DOMINANT™
Opto Technologies
Innovating Illumination

DATA SHEET:

Mini DomiLED

AlInGaP : DNx-CJS

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.
> Passed Corrosion Resistant Test. *Appx. 4.1*
> Compliance to automotive standard; AEC-Q102.

Applications:

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

Optical Characteristics at Tj=25˚C

Part Ordering Number	Color	Viewing Angle˚	Luminous Intensity @ 20mA IV (mcd) *Appx. 1.1*		
			Min.	Typ.	Max.
● DNH-CJS-N2Q1-1	Hyper-red, 640nm	120	35.50	56.00	90.00
DNS-CJS-PQ2-1	Super-red, 632nm	120	45.00	71.50	112.50
DNS-CJS-Q2S1-1	Super-red, 632nm	120	90.00	140.00	224.00
DNS-CJS-QR1-1	Super-red 632nm	120	71.50	105.00	140.00
DNR-CJS-RS2-1	Red, 625nm	120	112.50	180.00	285.00
DNA-CJS-RS2-1	Amber, 615nm	120	112.50	180.00	285.00
DNO-CJS-RS2-1	Orange, 605nm	120	112.50	180.00	285.00
DNO-CJS-S2T-1	Orange, 605nm	120	224.0	355.0	450.0
DNY-CJS-RS2-1	Yellow, 587nm	120	112.50	180.00	285.00
DNG-CJS-PQ2-1	Green, 570nm	120	45.00	71.50	112.50
DNP-CJS-LM2-1	Pure Green, 560nm	120	11.20	18.00	28.50

● Not for new design

Electrical Characteristics at Tj=25˚C

Part Number	Vf @ If = 20mA *Appx. 3.1*			Vr @ Ir = 10uA
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DNH-CJS, DNS-CJS, DNR-CJS, DNA-CJS, DNO-CJS, DNY-CJS, DNG-CJS, DNP-CJS	1.7	1.95	2.4	12

Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	30	mA
Peak pulse current; (Ts = 55°C, tp = 100µs, D = 0.03)	90	mA
Reverse voltage	12	V
ESD threshold (HBM)	2	KV
LED junction temperature	125	˚C
Operating temperature	-40 … +105	˚C
Storage temperature	-40 … +125	˚C
Power dissipation (at room temperature)	75	mW
Thermal resistance - Real Thermal Resistance Junction / ambient, $R_{th\ JA\ real}$ Junction / solder point, $R_{th\ JS\ real}$ (Mounting on FR4 PCB, pad size >= 16 mm^2 per pad)	 580 330	 K/W K/W

Luminous Intensity Group at Tj=25˚C

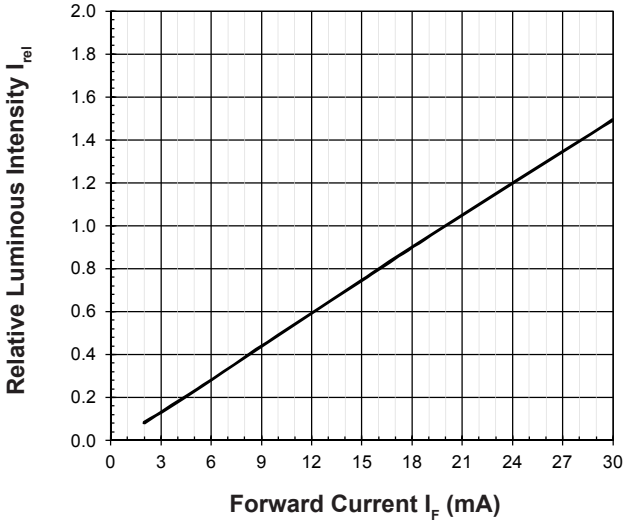
Brightness Group	Luminous Intensity *Appx. 1.1* IV (mcd)
L1	11.2 ... 14.0
L2	14.0 ... 18.0
M1	18.0 ... 22.4
M2	22.4 ... 28.5
N2	35.5 ... 45.0
P1	45.0 ... 56.0
P2	56.0 ... 71.5
Q1	71.5 ... 90.0
Q2	90.0 ... 112.5
R1	112.5 ... 140.0
R2	140.0 ... 180.0
S1	180.0 ... 224.0
S2	224.0 ... 285.0
T1	285.0 ... 355.0
T2	355.0 ... 450.0

Wavelength Grouping at Tj=25˚C

Color	Group	Wavelength distribution (nm) *Appx. 3.1*
DNH; Hyper-red	Full	636 - 646
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
DNG; Green	Full	564.5 - 576.5
	W	564.5 - 567.5
	X	567.5 - 570.5
	Y	570.5 - 573.5
	Z	573.5 - 576.5
DNP; Pure Green	Full	552.5 - 564.5
	W	552.5 - 555.5
	X	555.5 - 558.5
	Y	558.5 - 561.5
	Z	561.5 - 564.5

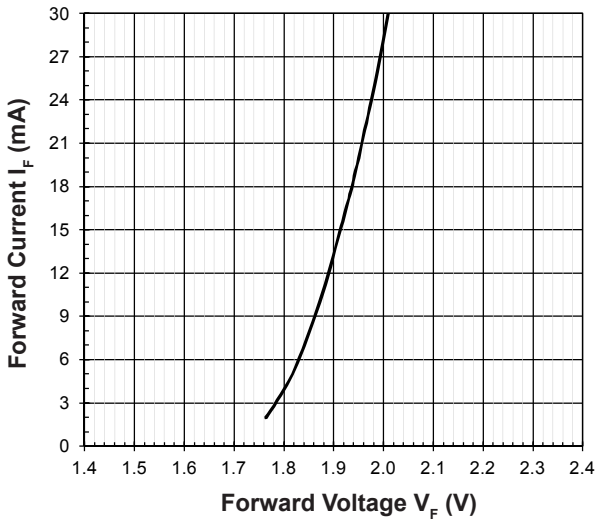
Relative Luminous Intensity Vs Forward Current

$I_V/I_V(20mA) = f(I_F)$; $T_j = 25°C$



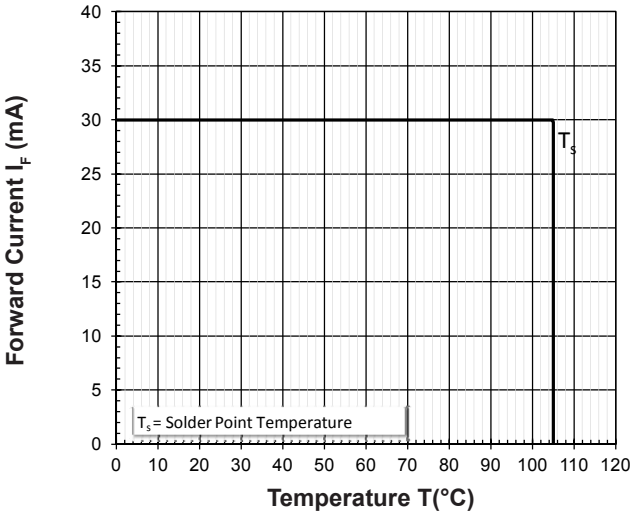
Forward Current Vs Forward Voltage

$I_F = f(V_F)$; $T_j = 25°C$



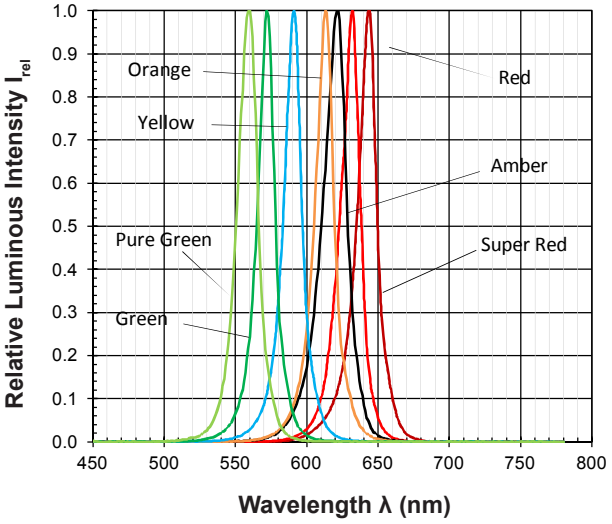
Maximum Current Vs Temperature

$I_F=f(T)$



Relative Spectral Emission

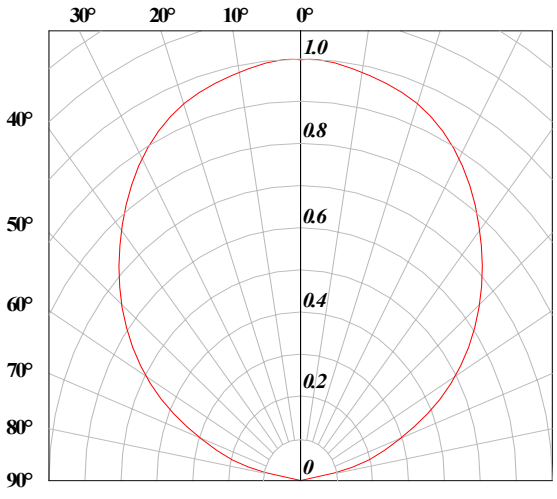
$I_{rel} = f(\lambda)$; $T_j = 25°C$; $I_F = 20mA$



Allowable Forward Current Vs Duty Ratio

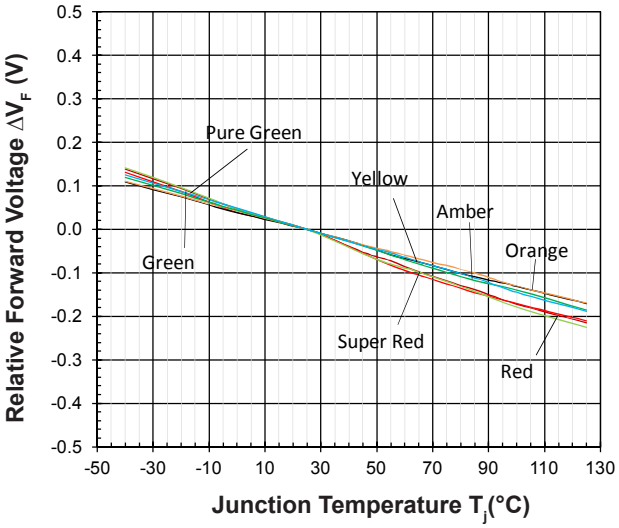
(T_S= 55°C; $t_p \leq 100\mu s$)

Radiation Pattern



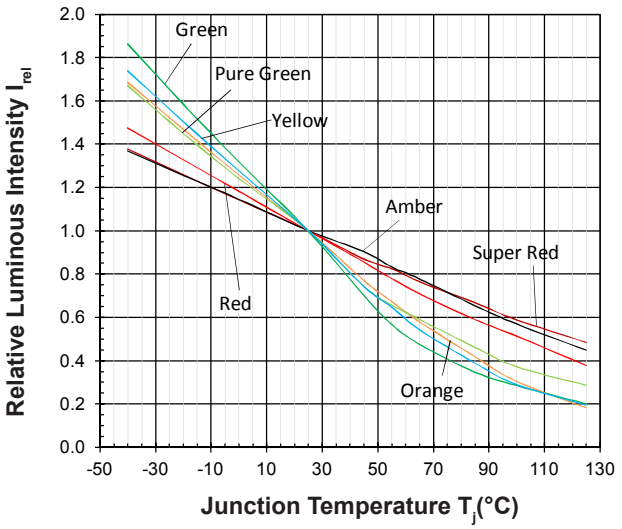
Relative Forward Voltage Vs Junction Temperature

$\Delta V_F = V_F - V_F(25°C) = f(T_j)$; I_F =20mA



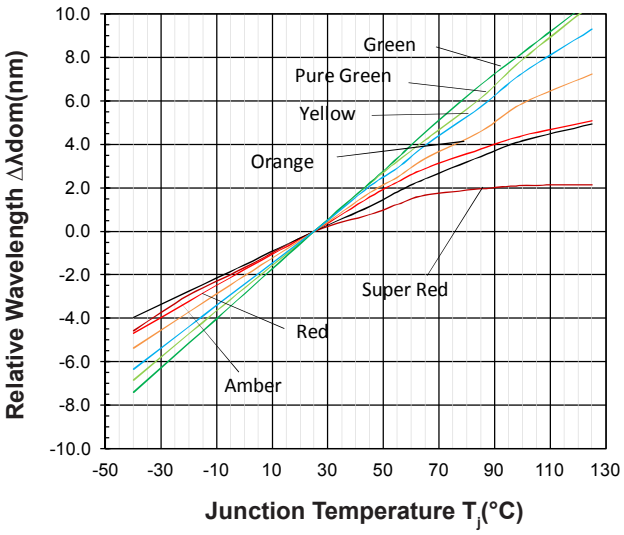
Relative Luminous Intensity Vs Junction Temperature

$I_V/I_V(25°C) = f(T_j)$; I_F = 20mA

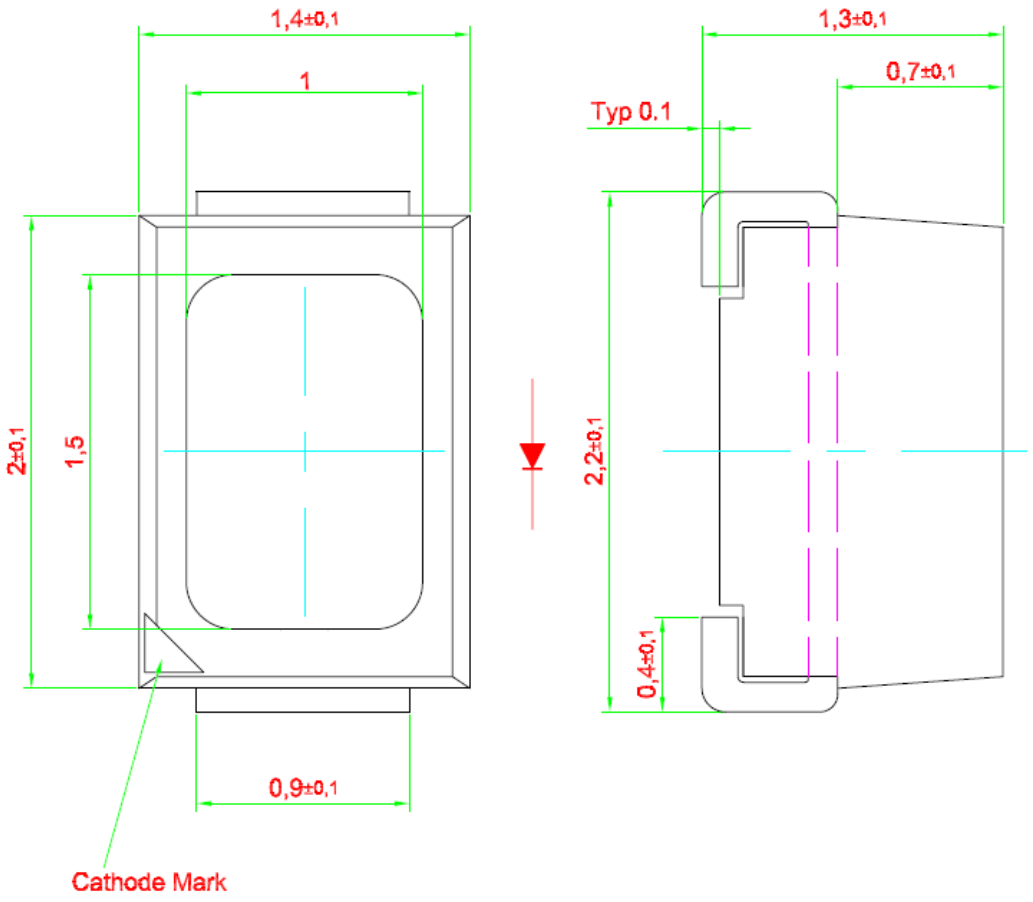


Relative Wavelength Vs Junction Temperature

$\Delta\lambda dom = \lambda dom - \lambda dom\ (25°C) = f(T_j)$; I_F =20mA



Mini DomiLED • AlInGaP : DNx-CJS Package Outlines

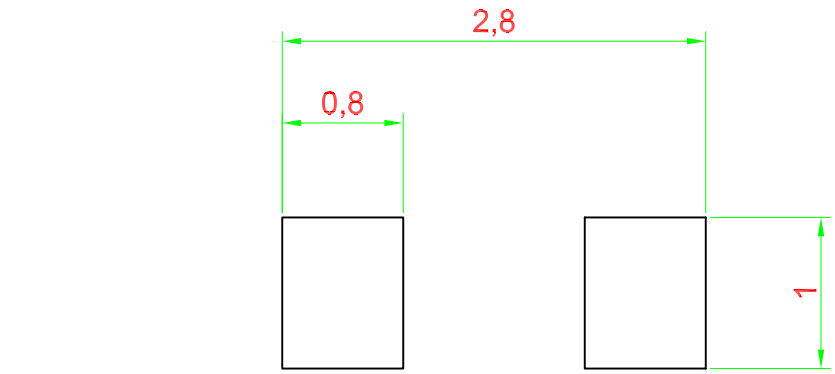


Note : Primary thermal path is through Cathode lead of LED package.

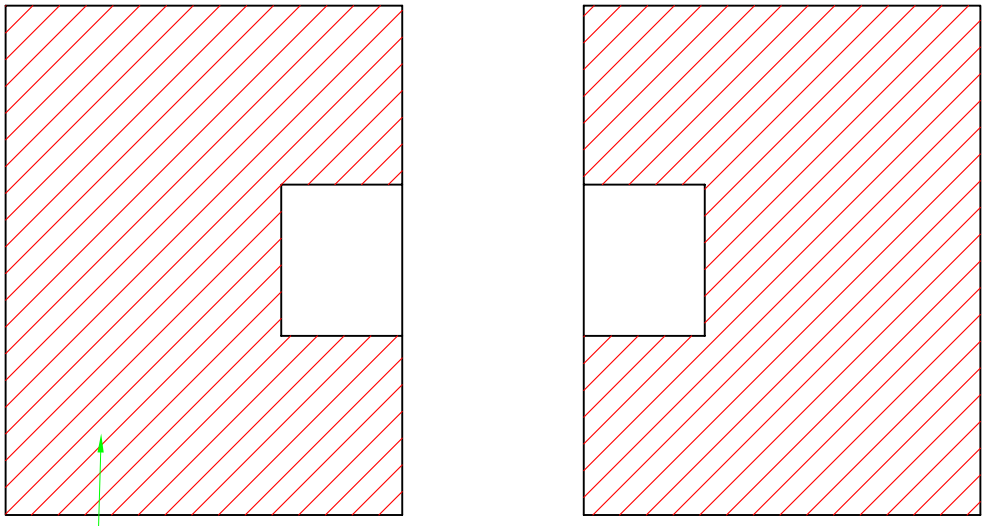
Material

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

Recommended Solder Pad



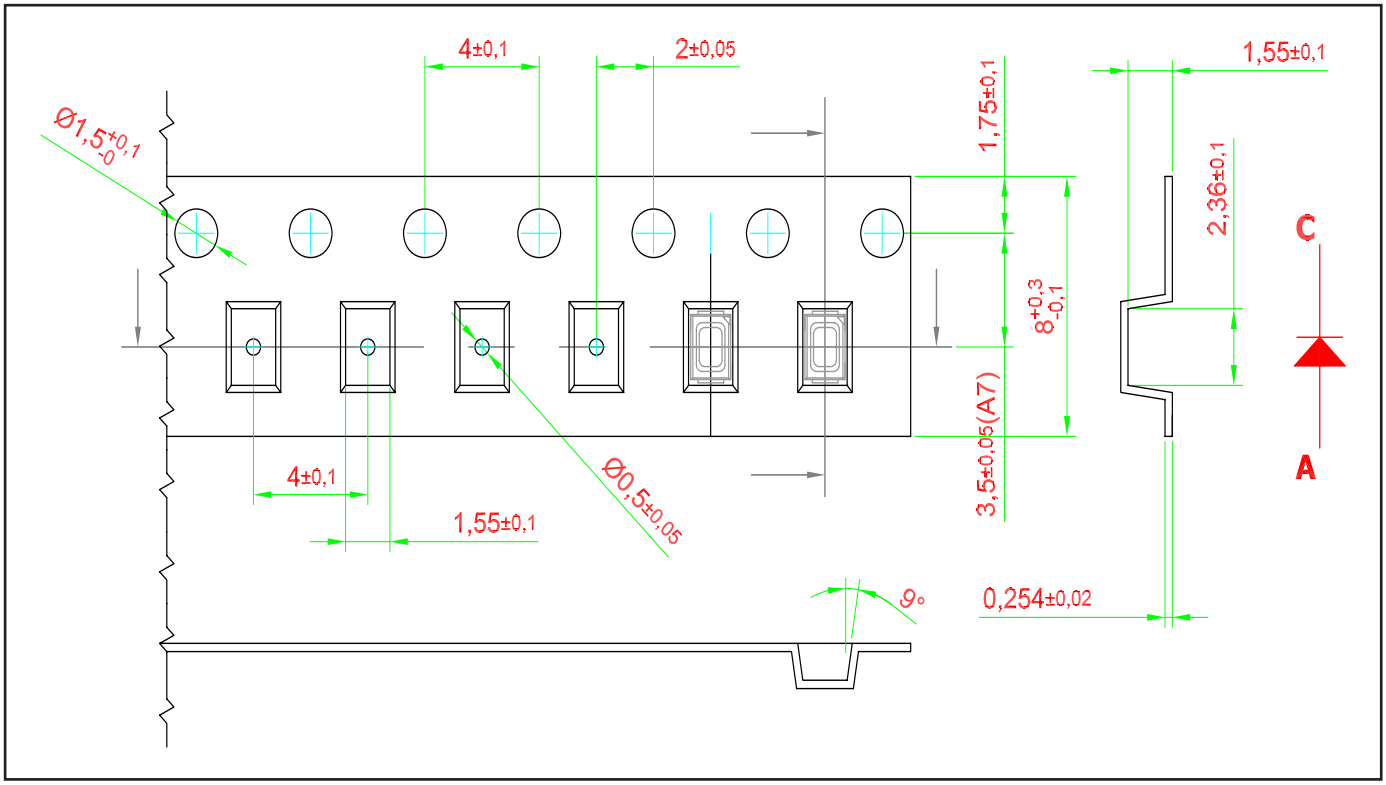
Improved Design For Better Heat Dissipation



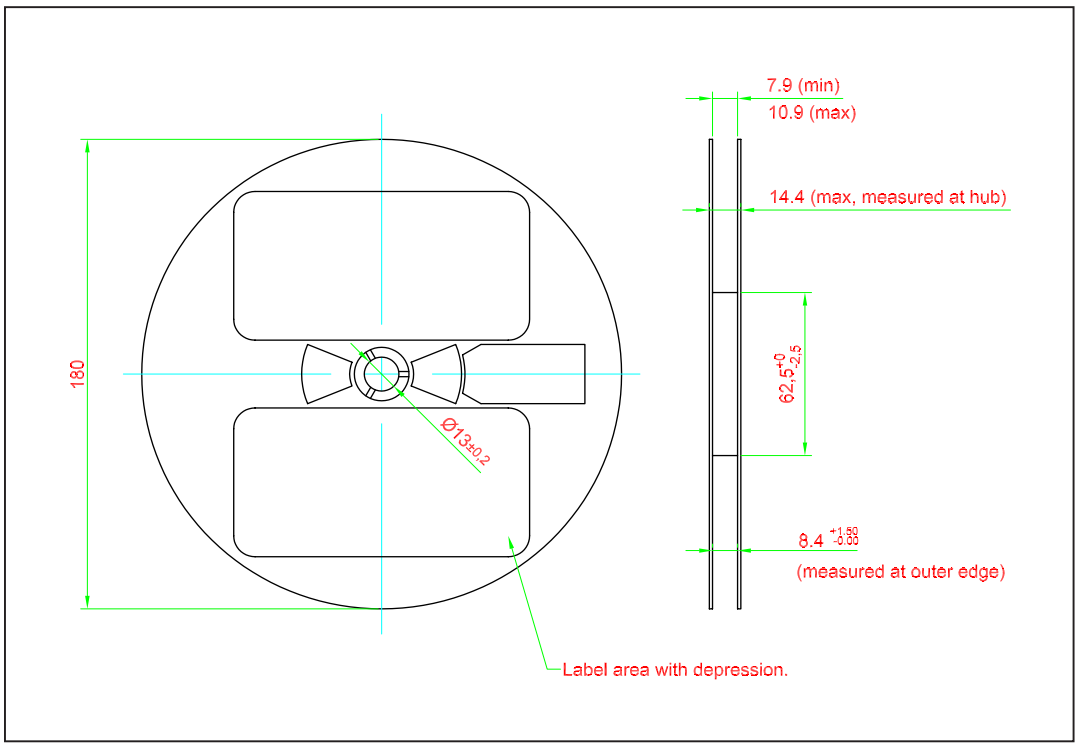
Additional Cu area for improved heat dissipation, > 16mm sq.

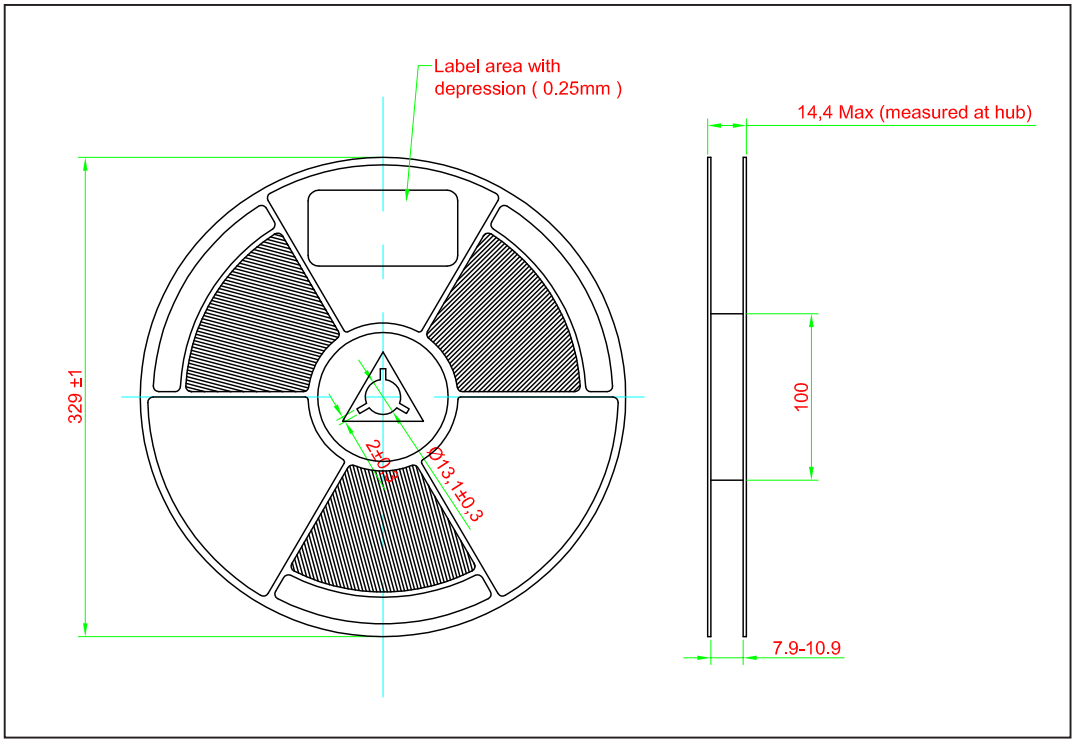
Solder resist.

Taping and orientation



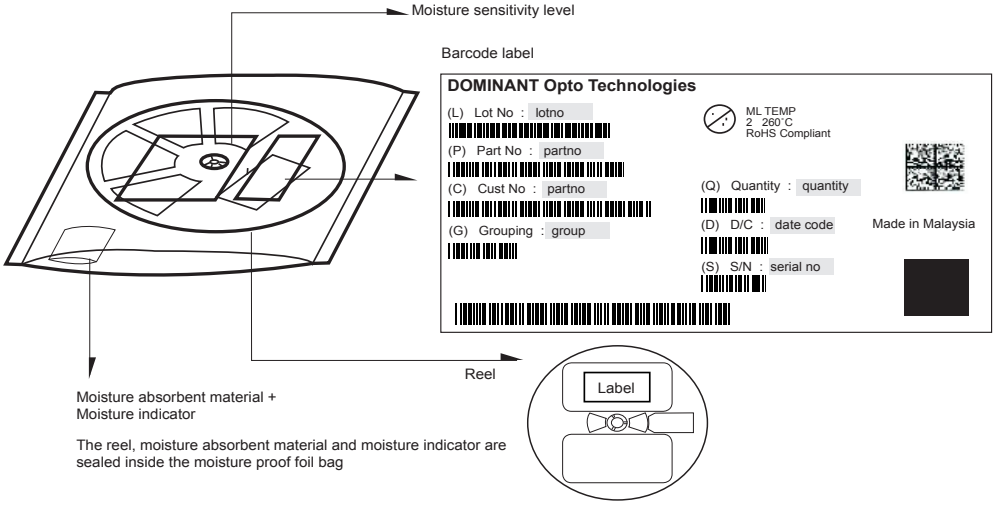
Packaging Specification



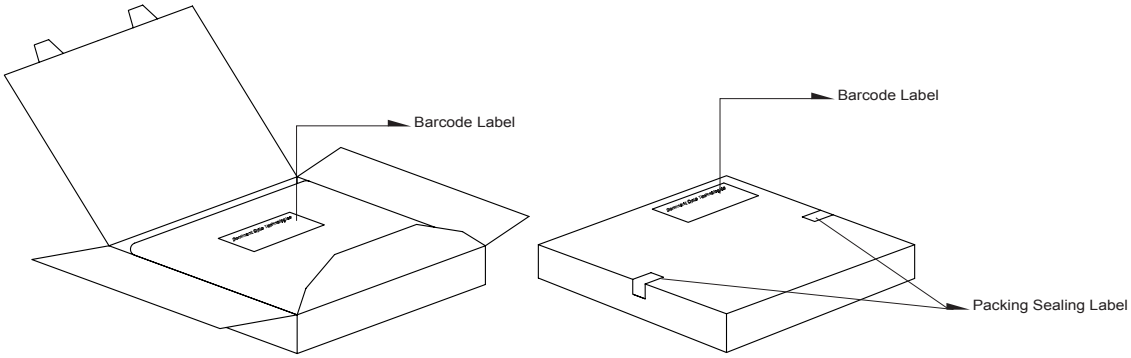


	Reel Diameter (mm)	Quantity (pcs)	Partno
Standard Packing	180	3000	DNx-CJS-xxx-x
Optional Packing	329	10000	DNx-CJS-xxx-x-J

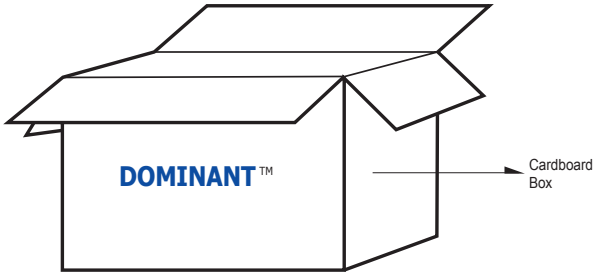
Packaging Specification



Quantity per bag (pcs)	Average 1pc Mini DomiLED (gram)	1 completed bag (gram)
3000	0.007	200 ± 10
10000	0.007	550 ± 10



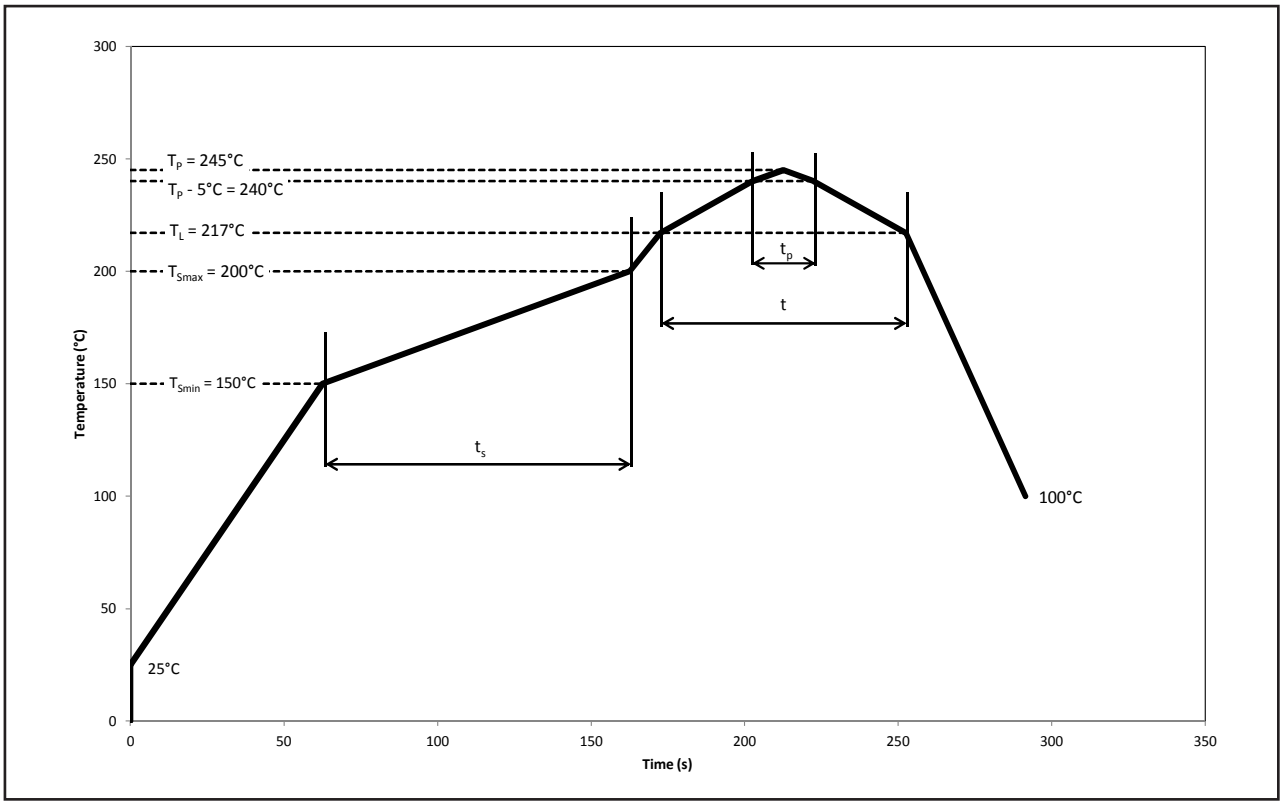
Reel Diameter (mm)	Packing Box Dimensions (mm)
180	210 x 210 x 16
329	345 x 345 x 16



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

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°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 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 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
6	Update Relative Luminous Intensity Vs Forward Current	14 Nov 2011
4	Update Characteristic	18 Jun 2012
1, 2, 12, 14	Update Features Add New Partno: DNO-CJS-S2T-1 Update Package Specification Add Appendix	28 Oct 2016
6, 7, 8	Add Electrical Thermal Resistance Update Graph Add Notes in Package Outline	07 Dec 2016
1, 14	Update Features Update Appendix	22 Jan 2018
1, 2, 6, 7, 11, 12, 13, 14	Update Features: AEC-Q101 to AEC-Q102 Update Application Not for New Design: DNH-CJS-N2Q1-1 Update Peak Pulse Current Update Operating & Storage Temperature Update Graph Update Packaging Specification Update Recommended Pb-free Soldering Profile Update Appendix	24 Dec 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, an IATF 16949 and ISO 14001 certified company, can be found under http://www.dominant-semi.com

Please contact us for more information:

DOMINANT Opto Technologies Sdn. Bhd.
Lot 6, Batu Berendam, FTZ Phase III, 75350 Melaka, Malaysia
Tel: (606) 283 3566 Fax: (606) 283 0566
E-mail: sales@dominant-semi.com