



# Bridgelux® V8 Thrive™ Array

Product Data Sheet DS323



# Introduction

V8 Thrive



Bridgelux Thrive™ combines unique chip, phosphor and packaging technology to closely match the spectra of natural light over the visible wavelength range. Thrive can be used in constant color point luminaires to bring full spectrum natural light indoors or in tunable white luminaires to incorporate circadian elements that may impact human well-being. The high fidelity spectral output of Thrive creates stunning environments with excellent color rendering and outstanding TM30 metrics. Thrive is available in both SMD components and LED arrays to enable a broad range of lighting applications including retail, hospitality, office, education, architectural, museums, healthcare and residential lighting.

## Features

- Engineered spectrum to closely match natural light
- CRI >95, R1-R15 >90, high Rf and Rg values
- High efficacy full spectrum solution
- No violet chip augmentation
- Hot color targeted
- Form factor consistent with existing Bridgelux COB arrays
- Broad product platform availability (SMDs and COBs)

## Benefits

- Full consistent spectrum with fewer spectral spikes
- Natural and vivid color rendering
- Greater energy savings, lower utility costs
- Economical, high efficiency solution
- Uniform and consistent white light at application conditions
- Ease of design and rapid go-to-market
- Enables greater design flexibility and platform color consistency

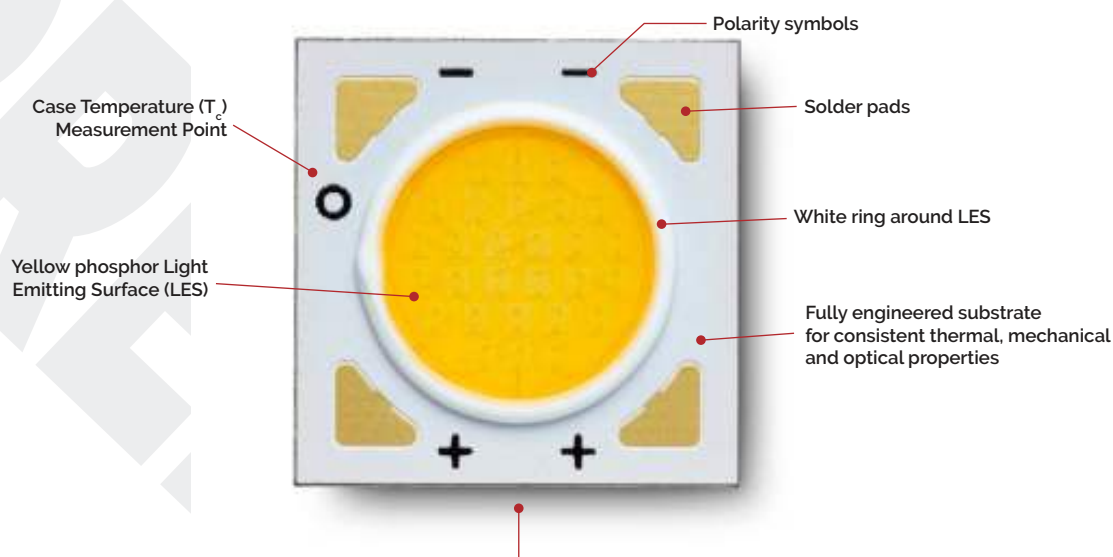


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# Product Feature Map

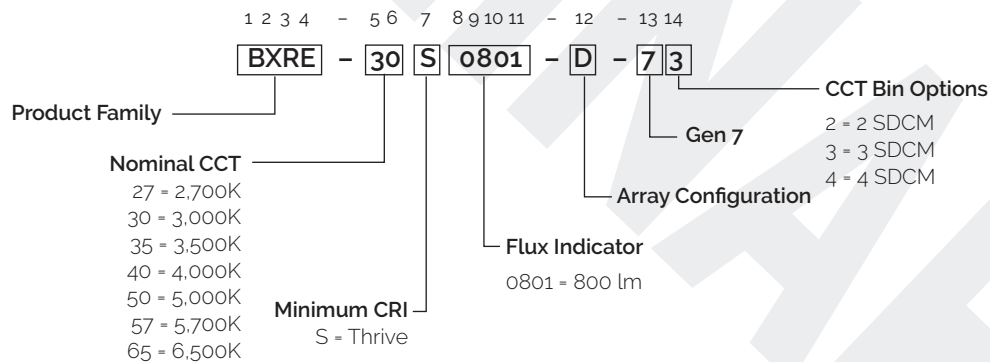
Bridgelux arrays are fully engineered devices that provide consistent thermal and optical performance on an engineered mechanical platform. The V Series arrays are the most compact chip-on-board devices across all of Bridgelux's LED Array products. The arrays incorporate several features to simplify design integration and assembly. Please visit [www.bridgelux.com](http://www.bridgelux.com) for more information on the V Series family of products.



Note: Part number and lot codes are scribed on back of array

## Product Nomenclature

The part number designation for Bridgelux COB arrays is explained as follows:



# Product Selection Guide

The following product configurations are available:

**Table 1:** Selection Guide, Pulsed Measurement Data ( $T_c = 25^\circ\text{C}$ )

Part Number <sup>1,6</sup>	Nominal CCT <sup>1</sup> (K)	CRI <sup>2</sup>	Nominal Drive Current <sup>3</sup> (mA)	Typical $V_f$ (V)	Typical Pulsed Flux <sup>4,5,6,7</sup> $T_c = 25^\circ\text{C}$ (lm)	Minimum Pulsed Flux <sup>6,7,8</sup> $T_c = 25^\circ\text{C}$ (lm)	Typical Power (W)	Typical Efficacy (lm/W)	Typical Photosynthetic Photon Flux (PPF)	Typical Photon Efficiency ( $\mu\text{mol}/\text{J}$ )
BXRE-27So801-D-7X	2700	98	350	17.2	630	554	6.0	105	11.51	1.91
BXRE-27So801-E-7X	2700	98	175	34.4	630	554	6.0	105	11.51	1.91
BXRE-30So801-D-7X	3000	98	350	17.2	677	596	6.0	112	11.77	1.96
BXRE-30So801-E-7X	3000	98	175	34.4	677	596	6.0	112	11.77	1.96
BXRE-35So801-D-7X	3500	98	350	17.2	728	641	6.0	121	11.90	1.98
BXRE-35So801-E-7X	3500	98	175	34.4	728	641	6.0	121	11.90	1.98
BXRE-40So801-D-7X	4000	98	350	17.2	740	652	6.0	123	12.33	2.05
BXRE-40So801-E-7X	4000	98	175	34.4	740	652	6.0	123	12.33	2.05
BXRE-50So801-D-7X	5000	98	350	17.2	777	683	6.0	129	12.35	2.05
BXRE-50So801-E-7X	5000	98	175	34.4	777	683	6.0	129	12.35	2.05
BXRE-57So801-D-7X	5700	98	350	17.2	789	694	6.0	131	13.20	2.19
BXRE-57So801-E-7X	5700	98	175	34.4	789	694	6.0	131	13.20	2.19
BXRE-65So801-D-7X	6500	98	350	17.2	771	678	6.0	128	12.60	2.09
BXRE-65So801-E-7X	6500	98	175	34.4	771	678	6.0	128	12.60	2.09

**Table 2:** Selection Guide, Stabilized DC Test Performance ( $T_c = 85^\circ\text{C}$ )<sup>4,5,6</sup>

Part Number <sup>1,6</sup>	Nominal CCT <sup>1</sup> (K)	CRI <sup>2</sup>	Nominal Drive Current <sup>3</sup> (mA)	Typical $V_f$ (V)	Typical DC Flux <sup>4,5,6,7</sup> $T_c = 85^\circ\text{C}$ (lm)	Minimum DC Flux <sup>6,7,8,9</sup> $T_c = 85^\circ\text{C}$ (lm)	Typical Power (W)	Typical Efficacy (lm/W)	Typical Photosynthetic Photon Flux (PPF)	Typical Photon Efficiency ( $\mu\text{mol}/\text{J}$ )
BXRE-27So801-D-7X	2700	98	350	16.7	567	499	5.8	97	10.79	1.83
BXRE-27So801-E-7X	2700	98	175	33.4	567	499	5.8	97	10.79	1.83
BXRE-30So801-D-7X	3000	98	350	16.7	609	536	5.8	104	10.97	1.86
BXRE-30So801-E-7X	3000	98	175	33.4	609	536	5.8	104	10.97	1.86
BXRE-35So801-D-7X	3500	98	350	16.7	656	577	5.8	112	11.62	1.97
BXRE-35So801-E-7X	3500	98	175	33.4	656	577	5.8	112	11.62	1.97
BXRE-40So801-D-7X	4000	98	350	16.7	666	586	5.8	114	11.79	2.00
BXRE-40So801-E-7X	4000	98	175	33.4	666	586	5.8	114	11.79	2.00
BXRE-50So801-D-7X	5000	98	350	16.7	699	615	5.8	120	11.85	2.01
BXRE-50So801-E-7X	5000	98	175	33.4	699	615	5.8	120	11.85	2.01
BXRE-57So801-D-7X	5700	98	350	16.7	710	625	5.8	121	12.30	2.09
BXRE-57So801-E-7X	5700	98	175	33.4	710	625	5.8	121	12.30	2.09
BXRE-65So801-D-7X	6500	98	350	16.7	694	610	5.8	119	12.11	2.05
BXRE-65So801-E-7X	6500	98	175	33.4	694	610	5.8	119	12.11	2.05

Notes for Table 1 & 2:

- Product CCT is hot targeted at  $T_c = 85^\circ\text{C}$ . Nominal CCT as defined by ANSI C78.377-2011.
- All CRI values are measured at  $T_c = 25^\circ\text{C}$ . CRI values are typical values. Minimum CRI for Thrive products is 95. Bridgelux maintains a  $\pm 3$  tolerance on CRI values.
- Drive current is referred to as nominal drive current.
- Products tested under pulsed condition (10ms pulse width) at nominal test current where  $T_j$  (junction temperature) -  $T_c$  (case temperature) -  $25^\circ\text{C}$ . Typical stabilized DC performance values are provided as reference only and are not a guarantee of performance.
- Typical performance values are provided as a reference only and are not a guarantee of performance.
- Typical performance is estimated based on operation under DC (direct current) with LED array mounted onto a heat sink with thermal interface material and the case temperature maintained at  $85^\circ\text{C}$ . Based on Bridgelux test setup, values may vary depending on the thermal design of the luminaire and/or the exposed environment to which the product is subjected.
- Bridgelux maintains a  $\pm 7\%$  tolerance on flux measurements.
- Minimum flux values at the nominal test current are guaranteed by 100% test.
- Minimum flux values at elevated temperatures are provided for reference only and are not guaranteed by 100% production testing. Based on Bridgelux test setup, values may vary depending on the thermal design of the luminaire and/or the exposed environment to which the product is subjected.

# Performance at Commonly Used Drive Currents

V Series Thrive LED arrays are tested to the specifications shown using the nominal drive currents in Table 1. V Series Thrive LED Arrays 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 Figures 10 & 11 and the flux vs. current characteristics shown in Figures 12 & 13. The performance at commonly used drive currents is summarized in Table 3.

**Table 3:** Product Performance at Commonly Used Drive Currents

Part Number	CRI	Drive Current <sup>1</sup> (mA)	Typical V <sub>f</sub> T <sub>c</sub> = 25°C (V)	Typical Power T <sub>c</sub> = 25°C (W)	Typical Flux <sup>2</sup> T <sub>c</sub> = 25°C (lm)	Typical DC Flux <sup>3</sup> T <sub>c</sub> = 85°C (lm)	Typical Efficacy T <sub>c</sub> = 25°C (lm/W)
BXRE-27S0801-D-7x	98	175	16.6	2.9	325	293	112
		250	16.9	4.2	458	412	108
		<b>350</b>	<b>17.3</b>	<b>6.1</b>	<b>630</b>	<b>567</b>	<b>104</b>
		500	17.8	8.9	875	787	98
		700	18.4	12.9	1179	1061	91
BXRE-27S0801-E-7x	98	88	33.0	2.9	326	294	112
		125	33.9	4.2	459	413	108
		<b>175</b>	<b>34.7</b>	<b>6.1</b>	<b>630</b>	<b>567</b>	<b>104</b>
		250	35.5	8.9	874	787	98
		350	36.8	12.9	1179	1061	92
BXRE-30S0801-D-7x	98	175	16.6	2.9	349	314	120
		250	16.9	4.2	492	443	116
		<b>350</b>	<b>17.3</b>	<b>6.1</b>	<b>677</b>	<b>609</b>	<b>112</b>
		500	17.8	8.9	940	846	105
		700	18.4	12.9	1266	1140	98
BXRE-30S0801-E-7x	98	88	33.0	2.9	351	316	121
		125	33.9	4.2	493	444	116
		<b>175</b>	<b>34.7</b>	<b>6.1</b>	<b>677</b>	<b>609</b>	<b>111</b>
		250	35.5	8.9	939	845	106
		350	36.8	12.9	1267	1141	98
BXRE-35S0801-D-7x	98	175	16.6	2.9	376	338	129
		250	16.9	4.2	529	476	125
		<b>350</b>	<b>17.3</b>	<b>6.1</b>	<b>728</b>	<b>655</b>	<b>120</b>
		500	17.8	8.9	1011	910	113
		700	18.4	12.9	1362	1226	105
BXRE-35S0801-E-7x	98	88	33.0	2.9	377	339	130
		125	33.9	4.2	531	477	125
		<b>175</b>	<b>34.7</b>	<b>6.1</b>	<b>728</b>	<b>655</b>	<b>120</b>
		250	35.5	8.9	1010	909	114
		350	36.8	12.9	1363	1227	106
BXRE-40S0801-D-7x	98	175	16.6	2.9	382	344	131
		250	16.9	4.2	538	484	127
		<b>350</b>	<b>17.3</b>	<b>6.1</b>	<b>740</b>	<b>666</b>	<b>122</b>
		500	17.8	8.9	1027	925	115
		700	18.4	12.9	1384	1246	107
BXRE-40S0801-E-7x	98	88	33.0	2.9	383	345	132
		125	33.9	4.2	539	485	127
		<b>175</b>	<b>34.7</b>	<b>6.1</b>	<b>740</b>	<b>666</b>	<b>122</b>
		250	35.5	8.9	1027	924	116
		350	36.8	12.9	1385	1247	108

Notes for Table 3:

1. Alternate drive currents are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a ± 7% tolerance on flux measurements.
3. Typical stabilized DC performance values are provided as reference only and are not a guarantee of performance.

# Performance at Commonly Used Drive Currents

**Table 3:** Product Performance at Commonly Used Drive Currents (Continued)

Part Number	CRI	Drive Current <sup>1</sup> (mA)	Typical V <sub>f</sub> T <sub>c</sub> = 25°C (V)	Typical Power T <sub>c</sub> = 25°C (W)	Typical Flux <sup>2</sup> T <sub>c</sub> = 25°C (lm)	Typical DC Flux <sup>3</sup> T <sub>c</sub> = 85°C (lm)	Typical Efficacy T <sub>c</sub> = 25°C (lm/W)
BXRE-50S0801-D-7x	98	175	16.6	2.9	401	361	138
		250	16.9	4.2	565	508	134
		<b>350</b>	<b>17.3</b>	<b>6.1</b>	<b>777</b>	<b>699</b>	<b>128</b>
		500	17.8	8.9	1079	971	121
		700	18.4	12.9	1454	1308	113
BXRE-50S0801-E-7x	98	88	33.0	2.9	402	362	139
		125	33.9	4.2	566	510	134
		<b>175</b>	<b>34.7</b>	<b>6.1</b>	<b>777</b>	<b>699</b>	<b>128</b>
		250	35.5	8.9	1078	970	121
		350	36.8	12.9	1455	1309	113
BXRE-57S0801-D-7x	98	175	16.6	2.9	407	366	140
		250	16.9	4.2	574	516	136
		<b>350</b>	<b>17.3</b>	<b>6.1</b>	<b>789</b>	<b>710</b>	<b>130</b>
		500	17.8	8.9	1095	986	123
		700	18.4	12.9	1476	1328	114
BXRE-57S0801-E-7x	98	88	33.0	2.9	409	368	141
		125	33.9	4.2	575	517	136
		<b>175</b>	<b>34.7</b>	<b>6.1</b>	<b>789</b>	<b>710</b>	<b>130</b>
		250	35.5	8.9	1095	985	123
		350	36.8	12.9	1477	1329	115
BXRE-65S0801-D-7x	98	175	16.6	2.9	398	358	137
		250	16.9	4.2	560	504	132
		<b>350</b>	<b>17.3</b>	<b>6.1</b>	<b>771</b>	<b>694</b>	<b>127</b>
		500	17.8	8.9	1070	963	120
		700	18.4	12.9	1442	1298	112
BXRE-65S0801-E-7x	98	88	33.0	2.9	399	359	137
		125	33.9	4.2	562	506	133
		<b>175</b>	<b>34.7</b>	<b>6.1</b>	<b>771</b>	<b>694</b>	<b>127</b>
		250	35.5	8.9	1070	963	121
		<b>350</b>	36.8	12.9	1443	1299	112

Notes for Table 3:

1. Alternate drive currents are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a ± 7% tolerance on flux measurements.
3. Typical stabilized DC performance values are provided as reference only and are not a guarantee of performance.

# Spectrum Characteristics

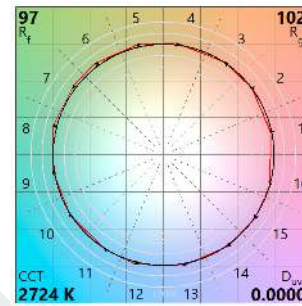
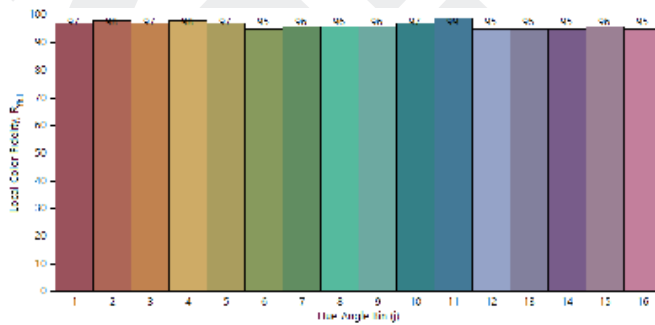
**Table 4:** Typical Color Rendering Index and TM-30 Values at,  $T_c=85^\circ\text{C}$

Nominal CCT <sup>1</sup>	R <sub>f</sub>	R <sub>g</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>	R <sub>7</sub>	R <sub>8</sub>	R <sub>9</sub>	R <sub>10</sub>	R <sub>11</sub>	R <sub>12</sub>	R <sub>13</sub>	R <sub>14</sub>	R <sub>15</sub>
2700K	95	103	97	99	94	94	97	98	97	98	99	97	91	98	98	95	98
3000K	95	104	98	99	93	94	97	98	96	96	97	96	92	95	98	95	97
3500K	95	98	98	98	97	98	98	98	98	97	93	97	97	95	98	97	98
4000K	97	100	99	99	97	99	99	99	99	98	94	97	99	96	99	98	98
5000K	97	100	98	99	98	98	98	98	99	98	95	98	98	98	98	98	97
5700K	94	98	98	98	97	95	98	97	96	95	92	97	96	96	98	98	97
6500K	95	98	98	98	97	96	98	98	96	96	93	97	96	97	98	98	97

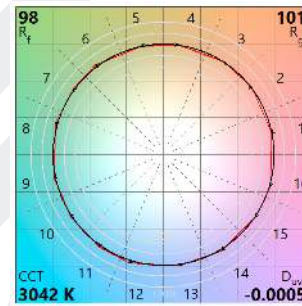
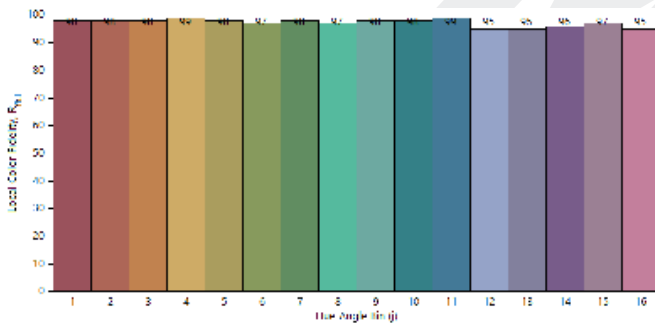
Note for Table 4:

1. Bridgelux maintains a tolerance of  $\pm 3$  on Color Rendering Index R1-R15 measurements and TM-30 measurements.

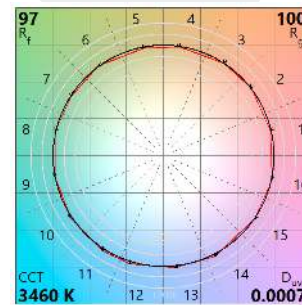
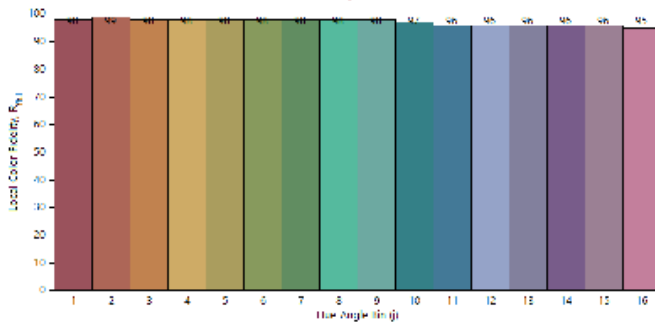
**Figure 1: 2700K Thrive TM-30 Graphs**



**Figure 2: 3000K Thrive TM-30 Graphs**



**Figure 3: 3500K Thrive TM-30 Graphs**





# Spectrum Characteristics

Figure 4: 4000K Thrive TM-30 Graphs

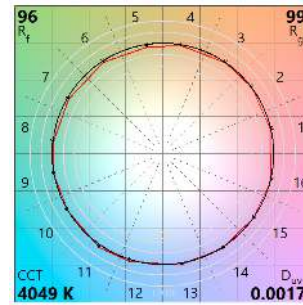
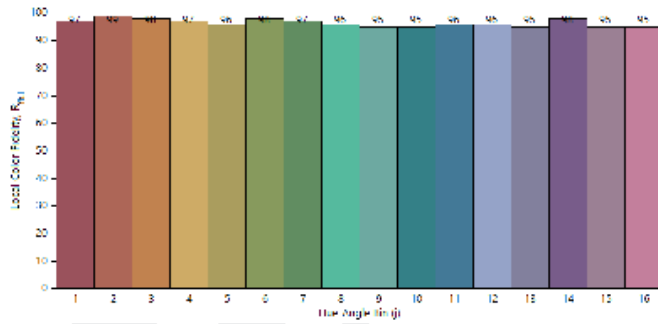


Figure 5: 5000K Thrive TM-30 Graphs

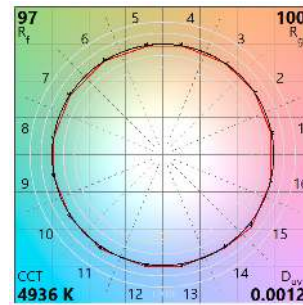
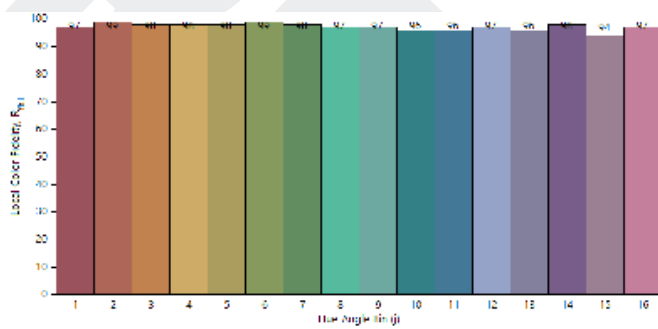


Figure 6: 5700K Thrive TM30 Graphs

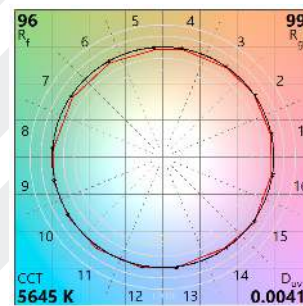
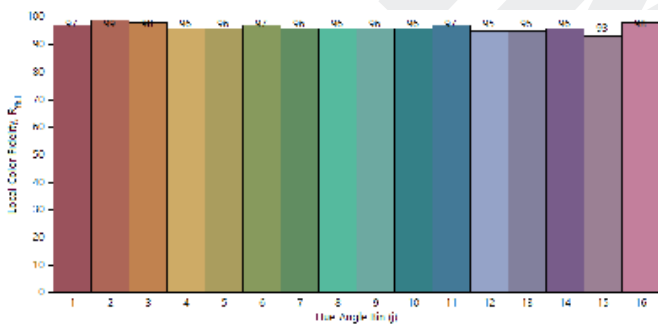
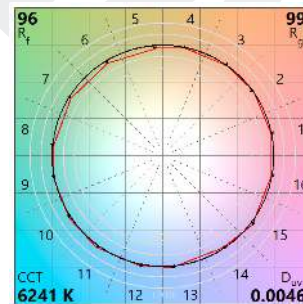
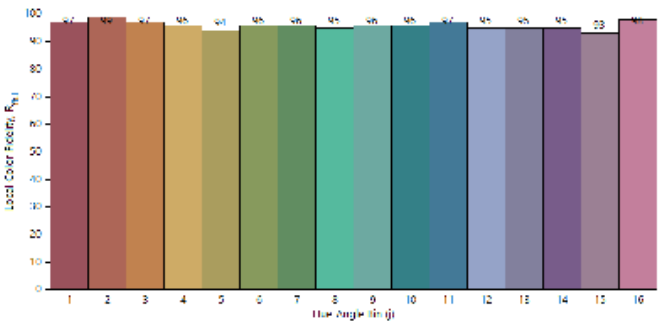
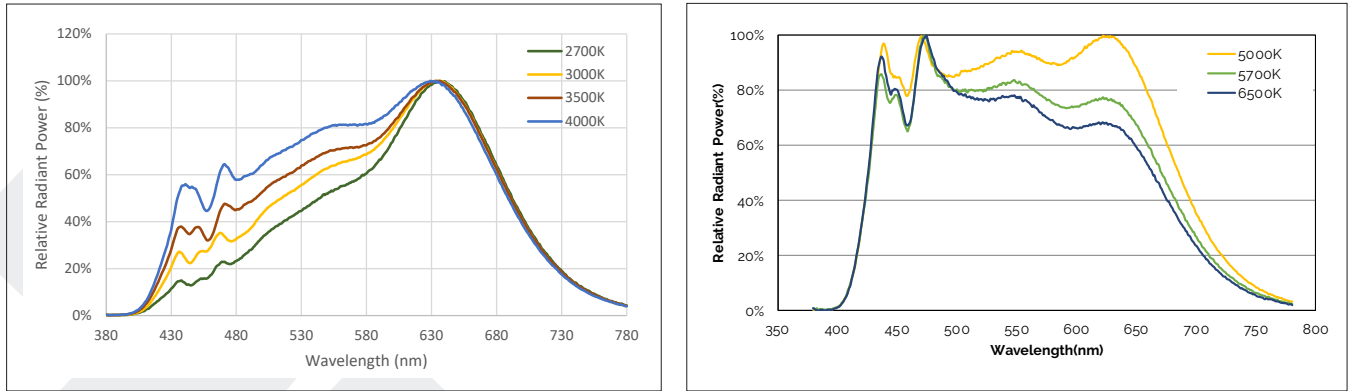


Figure 7: 6500K Thrive TM-30 Graphs



# Spectrum Characteristics

**Figure 8: Typical Color Spectrum**



Note for Figure 8:

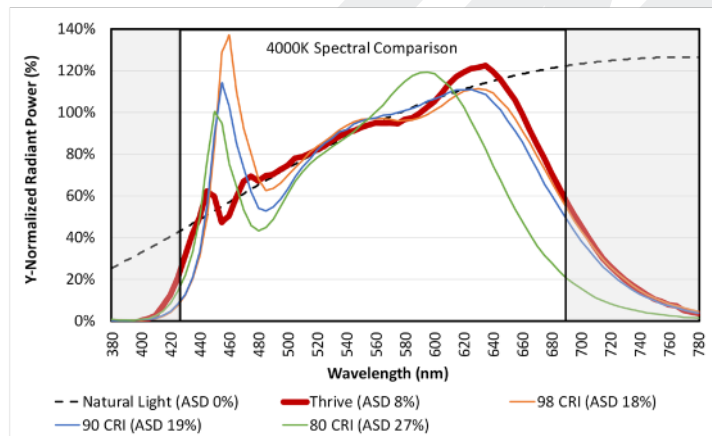
1. Color spectra measured at nominal current for  $T_c = 85^\circ\text{C}$ .

## Spectral Matching to Natural Light

The lighting market is in the early stages of adoption of human-centric lighting (HCL). HCL encompasses the effects of lighting on the physical and emotional health and well-being of people. Throughout evolution, the human visual system has evolved under the natural light of sun and fire. These light sources have standardized industry spectral power definitions that describe the state of natural light. However, conventional metrics such as CCT, CRI, and TM-30 fail to adequately quantify the naturalness, or closeness of these light sources to the standardized natural spectra. Due to a lack of an industry standard metric to quantitatively measure the naturalness of a light source, Bridgelux has pioneered a new metric that takes the guesswork out of comparing LED light sources to natural light.

Average Spectral Difference, or ASD, is calculated by measuring the absolute difference between two spectra at discrete wavelengths. These values are averaged across a wavelength range derived from the photopic response curve, or  $V(\lambda)$ ; a luminous efficiency function describing the average spectral sensitivity of human perception of brightness. The range of 425nm to 690nm was selected to remove the tails of the  $V(\lambda)$  gaussian distribution below 1% of the peak value at 555nm, covering 99.9% of the area under the photopic response curve. Natural light is defined following the approach of IES TM-30; black body curves for light sources of  $\leq 4000\text{K}$  and the CIE standard illuminant D for light sources of  $\geq 5000\text{K}$ .

Natural light has an ASD of 0%; lower ASD values indicate a closer match to natural light. Thrive is engineered to provide the closest match to natural light available using proprietary chip, phosphor and packaging technology, resulting in an ASD between 8% to 10% for all CCTs. By comparison, standard 80, 90, and 98 CRI light sources have ASD values that are 100% to 300% larger than Thrive. To learn more about the ASD metric, please review the Bridgelux whitepaper: Average Spectral Difference, a new method to make objective comparisons of naturalness between light sources; or contact your Bridgelux sales representative.



# Electrical Characteristics

**Table 5:** Electrical Characteristics

Part Number	Drive Current (mA)	Forward Voltage Pulsed, $T_c = 25^\circ\text{C}$ (V) <sup>1, 2, 3, 8</sup>			Typical Coefficient of Forward Voltage <sup>4</sup> $\Delta V_f / \Delta T_c$ (mV/ $^\circ\text{C}$ )	Typical Thermal Resistance Junction to Case <sup>5,6</sup> $R_{j-c}$ ( $^\circ\text{C}/\text{W}$ )	Driver Selection Voltages <sup>7</sup> (V)	
		Minimum	Typical	Maximum			$V_f$ Min. Hot $T_c = 105^\circ\text{C}$ (V)	$V_f$ Max. Cold $T_c = -40^\circ\text{C}$ (V)
BXRE-xxx080x-D-7x	350	16.0	17.3	18.6	-7.38	0.75	15.4	19.1
	700	17.0	18.5	19.8	-7.38	0.88	16.4	20.3
BXRE-xxx080x-E-7x	175	32.0	34.7	37.2	-14.76	0.75	33.2	37.7
	350	34.1	36.9	39.7	-14.76	0.88	35.3	40.1

Notes for Table 5:

- Parts are tested in pulsed conditions,  $T_c = 25^\circ\text{C}$ . Pulse width is 10ms.
- Voltage minimum and maximum are provided for reference only and are not a guarantee of performance.
- Bridgelux maintains a tester tolerance of  $\pm 0.10\text{V}$  on forward voltage measurements.
- Typical coefficient of forward voltage tolerance is  $\pm 0.1\text{mV}$  for nominal current.
- Thermal resistance values are based from test data of a 3000K 80 CRI product.
- Thermal resistance value was calculated using total electrical input power; optical power was not subtracted from input power. The thermal interface material used during testing is not included in the thermal resistance value.
- $V_f$ , min hot and max cold values are provided as reference only and are not guaranteed by test. These values are provided to aid in driver design and selection over the operating range of the product.
- This product has been designed and manufactured per IEC 62031:2014. This product has passed dielectric withstand voltage testing at 1160 V. The working voltage designated for the insulation is 80V d.c. The maximum allowable voltage across the array must be determined in the end product application.

# Absolute Maximum Ratings

**Table 6:** Maximum Ratings

Parameter	Maximum Rating	
LED Junction Temperature (T <sub>j</sub> )	150°C	
Storage Temperature	-40°C to +105°C	
Operating Case Temperature <sup>1</sup> (T <sub>c</sub> )	105°C	
Soldering Temperature <sup>2</sup>	300°C or lower for a maximum of 6 seconds	
	BXRE-xxx080x-D-7x	BXRE-xxx080x-E-7x
Maximum Drive Current <sup>3</sup>	700mA	350mA
Maximum Peak Pulsed Drive Current <sup>4</sup>	1000mA	500mA
Maximum Reverse Voltage <sup>5</sup>	-35V	-60V

Notes for Table 6:

1. For IEC 62717 requirement, please consult your Bridgelux sales representative.
2. Refer to Bridgelux Application Note AN101: Handling and Assembly of Bridgelux V Series LED Arrays.
3. Arrays may be driven at higher currents however lumen maintenance may be reduced.
4. Bridgelux recommends a maximum duty cycle of 10% and pulse width of 20 ms when operating LED Arrays at maximum peak pulsed current specified. Maximum peak pulsed currents indicate values where LED Arrays can be driven without catastrophic failures.
5. Light emitting diodes are not designed to be driven in reverse voltage and will not produce light under this condition. Maximum rating provided for reference only.

# Eye Safety

**Table 7:** Eye Safety Risk Group (RG) Classifications

Part Number	Drive Current <sup>5</sup> (mA)	CCT <sup>1,5</sup>			
		2700K/3000K	4000K <sup>2</sup>	5000K <sup>3</sup>	6500K <sup>4</sup>
BXRE-xxx080x-D-7x	350	RG1	RG1	RG1	RG1
	500	RG1	RG1	RG2	RG2
	700	RG1	RG1	RG2	RG2
BXRE-xxx080x-E-7x	175	RG1	RG1	RG1	RG2
	250	RG1	RG1	RG2	RG2
	350	RG1	RG1	RG2	RG2

Notes for Table 7:

1. Eye safety classification for the use of Bridgelux V Series LED arrays is in accordance with specification IEC/TR 62778: Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires.
2. For products classified as RG2 at 5000K  $E_{thr} = 1315.8$  lx.
3. Please contact your Bridgelux sales representative for  $E_{thr}$  values at specific drive currents and CCTs not listed.

# Product Bin Definitions

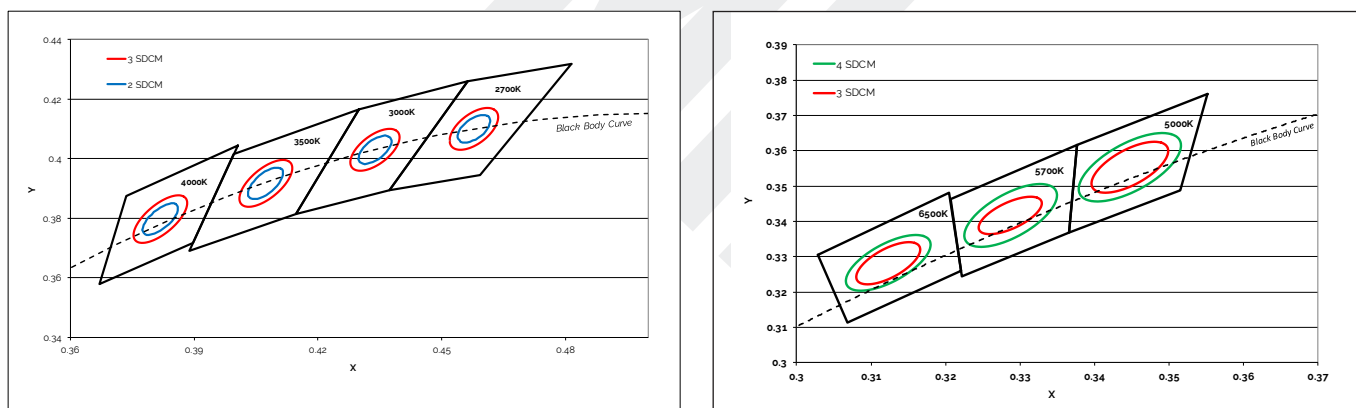
**Table 8:** 2-, 3- and 4-step MacAdam Ellipse Color Bin Definitions

CCT	Center Point		Degree	2-step		3-step		4-step	
	x	y	(°)	a	b	a	b	a	b
2700K	0.4578	0.4101	53.700	0.00540	0.00280	0.0081	0.0042	N/A	N/A
3000K	0.4338	0.403	53.217	0.00556	0.00272	0.0083	0.0041	N/A	N/A
4000K	0.3818	0.3797	53.717	0.00626	0.00268	0.0094	0.0040	N/A	N/A
5000K	0.3447	0.3553	59.617	N/A	N/A	0.0082	0.0035	0.0110	0.0047
5700K	0.3287	0.3417	59.060	N/A	N/A	0.0074	0.0032	0.0099	0.0042
6500K	0.3123	0.3282	58.567	N/A	N/A	0.0066	0.0028	0.0090	0.0038

Notes for Table 8:

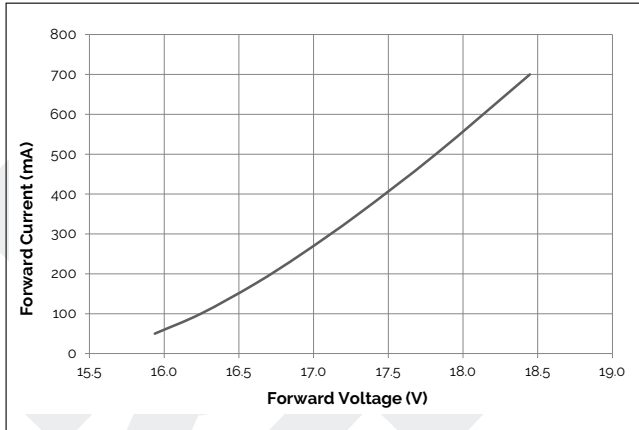
1. Color binning at  $T_c=85^\circ\text{C}$
2. Bridgelux maintains a tolerance of  $\pm 0.007$  on x and y color coordinates in the CIE 1931 color space.

**Figure 9: C.I.E. 1931 Chromaticity Diagram (Color targeted at  $T_c=85^\circ\text{C}$ )**

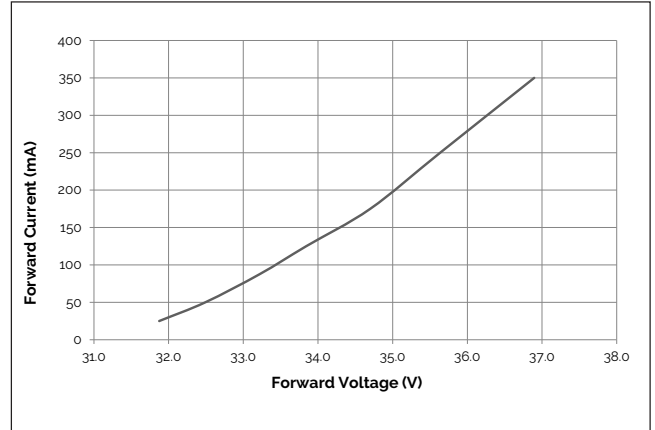


# Performance Curves

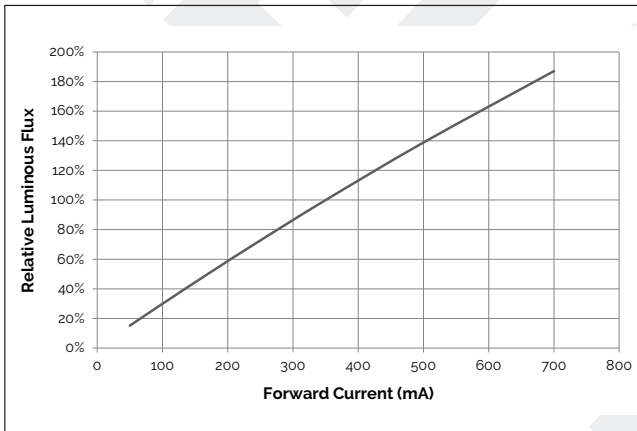
**Figure 10: V8D Drive Current vs. Voltage ( $T_j = T_c = 25^\circ\text{C}$ )<sup>1</sup>**



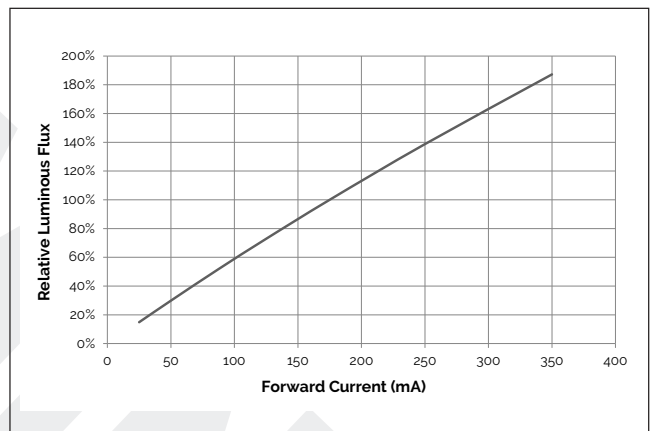
**Figure 11: V8E Drive Current vs. Voltage ( $T_j = T_c = 25^\circ\text{C}$ )<sup>1</sup>**



**Figure 12: V8D Typical Relative Luminous Flux vs. Drive Current ( $T_j = T_c = 25^\circ\text{C}$ )<sup>1</sup>**

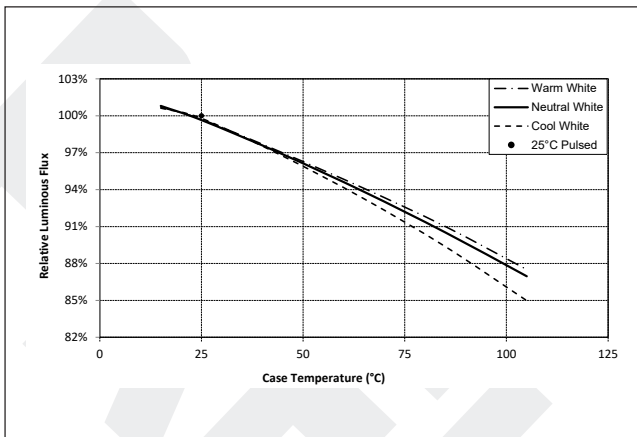


**Figure 13: V8E Typical Relative Luminous Flux vs. Drive Current ( $T_j = T_c = 25^\circ\text{C}$ )<sup>1</sup>**

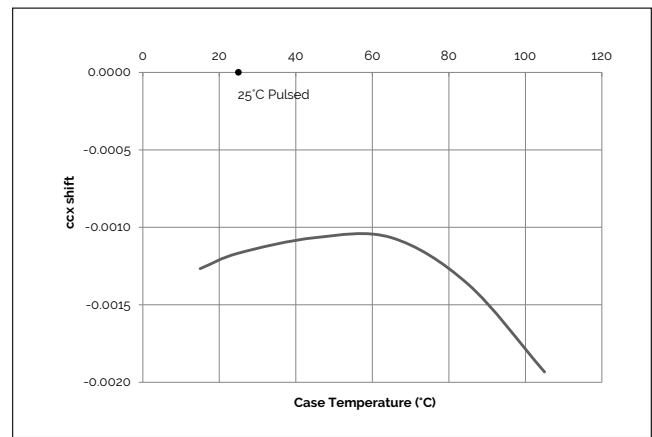


# Performance Curves

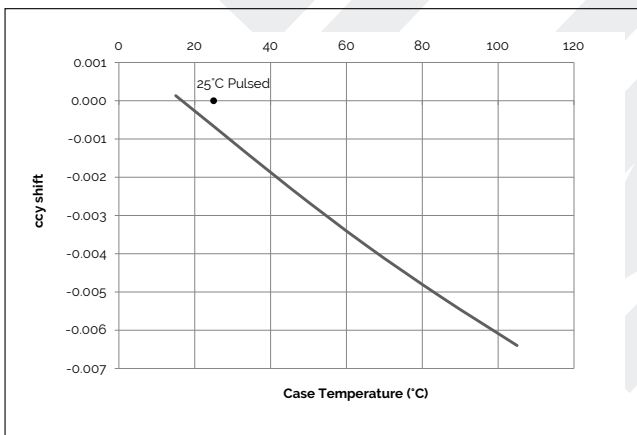
**Figure 14: Typical DC Flux vs. Case Temperature**



**Figure 15: Typical cxc Shift vs. Case Temperature**



**Figure 16: Typical ccy Shift vs. Case Temperature**



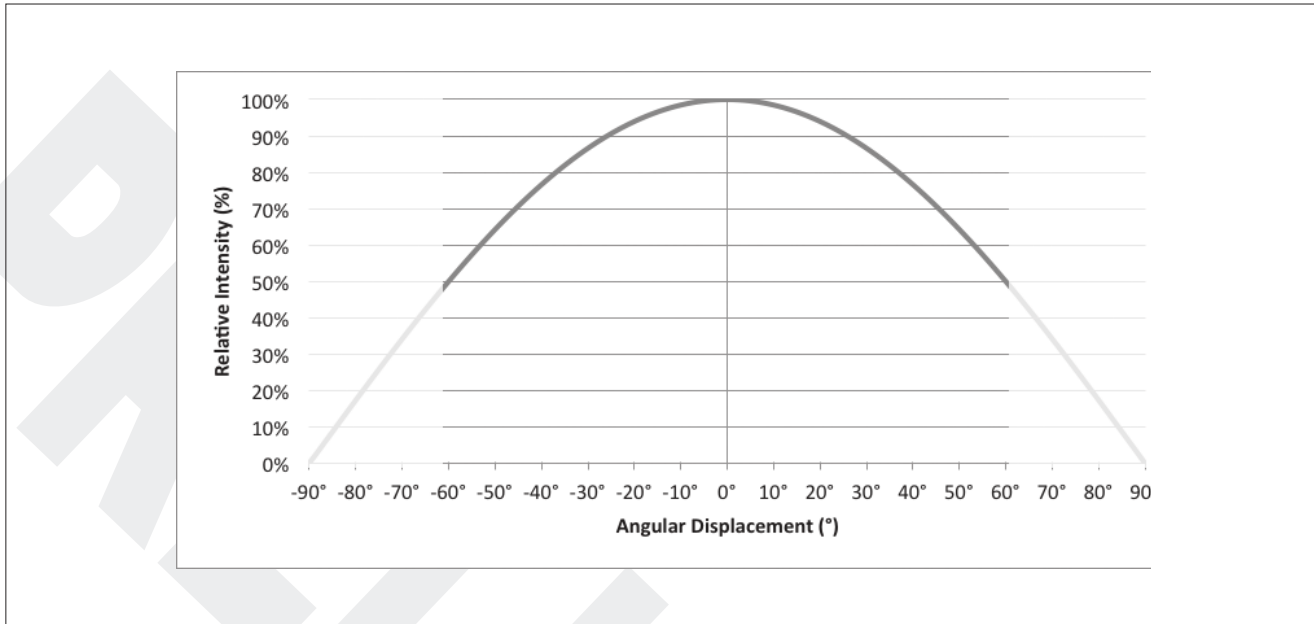
Notes for Figures 14-16:

1. Bridgelux does not recommend driving high power LEDs at low currents. Doing so may produce unpredictable results. Pulse width modulation (PWM) is recommended for dimming effects.
2. Characteristics shown for warm white based on 3000K Thrive
3. Characteristics shown for neutral white based on 4000K Thrive
4. Characteristics shown for cool white based on 5000K Thrive
5. For other color SKUs, the shift in color will vary. Please contact your Bridgelux Sales Representative for more information.



# Typical Radiation Pattern

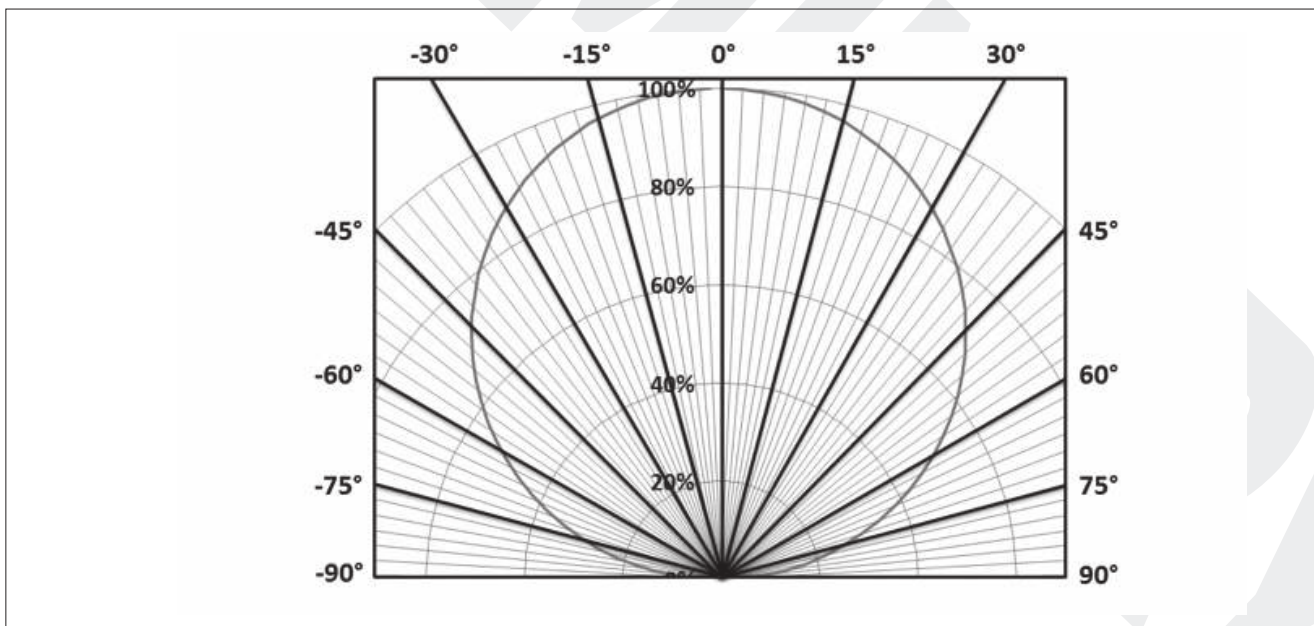
**Figure 17: Typical Spatial Radiation Pattern**



Notes for Figure 17:

1. Typical viewing angle is 120°.
2. The viewing angle is defined as the off axis angle from the centerline where intensity is 1/2 of the peak value.

**Figure 18: Typical Polar Radiation Pattern**





# Packaging and Labeling

Figure 20: V8 Packaging



Notes for Figure 20:

1. Each tube holds 40 V8 COB arrays.
2. One tube is sealed in an anti-static bag. Four bags are placed in a shipping box. Depending on quantities ordered, a bigger shipping box, containing four boxes may be used to ship products.
3. Each bag and box is to be labeled as shown above.
4. Dimensions for each tube are 8.3mm (W) x 14.3mm (H) x 530mm (L). Dimensions for the anti-static bag are 75 (W) x 615 (L) x 31 (T) mm. Dimensions for the shipping box are 58.7 x 13.3 x 7.9 cm

# Packaging and Labeling

**Figure 21: Gen. 7 Product Labeling**

Bridgelux COB arrays have laser markings on the back side of the substrate to help with product identification. In addition to the product identification markings, Bridgelux COB arrays also contain markings for internal Bridgelux manufacturing use only. The image below shows which markings are for customer use and which ones are for Bridgelux internal use only. The Bridgelux internal manufacturing markings are subject to change without notice, however these will not impact the form, function or performance of the COB array.



# Design Resources

## Application Notes

Bridgelux has developed a comprehensive set of application notes and design resources to assist customers in successfully designing with the V Series product family of LED array products. For all available application notes visit [www.bridgelux.com](http://www.bridgelux.com).

## Optical Source Models

Optical source models and ray set files are available for all Bridgelux products. For a list of available formats, visit [www.bridgelux.com](http://www.bridgelux.com).

## 3D CAD Models

Three dimensional CAD models depicting the product outline of all Bridgelux V Series LED arrays are available in both IGS and STEP formats. Please contact your Bridgelux sales representative for assistance.

## LM80

LM80 testing has been completed and the LM80 report is now available. Please contact your Bridgelux sales representative for LM-80 report.

# Precautions

### CAUTION: CHEMICAL EXPOSURE HAZARD

Exposure to some chemicals commonly used in luminaire manufacturing and assembly can cause damage to the LED array. Please consult Bridgelux Application Note AN101 for additional information.

### CAUTION: RISK OF BURN

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

## CAUTION

### CONTACT WITH LIGHT EMITTING SURFACE (LES)

Avoid any contact with the LES. Do not touch the LES of the LED array or apply stress to the LES (yellow phosphor resin area). Contact may cause damage to the LED array.

Optics and reflectors must not be mounted in contact with the LES (yellow phosphor resin area).

# 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, array 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  
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