DOMINANT™
Opto Technologies
Innovating Illumination

DATA SHEET:

Mini DomiLED

InGaN : DNx-DJS-XXX-1-I1

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.
> Based on InGaN technology.
> 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.
> Passed Corrosion Resistant Test. *Appx. 4.1*

Applications:

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

Optical characteristics at Tj=25^{0}C

Part Number	Color	Viewing Angle°	Luminous Intensity @ 10mA IV (mcd) *Appx. 1.1*		
			Min.	Typ.	Max.
DNT-DJS-VW2-1-I1	True Green, 525nm	120	715.0	1125.0	1800.0
● DNT-DJS-T2U-1-I1	True Green, 525nm	120	355.0	550.0	715.0
DNB-DJS-RS1-1-I1	Blue, 470nm	120	112.5	170.0	224.0
DNB-DJS-ST1-1-I1	Blue, 470nm	120	180.0	285.0	355.0
● DNB-DJS-Q2R-1-I1	Blue, 470nm	120	90.0	120.0	180.0

● Not for new design

Electrical Characteristics at Tj=25^{0}C

Part Number	Vf @ If = 10mA *Appx. 3.1*			Vr @ Ir = 10 µA
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DNx-DJS	2.8	3.1	3.6	5.0

Absolute Maximum Ratings

	Maximum Value	Unit
DC Forward Current	20	mA
Peak Pulse Current; (Ts = 55°C, tp = 100µs, D = 0.03)	120	mA
Reverse Voltage *Appx. 6.1*	5	V
ESD Threshold (HBM)	2000	V
LED Junction Temperature	125	˚C
Operating Temperature	-40 … +105	˚C
Storage Temperature	-40 … +110	˚C
Power Dissipation (at room temperature)	80	mW
Thermal resistance (Rated current = 10mA, Ts = 25 ˚C)		
- Junction / ambient, $R_{th\ JA}$	480	K/W
- Junction / solder point, $R_{th\ JS}$	230	K/W

Wavelength Grouping at Tj=25^{0}C

Color	Group	Wavelength distribution (nm) *Appx. 2.2*
DNT; True Green	Full	520 - 535
	A	520 - 525
	B	525 - 530
	C	530 - 535
DNB; Blue	Full	465 - 475
	A	465 - 470
	B	470 - 475

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

Luminous Intensity Group at Tj=25˚C

Brightness Group	Luminous Intensity *Appx. 1.1* IV (mcd)
Q2	90.0 ... 112.5
R1	112.5 ... 140.0
R2	140.0 ... 180.0
S1	180.0 ... 224.0
S2	224.0 ... 285.0
T1	285.0 ... 355.0
T2	355.0 ... 450.0
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

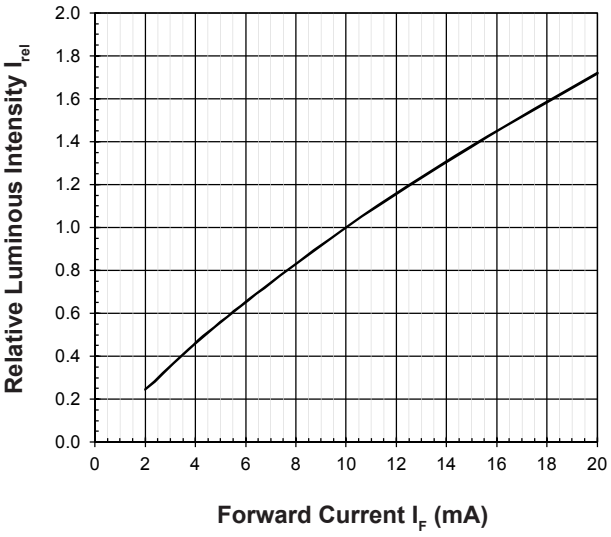
Vf Bining (Optional)

Vf @ If = 10mA	Forward Voltage (V) *Appx. 3.1*
VM6	2.70 ... 3.00
VM7	3.00 ... 3.30
VM8	3.30 ... 3.60

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

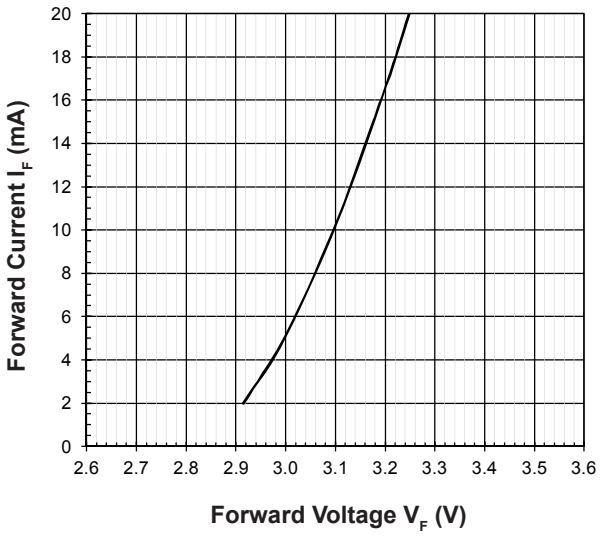
Relative Luminous Intensity Vs Forward Current *Appx. 4.1*

$I_V/I_V(10mA) = f(I_F)$; $T_j = 25°C$



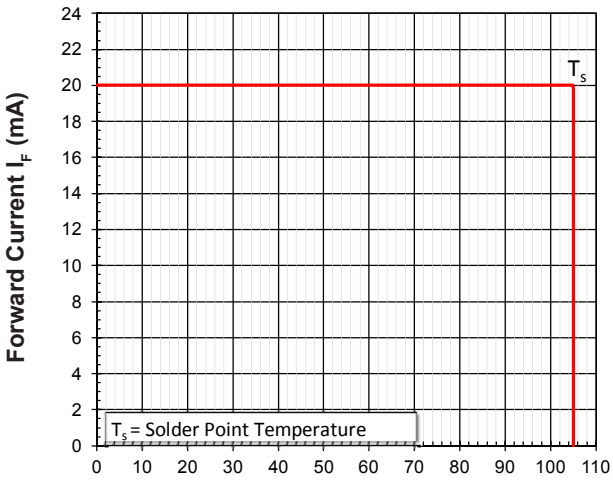
Forward Current Vs Forward Voltage *Appx. 4.1*

$I_F = f(V_F)$; $T_j = 25°C$



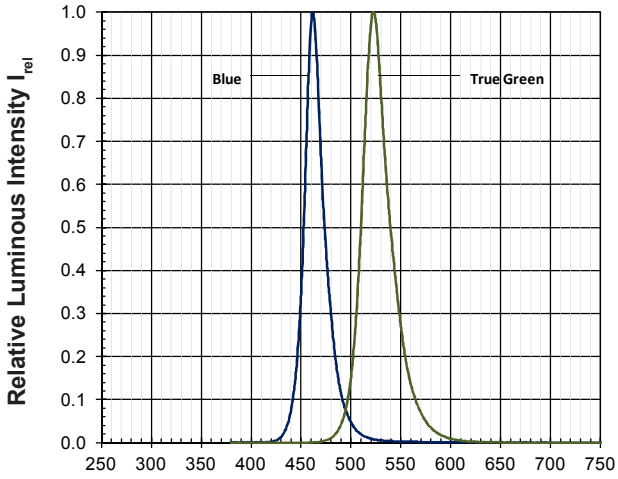
Maximum Current Vs Temperature

$I_F=f(T)$



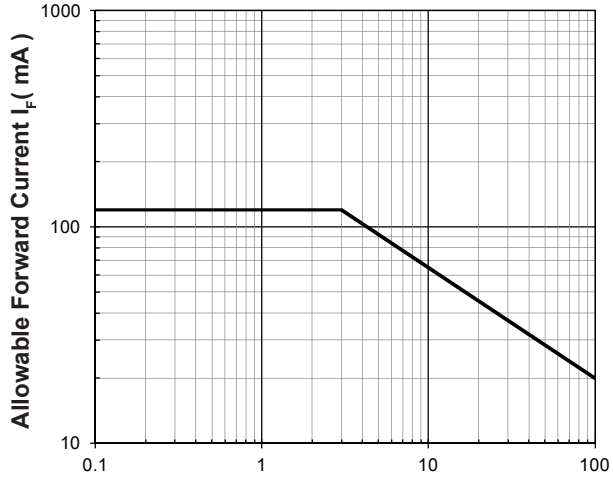
Relative Spectral Emission *Appx. 4.1*

$I_{rel} = f(\lambda)$; $T_j = 25°C$; $I_F = 10mA$

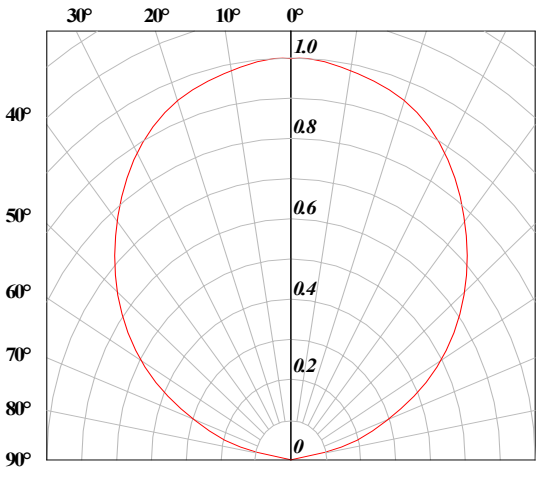


Allowable Forward Current Vs Duty Ratio

(T_S= 55°C; $t_p \leq 100\mu s$)

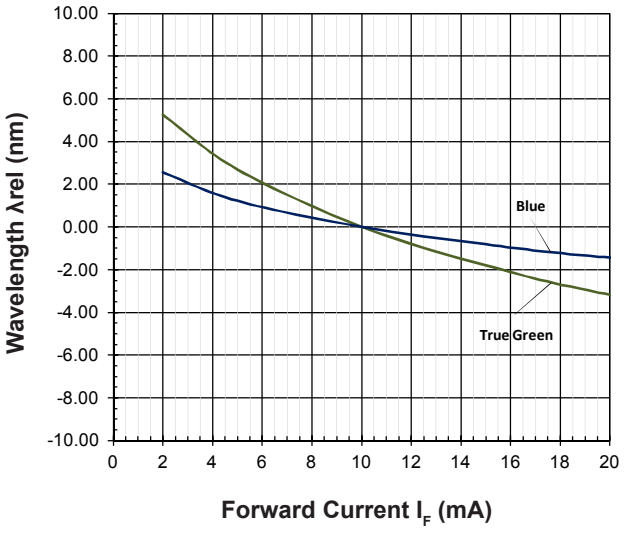


Radiation Pattern *Appx. 4.1*



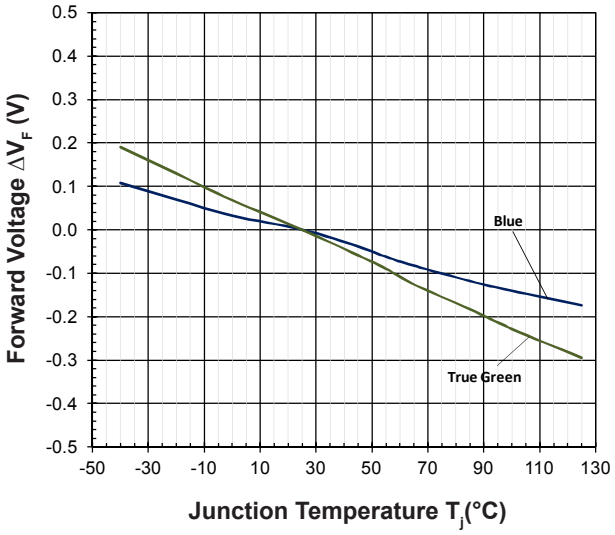
Wavelength Shift Vs Forward Current *Appx. 4.1*

$\lambda dom = f(I_F)$; T_j = 25°C



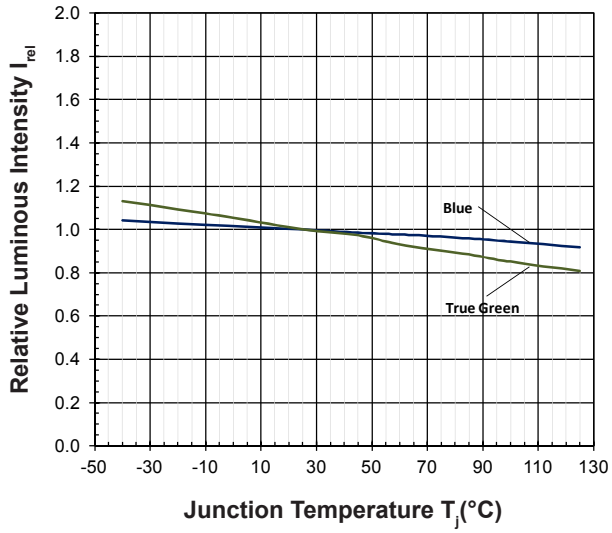
Forward Voltage Vs Junction Temperature *Appx. 4.1*

$\Delta V_F = V_F - V_F(25°C) = f(T_j)$; I_F =10mA



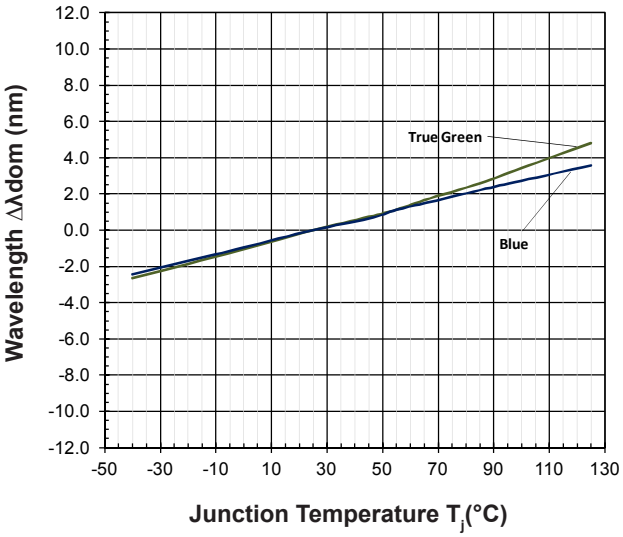
Relative Luminous Intensity Vs Junction Temperature *Appx. 4.1*

$I_V/I_V(25°C) = f(T_j)$; I_F = 10mA

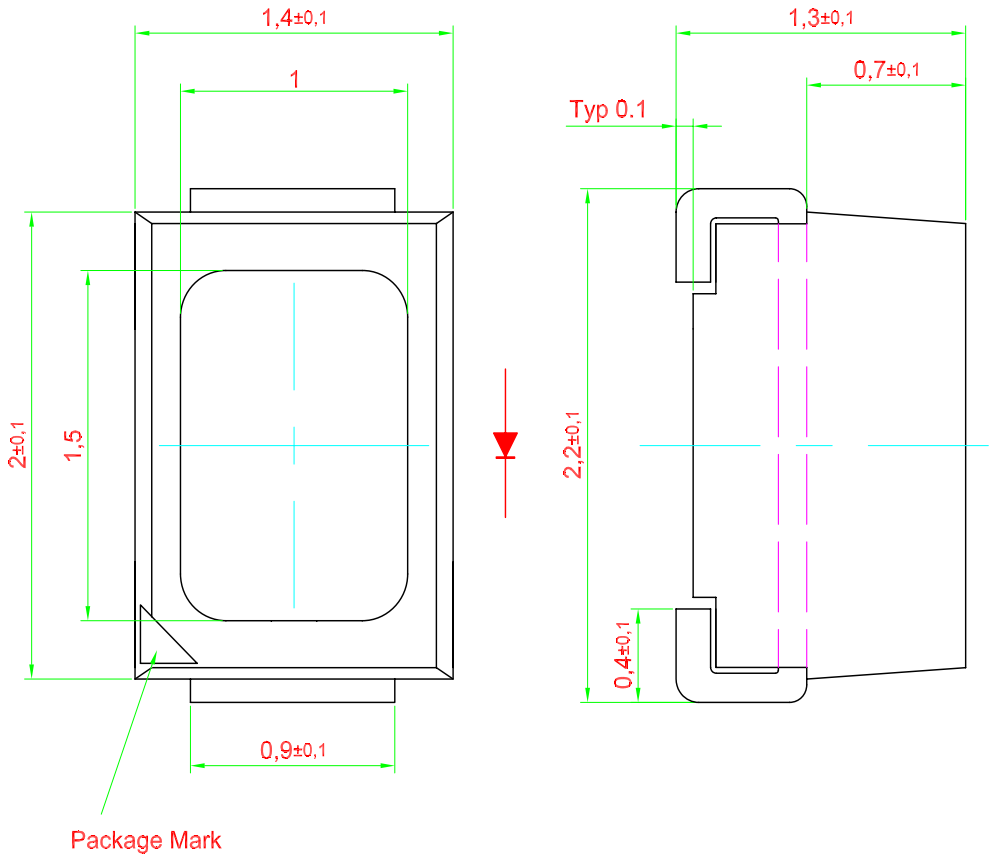


Wavelength Vs Junction Temperature *Appx. 4.1*

$\Delta\lambda dom = \lambda dom - \lambda dom\ (25°C) = f(T_j)$; I_F =10mA



Mini DomiLED • InGaN : DNx-DJS-XXX-1-I1 Package Outlines *Appx. 5.1*

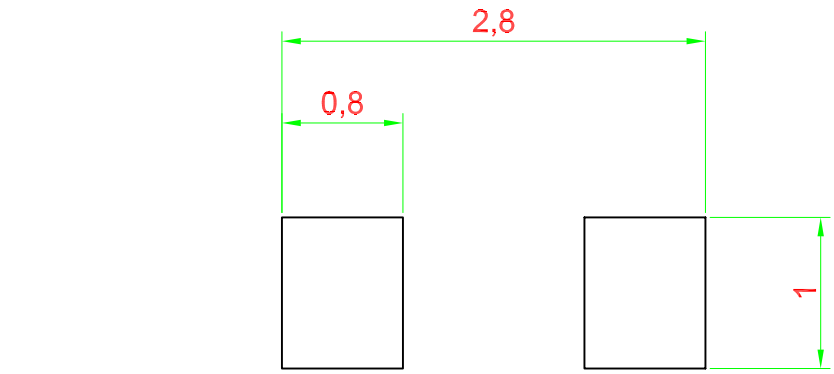


Note : Primary thermal path is through Cathode lead of LED package

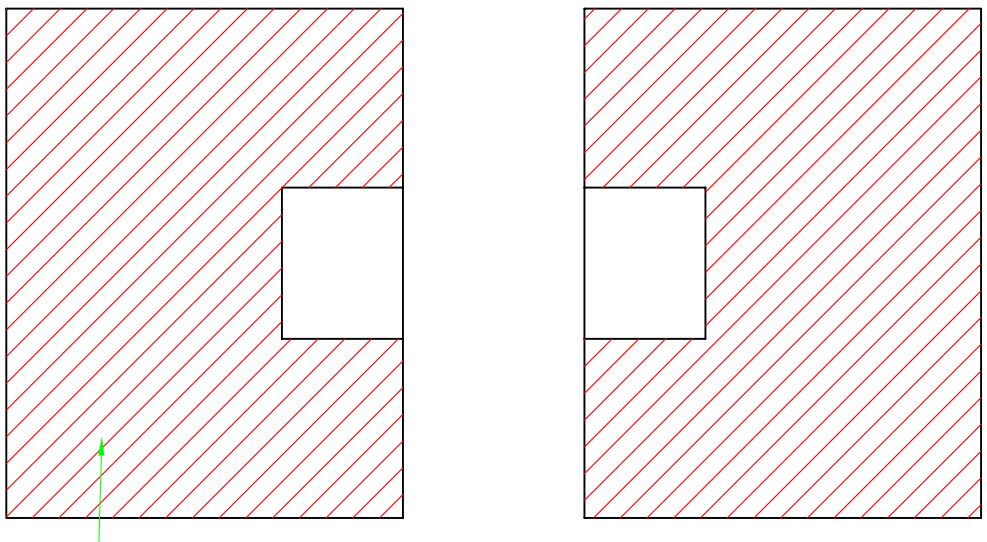
Material

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

Recommended Solder Pad *Appx. 5.1*



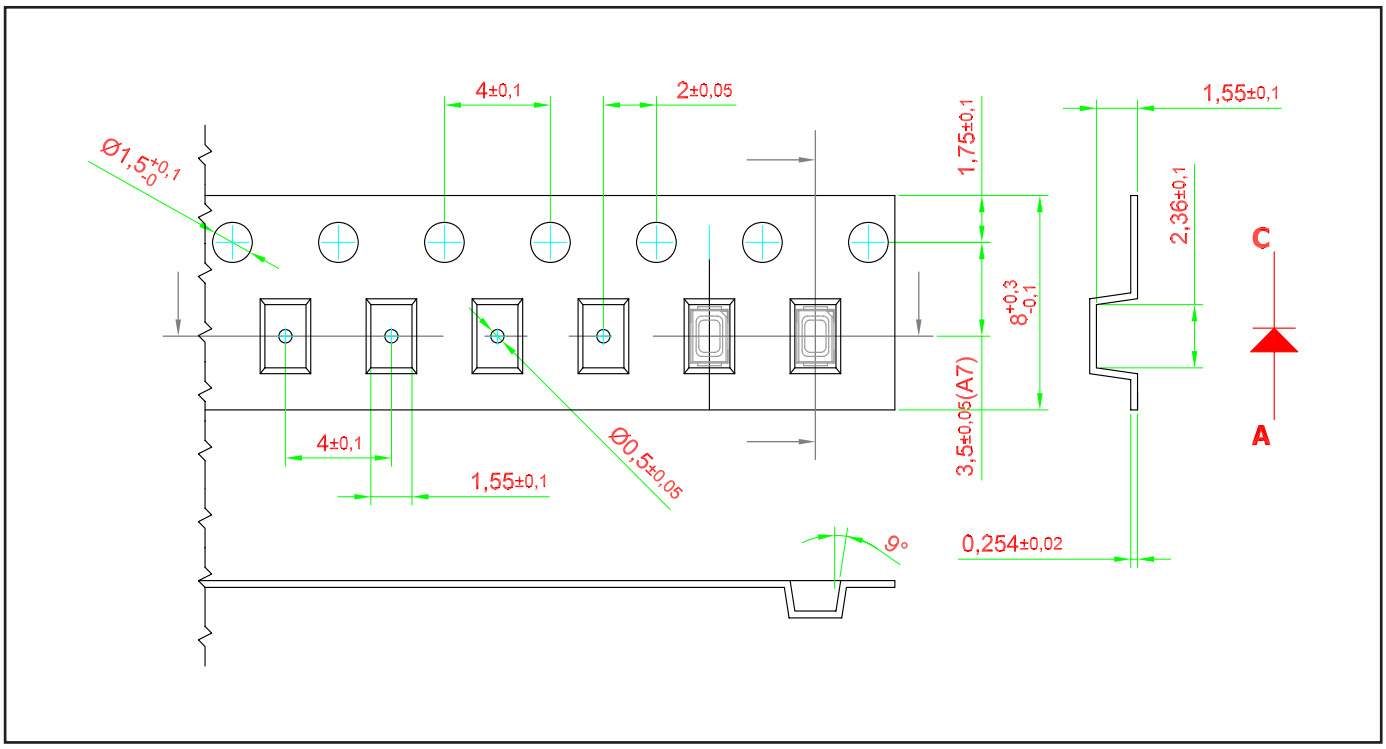
Improved Design For Better Heat Dissipation



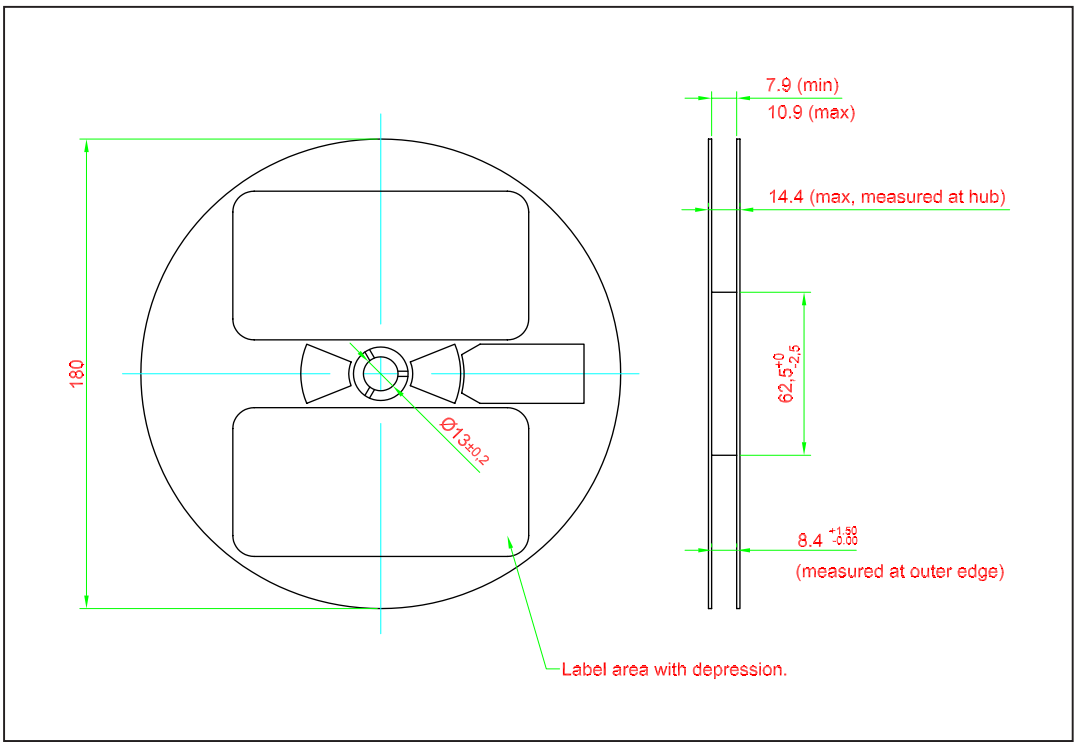
Additional Cu area for improved heat dissipation, > 16mm sq.

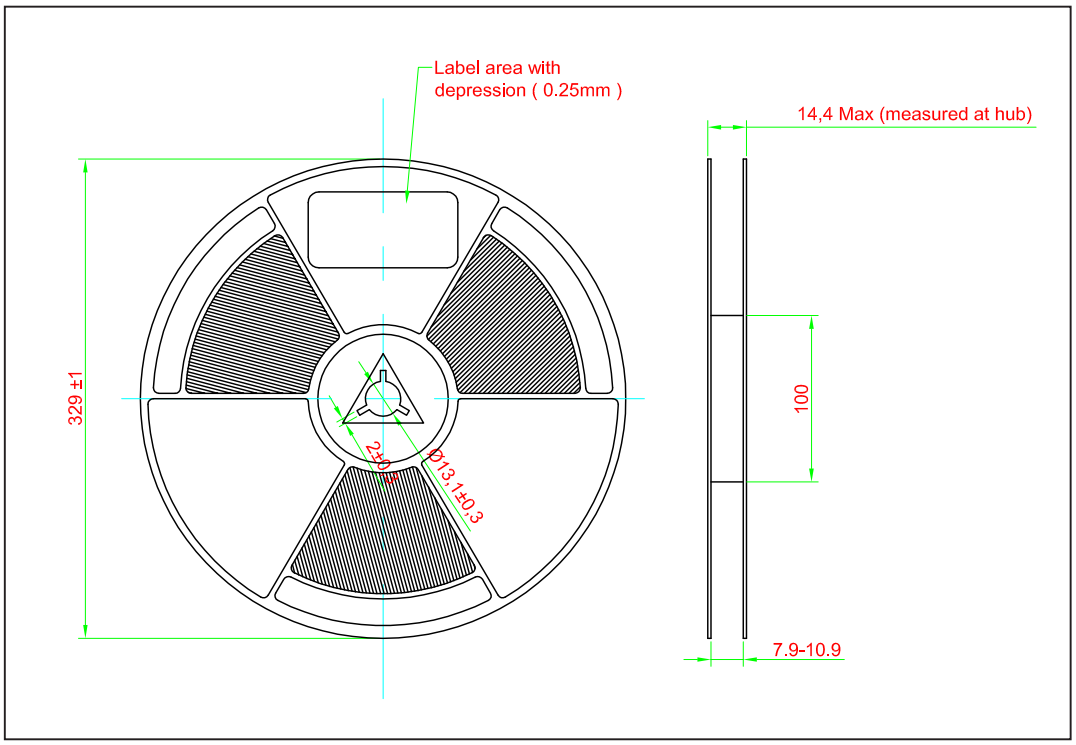
Solder resist.

Taping and orientation *Appx. 5.1*



Packaging Specification



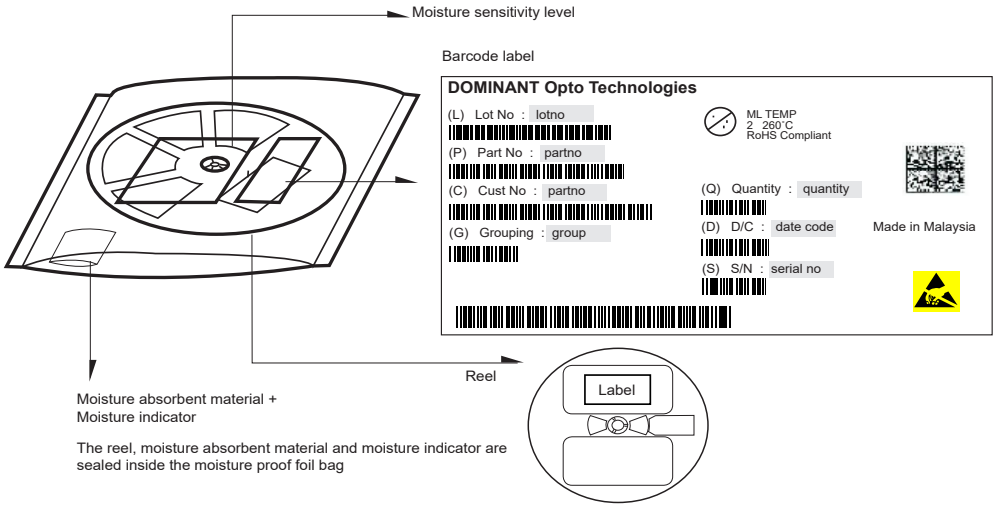


	Reel Diameter (mm)	Quantity (pcs)	*Ordering Number
Standard Packing	180	3000	DNx-DJS-xxx-x-I1
Optional Packing	329	10000	DNx-DJS-xxx-x-I1-J

Notes:

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

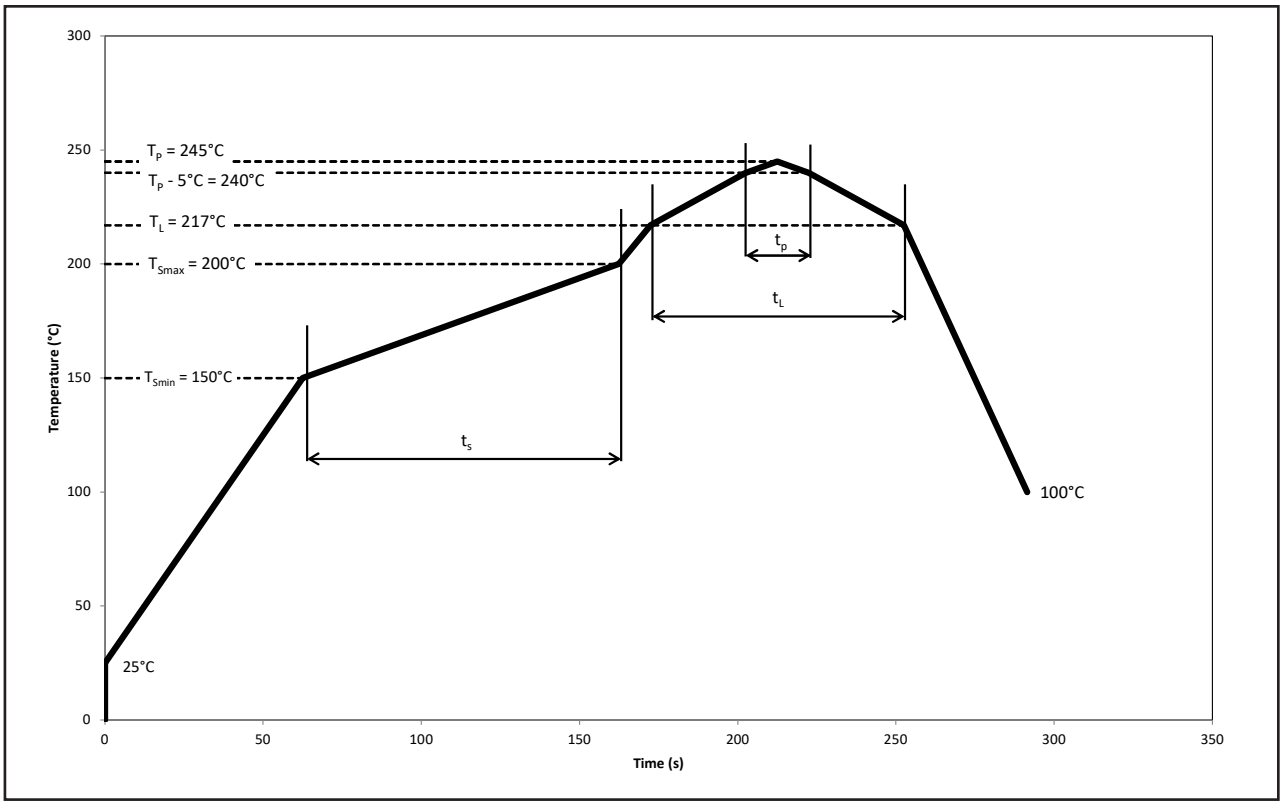
Packaging Specification



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°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 specifiec 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
2	Add Thermal Resistance	06 Mar 2014
1, 4, 9	Update Features Typo Error on Graph: Dominant Wavelength Shift Vs Forward Current Update Packaging Specification	15 Jun 2015
5	Typo Error on Material Add Notes in Packaging Outline	04 Aug 2015
2	Add new partno: DNB-DJS-ST1-1-I1	05 Oct 2015
1, 4, 5, 12	Add Features Update Graph Add Appendix	18 Jul 2017
2, 3, 9, 10, 11, 12	Add Test Condition for Thermal Resistance Add Vf Binning Optional Update Packaging Specification Update Appendix	16 Dec 2019
1, 2, 4, 5, 12	Update Features: AEC-Q101 to AEC-Q102. Update Application Update Peak Pulse Current Update Operating and Storage Temperature Update Graph Update Recommended Pb-free Soldering Profile	20 Nov 2020
10	Update Packaging Specification	03 Feb 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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