DOMINANT™
Opto Technologies
Innovating Illumination

DATA SHEET :

SpicePlus 3014

InGaN : SEW-WZSG

Spice:

Synonymous with function and performance, the new era of high intensity illumination in LED. With its high flux output and high luminous intensity, It transcends today LED lightings technology and how we perceive it.

Features:

- > Super high brightness surface mount LED
- > 120° viewing angle.
- > Compact package outline (LxW) of 3.0 x 1.4 mm.
- > Ultra low height profile - 0.52mm.
- > Low thermal resistance.
- > Build-in ESD protection device.
- > Environmental friendly; RoHS compliance.
- > Compliance to automotive standard; AEC-Q102.

Applications:

- > Automotive: Back-light applications.

Optical Characteristics at Tj=25°C

Part Number	Color	Viewing Angle°	Luminous Flux @ 80mA (lm) Appx. 1.2		
			Min.	Typ.	Max.
SEW-WZSG-8P9Q-1	White	120	26.8	33.0	39.8

Notes:
Typ Flux, chromaticity coordinate: Cx 0.290, Cy 0.275.

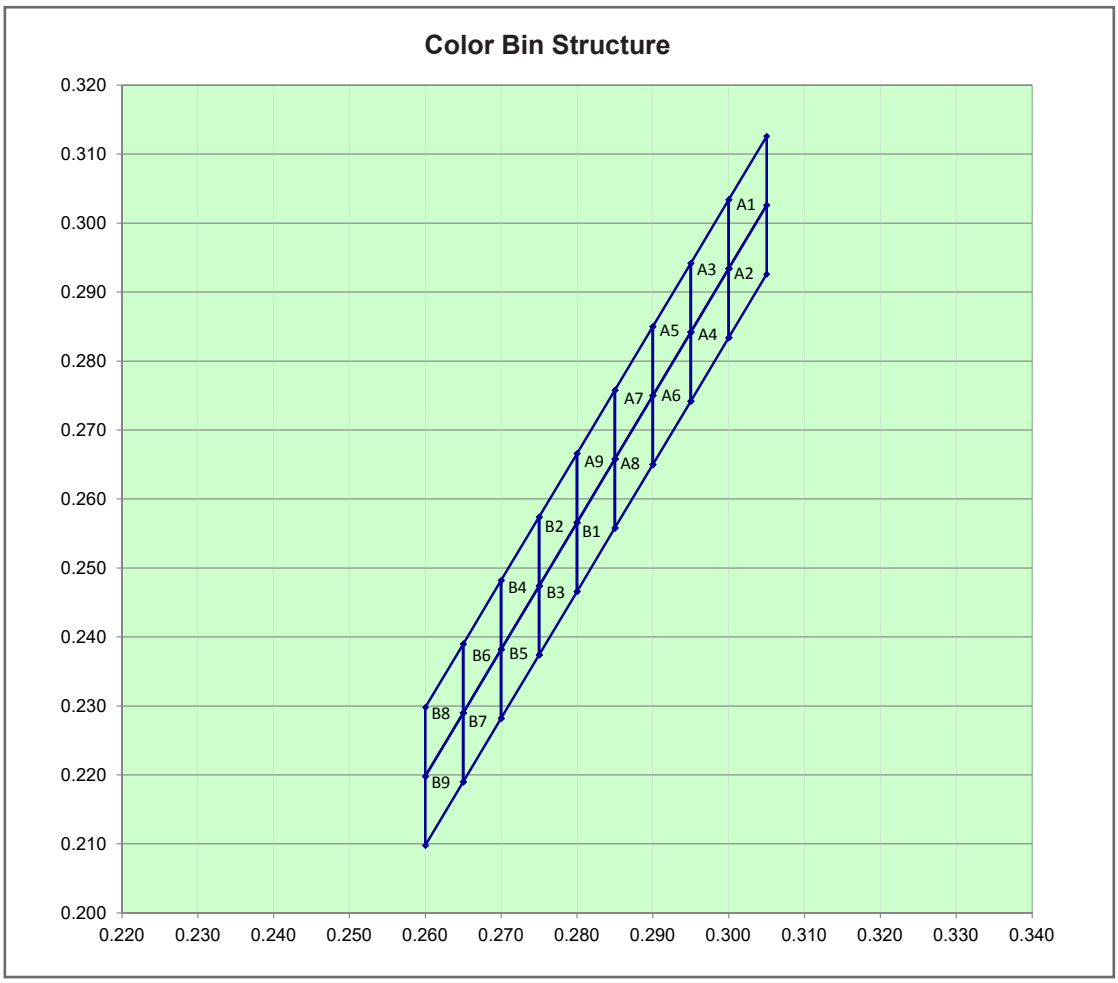
Electrical Characteristics at Tj=25°C

Part Number	Vf @ If = 80 mA Appx. 3.1		
	Min. (V)	Typ. (V)	Max. (V)
SEW-WZSG	2.7	3.0	3.2

Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	150	mA
Peak pulse current (Ts = 55°C, tp ≤ 100µs, duty cycle = 0.03)	400	mA
Reverse voltage	Not for reverse bias	V
ESD threshold (HBM)	8000	V
LED junction temperature	120	°C
Operating temperature	-40 … +100	°C
Storage temperature	-40 … +100	°C
Power dissipation (at room temperature)	480	mW
Thermal resistance - Junction / solder point, $R_{th\ JS}$ (typ = 20)	26	K/W

SEW-WZSG, Color Grouping *Appx. 2.1*



Bin		1	2	3	4
A1	Cx	0.3000	0.3000	0.3050	0.3050
	Cy	0.2934	0.3034	0.3126	0.3026
A3	Cx	0.2950	0.2950	0.3000	0.3000
	Cy	0.2842	0.2942	0.3034	0.2934
A5	Cx	0.2900	0.2900	0.2950	0.2950
	Cy	0.2750	0.2850	0.2942	0.2842
A7	Cx	0.2850	0.2850	0.2900	0.2900
	Cy	0.2658	0.2758	0.2850	0.2750
A9	Cx	0.2800	0.2800	0.2850	0.2850
	Cy	0.2566	0.2666	0.2758	0.2658
B2	Cx	0.2750	0.2750	0.2800	0.2800
	Cy	0.2474	0.2574	0.2666	0.2566
B4	Cx	0.2700	0.2700	0.2750	0.2750
	Cy	0.2382	0.2482	0.2574	0.2474
B6	Cx	0.2650	0.2650	0.2700	0.2700
	Cy	0.2290	0.2390	0.2482	0.2382
B8	Cx	0.2600	0.2600	0.2650	0.2650
	Cy	0.2198	0.2298	0.2390	0.2290

Bin		1	2	3	4
A2	Cx	0.3000	0.3000	0.3050	0.3050
	Cy	0.2834	0.2934	0.3026	0.2926
A4	Cx	0.2950	0.2950	0.3000	0.3000
	Cy	0.2742	0.2842	0.2934	0.2834
A6	Cx	0.2900	0.2900	0.2950	0.2950
	Cy	0.2650	0.2750	0.2842	0.2742
A8	Cx	0.2850	0.2850	0.2900	0.2900
	Cy	0.2558	0.2658	0.2750	0.2650
B1	Cx	0.2800	0.2800	0.2850	0.2850
	Cy	0.2466	0.2566	0.2658	0.2558
B3	Cx	0.2750	0.2750	0.2800	0.2800
	Cy	0.2374	0.2474	0.2566	0.2466
B5	Cx	0.2700	0.2700	0.2750	0.2750
	Cy	0.2282	0.2382	0.2474	0.2374
B7	Cx	0.2650	0.2650	0.2700	0.2700
	Cy	0.2190	0.2290	0.2382	0.2282
B9	Cx	0.2600	0.2600	0.2650	0.2650
	Cy	0.2098	0.2198	0.2290	0.2190

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 purposed.

Luminous Intensity Group

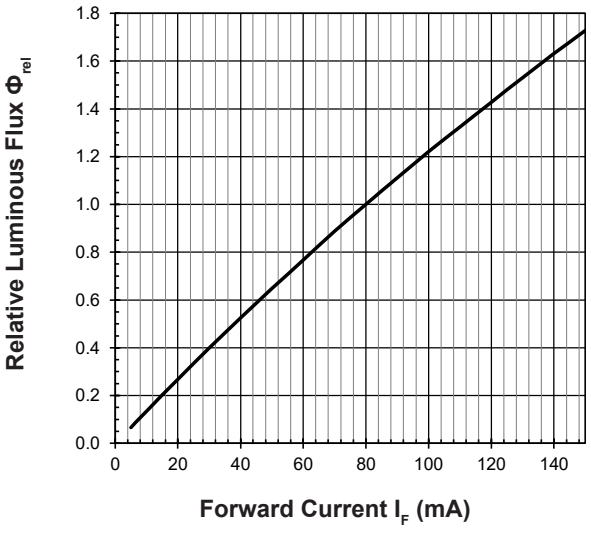
Brightness Group	Luminous Flux *Appx. 1.2* (lm)
8P	26.8 ... 28.7
9P	28.7 ... 30.6
6Q	30.6 ... 32.7
7Q	32.7 ... 34.8
8Q	34.8 ... 37.3
9Q	37.3 ... 39.8

Vf Binning

Vf Bin @ 80mA	Forward Voltage (V) *Appx. 3.1*
V1	2.70 ... 2.80
V2	2.80 ... 2.90
V3	2.90 ... 3.00
V4	3.00 ... 3.10
V5	3.10 ... 3.20

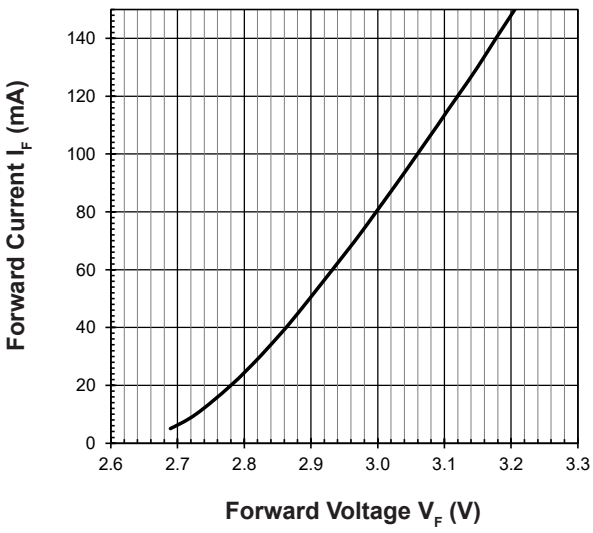
Relative Luminous Flux Vs Forward Current

$\Phi_V/\Phi_V(80mA) = f(I_F)$; $T_j = 25°C$



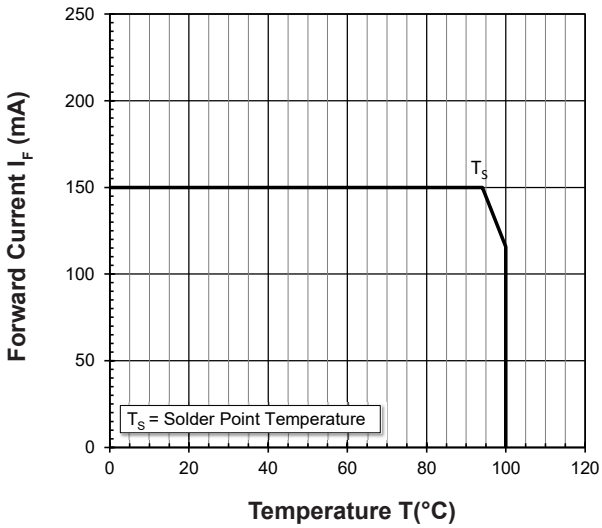
Forward Current Vs Forward Voltage

$I_F = f(V_F)$; $T_j = 25°C$



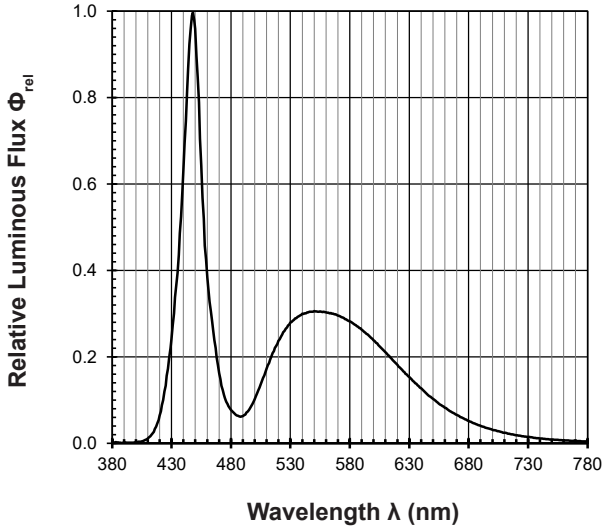
Maximum Current Vs Temperature

$I_F = f(T)$



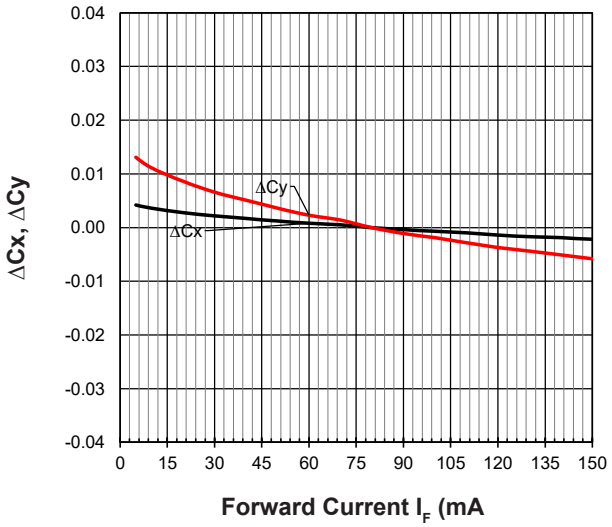
Relative Spectral Emission

$\Phi_{rel} = f(\lambda)$; $T_j = 25°C$; $I_F = 80mA$



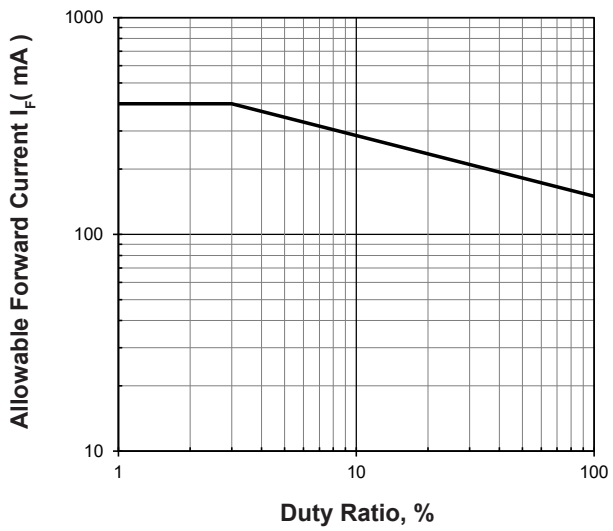
Chromaticity Coordinate Shift Vs Forward Current

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

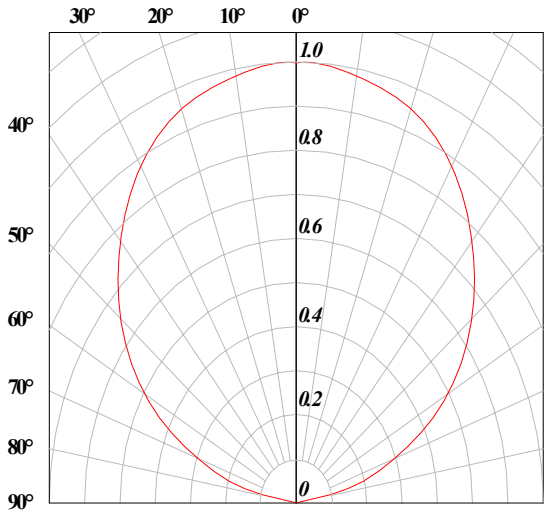


Allowable Forward Current Vs Duty Ratio

($T_s = 55°C$; $tp \leq 100\mu s$)

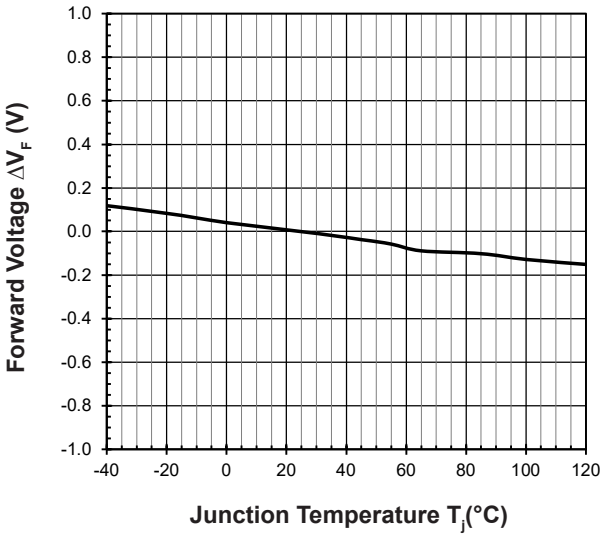


Radiation Pattern



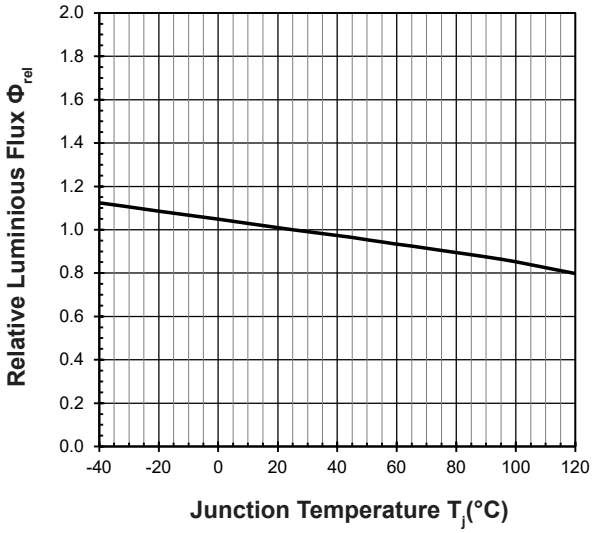
Forward Voltage Vs Junction Temperature

$\Delta V_F = V_F - V_F(25°C) = f(T_j)$; I_F =80mA



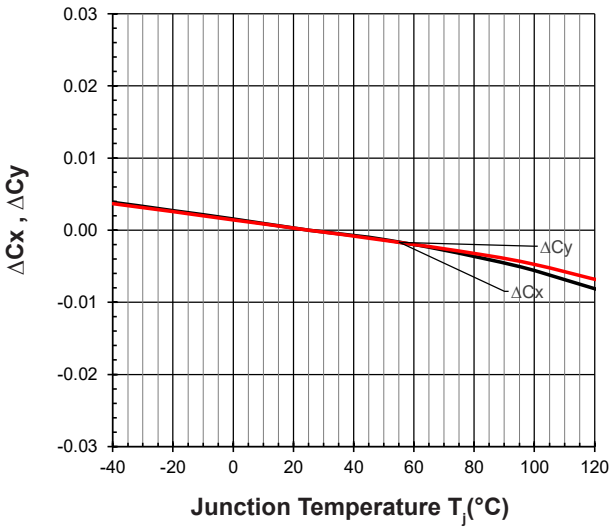
Relative Luminious Flux Vs Junction Temperature

$\Phi V/\Phi V(25°C) = f(T_j)$; I_F = 80mA

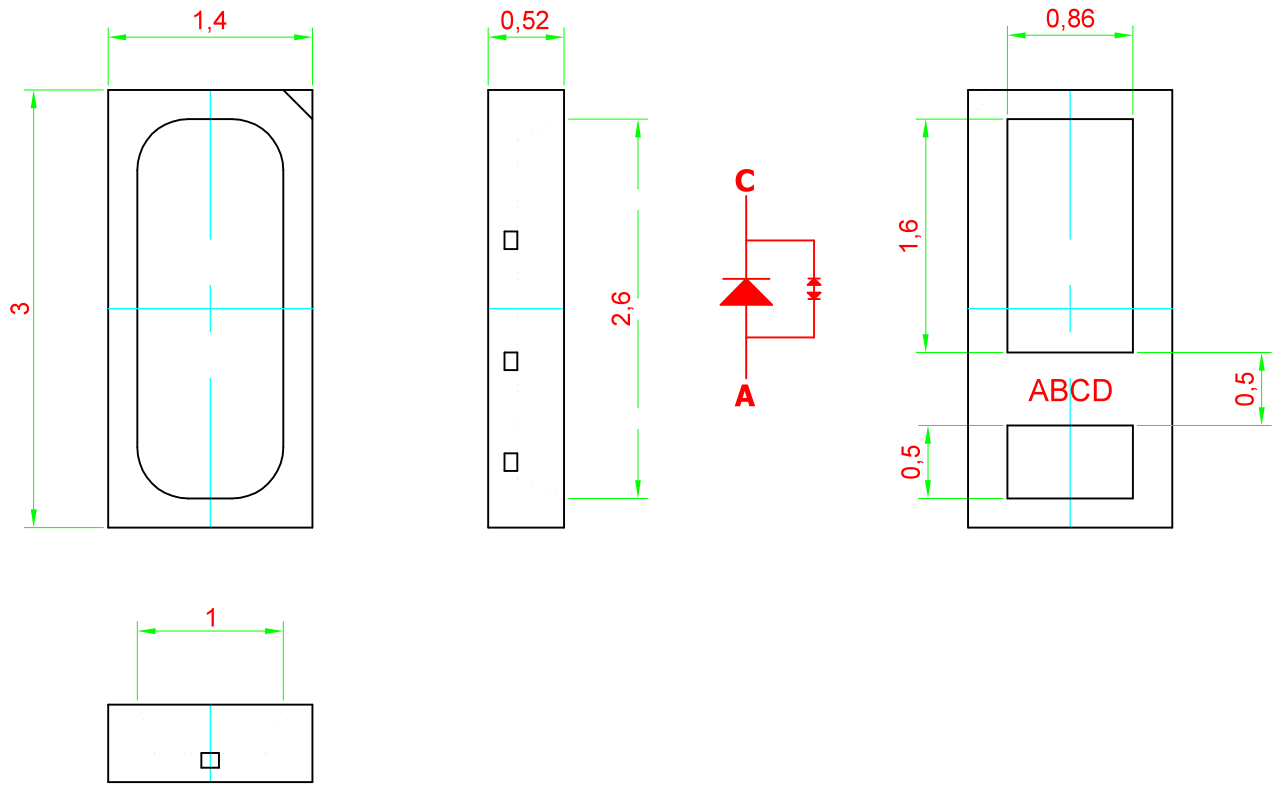


Chromaticity Coordinate Shift Vs Junction Temperature

$\Delta Cx, \Delta Cy = f(T_j)$; I_F = 80mA



SpicePlus 3014 • InGaN: SEW-WZSG Package Outlines

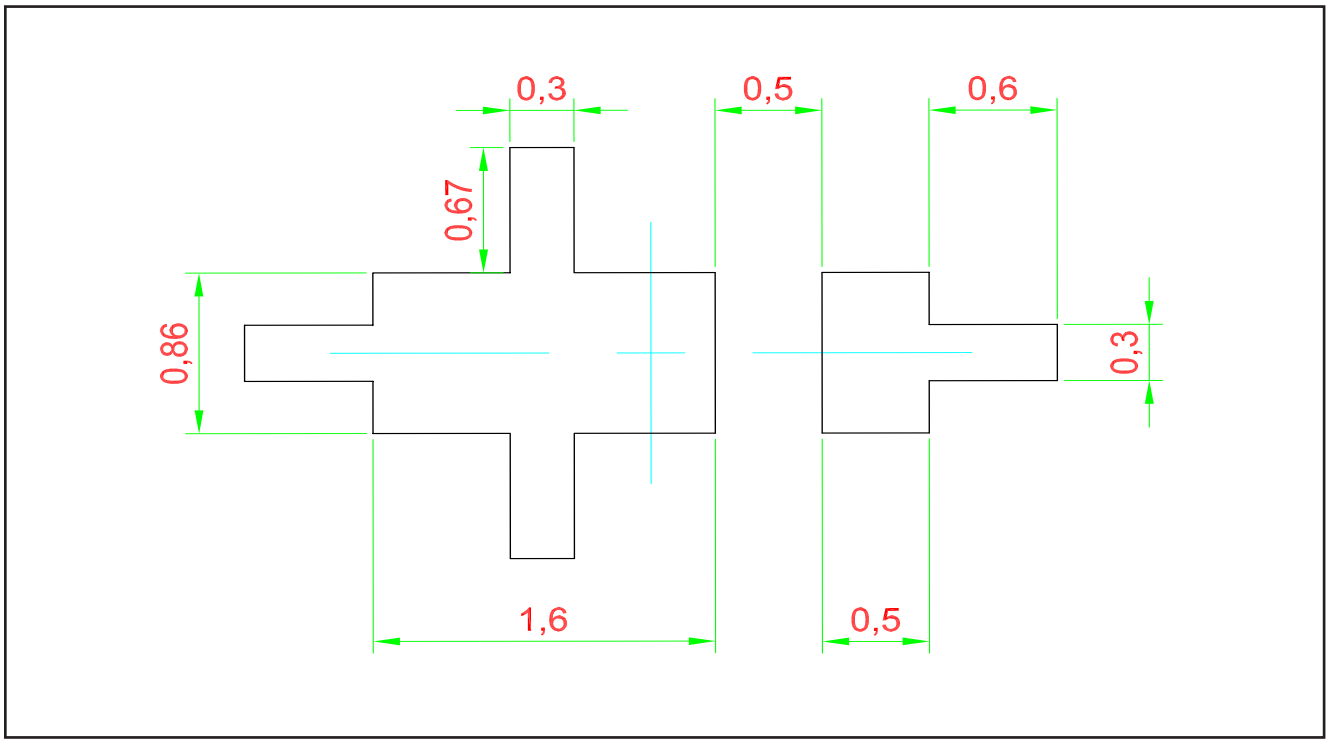


Note : Primary thermal path is through Cathode lead of LED package.
General Tolerances ± 0.10

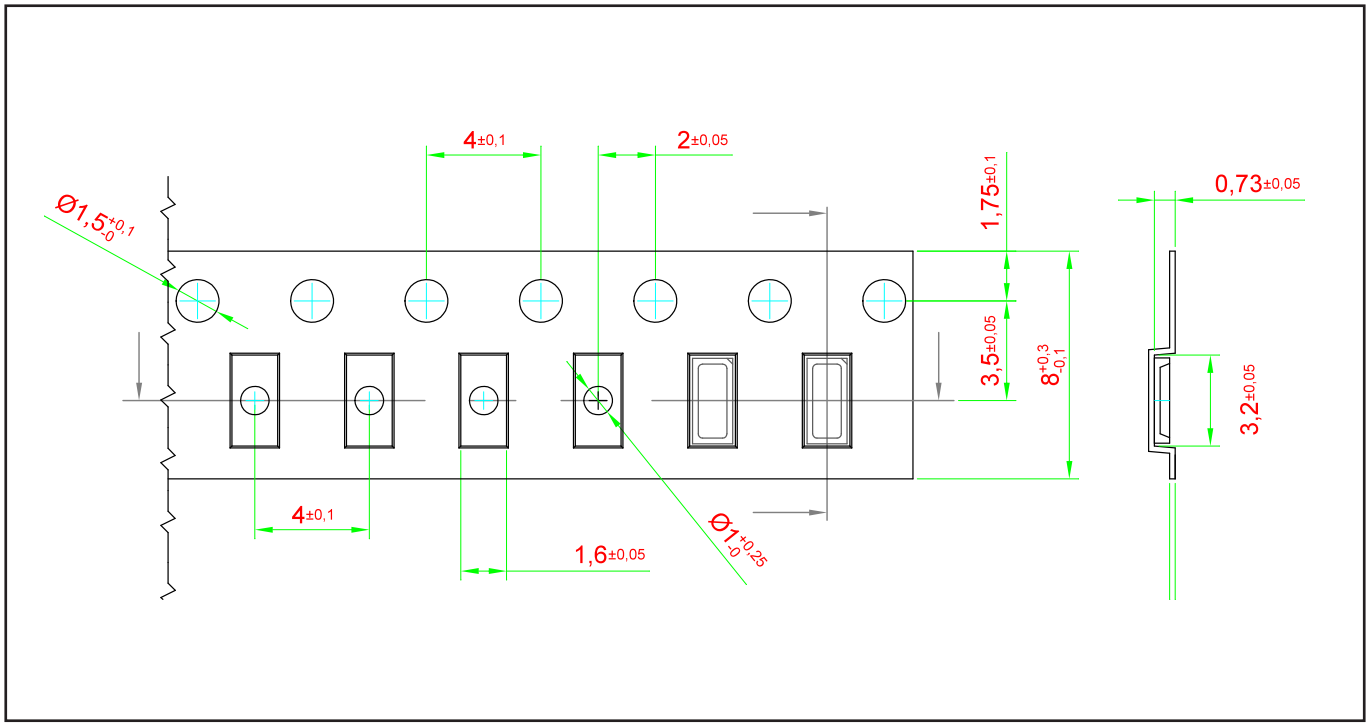
Material

	Material
Lead-frame	Cu Alloy With Ag Plating
Package	Heat Resistant Polymer
Encapsulant	Silicone Resin
Soldering Leads	Ag Plating

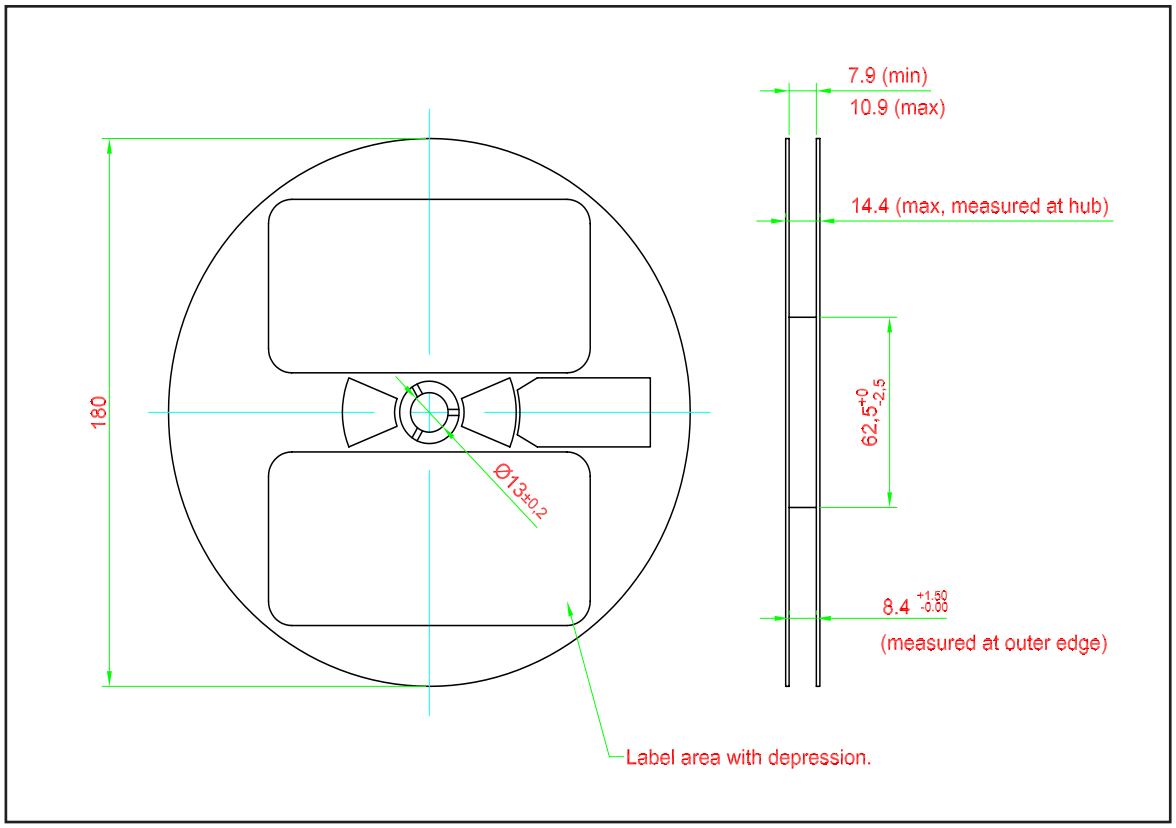
Recommended Solder Pad



Taping and orientation



Packaging Specification

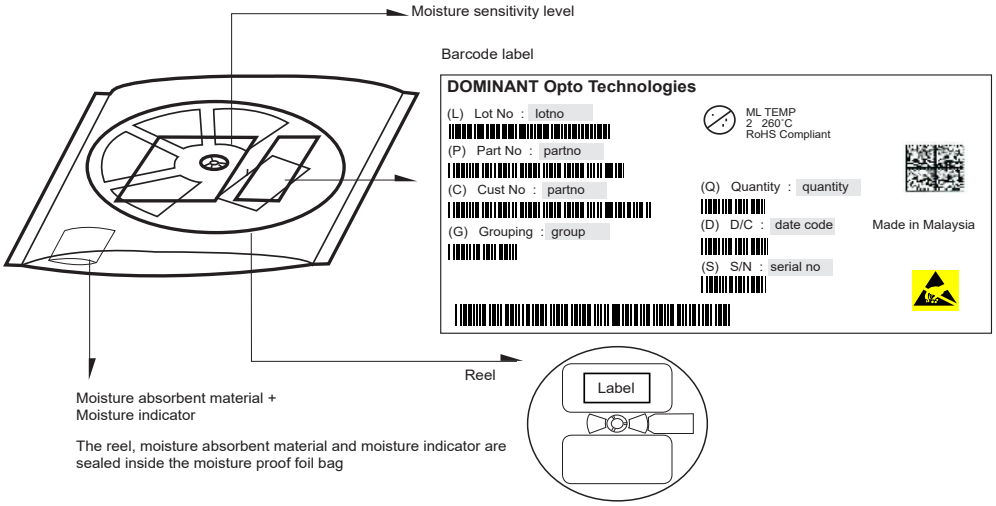


	Reel Diameter (mm)	Quantity (pcs)	*Ordering Number
Standard Packing	180	5000	SEW-WZSG-xxx-x

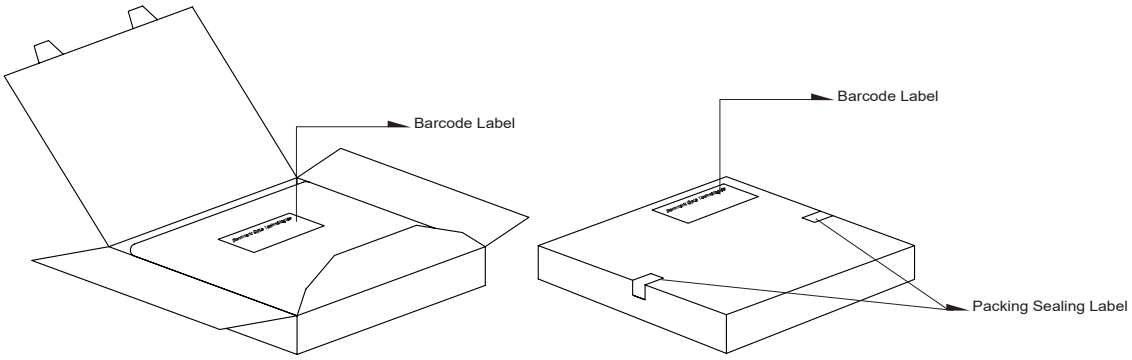
Notes:

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

Packaging Specification



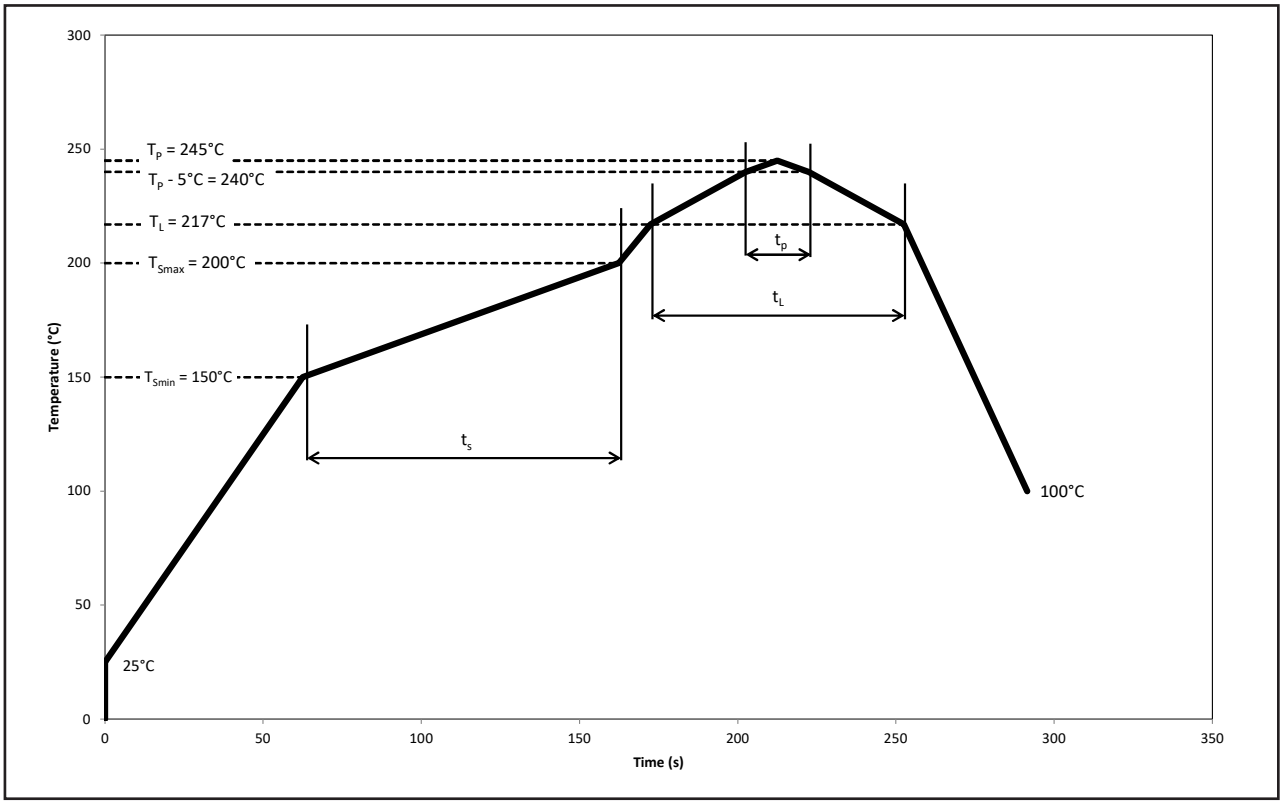
Quantity per bag (pcs)	Average 1pc SpicePlus 3014 (g)	1 completed bag (g)
5000	0.007	210 ± 10



Reel Diameter (mm)	Packing Box Dimensions (mm)
180	210 x 210 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_L	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 In the drawing, normally the tolerances used are at ± 0.1 with the dimension measurement unit in mm.

Revision History

Page	Subjects	Date of Modification
-	Initial Release	14 Feb 2018
2, 11, 12, 15	Update ESD (HBM) Typo Error on Plastic Reel Update Packaging Specification Update Appendix	07 Sep 2018
1, 8	Update Product Photo Update Package Outline	20 Sep 2018
12, 13	Update Qty from 3000pcs to 5000pcs Update Recommended Pb-free Soldering Profile	14 Dec 2020
1, 2, 6, 8	Update Product Photo Update AEC-Q101 to AEC-Q102 Update Peak Pulse Current Update Graph: Allowable Forward Current Vs Duty Ratio Update Package Outline	04 Apr 2023
10	Update Taping and Orientation	01 Dec 2023

NOTE

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Dispose of product is in accordance with local, regional, national and international regulations.

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