DOMINANT™
Opto Technologies
Innovating Illumination

DATA SHEET:

Mini DomiLED

InGaN Pure Green : DNZP-DKG-I5

Mini DomiLED

With the intense colors that seem to glow with energy and its significant brightness, Mini DomiLED white LED is a highly reliable design device. Its dynamic nature makes it perfect choice for lighthing 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-Q102.
> Superior corrosion resistant.

Applications:

> Automotive: interior applications, eg: switches, telematics, climate control system, dashboard, etc.
> Communication: indicator and backlight in mobilephone.
> Display: full color display video notice board.

Optical Characteristics at Tj=25^{0}C

Part Ordering Number	Color	Viewing Angle°	Luminous Intensity @ IF = 5mA IV (mcd) *Appx. 1.1*		
			Min.	Typ.	Max.
DNZP-DKG-QR1-1-I5	InGaN Pure Green	120	71.5	112.5	140.0

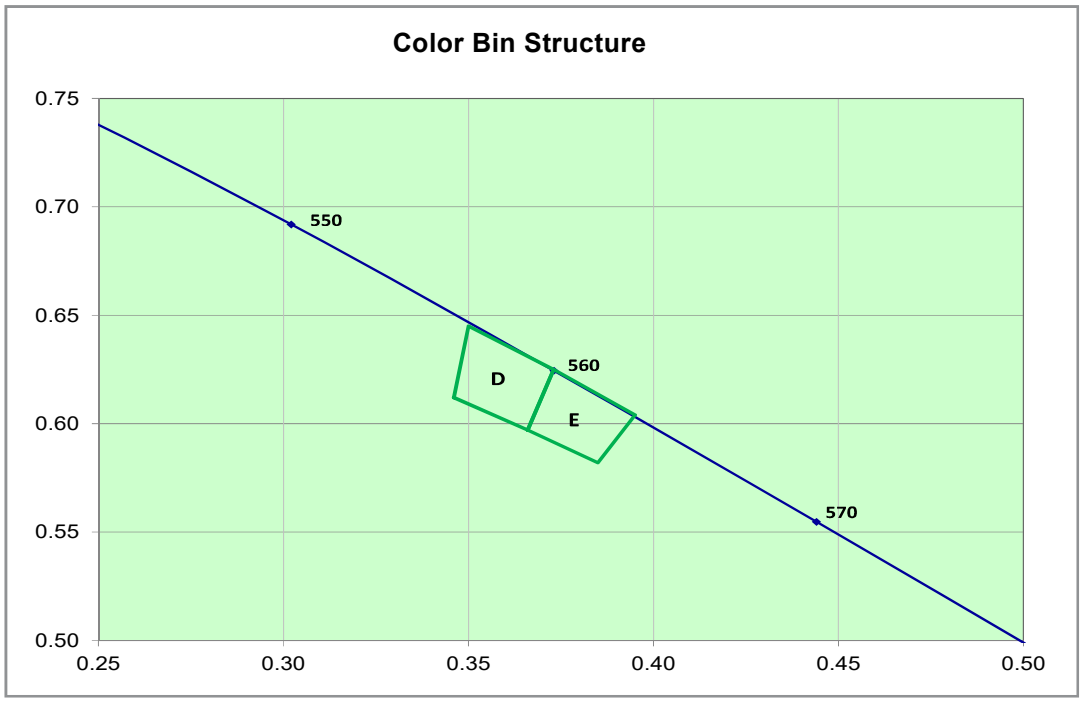
Electrical Characteristics at Tj=25^{0}C

Part Number	Vf @ If = 5 mA *Appx. 3.1*			Vr @ Ir = 10 µA *Appx. 6.1*
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DNZP-DKG	2.6	2.8	3.0	5.0

Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	20	mA
Peak pulse current; (T_s=55°C, tp ≤ 100µs, Duty cycle = 0.03)	100	mA
Reverse voltage *Appx. 6.1*	5	V
ESD threshold (HBM)	2000	V
LED junction temperature	125	˚C
Operating temperature	-40 … +115	˚C
Storage temperature	-40 … +125	˚C
Power dissipation (at room temperature)	60	mW
Thermal resistance - Junction / ambient, $R_{th\ JA}$ - Junction / solder point, $R_{th\ JS}$ (Mounting on FR4 PCB, pad size >= 5 mm^2 per pad)	 530 280	 K/W K/W

DNZP, Color Grouping *Appx. 2.1*



Bin		1	2	3	4
D	Cx	0.3460	0.3500	0.3730	0.3660
	Cy	0.6120	0.6450	0.6250	0.5970
E	Cx	0.3660	0.3730	0.3950	0.3850
	Cy	0.5970	0.6250	0.6040	0.5820

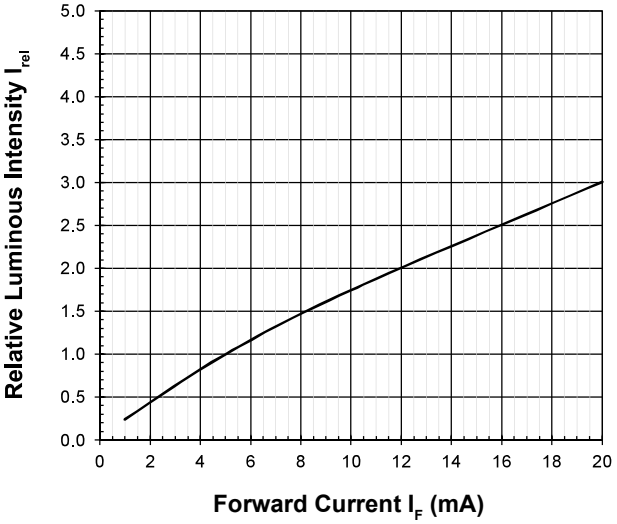
InGaN wavelength is very sensitive to drive current. Operating at lower current is not recommended and may yield unpredictable performance. Current pulsing should be used for dimming purposes.

Luminous Intensity Group at Tj=25˚C

Brightness Group	Luminous Intensity *Appx. 1.1* IV (mcd)
Q1	71.5 ... 90.0
Q2	90.0 ... 112.5
R1	112.5 ... 140.0

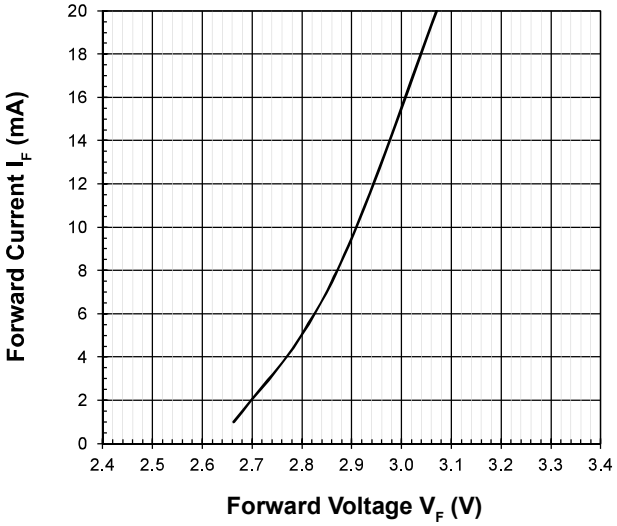
Relative Luminous Intensity Vs Forward Current

$I_V/I_V(5mA) = f(I_F)$; $T_j = 25°C$



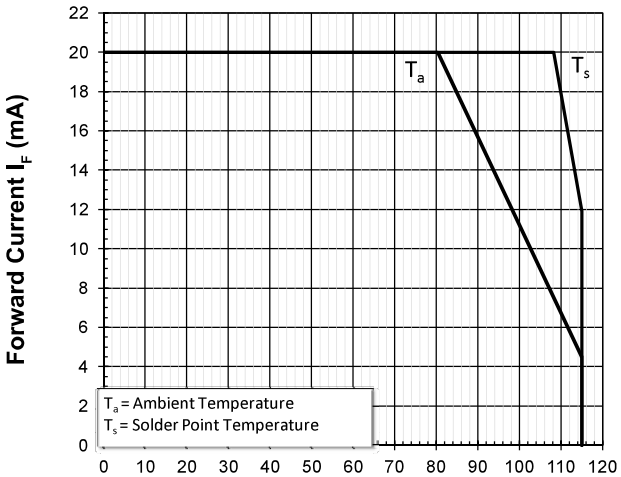
Forward Current Vs Forward Voltage

$I_F = f(V_F)$; $T_j = 25°C$



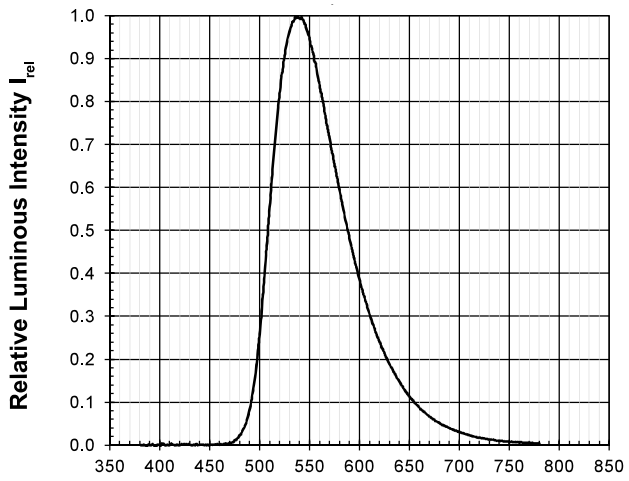
Maximum Current Vs Temperature

$I_F=f(T)$



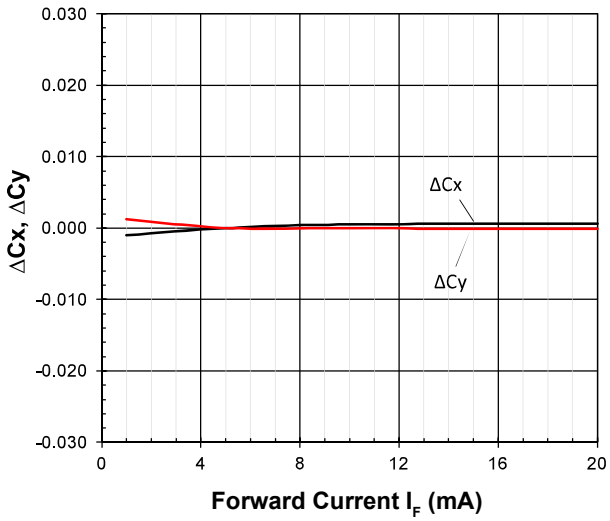
Relative Spectral Emission

$I_{rel} = f(\lambda)$; $T_j = 25°C$; $I_F = 5mA$



Chromaticity Coordinate Shift Vs Forward Current

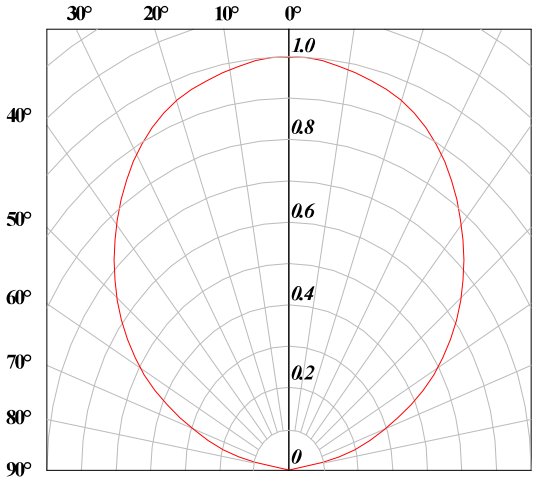
$\Delta Cx, \Delta Cy = f(I_F)$; $T_j = 25°C$



Allowable Forward Current Vs Duty Ratio

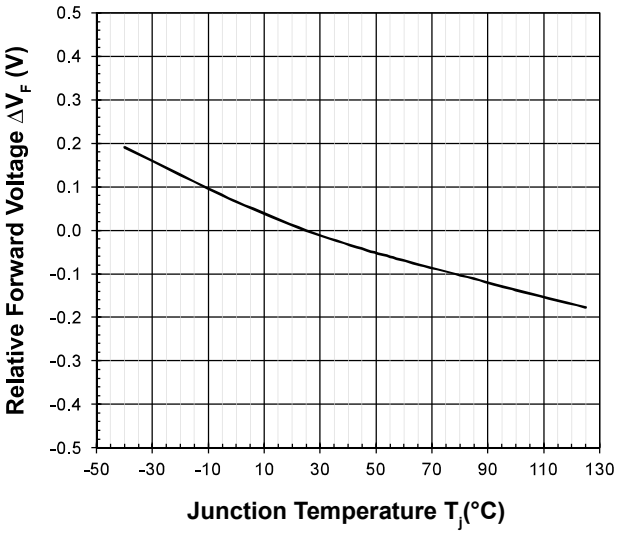
($T_s = 55°C$; $t_p \leq 100\mu s$)

Radiation Pattern



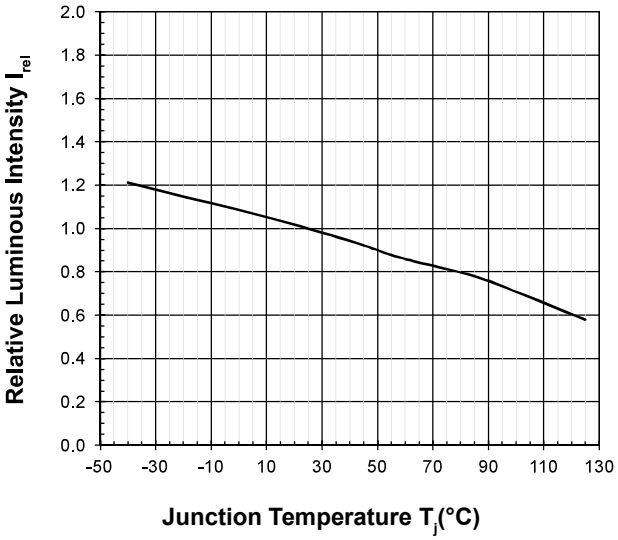
Relative Forward Voltage Vs Junction Temperature

$\Delta V_F = V_F - V_F(25°C) = f(T_j)$; I_F =5mA



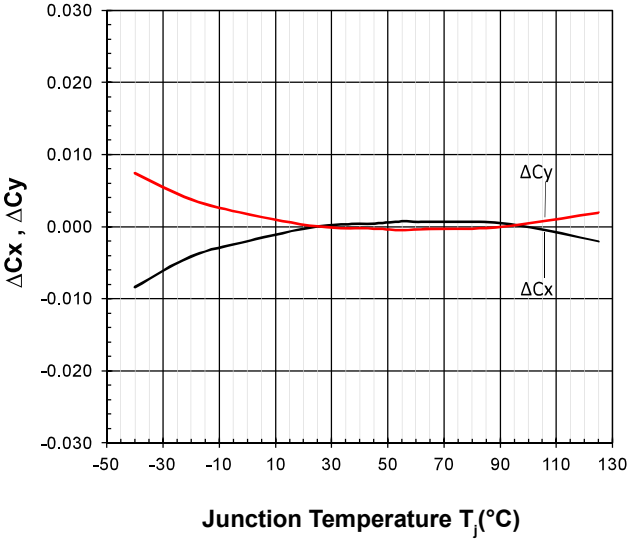
Relative Luminous Intensity Vs Junction Temperature

$I_V/I_V(25°C) = f(T_j)$; I_F = 5mA

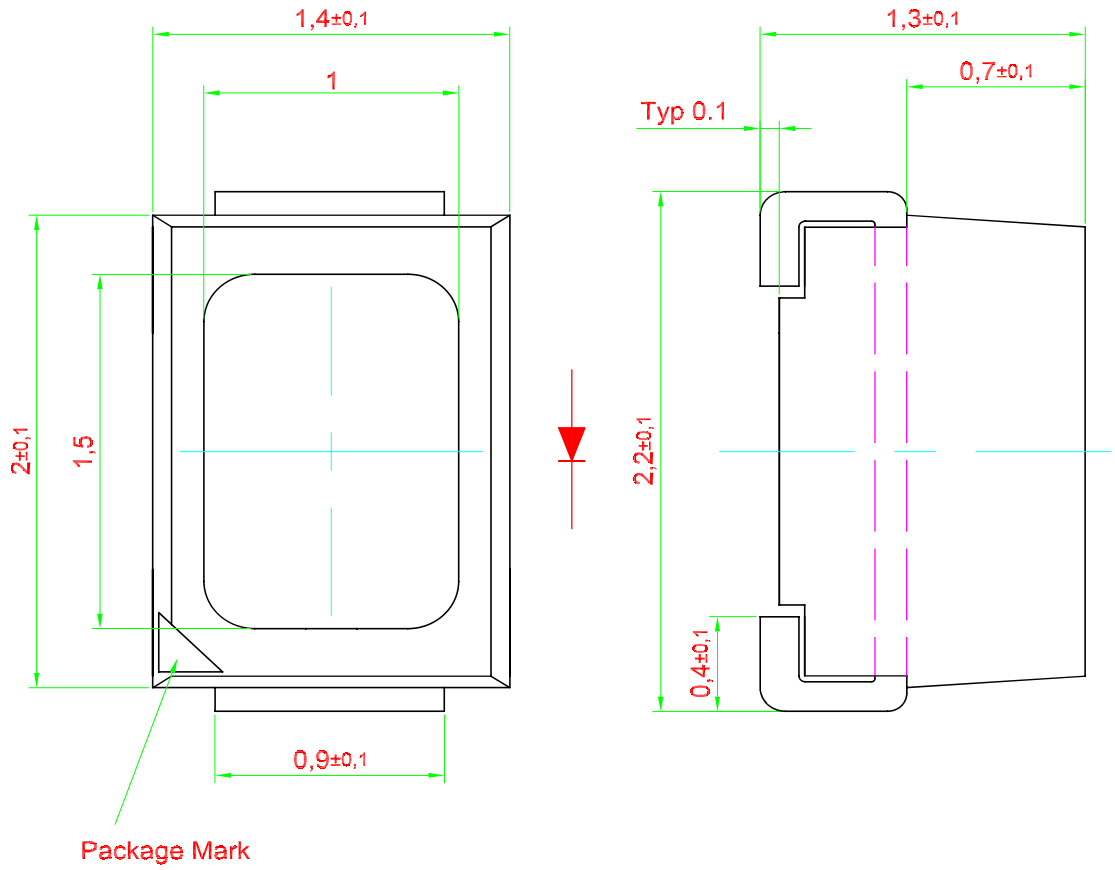


Chromaticity Coordinate Shift Vs Junction Temperature

$\Delta Cx, \Delta Cy = f(T_j)$; I_F = 5mA



Mini DomiLED • InGaN : DNZP-DKG-I5 Package Outlines

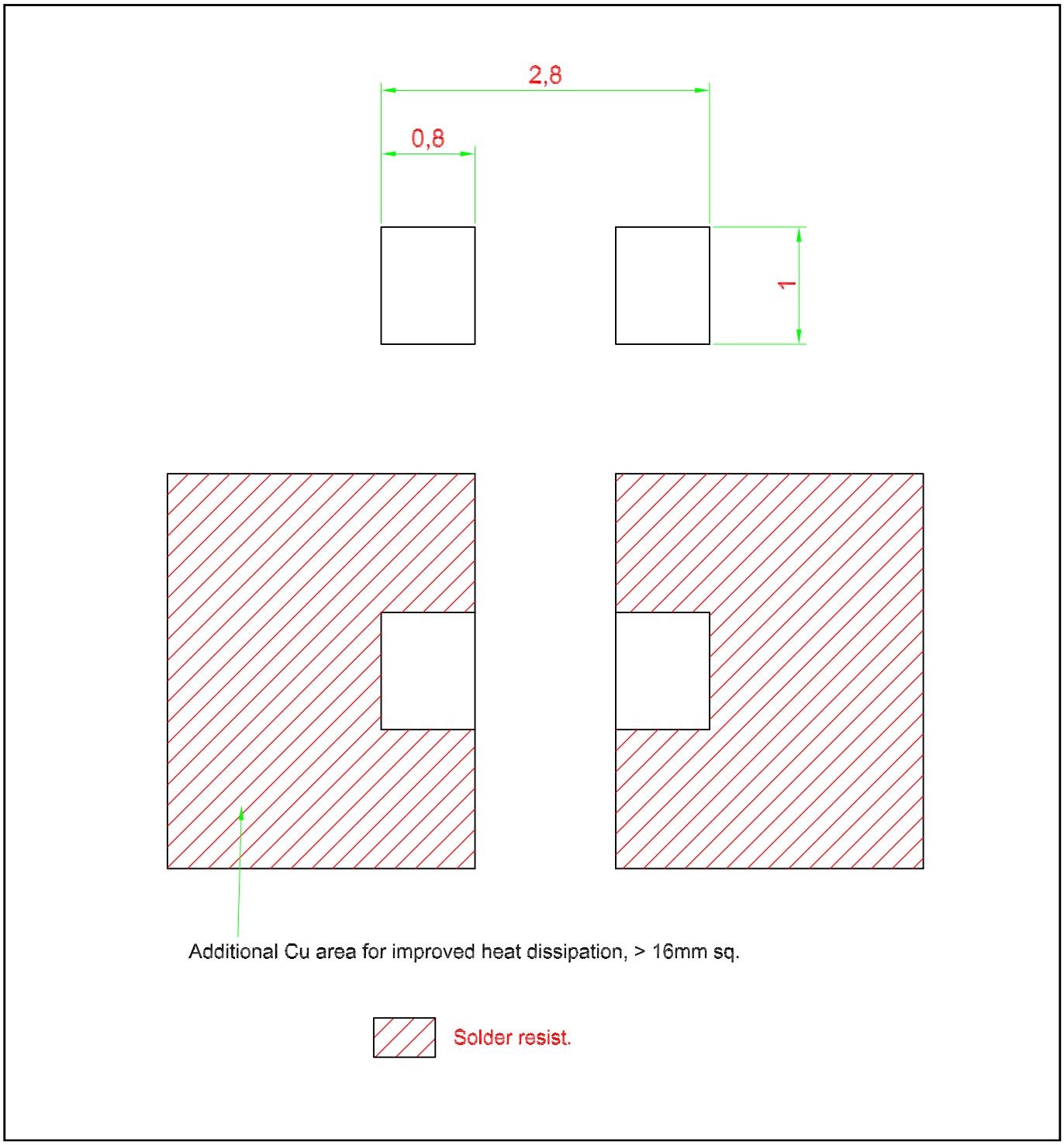


Note : Primary thermal path is through Cathode lead of LED package

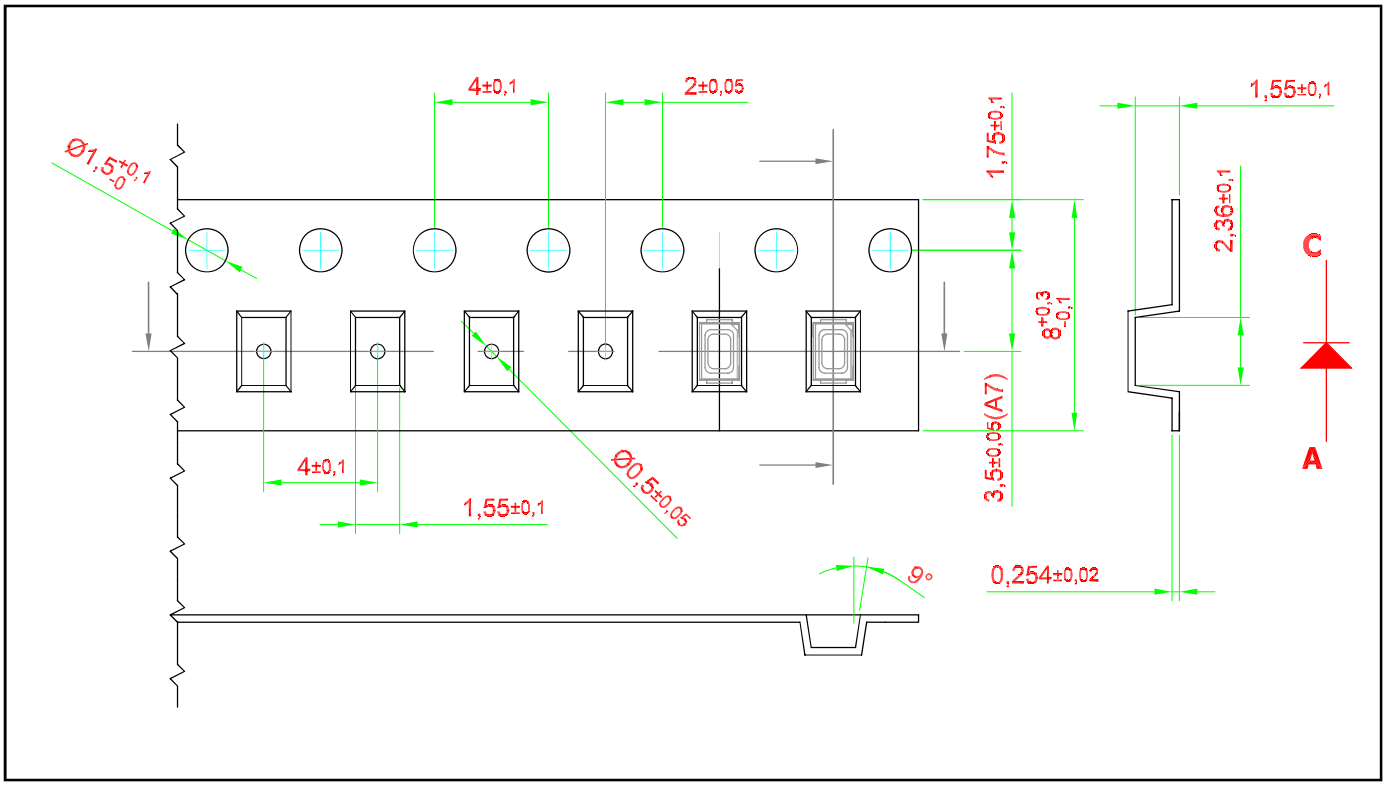
Material

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

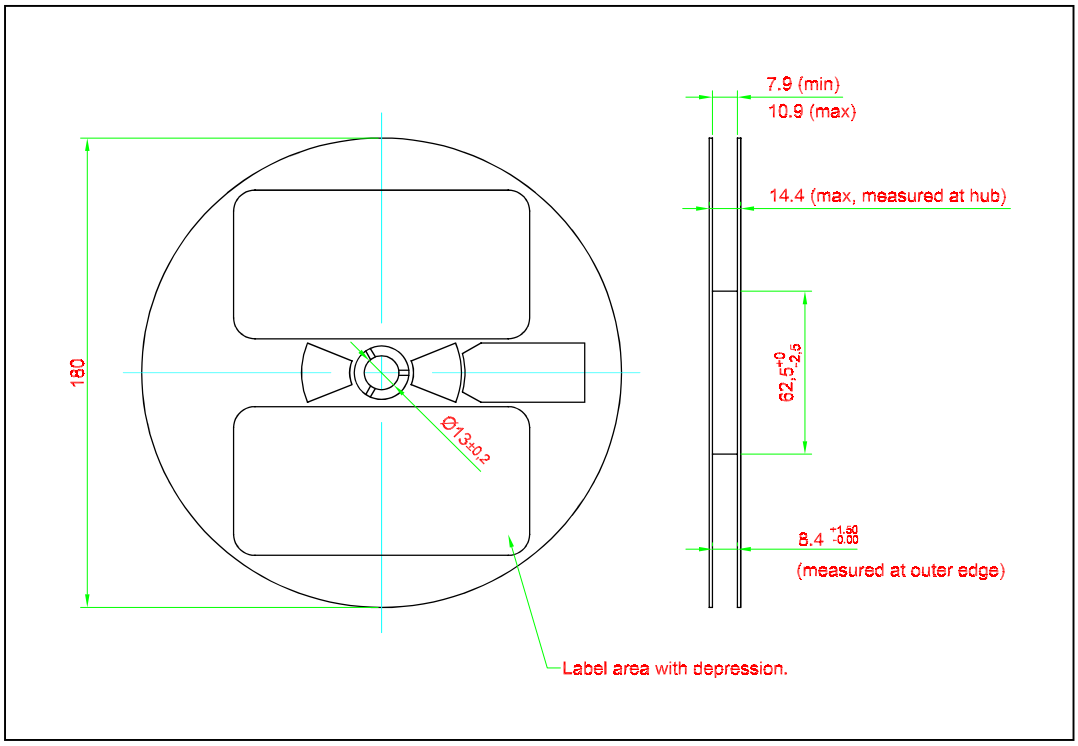
Recommended Solder Pad

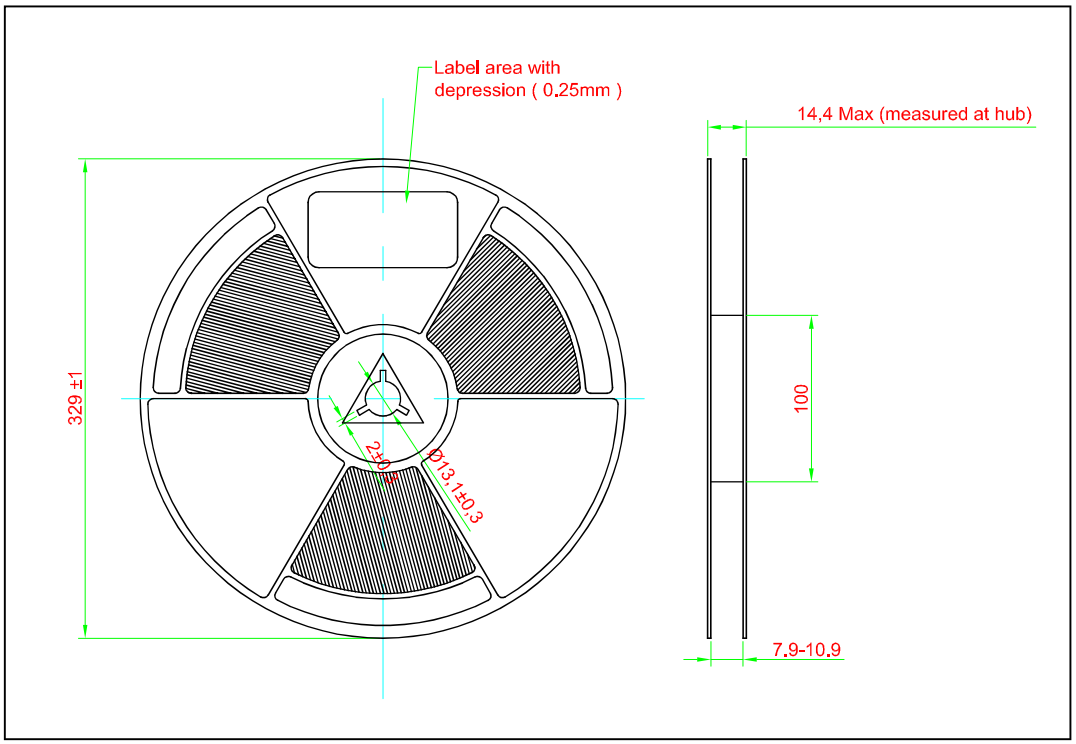


Taping and orientation



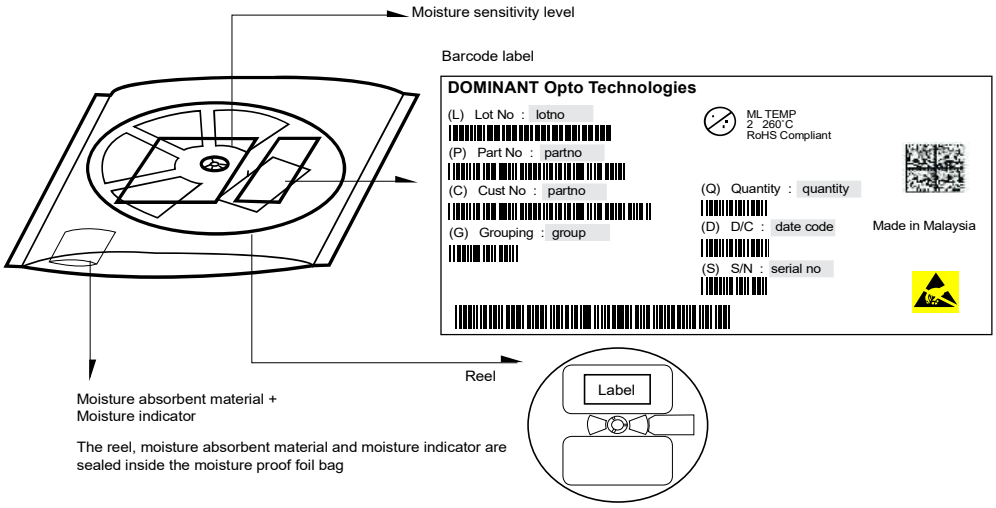
Packaging Specification



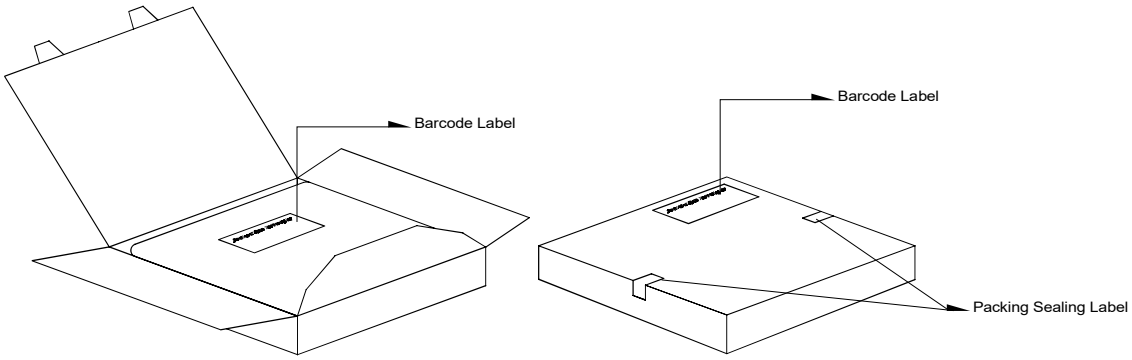


	Reel Diameter (mm)	Quantity (pcs)	Partno
Standard Packing	180	3000	DNZP-DKG-xxx-x-x
Optional Packing	329	10000	DNZP-DKG-xxx-x-x-J

Packaging Specification



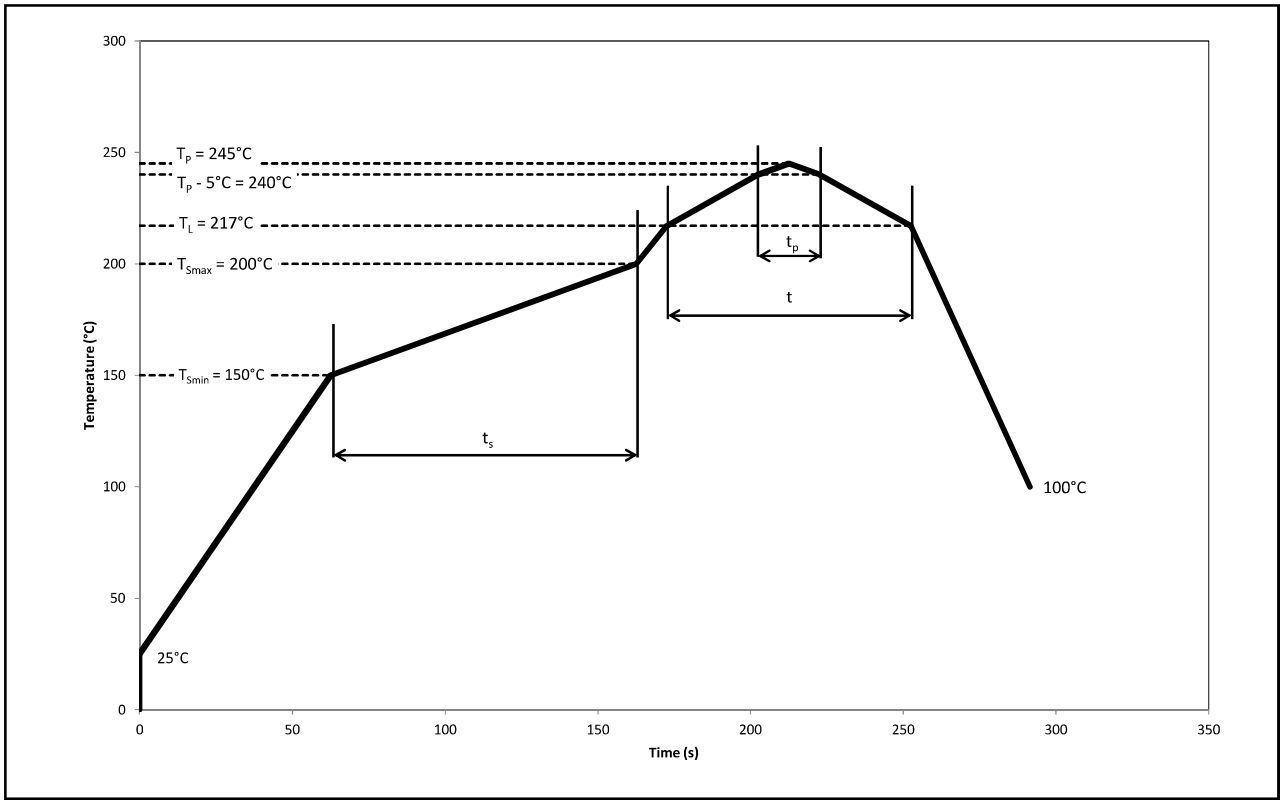
Quantity per bag (pcs)	Average 1pc Mini DomiLED (gram)	1 completed bag (gram)
3000	0.007	200 ± 10
10000	0.007	550 ± 10



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°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 ± 8 % and an expanded uncertainty of ± 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 ± 8 % and an expanded uncertainty of ± 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 ± 8 % and an expanded uncertainty of ± 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 ± 8 % and an expanded uncertainty of ± 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 ± 0.5nm and an expanded uncertainty of ± 1nm (accordingly to GUM with a coverage factor of k=3).

3) Voltage:

3.1 Forward Voltage, Vf is measured when a current pulse of 8 ms(typ) with an internal reproducibility of ± 0.05V and an expanded uncertainty of ± 0.1V (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 specifiec 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	02 Oct 2018
10, 11, 12	Update Packaging Specification Update Recommended Pb-free Soldering Profile	02 Sep 2021

NOTE

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