DOMINANT™
Opto Technologies
Innovating Illumination

DATA SHEET:

Mini DomiLED

AlInGaP : DLx-HJS

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-Q101.
> Passed Corrosion Resistant Test. *Appx. 4.1*

Applications:

> Automotive: interior applications, eg: switches, telematics, climate control system, dashboard, etc.
> Signage: full color display video notice board, signage, special effect lighting
> Lighting: channel light

Optical Characteristics at Tj=25˚C

Part Number	Color	Viewing Angle˚	Luminous Intensity @ IF = 20mA IV (mcd) *Appx. 1.1*		
			Min.	Typ.	Max.
● DLS-HJS-UV1-1	Super Red, 632nm	120	450.0	560.0	900.0
● DLR-HJS-U2V-1	Red, 620nm	120	560.0	715.0	1125.0
● DLA-HJS-VW1-1	Amber, 615nm	120	715.0	1125.0	1400.0
● DLO-HJS-VW1-1	Orange, 605nm	120	715.0	1125.0	1400.0
● DLY-HJS-VW1-1	Yellow, 590nm	120	715.0	1125.0	1400.0
● DLY-HJS-UV2-1	Yellow, 590nm	120	450.0	715.0	1125.0

● Not for new design.

Electrical Characteristics at Tj=25˚C

Part Number	Vf @ If = 20mA *Appx 3.1*			Vr @ Ir = 10uA *Appx. 6.1*
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DLx-HJS	1.8	2.1	2.4	12

Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	50	mA
Peak pulse current; (tp ≤ 10µs, Duty cycle = 0.005)	100	mA
Reverse voltage *Appx. 6.1*	12	V
ESD threshold (HBM)	2000	V
LED junction temperature	125	˚C
Operating temperature	-40 … +100	˚C
Storage temperature	-40 … +100	˚C
Power dissipation (at room temperature)	125	mW
Thermal resistance (Rated current = 20mA, Ts = 25 ˚C)		
- Real Thermal Resistance		
Junction / ambient, $R_{th\ JA\ real}$	440	K/W
Junction / solder point, $R_{th\ JS\ real}$	200	K/W
- Electrical Thermal Resistance		
Junction / ambient, $R_{th\ JA\ el}$	360	K/W
Junction / solder point, $R_{th\ JS\ el}$	160	K/W

Wavelength Grouping at Tj=25˚C

Color	Group	Wavelength distribution (nm) *Appx. 2.2*
DLS; Super Red	Full	625 - 640
DLR; Red	Full	620 - 630
DLA; Amber	Full	610 - 621
	W	610 - 615
	X	615 - 621
DLO; Orange	Full	600 - 612
	W	600 - 603
	X	603 - 606
	Y	606 - 609
	Z	609 - 612
DLY; Yellow	Full	585 - 594
	X	585 - 588
	Y	588 - 591
	Z	591 - 594

Luminous Intensity Group at Tj=25˚C

Brightness Group	Luminous Intensity *Appx. 1.1* 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

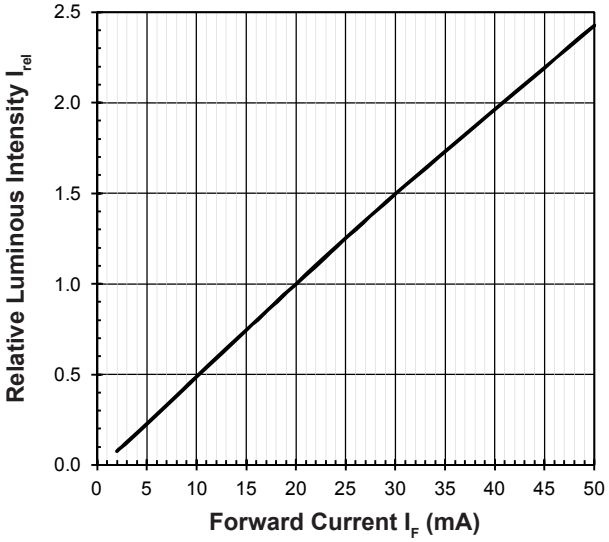
Vf Binning (Optional)

Vf Bin @ 20mA	Forward Voltage (V) *Appx. 3.1*
VA	1.80 ... 1.95
VB	1.95 ... 2.10
VC	2.10 ... 2.25
VD	2.25 ... 2.40

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

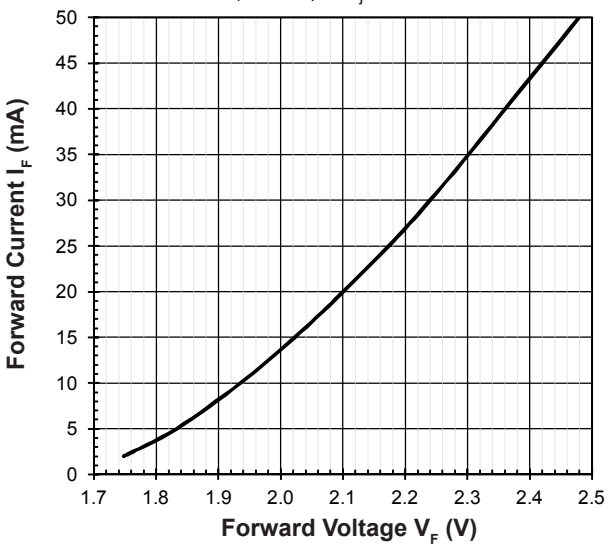
Relative Luminous Intensity Vs Forward Current

$I_V/I_V(20mA) = f(I_F)$; T_j = 25°C



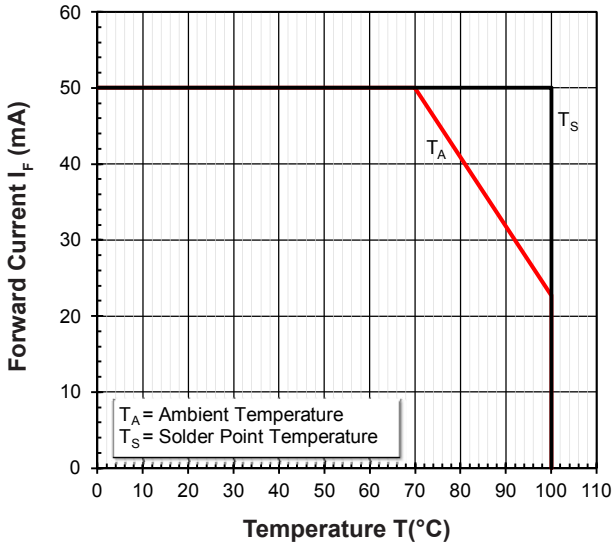
Forward Current Vs Forward Voltage

$I_F = f(V_F)$; T_j = 25°C



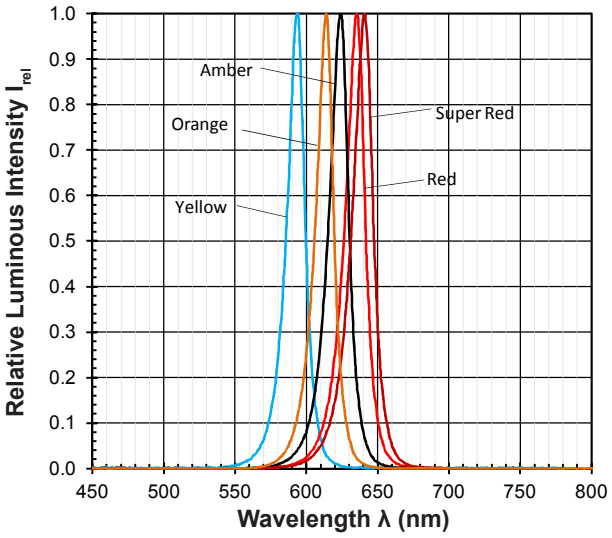
Maximum Current Vs Temperature

$I_F=f(T)$



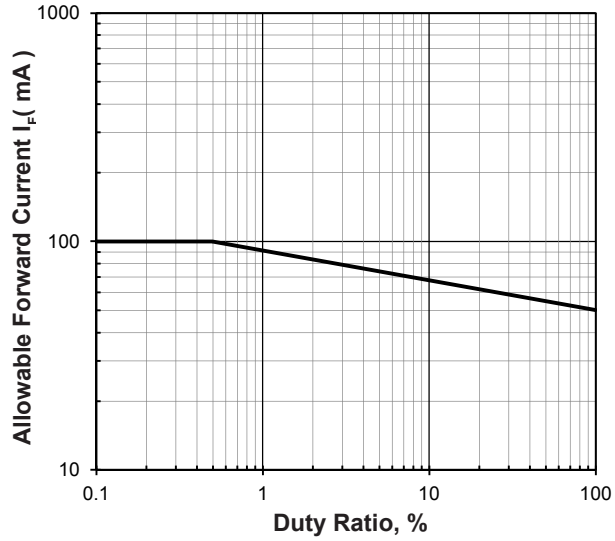
Relative Spectral Emission

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

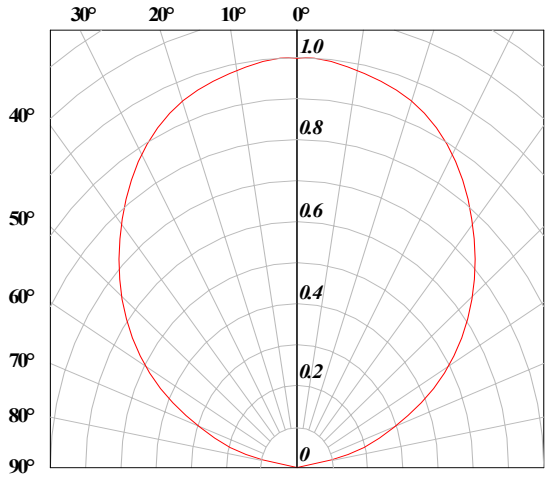


Allowable Forward Current Vs Duty Ratio

(T_j = 25°C; $t_p \leq 10\mu s$)

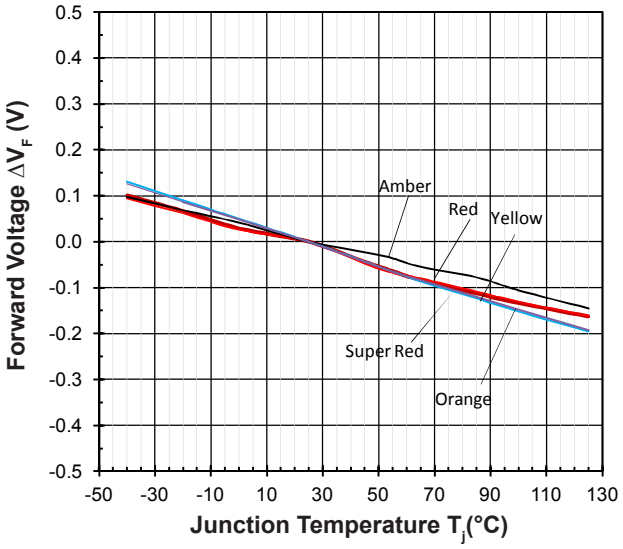


Radiation Pattern



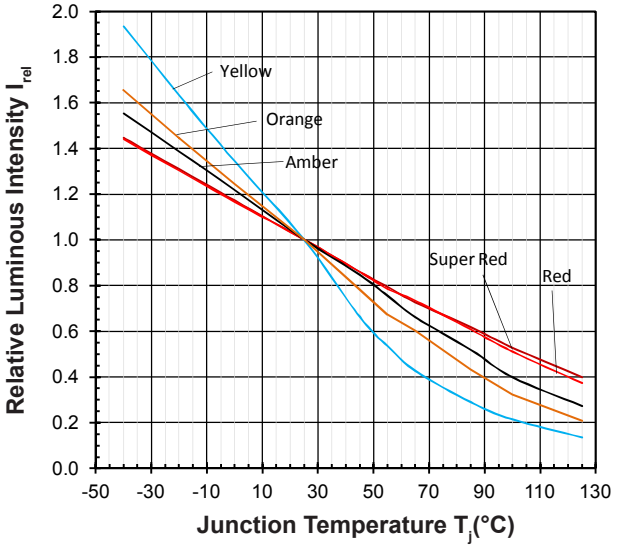
Forward Voltage Vs Junction Temperature

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



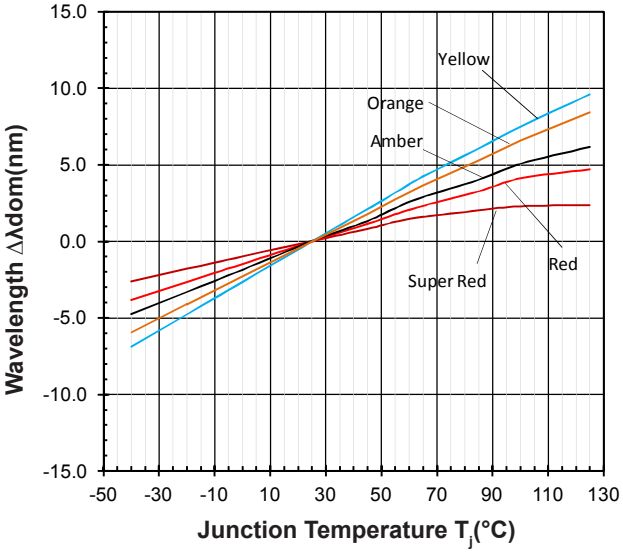
Relative Luminous Intensity Vs Junction Temperature

$I_V/I_V(25°C) = f(T_j)$; I_F = 20mA

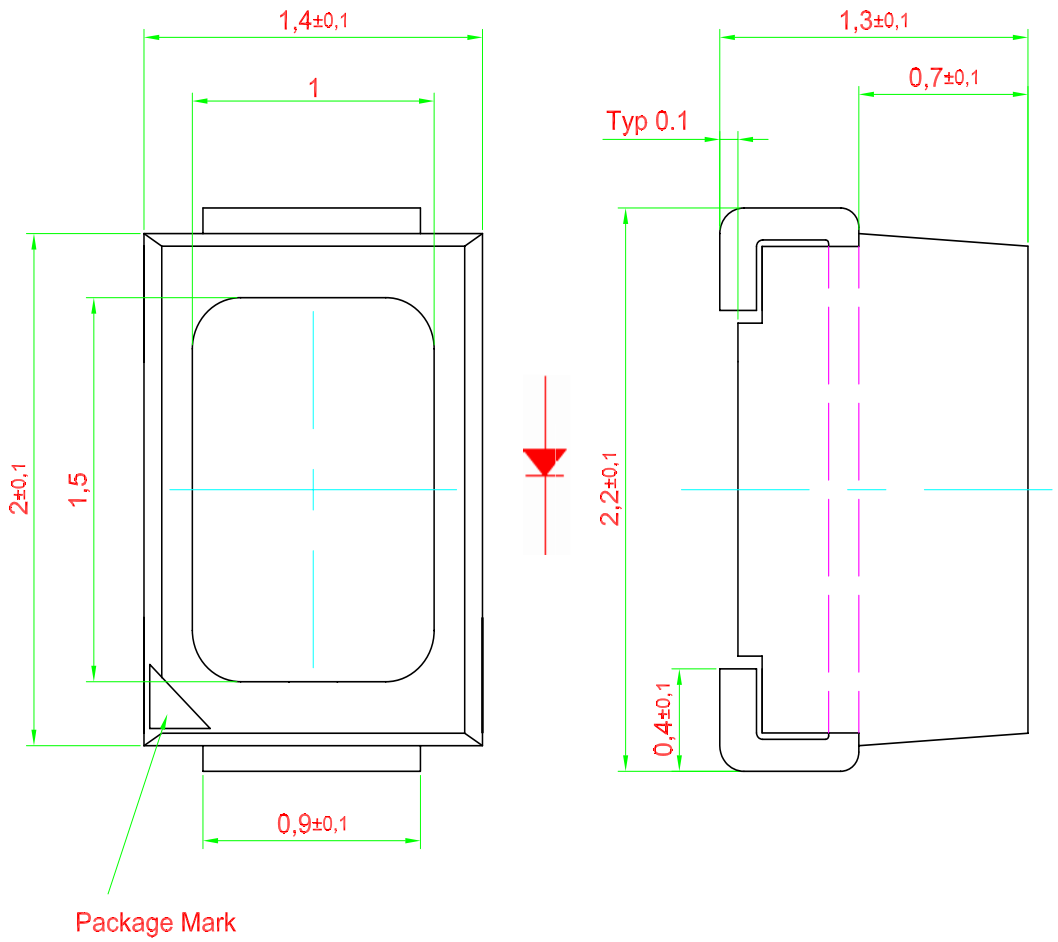


Wavelength Vs Junction Temperature

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



Mini DomiLED • AlInGaP : DLx-HJS Package Outlines

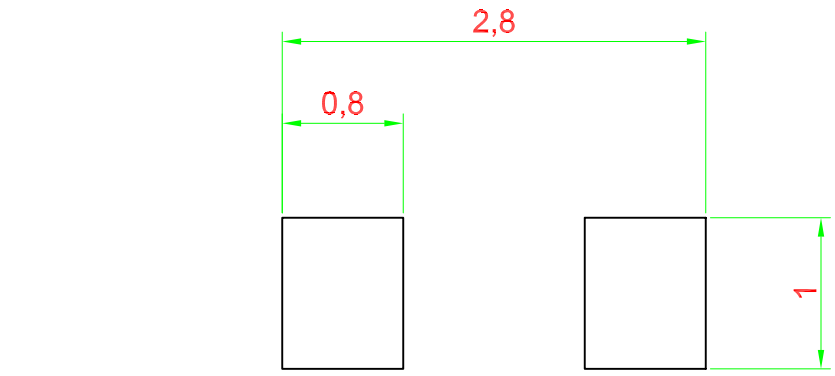


Notes: Primary thermal path is through Anode lead of LED package

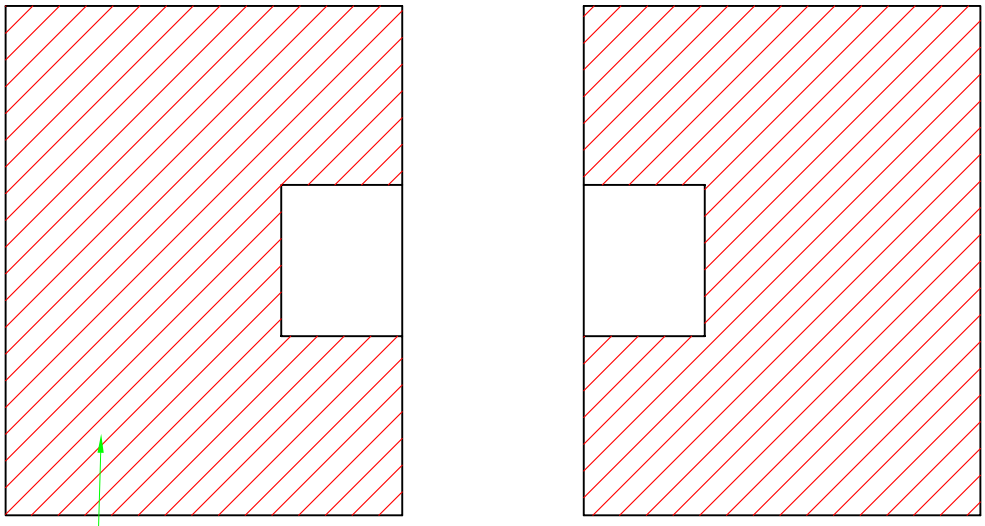
Material

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

Recommended Solder Pad



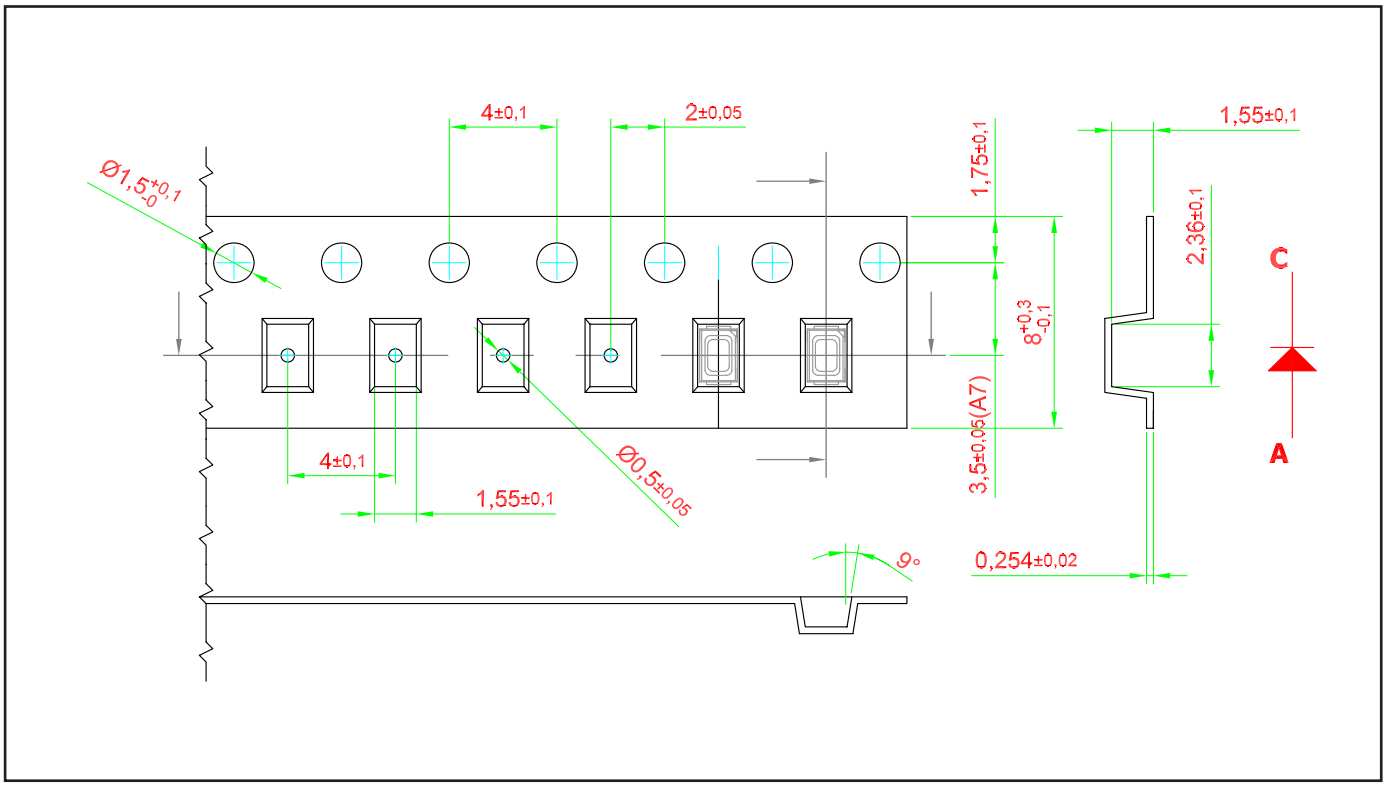
Improved Design For Better Heat Dissipation



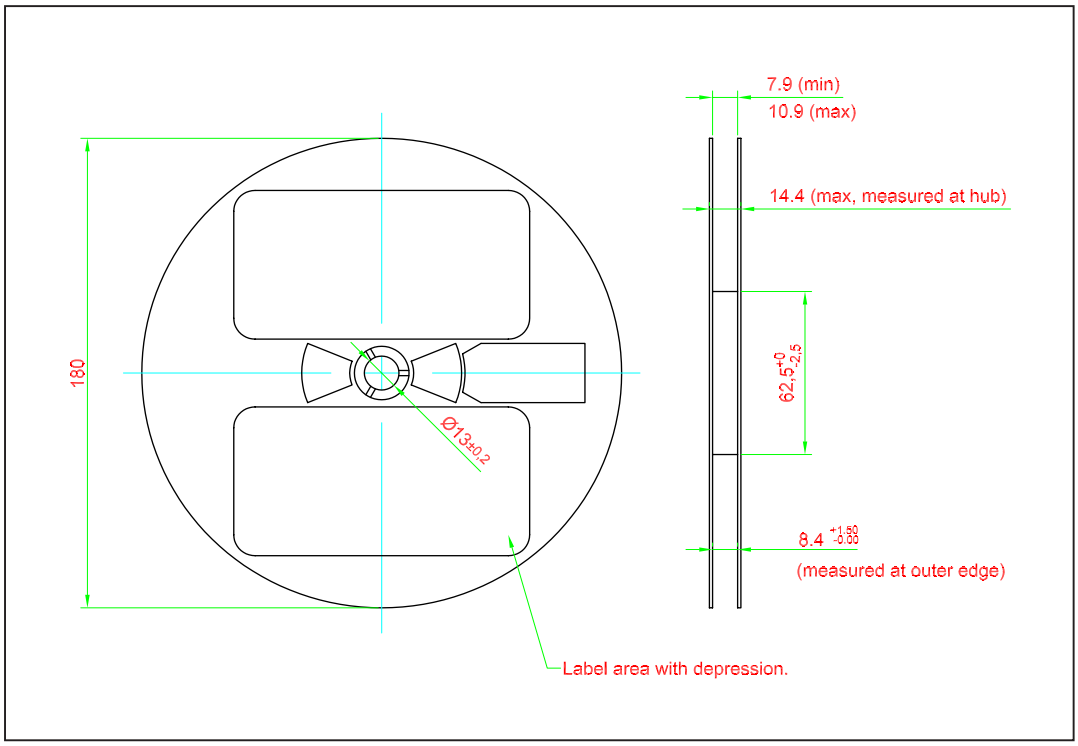
Additional Cu area for improved heat dissipation, > 16mm sq.

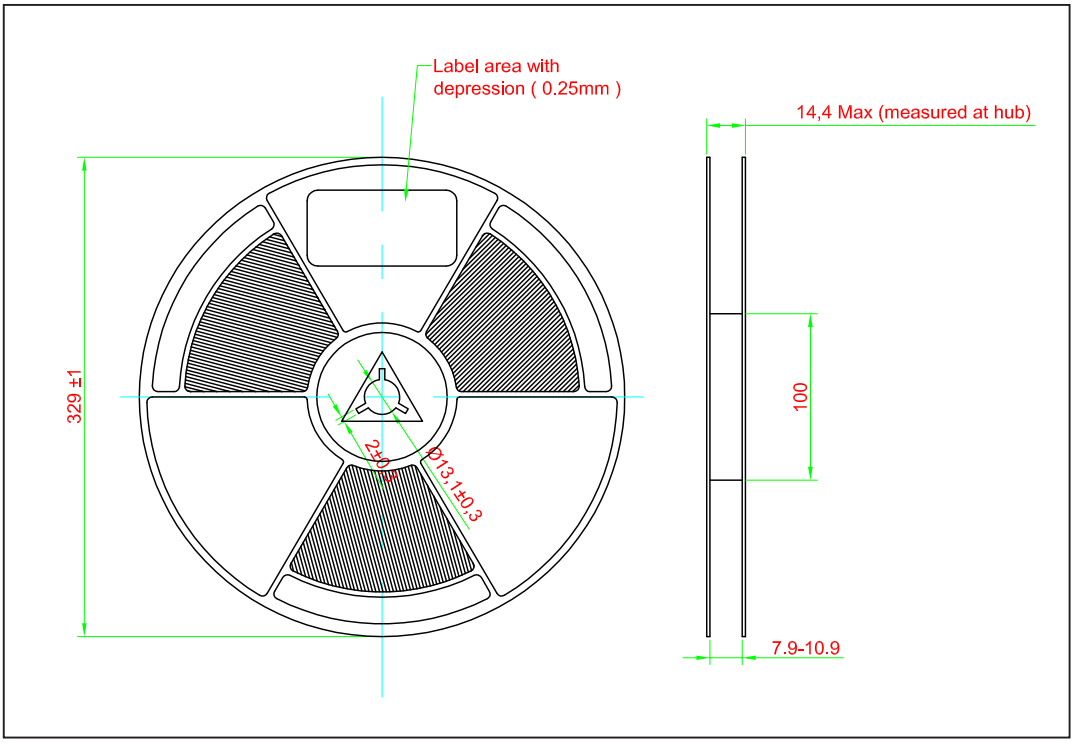
Solder resist.

Taping and orientation



Packaging Specification



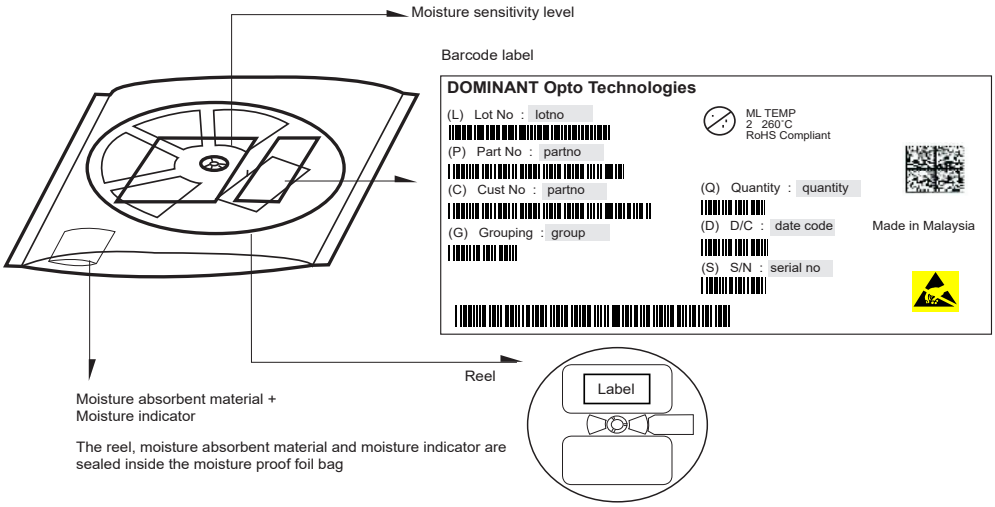


	Reel Diameter (mm)	Quantity (pcs)	*Ordering Number
Standard Packing	180	3000	DLx-HJS-xxx-x
Optional Packing	329	10000	DLx-HJS-xxx-x-J

Notes:

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

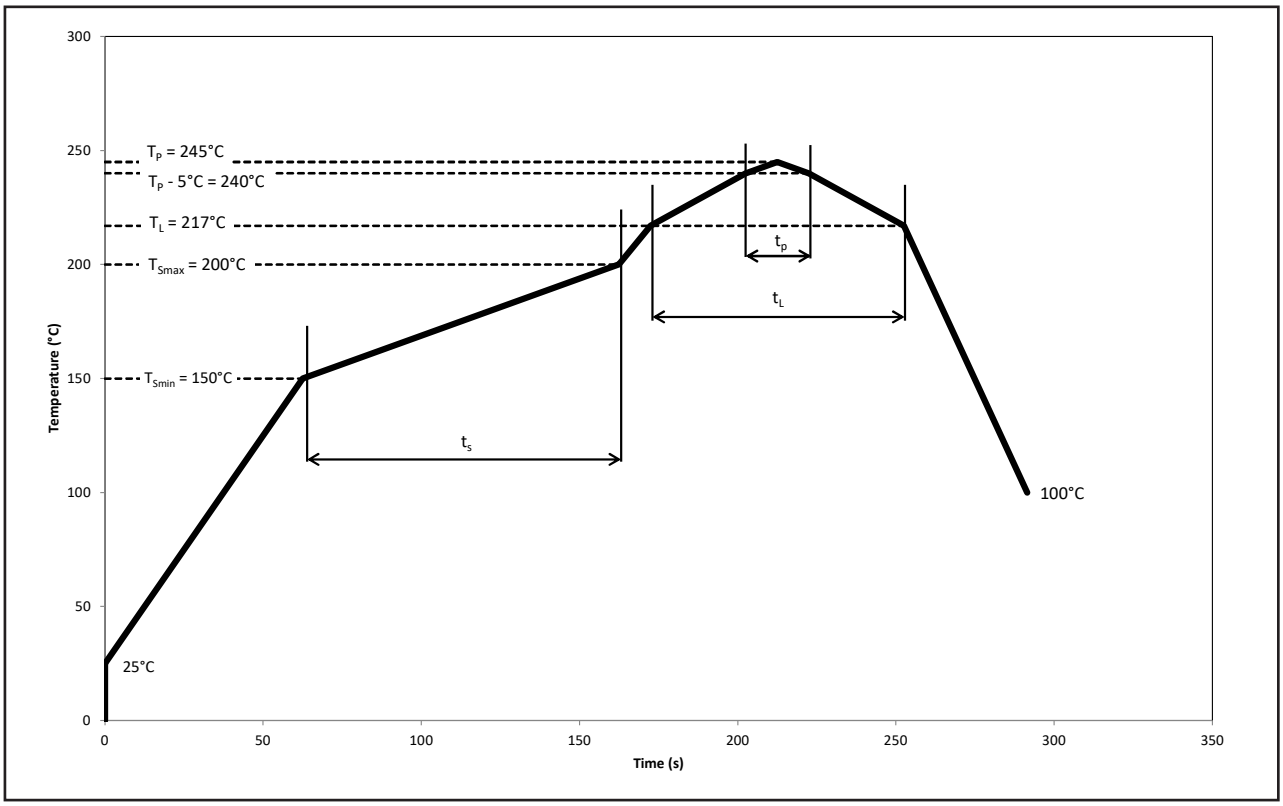
Packaging Specification



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°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
-	Initial Release	03 Nov 2016
2, 4	Update Vf Value	28 Nov 2016
2	Add New Partno: DLO-HJS-VW1-1	20 Jun 2017
1, 11, 13	Add New Partno: DLY-HJS-VW1-1 Not for New Design: DLY-HJS-UV2-1 Update Packaging Specification Update Appendix	04 Oct 2018
2, 10, 11, 12	Add Test Condition for Thermal Resistance Update Packaging Specification	02 Jul 2019
2	Not for New Design: DLS-HJS-UV1-1, DLR-HJS-U2V-1, DLA-HJS-VW1-1, DLO-HJS-VW1-1, DLY-HJS-VW1-1	06 Aug 2020
11, 12	Update Packaging Specification Update Recommended Pb-free Soldering Profile	05 Feb 2024

NOTE

All the information contained in this document is considered to be reliable at the time of publishing. However, DOMINANT Opto Technologies does not assume any liability arising out of the application or use of any product described herein.

DOMINANT Opto Technologies reserves the right to make changes to any products in order to improve reliability, function or design.

DOMINANT Opto Technologies products are not authorized for use as critical components in life support devices or systems without the express written approval from the Managing Director of DOMINANT Opto Technologies.

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.

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