

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.
- > 120° viewing angle.
- > Small package outline (LxWxH) of 3.2 x 2.8 x 1.8mm.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.
- > Compliance to AEC-Q102 Standard.
- > Passed corrosion test.



Applications:

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



Optical Characteristics at Tj=25°C

● Part Ordering Number	Color	Viewing Angle°	Luminous Flux @ 20mA IV (mcd) <i>Appx. 1.1</i>		
			Min.	Typ.	Max.
● DDH-CRS-PQ2-1	Hyper-red, 640nm	120	45.0	71.5	112.5
● DDH-SRS-QR2-1	Hyper-red, 640nm	120	71.5	112.5	180.0
● DDS-CRS-QR2-1	Super-red, 632nm	120	71.5	112.5	180.0
● DDS-CRS-RS1-1	Super-red, 632nm	120	112.5	140.0	224.0
● DDS-SRS-QR2-1	Super-red, 632nm	120	71.5	112.5	180.0
● DDR-CRS-Q2R-1	Red, 625nm	120	90.0	135.0	180.0
● DDR-CRS-RS2-1	Red, 625nm	120	112.5	180.0	285.0
● DDR-CRS-ST1-1	Red, 625nm	120	180.0	224.0	355.0
● DDR-SRS-RS2-1	Red, 625nm	120	112.5	180.0	285.0
● DDR-TRS-TU2-1	Red, 625nm	120	285.0	450.0	715.0
● DDA-CRS-RS2-1	Amber, 615nm	120	112.5	180.0	285.0
● DDA-SRS-ST2-1	Amber, 615nm	120	180.0	285.0	450.0
● DDO-CRS-RS2-1	Orange, 605nm	120	112.5	180.0	285.0
● DDO-CRS-ST2-1	Orange, 605nm	120	180.0	285.0	450.0
● DDO-SRS-ST2-1	Orange, 605nm	120	180.0	285.0	450.0
● DDY-CRS-RS2-1	Yellow, 587nm	120	112.5	180.0	285.0
● DDY-CRS-ST1-1	Yellow, 587nm	120	180.0	224.0	355.0
● DDY-TRS-TU2-1	Yellow, 587nm	120	285.0	450.0	715.0
● DDY-SRS-ST2-1	Yellow, 587nm	120	180.0	285.0	450.0
● DDG-CRS-PQ2-1	Green, 570nm	120	45.0	71.5	112.5
● DDG-CRS-QR2-1	Green, 570nm	120	71.5	112.5	180.0
● DDG-SRS-QR2-1	Green, 570nm	120	71.5	112.5	180.0
● Not for new design					

Electrical Characteristics at Tj=25°C

Part Number	Vf @ If = 20mA <i>Appx. 3.1</i>		Vr @ Ir = 10uA
	Typ. (V)	Max. (V)	Min. (V)
DDx-CRS, DDx-SRS	2.1	2.3	12
DDx-TRS	2.2	2.6	12

Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	30	mA
Peak pulse current; (tp ≤ 10µs, Duty cycle = 0.005)	500	mA
Reverse voltage	12	V
ESD threshold (HBM)	2	kV
LED junction temperature	125	°C
Operating temperature	-40 ... +110	°C
Storage temperature	-40 ... +110	°C
Power dissipation (at room temperature)	75	mW
Thermal resistance (Rated current = 20mA, Ts = 25 °C)		
- Junction / ambient, R _{th JA}	500	K/W
- Junction / solder point, R _{th JS} (Mounting on DOMINANT standard PCB)	250	K/W

Wavelength Grouping at Tj=25°C

Color	Group	Wavelength distribution (nm) <i>Appx. 2.2</i>
DDH; Hyper-red	Full	636 - 646
DDS; Super-red	Full	625 - 640
DDR-CR, -SR; Red (AS)	Full	620 - 630
DDR-TR; Red (TS)	Full	620 - 635
DDA; Amber	Full	610 - 621
	W	610 - 615
	X	615 - 621
DDO; Orange	Full	600 - 612
	W	600 - 603
	X	603 - 606
	Y	606 - 609
	Z	609 - 612
DDY; Yellow	Full	582 - 594
	W	582 - 585
	X	585 - 588
	Y	588 - 591
	Z	591 - 594
DDG; 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

Luminous Intensity Group at Tj=25°C

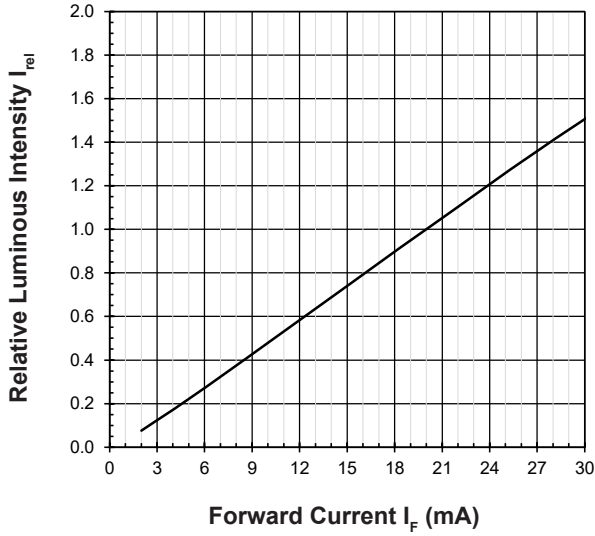
Brightness Group	Luminous Intensity <small>Appx. 1.1</small> IV (mcd)
P1	45.0...56.0
P2	56.0...71.5
Q1	71.5...90.0
Q2	90.0...112.5
R1	112.5...140.0
R2	140.0...180.0
S1	180.0...224.0
S2	224.0...285.0
T1	285.0...355.0
T2	355.0...450.0
U1	450.0...560.0
U2	560.0...715.0

Vf Binning (Optional)

Vf Bin @ 20mA	Forward Voltage (V) <small>Appx. 3.1</small>
01	1.55 ... 1.85
02	1.85 ... 2.15
03	2.15 ... 2.45
04	2.45 ... 2.75

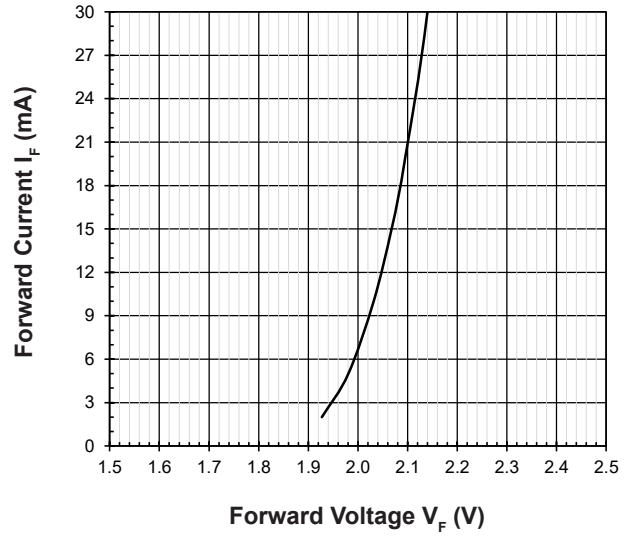
Relative Luminous Intensity Vs Forward Current

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



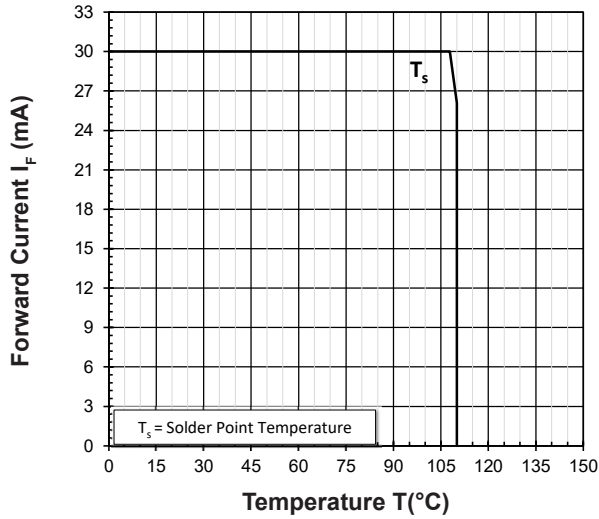
Forward Current Vs Forward Voltage

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



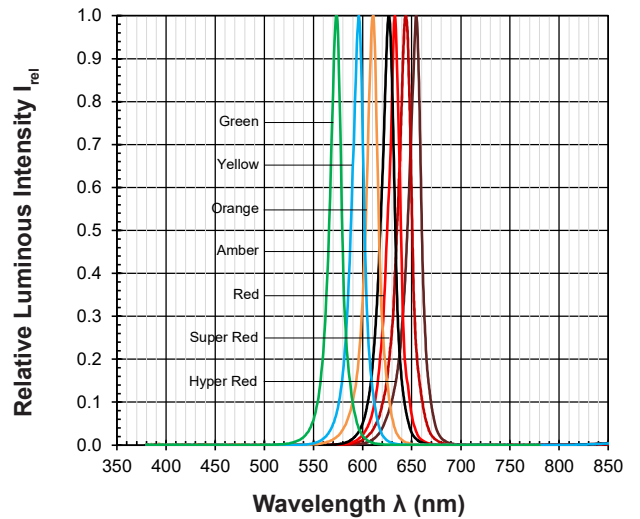
Maximum Current Vs Temperature

$I_F = f(T)$



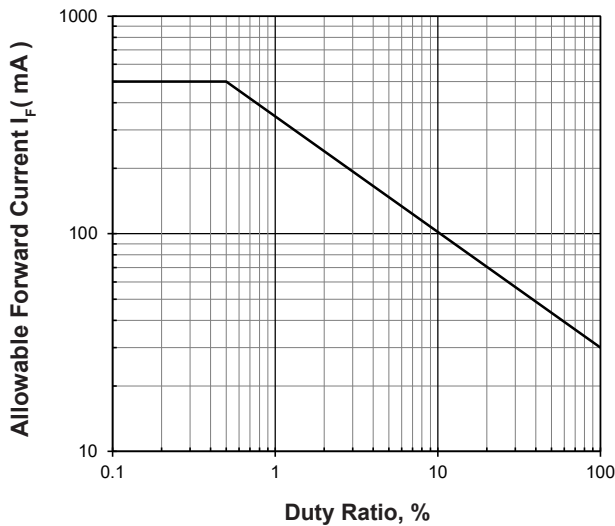
Relative Spectral Emission

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

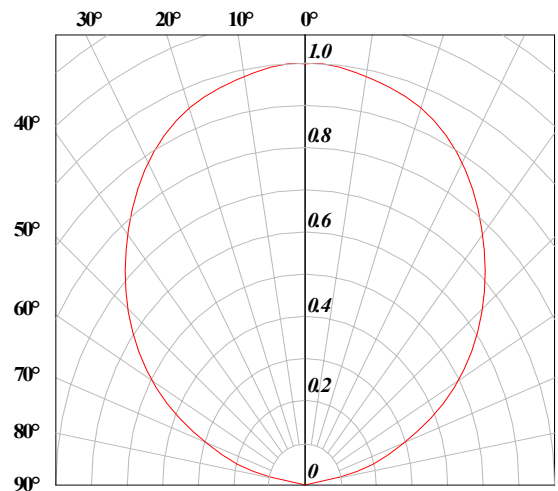


Allowable Forward Current Vs Duty Ratio

($T_s = 55^\circ\text{C}; t_p = 10\mu\text{s}$)

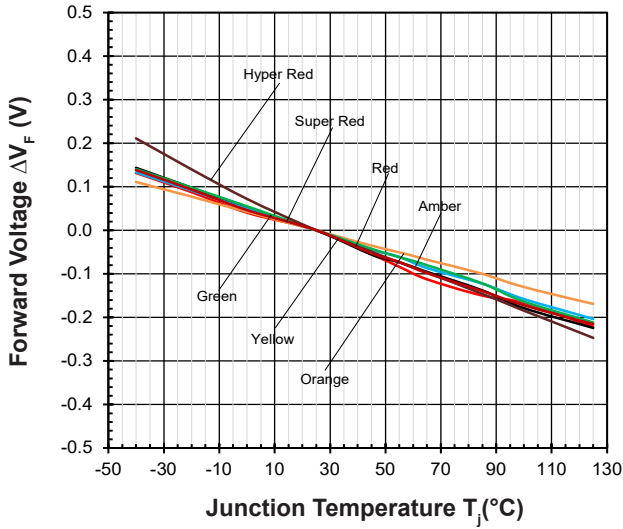


Radiation Pattern



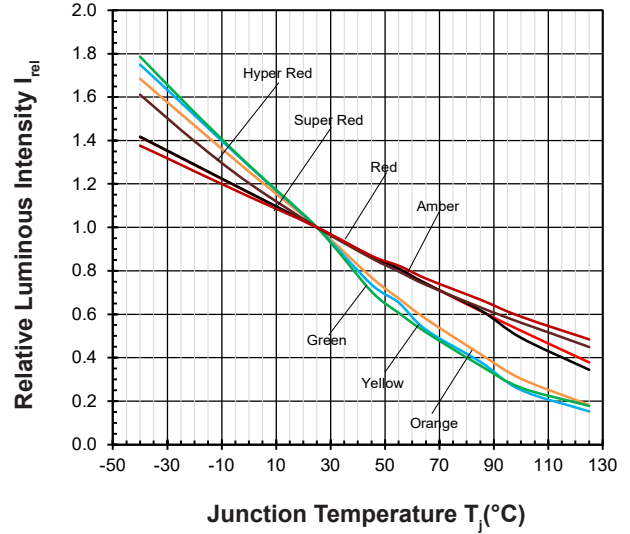
Forward Voltage Vs Junction Temperature

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



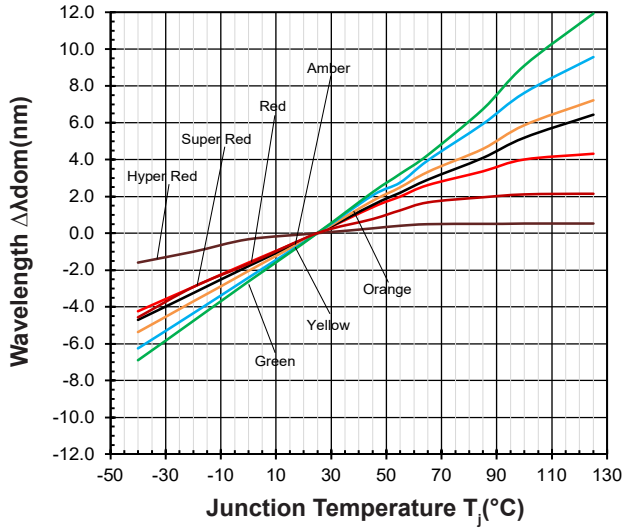
Relative Luminous Intensity Vs Junction Temperature

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

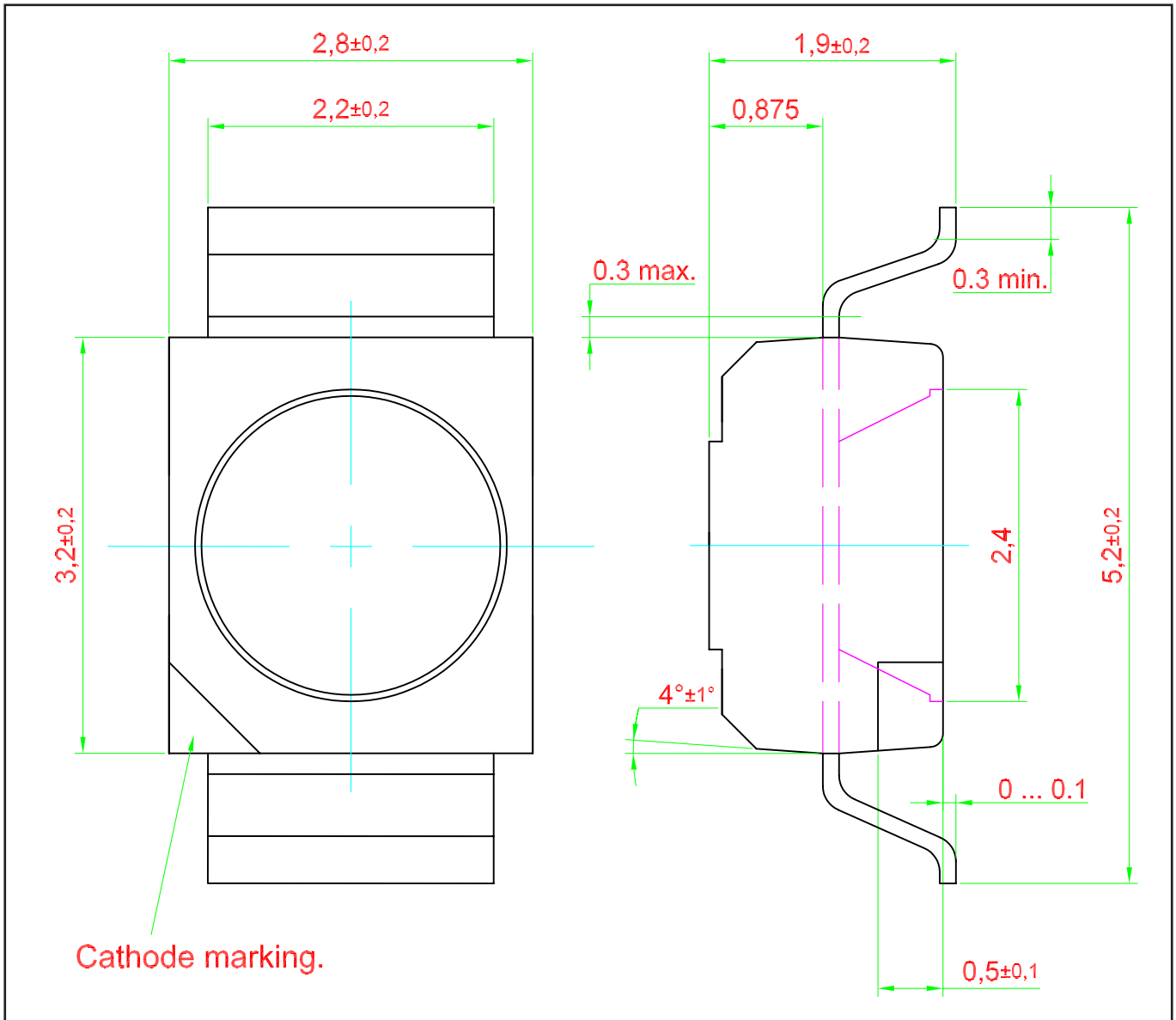


Wavelength Vs Junction Temperature

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



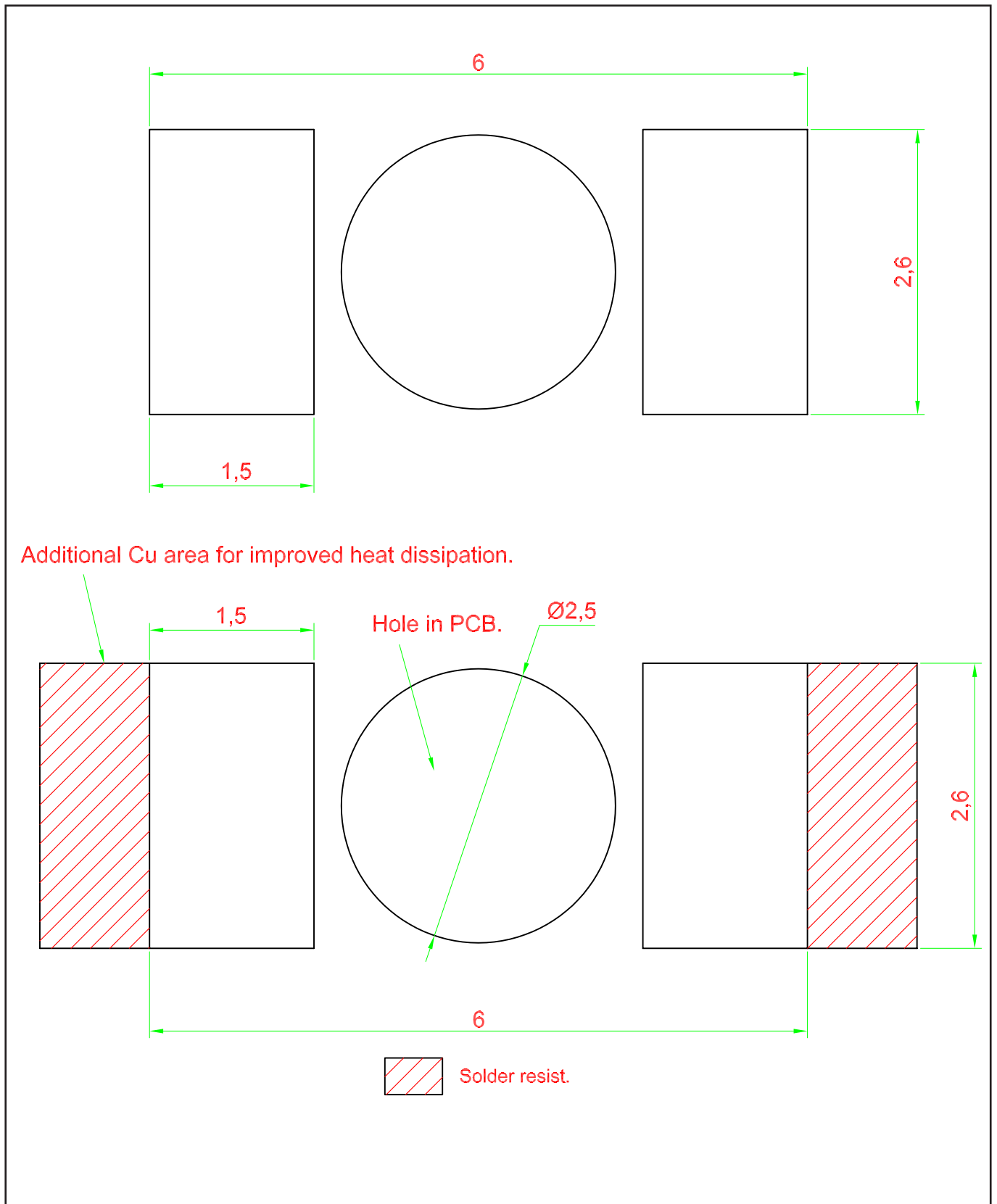
DomiLED • AllInGaP : DDx-xRS Package Outlines



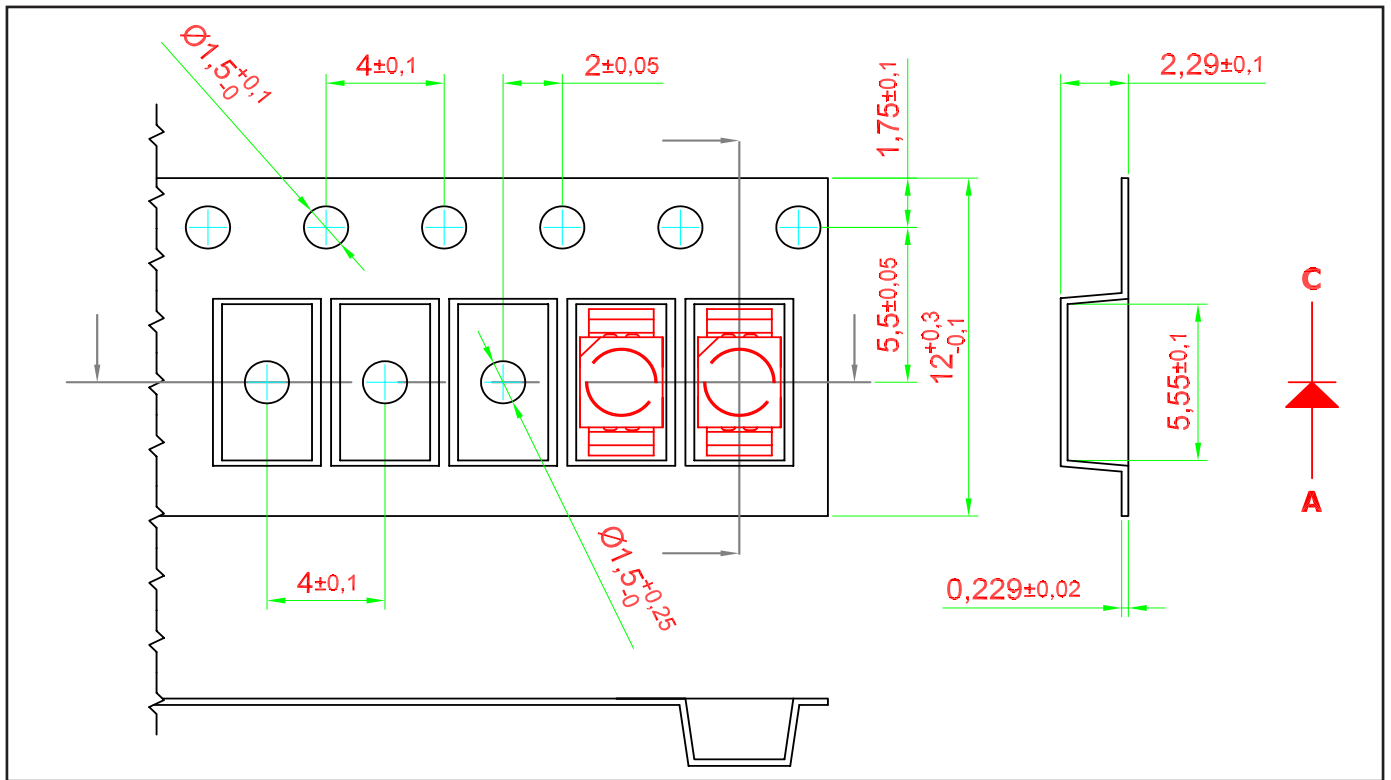
Material

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

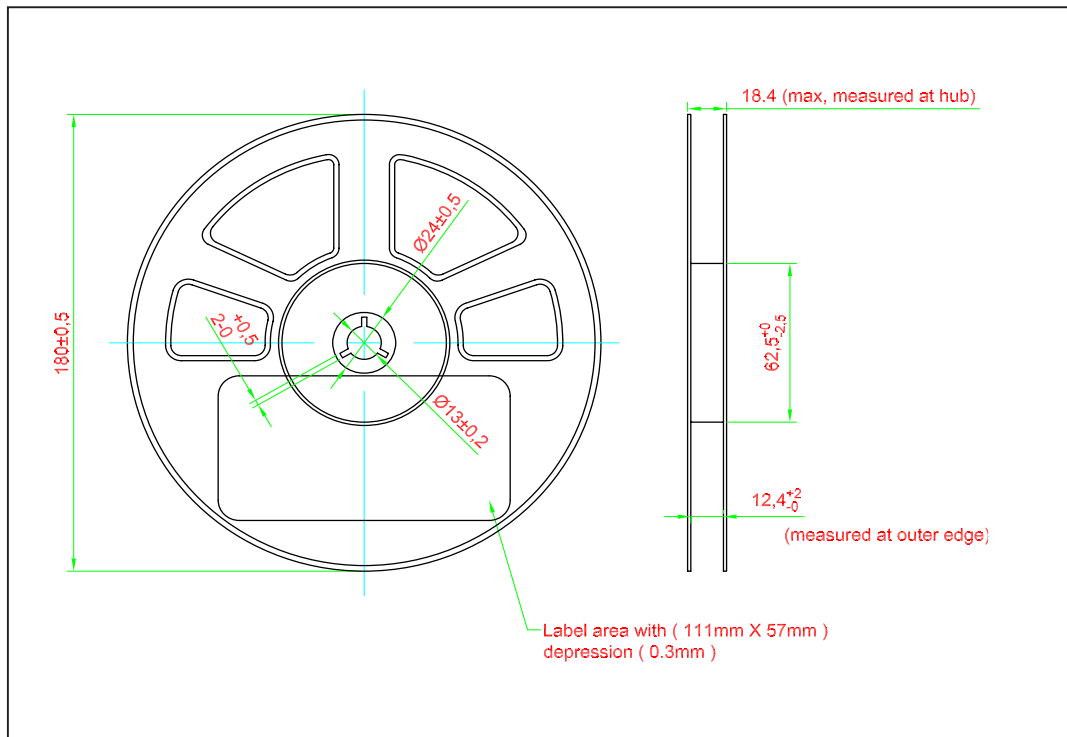
Recommended Solder Pad



Taping and orientation

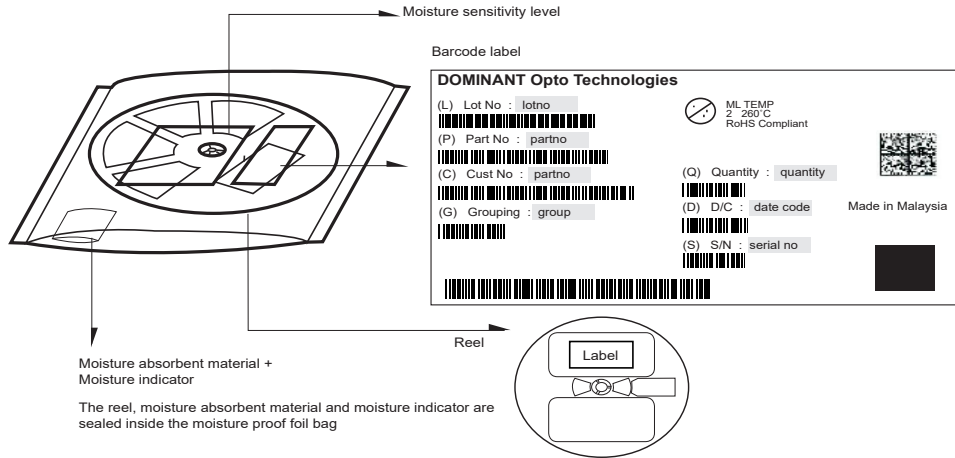


Packaging Specification

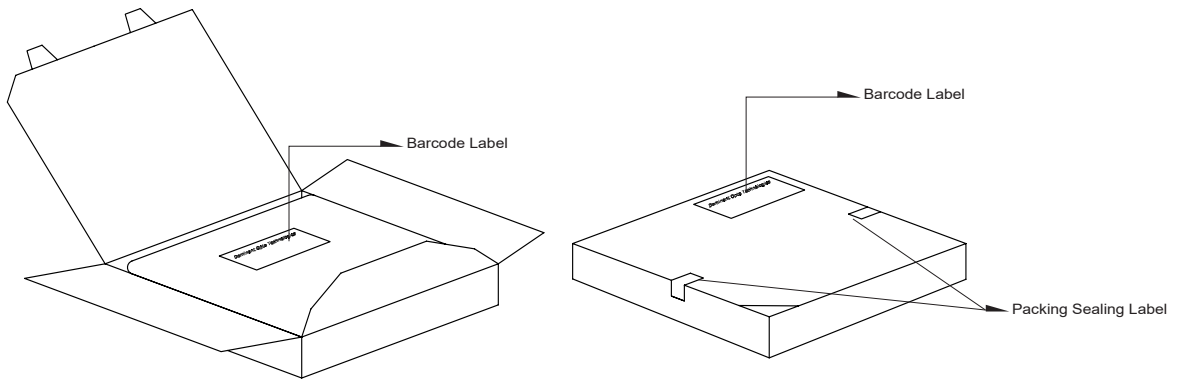


	Reel Diameter (mm)	Quantity (pcs)	Partno
Standard Packing	180	2000	DDx-xRS-xxx-x

Packaging Specification



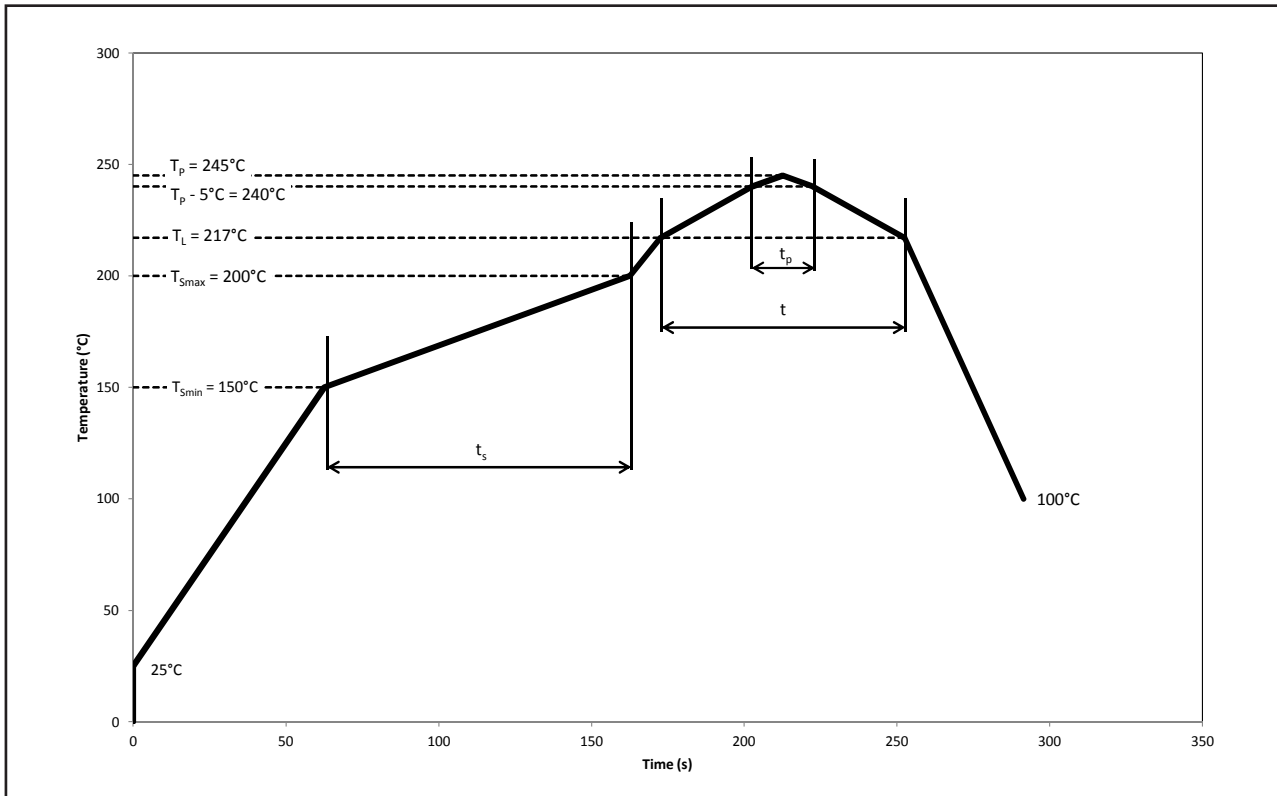
Quantity per bag (pcs)	Average 1pc DomiLED (gram)	1 completed bag (gram)
2000	0.034	240 ± 10



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

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 $\pm 8\%$ 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
-	Update company name	31 May 2010
2	Add new partno: DDO-CRS-ST2-1	28 Oct 2010
2	Add new partno: DDR-CRS-Q2R-1	10 Mar 2011
2	Not for new design: DDH-SRS-QR2-1, DDS-SRS-QR2-1, DDR-SRS-RS2-1, DDA-SRS-ST2-1, DDO-SRS-ST2-1, DDY-SRS-ST2-1, DDG-SRS-QR2-1	09 Oct 2012
2	Add new partno: DDR-CRS-ST1-1	22 May 2013
1, 11	Add Features Update Package Specification	16 Oct 2015
1, 11, 13	Update Product Photo Error on Packaging Specification Add Appendix	03 Jul 2017
1, 2, 3, 6, 7, 13	Update from AEC-Q101 to AEC-Q102 Add Features Not for New Design: DDH-CRS-PQ2-1, DDS-CRS-QR2-1, DDS-CRS-RS1-1, DDR-CRS-Q2R-1, DDR-CRS-RS2-1, DDR-CRS-ST1-1, DDR-TRS-TU2-1, DDA-CRS-RS2-1, DDO-CRS-RS2-1, DDO-CRS-ST2-1, DDY-CRS-RS2-1, DDY-CRS-ST1-1, DDY-TRS-TU2-1, DDG-CRS-PQ2-1, DDG-CRS-QR2-1 Update Operating and Storage Temperature Add Thermal Resistance Update Graph Update Recommended Pb-free Soldering Profile	20 Apr 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.

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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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