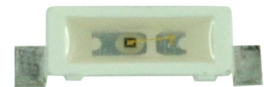


### **DomiLED**

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.
- > 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 Ordering Number	Color	Viewing Angle°	Luminous Intensity @ IF = 20mA		IV (mcd) <small>Appx. 1.1</small>
			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, R <sub>th JA</sub>	630	K/W
- Junction / solder point, R <sub>th JS</sub>	350	K/W
(Mounting on FR4 PCB, pad size ≥ 5 mm <sup>2</sup> per pad)		

**Characteristics**

	Symbol	Part Number	Value	Unit
Temperature coefficient of $\lambda_{dom}$ (typ) $I_F = 20\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	$TC_{\lambda_{dom}}$ (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) DSR-TS; Red (TS)	Full	620 - 630
	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

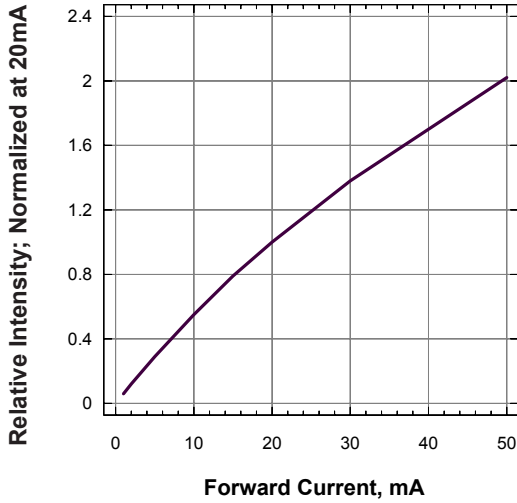
Brightness Group	Luminous Intensity <sup>Appx. 1.1</sup> IV (mcd)
L1	11.2...14.0
L2	14.0...18.0
M1	18.0...22.4
M2	22.4...28.5
P1	45.0...56.0
P2	56.0...71.5
Q1	71.5...90.0
Q2	90.0...112.5
R1	112.5...140.0
R2	140.0...180.0
S1	180.0...224.0
S2	224.0...285.0
T1	285.0...355.0
T2	355.0...450.0

**Vf Binning (Optional) at Tj=25°C**

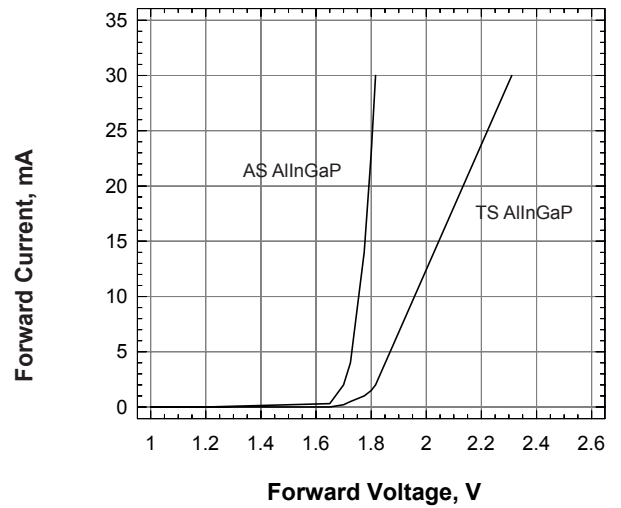
Vf Bin @ 20mA	Forward Voltage (V) <sup>Appx. 3.1</sup>
V01	1.55 ... 1.85
V02	1.85 ... 2.15
V03	2.15 ... 2.45
V04	2.45 ... 2.75

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

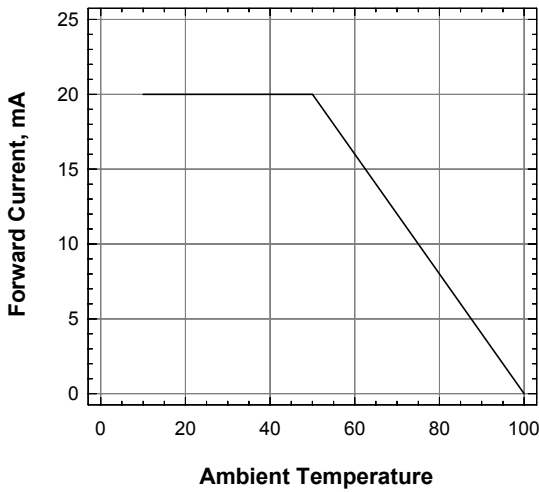
**Relative Luminous Intensity Vs Forward Current**



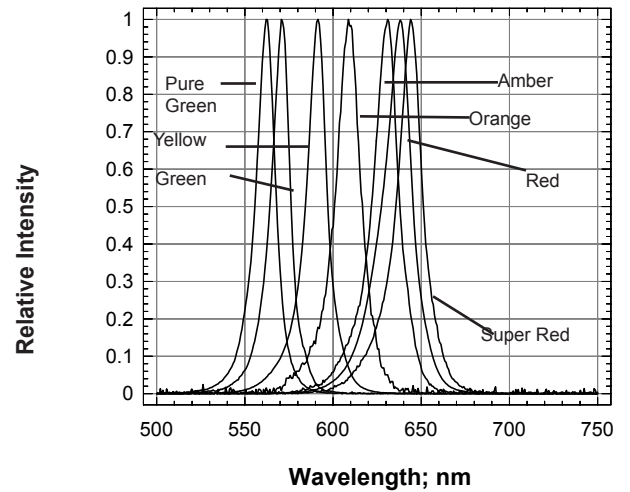
**Forward Current Vs Forward Voltage**



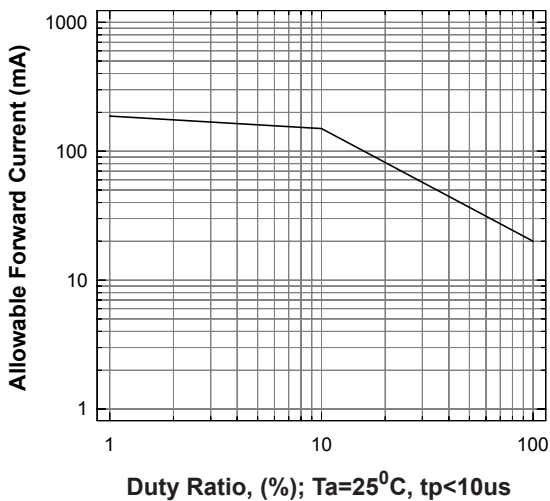
**Maximum Current Vs Temperature**



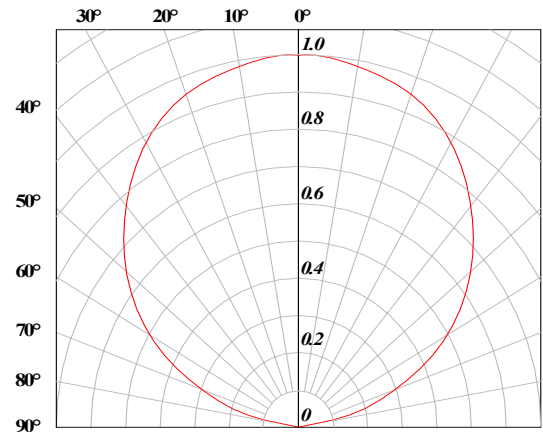
**Relative Intensity Vs Wavelength**



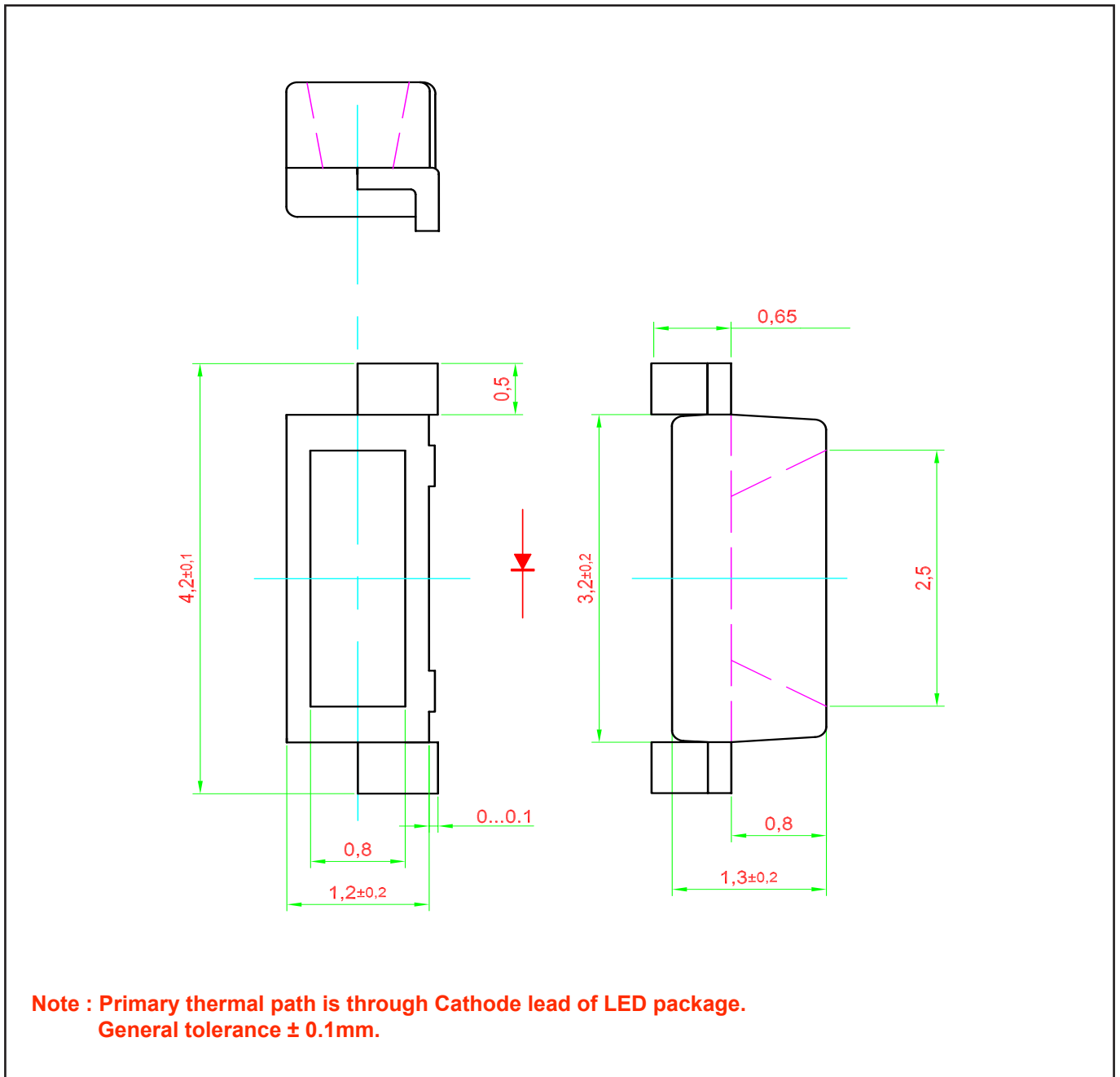
**Allowable Forward Current Vs Duty Ratio**



**Radiation Pattern**



**Right Angle DomiLED • AllnGaP : DSx-xSS Package Outlines**

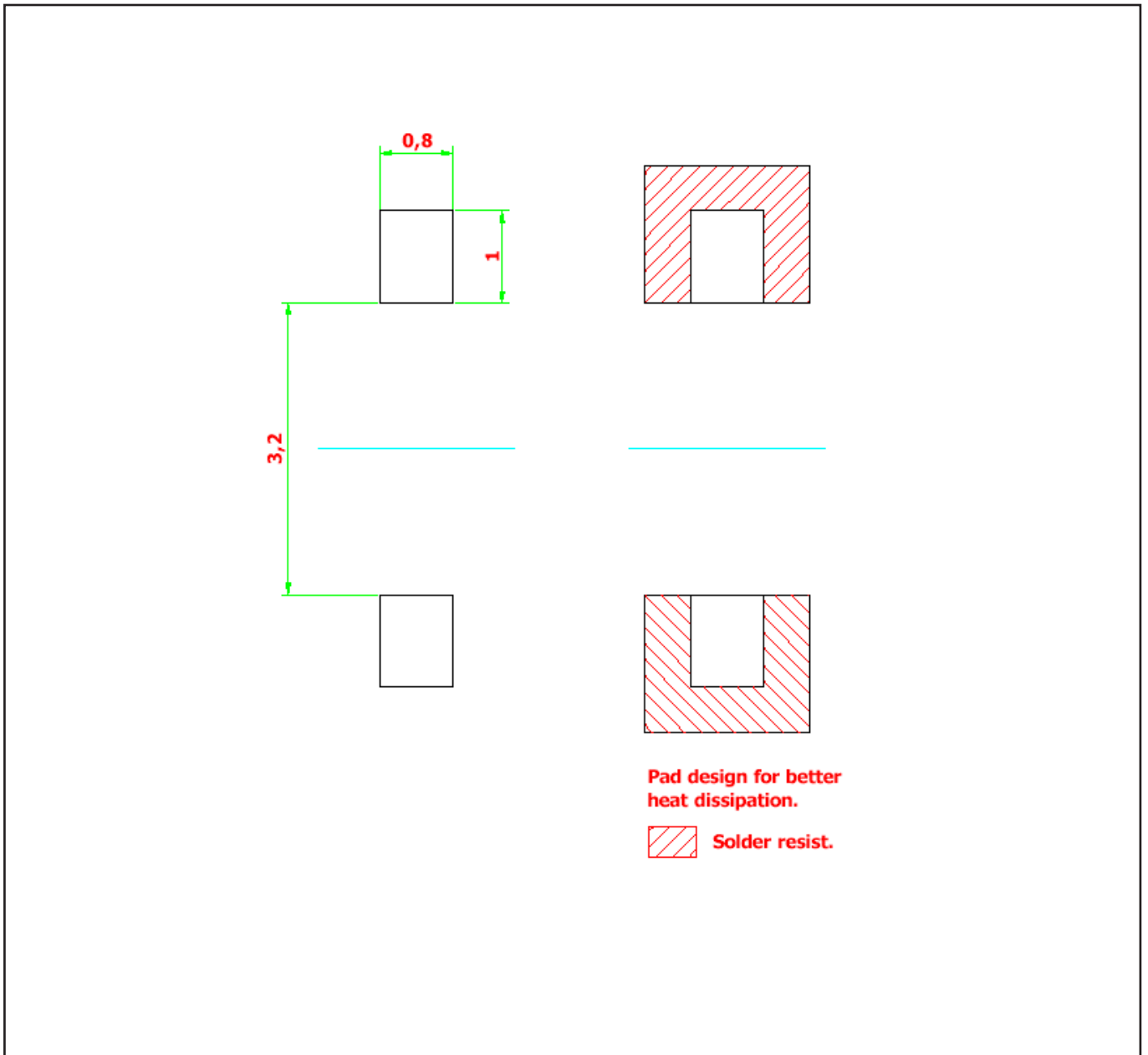


**Material**

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

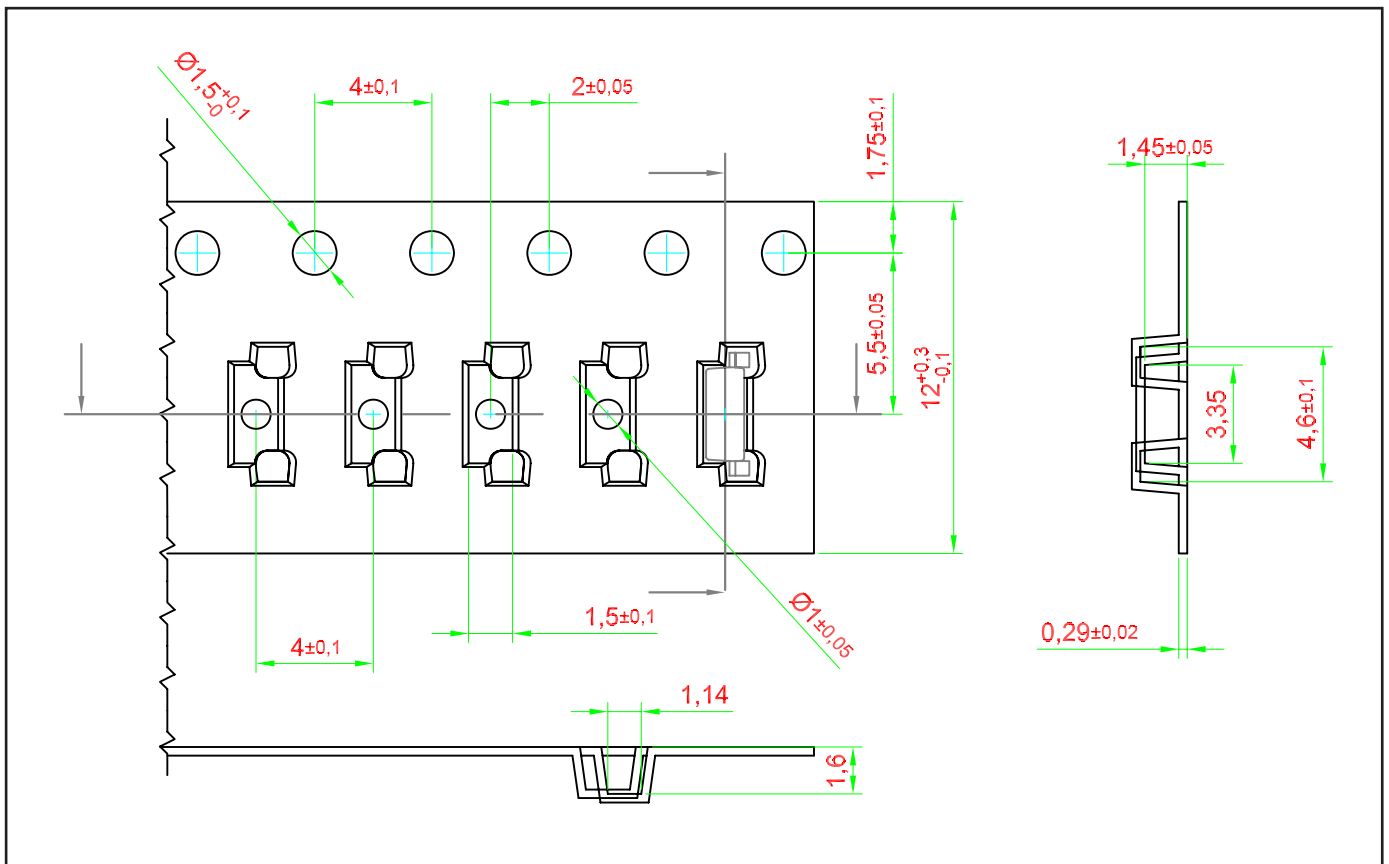


### Recommended Solder Pad

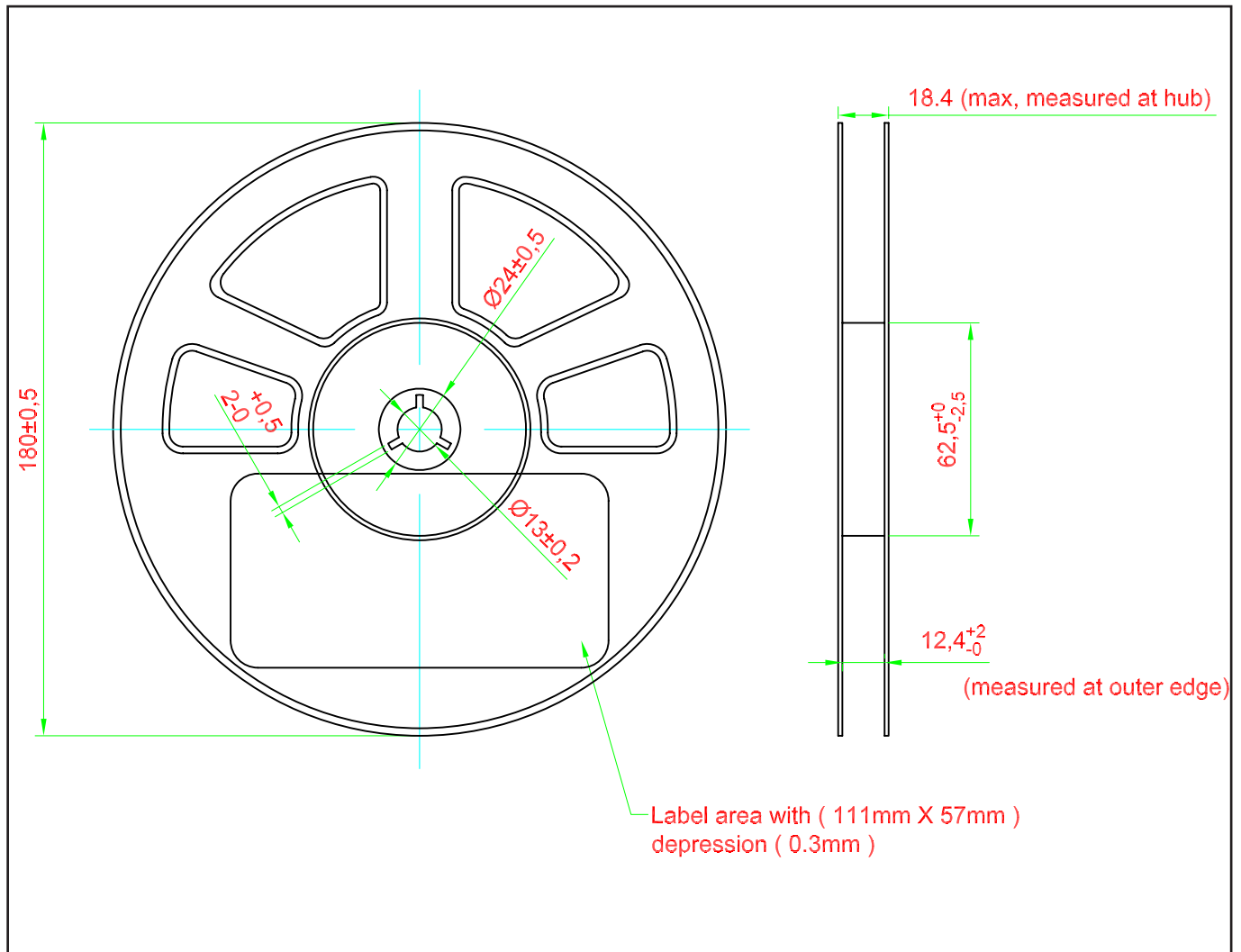


### Taping and orientation

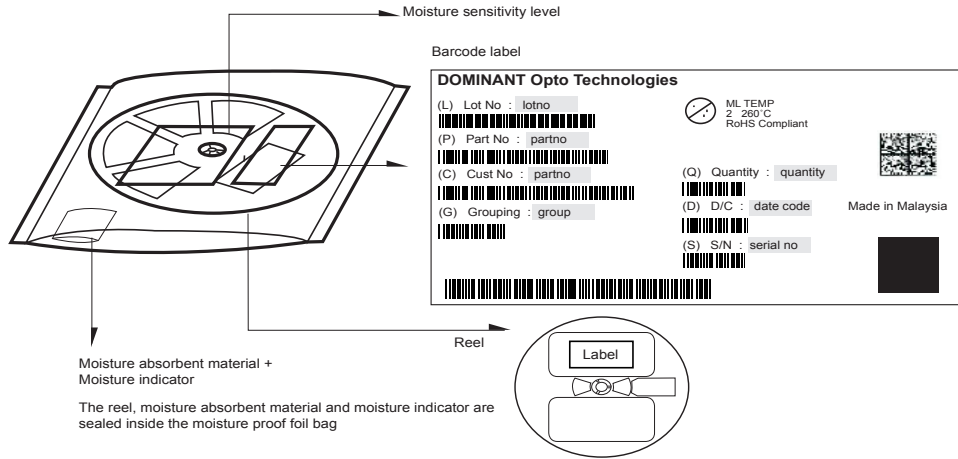
- Reels come in quantity of 2500 units.
- Reel diameter is 180 mm.



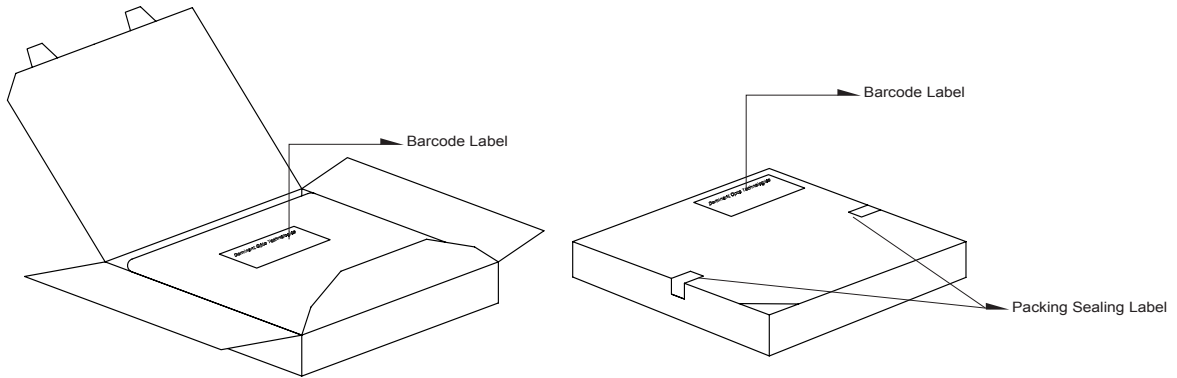
### Packaging Specification



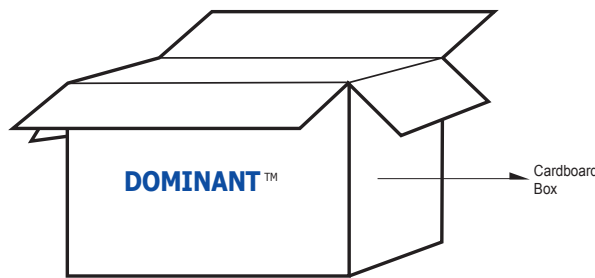
**Packaging Specification**



	<b>Average 1pc Right Angle DomiLED</b>	<b>1 completed bag (2500pcs)</b>
<b>Weight (gram)</b>	<b>0.010</b>	<b>240 ± 10</b>



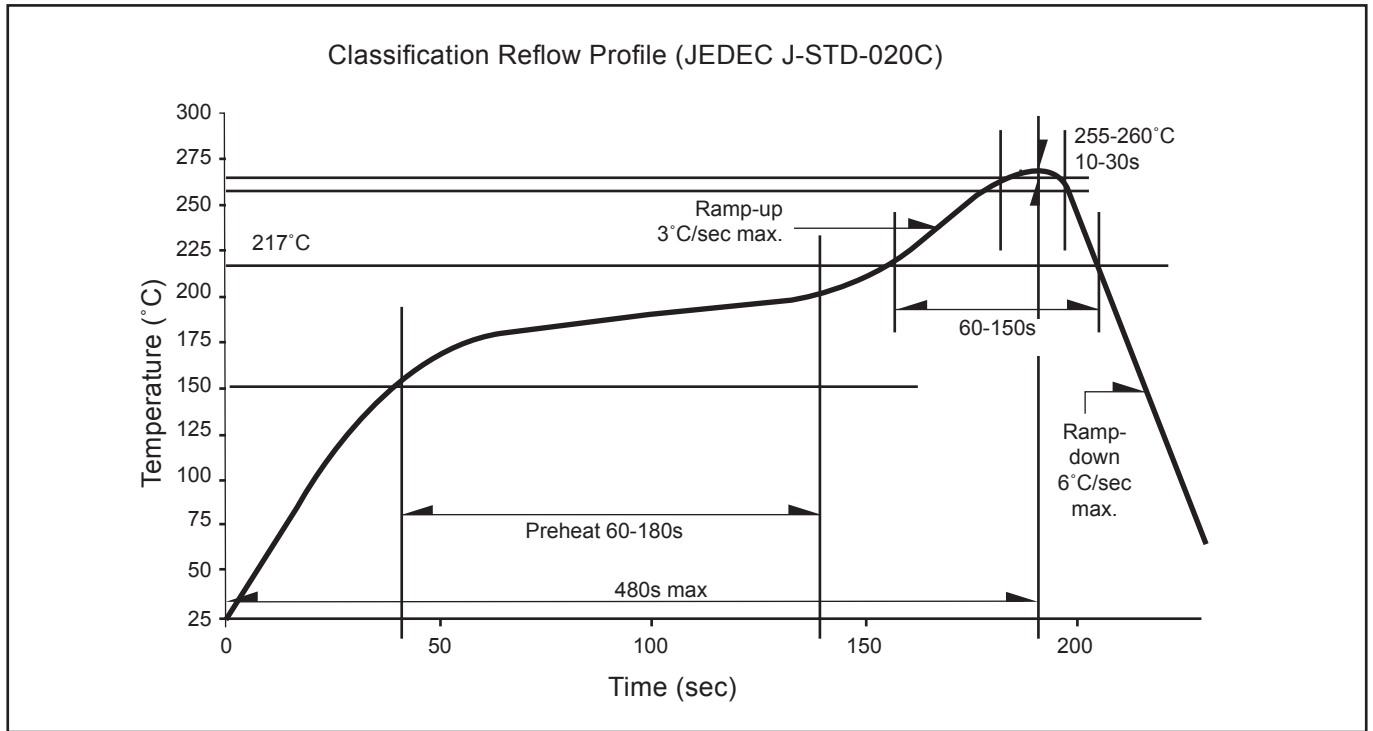
	<b>Dimensions (mm)</b>
<b>Packing Box</b>	<b>210 x 210 x 20</b>



**For Right Angle DomiLED**

<b>Cardboard Box Size</b>	<b>Dimensions (mm)</b>	<b>Empty Box Weight (kg)</b>	<b>Reel / Box</b>
Super Small	325 x 225 x 190	0.38	7 reels MAX
Small	325 x 225 x 280	0.54	11 reels MAX
Medium	570 x 440 x 230	1.46	48 reels MAX
Large	570 x 440 x 460	1.92	96 reels MAX

**Recommended Pb-free Soldering Profile**



---

## 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  $\pm 0.005$  and an expanded uncertainty of  $\pm 0.01$  (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  $\pm 0.1$  and dimension are specific in mm.

### 6) **Reverse Voltage:**

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

**Revision History**

<b>Page</b>	<b>Subjects</b>	<b>Date of Modification</b>
2	Not for new design: DSY-CSS-QR2-1	29 Sep 2010
7	Update Graph: Relative Luminous Intensity Vs Forward Current	29 Dec 2011
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

**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.

## 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](mailto:sales@dominant-semi.com)

---