



Bridgelux® Gen 7 Vero® 13 Array Series

Product Data Sheet DSg1



BXRC-27x2000

30x2000

35x2000

40x2000

50x2001

57x2001

65x2001

Introduction

Vero



Vero represents a revolutionary advancement in chip on board (COB) light source technology and innovation. Vero LED light sources simplify luminaire design and manufacturing processes, improve light quality, and define a platform for future functionality integration.

Vero is available in four different light emitting surface (LES) configurations and has been engineered to reliably operate over a broad current range, enabling new degrees of flexibility in luminaire design optimization. Vero arrays deliver increased lumen density to enable improved beam control and precision lighting with 2 and 3 SDCM color control standard for clean and consistent uniform lighting.

Vero includes an on board connector port to enable solder free electrical interconnect and simple easy to use mounting features to enable plug-and-play installation.

Features

- Efficacy of 155 lm/W typical
- Vero 13 lumen output performance ranges from 522 to 7,073 lumens
- Broad range of CCT options from 2700K to 6500K
- CRI options include: minimum 70, 80, and 90
- 2 and 3 SDCM color control for 2700K-4000K CCT
- Reliable operation at up to 2X nominal drive current
- Radial die pattern and improved lumen density
- Thermally isolated solder pads
- Onboard connector port
- Top side part number markings

Benefits

- Broad application coverage for interior and exterior lighting
- Flexibility for application driven lighting design requirements
- High quality true color reproduction
- Uniform consistent white light
- Flexibility in design optimization
- Improved optical control
- Enhanced ease of use and manufacturability
- Solderless connectivity enables plug & play installation and field upgradability
- Improved inventory management and quality control



Pending Standards and Classifications: ENEC

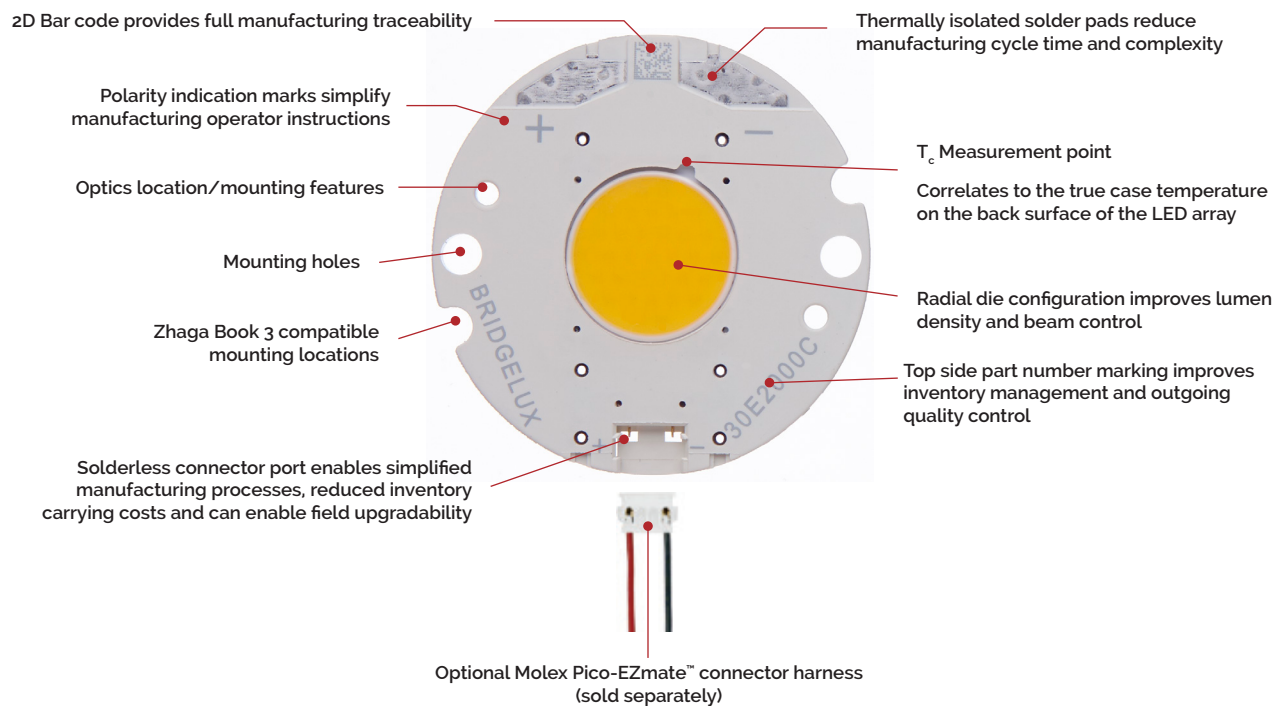
Contents

Product Feature Map	2
Product Nomenclature	2
Product Selection Guide	3
Performance at Commonly Used Drive Currents	7
Electrical Characteristics	13
Absolute Maximum Ratings	14
Performance Curves	15
Typical Radiation Pattern	20
Typical Color Spectrum	21
Mechanical Dimensions	22
Color Binning Information	23
Packaging and Labeling	24
Design Resources	26
Precautions	26
Disclaimers	26
About Bridgelux	27

Product Feature Map

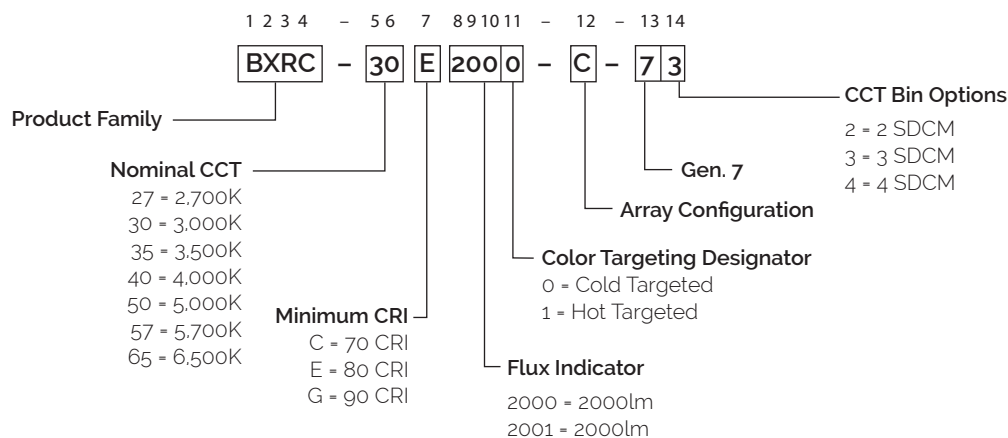
Vero 13 is the second smallest form factor in the Vero family of the next generation solid state light sources. In addition to delivering the performance and light quality required for many lighting applications, Vero incorporates

several features to simplify the design integration and manufacturing process, accelerate time to market and reduce system costs. Please visit www.bridgelux.com for more information on the Vero family of products.



Product Nomenclature

The part number designation for Bridgelux Vero 13 LED arrays is explained as follows:



Product Selection Guide

The following product configurations are available:

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

Part Number	Nominal CCT ¹ (K)	CRI ²	Nominal Drive Current ³ (mA)	Typical Pulsed Flux ^{4,5,6} $T_c = 25^\circ\text{C}$ (lm)	Minimum Pulsed Flux ^{6,7} $T_c = 25^\circ\text{C}$ (lm)	Typical V_f (V)	Typical Power (W)	Typical Efficacy (lm/W)
BXRC-27E2000-B-7X	2700	80	450	2323	2189	35.0	15.8	147
BXRC-27E2000-C-7X	2700	80	630	3251	2991	35.0	22.1	147
BXRC-27E2000-D-7X	2700	80	500	2365	2198	31.8	15.9	149
BXRC-27G2000-B-7X	2700	90	450	1936	1824	35.0	15.8	123
BXRC-27G2000-C-7X	2700	90	630	2709	2493	35.0	22.1	123
BXRC-27G2000-D-7X	2700	90	500	1971	1832	31.8	15.9	124
BXRC-30E2000-B-7X	3000	80	450	2441	2280	35.0	15.8	155
BXRC-30E2000-C-7X	3000	80	630	3418	3116	35.0	22.1	155
BXRC-30E2000-D-7X	3000	80	500	2480	2290	31.8	15.9	156
BXRC-30G2000-B-7X	3000	90	450	2008	1860	35.0	15.8	128
BXRC-30G2000-C-7X	3000	90	630	2811	2586	35.0	22.1	127
BXRC-30G2000-D-7X	3000	90	500	2045	1901	31.8	15.9	129
BXRC-35E2000-B-7X	3500	80	450	2492	2348	35.0	15.8	158
BXRC-35E2000-C-7X	3500	80	630	3488	3209	35.0	22.1	158
BXRC-35E2000-D-7X	3500	80	500	2538	2359	31.8	15.9	160
BXRC-35G2000-B-7X	3500	90	450	2081	1961	35.0	15.8	132
BXRC-35G2000-C-7X	3500	90	630	2913	2680	35.0	22.1	132
BXRC-35G2000-D-7X	3500	90	500	2119	1969	31.8	15.9	133
BXRC-40E2000-B-7X	4000	80	450	2516	2350	35.0	15.8	160
BXRC-40E2000-C-7X	4000	80	630	3522	3240	35.0	22.1	160
BXRC-40E2000-D-7X	4000	80	500	2562	2382	31.8	15.9	161
BXRC-40G2000-B-7X	4000	90	450	2153	2029	35.0	15.8	137
BXRC-40G2000-C-7X	4000	90	630	3014	2773	35.0	22.1	137
BXRC-40G2000-D-7X	4000	90	500	2193	2038	31.8	15.9	138
BXRC-50C2001-B-74	5000	70	450	2758	2599	35.0	15.8	175
BXRC-50C2001-C-74	5000	70	630	3861	3552	35.0	22.1	175
BXRC-50C2001-D-74	5000	70	500	2809	2611	31.8	15.9	177
BXRC-50E2001-B-74	5000	80	450	2593	2443	35.0	15.8	165
BXRC-50E2001-C-74	5000	80	630	3629	3339	35.0	22.1	165
BXRC-50E2001-D-74	5000	80	500	2640	2454	31.8	15.9	166

Notes for Tables 1:

1. Nominal CCT as defined by ANSI C78.377-2011. Products with CCTs 5000K-6500K are not targeted to 85°C.
2. CRI Values are minimums. Minimum R_g value for 80 CRI products is 0, the minimum R_g values for 90 CRI products is 50.
3. Drive current is referred to as nominal drive current.
4. Products tested under pulsed condition (10ms pulse width) at nominal test current where T_j (junction temperature) = T_c (case temperature) = 25°C.
5. Typical performance values are provided as a reference only and are not a guarantee of performance.
6. Bridgelux maintains a ±7% tolerance on flux measurements.
7. Minimum flux values at the nominal test current are guaranteed by 100% test.

Product Selection Guide

The following product configurations are available:

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

Part Number	Nominal CCT ¹ (K)	CRI ²	Nominal Drive Current ³ (mA)	Typical Pulsed Flux ^{4,5,6} $T_c = 25^\circ\text{C}$ (lm)	Minimum Pulsed Flux ^{6,7} $T_c = 25^\circ\text{C}$ (lm)	Typical V_f (V)	Typical Power (W)	Typical Efficacy (lm/W)
BXRC-50G2001-B-74	5000	90	450	2207	2079	35.0	15.8	140
BXRC-50G2001-C-74	5000	90	630	3089	2842	35.0	22.1	140
BXRC-50G2001-D-74	5000	90	500	2247	2088	31.8	15.9	141
BXRC-57C2001-B-74	5700	70	450	2662	2497	35.0	15.8	169
BXRC-57C2001-C-74	5700	70	630	3725	3413	35.0	22.1	169
BXRC-57C2001-D-74	5700	70	500	2710	2508	31.8	15.9	170
BXRC-57E2001-B-74	5700	80	450	2637	2531	35.0	15.8	167
BXRC-57E2001-C-74	5700	80	630	3692	3459	35.0	22.1	167
BXRC-57E2001-D-74	5700	80	500	2685	2542	31.8	15.9	169
BXRC-65C2001-B-74	6500	70	450	2710	2554	35.0	15.8	172
BXRC-65C2001-C-74	6500	70	630	3793	3490	35.0	22.1	172
BXRC-65C2001-D-74	6500	70	500	2759	2565	31.8	15.9	174
BXRC-65E2001-B-74	6500	80	450	2686	2531	35.0	15.8	171
BXRC-65E2001-C-74	6500	80	630	3759	3459	35.0	22.1	170
BXRC-65E2001-D-74	6500	80	500	2735	2542	31.8	15.9	172

Notes for Tables 1:

1. Nominal CCT as defined by ANSI C78.377-2011. Products with a CCT of 5000K-6500K are not targeted to 85°C.
2. CRI values are minimums. Minimum R_g value for 80 CRI products is 0, the minimum R_g values for 90 CRI products is 50.
3. Drive current is referred to as nominal drive current.
4. Products tested under pulsed condition (10ms pulse width) at nominal test current where T_j (junction temperature) = T_c (case temperature) = 25°C.
5. Typical performance values are provided as a reference only and are not a guarantee of performance.
6. Bridgelux maintains a $\pm 7\%$ tolerance on flux measurements.
7. Minimum flux values at the nominal test current are guaranteed by 100% test.

Product Selection Guide

Table 2: Selection Guide, Stabilized DC Performance ($T_c = 85^\circ\text{C}$)^{4,5}

Part Number	Nominal CCT ¹ (K)	CRI ²	Nominal Drive Current ³ (mA)	Typical DC Flux $T_c = 85^\circ\text{C}$ (lm)	Minimum DC Flux ⁶ $T_c = 85^\circ\text{C}$ (lm)	Typical V_f (V)	Typical Power (W)	Typical Efficacy (lm/W)
BXRC-27E2000-B-7X	2700	80	450	2090	1970	34.1	15.3	136
BXRC-27E2000-C-7X	2700	80	630	2926	2692	34.1	21.5	136
BXRC-27E2000-D-7X	2700	80	500	2129	1979	30.9	15.5	138
BXRC-27G2000-B-7X	2700	90	450	1742	1642	34.1	15.3	114
BXRC-27G2000-C-7X	2700	90	630	2438	2243	34.1	21.5	114
BXRC-27G2000-D-7X	2700	90	500	1774	1649	30.9	15.5	115
BXRC-30E2000-B-7X	3000	80	450	2197	2052	34.1	15.3	143
BXRC-30E2000-C-7X	3000	80	630	3076	2804	34.1	21.5	143
BXRC-30E2000-D-7X	3000	80	500	2232	2061	30.9	15.5	144
BXRC-30G2000-B-7X	3000	90	450	1807	1674	34.1	15.3	118
BXRC-30G2000-C-7X	3000	90	630	2530	2328	34.1	21.5	118
BXRC-30G2000-D-7X	3000	90	500	1840	1711	30.9	15.5	119
BXRC-35E2000-B-7X	3500	80	450	2243	2114	34.1	15.3	146
BXRC-35E2000-C-7X	3500	80	630	3140	2888	34.1	21.5	146
BXRC-35E2000-D-7X	3500	80	500	2284	2123	30.9	15.5	148
BXRC-35G2000-B-7X	3500	90	450	1873	1765	34.1	15.3	122
BXRC-35G2000-C-7X	3500	90	630	2621	2412	34.1	21.5	122
BXRC-35G2000-D-7X	3500	90	500	1907	1772	30.9	15.5	123
BXRC-40E2000-B-7X	4000	80	450	2265	2115	34.1	15.3	148
BXRC-40E2000-C-7X	4000	80	630	3170	2916	34.1	21.5	148
BXRC-40E2000-D-7X	4000	80	500	2306	2144	30.9	15.5	149
BXRC-40G2000-B-7X	4000	90	450	1938	1826	34.1	15.3	126
BXRC-40G2000-C-7X	4000	90	630	2713	2496	34.1	21.5	126
BXRC-40G2000-D-7X	4000	90	500	1973	1834	30.9	15.5	128
BXRC-50C2001-B-74	5000	70	450	2482	2339	34.1	15.3	162
BXRC-50C2001-C-74	5000	70	630	3475	3197	34.1	21.5	162
BXRC-50C2001-D-74	5000	70	500	2528	2350	30.9	15.5	163
BXRC-50E2001-B-74	5000	80	450	2334	2199	34.1	15.3	152
BXRC-50E2001-C-74	5000	80	630	3266	3005	34.1	21.5	152
BXRC-50E2001-D-74	5000	80	500	2376	2209	30.9	15.5	154

Notes for Tables 2:

1. Nominal CCT as defined by ANSI C78.377-2011. Products with a CCT of 5000K-6500K are not targeted to 85°C .
2. CRI values are minimums. Minimum Rg value for 80 CRI products is 0, the minimum Rg values for 90 CRI products is 50.
3. Drive current is referred to as nominal drive current.
4. Typical stabilized DC performance values are provided as reference only and are not a guarantee of performance.
5. 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°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.
6. 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.

Product Selection Guide

Table 2: Selection Guide, Stabilized DC Performance ($T_c = 85^\circ\text{C}$) ^{4,5} (continued)

Part Number	Nominal CCT ¹ (K)	CRI ²	Nominal Drive Current ³ (mA)	Typical DC Flux $T_c = 85^\circ\text{C}$ (lm)	Minimum DC Flux ⁶ $T_c = 85^\circ\text{C}$ (lm)	Typical V_f (V)	Typical Power (W)	Typical Efficacy (lm/W)
BXRC-50G2001-B-74	5000	90	450	1986	1871	34.1	15.3	129
BXRC-50G2001-C-74	5000	90	630	2780	2557	34.1	21.5	129
BXRC-50G2001-D-74	5000	90	500	2022	1880	30.9	15.5	131
BXRC-57C2001-B-74	5700	70	450	2395	2257	34.1	15.3	156
BXRC-57C2001-C-74	5700	70	630	3353	3085	34.1	21.5	156
BXRC-57C2001-D-74	5700	70	500	2439	2267	30.9	15.5	158
BXRC-57E2001-B-74	5700	80	450	2374	2237	34.1	15.3	155
BXRC-57E2001-C-74	5700	80	630	3322	3057	34.1	21.5	155
BXRC-57E2001-D-74	5700	80	500	2417	2246	30.9	15.5	156
BXRC-65C2001-B-74	6500	70	450	2439	2298	34.1	15.3	159
BXRC-65C2001-C-74	6500	70	630	3414	3141	34.1	21.5	159
BXRC-65C2001-D-74	6500	70	500	2483	2308	30.9	15.5	161
BXRC-65E2001-B-74	6500	80	450	2417	2278	34.1	15.3	157
BXRC-65E2001-C-74	6500	80	630	3383	3113	34.1	21.5	157
BXRC-65E2001-D-74	6500	80	500	2461	2288	30.9	15.5	159

Notes for Tables 2:

1. Nominal CCT as defined by ANSI C78.377-2011. Prodcuts with a CCT of 5000K-6500K are hot targetd to 85°C.
2. CRI values are minimums. Minimum Rg value for 80 CRI products is 0, the minimum Rg values for 90 CRI products is 50.
3. Drive current is referred to as nominal drive current.
4. Typical stabilized DC performance values are provided as reference only and are not a guarantee of performance.
5. 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°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.
6. 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

Vero LED arrays are tested to the specifications shown using the nominal drive currents in Table 1. Vero 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 1, 2 & 3 and the flux vs. current characteristics shown in Figures 4, 5 & 6. 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 ¹ (mA)	Typical V _f T _c = 25°C (V)	Typical Power T _c = 25°C (W)	Typical Flux ² T _c = 25°C (lm)	Typical DC Flux ³ T _c = 85°C (lm)	Typical Efficacy T _c = 25°C (lm/W)
BXRC-27E2000-B-7X	80	113	32.3	3.6	633	580	174
		225	33.2	7.5	1224	1110	164
		450	35.0	15.8	2323	2090	147
		675	36.3	24.5	3357	2940	137
		900	37.5	33.7	4282	3678	127
BXRC-27E2000-C-7X	80	158	32.3	5.1	878	831	173
		315	33.2	10.5	1701	1601	162
		630	35.0	22.1	3251	2926	147
		945	36.4	34.4	4667	4363	136
		1260	37.8	47.6	5956	5550	125
BXRC-27E2000-D-7X	80	125	29.6	3.7	626	598	169
		250	30.3	7.6	1214	1156	160
		500	31.8	15.9	2365	2129	149
		750	33.2	24.9	3342	3166	134
		1000	34.4	34.4	4274	4039	124
BXRC-27G2000-B-7X	90	113	32.3	3.6	527	483	145
		225	33.2	7.5	1020	925	137
		450	35.0	15.8	1936	1742	123
		675	36.3	24.5	2797	2450	114
		900	37.5	33.7	3568	3065	106
BXRC-27G2000-C-7X	90	158	32.3	5.1	732	692	144
		315	33.2	10.5	1417	1335	135
		630	35.0	22.1	2709	2438	123
		945	36.4	34.4	3889	3635	113
		1260	37.8	47.6	4963	4625	104
BXRC-27G2000-D-7X	90	125	29.6	3.7	522	498	141
		250	30.3	7.6	1011	963	133
		500	31.8	15.9	1971	1774	124
		750	33.2	24.9	2785	2639	112
		1000	34.4	34.4	3561	3365	103

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 ± 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 ¹ (mA)	Typical V _f T _c = 25°C (V)	Typical Power T _c = 25°C (W)	Typical Flux ² T _c = 25°C (lm)	Typical DC Flux ³ T _c = 85°C (lm)	Typical Efficacy T _c = 25°C (lm/W)
BXRC-30E2000-B-7X	80	113	32.3	3.6	665	609	183
		225	33.2	7.5	1287	1167	172
		450	35.0	15.8	2441	2197	155
		675	36.3	24.5	3528	3090	144
		900	37.5	33.7	4500	3865	133
BXRC-30E2000-C-7X	80	158	32.3	5.1	923	873	181
		315	33.2	10.5	1788	1683	171
		630	35.0	22.1	3418	3076	155
		945	36.4	34.4	4905	4586	142
		1260	37.8	47.6	6261	5834	132
BXRC-30E2000-D-7X	80	125	29.6	3.7	656	627	178
		250	30.3	7.6	1273	1212	168
		500	31.8	15.9	2480	2232	156
		750	33.2	24.9	3505	3320	141
		1000	34.4	34.4	4481	4235	130
BXRC-30G2000-B-7X	90	113	32.3	3.6	547	501	150
		225	33.2	7.5	1059	960	142
		450	35.0	15.8	2008	1807	128
		675	36.3	24.5	2902	2542	119
		900	37.5	33.7	3702	3180	110
BXRC-30G2000-C-7X	90	158	32.3	5.1	760	718	149
		315	33.2	10.5	1470	1385	140
		630	35.0	22.1	2811	2530	127
		945	36.4	34.4	4035	3772	117
		1260	37.8	47.6	5149	4798	108
BXRC-30G2000-D-7X	90	125	29.6	3.7	541	517	147
		250	30.3	7.6	1049	999	138
		500	31.8	15.9	2045	1840	129
		750	33.2	24.9	2890	2738	116
		1000	34.4	34.4	3695	3492	107
BXRC-35E2000-B-7X	80	113	32.3	3.6	679	622	187
		225	33.2	7.5	1314	1191	176
		450	35.0	15.8	2492	2243	158
		675	36.3	24.5	3602	3154	147
		900	37.5	33.7	4594	3946	136
BXRC-35E2000-C-7X	80	158	32.3	5.1	943	891	185
		315	33.2	10.5	1825	1718	174
		630	35.0	22.1	3488	3140	158
		945	36.4	34.4	5007	4681	145
		1260	37.8	47.6	6390	5954	134
BXRC-35E2000-D-7X	80	125	29.6	3.7	672	642	182
		250	30.3	7.6	1302	1240	172
		500	31.8	15.9	2538	2284	160
		750	33.2	24.9	3586	3397	144
		1000	34.4	34.4	4585	4333	133

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 ± 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 ¹ (mA)	Typical V _f T _c = 25°C (V)	Typical Power T _c = 25°C (W)	Typical Flux ² T _c = 25°C (lm)	Typical DC Flux ³ T _c = 85°C (lm)	Typical Efficacy T _c = 25°C (lm/W)
BXRC-35G2000-B-7X	90	113	32.3	3.6	567	519	156
		225	33.2	7.5	1097	995	147
		450	35.0	15.8	2081	1873	132
		675	36.3	24.5	3007	2633	123
		900	37.5	33.7	3836	3295	114
BXRC-35G2000-C-7X	90	158	32.3	5.1	787	744	155
		315	33.2	10.5	1523	1435	145
		630	35.0	22.1	2913	2621	132
		945	36.4	34.4	4180	3908	121
		1260	37.8	47.6	5336	4971	112
BXRC-35G2000-D-7X	90	125	29.6	3.7	561	536	152
		250	30.3	7.6	1087	1036	143
		500	31.8	15.9	2119	1907	133
		750	33.2	24.9	2994	2837	120
		1000	34.4	34.4	3828	3618	111
BXRC-40E2000-B-7X	80	113	32.3	3.6	685	628	188
		225	33.2	7.5	1326	1203	178
		450	35.0	15.8	2516	2265	160
		675	36.3	24.5	3636	3185	149
		900	37.5	33.7	4639	3984	137
BXRC-40E2000-C-7X	80	158	32.3	5.1	952	900	187
		315	33.2	10.5	1842	1735	176
		630	35.0	22.1	3522	3170	160
		945	36.4	34.4	5055	4726	147
		1260	37.8	47.6	6452	6012	136
BXRC-40E2000-D-7X	80	125	29.6	3.7	678	648	184
		250	30.3	7.6	1315	1252	173
		500	31.8	15.9	2562	2306	161
		750	33.2	24.9	3621	3430	145
		1000	34.4	34.4	4630	4375	134
BXRC-40G2000-B-7X	90	113	32.3	3.6	586	537	161
		225	33.2	7.5	1135	1030	152
		450	35.0	15.8	2153	1938	137
		675	36.3	24.5	3112	2725	127
		900	37.5	33.7	3970	3410	118
BXRC-40G2000-C-7X	90	158	32.3	5.1	814	770	160
		315	33.2	10.5	1577	1485	151
		630	35.0	22.1	3014	2713	137
		945	36.4	34.4	4326	4044	126
		1260	37.8	47.6	5522	5145	116
BXRC-40G2000-D-7X	90	125	29.6	3.7	580	554	157
		250	30.3	7.6	1125	1072	148
		500	31.8	15.9	2193	1973	138
		750	33.2	24.9	3099	2935	124
		1000	34.4	34.4	3962	3744	115

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 ± 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 ¹ (mA)	Typical V_f $T_c = 25^\circ\text{C}$ (V)	Typical Power $T_c = 25^\circ\text{C}$ (W)	Typical Flux ² $T_c = 25^\circ\text{C}$ (lm)	Typical DC Flux ³ $T_c = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_c = 25^\circ\text{C}$ (lm/W)
BXRC-50C2001-B-74	70	113	32.3	3.6	751	688	207
		225	33.2	7.5	1454	1319	195
		450	35.0	15.8	2758	2482	175
		675	36.3	24.5	3986	3491	163
		900	37.5	33.7	5085	4367	151
BXRC-50C2001-C-74	70	158	32.3	5.1	1043	986	205
		315	33.2	10.5	2019	1902	193
		630	35.0	22.1	3861	3475	175
		945	36.4	34.4	5542	5181	161
		1260	37.8	47.6	7073	6590	149
BXRC-50C2001-D-74	70	125	29.6	3.7	743	710	201
		250	30.3	7.6	1441	1373	190
		500	31.8	15.9	2809	2528	177
		750	33.2	24.9	3969	3760	159
		1000	34.4	34.4	5075	4796	147
BXRC-50E2001-B-74	80	113	32.3	3.6	706	647	194
		225	33.2	7.5	1367	1240	183
		450	35.0	15.8	2593	2334	165
		675	36.3	24.5	3747	3281	153
		900	37.5	33.7	4780	4105	142
BXRC-50E2001-C-74	80	158	32.3	5.1	981	927	193
		315	33.2	10.5	1898	1788	181
		630	35.0	22.1	3629	3266	165
		945	36.4	34.4	5209	4870	151
		1260	37.8	47.6	6648	6195	140
BXRC-50E2001-D-74	80	125	29.6	3.7	699	667	189
		250	30.3	7.6	1355	1290	179
		500	31.8	15.9	2640	2376	166
		750	33.2	24.9	3731	3534	150
		1000	34.4	34.4	4770	4508	139
BXRC-50G2001-B-74	90	113	32.3	3.6	601	551	165
		225	33.2	7.5	1163	1055	156
		450	35.0	15.8	2207	1986	140
		675	36.3	24.5	3189	2793	130
		900	37.5	33.7	4068	3494	121
BXRC-50G2001-C-74	90	158	32.3	5.1	835	789	164
		315	33.2	10.5	1616	1521	154
		630	35.0	22.1	3089	2780	140
		945	36.4	34.4	4433	4144	129
		1260	37.8	47.6	5658	5272	119
BXRC-50G2001-D-74	90	125	29.6	3.7	595	568	161
		250	30.3	7.6	1153	1098	152
		500	31.8	15.9	2247	2022	141
		750	33.2	24.9	3175	3008	128
		1000	34.4	34.4	4060	3837	118

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 $\pm 7\%$ 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 ¹ (mA)	Typical V _f T _c = 25°C (V)	Typical Power T _c = 25°C (W)	Typical Flux ² T _c = 25°C (lm)	Typical DC Flux ³ T _c = 85°C (lm)	Typical Efficacy T _c = 25°C (lm/W)
BXRC-57C2001-B-74	70	113	32.3	3.6	725	664	199
		225	33.2	7.5	1403	1272	188
		450	35.0	15.8	2662	2395	169
		675	36.3	24.5	3846	3368	157
		900	37.5	33.7	4906	4214	145
BXRC-57C2001-C-74	70	158	32.3	5.1	1007	952	198
		315	33.2	10.5	1949	1835	186
		630	35.0	22.1	3725	3353	169
		945	36.4	34.4	5347	4999	155
		1260	37.8	47.6	6825	6359	143
BXRC-57C2001-D-74	70	125	29.6	3.7	717	685	194
		250	30.3	7.6	1391	1325	183
		500	31.8	15.9	2710	2439	170
		750	33.2	24.9	3830	3628	154
		1000	34.4	34.4	4897	4627	142
BXRC-57E2001-B-74	80	113	32.3	3.6	718	658	198
		225	33.2	7.5	1390	1261	186
		450	35.0	15.8	2637	2374	167
		675	36.3	24.5	3811	3338	156
		900	37.5	33.7	4862	4176	144
BXRC-57E2001-C-74	80	158	32.3	5.1	997	943	196
		315	33.2	10.5	1931	1818	184
		630	35.0	22.1	3692	3322	167
		945	36.4	34.4	5298	4953	154
		1260	37.8	47.6	6762	6301	142
BXRC-57E2001-D-74	80	125	29.6	3.7	711	679	192
		250	30.3	7.6	1378	1313	182
		500	31.8	15.9	2685	2417	169
		750	33.2	24.9	3795	3595	152
		1000	34.4	34.4	4852	4585	141
BXRC-65C2001-B-74	70	113	32.3	3.6	738	676	203
		225	33.2	7.5	1429	1296	191
		450	35.0	15.8	2710	2439	172
		675	36.3	24.5	3916	3430	160
		900	37.5	33.7	4995	4291	148
BXRC-65C2001-C-74	70	158	32.3	5.1	1025	969	201
		315	33.2	10.5	1984	1868	189
		630	35.0	22.1	3793	3414	172
		945	36.4	34.4	5444	5090	158
		1260	37.8	47.6	6949	6474	146
BXRC-65C2001-D-74	70	125	29.6	3.7	730	698	198
		250	30.3	7.6	1416	1349	187
		500	31.8	15.9	2759	2483	174
		750	33.2	24.9	3899	3694	157
		1000	34.4	34.4	4986	4712	145

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 ± 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 ¹ (mA)	Typical V_f $T_c = 25^\circ\text{C}$ (V)	Typical Power $T_c = 25^\circ\text{C}$ (W)	Typical Flux ² $T_c = 25^\circ\text{C}$ (lm)	Typical DC Flux ³ $T_c = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_c = 25^\circ\text{C}$ (lm/W)
BXRC-65E2001-B-74	80	113	32.3	3.6	731	670	201
		225	33.2	7.5	1416	1284	189
		450	35.0	15.8	2686	2417	171
		675	36.3	24.5	3881	3399	159
		900	37.5	33.7	4951	4253	147
BXRC-65E2001-C-74	80	158	32.3	5.1	1016	960	199
		315	33.2	10.5	1966	1852	188
		630	35.0	22.1	3759	3383	170
		945	36.4	34.4	5396	5044	157
		1260	37.8	47.6	6887	6417	145
BXRC-65E2001-D-74	80	125	29.6	3.7	724	691	196
		250	30.3	7.6	1403	1337	185
		500	31.8	15.9	2735	2461	172
		750	33.2	24.9	3865	3661	155
		1000	34.4	34.4	4941	4670	144

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 $\pm 7\%$ tolerance on flux measurements.
3. Typical stabilized DC performance values are provided as reference only and are not a guarantee of performance.

Electrical Characteristics

Table 4: Electrical Characteristics

Part Number	Drive Current (mA)	Forward Voltage Pulsed, $T_c = 25^\circ\text{C}$ (V) ^{1, 2, 3}			Typical Coefficient of Forward Voltage ⁴ $\Delta V_f / \Delta T_c$ (mV/ $^\circ\text{C}$)	Typical Thermal Resistance Junction to Case ^{5, 6} R_{j-c} ($^\circ\text{C}/\text{W}$)	Driver Selection Voltages ⁷ (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)
BXRC-xxx200x-B-7x	450	32.4	35.0	37.6	-14.9	0.28	31.2	38.6
	900	34.7	37.5	40.3	-14.9	0.35	33.5	41.3
BXRC-xxx200x-C-7x	630	32.4	35.0	37.6	-14.5	0.20	31.2	38.6
	1260	34.9	37.8	40.6	-14.9	0.24	33.7	41.6
BXRC-xxx200x-D-7x	500	29.4	31.8	34.2	-14.9	0.34	28.2	35.2
	1000	31.8	34.4	37.0	-14.5	0.41	30.7	38.0

Notes for Table 4:

1. Parts are tested in pulsed conditions, $T_c = 25^\circ\text{C}$. Pulse width is 10ms.
2. Voltage minimum and maximum are provided for reference only and are not a guarantee of performance.
3. Bridgelux maintains a tester tolerance of $\pm 0.10\text{V}$ on forward voltage measurements.
4. Typical coefficient of forward voltage tolerance is $\pm 0.1\text{mV}$ for nominal current.
5. Thermal resistance values are based from test data of a 3000K 80 CRI product.
6. 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.
7. 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.

Absolute Maximum Ratings

Table 5: Maximum Ratings

Parameter	Maximum Rating		
LED Junction Temperature (T_j)	125°C		
Storage Temperature	-40°C to +105°C		
Operating Case Temperature ¹ (T_c)	105°C		
Soldering Temperature ²	350°C or lower for a maximum of 10seconds		
	BXRC-xxx200x-B-7x	BXRC-xxx200x-C-7x	BXRC-xxx200x-D-7x
Maximum Drive Current ³	900mA	1260mA	1000mA
Maximum Peak Pulsed Drive Current ⁴	1286mA	1800mA	1429mA
Maximum Reverse Voltage ⁵	-60V	-60V	-55V

Notes for Table 5:

1. For IEC 62717 requirement, please consult your Bridgelux sales representative.
2. Refer to Bridgelux Application Note AN31: Assembly Considerations for Bridgelux Vero 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.

Performance Curves

Figure 1: Vero 13B Drive Current vs. Voltage ($T_j = T_c = 25^\circ\text{C}$)

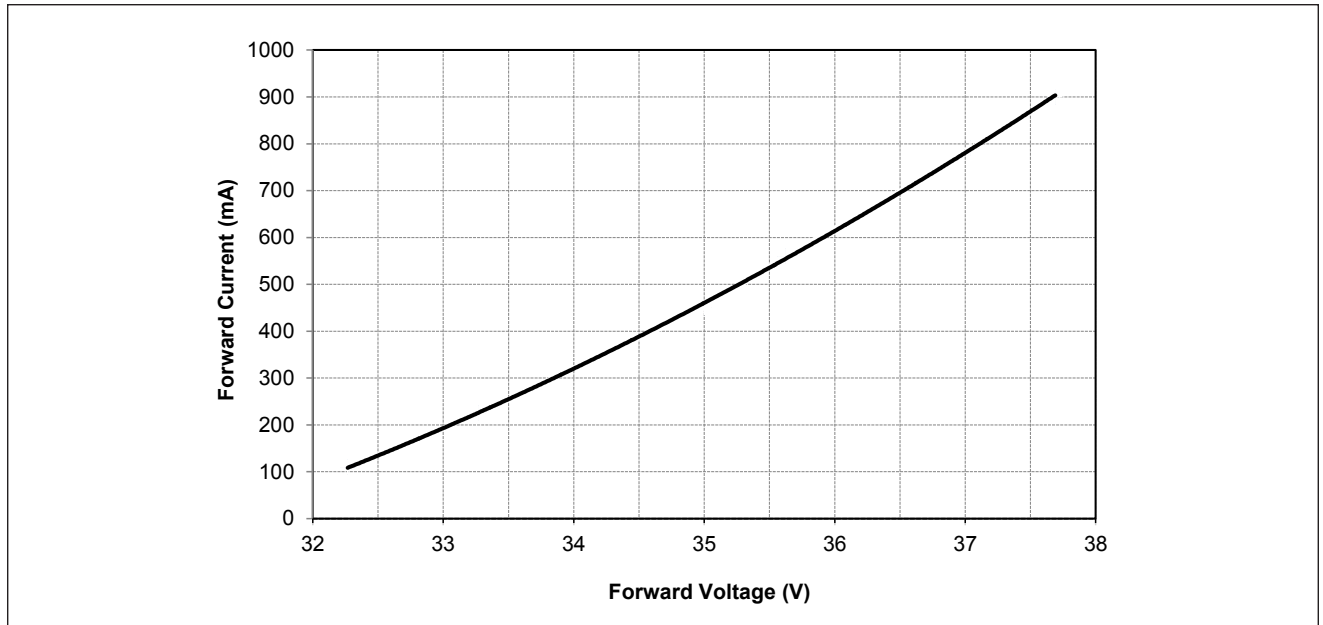
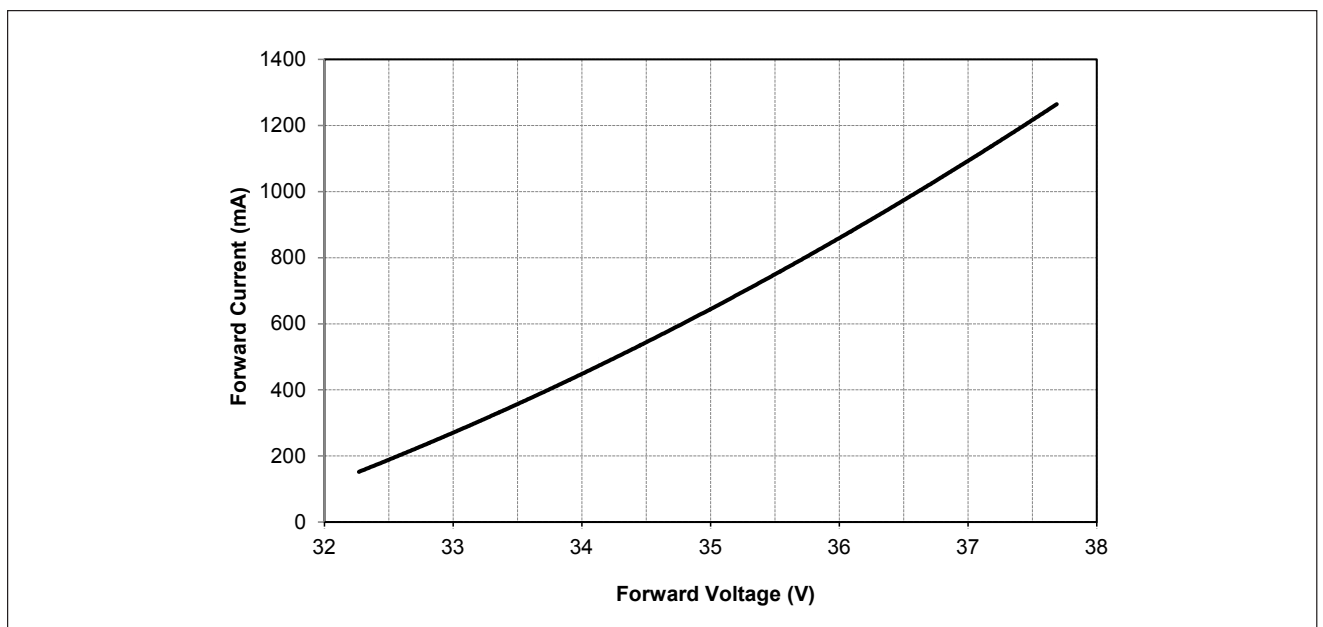


Figure 2: Vero 13C Drive Current vs. Voltage ($T_j = T_c = 25^\circ\text{C}$)



Performance Curves

Figure 3: Vero 13D Drive Current vs. Voltage ($T_j = T_c = 25^{\circ}\text{C}$)

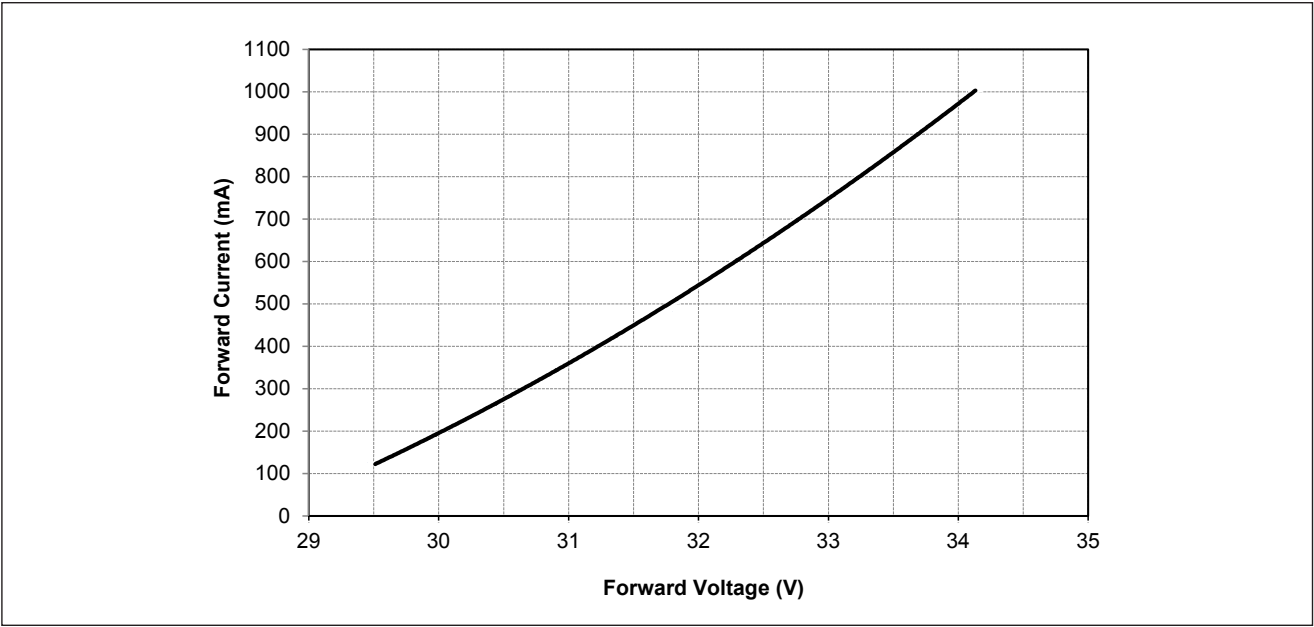
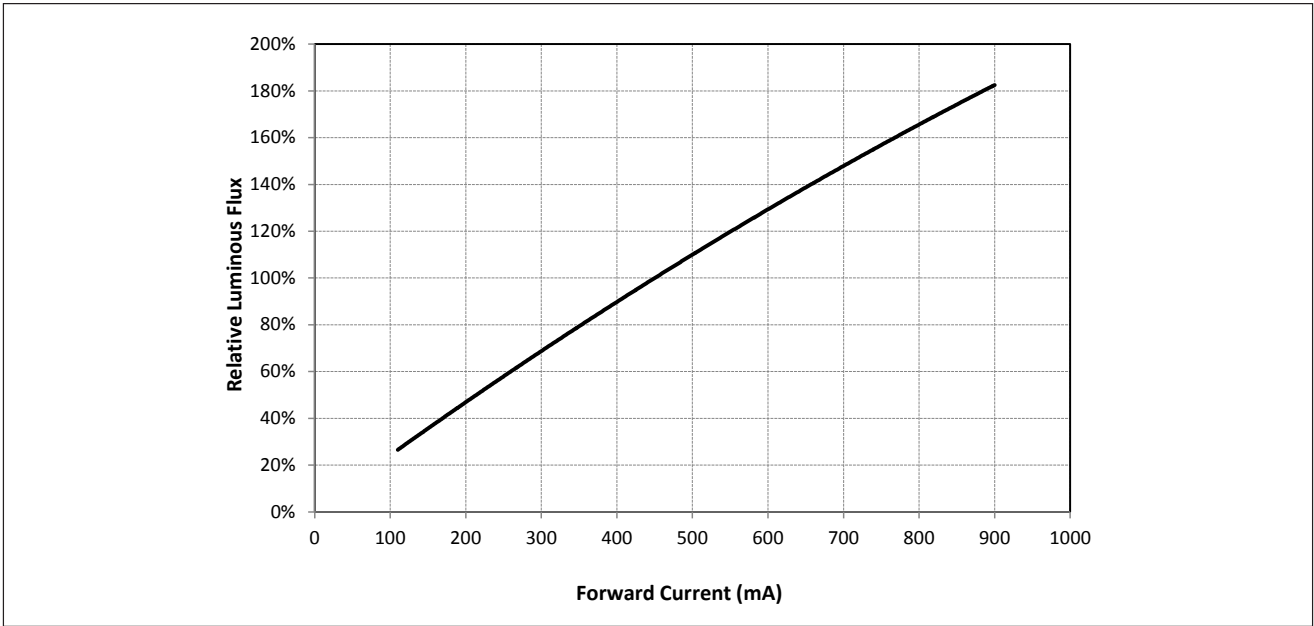


Figure 4: Vero 13B Typical Relative Flux vs. Current ($T_j = T_c = 25^{\circ}\text{C}$)



Note for Figure 4:

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.

Performance Curves

Figure 5: Vero 13C Typical Relative Flux vs. Current ($T_j = T_c = 25^\circ\text{C}$)

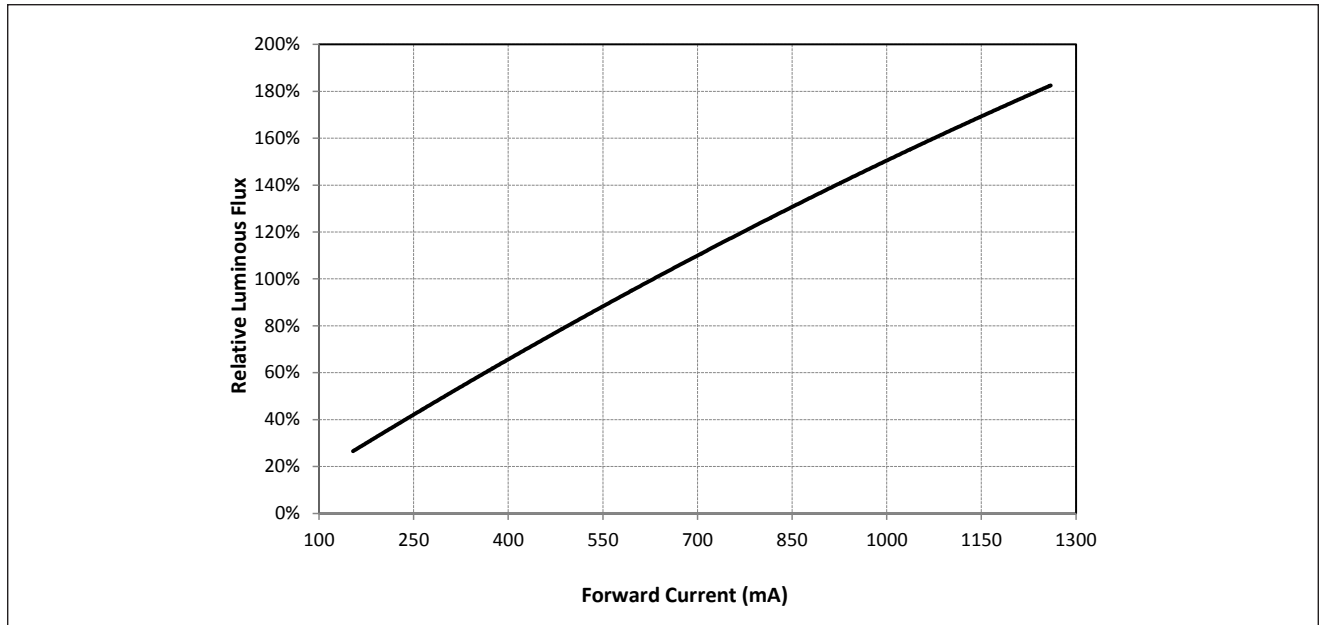
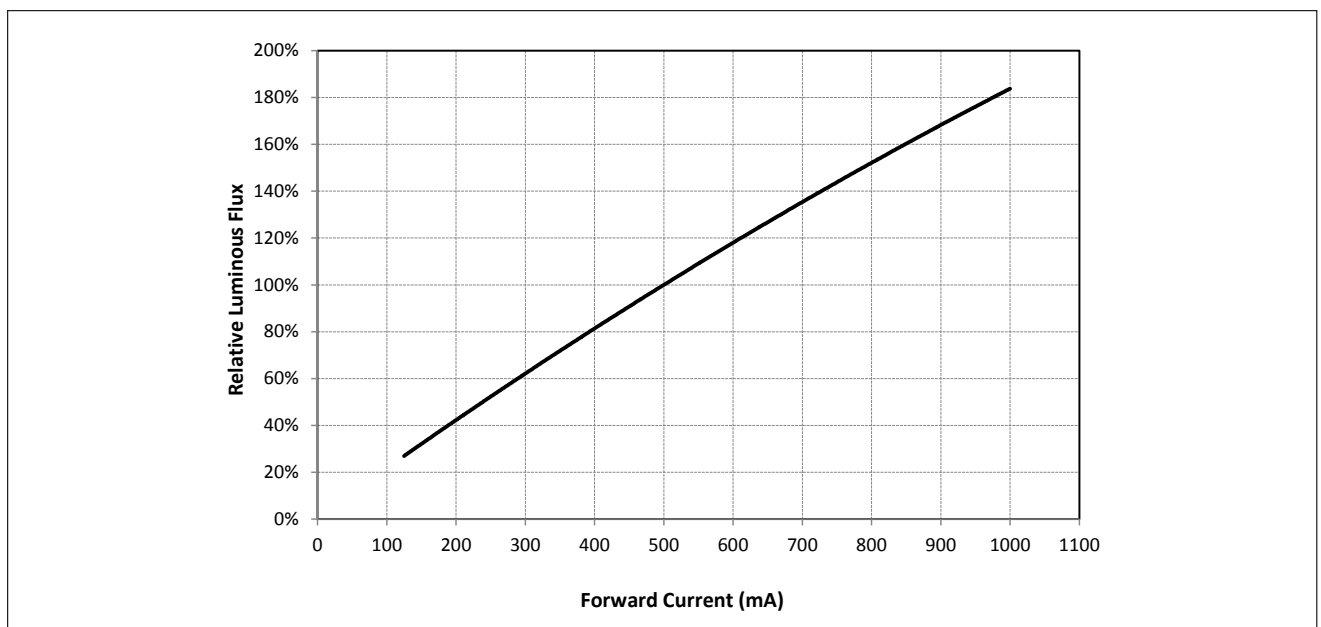


Figure 6 Vero 13D Typical Relative Flux vs. Current ($T_j = T_c = 25^\circ\text{C}$)



Note for Figures 5 & 6:

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.

Performance Curves

Figure 7: Typical DC Flux vs. Case Temperature

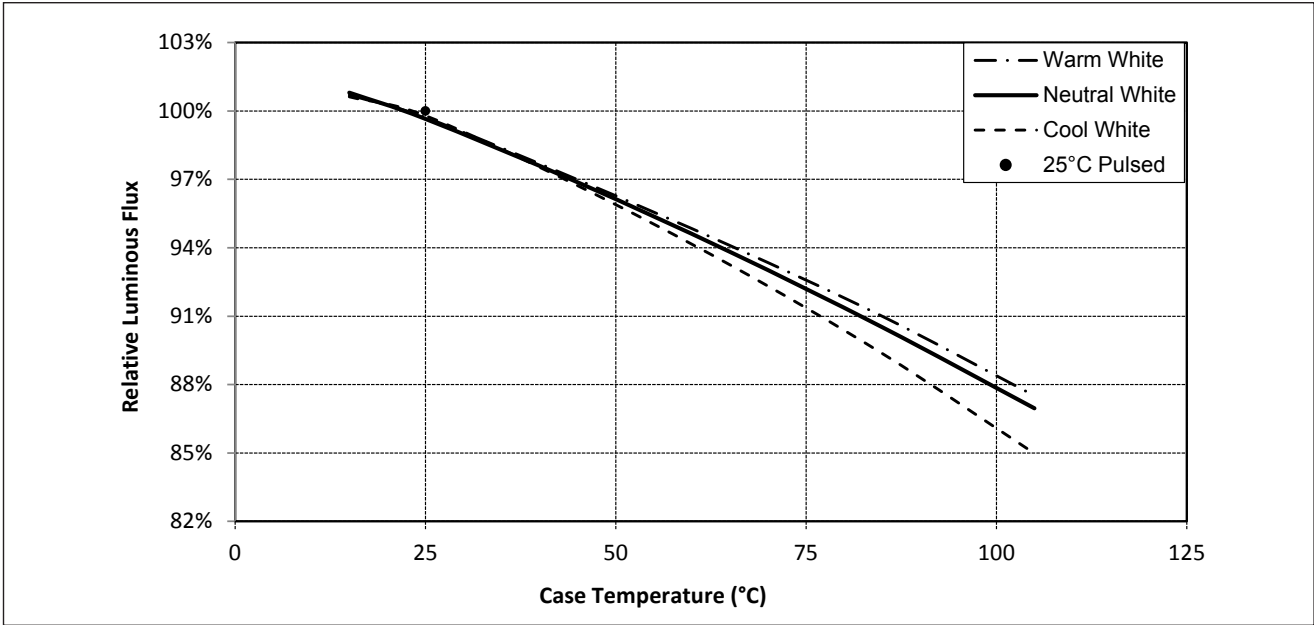
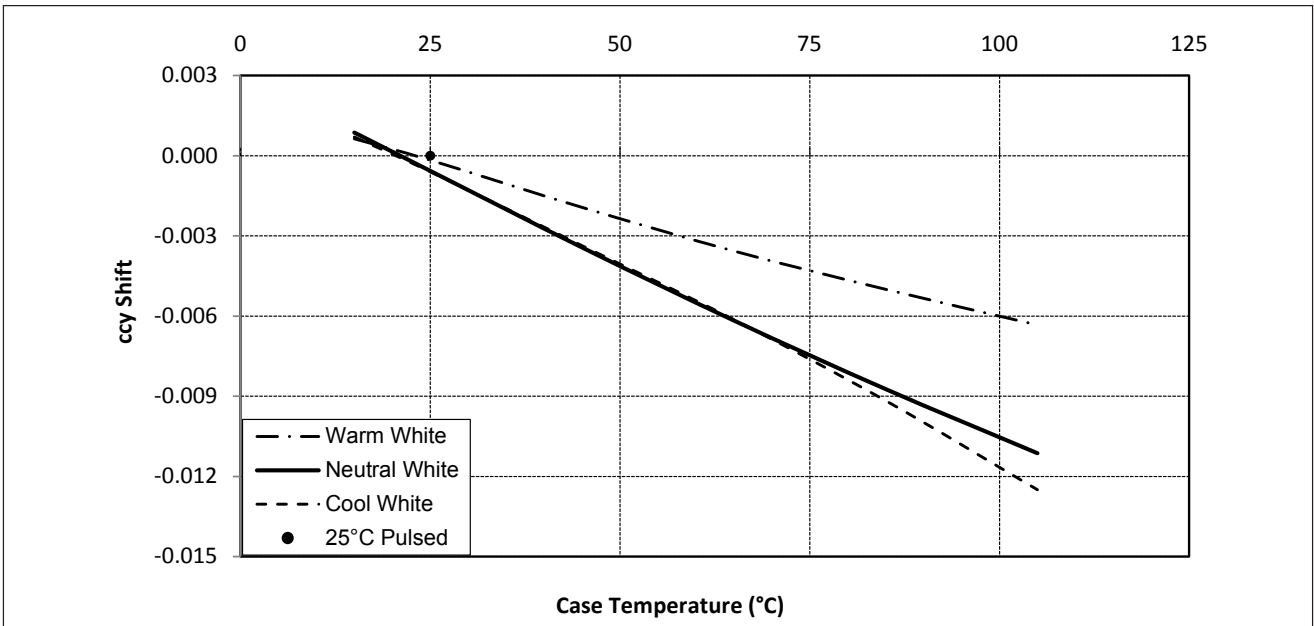


Figure 8: Typical DC ccy Shift vs. Case Temperature

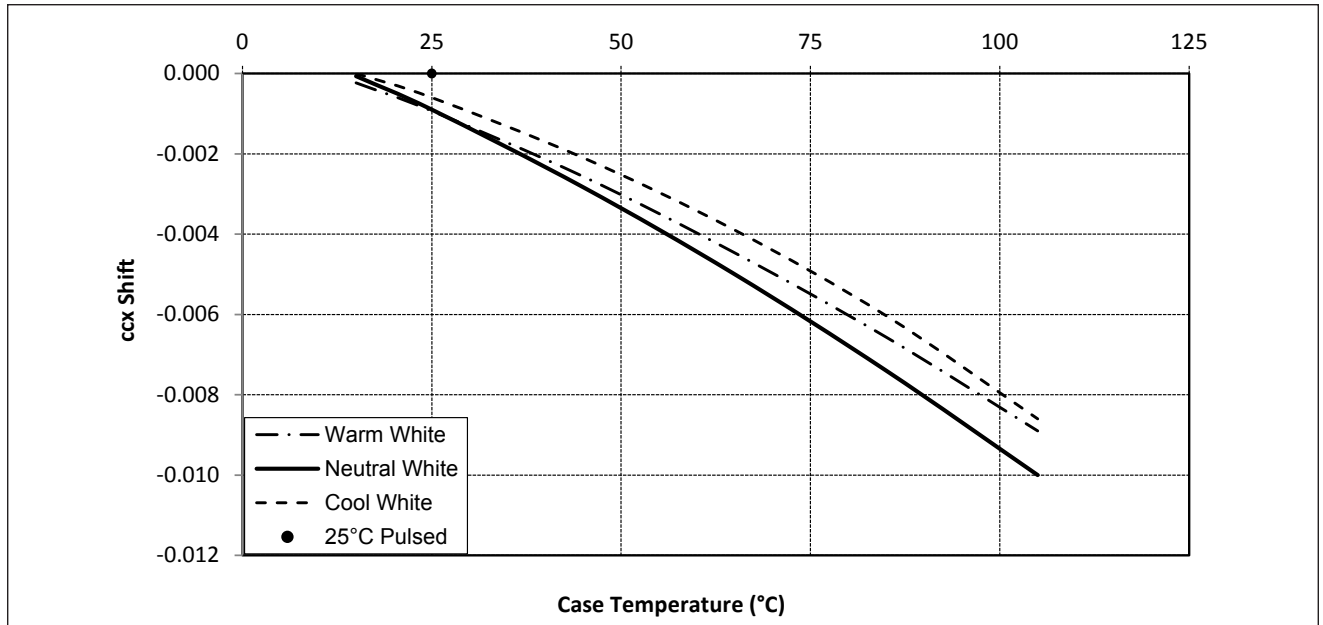


Notes for Figures 7 & 8:

1. Characteristics shown for warm white based on 3000K and 80 CRI.
2. Characteristics shown for neutral white based on 4000K and 80 CRI.
3. Characteristics shown for cool white based on 5000K and 70 CRI.
4. For other color SKUs, the shift in color will vary. Please contact your Bridgelux Sales Representative for more information.

Performance Curves

Figure 9: Typical DC ccx Shift vs. Case Temperature

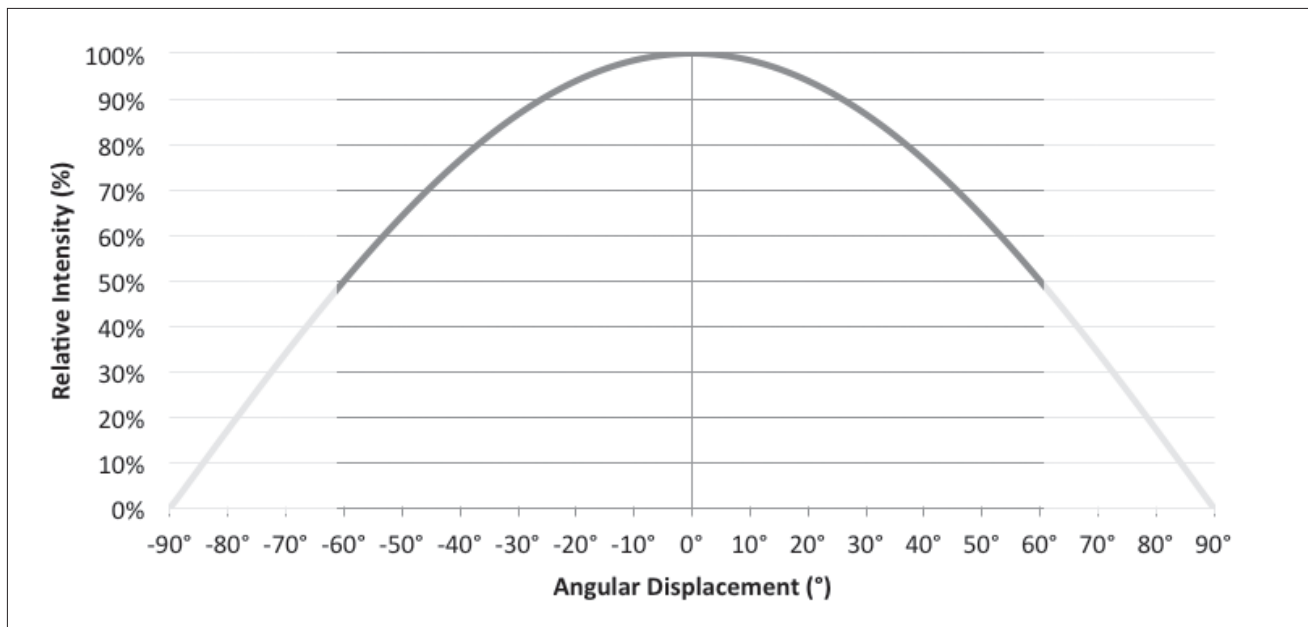


Notes for Figure 9:

1. Characteristics shown for warm white based on 3000K and 80 CRI.
2. Characteristics shown for neutral white based on 4000K and 80 CRI.
3. Characteristics shown for cool white based on 5000K and 70 CRI.
4. For other color SKUs, the shift in color will vary. Please contact your Bridgelux Sales Representative for more information.

Typical Radiation Pattern

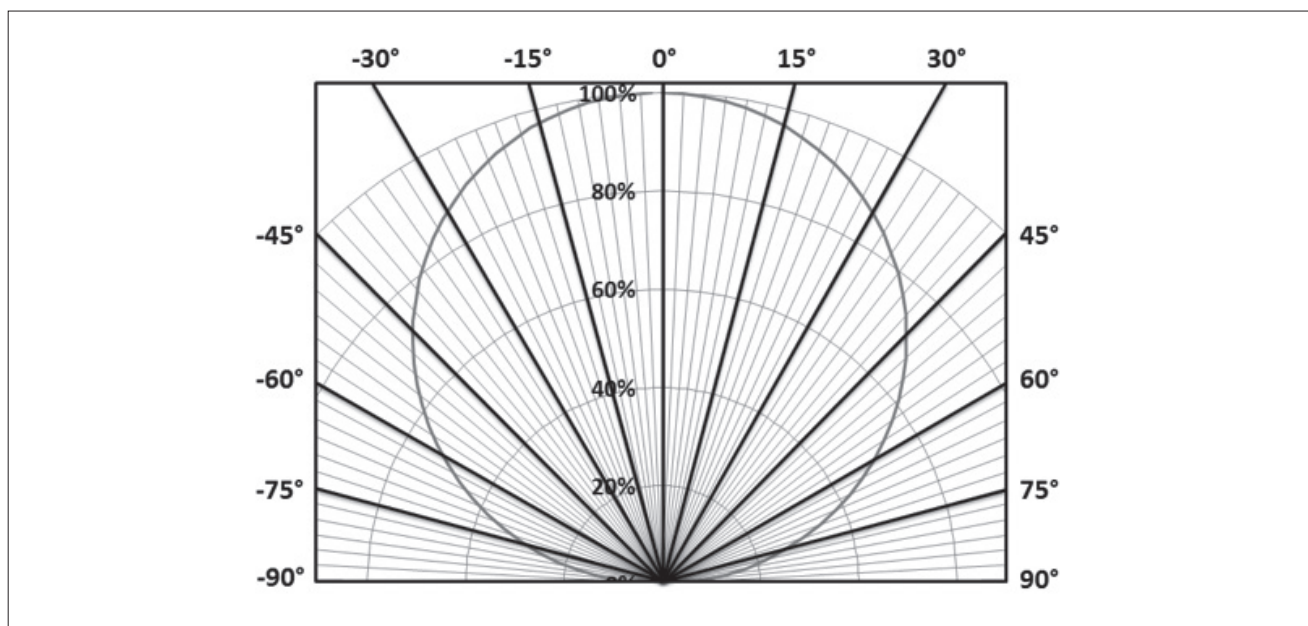
Figure 10: Typical Spatial Radiation Pattern



Notes for Figure 10:

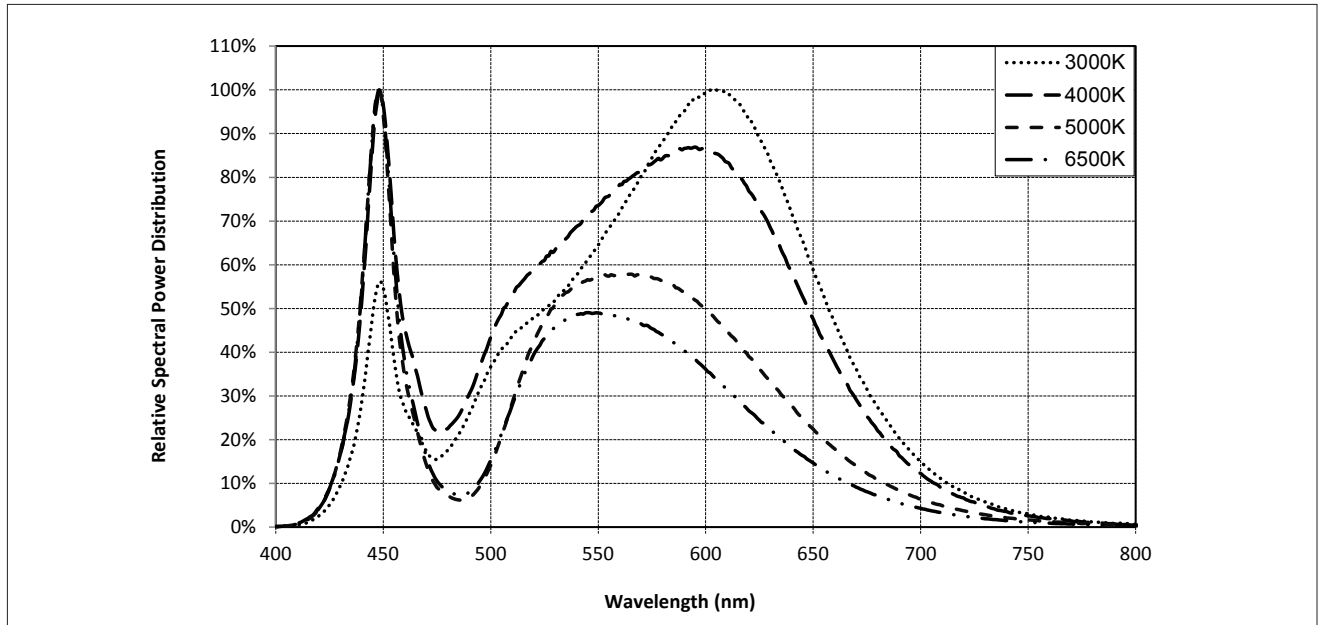
1. Typical viewing angle is 120°.
2. The viewing angle is defined as the off axis angle from the centerline where intensity is $\frac{1}{2}$ of the peak value.

Figure 11: Typical Polar Radiation Pattern



Typical Color Spectrum

Figure 12: Typical Color Spectrum

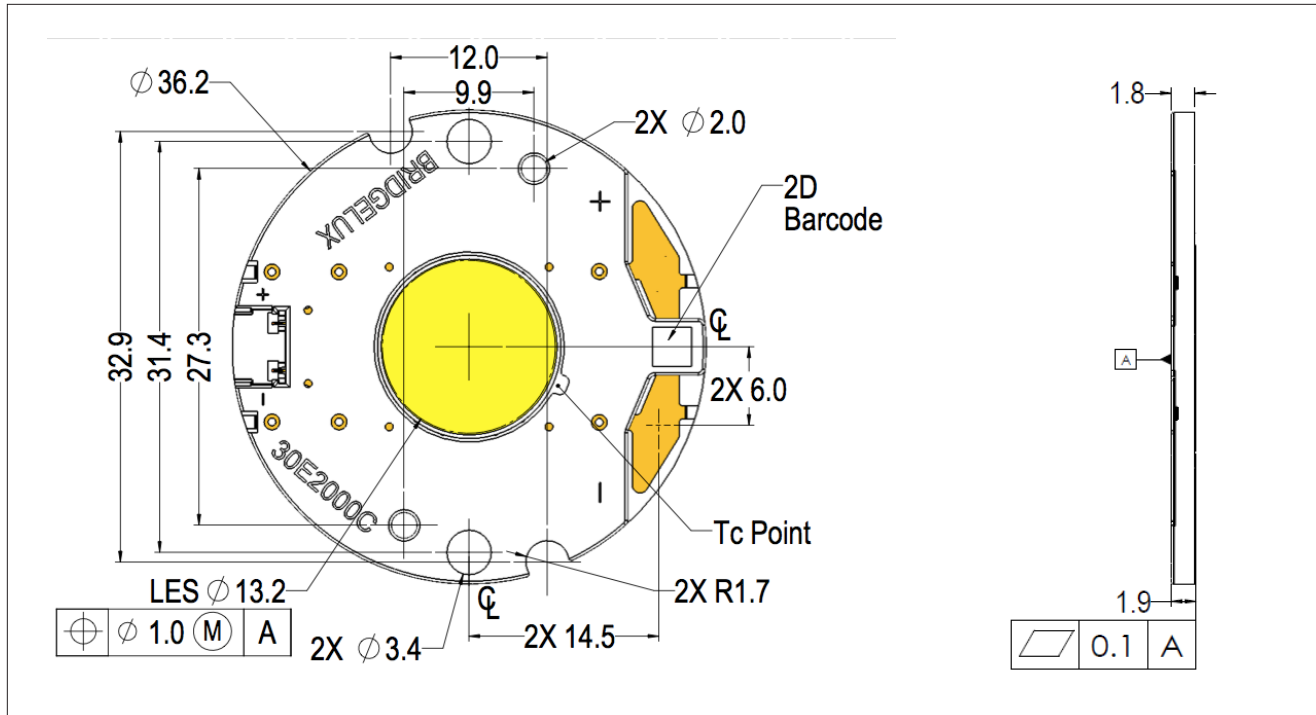


Notes for Figure 12:

1. Color spectra measured at nominal current for $T_j = T_c = 25^\circ\text{C}$.
2. Color spectra shown is 3000K and 80 CRI.
3. Color spectra shown is 4000K and 80 CRI.
4. Color spectra shown is 5000K and 70 CRI.
4. Color spectra shown is 6500K and 70 CRI.

Mechanical Dimensions

Figure 13: Drawing for Vero 13 LED Array

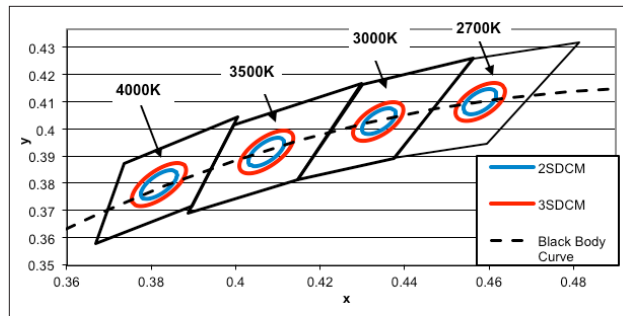


Notes for Figure 13:

1. Drawings are not to scale.
2. Drawing dimensions are in millimeters.
3. Unless otherwise specified, tolerances are $\pm 0.1\text{mm}$.
4. Mounting holes (2X) are for M2.5 screws.
5. Bridgelux recommends two tapped holes for mounting screws with $31.4 \pm 0.10\text{mm}$ center-to-center spacing.
6. Screws with flat shoulders (pan, dome, button, round, truss, mushroom) provide optimal torque control. Do NOT use flat, countersink, or raised head screws.
7. Solder pads and connector port are labeled "+" and "-" to denote positive and negative, respectively.
8. It is not necessary to provide electrical connections to both the solder pads and the connector port. Either set may be used depending on application specific design requirements.
9. Refer to Application Notes AN30 and AN31 for product handling, mounting and heat sink recommendations.
10. The optical center of the LED Array is nominally defined by the mechanical center of the array to a tolerance of $\pm 0.2\text{mm}$.
11. Bridgelux maintains a flatness of 0.10mm across the mounting surface of the array.

Color Binning Information

Figure 14: Graph of Warm and Neutral White Test Bins in xy Color Space

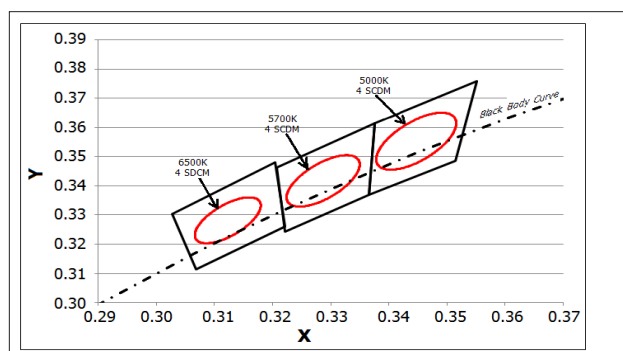


Note: Pulsed Test Conditions, $T_c = 25^\circ\text{C}$

Table 6: Warm and Neutral White xy Bin Coordinates and Associated Typical CCT

Bin Code	2700K	3000K	3500K	4000K
ANSI Bin (for reference only)	(2580K - 2870K)	(2870K - 3220K)	(3220K - 3710K)	(3710K - 4260K)
23 (3 SDCM)	(2651K - 2794K)	(2968K - 3136K)	(3369K - 3586K)	(3851K - 4130K)
22 (2 SDCM)	(2674K - 2769K)	(2995K - 3107K)	(3404K - 3548K)	(3895K - 4081K)
Center Point (x,y)	(0.4578, 0.4101)	(0.4338, 0.403)	(0.4073, 0.3917)	(0.3818, 0.3797)

Figure 15: Graph of Cool White Test Bins in xy Color Space



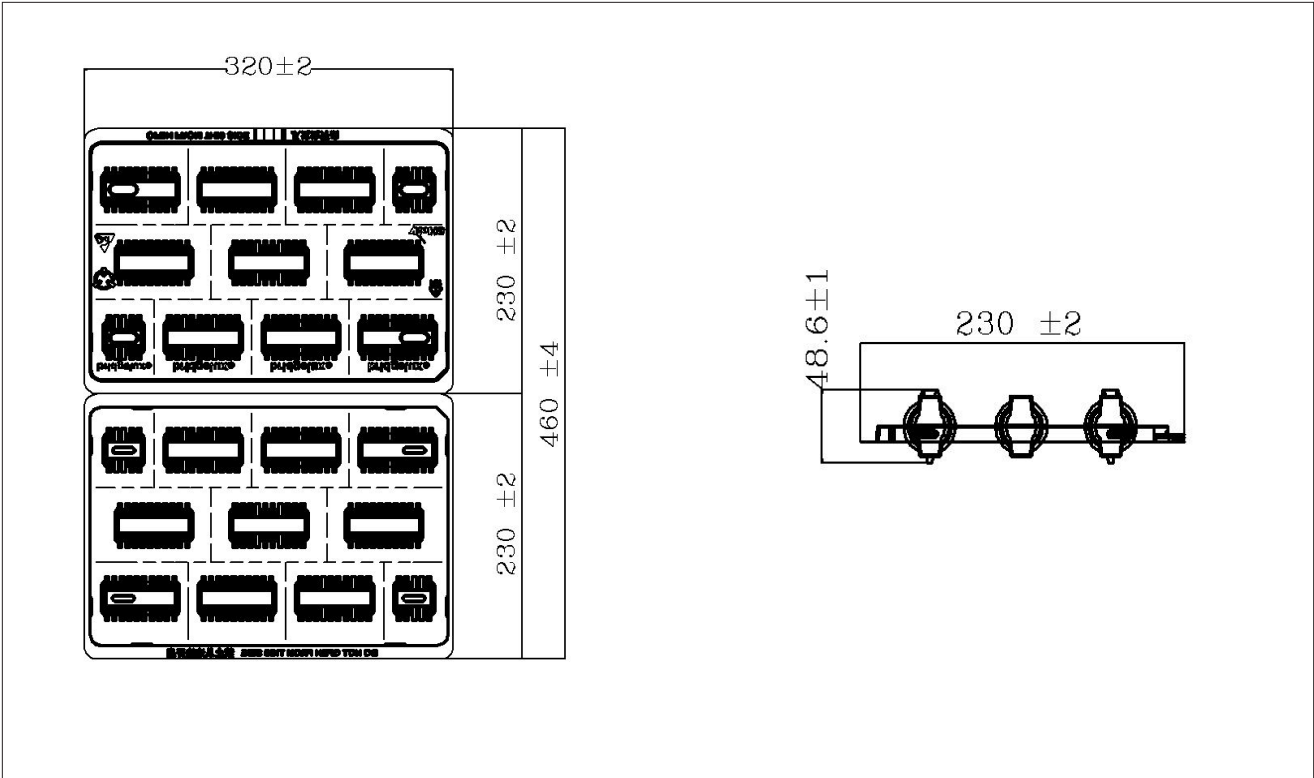
Note: Pulsed Test Conditions, $T_c = 25^\circ\text{C}$

Table 7: Cool White xy Bin Coordinates and Associated Typical CCT (product is hot targeted to $T_c = 85^\circ\text{C}$)

Bin Code	5000K	5700K	6500K
ANSI Bin (for reference only)	(4745K - 5311K)	(5312K - 6022K)	(6022K - 7042K)
4 (4 SDCM)	(4801K - 5282K)	(5829K - 5481K)	(6270K - 6765K)
Center Point (x,y)	(0.3447, 0.3553)	(0.3287, 0.3417)	(0.3123, 0.3282)

Packaging and Labeling

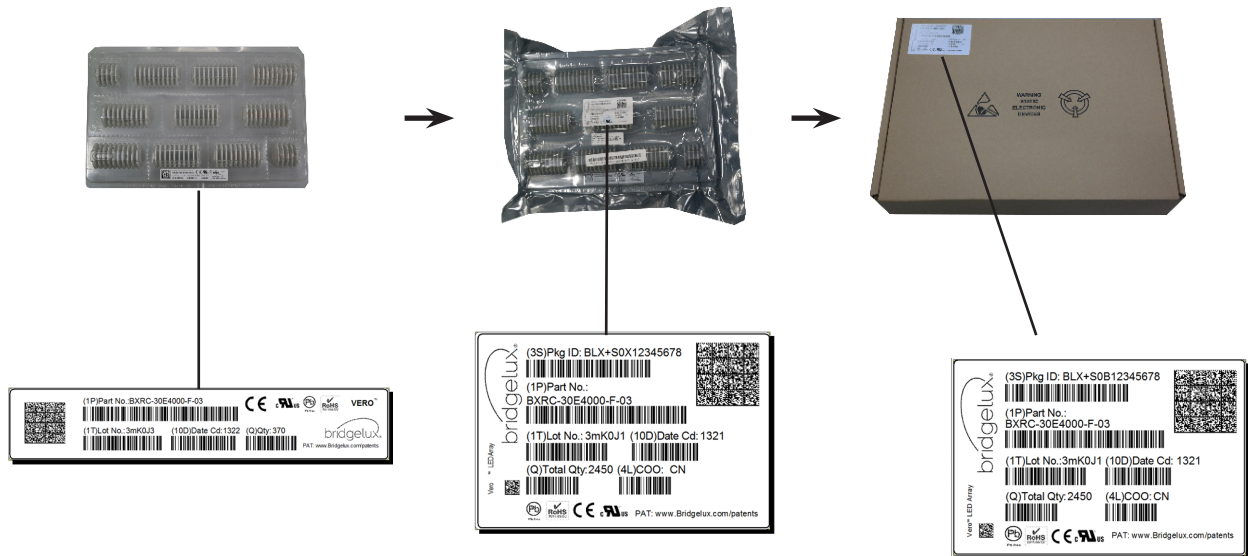
Figure 16: Drawing for Vero 13 Packaging Tray



- Notes for Figure 13:
- 1. Dimensions are in millimeters.
 - 2. Drawing is not to scale.

Packaging and Labeling

Figure 17: Vero Series Packaging and Labeling



Notes for Figure 17:

1. Each tray holds 100 COBs.
2. Each tray is vacuum sealed in an anti-static bag and placed in its own box.
3. Each tray, bag and box is to be labeled as shown above.

Figure 18: 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 Vero product family of LED array products. For all available application notes visit 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.

3D CAD Models

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

LM80

LM80 testing is on going. Please contact your Bridgelux sales representative for more information.

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 AN31 for additional information.

CAUTION: EYE SAFETY

Eye safety classification for the use of Bridgelux Vero 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. Vero Series LED arrays are classified as Risk Group 2 (Moderate Risk) when operated at or below 2.5 times the nominal drive current. The Ethr value is 889.79 lux per IEC/TR 62778. Please use appropriate precautions. Under many operating conditions the Vero Series LED arrays are classified as Risk Group 1, for more information please contact your Bridgelux sales representative. It is important that employees working with LEDs are trained to use them safely.

CAUTION: RISK OF BURN

Do not touch the Vero LED array during operation. Allow the array to cool for a sufficient period of time before handling. The Vero 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). Optical devices may be mounted on the top surface of the plastic housing of the Vero LED array. Use the mechanical features of the LED array housing, edges and/or mounting holes to locate and secure optical devices as needed.

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: We Build Light That Transforms

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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