

DomiLED

Synonymous with function and performance, the 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.
- > Designed for sideway illumination.
- > 120° viewing angle.
- > Small package outline.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.
- > Qualified based on AEC-Q101 Standard.
- > Passed Corrosion Resistant Test. Appx. 6.1



Applications:

- > Automotive: interior applications, eg: switches, telematics, climate control system, dashboard, etc.
- > Consumer Appliances: LCD illumination as in PDAs, LCD TV.
- > Display: full color display video notice board.
- > Industry: white goods (eg: Oven, microwave, etc.).



Optical Characteristics at T_j=25°C

Part Number	Color	Viewing Angle°	Luminous Intensity @ 20mA IV (mcd) <small>Appx. 1.1</small>		
			Min.	Typ.	Max.
● DSW-LSG-V2W-1	White	120	900.0	1400.0	1800.0
● DSW-LSG-WX1-1	White	120	1125.0	1800.0	2240.0
● DSW-LSG-WX1-JKPL	White	120	1125.0	1800.0	2240.0

● Not for new design

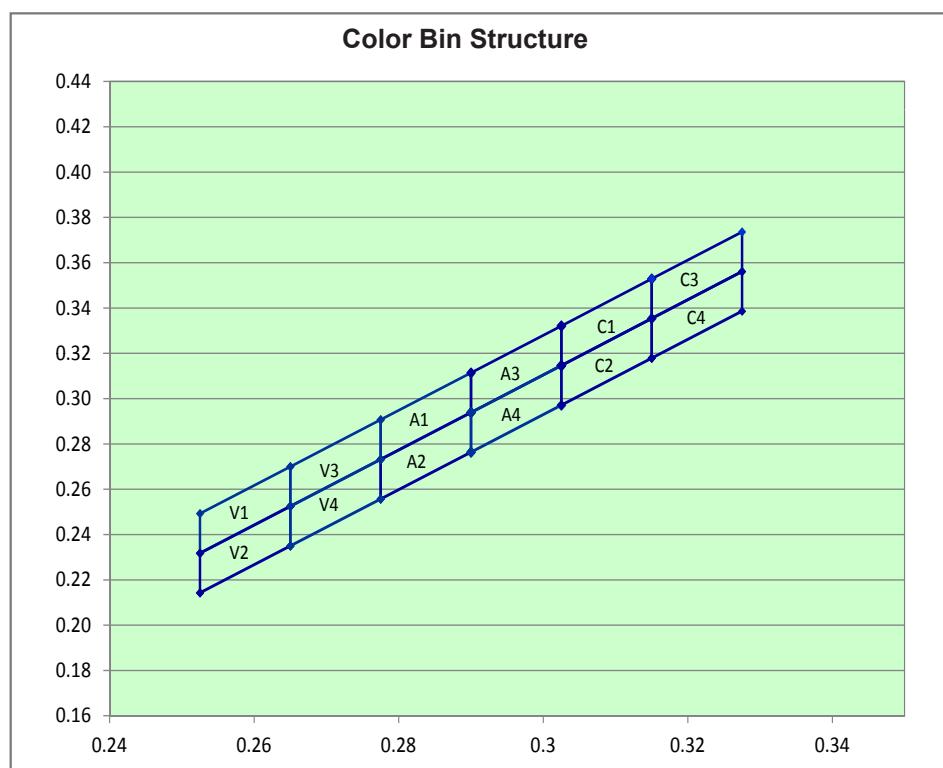
Part Number	V _f @ I _f = 20mA <small>Appx. 3.1</small>			V _r @ I _r = 10uA <small>Appx. 6.1</small>
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DSW-LSG	2.8	3.2	3.6	5.0

Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	20	mA
Peak pulse current; (tp ≤ 10μs, Duty cycle = 0.005)	100	mA
Reverse voltage; I _r (max) = 10uA <small>Appx. 6.1</small>	5	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)	80	mW
Thermal resistance (Rated current = 20mA, Ts = 25 °C)		
- Junction / ambient, R _{th} JA	460	K/W
- Junction / solder point, R _{th} JS	240	K/W
(Mounting on FR4 PCB, pad size >= 5 mm ² per pad)		

Color Grouping Appx. 2.1

For this color bin selection, part number will be DSW-LSG-xxxx-1 (**Not Offer For New Design**)

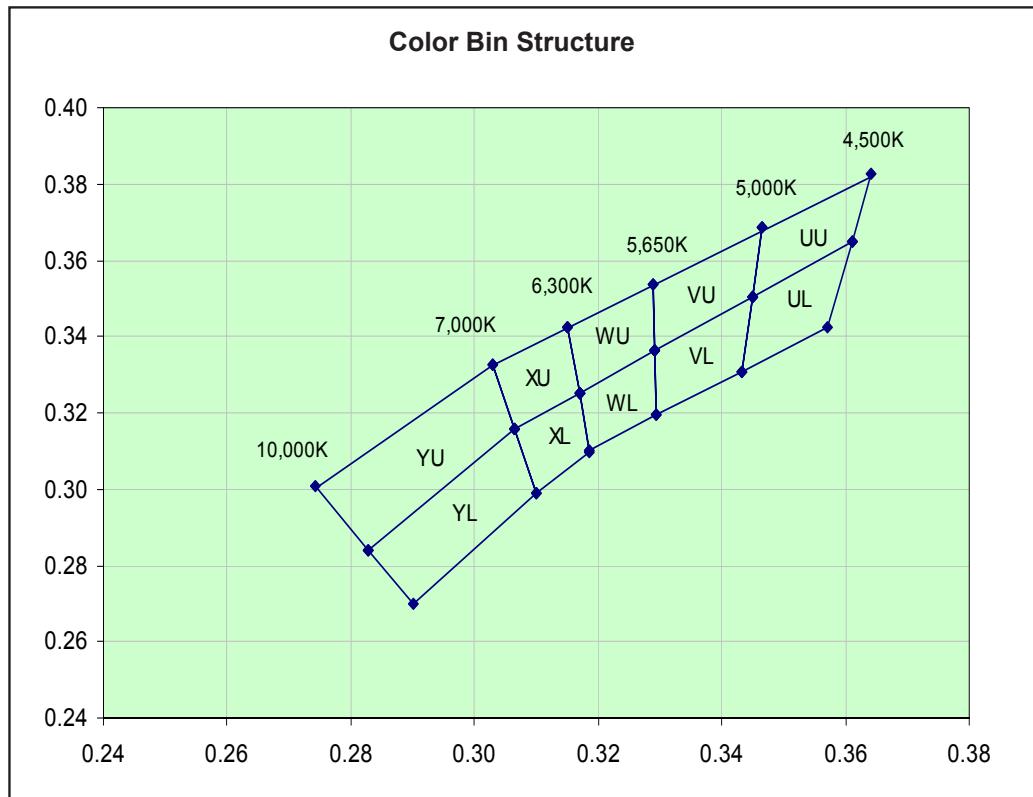


Bin	1	2	3	4
V1	Cx 0.2525	0.2650	0.2650	0.2525
	Cy 0.2318	0.2525	0.2700	0.2493
V2	Cx 0.2525	0.2650	0.2650	0.2525
	Cy 0.2143	0.2350	0.2525	0.2318
V3	Cx 0.2650	0.2775	0.2775	0.2650
	Cy 0.2525	0.2732	0.2907	0.2700
V4	Cx 0.2650	0.2775	0.2775	0.2650
	Cy 0.2350	0.2557	0.2732	0.2525
A1	Cx 0.2775	0.2900	0.2900	0.2775
	Cy 0.2732	0.2939	0.3114	0.2907
A2	Cx 0.2775	0.2900	0.2900	0.2775
	Cy 0.2557	0.2764	0.2939	0.2732
A3	Cx 0.2900	0.3025	0.3025	0.2900
	Cy 0.2939	0.3146	0.3321	0.3114
A4	Cx 0.2900	0.3025	0.3025	0.2900
	Cy 0.2764	0.2971	0.3146	0.2939
C1	Cx 0.3025	0.3150	0.3150	0.3025
	Cy 0.3146	0.3354	0.3529	0.3321
C2	Cx 0.3025	0.3150	0.3150	0.3025
	Cy 0.2971	0.3179	0.3354	0.3146
C3	Cx 0.3150	0.3275	0.3275	0.3150
	Cy 0.3354	0.3561	0.3736	0.3529
C4	Cx 0.3150	0.3275	0.3275	0.3150
	Cy 0.3179	0.3386	0.3561	0.3354

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 purposes.

Color Grouping Appx. 2.1

For this color bin selection, part number will be DSW-LSG-xxxx-1 (**Not Offer For New Design**)

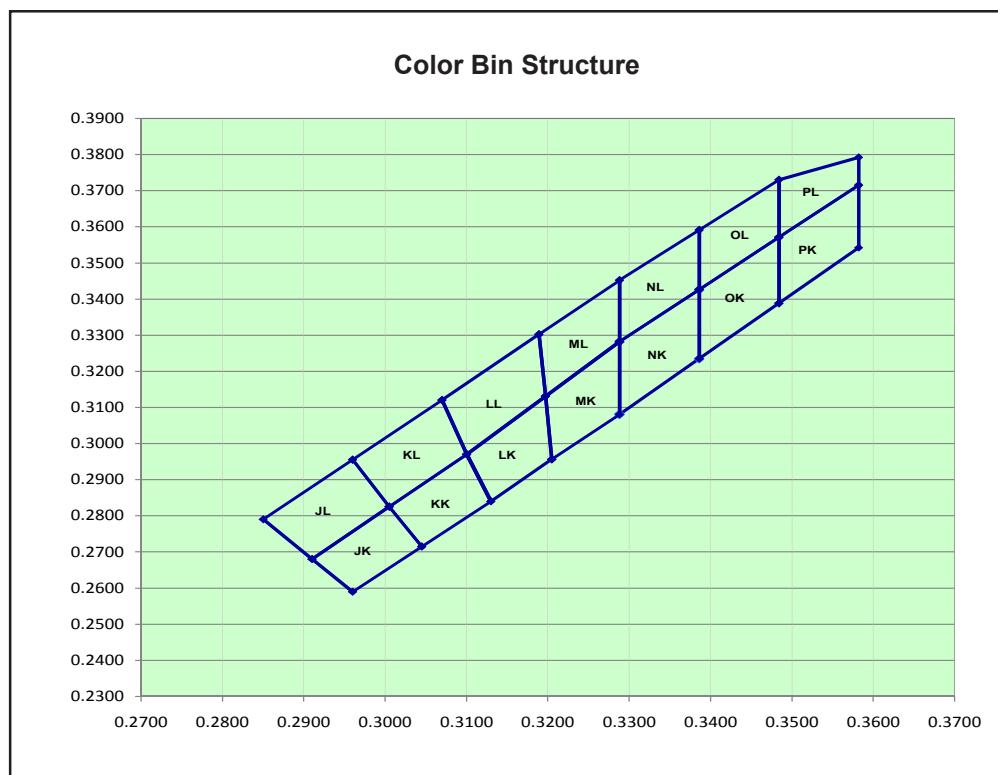


Bin		1	2	3	4
YU	Cx	0.274	0.283	0.307	0.303
	Cy	0.301	0.284	0.316	0.333
YL	Cx	0.283	0.290	0.310	0.307
	Cy	0.284	0.270	0.299	0.316
XU	Cx	0.303	0.307	0.317	0.315
	Cy	0.333	0.316	0.325	0.343
XL	Cx	0.307	0.310	0.319	0.317
	Cy	0.316	0.299	0.310	0.325
WU	Cx	0.315	0.317	0.329	0.329
	Cy	0.343	0.325	0.336	0.354
WL	Cx	0.317	0.319	0.329	0.329
	Cy	0.325	0.310	0.319	0.336
VU	Cx	0.329	0.329	0.345	0.347
	Cy	0.354	0.336	0.350	0.368
VL	Cx	0.329	0.329	0.343	0.345
	Cy	0.336	0.319	0.331	0.350
UU	Cx	0.347	0.345	0.361	0.364
	Cy	0.368	0.350	0.365	0.383
UL	Cx	0.345	0.343	0.357	0.361
	Cy	0.350	0.331	0.343	0.365

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Color Grouping Appx. 2.1

For this color bin selection, part number will be DSW-LSG-xxxx-JKPL (**Not Offer For New Design**)



Bin		1	2	3	4
JK	Cx	0.2960	0.2910	0.3005	0.3045
	Cy	0.2590	0.2680	0.2825	0.2715
JL	Cx	0.291	0.2850	0.2960	0.3005
	Cy	0.2680	0.2790	0.2955	0.2825
KK	Cx	0.3045	0.3005	0.3100	0.3130
	Cy	0.2715	0.2825	0.2970	0.2840
KL	Cx	0.3005	0.2960	0.3070	0.3100
	Cy	0.2825	0.2955	0.3120	0.2970
NK	Cx	0.3288	0.3288	0.3386	0.3386
	Cy	0.3081	0.3282	0.3426	0.3235
NL	Cx	0.3288	0.3288	0.3386	0.3386
	Cy	0.3282	0.3453	0.3591	0.3426
OK	Cx	0.3386	0.3386	0.3484	0.3484
	Cy	0.3235	0.3426	0.3571	0.3388
OL	Cx	0.3386	0.3386	0.3484	0.3484
	Cy	0.3426	0.3591	0.3730	0.3571
LK	Cx	0.3100	0.3197	0.3205	0.3130
	Cy	0.2970	0.3131	0.2956	0.2840
LL	Cx	0.3070	0.3189	0.3197	0.3100
	Cy	0.3120	0.3302	0.3131	0.2970

Bin		1	2	3	4
MK	Cx	0.3197	0.3288	0.3288	0.3205
	Cy	0.3131	0.3282	0.3081	0.2956
ML	Cx	0.3189	0.3288	0.3288	0.3197
	Cy	0.3302	0.3452	0.3282	0.3131
PK	Cx	0.3484	0.3484	0.3582	0.3582
	Cy	0.3388	0.3571	0.3715	0.3542
PL	Cx	0.3484	0.3484	0.3582	0.3582
	Cy	0.3571	0.3730	0.3792	0.3715

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 purposes.

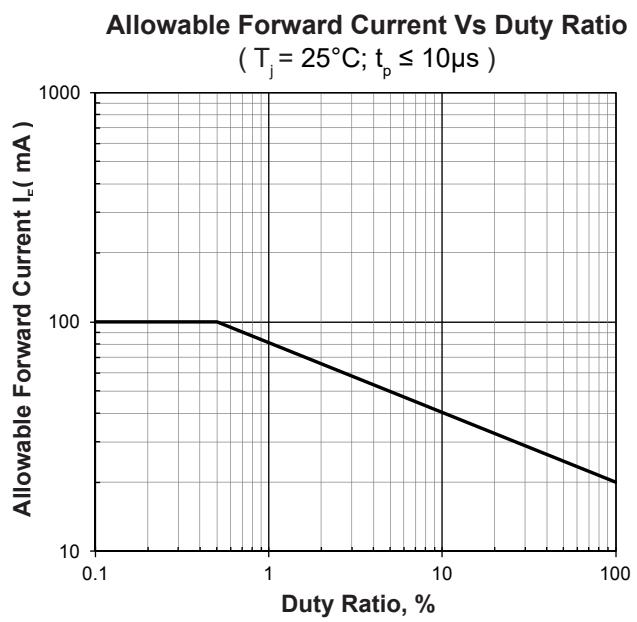
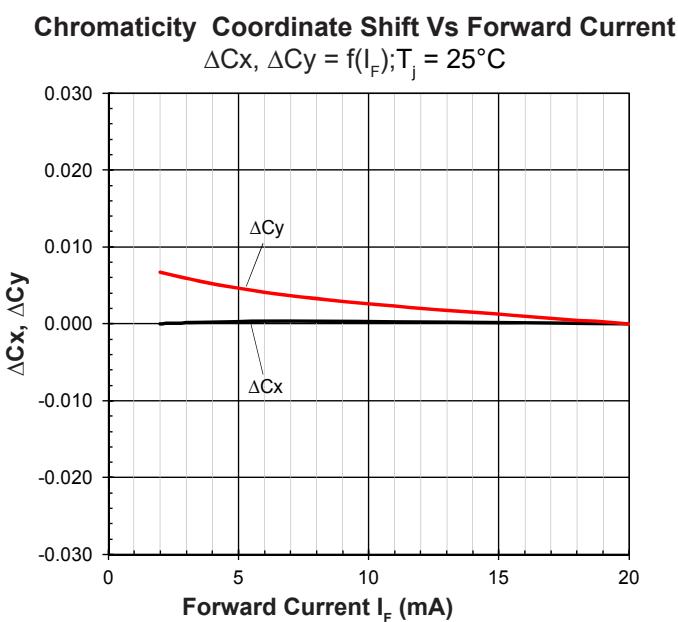
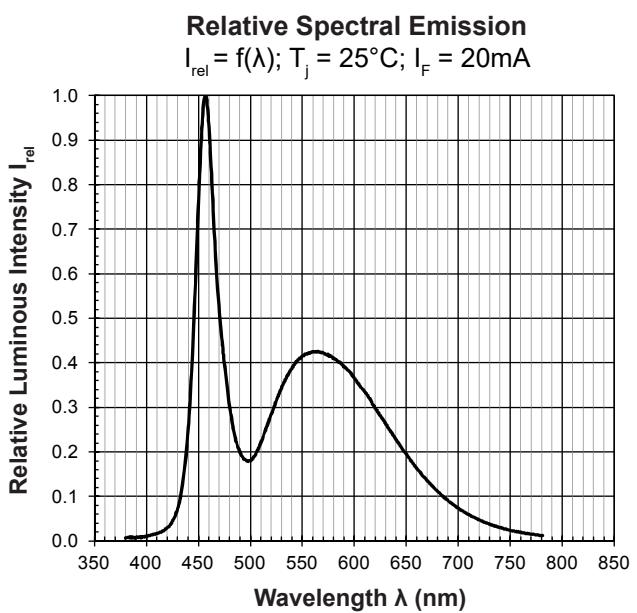
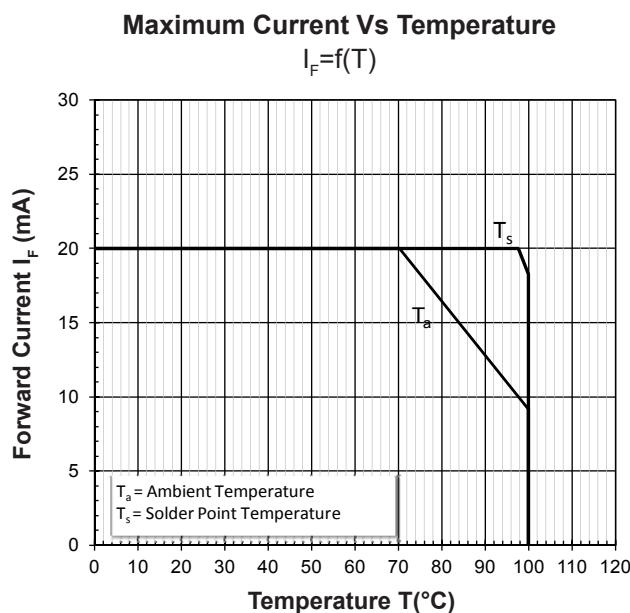
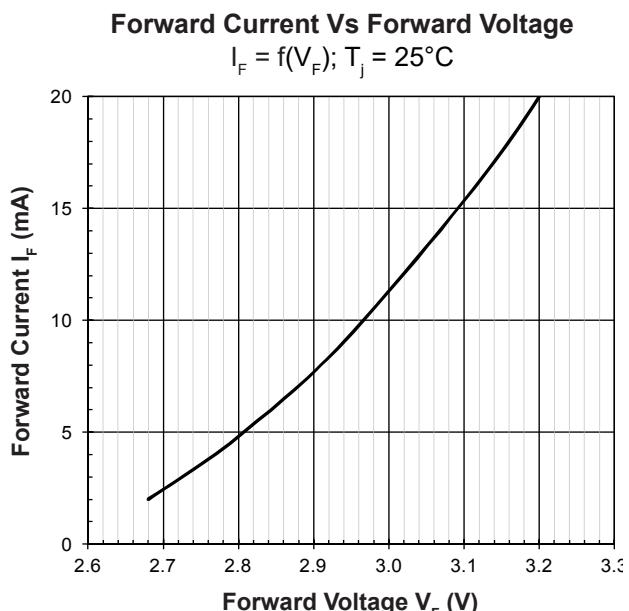
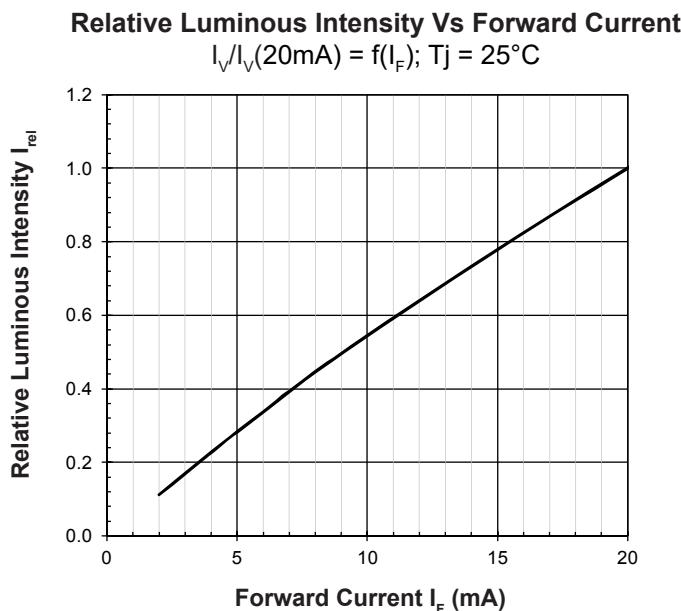
Luminous Intensity Group at Tj=25°C

Brightness Group	Luminous Intensity ^{Appx. 1.1} IV (mcd)
V2	900.0 ... 1125.0
W1	1125.0 ... 1400.0
W2	1400.0 ... 1800.0
X1	1800.0 ... 2240.0

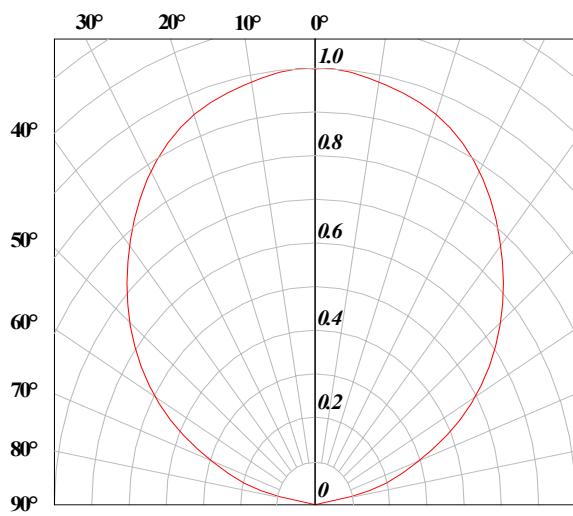
Vf Binning (Optional)

Vf Bin @ 20mA	Forward Voltage (V) ^{Appx. 3.1}
V1	2.75 ... 3.05
V2	3.05 ... 3.35
V3	3.35 ... 3.65

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

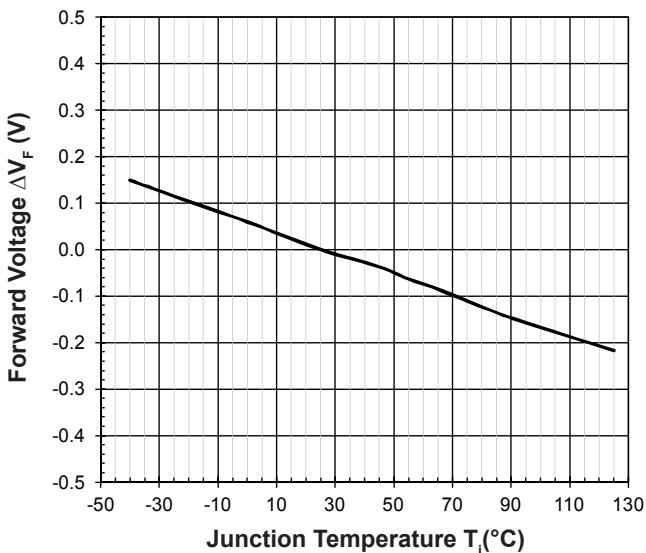


Radiation Pattern



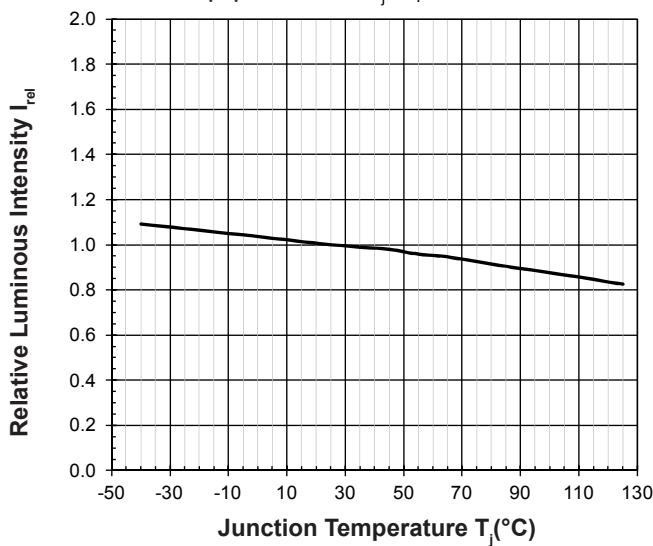
Forward Voltage Vs Junction Temperature

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



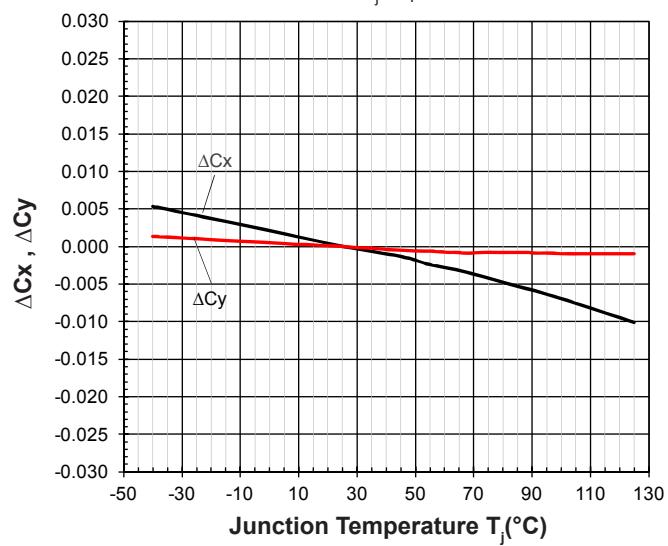
Relative Luminous Intensity Vs Junction Temperature

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

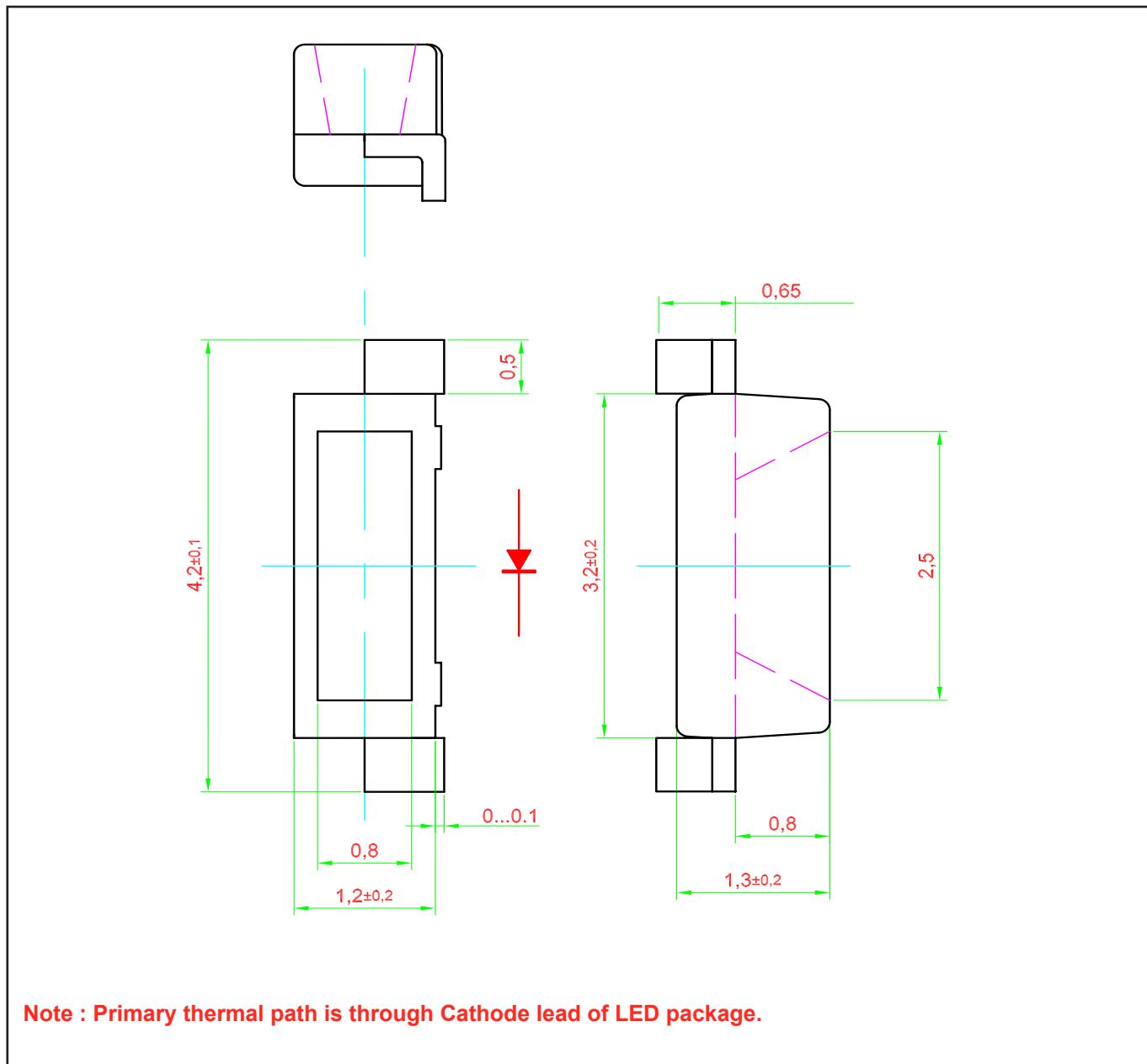


Chromaticity Coordinate Shift Vs Junction Temperature

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



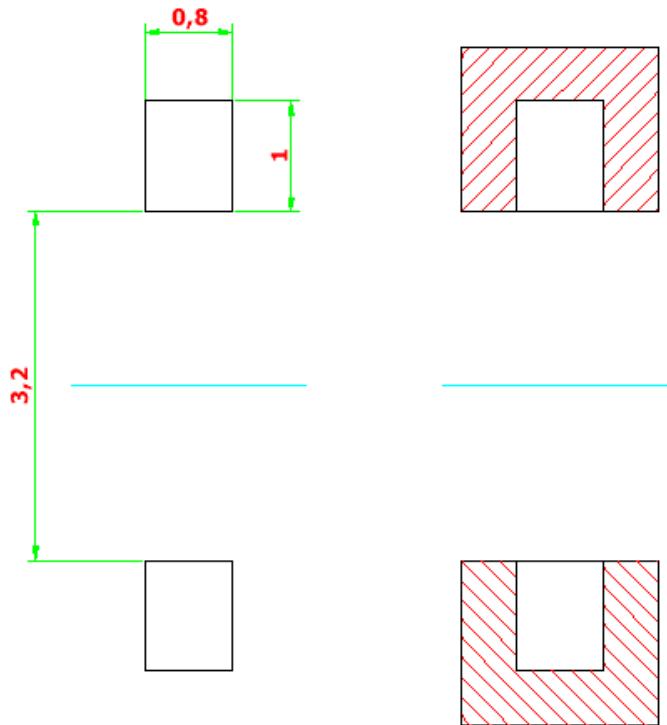
Right Angle DomiLED • InGaN : DSW-LSG Package Outlines



Material

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

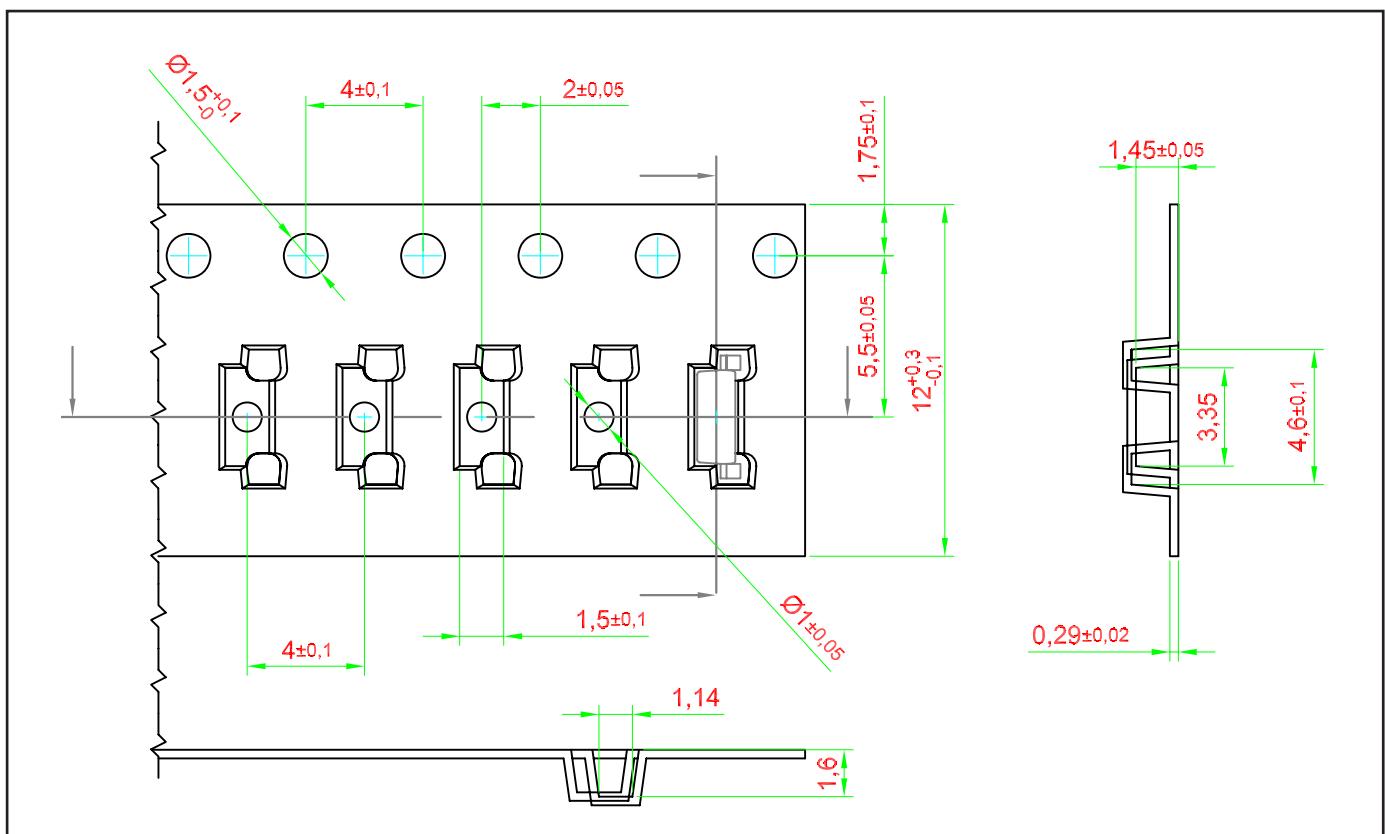
Recommended Solder Pad



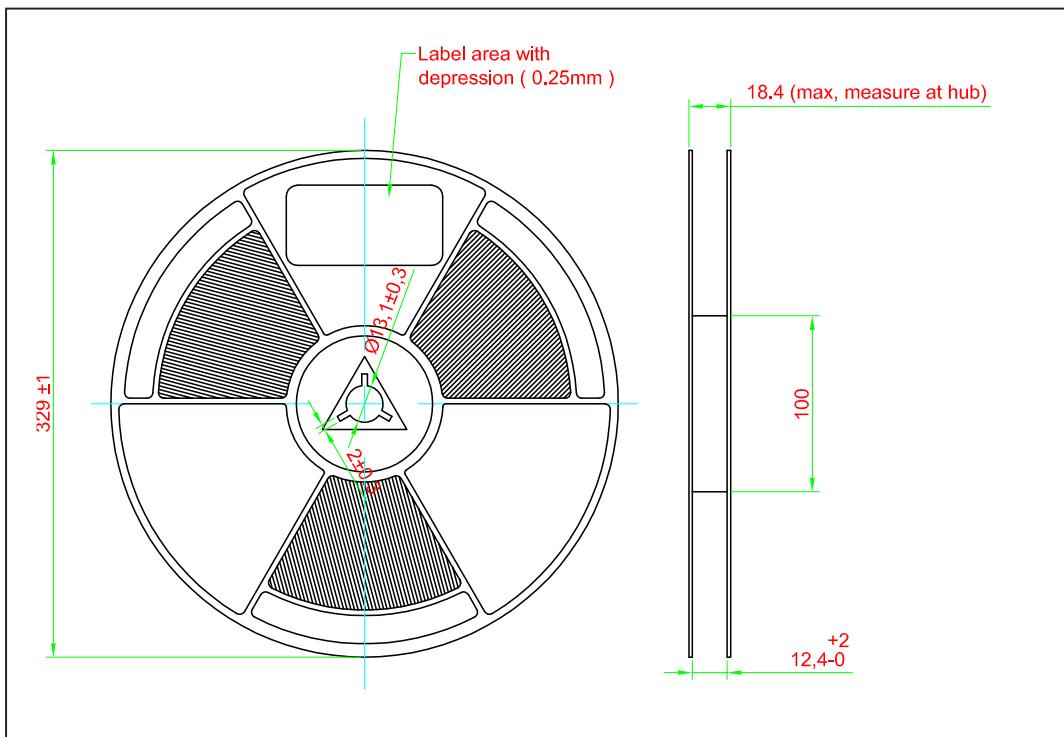
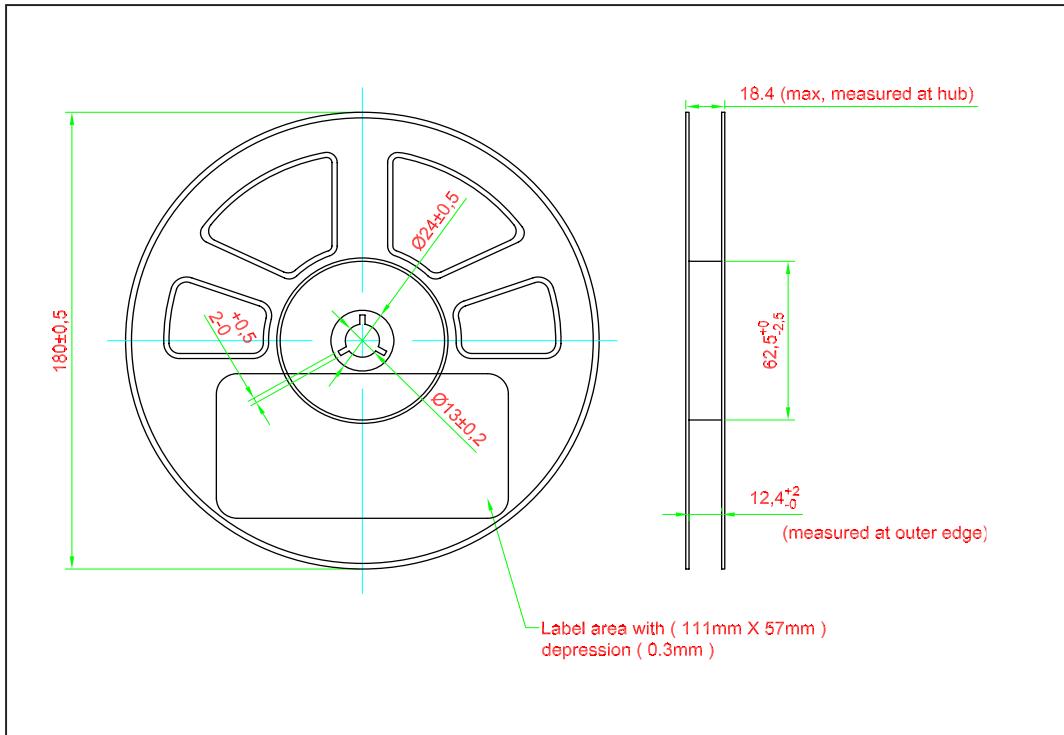
**Pad design for better
heat dissipation.**

 **Solder resist.**

Taping and orientation



Packaging Specification

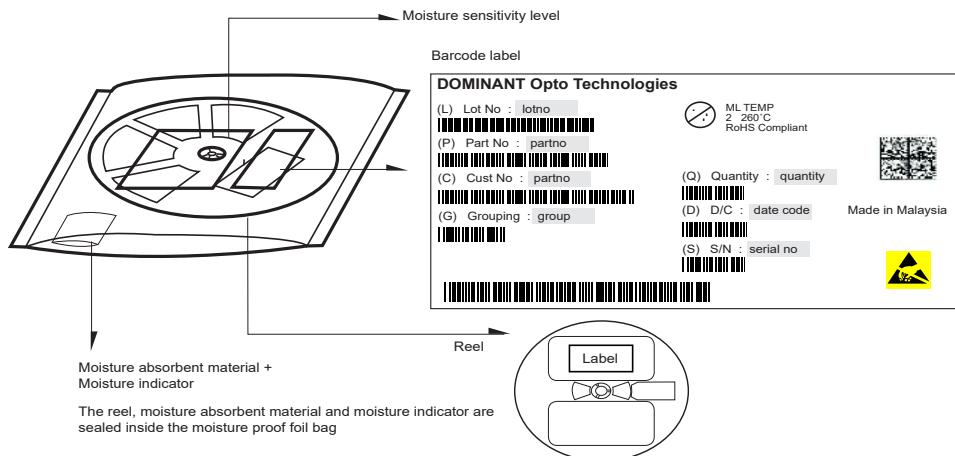


	Reel Diameter (mm)	Quantity (pcs)	*Ordering Number
Standard Packing	180	2500	DSW-LSG-xxx-x
Optional Packing	329	9000	DSW-LSG-xxx-x-9

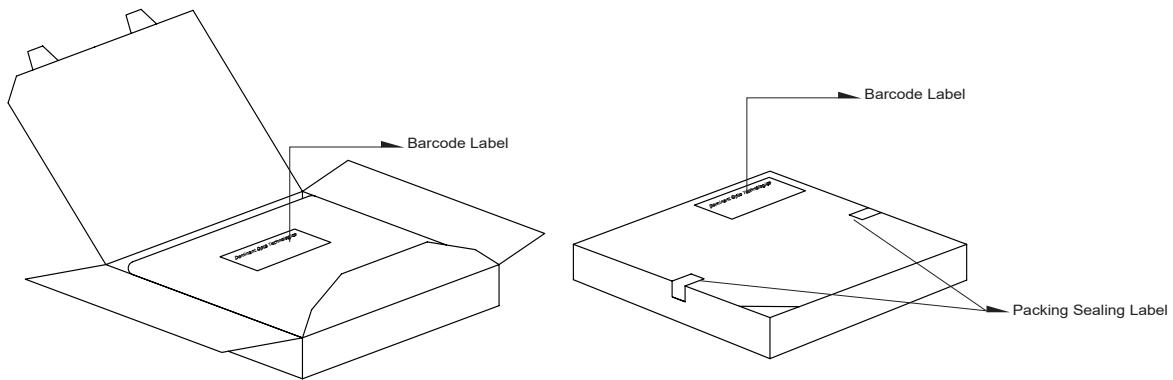
Notes:

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

Packaging Specification



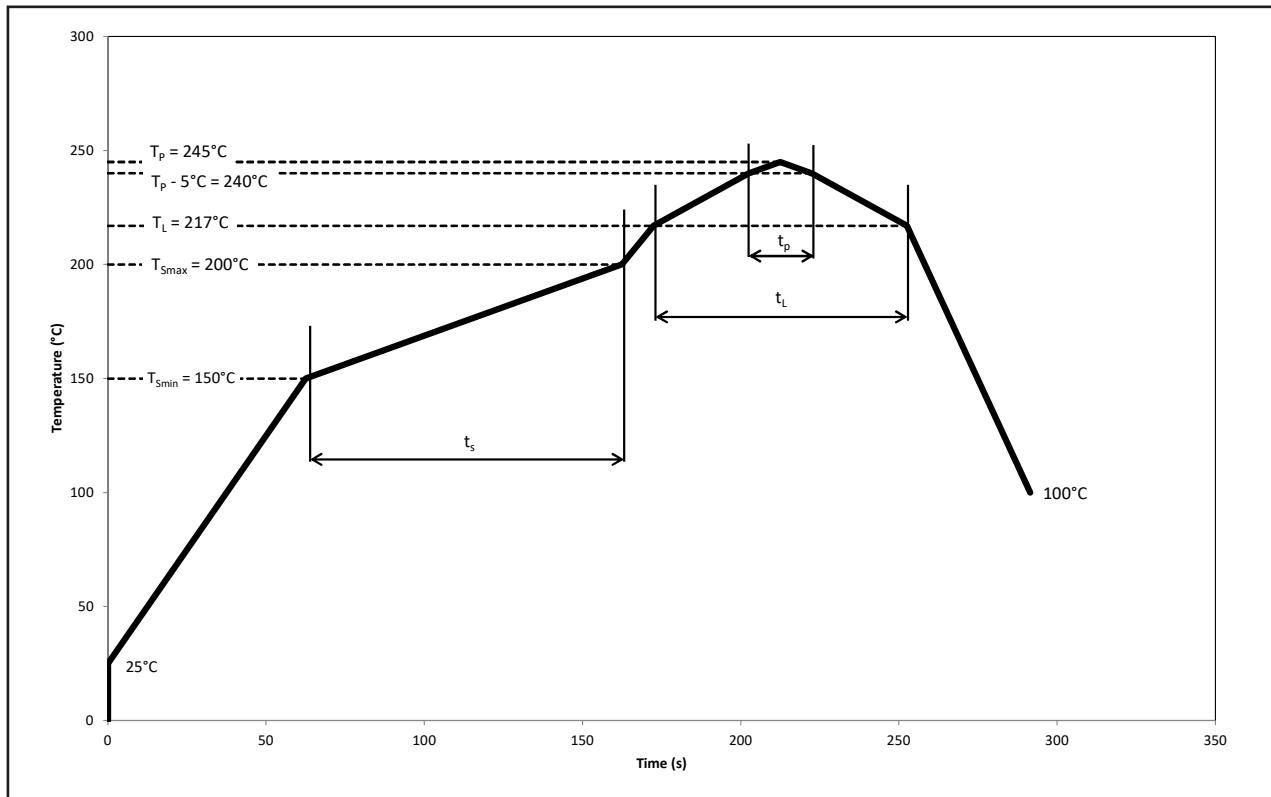
Quantity per bag (pcs)	Average 1pc Right Angle DomiLED (gram)	1 completed bag (gram)
2500	0.010	240 ± 10
9000	0.010	520 ± 10



Reel Diameter (mm)	Packing Box Dimensions (mm)
180	210 x 210 x 20
329	345 x 345 x 20

Recommended Pb-free Soldering Profile

Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



Pb-Free Assembly					
Profile Feature	Symbol	Min.	Recommended	Max.	Unit
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

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 ± 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 $\pm 0.5\text{nm}$ 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, Vf 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 ± 0.1 and dimension are specifiec in mm.

6) Corrosion Robustness:

- 6.1 Test conditions: $40^\circ\text{C} / 90\% \text{rh} / 15 \text{ ppm H}_2\text{S} / 336 \text{ h}$.
= Stricter than IEC 60068-2-43 (H_2S) [$25^\circ\text{C} / 75\% \text{rh} / 10 \text{ ppm H}_2\text{S} / 21 \text{ days}$].

7) Reverse Voltage:

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

Revision History

Page	Subjects	Date of Modification
7	Add Vf Binning	11 Nov 2014
4	Update Features Not For New Design for Color Bin Structure	14 Apr 2015
8	Add Graph: Chromaticity Vs Forward Current	01 Jun 2015
1, 9, 11, 13	Add Features Add Notes in Package Outline Update Carrier Tape Update Packaging Specification	10 Mar 2016
1, 10, 16	Update Features Update Package Outline Add Appendix	29 Aug 2016
1, 8, 9, 16	Update Features Update Graph Update Appendix	28 Sep 2016
1	Update Product Photo	10 Feb 2017
1, 2, 14, 16	Update Product Photo Add Thermal Resistance Test Condition Update Packaging Specification Update Appendix	07 Mar 2019
2	Not for New Design: DSW-LSG-WX1-1, DSW-LSG-WX1-JKPL	11 Aug 2020
13, 14, 15	Update Packaging Specification Update Recommended Pb-free Soldering Profile	06 Jul 2022

NOTE

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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>.

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