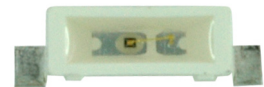


DomiLED

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 sideways illumination.
- > 120° viewing angle.
- > Small package outline.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.
- > Compliance to automotive standard; AEC-Q101.
- > Superior corrosion resistant.



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 Tj=25°C

Part Number	Color	Viewing Angle°	Luminous Intensity @ IF = 20mA		IV (mcd) <i>Appx. 1.1</i>
			Min.	Typ.	
● DSS-SSS-PQ2-1	Super red, 632nm	120	45.0	71.5	112.5
● DSS-CSS-PQ2-1	Super red, 632nm	120	45.0	71.5	112.5
● DSR-CSS-PQ2-1	Red, 625nm	120	45.0	71.5	112.5
● DSR-CSS-QR2-1	Red, 625nm	120	71.5	112.5	180.0
● DSR-CSS-RS2-1	Red, 625nm	120	112.5	180.0	285.0
● DSR-CSS-ST2-1	Red, 625nm	120	180.0	285.0	450.0
● DSR-SSS-QR2-1	Red, 625nm	120	71.5	112.5	180.0
● DSR-TSS-ST2-1	Red, 625nm	120	180.0	285.0	450.0
● DSA-CSS-QR2-1	Amber, 615nm	120	71.5	112.5	180.0
● DSA-SSS-RS2-1	Amber, 615nm	120	112.5	180.0	285.0
● DSA-CSS-RS2-1	Amber, 615nm	120	112.5	180.0	285.0
● DSO-CSS-QR2-1	Orange, 605nm	120	71.5	112.5	180.0
● DSO-SSS-RS2-1	Orange, 605nm	120	112.5	180.0	285.0
● DSO-CSS-RS2-1	Orange, 605nm	120	112.5	180.0	285.0
● DSY-CSS-QR2-1	Yellow, 587nm	120	71.5	112.5	180.0
● DSY-CSS-RS2-1	Yellow, 587nm	120	112.5	180.0	285.0
● DSY-SSS-RS2-1	Yellow, 587nm	120	112.5	180.0	285.0
● DSG-SSS-PQ2-1	Green, 570nm	120	45.0	71.5	112.5
● DSG-CSS-PQ2-1	Green, 570nm	120	45.0	71.5	112.5
● DSG-CSS-QR2-1	Green, 570nm	120	71.5	112.5	180.0
● DSP-SSS-LM2-1	Pure Green, 560nm	120	11.2	18.0	28.5
● Not for new design					

Electrical Characteristics at Tj=25°C

Part Number	Vf @ If = 20mA <i>Appx. 3.1</i>			Vr @ Ir = 10uA
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DSR-CSS, DSA-CSS, DSS-CSS, DSG-CSS DSO-CSS, DSY-CSS	1.6	1.9	2.3	12
DSS-SSS, DSR-SSS, DSA-SSS, DSO-SSS, DSY-SSS, DSG-SSS, DSP-SSS	1.6	1.8	2.3	12
DSR-TSS	1.6	2.1	2.6	12

Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	20	mA
Peak pulse current; (tp ≤ 10µs, Duty cycle = 0.005)	200	mA
Reverse voltage <i>Appx. 6.1</i>	12	V
ESD threshold (HBM)	2	kV
LED junction temperature	125	°C
Operating temperature	-40 ... +100	°C
Storage temperature	-40 ... +100	°C
Power dissipation (at room temperature)	50	mW
Thermal resistance (Rated current = 20mA, Ts = 25 °C)		
- Junction / ambient, Rth JA	630	K/W
- Junction / solder point, Rth JS	350	K/W
(Mounting on FR4 PCB, pad size ≥ 5 mm ² per pad)		

Characteristics

	Symbol	Part Number	Value	Unit
Temperature coefficient of λ_{dom} (typ) $I_F = 20\text{mA}; 0\text{ }^{\circ}\text{C} \leq T \leq 100\text{ }^{\circ}\text{C}$	$TC_{\lambda_{\text{dom}}}$ (typ)	DSS-CSS	0.01	nm / K
		DSR-CSS	0.03	
		DSA-CSS	0.05	
		DSO-CSS	0.04	
		DSY-CSS	0.09	
		DSG-CSS	0.10	
		DSR-TSS	0.02	
		DSP-SSS	0.10	
Temperature coefficient of V_F (typ) $I_F = 20\text{mA}; 0\text{ }^{\circ}\text{C} \leq T \leq 100\text{ }^{\circ}\text{C}$	TC_V	DSS-CSS	-2.3	mV / K
		DSR-CSS	-4.3	
		DSA-CSS	-3.2	
		DSO-CSS	-1.6	
		DSY-CSS	-3.3	
		DSG-CSS	-0.2	
		DSR-TSS	-2.0	
		DSP-SSS	-0.2	
Temperature coefficient of I_V (typ) $I_F = 20\text{mA}; 0\text{ }^{\circ}\text{C} \leq T \leq 100\text{ }^{\circ}\text{C}$	TC_{I_V}	DSS-CSS	-0.52	% / K
		DSR-CSS	-0.59	
		DSA-CSS	-0.60	
		DSO-CSS	-0.62	
		DSY-CSS	-1.05	
		DSG-CSS	-1.20	
		DSR-TSS	-0.62	
		DSP-SSS	-1.17	

Wavelength Grouping at Tj=25°C

Color	Group	Wavelength distribution (nm) <i>Appx. 2.2</i>
DSS; Super red	Full	625 - 640
DSR-CS, -SS; Red (AS)	Full	620 - 630
DSR-TS; Red (TS)	Full	620 - 635
DSA; Amber	Full	610 - 621
	W	610 - 615
	X	615 - 621
DSO; Orange	Full	600 - 612
	W	600 - 603
	X	603 - 606
	Y	606 - 609
	Z	609 - 612
DSY; Yellow	Full	582 - 594
	W	582 - 585
	X	585 - 588
	Y	588 - 591
	Z	591 - 594
DSG; 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
DSP; 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

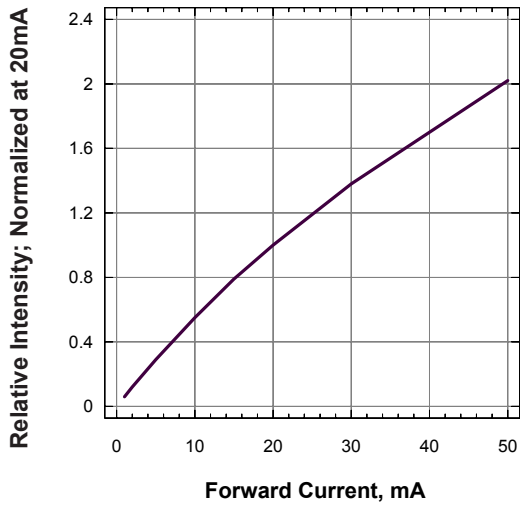
Brightness Group	Luminous Intensity ^{Appx. 1.1} IV (mcd)
L1	11.2...14.0
L2	14.0...18.0
M1	18.0...22.4
M2	22.4...28.5
P1	45.0...56.0
P2	56.0...71.5
Q1	71.5...90.0
Q2	90.0...112.5
R1	112.5...140.0
R2	140.0...180.0
S1	180.0...224.0
S2	224.0...285.0
T1	285.0...355.0
T2	355.0...450.0

Vf Binning (Optional) at Tj=25°C

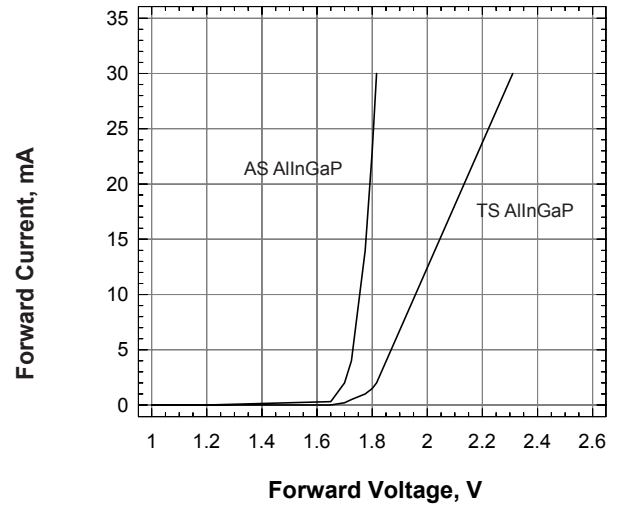
Vf Bin @ 20mA	Forward Voltage (V) ^{Appx. 3.1}
V01	1.55 ... 1.85
V02	1.85 ... 2.15
V03	2.15 ... 2.45
V04	2.45 ... 2.75

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

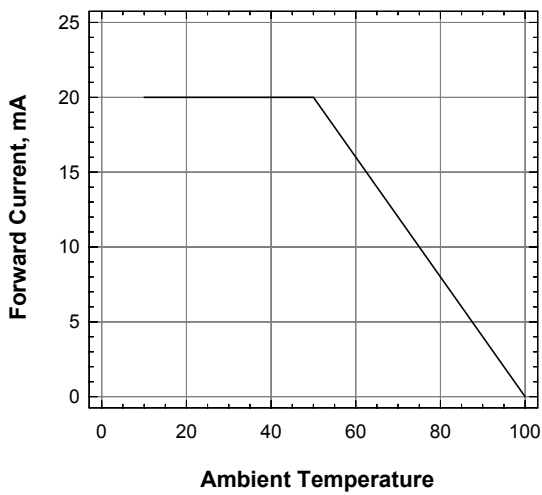
Relative Luminous Intensity Vs Forward Current



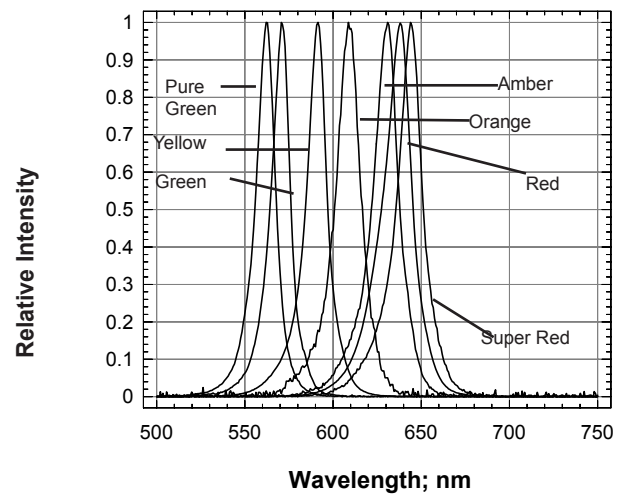
Forward Current Vs Forward Voltage



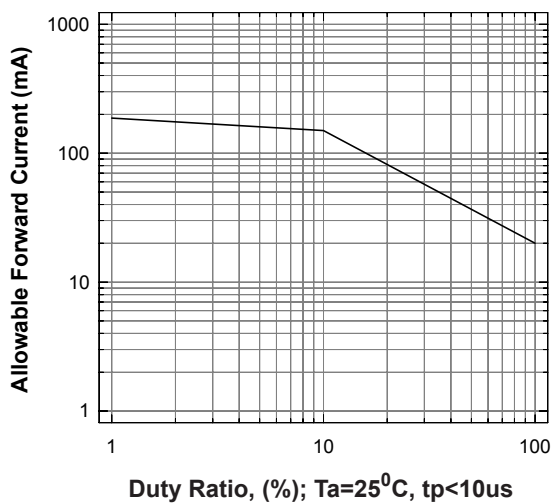
Maximum Current Vs Temperature



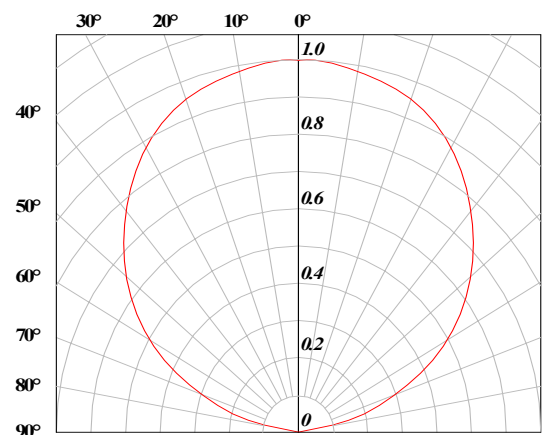
Relative Intensity Vs Wavelength



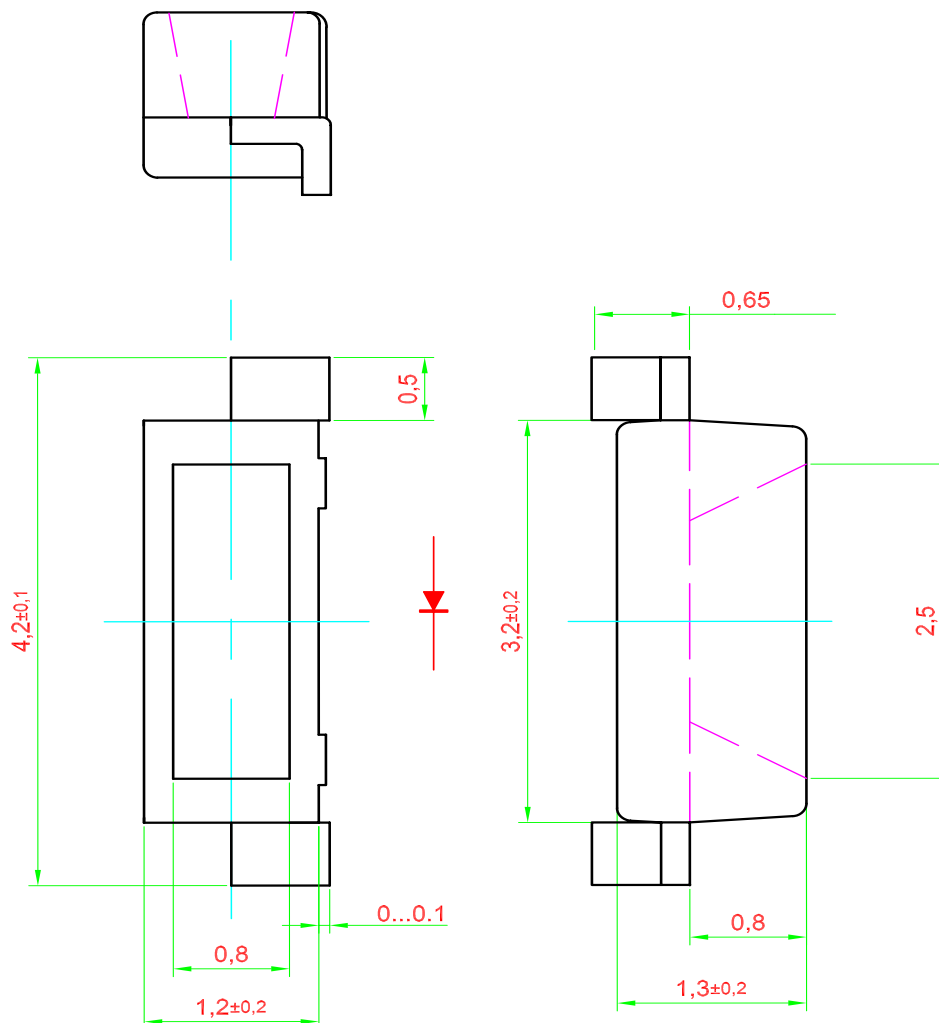
Allowable Forward Current Vs Duty Ratio



Radiation Pattern



Right Angle DomiLED • AllnGaP : DSx-xSS Package Outlines

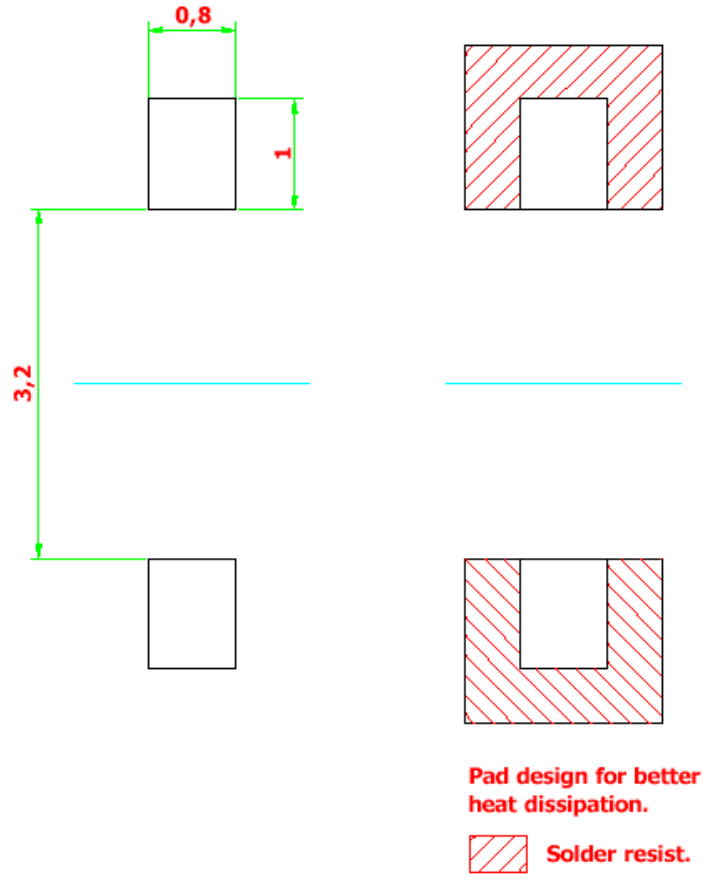


Note : Primary thermal path is through Cathode lead of LED package.
General tolerance ± 0.1 mm.

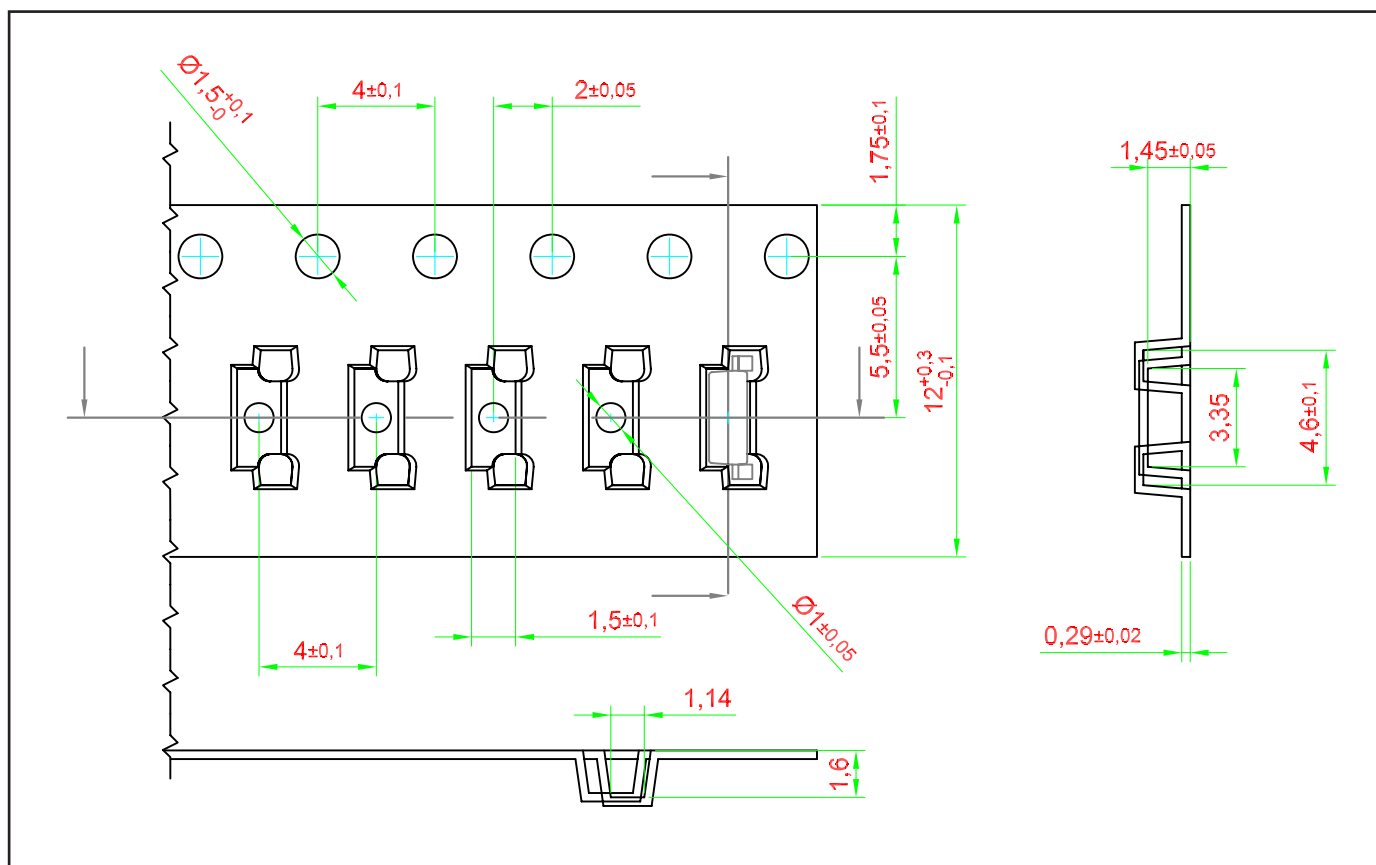
Material

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

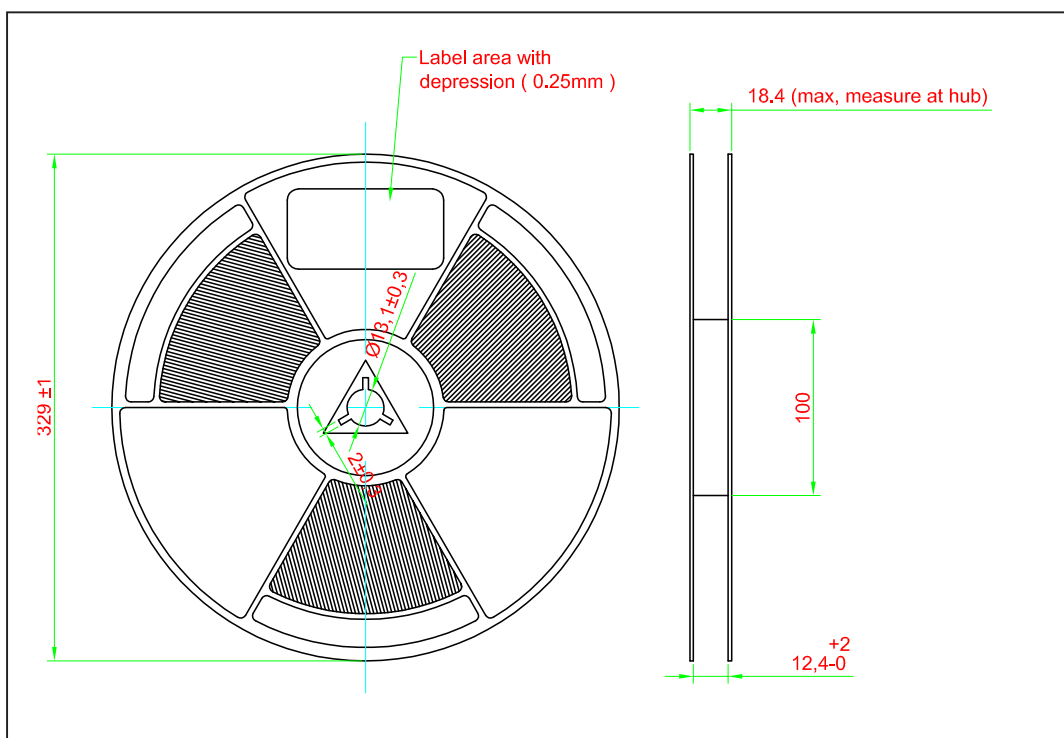
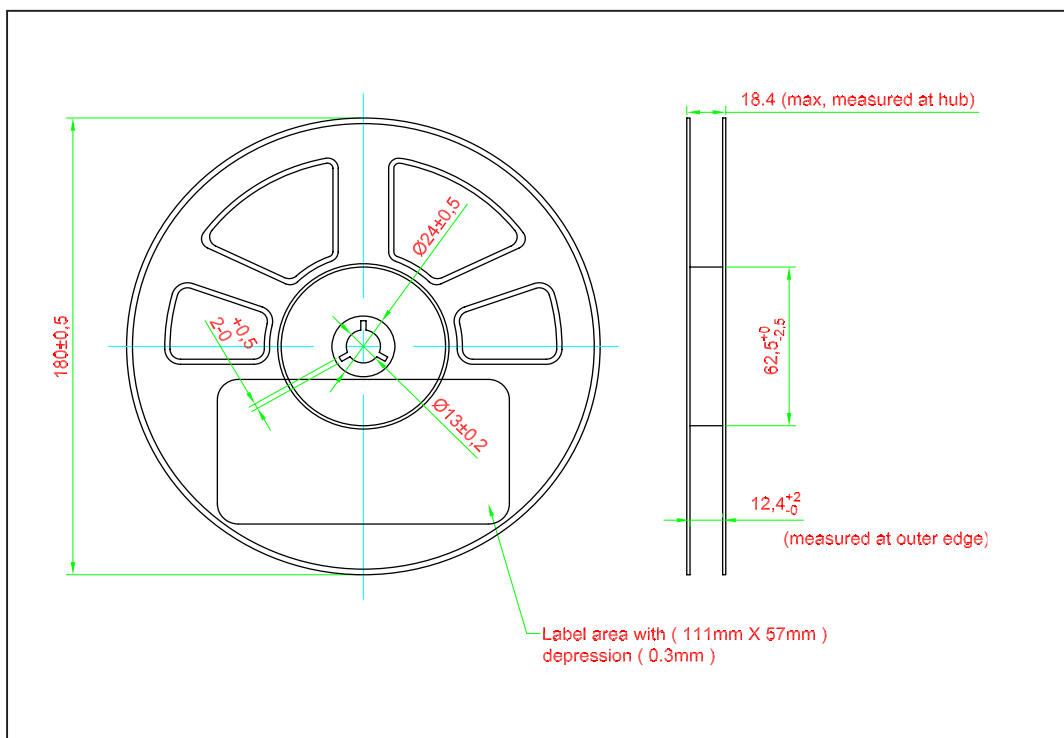
Recommended Solder Pad



Taping and orientation



Packaging Specification

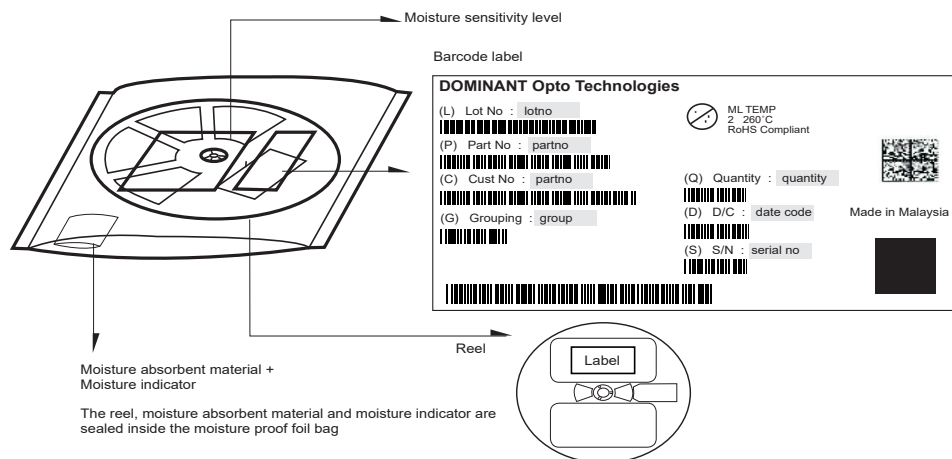


	Reel Diameter (mm)	Quantity (pcs)	*Ordering Number
Standard Packing	180	2500	DSx-xSS-xxx-x
Optional Packing	329	9000	DSx-xSS-xxx-x-9

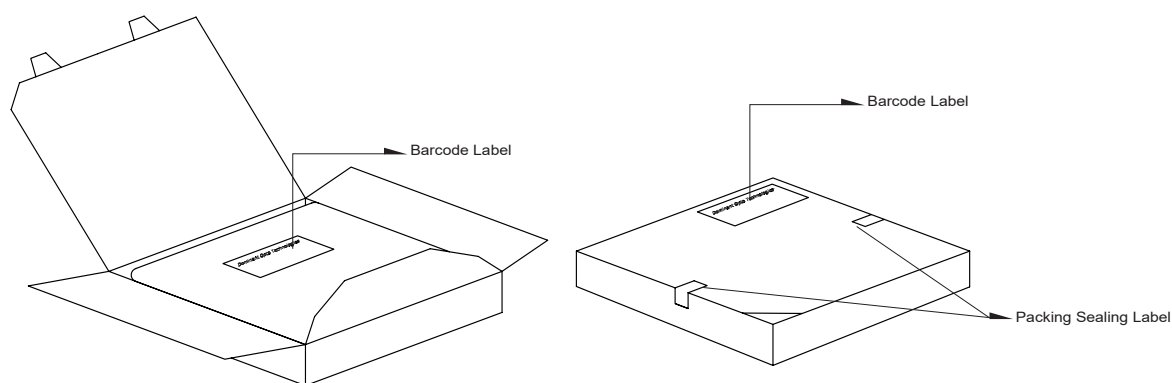
Notes:

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

Packaging Specification



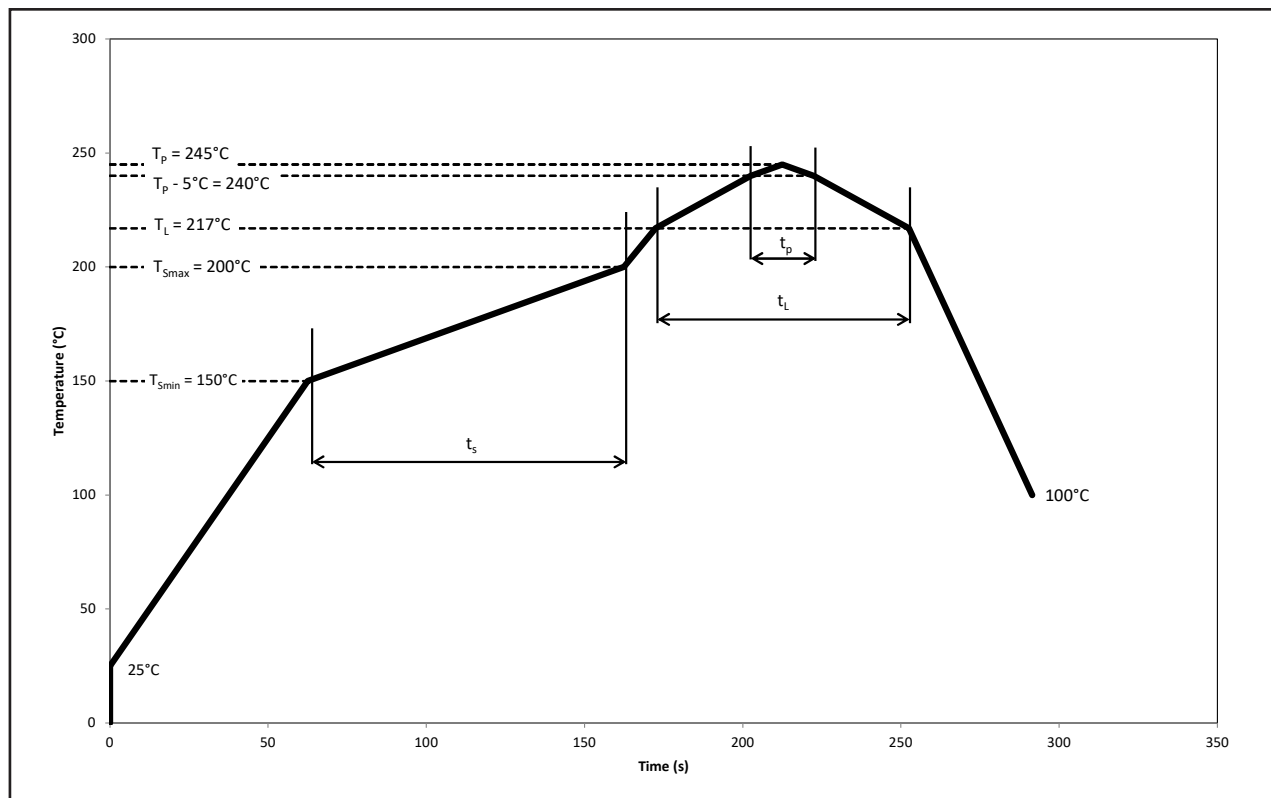
Quantity per bag (pcs)	Average 1pc Right Angle DomiLED (gram)	1 completed bag (gram)
2500	0.010	240 ± 10
9000	0.010	520 ± 10



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



Profile Feature	Symbol	Min.	Pb-Free Assembly		Unit
			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

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, 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 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 specified 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
11	Error in carrier tape Not for new design: DSO-CSS-QR2-1	25 Jun 2012
2	Typo error in Luminous Intensity	13 Mar 2013
4	Add Characteristics Add Thermal Resistance	07 May 2013
2	Add new partno: DSG-CSS-QR2-1	12 Nov 2013
2, 6	Add new partno: DSR-CSS-ST2-1 Update Vf bin naming	16 Dec 2014
1, 8, 10, 12	Add Features Add Notes in Packaging Outline Update Carrier Tape Update Packaging Specification	10 Mar 2016
1, 8, 14	Update Product Photo Update Package Outline Add Appendix	29 Aug 2017
1, 3, 12, 14	Update Product Photo Add Thermal Resistance Test Condition Update Packaging Specification Update Appendix	07 Mar 2019
2, 11, 12, 13	Not for New Design: DSS-CSS-PQ2-1, DSR-CSS-RS2-1, DSR-CSS-ST2-1, DSR-TSS-ST2-1, DSA-CSS-QR2-1, DSA-CSS-RS2-1, DSO-CSS-RS2-1, DSY-CSS-RS2-1, DSG-CSS-PQ2-1, DSG-CSS-QR2-1, DSP-SSS-LM2-1 Update Packaging Specification Update Recommended Pb-free Soldering Profile	20 Jun 2022

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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