

### 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 automotive standard, AEC-Q102.
- > Superior Corrosion Resistance.



### 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.
- > Signage: full color display video notice board.
- > Industrial: white goods (eg: Oven, microwave, etc.).



### Optical Characteristics at Tj=25°C

Part Number	Color	Viewing Angle°	Luminous Intensity @ 10mA IV (mcd) <i>Appx. 1.1</i>		
			Min.	Typ.	Max.
● DDB-ERG-N2P-1-I1	Blue, 470nm	120	35.5	45.0	71.5
● DDT-ERG-RS1-1-I1	True Gree, 528nm	120	112.5	180.0	224.0
● Not for new design					

### Electrical Characteristics at Tj=25°C

Part Number	Vf @ If = 10mA <i>Appx. 3.1</i>			Vr @ Ir = 10uA <i>Appx. 6.1</i>
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DDB-ERG	2.7	3.0	3.3	5
DDT-ERG	2.7	3.1	3.3	5

### Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	20	mA
Peak pulse current; (Ts=55°C, tp ≤ 100µs, Duty cycle = 0.03)	50	mA
Reverse voltage; Ir (max) = 10uA <i>Appx. 6.1</i>	5	V
ESD threshold (HBM)	2000	V
LED junction temperature	125	°C
Operating temperature	-40 ... +110	°C
Storage temperature	-40 ... +110	°C
Power dissipation (at room temperature)	66	mW
Thermal resistance (Rated current = 10mA, Ts = 25 °C)		
- Junction / ambient, Rth JA	400	K/W
- Junction / solder point, Rth JS	230	K/W
(Mounting on FR4 PCB, pad size ≥ 16 mm <sup>2</sup> per pad)		

### Wavelength Grouping at Tj=25°C

Color	Group	Wavelength distribution(nm) <i>Appx. 2.2</i>
DDB; Blue	Full	465.0 - 475.0
	A	465.0 - 470.0
	B	470.0 - 475.0
DDT; True Green	Full	520.0 - 535.0
	A	520.0 - 525.0
	B	525.0 - 530.0
	C	530.0 - 535.0

### Luminous Intensity Group at Tj=25°C

Brightness Group	Luminous Intensity <i>Appx. 1.1</i> IV (mcd)
N2	35.5 ... 45.0
P1	45.0 ... 56.0
P2	56.0 ... 71.5
R1	112.5 ... 140.0
R2	140.0 ... 180.0
S1	180.0 ... 224.0

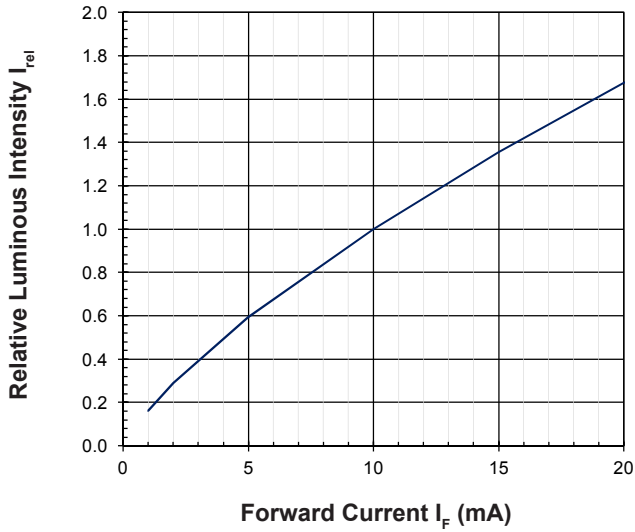
### Vf Bining (Optional)

Vf @ If = 10mA	Forward Voltage (V) <i>Appx. 3.1</i>
VH8	2.80 ... 3.00
VH9	3.00 .. 3.20
VJ1	3.20 ... 3.40

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

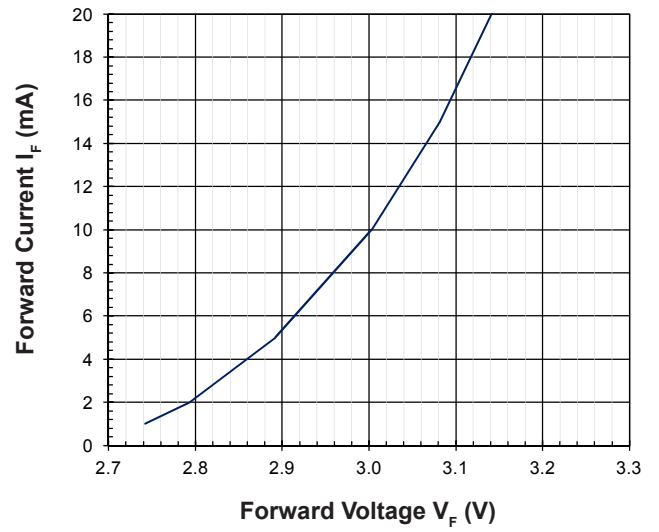
**Relative Luminous Intensity Vs Forward Current**

$I_v/I_v(10mA) = f(I_F); T_j = 25^\circ\text{C}$  (Blue)



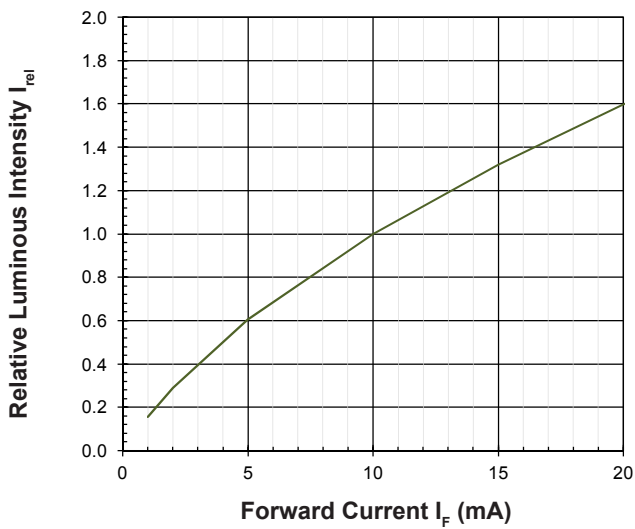
**Forward Current Vs Forward Voltage**

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



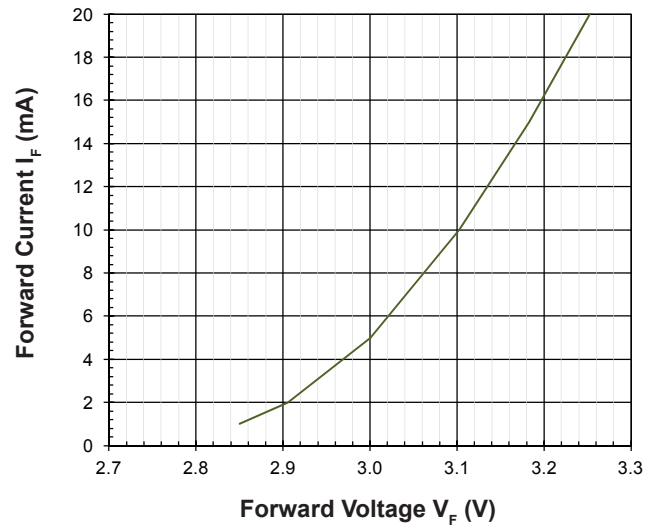
**Relative Luminous Intensity Vs Forward Current**

$I_v/I_v(10mA) = f(I_F); T_j = 25^\circ\text{C}$  (True Green)



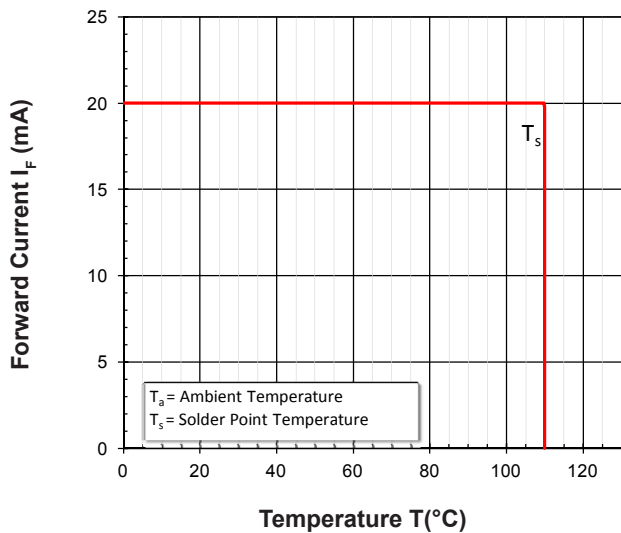
**Forward Current Vs Forward Voltage**

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



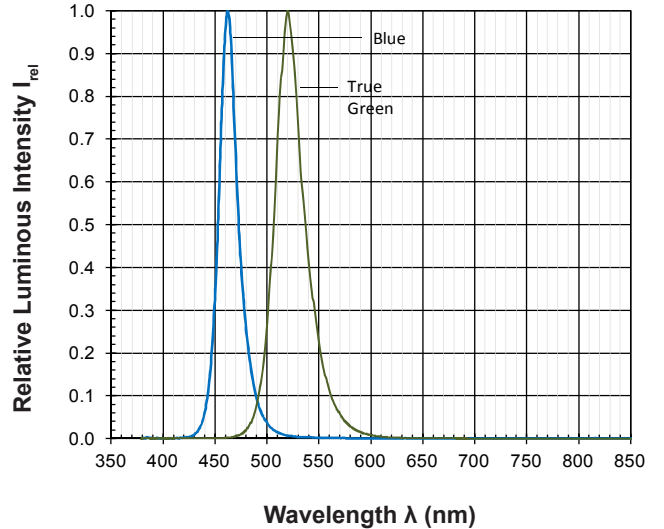
**Maximum Current Vs Temperature**

$I_F = f(T)$



**Relative Spectral Emission**

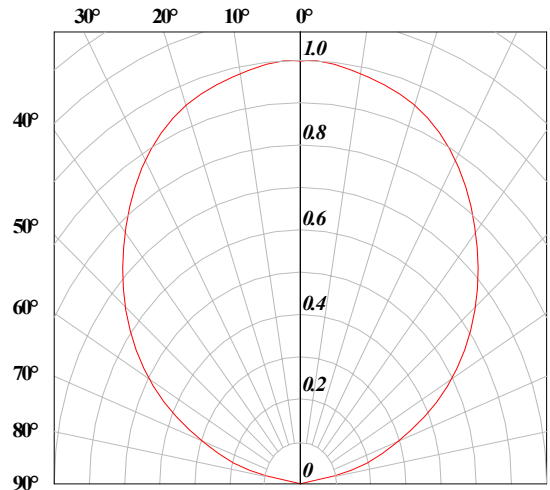
$I_{rel} = f(\lambda); T_j = 25^\circ\text{C}; I_F = 10\text{mA}$



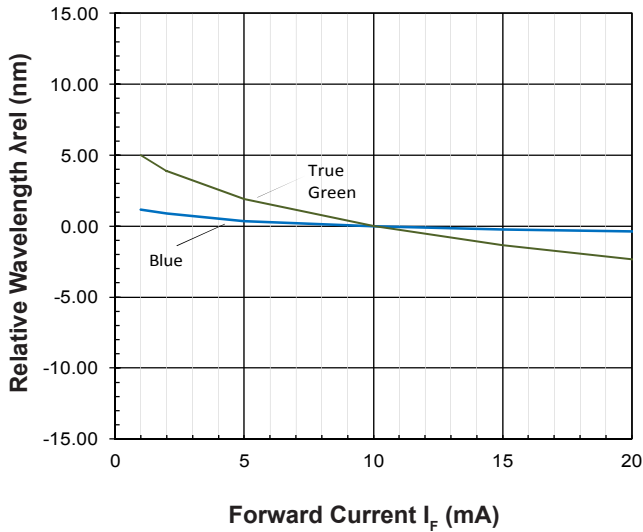
**Allowable Forward Current Vs Duty Ratio**  
 $(T_s = 55^\circ\text{C}; t_p \leq 100\mu\text{s})$



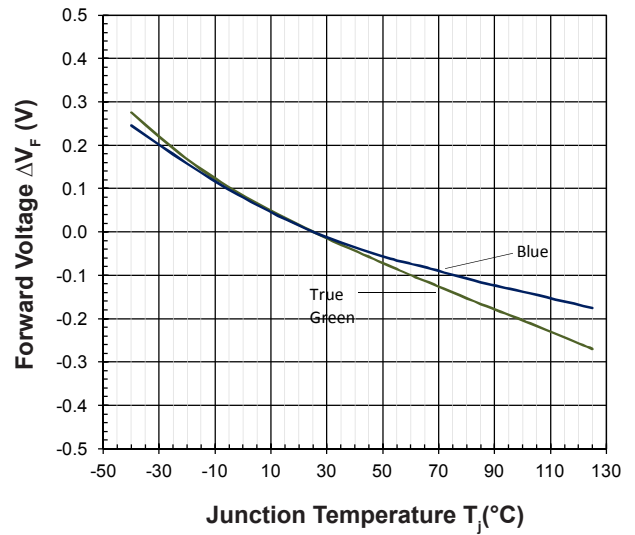
**Radiation Pattern**



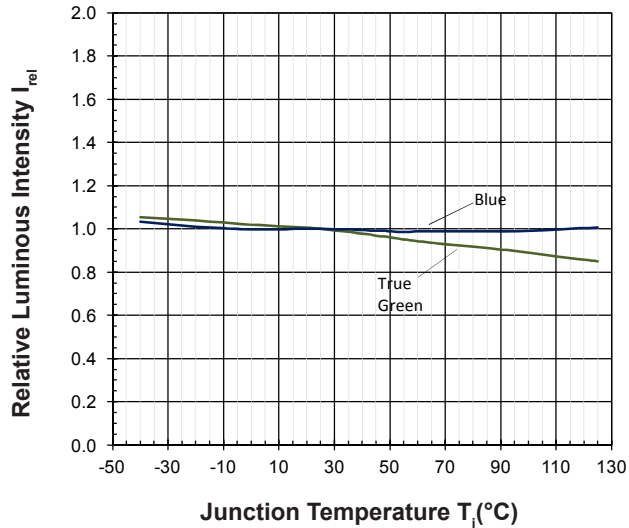
**Relative Wavelength Shift Vs Forward Current**  
 $\lambda_{dom} = f(I_F); T_j = 25^\circ\text{C}$



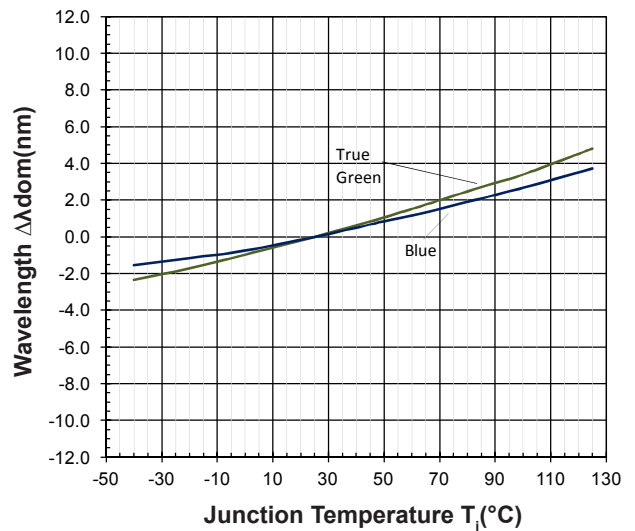
**Forward Voltage Vs Junction Temperature**  
 $\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j); I_F = 10\text{mA}$



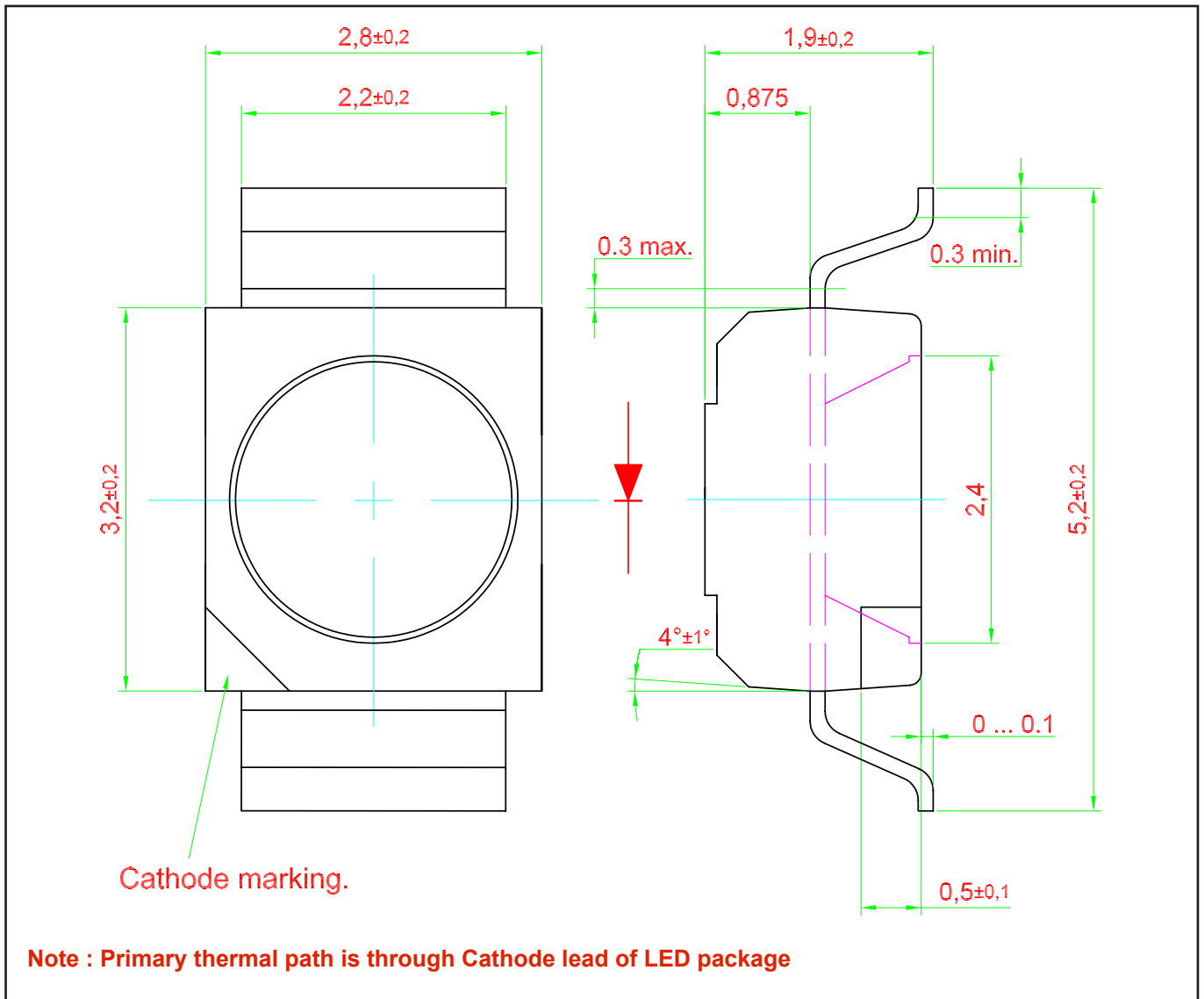
**Relative Luminous Intensity Vs Junction Temperature**  
 $I_v/I_v(25^\circ\text{C}) = f(T_j); I_F = 10\text{mA}$



**Wavelength Vs Junction Temperature**  
 $\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25^\circ\text{C}) = f(T_j); I_F = 10\text{mA}$



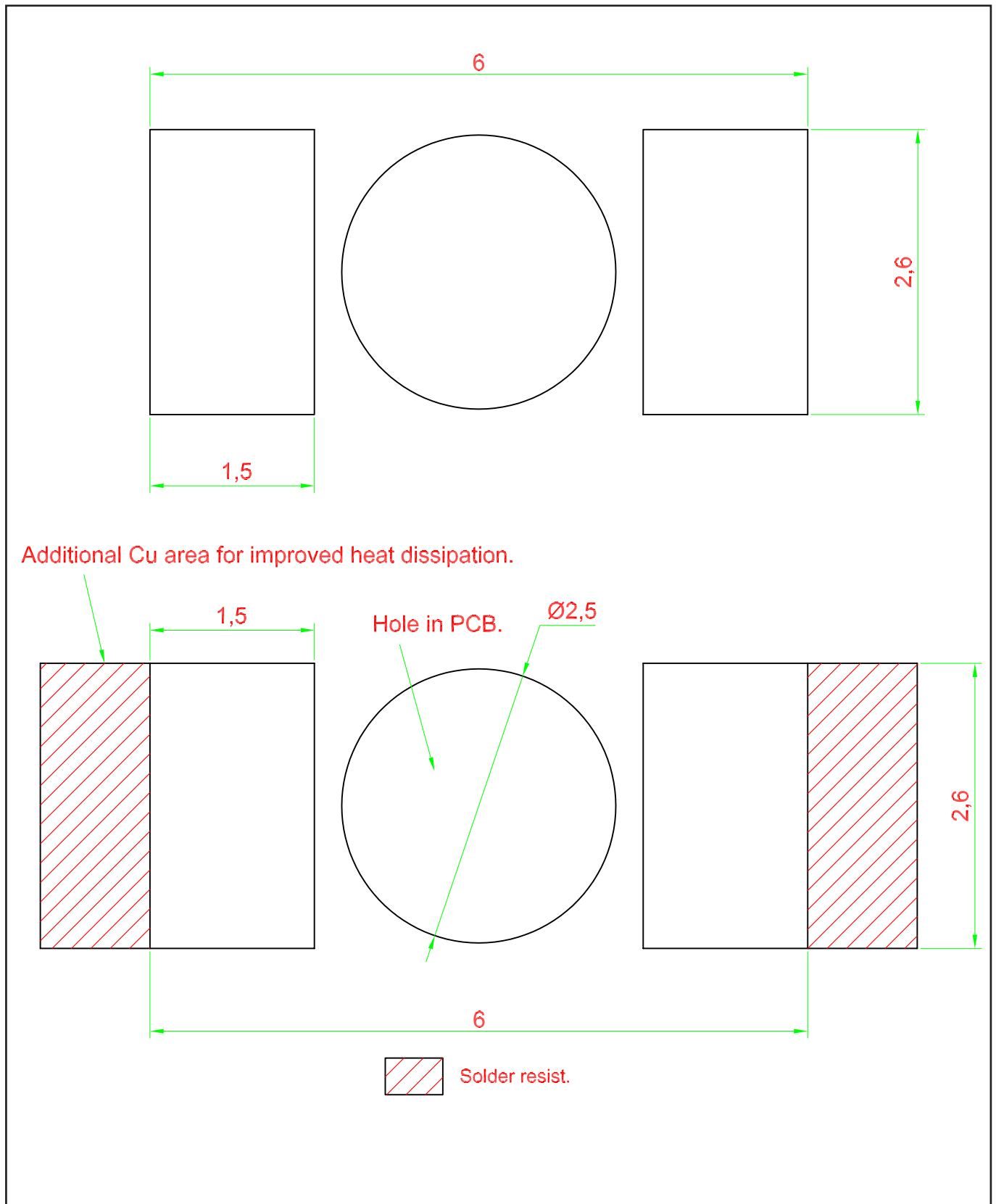
**DomiLED • InGaN : DDx-ERG Package Outlines**



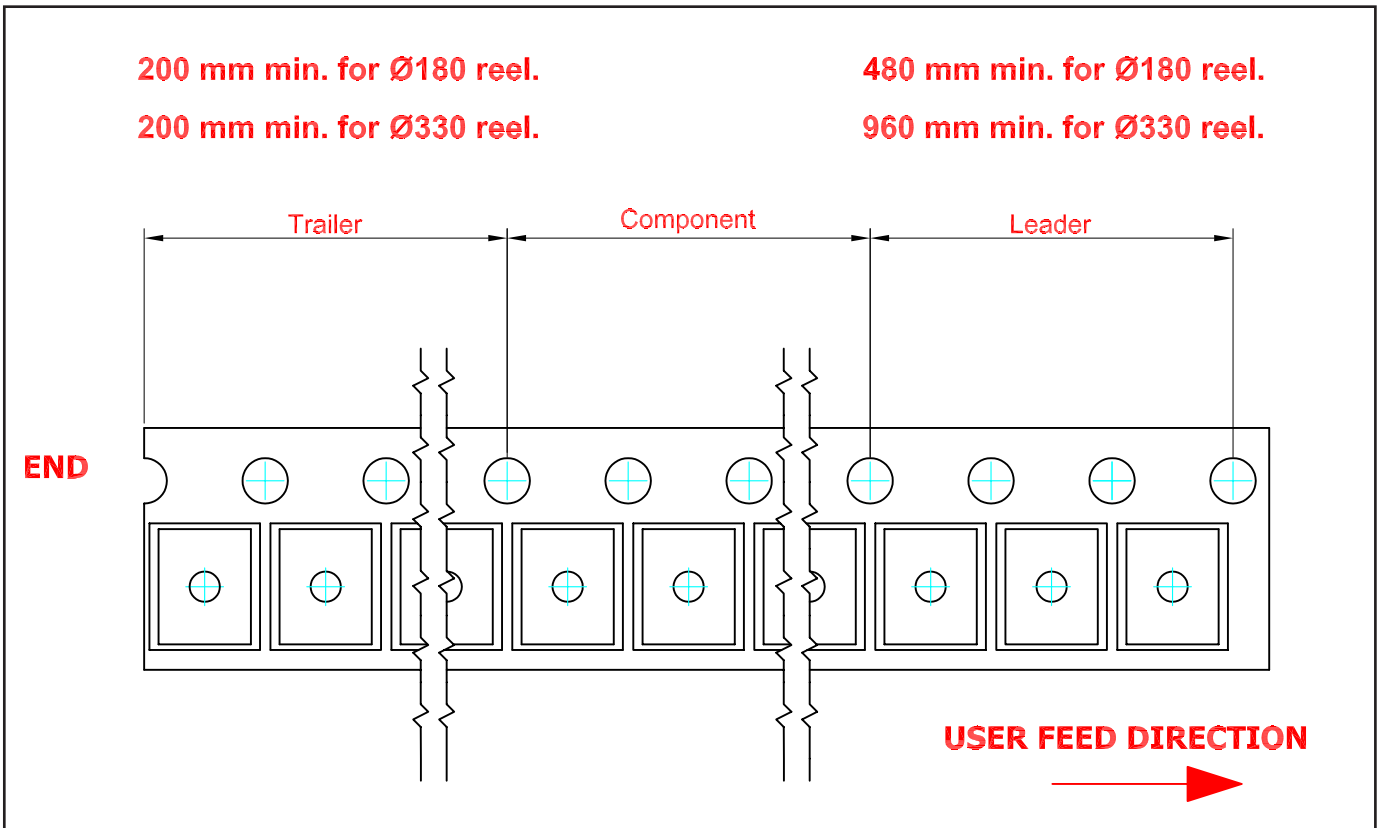
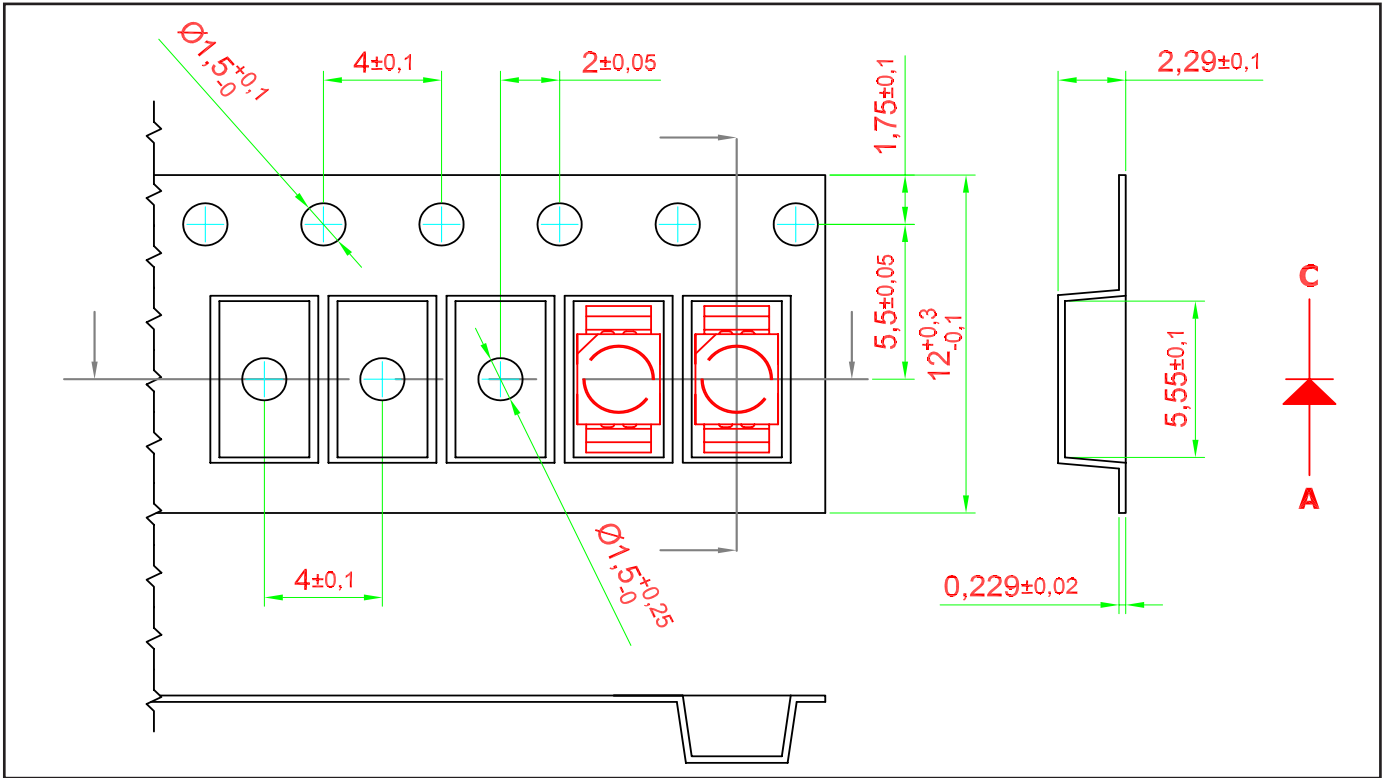
**Material**

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

**Recommended Solder Pad**

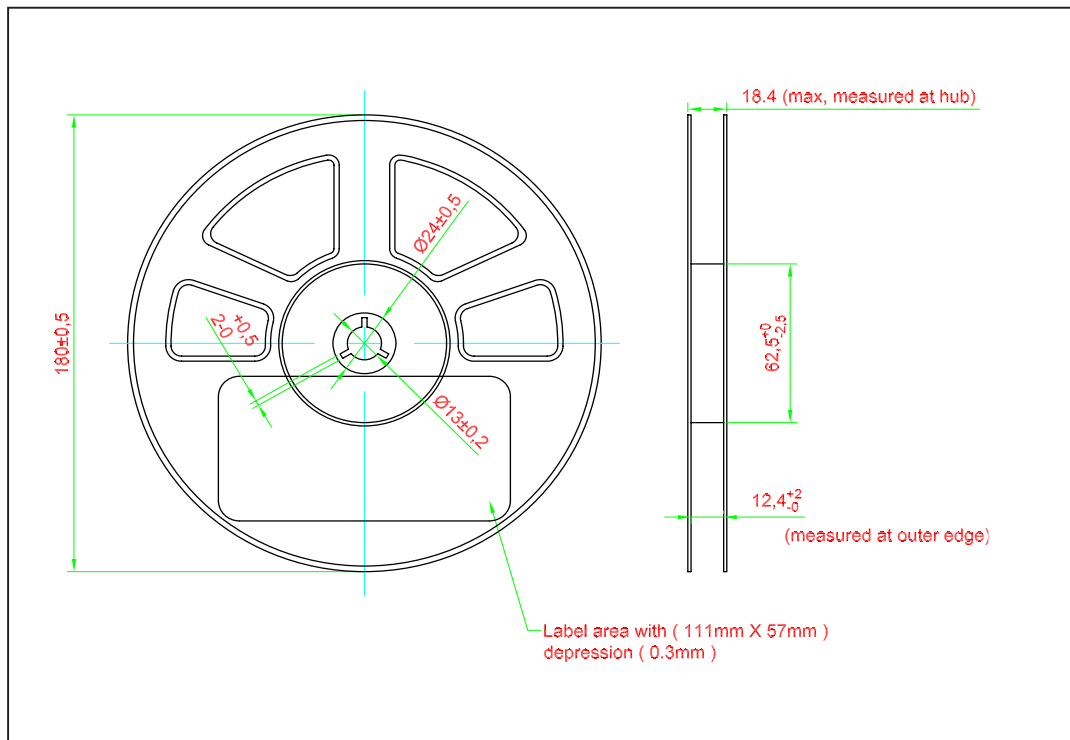


**Taping and orientation**





**Packaging Specification**

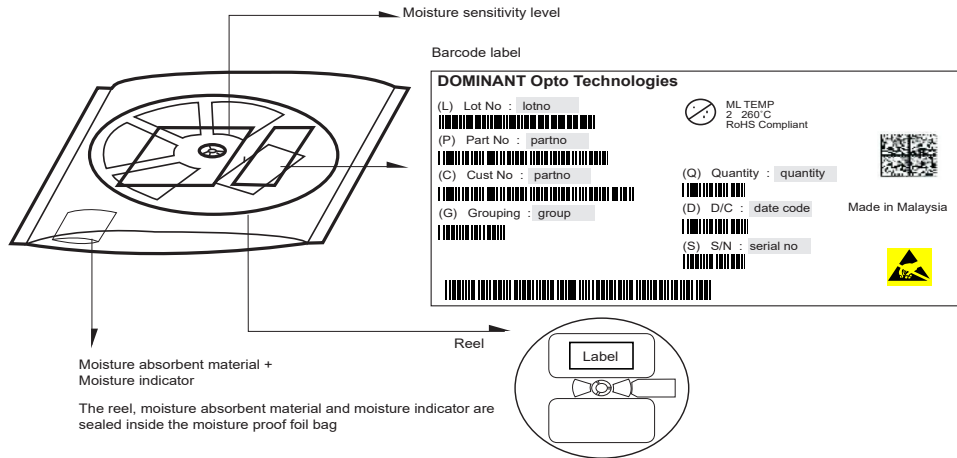


	Reel Diameter (mm)	Quantity (pcs)	*Ordering Number
Standard Packing	180	2000	DDx-ERG-xxx-x

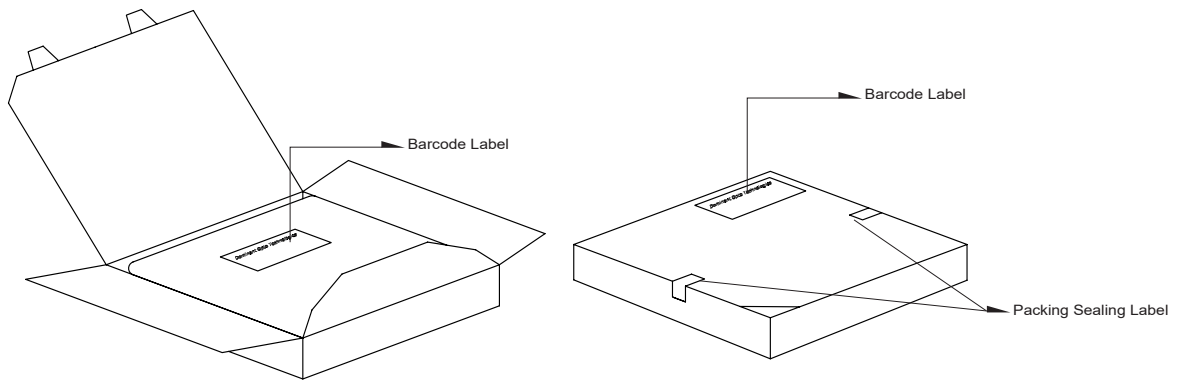
Notes:

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

**Packaging Specification**



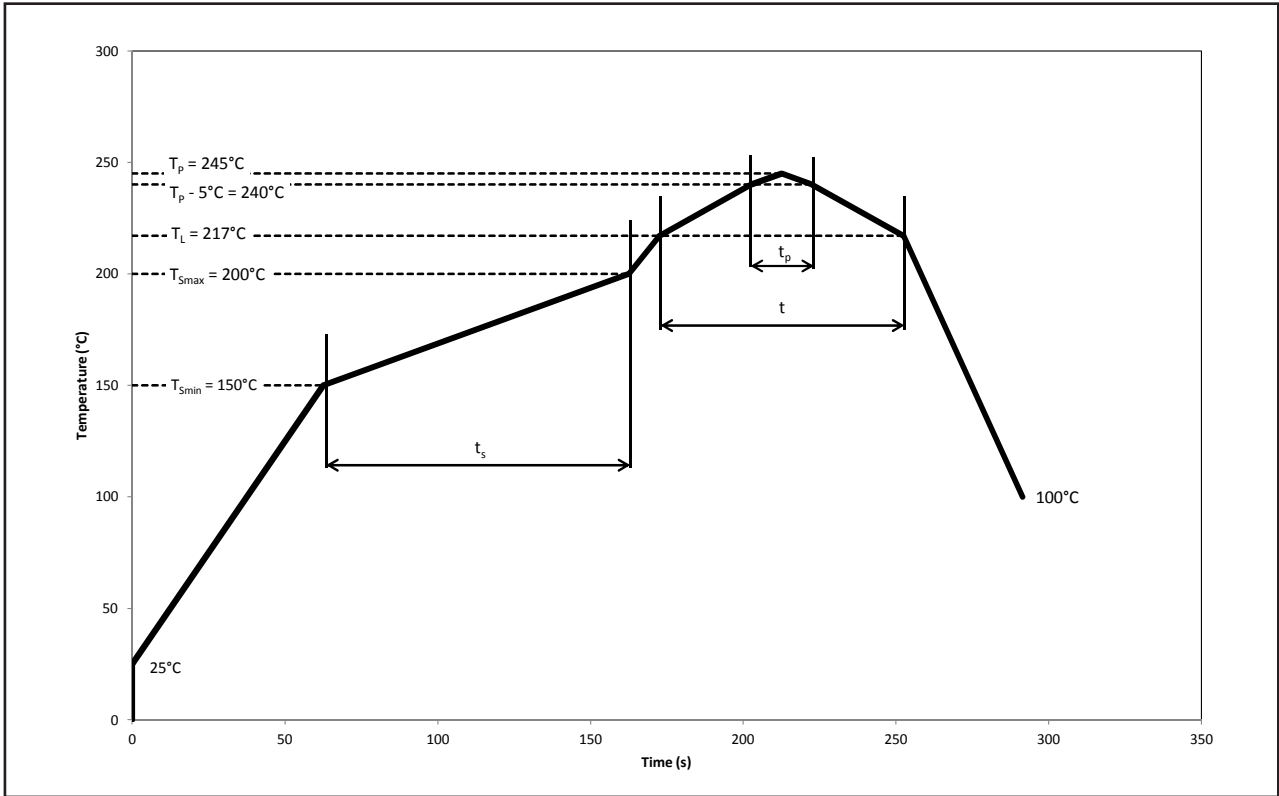
Quantity per bag (pcs)	Average 1pc DomiLED (gram)	1 completed bag (gram)
2000	0.034	240 ± 10



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

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## 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**

Page	Subjects	Date of Modification
-	Initial Release	26 Feb 2020
2, 11	Not for New Design: DDB-ERG-N2P-1-I1, DDT-ERG-RS1-1-I1 Update Recommended Pb-free Soldering Profile	18 May 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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