1 DNY-MJS-U2V-1, DNY-MJS-V2W-1 Update Packaging Specification Update Appendix	21 May 2018
2, 9, 10, 11	Update Thermal Resistance Update Packaging Specification	09 Apr 2019
9	Typo Error on Partno	02 Jul 2019
1, 2, 3, 5, 6	Update Features (AEC-Q101 to AEC-Q102) Add New Partno: DNS-MJS-V2W-1, DNA-MJS-WX1-1, DNR-MJS-V2W-1, DNY-MJS-WX1-4, DNY-MJS-WX1-3, DNY-MJS-VW1-2 Update Peak Pulse Current, Operating Temperature, Storage Temperature, & Thermal Resistance Update Graph	06 Sep 2019
10, 11, 12	Update Packaging Specification Update Recommended Pb-free Soldering Profile	25 Sep 2024

**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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