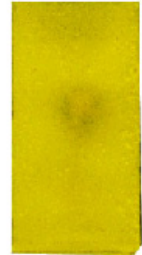


SpiceLED[™]

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 SpiceLED[™] packs a powerful performance and is a highly reliable design device. Its versatility enables its application in automotive appliances, key-pad illumination, hand-held devices such as PDAs, notebooks, compact back-lighting applications, consumer appliances, office equipment, audio and video equipment.



Features:

- > High brightness surface mount LED.
- > Super wide viewing angle of 160°.
- > Equivalent to 0603 package outline. Copper lead-frame construction.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.



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



Electrical Characteristics at Tj=25°C

Part Ordering Number	Color	Viewing Angle°	Luminous Intensity @ 10mA IV (mcd)		
			Min.	Typ.	Max.
SSW-ULD-QR2-1-I1	White	160	71.50	112.50	180.00
SSW-ULD-QR2-3K8L-I1	White	160	71.50	112.50	180.00

NOTE

1. All part number above comes in a quantity of 3000 units per reel.
2. Other luminous intensity groups are also available upon request
3. Luminous intensity is measured with an accuracy of ± 11%.
4. Wavelength binning is carried for all units as per the wavelength-binning table. Only one wavelength group is allowed for each reel.

Part Number	Vf @ If = 10mA			Vr @ Ir = 10uA
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
SSW-ULD	2.70	3.35	4.00	5

Forward voltage, Vf is measured with an accuracy of ± 0.1 V.

Absolute Maximum Ratings

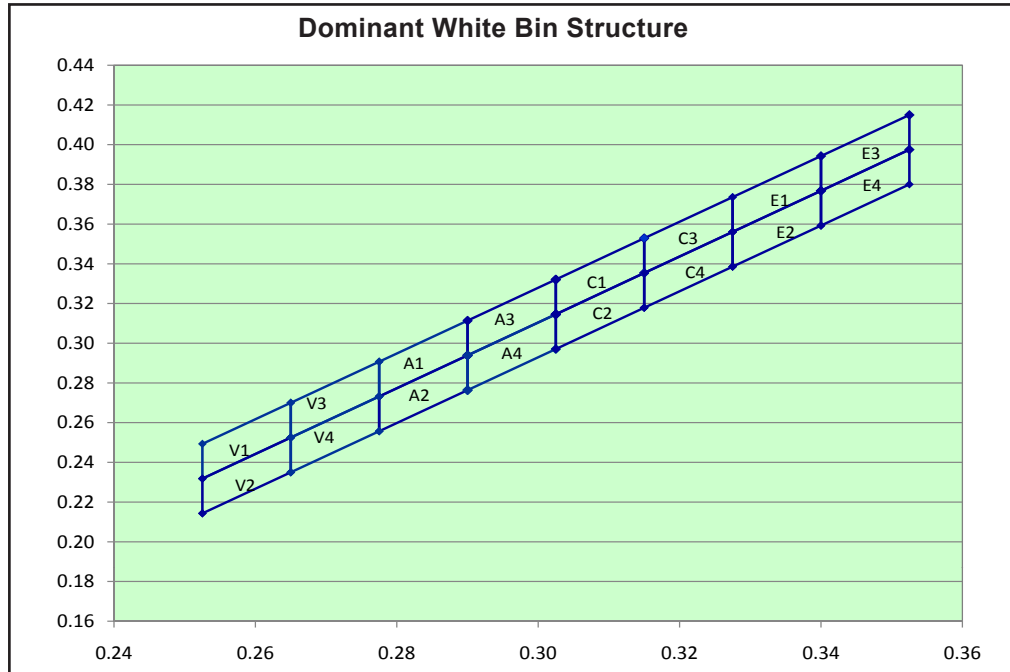
	Maximum Value	Unit
DC forward current	20	mA
Peak pulse current; (tp ≤ 10µs, Duty cycle = 0.1)	250	mA
Reverse voltage; Ir _{max} = 10µA	5	V
ESD threshold (HBM)	2000	V
LED junction temperature	110	°C
Operating temperature	-40 ... +100	°C
Storage temperature	-40 ... +100	°C
Power dissipation (at room temperature)	80	mW
Thermal resistance		
- Junction / ambient, R _{th JA}	480	K/W
- Junction / solder point, R _{th JS}	280	K/W
(Mounting on FR4 PCB, pad size ≥ 16 mm ² per pad)		

Characteristics

	Symbol	Part Number	Value	Unit
Temperature coefficient of V_F (typ) $I_F = 10\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	TC_V	SSW-ULD	-2.80	mV / K
Temperature coefficient of I_V (typ) $I_F = 10\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	TC_{I_V}	SSW-ULD	-0.32	% / K
Temperature coefficient of C_x (typ) $I_F = 10\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	TC_{C_x}	SSW-ULD	-0.0002	
Temperature coefficient of C_y (typ) $I_F = 10\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	TC_{C_y}	SSW-ULD	-0.0001	

SSW, White Color Grouping

For this color bin selection, part number will be SSW-ULD-xxx-1-11



Chromaticity coordinate groups are measured with an accuracy of ± 0.0075.

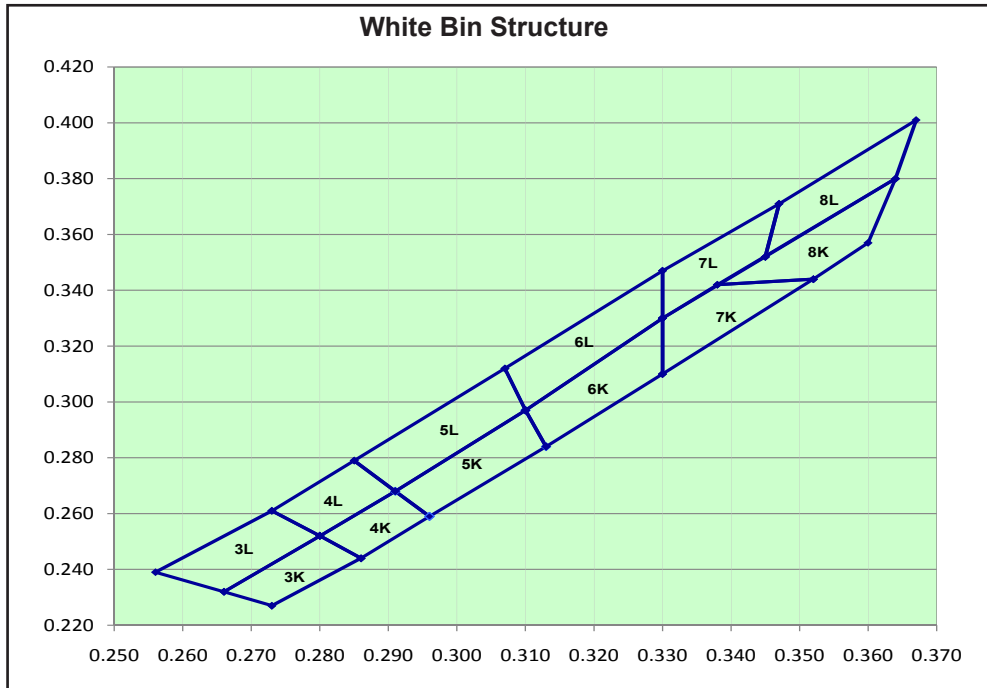
Bin		1	2	3	4
V1	Cx	0.2525	0.2650	0.2650	0.2525
	Cy	0.2318	0.2525	0.2700	0.2493
V2	Cx	0.2525	0.2650	0.2650	0.2525
	Cy	0.2143	0.2350	0.2525	0.2318
V3	Cx	0.2650	0.2775	0.2775	0.2650
	Cy	0.2525	0.2732	0.2907	0.2700
V4	Cx	0.2650	0.2775	0.2775	0.2650
	Cy	0.2350	0.2557	0.2732	0.2525
A1	Cx	0.2775	0.2900	0.2900	0.2775
	Cy	0.2732	0.2939	0.3114	0.2907
A2	Cx	0.2775	0.2900	0.2900	0.2775
	Cy	0.2557	0.2764	0.2939	0.2732
A3	Cx	0.2900	0.3025	0.3025	0.2900
	Cy	0.2939	0.3146	0.3321	0.3114
A4	Cx	0.2900	0.3025	0.3025	0.2900
	Cy	0.2764	0.2971	0.3146	0.2939
C1	Cx	0.3025	0.3150	0.3150	0.3025
	Cy	0.3146	0.3354	0.3529	0.3321
C2	Cx	0.3025	0.3150	0.3150	0.3025
	Cy	0.2971	0.3179	0.3354	0.3146
C3	Cx	0.3150	0.3275	0.3275	0.3150
	Cy	0.3354	0.3561	0.3736	0.3529
C4	Cx	0.3150	0.3275	0.3275	0.3150
	Cy	0.3179	0.3386	0.3561	0.3354

Bin		1	2	3	4
E1	Cx	0.3275	0.3400	0.3400	0.3275
	Cy	0.3561	0.3768	0.3943	0.3736
E2	Cx	0.3275	0.3400	0.3400	0.3275
	Cy	0.3386	0.3593	0.3768	0.3561
E3	Cx	0.3400	0.3525	0.3525	0.3400
	Cy	0.3768	0.3975	0.4150	0.3943
E4	Cx	0.3400	0.3525	0.3525	0.3400
	Cy	0.3593	0.3800	0.3975	0.3768

Dominant color coordinate is measured with an accuracy of ± 0.0075 .

SSW, White Color Grouping

For this color bin selection, part number will be SSW-ULD-3K8L-I1



Chromaticity coordinate groups are measured with an accuracy of ± 0.0075 .

Bin		1	2	3	4
3K	Cx	0.273	0.266	0.280	0.286
	Cy	0.227	0.232	0.252	0.244
3L	Cx	0.266	0.256	0.273	0.280
	Cy	0.232	0.239	0.261	0.252
4K	Cx	0.286	0.280	0.291	0.296
	Cy	0.244	0.252	0.268	0.259
4L	Cx	0.280	0.273	0.285	0.291
	Cy	0.252	0.261	0.279	0.268
5K	Cx	0.296	0.291	0.310	0.313
	Cy	0.259	0.268	0.297	0.284
5L	Cx	0.291	0.285	0.307	0.310
	Cy	0.268	0.279	0.312	0.297
6K	Cx	0.313	0.310	0.330	0.330
	Cy	0.284	0.297	0.330	0.310
6L	Cx	0.310	0.307	0.330	0.330
	Cy	0.297	0.312	0.347	0.330
7K	Cx	0.330	0.330	0.338	0.352
	Cy	0.310	0.330	0.342	0.344
7L	Cx	0.330	0.330	0.347	0.345
	Cy	0.330	0.347	0.371	0.352
8K	Cx	0.352	0.338	0.364	0.360
	Cy	0.344	0.342	0.380	0.357
8L	Cx	0.345	0.347	0.367	0.364
	Cy	0.352	0.371	0.401	0.380

Dominant color coordinate is measured with an accuracy of ± 0.0075 .

Luminous Intensity Group at Tj=25°C

Brightness Group	Luminous Intensity IV (mcd)
Q1	71.50...90.00
Q2	90.00...112.50
R1	112.50...140.00
R2	140.00...180.00

Luminous intensity is measured with an accuracy of ± 11%.

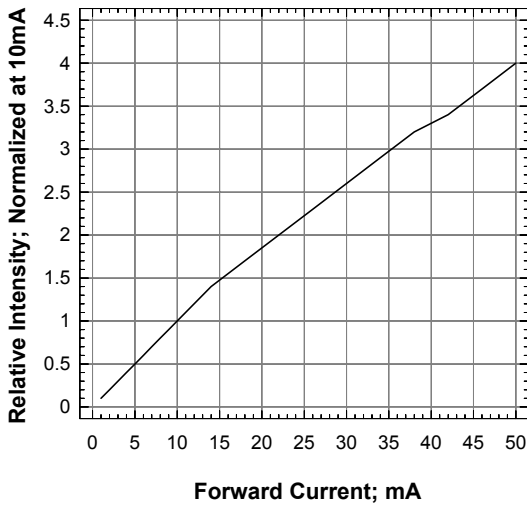
Vf Binning (Optional)

Vf Bin @ 10mA	Forward voltage (V)
0A	2.75 - 3.05
00	3.05 - 3.35
01	3.35 - 3.65
02	3.65 - 3.95

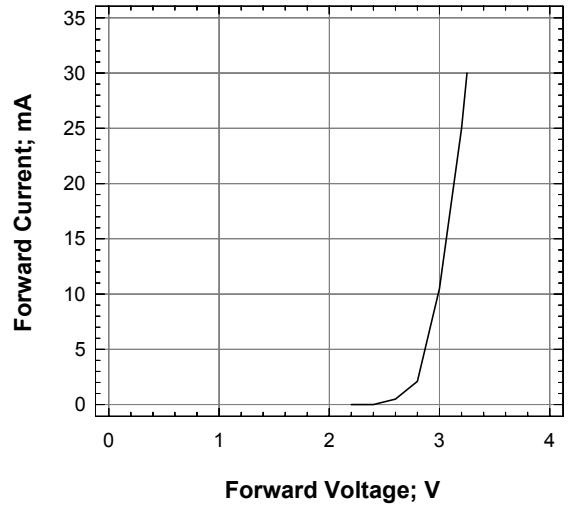
Forward voltage, Vf is measured with an accuracy of ± 0.1 V.

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

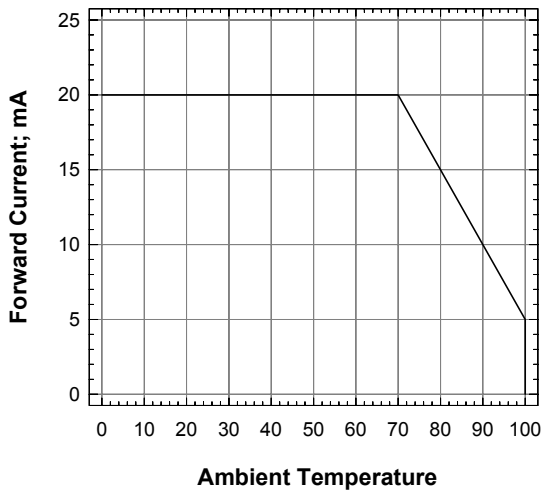
Relative Intensity Vs Forward Current



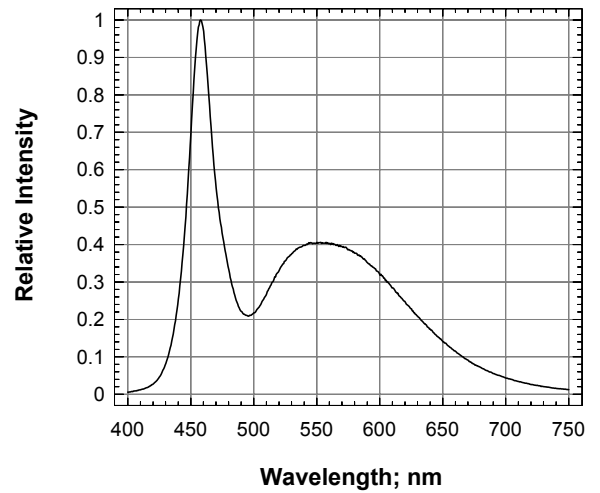
Forward Current Vs Forward Voltage



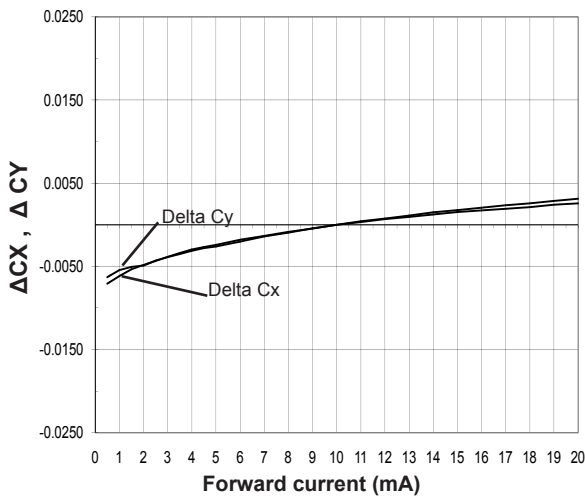
Maximum Current Vs Forward Current



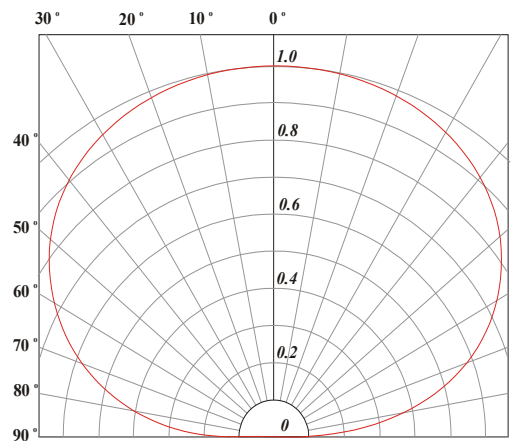
Relative Intensity Vs Wavelength



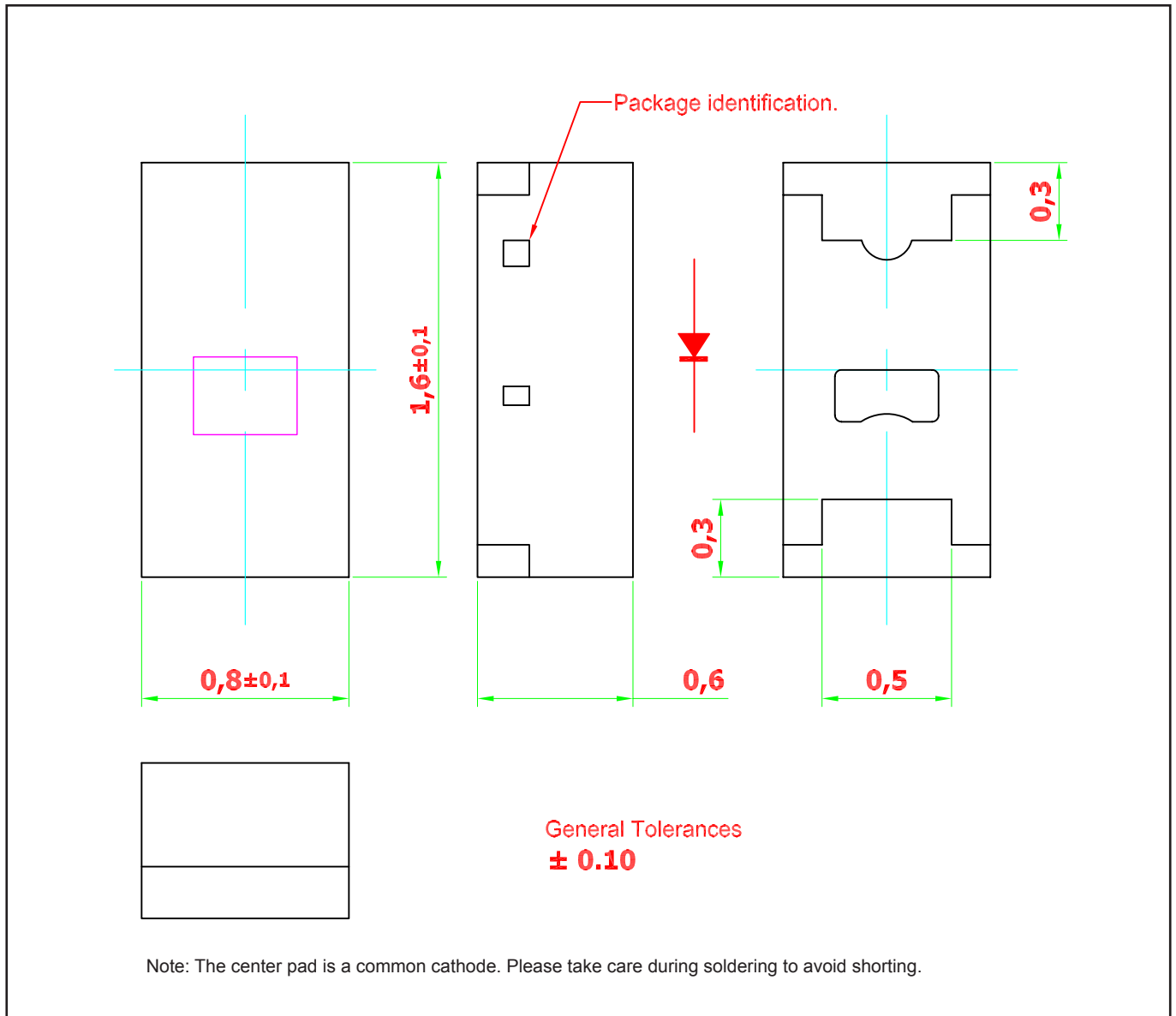
Chromaticity vs Forward Current



Radiation Pattern



SpiceLED™ • InGaN White S-Spice : SSW-ULD-I1 Package Outlines

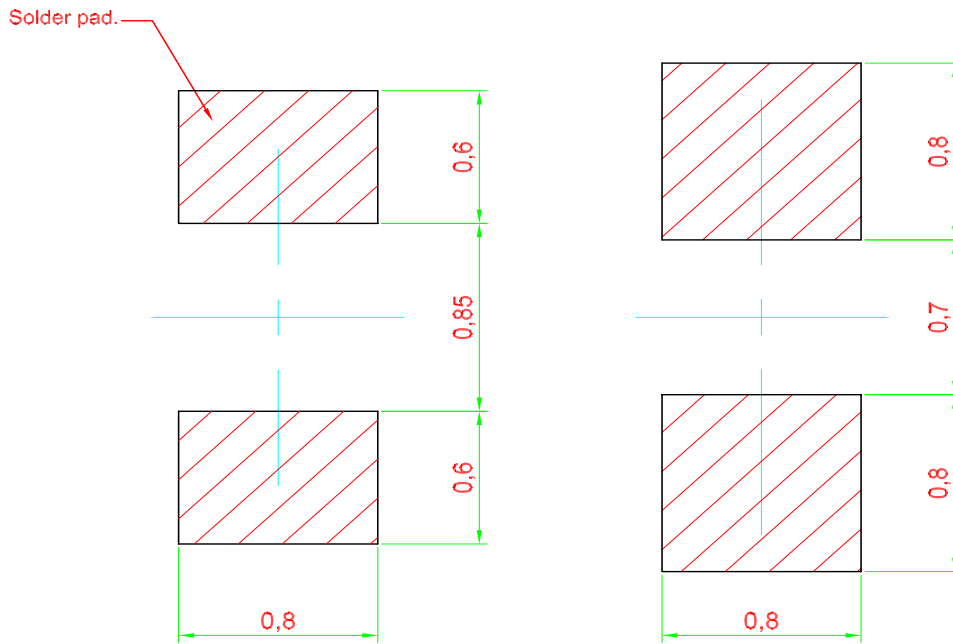


Material

Material	
Lead-frame	Cu Alloy With NiPdAu Plating
Package	High Temperature Resistant Epoxy Resin

Note: product is Pb free

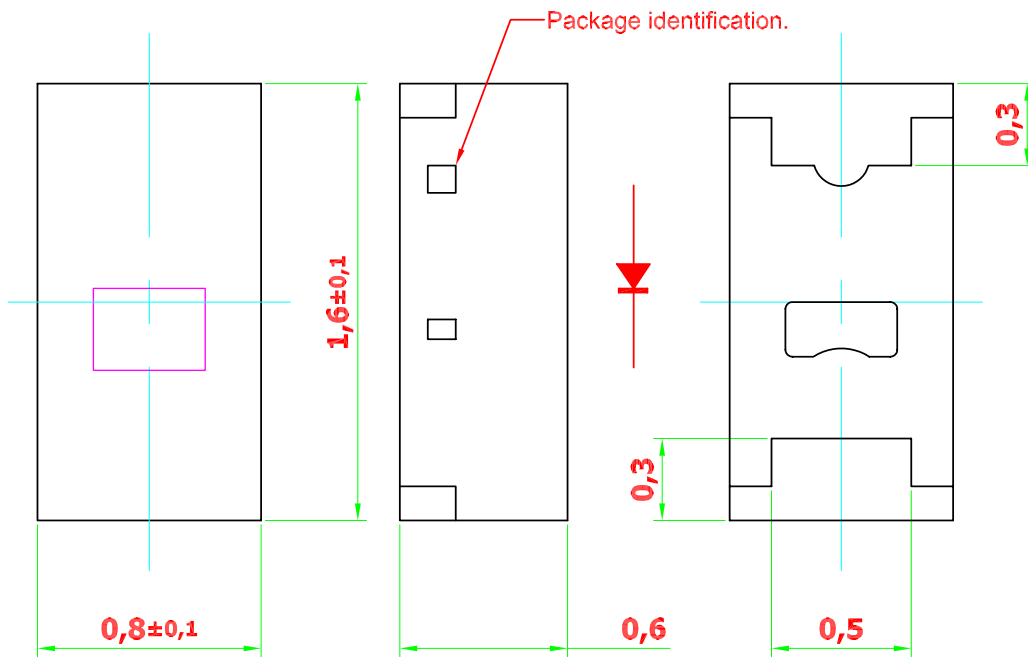
Recommended Solder Pad



Recommended Solder-pad

Alternative Solder-pad
 Compatible to ChipLED 0603

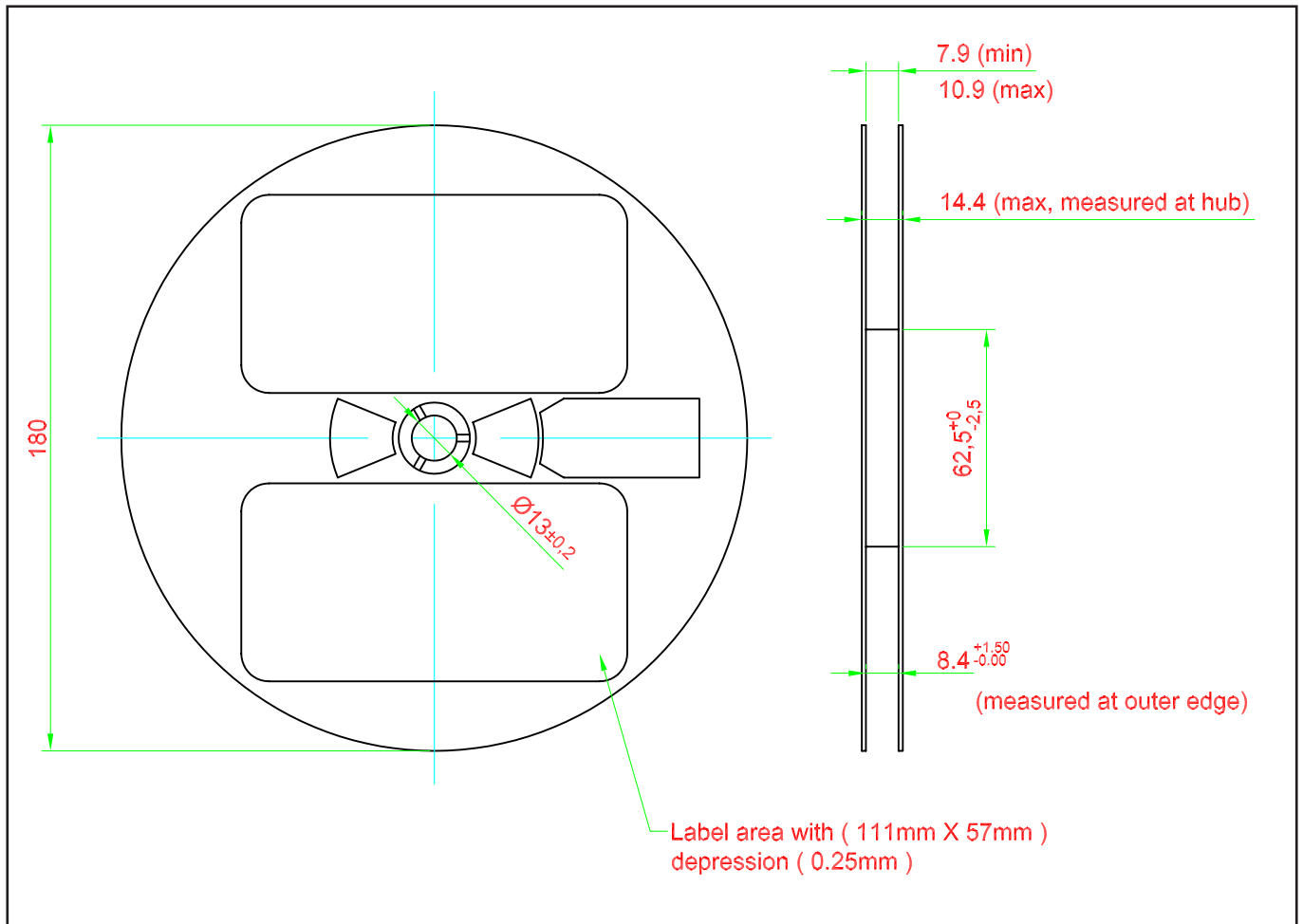
Note: Component is based on a new package platform, which features “Bottom Only Terminations”. Solder joints are only formed at the bottom of the component and solder fillet will not be observable as the sides of the component.



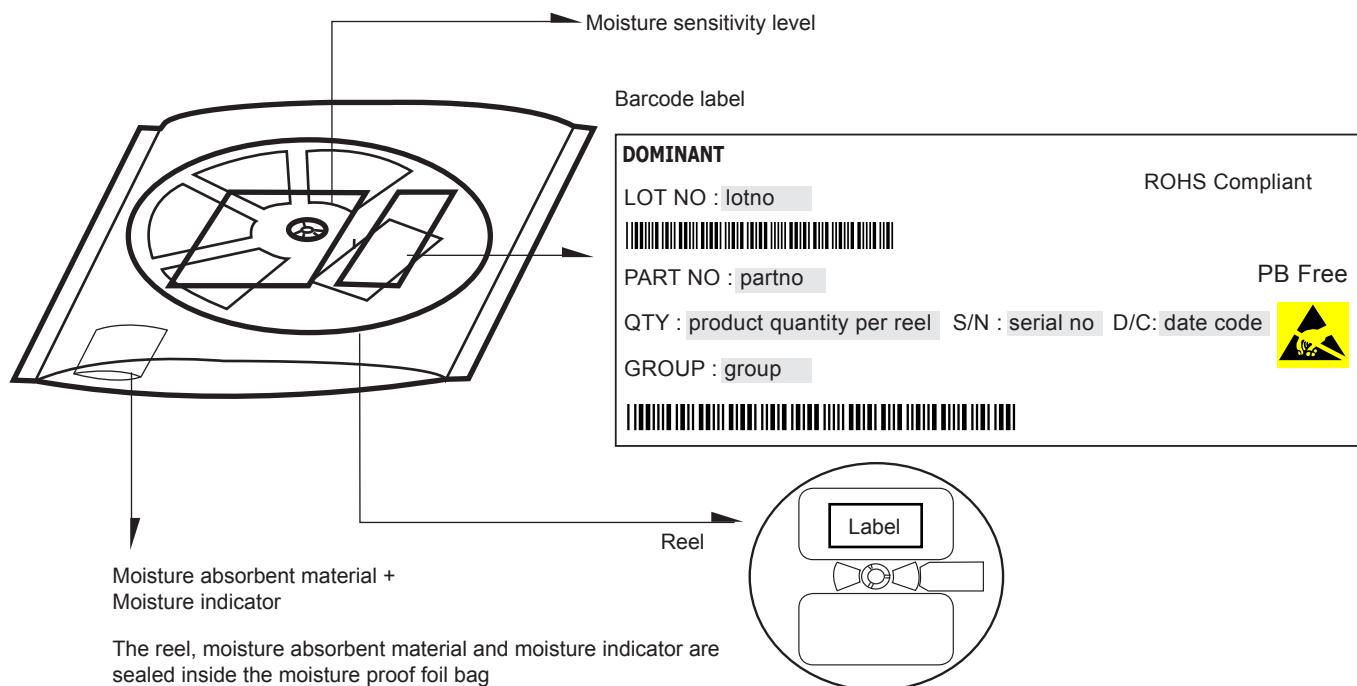
Surface are not intended for soldering

General Tolerances
± 0.10

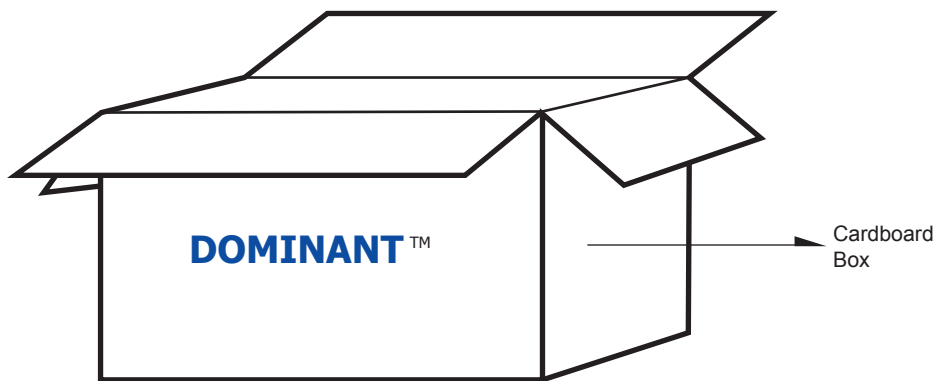
Packaging Specification



Packaging Specification



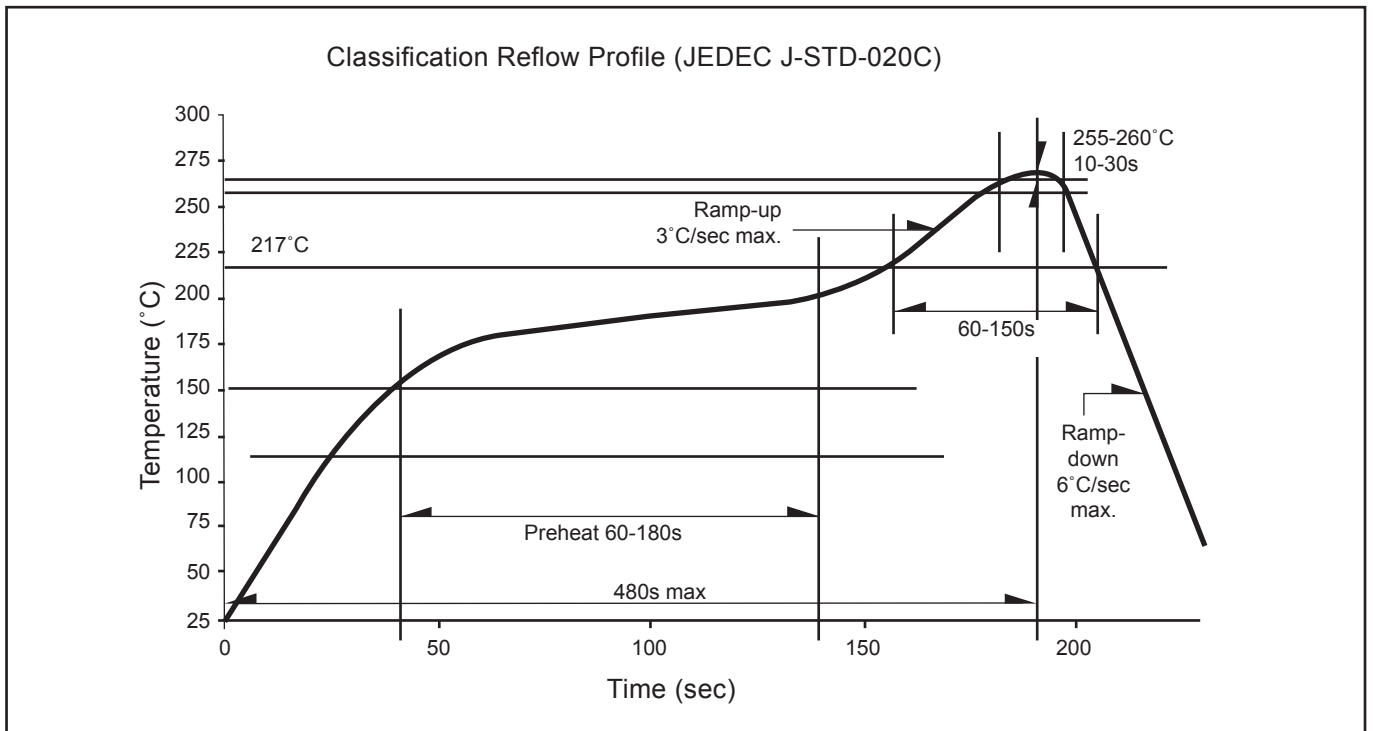
	Average 1pc SpiceLED	1 completed bag (3000pcs)
Weight (gram)	0.001	140 ± 10



For SpiceLED™

Cardboard Box Size	Dimensions (mm)	Empty Box Weight (kg)	Reel / Box	Quantity / Box (pcs)
Small	300 x 250 x 250	0.58	15 reels MAX	45,000 MAX
Large	416 x 516 x 476	1.74	96 reels MAX	288,000 MAX

Recommended Pb-free Soldering Profile



Revision History

Page	Subjects	Date of Modification
-	Initial release	01 Dec 2011
3	Update Color Bin Structure	31 Jan 2012
2, 3	Add new partno: SSW-ULD-QR2-1-I1 Add Color Bin Structure	21 June 2012
2	Add Thermal Resistance	05 Nov 2012
3, 8	Add Characteristic Add graph: Chromaticity vs Forward Current	16 Nov 2012
4, 5, 6	Update Chromaticity coordinate groups accuracy to ± 0.0075	18 Dec 2013
11	Update Carrier Tape	13 Feb 2014

NOTE

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About Us

DOMINANT Opto Technologies is a dynamic Malaysian Corporation that is among the world's leading SMT LED Manufacturers. An excellence – driven organization, it offers a comprehensive product range for diverse industries and applications. Featuring an internationally certified quality assurance acclaim, DOMINANT's extra bright LEDs are perfectly suited for various lighting applications in the automotive, consumer and communications as well as industrial sectors. With extensive industry experience and relentless pursuit of innovation, DOMINANT's state-of-art manufacturing, research and testing capabilities have become a trusted and reliable brand across the globe. More information about DOMINANT Opto Technologies can be found on the Internet at <http://www.dominant-semi.com>.

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