

Mini DomiLED

With the intense colors that seem to glow with energy and its significant brightness, Mini DomiLED LED is a highly reliable design device. Its dynamic nature makes it perfect choice for lighting applications, office and home applications and standard industrial applications.



Features:

- > High brightness surface mount LED.
- > Based on InGaN technology.
- > 120° viewing angle.
- > Small package outline (LxWxH) of 2.0 x 1.4 x 1.3mm.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to both IR reflow soldering.
- > Environmental friendly; RoHS compliance.
- > Compliance to automotive standard; AEC-Q101.
- > Passed Corrosion Resistant Test. *Appx. 6.1*



Applications:

- > Automotive: interior applications, eg: switches, telematics, climate control system, dashboard, etc.



Optical Characteristics at Tj=25°C

Part Ordering Number	Viewing Angle°	Luminous Intensity @ IF = 10mA IV (mcd) <i>Appx. 1.1</i>		
		Min.	Typ.	Max.
DNZB-LJG-T2U-1R3T-I1	120	355.0	560.0	715.0
DNZB-LJG-UV1-4R6T-I1	120	450.0	715.0	900.0

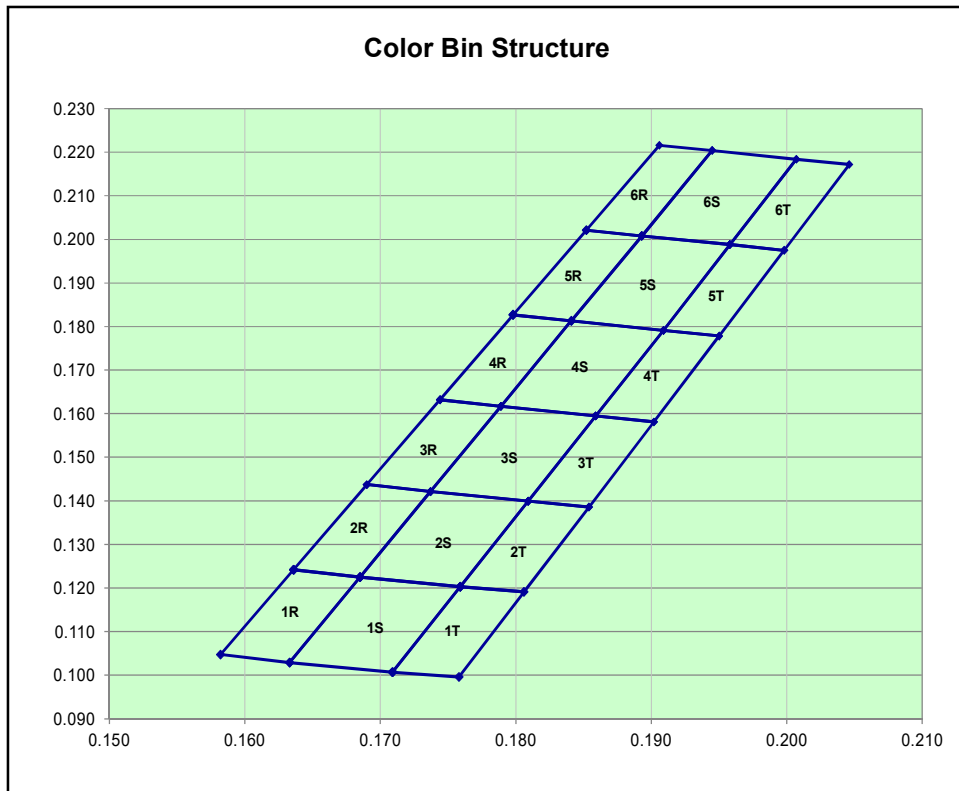
Electrical Characteristics at Tj=25°C

Part Number	Vf @ If = 10mA <i>Appx. 3.1</i>			Vr @ Ir = 10 µA <i>Appx. 7.1</i>
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DNZB-LJG	2.7	2.9	3.2	5.0

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. 7.1</i>	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)	65	mW
Thermal resistance		
- Junction / ambient, R _{th JA}	480	K/W
- Junction / solder point, R _{th JS}	230	K/W
(Mounting on FR4 PCB, pad size ≥ 16 mm ² per pad)		

DNZB-LJG, Sapphire Blue Color Grouping *Appx. 2.1*



Chromaticity coordinate groups are measured with an accuracy of ± 0.01 .

Bin		1	2	3	4
1R	Cx	0.1636	0.1685	0.1633	0.1582
	Cy	0.1242	0.1225	0.1029	0.1047
1S	Cx	0.1685	0.1759	0.1709	0.1633
	Cy	0.1225	0.1203	0.1007	0.1029
1T	Cx	0.1759	0.1806	0.1758	0.1709
	Cy	0.1203	0.1191	0.0996	0.1007
2R	Cx	0.1690	0.1737	0.1685	0.1636
	Cy	0.1437	0.1421	0.1225	0.1242
2S	Cx	0.1737	0.1809	0.1759	0.1685
	Cy	0.1421	0.1399	0.1203	0.1225
2T	Cx	0.1809	0.1854	0.1806	0.1759
	Cy	0.1399	0.1386	0.1191	0.1203
3R	Cx	0.1744	0.1789	0.1737	0.1690
	Cy	0.1632	0.1617	0.1421	0.1437
3S	Cx	0.1789	0.1859	0.1809	0.1737
	Cy	0.1617	0.1595	0.1399	0.1421
3T	Cx	0.1859	0.1902	0.1854	0.1809
	Cy	0.1595	0.1581	0.1386	0.1399
4R	Cx	0.1744	0.1789	0.1841	0.1798
	Cy	0.1632	0.1617	0.1813	0.1827
4S	Cx	0.1789	0.1859	0.1909	0.1841
	Cy	0.1617	0.1595	0.1791	0.1813
4T	Cx	0.1859	0.1902	0.1950	0.1909
	Cy	0.1595	0.1581	0.1778	0.1791

Bin		1	2	3	4
5R	Cx	0.1798	0.1841	0.1893	0.1852
	Cy	0.1827	0.1813	0.2008	0.2021
5S	Cx	0.1841	0.1909	0.1958	0.1893
	Cy	0.1813	0.1791	0.1988	0.2008
5T	Cx	0.1909	0.1950	0.1998	0.1958
	Cy	0.1791	0.1778	0.1975	0.1988
6R	Cx	0.1852	0.1893	0.1945	0.1906
	Cy	0.2021	0.2008	0.2204	0.2216
6S	Cx	0.1893	0.1958	0.2007	0.1945
	Cy	0.2008	0.1988	0.2184	0.2204
6T	Cx	0.1958	0.1998	0.2046	0.2007
	Cy	0.1988	0.1975	0.2172	0.2184

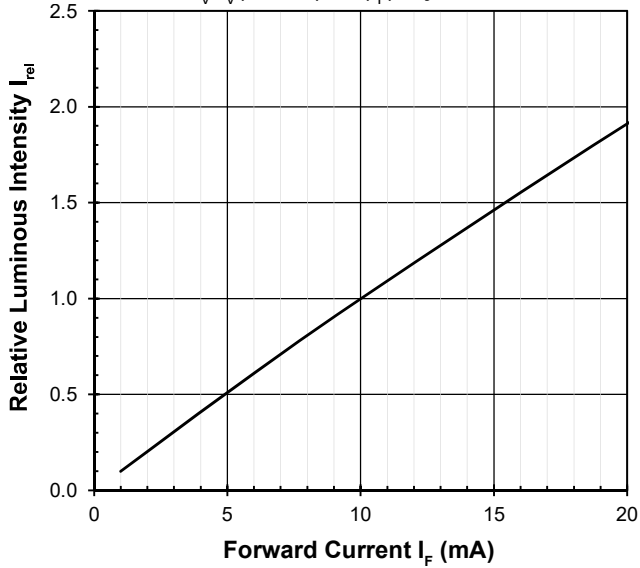
InGaN wavelength is very sensitive to drive current. Operating at lower current is not recommended and may yield unpredictable performance. Current pulsing should be used for dimming purposes.

Luminous Intensity Group at Tj=25°C

Brightness Group	Luminous Intensity <i>Appx. 1.1</i> IV (mcd)
T2	355.0 ... 450.0
U1	450.0 ... 560.0
U2	560.0 ... 715.0
V1	715.0 ... 900.0

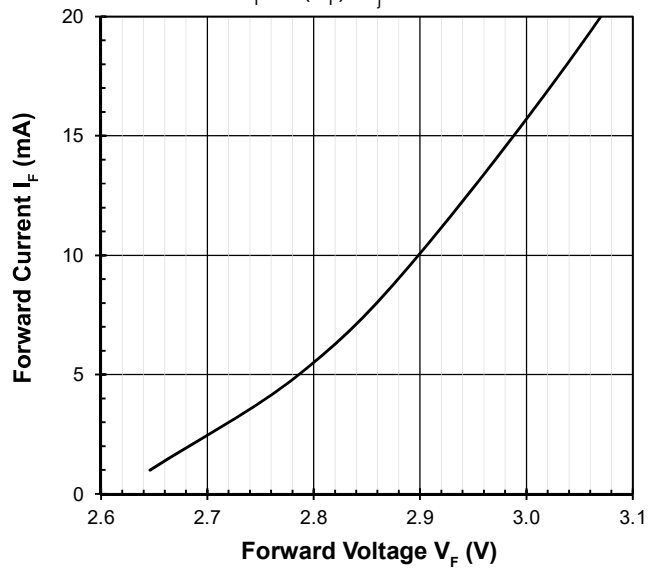
Relative Luminous Intensity Vs Forward Current

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



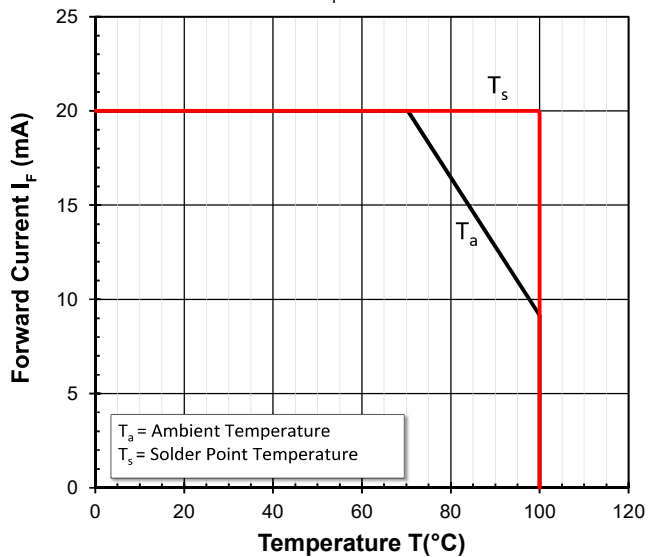
Forward Current Vs Forward Voltage

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



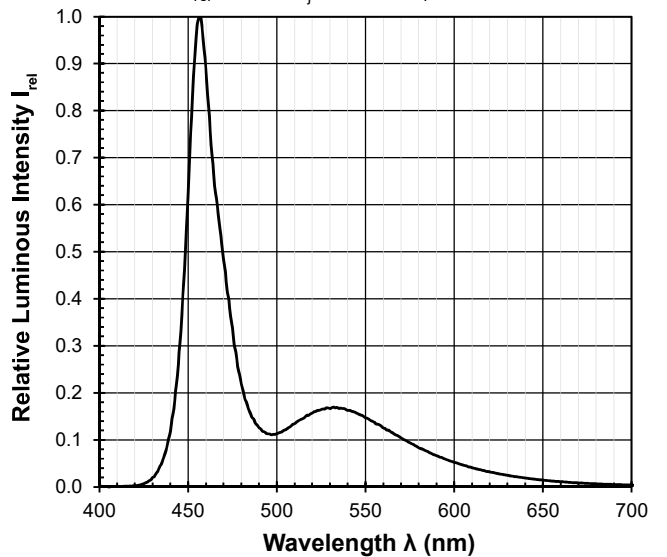
Maximum Current Vs Temperature

$I_F = f(T)$



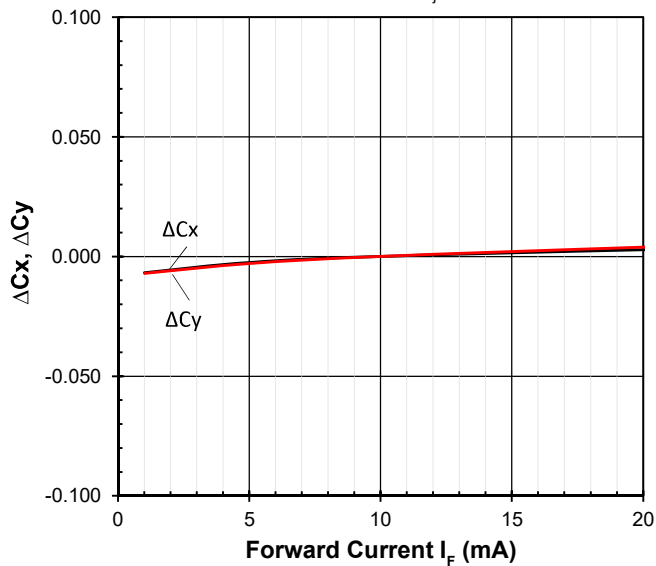
Relative Spectral Emission

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



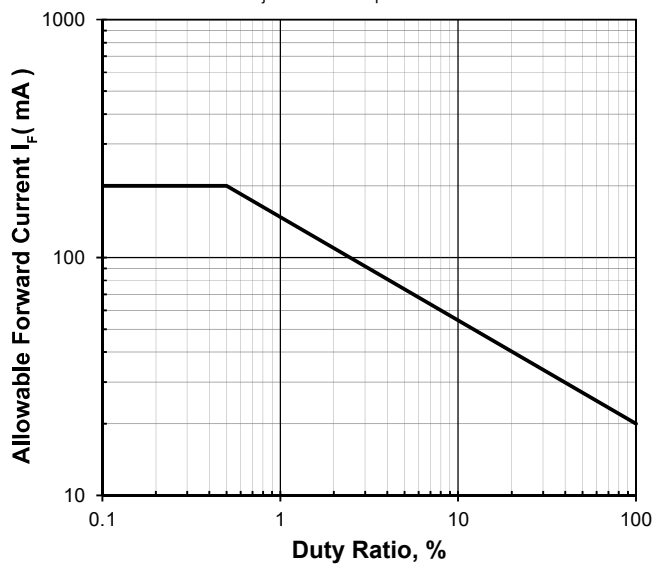
Chromaticity Coordinate Shift Vs Forward Current

$\Delta Cx, \Delta Cy = f(I_F); T_j = 25^\circ\text{C}$

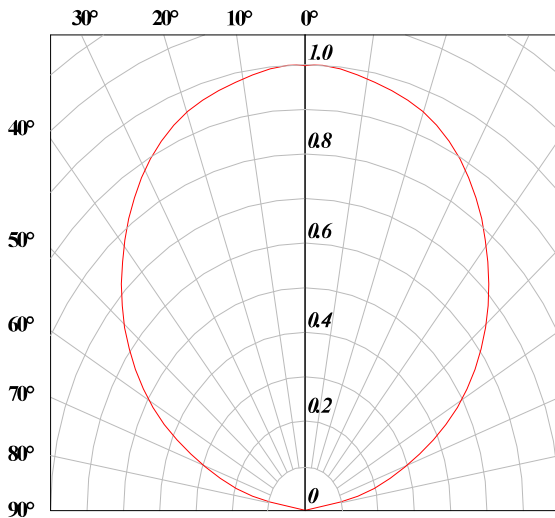


Allowable Forward Current Vs Duty Ratio

$(T_j = 25^\circ\text{C}; t_p \leq 10\mu\text{s})$

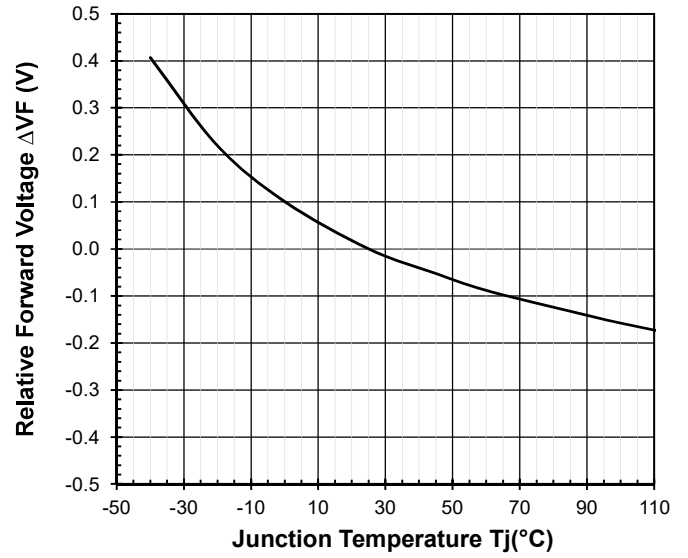


Radiation Pattern



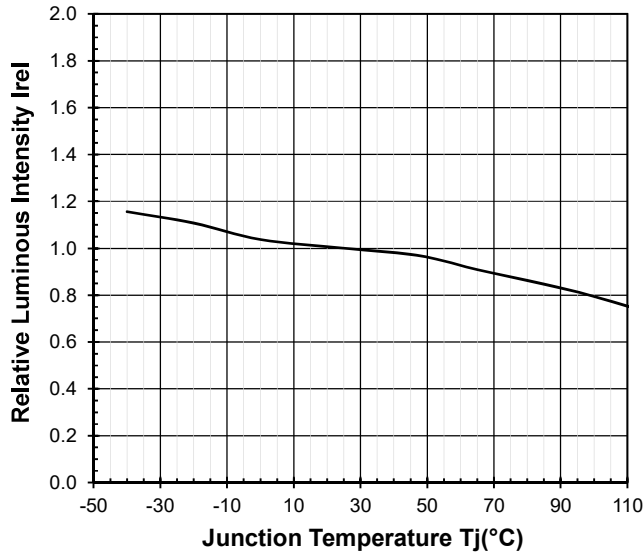
Relative Forward Voltage Vs Junction Temperature

$\Delta VF = VF - VF(25^\circ C) = f(Tj); IF = 10mA$



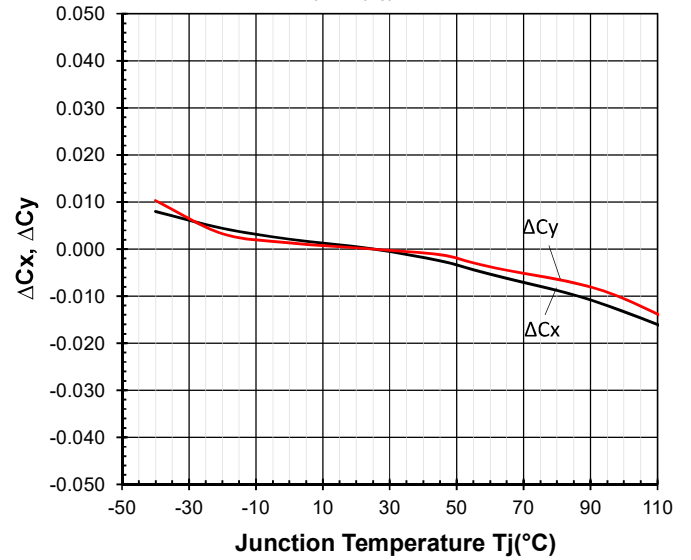
Relative Luminous Intensity Vs Junction Temperature

$IV / IV(25^\circ C) = f(Tj); IV = 10mA$

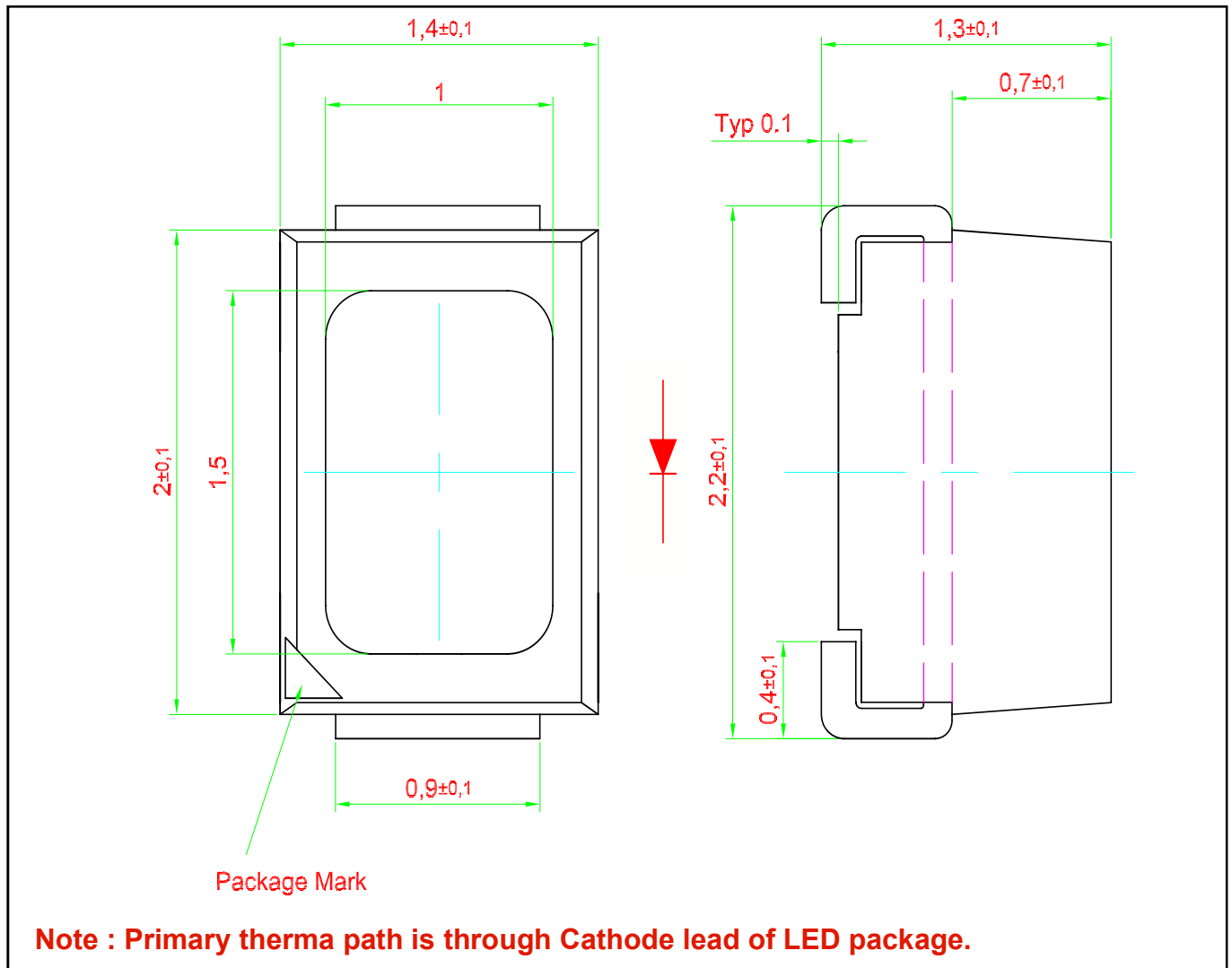


Chromaticity Coordinate Shift Vs Junction Temperature

$\Delta Cx, \Delta Cy = f(Tj); IF = 10mA$



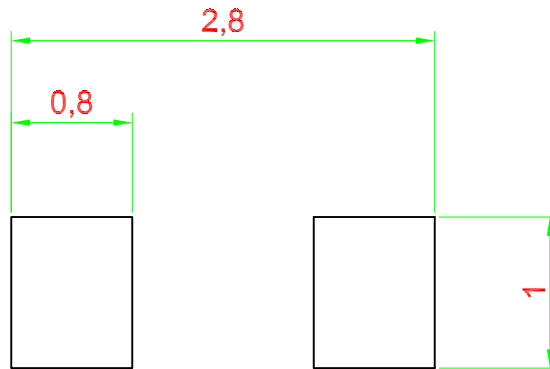
Mini DomiLED • InGaN: DNZB-LJG-I1 Package Outlines



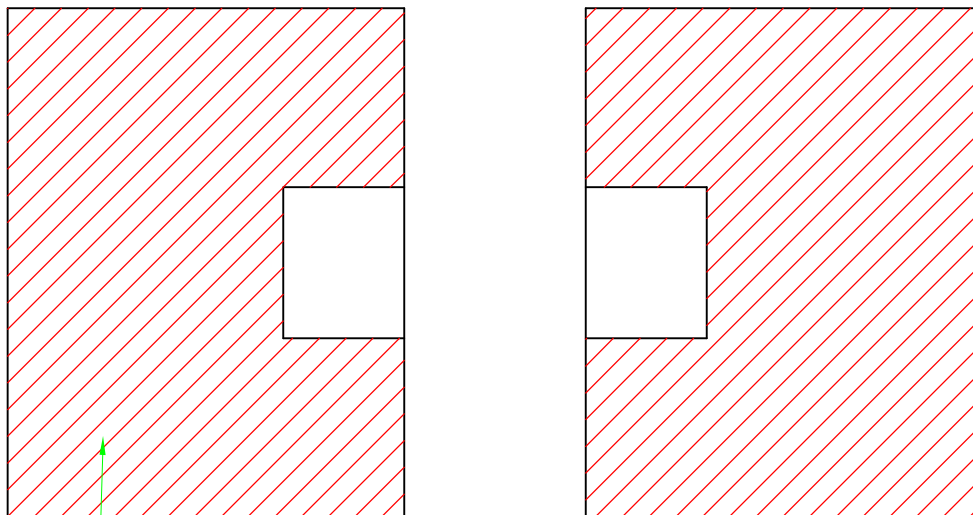
Material

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

Recommended Solder Pad



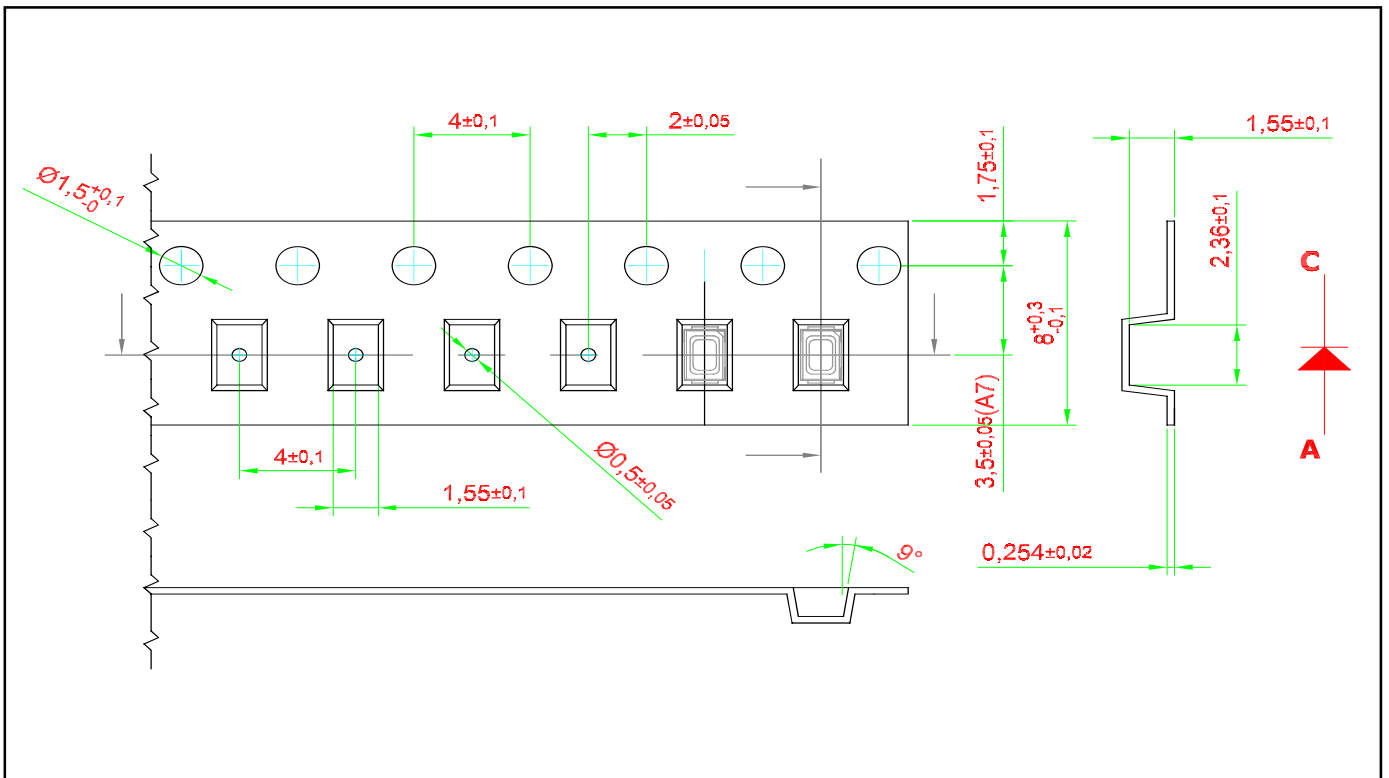
Improved Design For Better Heat Dissipation



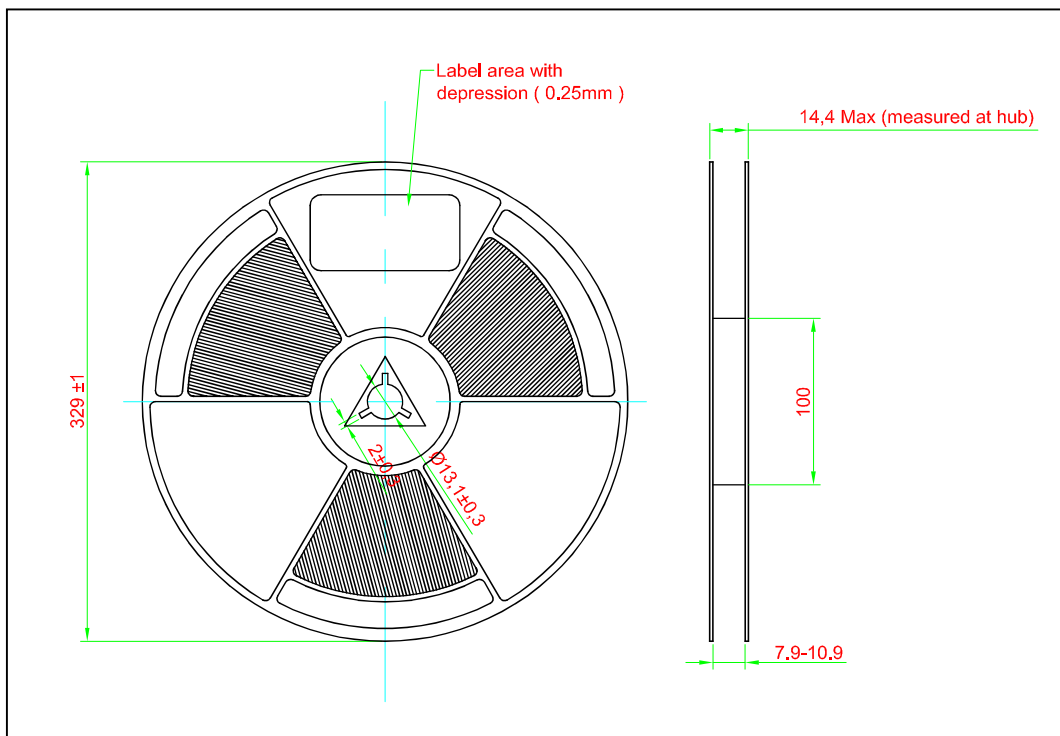
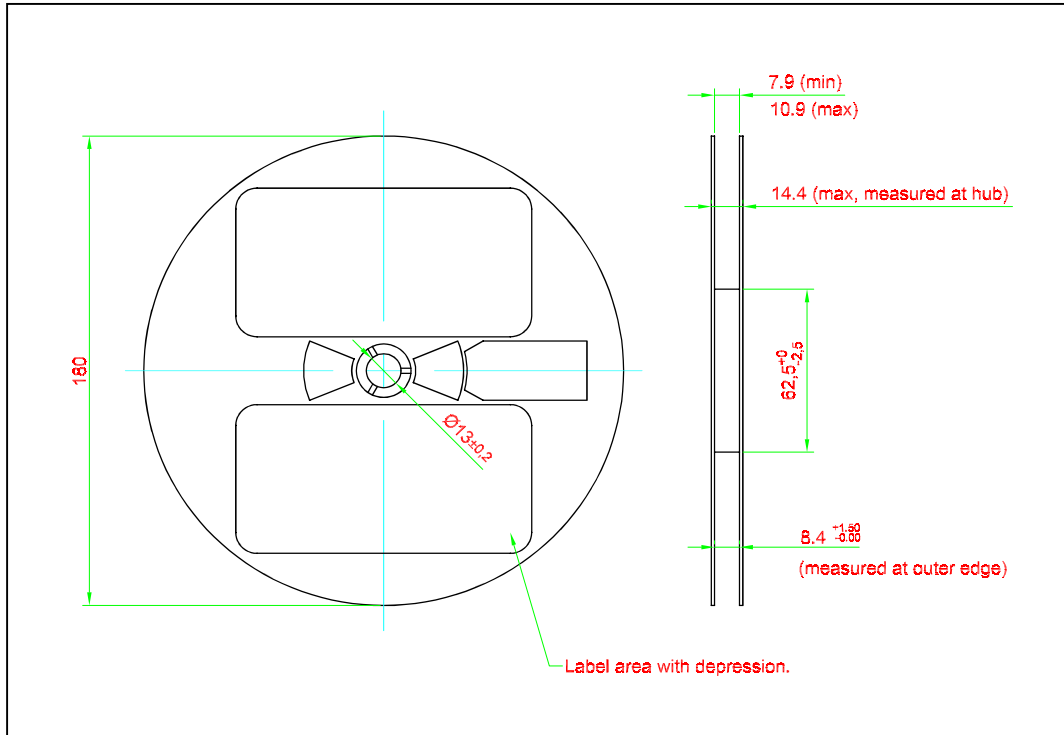
Additional Cu area for improved heat dissipation, > 16mm sq.

 Solder resist.

Taping and orientation

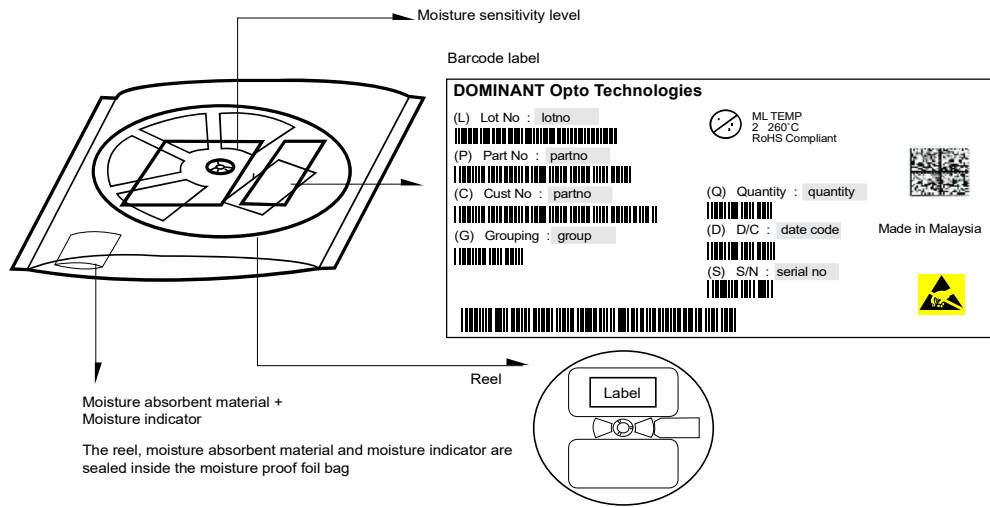


Packaging Specification

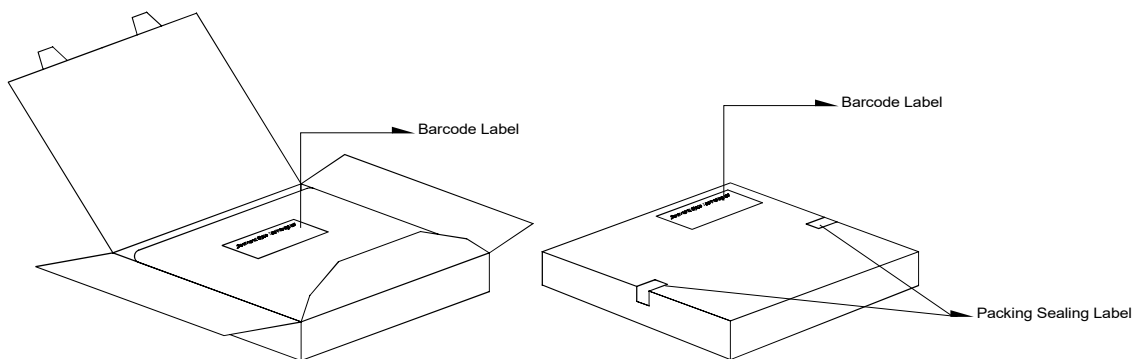


	Reel Diameter (mm)	Quantity (pcs)	Partno
Standard Packing	180	3000	DNW-LJG-xxx-x-x
Optional Packing	329	10000	DNW-LJG-xxx-x-x-J

Packaging Specification



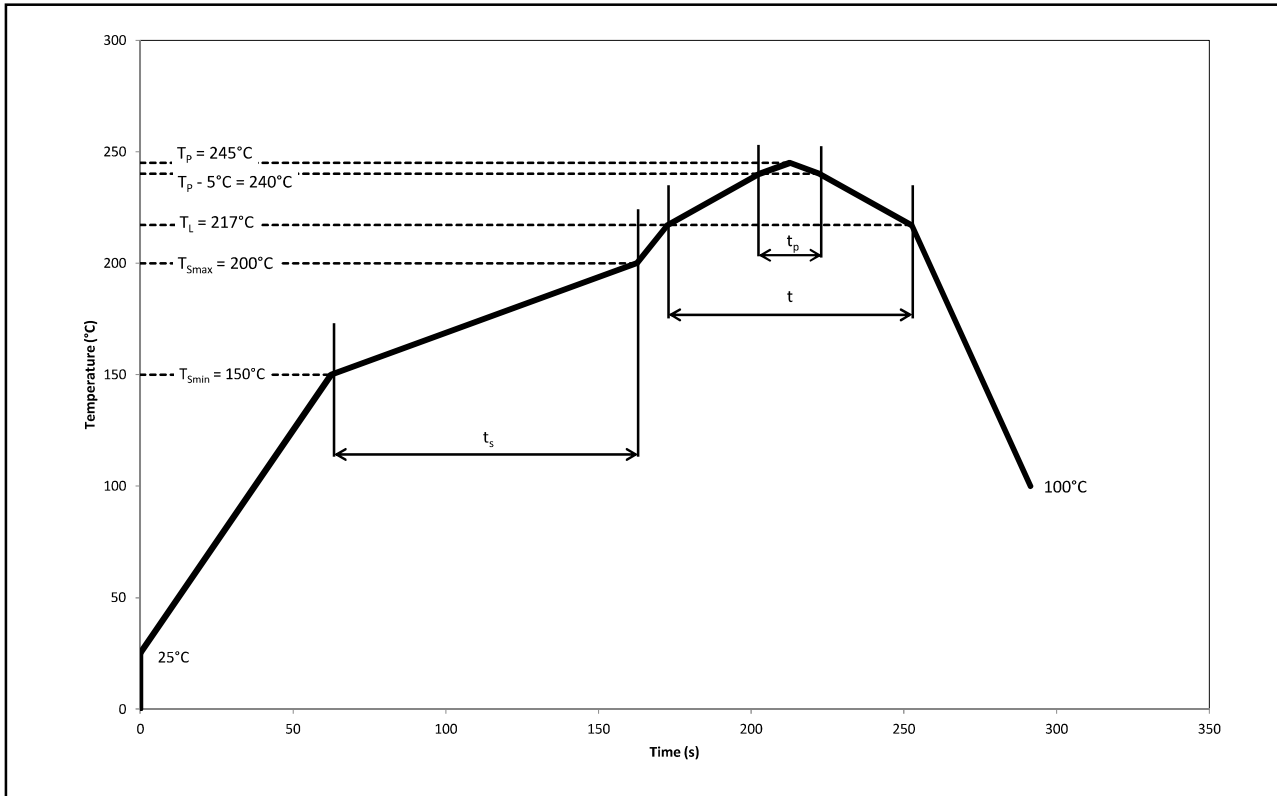
Quantity per bag (pcs)	Average 1pc Mini DomiLED (gram)	1 completed bag (gram)
3000	0.007	200 ± 10
10000	0.007	550 ± 10



Reel Diameter (mm)	Packing Box Dimensions (mm)
180	210 x 210 x 16
329	345 x 345 x 16

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 $T_P - 5^\circ\text{C}$	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) **Corrosion Robustness:**

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

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
-	Initial Release	01 Nov 2017
2, 6, 14	Update Forward Voltage Update Graph: Forward Current Vs Forward Voltage Update Appendix	20 Mar 2018
11, 12, 13	Update Package Specification Update Recommended Pb-free Soldering Profile	02 Sep 2021

NOTE

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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, a ISO/TS 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
