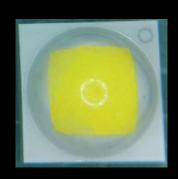




# Bridgelux® SMD 3535 2W3V Series

**Product Data Sheet DS882** 



### Introduction

- Package: SMT ceramic package with silicone lens
- · Lumen maintenance: Test results according to IESNA LM-80 available
- ESD8kV HBM. JEDEC-JS-001-HBM and JE-DEC-JS-001-2012
- Operates at a maximum current of up to 1.5A
- · Hot binning @ 85 °C

#### **Application**

- Indoor Lighting: Spotlight, Downlight
- Outdoor Lighting: Street Light, Tunnel Light, Security Light, Area Light, Stadium/Arena Light
- Industrial Lighting: High Bay Light, Low Bay Light
- · Consumer Lighting: Torch Light

## Contents

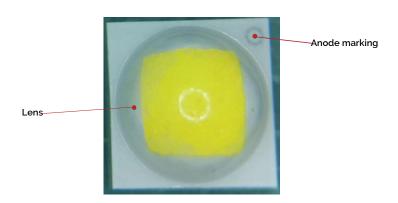
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### Product Feature Map

Bridgelux SMD LED products come in industry standard package sizes and follow ANSI binning standards.

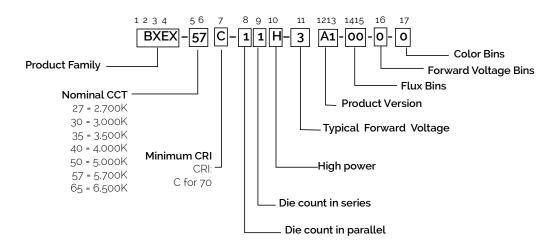
These LEDs are optimized for cost and performance.

helping to ensure highly competitive system lumen per dollar performance while addressing the stringent efficacy and reliability standards required for modern lighting



#### **Product Nomenclature**

The part number designation for Bridgelux SMD 3535 is explained as follows:



#### **Product Test Conditions**

Bridgelux SMD 3535 LEDs are tested and binned with a 10ms pulse of 700mA at  $T_j$  (junction temperature)= $T_{sp}$ (solder point temperature) = 85°C. Luminous flux ,color and forward voltage are binned at  $T_j$ = $T_{sp}$ =85°C.

### **Product Selection Guide**

The following product configurations are available:

**Table 1:** Selection Guide, Pulsed Measurement Data at 700mA (T<sub>i</sub>=T<sub>sn</sub>=25°C)

Part Number <sup>1,6</sup>	Nominal CCT <sup>2</sup> CRI <sup>3.5</sup>		Nominal Drive Current	Forward Voltage <sup>4,5</sup> (V)			Typical Pulsed Flux <sup>4,5</sup>	Typical Power	Typical Efficacy
	(K)		(mA)	Min	Typical	Max	(lm)	(W)	(lm/W)
BXEX-27C-11H-3A1-00-0-0	2700	70	700	2.80	3.00	3.20	340	2.1	162
BXEX-30C-11H-3A1-00-0-0	3000	70	700	2.80	3.00	3.20	351	2.1	167
BXEX-35C-11H-3A1-00-0-0	3500	70	700	2.80	3.00	3.20	354	2.1	169
BXEX-40C-11H-3A1-00-0-0	4000	70	700	2.80	3.00	3.20	373	2.1	178
BXEX-50C-11H-3A1-00-0-0	5000	70	700	2.80	3.00	3.20	373	2.1	178
BXEX-57C-11H-3A1-00-0-0	5700	70	700	2.80	3.00	3.20	373	2.1	178
BXEX-65C-11H-3A1-00-0-0	6500	70	700	2.80	3.00	3.20	356	2.1	169

#### Notes for Table 1:

- 1. The last 6 characters (including hyphens '-') refer to flux bins, forward voltage bins, and color bin options, respectively. "00-0-0" denotes the full distribution of flux, forward voltage, and color bin.
  - Example: BXEX-57C-11H-3A1-00-0-0 refers to the full distribution of flux, forward voltage, and color within a 5700K 6-step ANSI standard chromaticity region with a minimum of 70 CRI, 1x1 die configuration, high power, 3.0V typical forward voltage.
- 2. Product CCT is hot targeted at Tsp =  $85^{\circ}$ C. Nominal CCT as defined by ANSI C78.377-2011.
- 3. Listed CRIs are minimum values and include test tolerance.
- 4. Products tested under pulsed condition (10ms pulse width) at nominal drive current.
- 5. Bridgelux maintains a ±7.5% tolerance on luminous flux measurements, ±0.15V tolerance on forward voltage measurements, and ±2 tolerance on CRI measurements for the SMD 3535.
- 6. Refer to Table 6 and Table 7 for Bridgelux SMD 3535 Luminous Flux Binning and Forward Voltage Binning information.

### **Product Selection Guide**

**Table 2:** Selection Guide, Pulsed Measurement Data at 700mA ( $T_j = T_{sp} = 85$ °C)

Part Number <sup>15</sup>	Nominal CCT <sup>2</sup>	CRI <sup>3, 4</sup>	Nominal Drive Current	F	orward Voltag (V)	<b>9</b> ⁴	Typical Pulsed Flux <sup>4</sup>	Typical Power	Typical Efficacy
	(K)		(mA)	Min	Typical	Max	(lm)	(W)	(lm/W)
BXEX-27C-11H-3A1-00-0-0	2700	70	700	2.70	2.90	3.10	304	2.0	150
BXEX-30C-11H-3A1-00-0-0	3000	70	700	2.70	2.90	3.10	314	2.0	155
BXEX-35C-11H-3A1-00-0-0	3500	70	700	2.70	2.90	3.10	318	2.0	156
BXEX-40C-11H-3A1-00-0-0	4000	70	700	2.70	2.90	3.10	334	2.0	165
BXEX-50C-11H-3A1-00-0-0	5000	70	700	2.70	2.90	3.10	334	2.0	165
BXEX-57C-11H-3A1-00-0-0	5700	70	700	2.70	2.90	3.10	334	2.0	165
BXEX-65C-11H-3A1-00-0-0	6500	70	700	2.70	2.90	3.10	329	2.0	162

#### Notes for Table 2:

- 1. The last 6 characters (including hyphens '-') refer to flux bins, forward voltage bins, and color bin options, respectively. "00-0-0" denotes the full distribution of flux, forward voltage, and color bin.
  - Example: BXEX-57C-11H-3A1-00-0-0 refers to the full distribution of flux, forward voltage, and color within a 5700K 6-step ANSI standard chromaticity region with a minimum of 70CRI, 1x1 die configuration. high power, 3.0V typical forward voltage.
- 2. Product CCT is hot targeted at Tsp = 85°C. Nominal CCT as defined by ANSI C78.377-2011.
- 3. Listed CRIs are minimum values and include test tolerance.
- 4. Products tested under pulsed condition (10ms pulse width) at nominal drive current.
- 5. Bridgelux maintains a ±7.5% tolerance on luminous flux measurements, ±0.15V tolerance on forward voltage measurements, and ±2 tolerance on CRI measurements for the SMD 3535.
- 6. Refer to Table 6 and Table 7 for Bridgelux SMD 3535 Luminous Flux Binning and Forward Voltage Binning information.

### Performance at Commonly Used Drive Currents

SMD 3535 LEDs specifications at nominal drive current are shown in Table 1 and Table 2. SMD 3535 may also be driven at other drive currents dependent on specific application design requirements. The performance at any drive current can be derived from the current vs. voltage characteristics shown in Figure 2 and the relative luminous flux vs. current characteristics shown in Figure 3. The performance at commonly used drive currents is summarized in Table 3.

 Table 3: Performance at Commonly Used Drive Currents

Part Number	CRI	Drive Current¹ (mA)	Typical V <sub>r</sub> T <sub>sp</sub> = 25°C (V)	Typical Power T <sub>sp</sub> = 25°C (W)	Typical Pulsed Flux² T <sub>sp</sub> = 25°C (lm)	Typical Pulsed Flux³ T <sub>sp</sub> = 85°C (lm)	Typical Efficacy T <sub>sp</sub> = 25°C (lm/W)
		50	2.64	0.1	28	25	214
	Ì	150	2.73	0.4	83	74	203
BXEX-27C-11H-3A1-00-0-0	70	350	2.85	1.0	183	164	183
BAEA-2/C-11H-3A1-00-0-0	/ /	700	3.00	2.1	340	304	162
	Ī	1200	3.30	4.0	535	479	135
		1400	3.40	4.8	604	541	127
		50	2.64	0.1	29	26	221
		150	2.73	0.4	86	77	209
DVEV 00C 44LL 0A4 00 0 0	70	350	2.85	1.0	189	169	189
BXEX-30C-11H-3A1-00-0-0	70	700	3.00	2.1	351	314	167
		1200	3.30	4.0	552	495	139
	Ī	1400	3.40	4.8	624	559	131
		50	2.64	0.1	29	26	223
		150	2.73	0.4	86	77	211
BXEX-35C-11H-3A1-00-0-0	70	350	2.85	1.0	191	171	191
DVEV-32C-11U-3V1-00-0-0	/0	700	3.00	2.1	354	318	169
		1200	3.30	4.0	558	500	141
		1400	3.40	4.8	630	565	133
		50	2.64	0.1	31	28	234
	Ī	150	2.73	0.4	91	81	222
BXEX-40C-11H-3A1-00-0-0 BXEX-50C-11H-3A1-00-0-0	70	350	2.85	1.0	201	180	201
BXEX-57C-11H-3A1-00-0-0	/ [	700	3.00	2.1	373	334	178
		1200	3.30	4.0	587	526	148
		1400	3.40	4.8	663	594	139
		50	2.64	0.1	30	27	230
		150	2.73	0.4	89	80	219
BXEX-65C-11H-3A1-00-0-0	70	350	2.85	1.0	197	177	198
DVFV-02C-11U-3M1-00-0-0	/ /	700	3.00	2.1	356	329	169
		1200	3.30	4.0	577	517	146
		1400	3.40	4.8	652	584	137

Notes for Table 3:

- 1. Alternate drive currents in Table 3 are provided for reference only and are not a guarantee of performance.
- 2. Bridgelux maintains a  $\pm$  7.5% tolerance on flux measurements.
- 3. Typical pulsed performance values are provided as reference only and are not a guarantee of performance.

### **Electrical and Thermal Characteristics**

Table 4: Electrical and Thermal Characteristics

Part Number ¹	Drive Current	F	orward Voltage (V)	Typical Temperature Coefficient	Typical Thermal Resistance	
	(mA)	Minimum	Typical	Maximum	of Forward Voltage⁴ ∆V <sub>r</sub> ∕∆T (mV∕°C)	Junction to Solder Point <sup>5,6</sup> R <sub>j-sp</sub> (°C/W)
BXEX-xxx-11H-3A1-00-0-0	700	2.80	3.0	3.20	-1.3	3.0

#### Notes for Table 4:

- 1. The last 6 characters (including hyphens '-') refer to nominal flux, nominal forward voltage, and color bins, respectively. "00-o-o" denotes the full distribution of flux, forward voltage, and color bin .
- Example: BXEX-57C-11H-3A1-00-0-0 refers to the full distribution of flux, forward voltage, and color within a 5700K ANSI standard chromaticity region with a minimum of 70 CRI.
- 2. Products tested under pulsed condition (10ms pulse width) where  $T_{\rm sp}$  = 85  $^{\circ}$ C.
- 3. Bridgelux maintains a tolerance of  $\pm$  0.1V on forward voltage measurements.
- 4. Products measured between 25°C and 105°C under pulsed condition (10ms pulse width).
- 5. Thermal Resistance values based on 5700K 70 CRI product.
- 6. Thermal resistance value was calculated using total electrical input power; optical power was not subtracted from input power.

## Absolute Maximum Ratings

Table 5: Maximum Ratings

Parameter	Maximum Rating				
LED Junction Temperature (T <sub>j</sub> )	150°C				
Storage Temperature	-40°C to +105°C				
Operating Solder Point Temperature (T <sub>Sp</sub> )	-40°C to +105°C				
Soldering Temperature	260°C or lower for a maximum of 40 seconds				
DC Forward Current	1500mA				
Reverse Voltage²	-				
Peak Pulse Forward Current <sup>1</sup>	2000mA				
Moisture Sensitivity Rating	MSL3				
Electrostatic Discharge	8kV HBM. JEDEC-JS-001-HBM and JEDEC-JS-001-2012				

#### Notes for Table 5:

<sup>1.</sup> Bridgelux recommends a maximum duty cycle of 10% and pulse width of 10 ms when operating LED SMD at maximum peak pulsed current specified. Maximum peak pulsed current indicate values where LED SMD can be driven without catastrophic failures.

<sup>2.</sup> Light emitting diodes are not designed to be driven in reverse voltage and will not produce light under this condition. no rating is provided.

Table 6 lists the standard photometric luminous flux bins for Bridgelux SMD 3535 LEDs. Although several bins are listed, product availability in a particular bin varies by production run and by product performance. Not all bins are available in all CCTs.

**Table 6:** Luminous Flux Bin Definitions at 700mA,  $T_{sp}$ =85 $^{\circ}$ C

Bin Code	Minimum	Maximum	Unit	Condition		
D6	250	270				
D <sub>7</sub>	270	290				
D8	290	310	lm	I <sub>F</sub> =700mA		
D9	310	330				
E6	330	350				

Note for Table 6:

**Table 7:** Forward Voltage Bin Definition at 700mA,  $T_{sp}$ =85 $^{\circ}$ C

Bin Code	Minimum	Maximum	Unit	Condition		
Н	2.5	2.7				
J	2.7	2.9	V	I <sub>F</sub> =700mA		
K	2.9	3.1	V			
L	3.1	3.3				

Note for Table 7:

1. Bridgelux maintains a tolerance of ± 0.15V on forward voltage measurements.

<sup>1.</sup> Bridgelux maintains a tolerance of  $\pm$  7.5% on luminous flux measurements.

Table 8: Color Bin Definition

2700K	Center_x	Center_y	Major_Axis	Minor_Axis	Angle		Color Bin	
3SDCM	0.4578	0.4101	0.0081	0.0042	53.7		1	
6SDCM	0.4578	0.4101	0.0162	0.0084	53.7		A/B/C/D	
ITEM	ļ	4	E		С		D	
Point 1	0.4655	0.424	0.4501	0.3962	0.4471	0.4079	0.4687	0.4129
Point 2	0.4615	0.4169	0.4539	0.4031	0.4523	0.4087	0.4631	0.4112

3000K	Center_x	Center_y	Major_Axis	Minor_Axis	Angle		Color Bin		
3SDCM	0.4338	0.403	0.00834	0.00408	53.22		1		
6SDCM	0.4338	0.403	0.01668	0.00816	53.22		53.22 A/B/C/D		
ITEM	,	4	E	В		С		D	
Point 1	0.4406	0.4172	0.4271	0.3888	0.4227	0.3993	0.445	0.4072	
Point 2	0.4371	0.4099	0.4303	0.3957	0.4281	0.4008	0.4393	0.4048	

3500K	Center_x	Center_y	Major_Axis	Minor_Axis	Angle		Color Bin		
3SDCM	0.4078	0.393	0.00927	0.00414	54		1		
6SDCM	0.4078	0.393	0.01854	0.00828	54		54 A/B/C/D		/C/D
ITEM	,	A		3	С		D		
Point 1	0.4137	0.4084	0.4019	0.3776	0.3957	0.3873	0.42	0.3992	
Point 2	0.4106	0.4006	0.4048	0.3852	0.4016	0.3899	0.4138	0.3958	

4000K	Center_x	Center_y	Major_Axis	Minor_Axis	Angle		Color Bin	
3SDCM	0.3818	0.3797	0.00939	0.00402	53.72		1	
6SDCM	0.3818	0.3797	0.01878	0.00804	53.72		A/B/C/D	
ITEM	Į.	A E		3 C			D	
Point 1	0.3859	0.3942	0.3778	0.3652	0.3693	0.3722	0.3944	0.3877
Point 2	0.3837	0.3867	0.3797	0.3723	0.3754	0.3756	0.388	0.3834

Table 8: Color Bin Definition

5000K	Center_x	Center_y	Major_Axis	Minor_Axis	An	gle	Colo	r Bin
3SDCM	0.3447	0.3553	0.00822	0.00354	59	.62	:	1
6SDCM	0.3447	0.3553	0.01644	0.00708	59	.62	A/B/	/C/D
ITEM	A		E	3	(		Ι	)
Point 1	0.3458	0.3675	0.3437	0.3431	0.3344	0.3473	0.355	0.3642
Point 2	0.3452	0.3612	0.3441	0.349	0.3394	0.3512	0.3497	0.3592

5700K	Center_x	Center_y	Major_Axis	Minor_Axis	An	gle	Colo	r Bin
3SDCM	0.3287	0.3417	0.00746	0.0032	59	.09	-	1
6SDCM	0.3287	0.3417	0.01492	0.0064	59	.09	A/B/	/C/D
ITEM	A		E	3	(	2	Γ	)
Point 1	0.3287	0.3518	0.3288	0.3317	0.3194	0.335	0.3381	0.3499
Point 2	0.3287	0.3468	0.3287	0.3366	0.324	0.3383	0.3334	0.3451

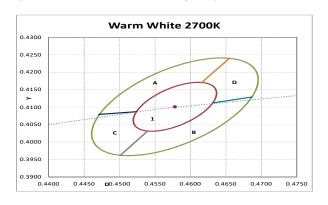
6500K	Center_x	Center_y	Major_Axis	Minor_Axis	An	gle	Colo	r Bin
3SDCM	0.3123	0.3282	0.00669	0.00285	58	.57	:	1
6SDCM	0.3123	0.3282	0.01338	0.0057	58	.57	A/B/	/C/D
ITEM	A		В		(		Ι	)
Point 1	0.3113	0.3362	0.3134	0.3203	0.3038	0.3198	0.3208	0.3364
Point 2	0.3117	0.3321	0.3128	0.3242	0.3081	0.3239	0.3165	0.3324

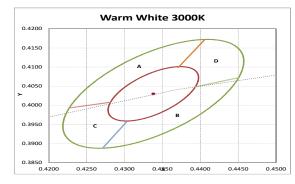
#### Note for Table 8:

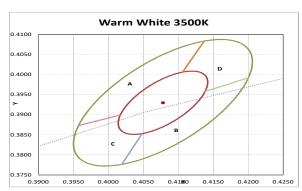
<sup>1.</sup> Color binning at  $\rm T_{\rm sp}\hbox{--}85^{\circ}C$  unless otherwise specified

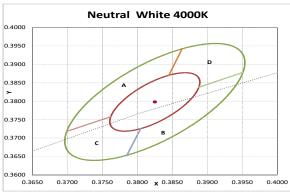
<sup>2.</sup> Bridgelux maintains a tolerance of ± 0.007 on x and y color coordinates in the CIE 1931 color space.

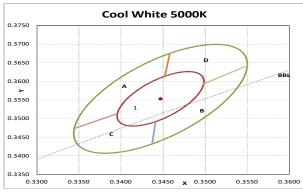
Figure 1: C.I.E. 1931 Chromaticity Diagram (5 Color Bin Structure, Hot-color Targeted at T<sub>so</sub>=85°C)

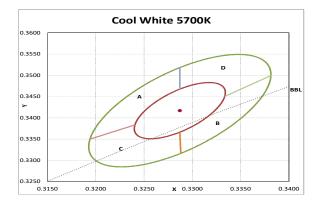


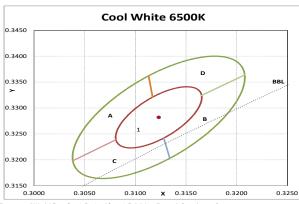












### Performance Curves

Figure 2: Drive Current vs. Forward Voltage ( $T_{sp}$ =85°C)

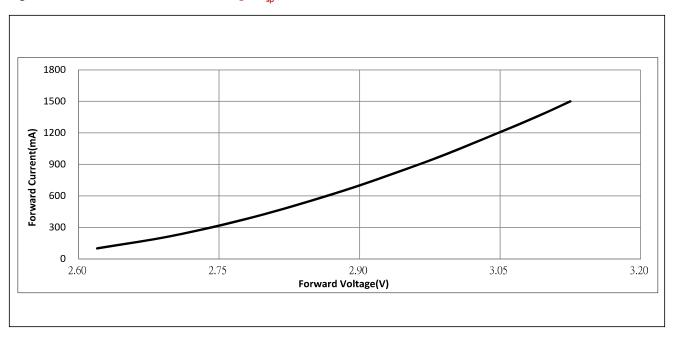
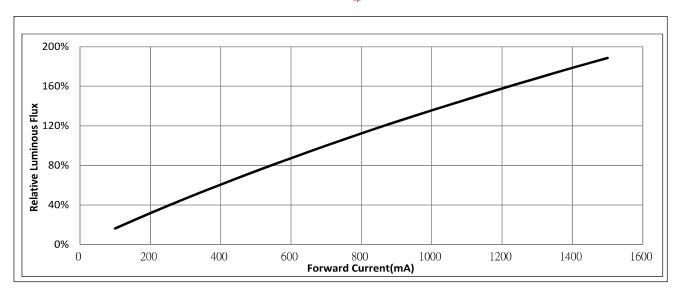


Figure 3: Typical Relative Luminous Flux vs. Drive Current ( $T_{\rm sp}$ =85°C)



Note for Figure 3:

<sup>1.</sup> Pulse width modulation (PWM) is recommended for dimming effects.

### Performance Curves

Figure 4: Typical Relative Flux vs. Solder Point Temperature\_700mA

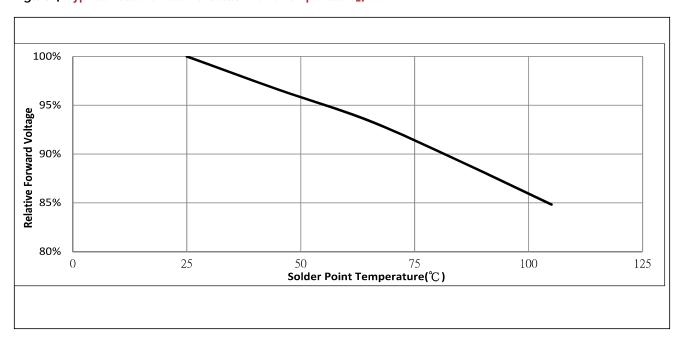
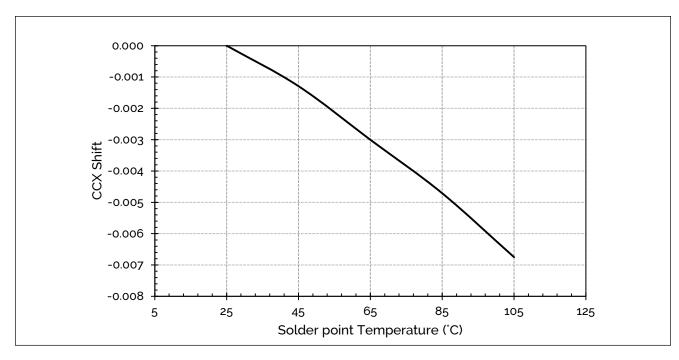


Figure 5: Typical CCX Shift vs. Solder Point Temperature\_700mA



Notes for Figures 4 & 5:

<sup>1.</sup> Characteristics shown for cool white based on 5700K and 70 CRI.

<sup>2.</sup> For other color SKUs, the shift in color will vary. Please contact your Bridgelux Sales Representative for more information

### Performance Curves

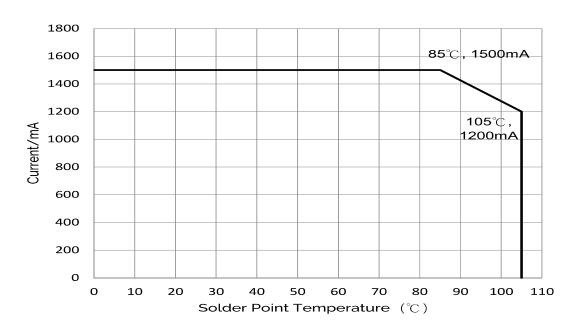
0.000 -0.002 -0.004 CCY Shift (mV) -0.006 -0.008 -0.010 -0.012 25 65 85 5 45 105 125 Solder point Temperature (°C)

Figure 6: Typical CCY Shift vs. Solder Point Temperature\_700mA

Notes for Figure 6:

- 1. Characteristics shown for cool white based on 5700K and 70 CRI.
- 2. For other color SKUs, the shift in color will vary. Please contact your Bridgelux Sales Representative for more information

Figure 7: Drive Current vs Solder Point Temperature



## Typical Radiation Pattern

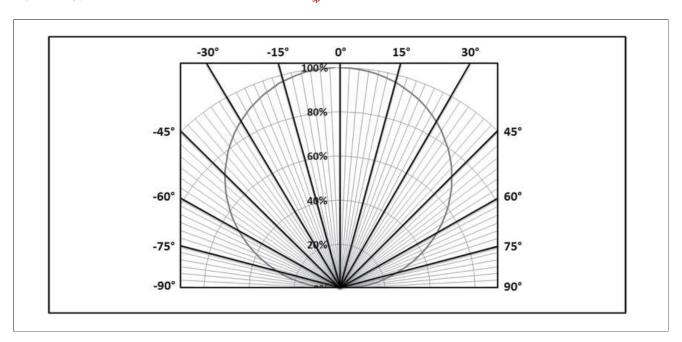
100%
90%
80%
70%
60%
50%
40%
20%
10%
-90° -80° -70° -60° -50° -40° -30° -20° -10° 0° 10° 20° 30° 40° 50° 60° 70° 80° 90°
Angular Displacement (°)

Figure 8: Typical Spatial Radiation Pattern at 700mA,  $T_{sp}$ =25°C

Notes for Figure 8:

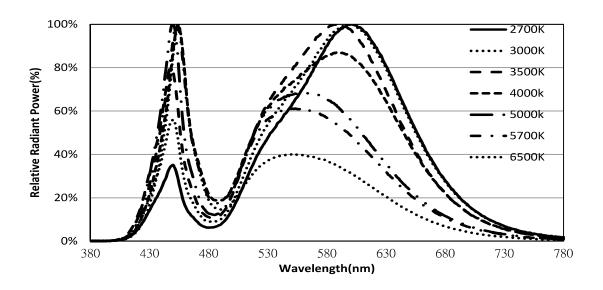
- 1. Typical viewing angle is 120°.
- 2. The viewing angle is defined as the off axis angle from the centerline where luminous intensity (Iv) is  $\frac{1}{2}$  of the peak value.

Figure 9: Typical Polar Radiation Pattern at 700mA, T<sub>sp</sub>=25°C



## Typical Color Spectrum

Figure 10: Typical Color Spectrum

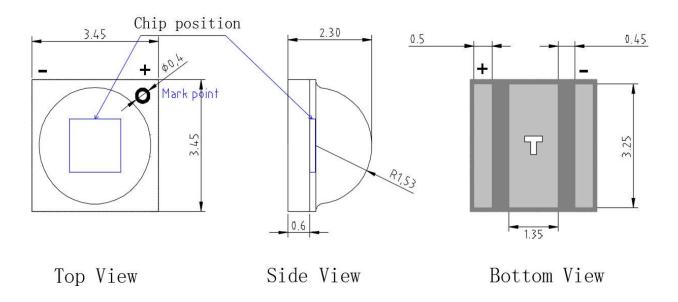


Notes for Figure 10:

- 1. Color spectra measured at nominal current for Tsp = 85°C
- 2. Color spectra shown for 70 CRI products.

### Mechanical Dimensions

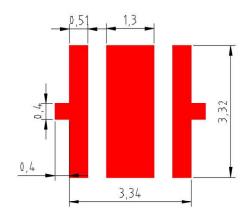
Figure 11: Drawing for SMD 3535



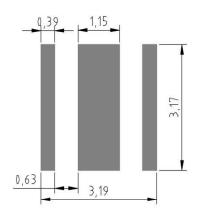
Notes for Figure 11:

- 1. Drawings are not to scale.
- 2. Drawing dimensions are in millimeters.
- 3. Unless otherwise specified, tolerances are ± 0.10mm.

#### Welded plate and steel mesh Dimensions



Welded plate Dimensions



Steel mesh Dimensions

## Reliability

Table 9: Reliability Test Items and Conditions

No.	ltems	Reference Standard	Test Conditions	Drive Current	Test Duration	Units Failed/Tested
1	Moisture/reflow Sensitivity	J-STD-020E	T <sub>sld</sub> = 260°C, 10sec, Precondition: 85°C, 60%RH, 168hr		3 reflows	0/20
2	Low Temperature Storage	JESD22-A119	T <sub>a</sub> =-40°C		1000 hours	0/20
3	High Temperature Storage	JESD22-A103D	T <sub>a</sub> =105°C		1000 hours	0/20
4	Low Temperature Operating Life	JESD22-A108D	T <sub>a</sub> =-40°C	700mA	1000 hours	0/20
5	Temperature Humidity Operating Life	JESD22-A101C	T <sub>sp</sub> =85°C, RH=85%	700mA	1000 hours	0/20
6	High Temperature Operating Life	JESD22-A108D	T <sub>sp</sub> =105°C	700mA	1000 hours	0/20
7	Thermal Shock	JESD22-A106B	T <sub>a</sub> =-40°C ~100°C; Dwell : 15min; Transfer: 10sec		200 Cycle	0/20
8	Temperature Cycle	JESD22-A104E	T <sub>a</sub> =-40°C ~100°C; Dwell at extreme temperature: 15min; Ramp rate < 105°C/min		200 Cycle	0/20
9	Electrostatic Discharge	JS-001-2012	HBM, 8KV, 1.5kΩ, 100pF, Alternately positive or negative			0/20

#### **Passing Criteria**

Item	Symbol	Test Condition	Passing Criteria	
Forward Voltage	Vf	700mA	ΔVf<10%	
Luminous Flux	Fv	700mA	<b>∆</b> Fv<30%	
Chromaticity Coordinates	(x, y)	700mA	Δu'v'<0.007	

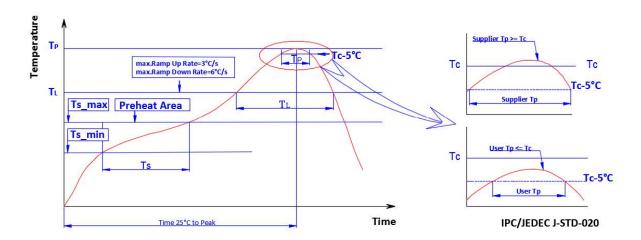
Notes for Table 9:

<sup>1.</sup> Measurements are performed after allowing the LEDs to return to room temperature

<sup>2.</sup>  $T_{\rm sld}$  : reflow soldering temperature;  $T_{\rm a}$  : ambient temperature

## **Reflowing Characteristics**

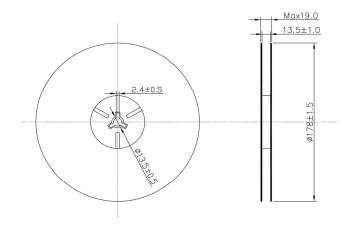
Figure 12: Reflow Profile



Profile Feature	Lead Free Assembly		
Temperature Min. (Ts_min)	160°C		
Temperature Max. (Ts_max)	205°C		
Time (ts) from Ts_min to Ts_max	60-150 seconds		
Ramp-Up Rate (TL to Tp)	3 °C/second		
Liquidus Temperature (TL)	220 °C		
Time (TL) Maintained Above TL	60-150 seconds		
Peak Temp(Tp)	260 °C max.		
Time (Tp) Within 5 °C of the Specified Classification Temperature (Tc)	25 seconds max.		
Ramp-Down Rate (Tp to TL)	5 °C/second max.		
Time 25 °C to Peak Temperature	10 minutes max.		

## Packaging

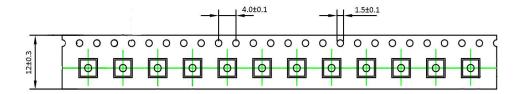
Figure 13: Emitter Reel Drawings

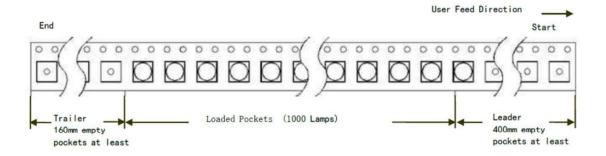


Note for Figure 13:

1. Drawings are not to scale. Drawing dimensions are in millimeters.

Figure 14: Emitter Tape Drawings





Note for Figure 14:

1. Drawings are not to scale. Drawing dimensions are in millimeters.

## Packaging

Figure 15: Emitter Reel Packaging Drawings



Note for Figure 15:

1. Drawings are not to scale.

### **Design Resources**

#### **Optical Source Models**

Please contact your Bridgelux sales representative for assistance.

#### **Precautions**

#### **CAUTION: CHEMICAL EXPOSURE HAZARD**

Exposure to some chemicals commonly used in luminaire manufacturing and assembly can cause damage to the LED emitter. Please consult Bridgelux Application Note AN51 for additional information.

#### **CAUTION: EYE SAFETY**

Eye safety classification for the use of Bridgelux SMD LED emitter is in accordance with IEC specification EN62471: Photobiological Safety of Lamps and Lamp Systems. SMD LED emitters are classified as Risk Group 2 when operated at or below the maximum drive current. Please use appropriate precautions. It is important that employees working with LEDs are trained to use them safely.

#### **CAUTION: RISK OF BURN**

Do not touch the SMD LED emitter during operation. Allow the emitter to cool for a sufficient period of time before handling. The SMD LED emitter may reach elevated temperatures such that could burn skin when touched.

### **Disclaimers**

#### MINOR PRODUCT CHANGE POLICY

The rigorous qualification testing on products offered by Bridgelux provides performance assurance. Slight cosmetic changes that do not affect form, fit, or function may occur as Bridgelux continues product optimization.

#### STANDARD TEST CONDITIONS

Unless otherwise stated, LED emitter testing is performed at the nominal drive current.

## About Bridgelux: Bridging Light and Life™

At Bridgelux, we help companies, industries and people experience the power and possibility of light. Since 2002, we've designed LED solutions that are high performing, energy efficient, cost effective and easy to integrate. Our focus is on light's impact on human behavior, delivering products that create better environments, experiences and returns—both experiential and financial. And our patented technology drives new platforms for commercial and industrial luminaires.

For more information about the company, please visit bridgelux.com twitter.com/Bridgelux facebook.com/Bridgelux WeChat ID: BridgeluxInChina



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