DOMINANT™
Opto Technologies
Innovating Illumination

DATASHEET:

SpicePlus 2520

InGaN : SVW-EZHG

SpicePlus

Like spice, its diminutive size is a stark contrast to its standout performance in terms of brightness, durability and reliability. Despite being the smallest in size yet the SpicePlus packs a powerful performance and is a highly reliable design device.

Features:

> Super high brightness surface mount LED automotive exterior applications.
> 120° viewing angle.
> Compact package outline (LxW) of 2.5 x 2.0mm.
> Ultra low height profile - 0.7mm.
> Low thermal resistance.
> Superior corrosion robustness.
> Compatible to IR reflow soldering.
> Compliance to automotive standard; AEC-Q102.
> Environmental friendly; RoHS compliance.

Applications:

> Automotive: Exterior application: eg: DRL.

Optical Characteristics at Tj=25˚C

Part Number	Color	Viewing Angle˚	Luminous Flux @ 150mA (lm) Appx. 1.2		
			Min.	Typ.	Max.
SVW-EZHG-R3T2-L2P2	White	120	45.2	59.0	76.5
SVW-EZHG-R9T8-L2P2	White	120	48.5	63.0	82.0

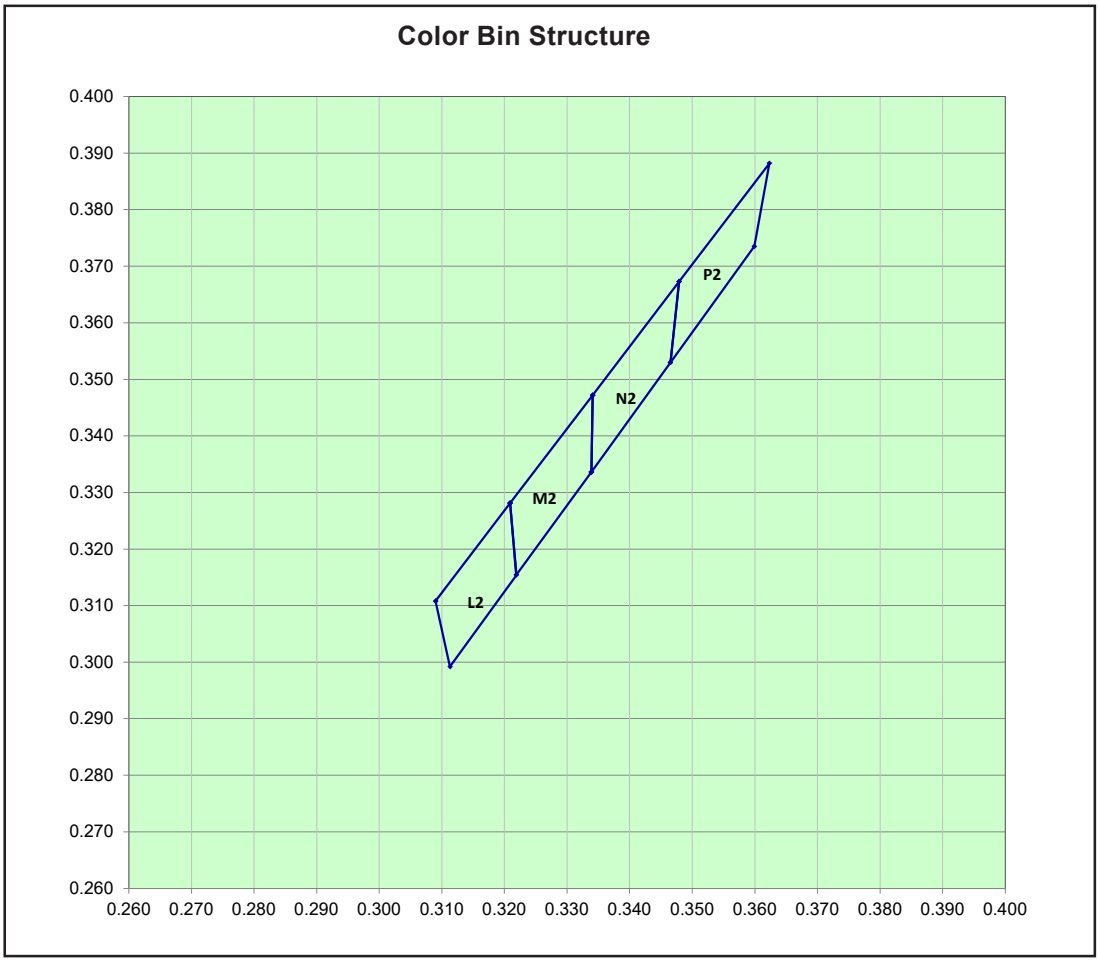
Electrical Characteristics at Tj=25˚C

Part Number	Vf @ If = 150mA Appx. 3.1		
	Min. (V)	Typ. (V)	Max. (V)
SVW-EZHG	2.80	3.10	3.40

Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	250	mA
Peak pulse current; (Ts = 55˚C, tp ≤ 100µs, Duty cycle = 0.03)	600	mA
Reverse voltage	Not designed for reverse bias	V
ESD threshold (HBM)	8	KV
LED junction temperature	150	˚C
Operating temperature	-40 … +125	˚C
Storage temperature	-40 … +125	˚C
Thermal resistance (Rated current = 150mA, Ts = 25 ˚C) - Real Thermal Resistance Junction / solder point, $R_{th\ JS\ real}$ (typ = 16)	21	K/W
- Electrical Thermal Resistance Junction / solder point, $R_{th\ JS\ el}$ (typ = 11)	13	K/W

SVW, Color Grouping *Appx. 2.1*



Bin		1	2	3	4
L2	Cx	0.3090	0.3113	0.3219	0.3209
	Cy	0.3108	0.2992	0.3154	0.3281
M2	Cx	0.3209	0.3219	0.3339	0.3341
	Cy	0.3281	0.3154	0.3336	0.3472
N2	Cx	0.3339	0.3341	0.3479	0.3465
	Cy	0.3336	0.3472	0.3673	0.3530
P2	Cx	0.3465	0.3479	0.3623	0.3599
	Cy	0.3530	0.3673	0.3882	0.3735

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 Flux Group at Tj=25˚C

Brightness Group	Luminous Flux *Appx. 1.2* (lm)
R3	45.2 ... 51.7
S2	51.7 ... 59.0
S3	59.0 ... 67.2
T2	67.2 ... 76.5
R9	48.5 ... 55.4
S8	55.4 ... 63.0
S9	63.0 ... 72.0
T8	72.0 ... 82.0

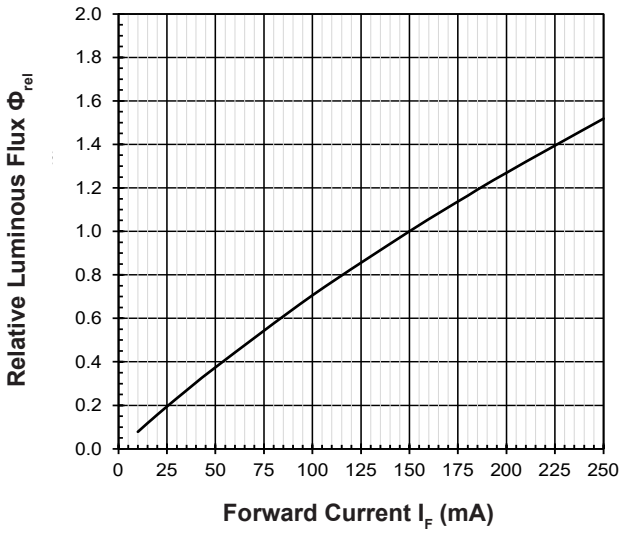
Vf Bining (Optional)

Vf Bin @ 150 mA	Forward Voltage (V) *Appx. 4.1*
VH8	2.80 ... 3.00
VH9	3.00 ... 3.20
VJ1	3.20 ... 3.40

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

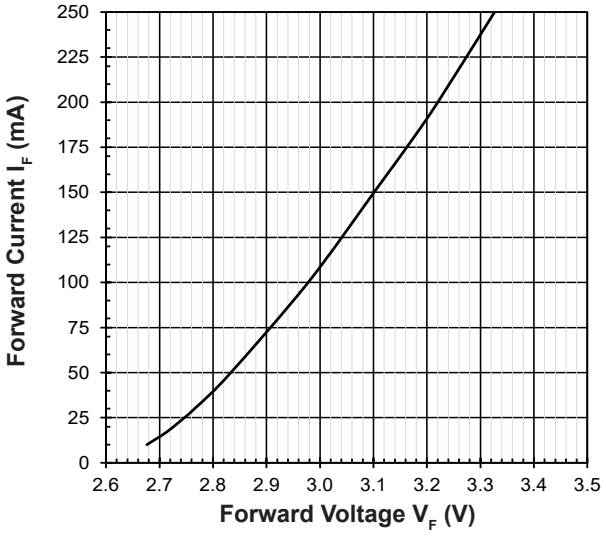
Relative Luminous Flux Vs Forward Current

$\Phi_V/\Phi_V(150mA) = f(I_F)$; $T_j = 25°C$



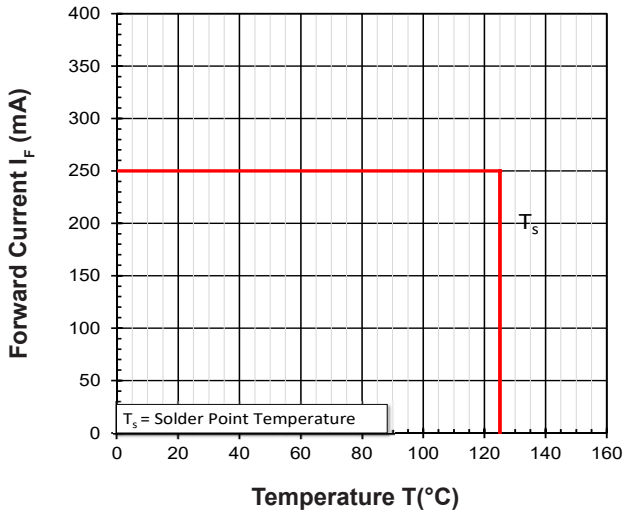
Forward Current Vs Forward Voltage

$I_F = f(V_F)$; $T_j = 25°C$



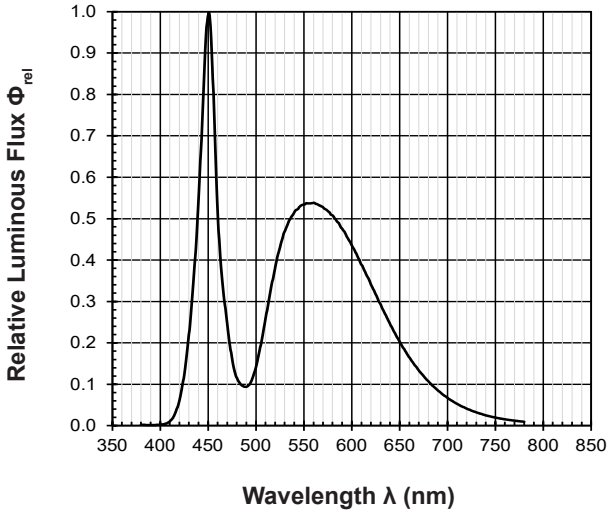
Maximum Current Vs Temperature

$I_F = f(T)$



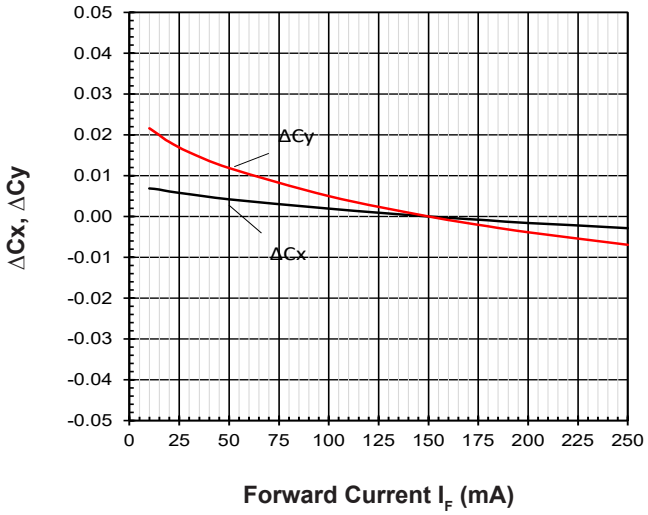
Relative Spectral Emission

$\Phi_{rel} = f(\lambda)$; $T_j = 25°C$; $I_F = 150mA$



Chromaticity Coordinate Shift Vs Forward Current

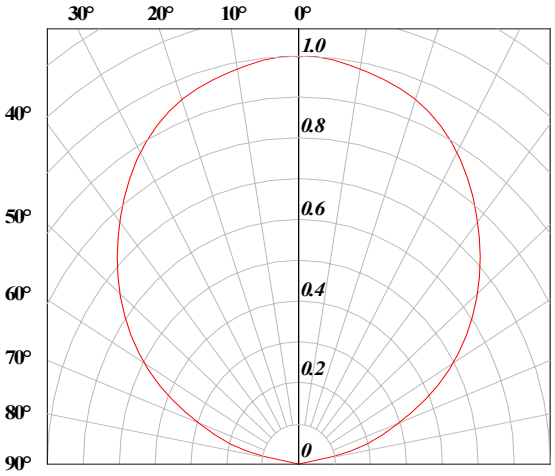
$\Delta Cx, \Delta Cy = f(I_F); T_j = 25°C$



Allowable Forward Current Vs Duty Ratio

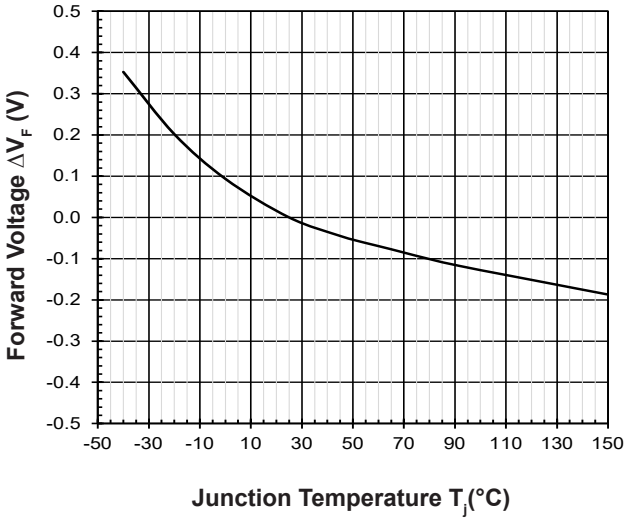
($T_s = 55°C$; $t_p \leq 100\mu s$)

Radiation Pattern



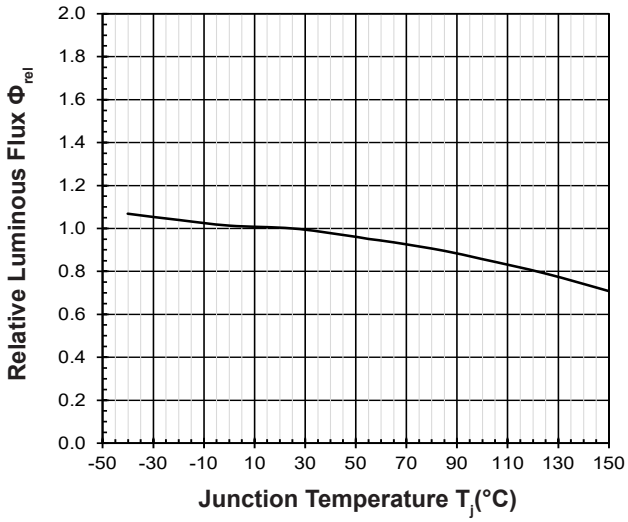
Forward Voltage Vs Junction Temperature

$\Delta V_F = V_F - V_F(25°C) = f(T_j)$; I_F =150mA



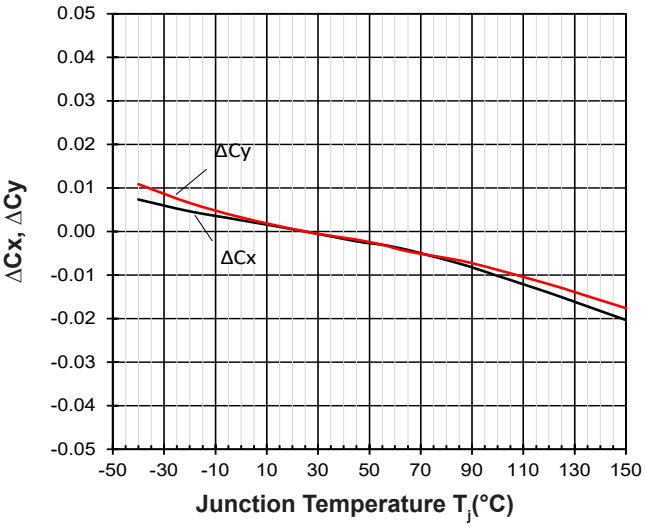
Relative Luminous Flux Vs Junction Temperature

$\Phi V/\Phi V(25°C) = f(T_j)$; I_F = 150mA

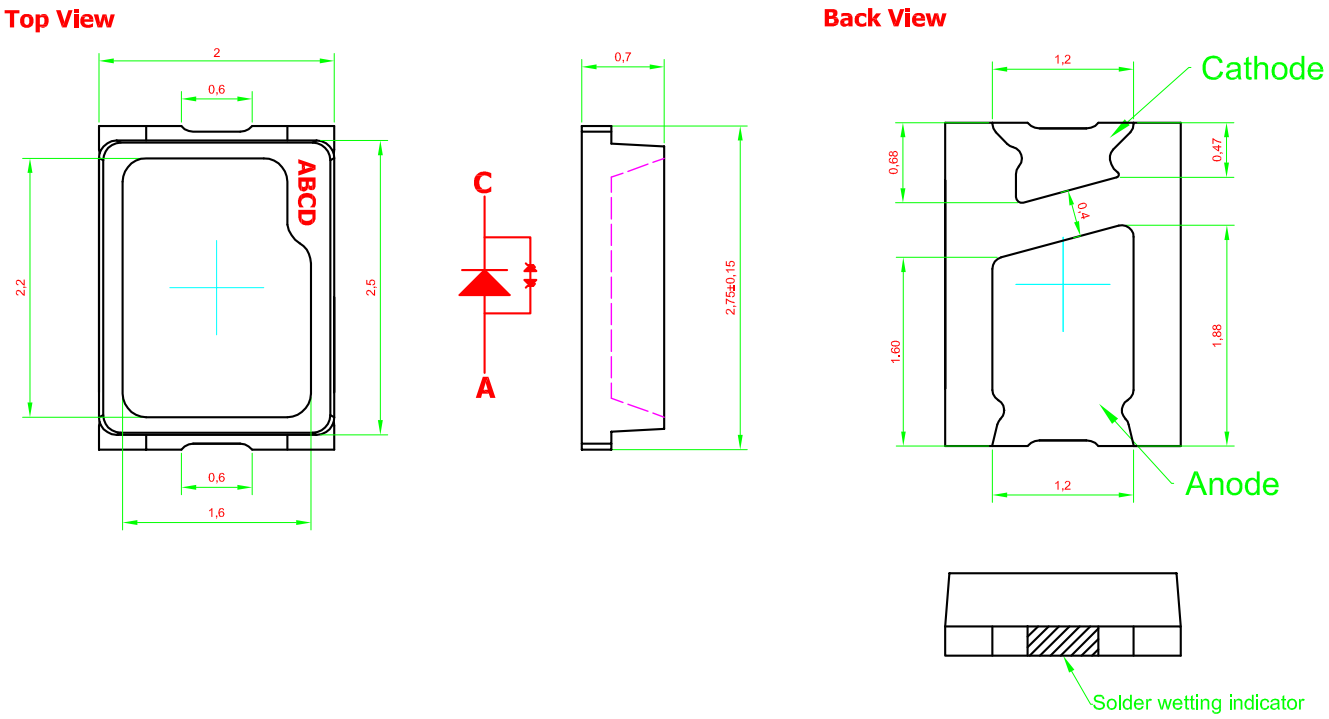


Chromaticity Coordinate Shift Vs Junction Temperature

$\Delta Cx, \Delta Cy = f(T_j)$; I_F = 150mA



SpicePlus 2520 InGaN: SVW-EZHG Package Outlines

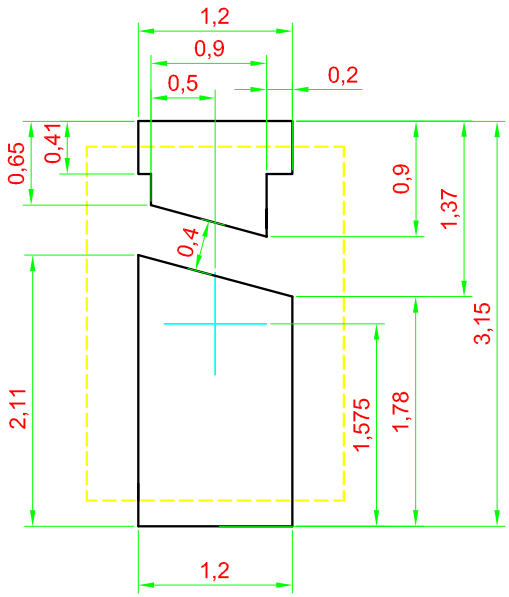


Note : Primary thermal path is through Anode lead of LED package
General Tolerances ± 0.10

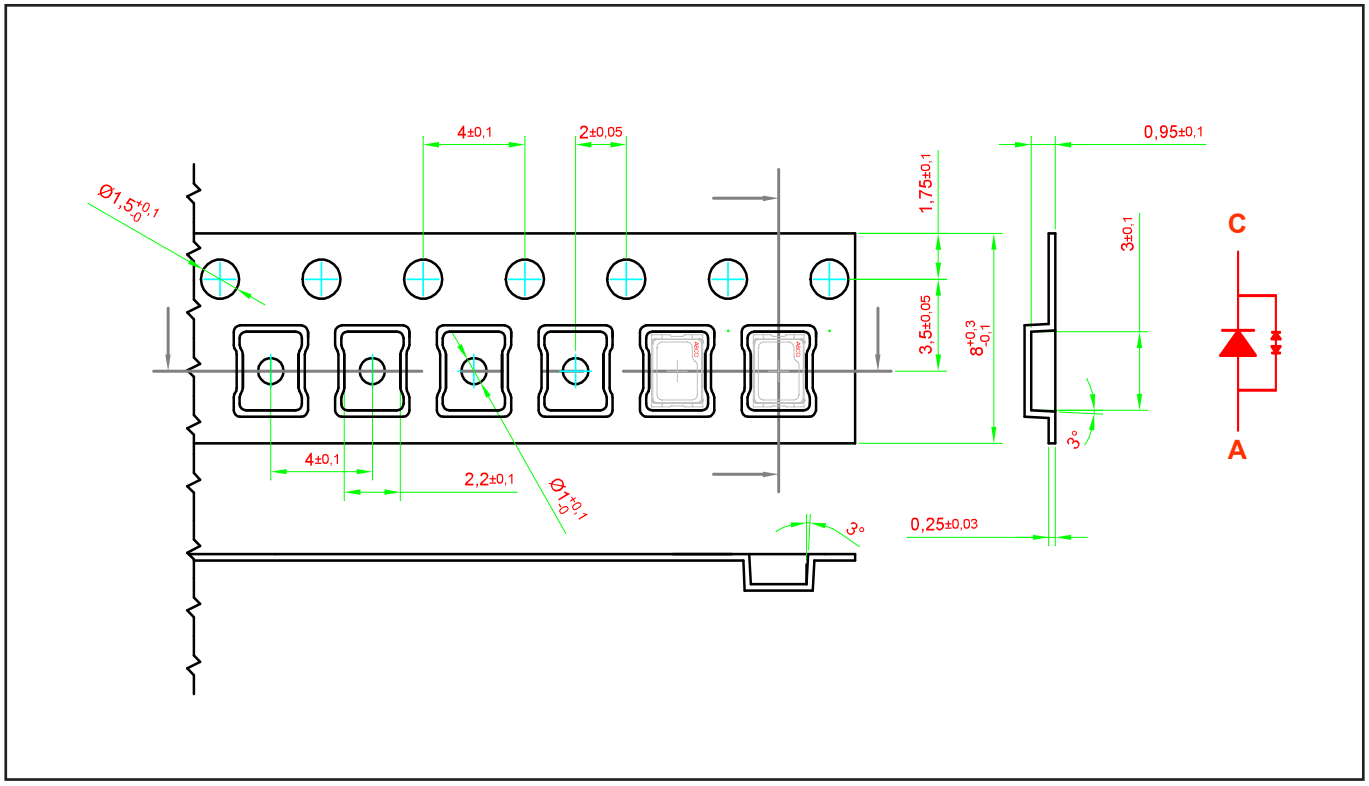
Material

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

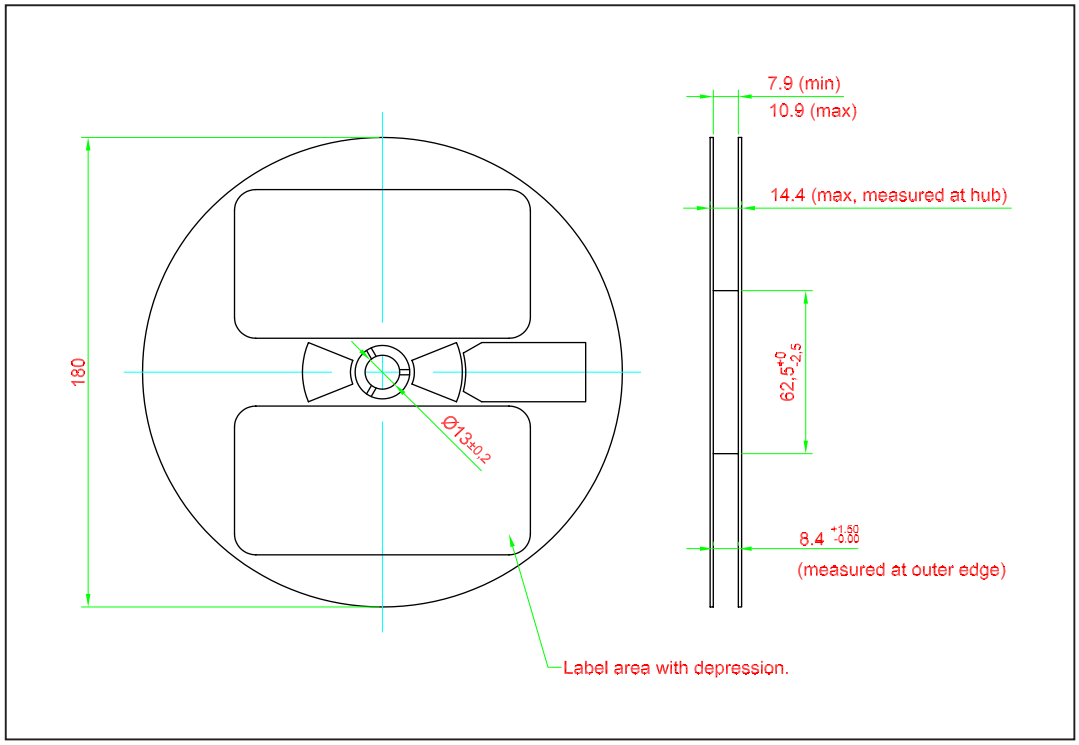
Recommended Solder Pad

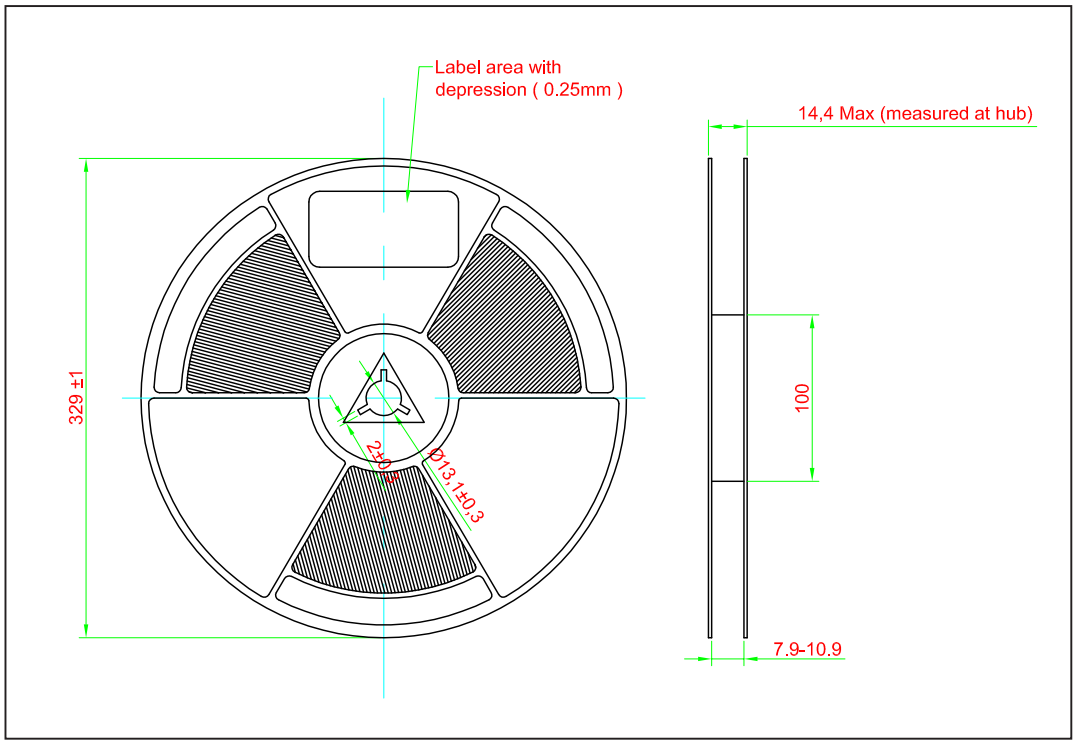


Taping and orientation



Packaging Specification



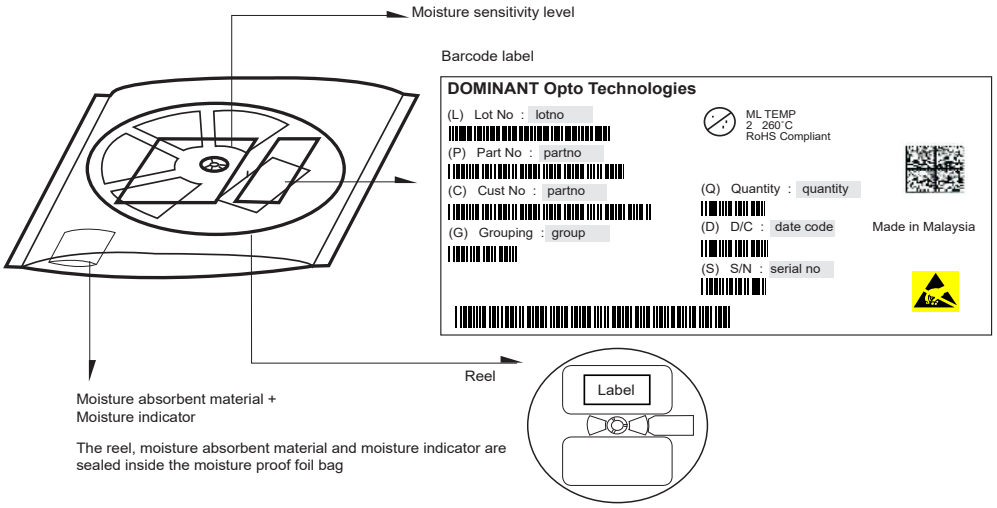


	Reel Diameter (mm)	Quantity (pcs)	*Ordering Number
Standard Packing	180	4000	SVW-EZHG-xxx-x
Optional Packing	329	15000	SVW-EZHG-xxx-x-L

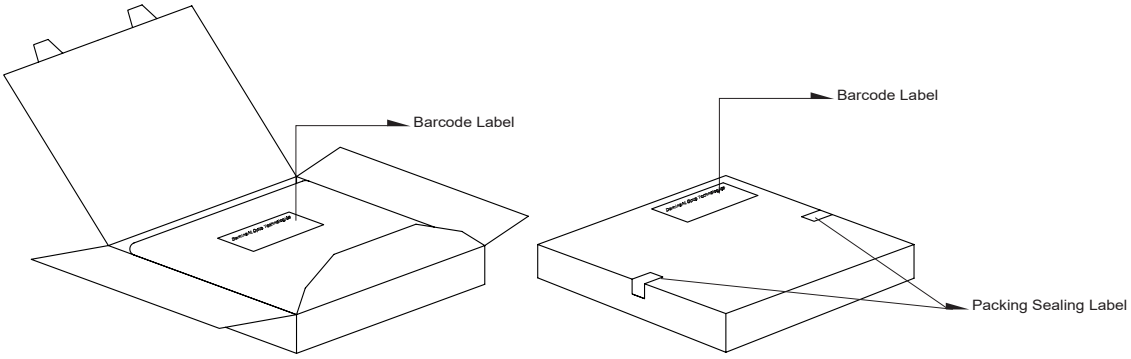
Notes:

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

Packaging Specification



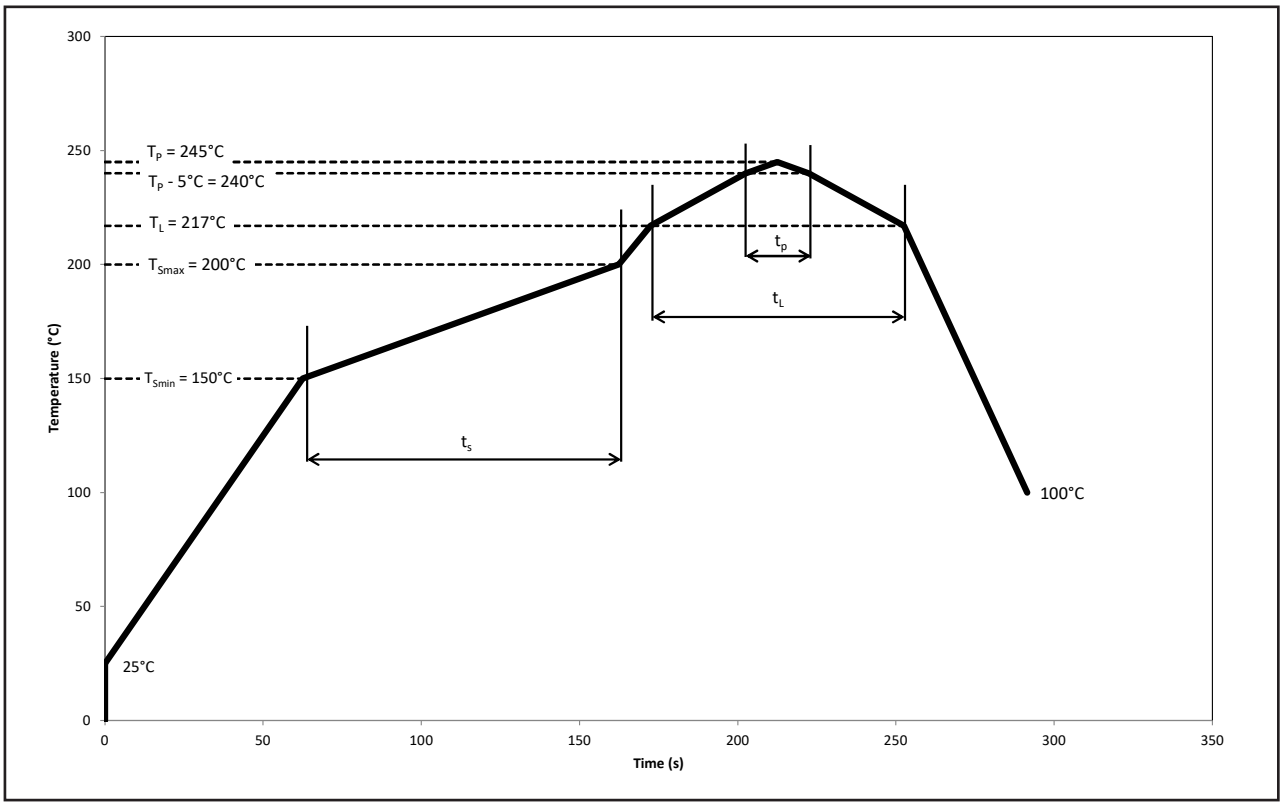
Quantity per bag (pcs)	Average 1pc SpicePlus 2520	1 completed bag (gram)
4000	0.0089	150 ± 10
15000	0.0089	600 ± 10



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_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 Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimension are specifiec in mm.

6) Corrosion Robustness:

6.1 Test conditions: 40 °C / 90 % rh / 15 ppm H_2S / 336 h.

= Stricter than IEC 60068-2-43 (H_2S) [25 °C / 75% rh / 10 ppm H_2S / 21 days].

7) Thermal Resistance

7.1 Rth max is based on statistic values (6σ).

Revision History

Page	Subjects	Date of Modification
-	Initial Release	08 Jul 2021
2, 13	Add New Partno: SVW-EZHG-R9T8-L2P2 Update Appendix	20 May 2022
7	Add Polarity in Package Outline	11 Aug 2022

NOTE

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