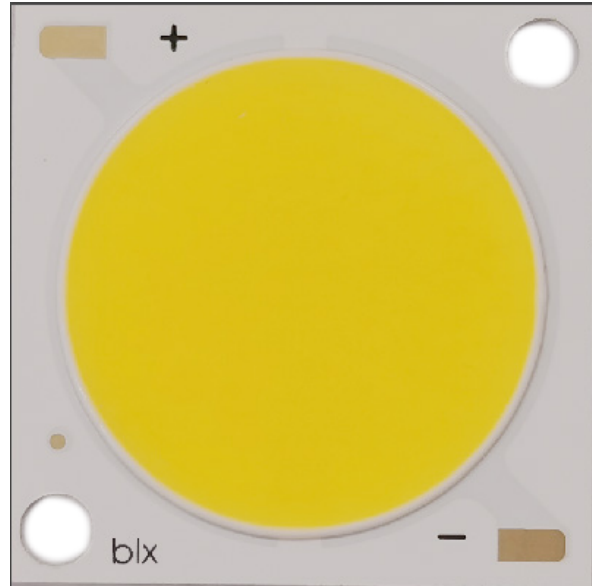




Bridgelux® E22 LED Array

Product Data Sheet DS444-1

Introduction

E Series



The E Series LED array products deliver high quality of light in a compact and cost-effective solid-state lighting package. These chip-on-board (COB) arrays are available in multiple performance and electrical configuration options, simplifying the design-in process. These high flux density light sources are designed to support a wide range of highly competitive directional luminaires and replacement lamps for commercial and residential applications.

Lighting system designs incorporating these LED arrays deliver increased system level efficacy. Typical applications include, but are not limited to, replacement lamps, task, accent, spot, track, downlight, wide area, security, and wall pack.

Features

- Compact, high flux density light source
- Uniform, high quality illumination
- Streamlined thermal path
- ENERGY STAR® / ANSI compliant color binning structure with 3 and 4 SDCM options
- Higher energy efficiency than incandescent, halogen and CFL lamps
- Industry standard DC voltage operation
- Instant light with unlimited dimming
- RoHS and REACH compliant

Benefits

- Supports many general lighting applications
- Enables tight beam control when used with secondary optics
- Clean white light without pixilation
- Low thermal resistance
- Uniform, consistent white light
- Lower operating costs
- Aligns with industry standard drivers to reduce system costs
- Easy to use with daylight and motion detectors to enable increased energy savings
- Environmentally friendly

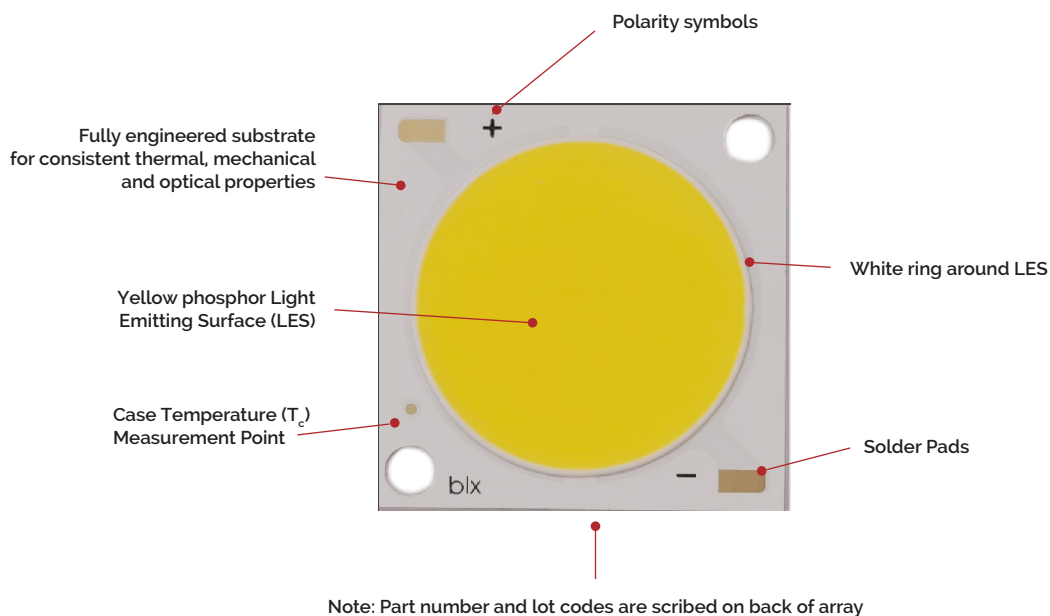


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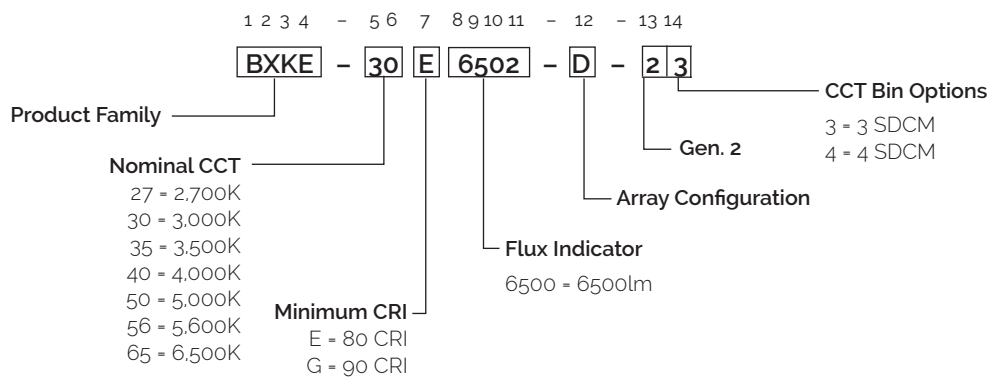
Product Feature Map

Bridgelux arrays are fully engineered devices that provide consistent thermal and optical performance on an engineered mechanical platform. The E Series arrays incorporate several features to simplify design integration and assembly.



Product Nomenclature

The part number designation for Bridgelux E Series LED arrays is explained as follows:



Product Selection Guide

The following product configurations are available:

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

Part Number	Nominal CCT ¹ (K)	CRI ²	Nominal Drive Current ³ (mA)	Typical Pulsed Flux ^{4,5,6} $T_j = 25^\circ\text{C}$ (lm)	Minimum Pulsed Flux ^{6,7} $T_j = 25^\circ\text{C}$ (lm)	Typical V_f (V)	Typical Power (W)	Typical Efficacy (lm/W)
BXKE-27E6502-D-2X	2700K	80	1080	5955	5359	34.8	37.6	158
BXKE-27E6502-E-2X	2700K	80	1080	8932	8039	52.2	56.4	158
BXKE-27E6502-F-2X	2700K	80	1620	13403	12063	52.2	84.6	158
BXKE-27G6502-D-2X	2700K	90	1080	5139	4625	34.8	37.6	137
BXKE-27G6502-E-2X	2700K	90	1080	7709	6938	52.2	56.4	137
BXKE-27G6502-F-2X	2700K	90	1620	11567	10410	52.2	84.6	137
BXKE-30C6502-D-2X	3000K	70	1080	6519	5867	34.8	37.6	173
BXKE-30C6502-E-2X	3000K	70	1080	9778	8800	52.2	56.4	173
BXKE-30C6502-F-2X	3000K	70	1620	14672	13205	52.2	84.6	174
BXKE-30E6502-D-2X	3000K	80	1080	6220	5598	34.8	37.6	165
BXKE-30E6502-E-2X	3000K	80	1080	9330	8397	52.2	56.4	165
BXKE-30E6502-F-2X	3000K	80	1620	14000	12600	52.2	84.6	166
BXKE-30G6502-D-2X	3000K	90	1080	5384	4845	34.8	37.6	143
BXKE-30G6502-E-2X	3000K	90	1080	8076	7268	52.2	56.4	143
BXKE-30G6502-F-2X	3000K	90	1620	12118	10906	52.2	84.6	143
BXKE-35E6502-D-2X	3500K	80	1080	6404	5763	34.8	37.6	170
BXKE-35E6502-E-2X	3500K	80	1080	9605	8645	52.2	56.4	170
BXKE-35E6502-F-2X	3500K	80	1620	14413	12972	52.2	84.6	170
BXKE-35G6502-D-2X	3500K	90	1080	5567	5011	34.8	37.6	148
BXKE-35G6502-E-2X	3500K	90	1080	8351	7516	52.2	56.4	148
BXKE-35G6502-F-2X	3500K	90	1620	12531	11278	52.2	84.6	148
BXKE-40C6502-D-2X	4000K	70	1080	6699	6029	34.8	37.6	178
BXKE-40C6502-E-2X	4000K	70	1080	10048	9044	52.2	56.4	178
BXKE-40C6502-F-2X	4000K	70	1620	15078	13570	52.2	84.6	178
BXKE-40E6502-D-2X	4000K	80	1080	6465	5818	34.8	37.6	172
BXKE-40E6502-E-2X	4000K	80	1080	9697	8727	52.2	56.4	172
BXKE-40E6502-F-2X	4000K	80	1620	14551	13096	52.2	84.6	172
BXKE-40G6502-D-2X	4000K	90	1080	5771	5194	34.8	37.6	154
BXKE-40G6502-E-2X	4000K	90	1080	8657	7791	52.2	56.4	154
BXKE-40G6502-F-2X	4000K	90	1620	12990	11691	52.2	84.6	154
BXKE-50C6502-D-2X	5000K	70	1080	6736	6063	34.8	37.6	179
BXKE-50C6502-E-2X	5000K	70	1080	10104	9094	52.2	56.4	179
BXKE-50C6502-F-2X	5000K	70	1620	15162	13646	52.2	84.6	179

Notes for Table 1:

1. Nominal CCT as defined by ANSI C78.377-2011.
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. 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 1: Selection Guide, Pulsed Measurement Data ($T_j = 25^\circ\text{C}$) (Continued)

Part Number	Nominal CCT ¹ (K)	CRI ²	Nominal Drive Current ³ (mA)	Typical Pulsed Flux ^{4,5,6} $T_j = 25^\circ\text{C}$ (lm)	Minimum Pulsed Flux ^{6,7} $T_j = 25^\circ\text{C}$ (lm)	Typical V_f (V)	Typical Power (W)	Typical Efficacy (lm/W)
BXKE-50E6502-D-2X	5000K	80	1080	6648	5983	34.8	37.6	177
BXKE-50E6502-E-2X	5000K	80	1080	9972	8975	52.2	56.4	177
BXKE-50E6502-F-2X	5000K	80	1620	14964	13468	52.2	84.6	177
BXKE-50G6502-D-2X	5000K	90	1080	5771	5194	34.8	37.6	154
BXKE-50G6502-E-2X	5000K	90	1080	8657	7791	52.2	56.4	154
BXKE-50G6502-F-2X	5000K	90	1620	12990	11691	52.2	84.6	154
BXKE-56E6502-D-2X	5600K	80	1080	6587	5928	34.8	37.6	175
BXKE-56E6502-E-2X	5600K	80	1080	9881	8893	52.2	56.4	175
BXKE-56E6502-F-2X	5600K	80	1620	14826	13344	52.2	84.6	175
BXKE-65C6502-D-2X	6500K	70	1080	6606	5945	34.8	37.6	176
BXKE-65C6502-E-2X	6500K	70	1080	9908	8918	52.2	56.4	176
BXKE-65C6502-F-2X	6500K	70	1620	14868	13381	52.2	84.6	176
BXKE-65E6502-D-2X	6500K	80	1080	6587	5928	34.8	37.6	175
BXKE-65E6502-E-2X	6500K	80	1080	9881	8893	52.2	56.4	175
BXKE-65E6502-F-2X	6500K	80	1620	14826	13344	52.2	84.6	175

Notes for Table 1:

1. Nominal CCT as defined by ANSI C78.377-2011.
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. 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, Pulsed Measurement Data ($T_j = 85^\circ\text{C}$)^{4,5}

Part Number	Nominal CCT ¹ (K)	CRI ²	Nominal Drive Current ³ (mA)	Typical Pulsed Flux ^{4,5} $T_j = 85^\circ\text{C}$ (lm)	Minimum Pulsed Flux ⁶ $T_j = 85^\circ\text{C}$ (lm)	Typical V_f (V)	Typical Power (W)	Typical Efficacy (lm/W)
BXKE-27E6502-D-2X	2700K	80	1080	5359	4823	34.0	36.7	146
BXKE-27E6502-E-2X	2700K	80	1080	8039	7235	51.0	55.1	146
BXKE-27E6502-F-2X	2700K	80	1620	12063	10857	51.0	82.6	146
BXKE-27G6502-D-2X	2700K	90	1080	4625	4163	34.0	36.7	126
BXKE-27G6502-E-2X	2700K	90	1080	6938	6244	51.0	55.1	126
BXKE-27G6502-F-2X	2700K	90	1620	10410	9369	51.0	82.6	126
BXKE-30C6502-D-2X	3000K	70	1080	5867	5280	34.0	36.7	160
BXKE-30C6502-E-2X	3000K	70	1080	8800	7920	51.0	55.1	160
BXKE-30C6502-F-2X	3000K	70	1620	13205	11884	51.0	82.6	160
BXKE-30E6502-D-2X	3000K	80	1080	5598	5038	34.0	36.7	152
BXKE-30E6502-E-2X	3000K	80	1080	8397	7557	51.0	55.1	152
BXKE-30E6502-F-2X	3000K	80	1620	12600	11340	51.0	82.6	153
BXKE-30G6502-D-2X	3000K	90	1080	4845	4361	34.0	36.7	132
BXKE-30G6502-E-2X	3000K	90	1080	7268	6541	51.0	55.1	132
BXKE-30G6502-F-2X	3000K	90	1620	10906	9816	51.0	82.6	132
BXKE-35E6502-D-2X	3500K	80	1080	5763	5187	34.0	36.7	157
BXKE-35E6502-E-2X	3500K	80	1080	8645	7780	51.0	55.1	157
BXKE-35E6502-F-2X	3500K	80	1620	12972	11675	51.0	82.6	157
BXKE-35G6502-D-2X	3500K	90	1080	5011	4510	34.0	36.7	136
BXKE-35G6502-E-2X	3500K	90	1080	7516	6764	51.0	55.1	136
BXKE-35G6502-F-2X	3500K	90	1620	11278	10150	51.0	82.6	137
BXKE-40C6502-D-2X	4000K	70	1080	6029	5426	34.0	36.7	164
BXKE-40C6502-E-2X	4000K	70	1080	9044	8139	51.0	55.1	164
BXKE-40C6502-F-2X	4000K	70	1620	13570	12213	51.0	82.6	164
BXKE-40E6502-D-2X	4000K	80	1080	5818	5236	34.0	36.7	158
BXKE-40E6502-E-2X	4000K	80	1080	8727	7855	51.0	55.1	158
BXKE-40E6502-F-2X	4000K	80	1620	13096	11786	51.0	82.6	159
BXKE-40G6502-D-2X	4000K	90	1080	5194	4675	34.0	36.7	141
BXKE-40G6502-E-2X	4000K	90	1080	7791	7012	51.0	55.1	141
BXKE-40G6502-F-2X	4000K	90	1620	11691	10522	51.0	82.6	142
BXKE-50C6502-D-2X	5000K	70	1080	6063	5456	34.0	36.7	165
BXKE-50C6502-E-2X	5000K	70	1080	9094	8185	51.0	55.1	165
BXKE-50C6502-F-2X	5000K	70	1620	13646	12281	51.0	82.6	165

Notes for Table 2:

- Nominal CCT as defined by ANSI C78.377-2011.
- 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.
- Drive current is referred to as nominal drive current.
- Typical Pulsed performance values are provided as reference only and are not a guarantee of performance.
- Typical performance is estimated based on operation under Pulsed with LED array mounted onto a heat sink with thermal interface material and the $T_j = T_c$ 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.
- 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, Pulsed Measurement Data ($T_j = 85^\circ\text{C}$) ^{4,5} (Continued)

Part Number	Nominal CCT ¹ (K)	CRI ²	Nominal Drive Current ³ (mA)	Typical Pulsed Flux ^{4,5} $T_j = 85^\circ\text{C}$ (lm)	Minimum Pulsed Flux ⁶ $T_j = 85^\circ\text{C}$ (lm)	Typical V_f (V)	Typical Power (W)	Typical Efficacy (lm/W)
BXKE-50E6502-D-2X	5000K	80	1080	5983	5385	34.0	36.7	163
BXKE-50E6502-E-2X	5000K	80	1080	8975	8078	51.0	55.1	163
BXKE-50E6502-F-2X	5000K	80	1620	13468	12121	51.0	82.6	163
BXKE-50G6502-D-2X	5000K	90	1080	5194	4675	34.0	36.7	141
BXKE-50G6502-E-2X	5000K	90	1080	7791	7012	51.0	55.1	141
BXKE-50G6502-F-2X	5000K	90	1620	11691	10522	51.0	82.6	142
BXKE-56E6502-D-2X	5600K	80	1080	5928	5336	34.0	36.7	161
BXKE-56E6502-E-2X	5600K	80	1080	8893	8003	51.0	55.1	161
BXKE-56E6502-F-2X	5600K	80	1620	13344	12009	51.0	82.6	162
BXKE-65C6502-D-2X	6500K	70	1080	5945	5351	34.0	36.7	162
BXKE-65C6502-E-2X	6500K	70	1080	8918	8026	51.0	55.1	162
BXKE-65C6502-F-2X	6500K	70	1620	13381	12043	51.0	82.6	162
BXKE-65E6502-D-2X	6500K	80	1080	5928	5336	34.0	36.7	161
BXKE-65E6502-E-2X	6500K	80	1080	8893	8003	51.0	55.1	161
BXKE-65E6502-F-2X	6500K	80	1620	13344	12009	51.0	82.6	162

Notes for Table 2:

1. Nominal CCT as defined by ANSI C78.377-2011.
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 Pulsed performance values are provided as reference only and are not a guarantee of performance.
5. Typical performance is estimated based on operation under Pulsed with LED array mounted onto a heat sink with thermal interface material and the $T_j = T_c$ 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

Bridgelux E series LED arrays are tested to the specifications shown using the nominal drive currents in Table 1. Bridgelux E series 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 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 4.

Table 4: Product Performance at Commonly Used Drive Currents

Part Number	CRI	Drive Current ¹ (mA)	Typical V _f T _j = 25°C (V)	Typical Power T _j = 25°C (W)	Typical Flux ² T _j = 25°C (lm)	Typical Pulsed Flux ³ T _j = 85°C (lm)	Typical Efficacy T _j = 25°C (lm/W)
BXKE-27E6502-D-2X	80	360	32.6	11.7	2086	1878	178
		720	33.8	24.3	4064	3658	167
		1080	34.8	37.6	5955	5359	158
		1800	36.9	66.4	9512	8560	143
		2880	39.7	114.3	14390	12951	126
BXKE-27E6502-E-2X	80	360	48.9	17.6	3129	2816	178
		720	50.7	36.5	6097	5487	167
		1080	52.2	56.4	8932	8039	158
		1800	55.4	99.6	14267	12841	143
		2880	59.6	171.5	21584	19426	126
BXKE-27E6502-F-2X	80	540	48.9	26.4	4696	4226	178
		1080	50.7	54.8	9148	8233	167
		1620	52.2	84.6	13403	12063	158
		2700	55.4	149.4	21409	19268	143
		4320	59.6	257.3	32388	29149	126
BXKE-27G6502-D-2X	90	360	32.6	11.7	1800	1620	153
		720	33.8	24.3	3508	3157	144
		1080	34.8	37.6	5139	4625	137
		1800	36.9	66.4	8209	7388	124
		2880	39.7	114.3	12418	11177	109
BXKE-27G6502-E-2X	90	360	48.9	17.6	2701	2431	153
		720	50.7	36.5	5261	4735	144
		1080	52.2	56.4	7709	6938	137
		1800	55.4	99.6	12313	11082	124
		2880	59.6	171.5	18628	16765	109
BXKE-27G6502-F-2X	90	540	48.9	26.4	4052	3647	153
		1080	50.7	54.8	7895	7106	144
		1620	52.2	84.6	11567	10410	137
		2700	55.4	149.4	18476	16628	124
		4320	59.6	257.3	27951	25156	109
BXKE-30C6502-D-2X	70	360	32.6	11.7	2284	2055	195
		720	33.8	24.3	4449	4004	183
		1080	34.8	37.6	6519	5867	173
		1800	36.9	66.4	10412	9371	157
		2880	39.7	114.3	15752	14177	138

Notes for Table 4

1. Alternate drive currents in Table 4 are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a ± 7% tolerance on flux measurements.
3. Typical Pulsed performance values are provided as reference only and are not a guarantee of performance.

Performance at Commonly Used Drive Currents

Table 4: Product Performance at Commonly Used Drive Currents (Continued)

Part Number	CRI	Drive Current ¹ (mA)	Typical V _f T _j = 25°C (V)	Typical Power T _j = 25°C (W)	Typical Flux ² T _j = 25°C (lm)	Typical Pulsed Flux ³ T _j = 85°C (lm)	Typical Efficacy T _j = 25°C (lm/W)
BXKE-30C6502-E-2X	70	360	48.9	17.6	3426	3083	195
		720	50.7	36.5	6674	6006	183
		1080	52.2	56.4	9778	8800	173
		1800	55.4	99.6	15618	14056	157
		2880	59.6	171.5	23628	21265	138
BXKE-30C6502-F-2X	70	540	48.9	26.4	5140	4626	195
		1080	50.7	54.8	10014	9013	183
		1620	52.2	84.6	14672	13205	174
		2700	55.4	149.4	23435	21092	157
		4320	59.6	257.3	35454	31909	138
BXKE-30E6502-D-2X	80	360	32.6	11.7	2179	1961	186
		720	33.8	24.3	4245	3821	174
		1080	34.8	37.6	6220	5598	165
		1800	36.9	66.4	9935	8941	150
		2880	39.7	114.3	15030	13527	131
BXKE-30E6502-E-2X	80	360	48.9	17.6	3269	2942	186
		720	50.7	36.5	6368	5731	174
		1080	52.2	56.4	9330	8397	165
		1800	55.4	99.6	14902	13412	150
		2880	59.6	171.5	22545	20291	131
BXKE-30E6502-F-2X	80	540	48.9	26.4	4905	4414	186
		1080	50.7	54.8	9555	8600	175
		1620	52.2	84.6	14000	12600	166
		2700	55.4	149.4	22362	20125	150
		4320	59.6	257.3	33830	30447	132
BXKE-30G6502-D-2X	90	360	32.6	11.7	1886	1698	161
		720	33.8	24.3	3675	3307	151
		1080	34.8	37.6	5384	4845	143
		1800	36.9	66.4	8599	7739	129
		2880	39.7	114.3	13010	11709	114
BXKE-30G6502-E-2X	90	360	48.9	17.6	2829	2546	161
		720	50.7	36.5	5512	4961	151
		1080	52.2	56.4	8076	7268	143
		1800	55.4	99.6	12899	11609	129
		2880	59.6	171.5	19515	17563	114
BXKE-30G6502-F-2X	90	540	48.9	26.4	4245	3821	161
		1080	50.7	54.8	8271	7444	151
		1620	52.2	84.6	12118	10906	143
		2700	55.4	149.4	19356	17420	130
		4320	59.6	257.3	29282	26354	114

Notes for Table 4:

1. Alternate drive currents in Table 4 are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a ± 7% tolerance on flux measurements.
3. Typical Pulsed performance values are provided as reference only and are not a guarantee of performance.

Performance at Commonly Used Drive Currents

Table 4: Product Performance at Commonly Used Drive Currents (Continued)

Part Number	CRI	Drive Current ¹ (mA)	Typical V _f T _j = 25°C (V)	Typical Power T _j = 25°C (W)	Typical Flux ² T _j = 25°C (lm)	Typical Pulsed Flux ³ T _j = 85°C (lm)	Typical Efficacy T _j = 25°C (lm/W)
BXKE-35E6502-D-2X	80	360	32.6	11.7	2243	2019	191
		720	33.8	24.3	4371	3934	180
		1080	34.8	37.6	6404	5763	170
		1800	36.9	66.4	10228	9205	154
		2880	39.7	114.3	15474	13926	135
BXKE-35E6502-E-2X	80	360	48.9	17.6	3365	3029	191
		720	50.7	36.5	6556	5900	180
		1080	52.2	56.4	9605	8645	170
		1800	55.4	99.6	15342	13808	154
		2880	59.6	171.5	23211	20890	135
BXKE-35E6502-F-2X	80	540	48.9	26.4	5050	4545	191
		1080	50.7	54.8	9837	8854	180
		1620	52.2	84.6	14413	12972	170
		2700	55.4	149.4	23021	20719	154
		4320	59.6	257.3	34828	31346	135
BXKE-35G6502-D-2X	90	360	32.6	11.7	1951	1755	166
		720	33.8	24.3	3800	3420	156
		1080	34.8	37.6	5567	5011	148
		1800	36.9	66.4	8893	8003	134
		2880	39.7	114.3	13453	12108	118
BXKE-35G6502-E-2X	90	360	48.9	17.6	2926	2633	166
		720	50.7	36.5	5700	5130	156
		1080	52.2	56.4	8351	7516	148
		1800	55.4	99.6	13339	12005	134
		2880	59.6	171.5	20180	18162	118
BXKE-35G6502-F-2X	90	540	48.9	26.4	4390	3951	166
		1080	50.7	54.8	8553	7698	156
		1620	52.2	84.6	12531	11278	148
		2700	55.4	149.4	20016	18014	134
		4320	59.6	257.3	30281	27253	118
BXKE-40C6502-D-2X	80	360	32.6	11.7	2347	2112	200
		720	33.8	24.3	4572	4115	188
		1080	34.8	37.6	6699	6029	178
		1800	36.9	66.4	10700	9630	161
		2880	39.7	114.3	16188	14569	142
BXKE-40C6502-E-2X	80	360	48.9	17.6	3520	3168	200
		720	50.7	36.5	6858	6173	188
		1080	52.2	56.4	10048	9044	178
		1800	55.4	99.6	16050	14445	161
		2880	59.6	171.5	24281	21853	142

Notes for Table 4:

1. Alternate drive currents in Table 4 are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a ± 7% tolerance on flux measurements.
3. Typical Pulsed performance values are provided as reference only and are not a guarantee of performance.

Performance at Commonly Used Drive Currents

Table 4: Product Performance at Commonly Used Drive Currents (Continued)

Part Number	CRI	Drive Current ¹ (mA)	Typical V _f T _j = 25°C (V)	Typical Power T _j = 25°C (W)	Typical Flux ² T _j = 25°C (lm)	Typical Pulsed Flux ³ T _j = 85°C (lm)	Typical Efficacy T _j = 25°C (lm/W)
BXKE-40C6502-F-2X	80	540	48.9	26.4	5282	4754	200
		1080	50.7	54.8	10291	9262	188
		1620	52.2	84.6	15078	13570	178
		2700	55.4	149.4	24083	21675	161
		4320	59.6	257.3	36435	32792	142
BXKE-40E6502-D-2X	80	360	32.6	11.7	2265	2038	193
		720	33.8	24.3	4412	3971	181
		1080	34.8	37.6	6465	5818	172
		1800	36.9	66.4	10326	9293	155
		2880	39.7	114.3	15622	14059	137
BXKE-40E6502-E-2X	80	360	48.9	17.6	3397	3058	193
		720	50.7	36.5	6619	5957	181
		1080	52.2	56.4	9697	8727	172
		1800	55.4	99.6	15489	13940	155
		2880	59.6	171.5	23432	21089	137
BXKE-40E6502-F-2X	80	540	48.9	26.4	5098	4588	193
		1080	50.7	54.8	9931	8938	181
		1620	52.2	84.6	14551	13096	172
		2700	55.4	149.4	23241	20917	156
		4320	59.6	257.3	35161	31645	137
BXKE-40G6502-D-2X	90	360	32.6	11.7	2022	1820	172
		720	33.8	24.3	3939	3545	162
		1080	34.8	37.6	5771	5194	154
		1800	36.9	66.4	9218	8297	139
		2880	39.7	114.3	13946	12551	122
BXKE-40G6502-E-2X	90	360	48.9	17.6	3033	2730	172
		720	50.7	36.5	5909	5318	162
		1080	52.2	56.4	8657	7791	154
		1800	55.4	99.6	13828	12445	139
		2880	59.6	171.5	20919	18827	122
BXKE-40G6502-F-2X	90	540	48.9	26.4	4551	4096	172
		1080	50.7	54.8	8866	7980	162
		1620	52.2	84.6	12990	11691	154
		2700	55.4	149.4	20749	18674	139
		4320	59.6	257.3	31390	28251	122
BXKE-50C6502-D-2X	80	360	32.6	11.7	2360	2124	201
		720	33.8	24.3	4598	4138	189
		1080	34.8	37.6	6736	6063	179
		1800	36.9	66.4	10760	9684	162
		2880	39.7	114.3	16278	14650	142

Notes for Table 4:

1. Alternate drive currents in Table 4 are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a ± 7% tolerance on flux measurements.
3. Typical Pulsed performance values are provided as reference only and are not a guarantee of performance.

Performance at Commonly Used Drive Currents

Table 4: Product Performance at Commonly Used Drive Currents (Continued)

Part Number	CRI	Drive Current ¹ (mA)	Typical V _f T _j = 25°C (V)	Typical Power T _j = 25°C (W)	Typical Flux ² T _j = 25°C (lm)	Typical Pulsed Flux ³ T _j = 85°C (lm)	Typical Efficacy T _j = 25°C (lm/W)
BXKE-50C6502-E-2X	80	360	48.9	17.6	3540	3186	201
		720	50.7	36.5	6897	6207	189
		1080	52.2	56.4	10104	9094	179
		1800	55.4	99.6	16139	14525	162
		2880	59.6	171.5	24417	21975	142
BXKE-50C6502-F-2X	80	540	48.9	26.4	5312	4781	201
		1080	50.7	54.8	10349	9314	189
		1620	52.2	84.6	15162	13646	179
		2700	55.4	149.4	24218	21796	162
		4320	59.6	257.3	36638	32974	142
BXKE-50E6502-D-2X	80	360	32.6	11.7	2329	2096	198
		720	33.8	24.3	4538	4084	186
		1080	34.8	37.6	6648	5983	177
		1800	36.9	66.4	10619	9557	160
		2880	39.7	114.3	16065	14459	141
BXKE-50E6502-E-2X	80	360	48.9	17.6	3494	3144	198
		720	50.7	36.5	6807	6126	186
		1080	52.2	56.4	9972	8975	177
		1800	55.4	99.6	15929	14336	160
		2880	59.6	171.5	24098	21688	141
BXKE-50E6502-F-2X	80	540	48.9	26.4	5243	4718	199
		1080	50.7	54.8	10213	9192	187
		1620	52.2	84.6	14964	13468	177
		2700	55.4	149.4	23901	21511	160
		4320	59.6	257.3	36159	32543	141
BXKE-50G6502-D-2X	90	360	32.6	11.7	2022	1820	172
		720	33.8	24.3	3939	3545	162
		1080	34.8	37.6	5771	5194	154
		1800	36.9	66.4	9218	8297	139
		2880	39.7	114.3	13946	12551	122
BXKE-50G6502-E-2X	90	360	48.9	17.6	3033	2730	172
		720	50.7	36.5	5909	5318	162
		1080	52.2	56.4	8657	7791	154
		1800	55.4	99.6	13828	12445	139
		2880	59.6	171.5	20919	18827	122
BXKE-50G6502-F-2X	90	540	48.9	26.4	4551	4096	172
		1080	50.7	54.8	8866	7980	162
		1620	52.2	84.6	12990	11691	154
		2700	55.4	149.4	20749	18674	139
		4320	59.6	257.3	31390	28251	122

Notes for Table 4:

1. Alternate drive currents in Table 4 are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a ± 7% tolerance on flux measurements.
3. Typical Pulsed performance values are provided as reference only and are not a guarantee of performance.

Performance at Commonly Used Drive Currents

Table 4: Product Performance at Commonly Used Drive Currents (Continued)

Part Number	CRI	Drive Current ¹ (mA)	Typical V_f $T_j = 25^\circ\text{C}$ (V)	Typical Power $T_j = 25^\circ\text{C}$ (W)	Typical Flux ² $T_j = 25^\circ\text{C}$ (lm)	Typical Pulsed Flux ³ $T_j = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_j = 25^\circ\text{C}$ (lm/W)
BXKE-56E6502-D-2X	80	360	32.6	11.7	2308	2077	197
		720	33.8	24.3	4496	4046	185
		1080	34.8	37.6	6587	5928	175
		1800	36.9	66.4	10521	9469	158
		2880	39.7	114.3	15917	14326	139
BXKE-56E6502-E-2X	80	360	48.9	17.6	3462	3115	197
		720	50.7	36.5	6744	6069	185
		1080	52.2	56.4	9881	8893	175
		1800	55.4	99.6	15782	14204	158
		2880	59.6	171.5	23876	21488	139
BXKE-56E6502-F-2X	80	540	48.9	26.4	5194	4675	197
		1080	50.7	54.8	10119	9107	185
		1620	52.2	84.6	14826	13344	175
		2700	55.4	149.4	23681	21313	158
		4320	59.6	257.3	35827	32244	139
BXKE-65C6502-D-2X	80	360	32.6	11.7	2314	2083	197
		720	33.8	24.3	4509	4058	185
		1080	34.8	37.6	6606	5945	176
		1800	36.9	66.4	10551	9496	159
		2880	39.7	114.3	15962	14366	140
BXKE-65C6502-E-2X	80	360	48.9	17.6	3471	3124	197
		720	50.7	36.5	6763	6087	185
		1080	52.2	56.4	9908	8918	176
		1800	55.4	99.6	15826	14244	159
		2880	59.6	171.5	23943	21549	140
BXKE-65C6502-F-2X	80	540	48.9	26.4	5209	4688	197
		1080	50.7	54.8	10148	9133	185
		1620	52.2	84.6	14868	13381	176
		2700	55.4	149.4	23748	21373	159
		4320	59.6	257.3	35928	32335	140
BXKE-65E6502-D-2X	80	360	32.6	11.7	2308	2077	197
		720	33.8	24.3	4496	4046	185
		1080	34.8	37.6	6587	5928	175
		1800	36.9	66.4	10521	9469	158
		2880	39.7	114.3	15917	14326	139
BXKE-65E6502-E-2X	80	360	48.9	17.6	3462	3115	197
		720	50.7	36.5	6744	6069	185
		1080	52.2	56.4	9881	8893	175
		1800	55.4	99.6	15782	14204	158
		2880	59.6	171.5	23876	21488	139

Notes for Table 4:

1. Alternate drive currents in Table 4 are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a $\pm 7\%$ tolerance on flux measurements.
3. Typical Pulsed performance values are provided as reference only and are not a guarantee of performance.

Performance at Commonly Used Drive Currents

Table 4: Product Performance at Commonly Used Drive Currents (Continued)

Part Number	CRI	Drive Current ¹ (mA)	Typical V_f $T_j = 25^\circ\text{C}$ (V)	Typical Power $T_j = 25^\circ\text{C}$ (W)	Typical Flux ² $T_j = 25^\circ\text{C}$ (lm)	Typical Pulsed Flux ³ $T_j = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_j = 25^\circ\text{C}$ (lm/W)
BXKE-65E6502-F-2X	80	540	48.9	26.4	5194	4675	197
		1080	50.7	54.8	10119	9107	185
		1620	52.2	84.6	14826	13344	175
		2700	55.4	149.4	23681	21313	158
		4320	59.6	257.3	35827	32244	139

Notes for Table 4:

1. Alternate drive currents in Table 4 are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a $\pm 7\%$ tolerance on flux measurements.
3. Typical Pulsed performance values are provided as reference only and are not a guarantee of performance.

Electrical Characteristics

Table 5: Electrical Characteristics

Part Number	Drive Current (mA)	Forward Voltage Pulsed, $T_j = 25^{\circ}\text{C}$ (V) ^{1, 2, 3}			Typical Coefficient of Forward Voltage ⁴ $\Delta V_f / \Delta T_j$ (mV/ $^{\circ}\text{C}$)	Typical Thermal Resistance Junction to Case ^{5, 6} R_{j-c} ($^{\circ}\text{C}/\text{W}$)
		Minimum	Typical	Maximum		
BXKE-XXX6502-D-2x	1080	31.6	34.8	38.4	-14.38	0.44
BXKE-XXX6502-E-2x	1080	47.4	52.2	57.6	-14.38	0.30
BXKE-XXX6502-F-2x	1620	47.4	52.2	57.6	-14.38	0.20

Notes for Table 5:

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.

Absolute Maximum Ratings

Table 6: Maximum Ratings

Parameter	Maximum Rating		
LED Junction Temperature (T_j)	140°C		
Storage Temperature	-40°C to +100°C		
Operating Case Temperature ¹ (T_c)	105°C		
Soldering Temperature ²	350°C $\leq$ 3.5sec		
	BXKE-xxx6502-D-2x	BXKE-xxx6502-E-2x	BXKE-xxx6502-F-2x
Maximum Drive Current ³	2880 mA	2880 mA	4320 mA
Maximum Reverse Voltage ⁴	-60 V	-90 V	-90 V

Notes for Table 6

1. For IEC 62717 requirement, please consult your Bridgelux sales representative.
2. Arrays may be driven at higher currents however lumen maintenance may be reduced.
3. 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: E22D Drive Current vs. Voltage $T_j = 25^\circ\text{C}$

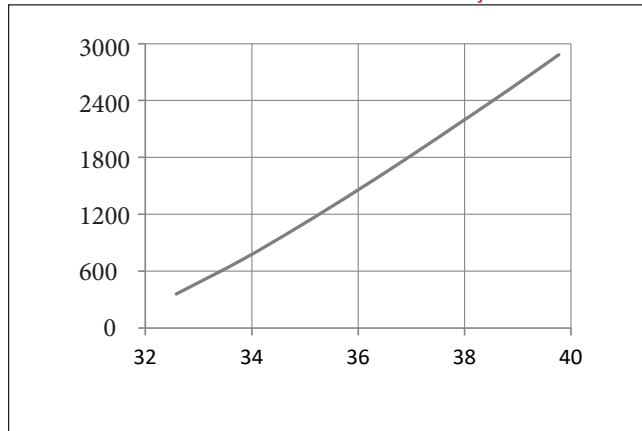


Figure 2: E22E Drive Current vs. Voltage $T_j = 25^\circ\text{C}$

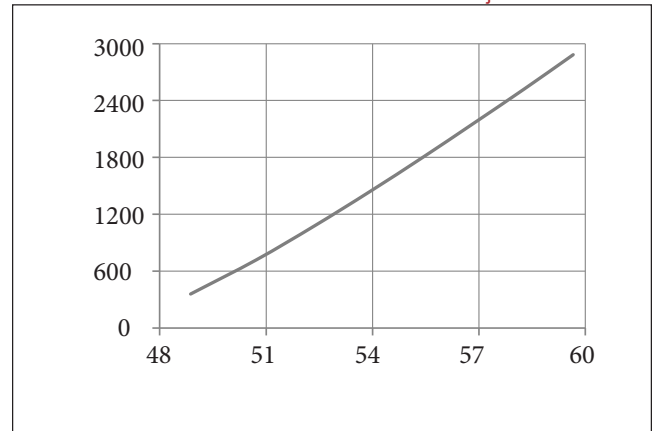


Figure 3: E22F Drive Current vs. Voltage $T_j = 25^\circ\text{C}$

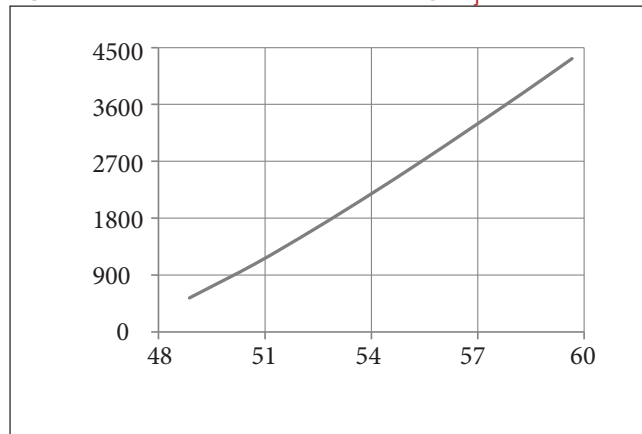


Figure 4: E22D Relative Flux vs. Current $T_j = 25^\circ\text{C}$

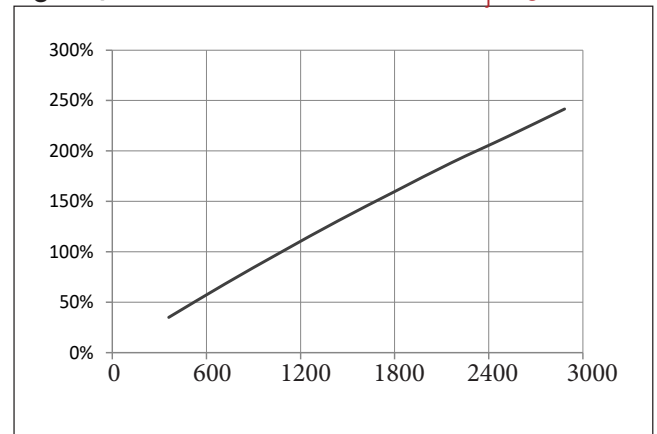


Figure 5: E22D Relative Flux vs. Current $T_j = 25^\circ\text{C}$

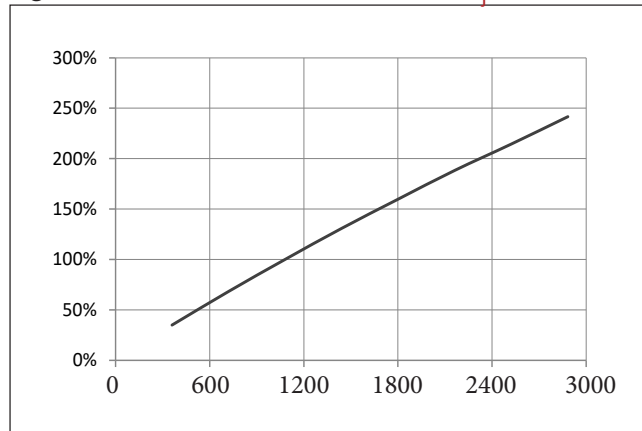
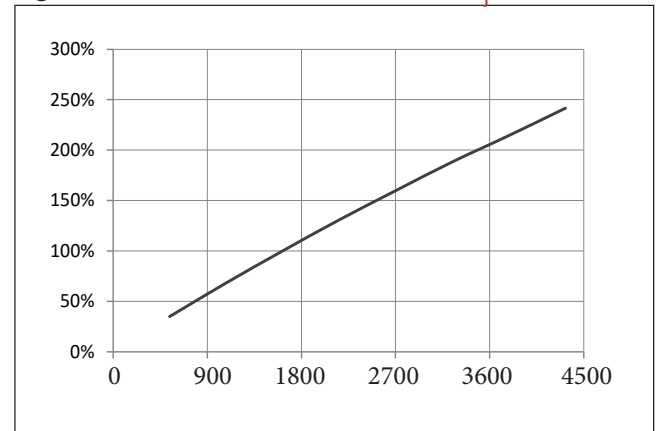


Figure 6: E22F Relative Flux vs. Current $T_j = 25^\circ\text{C}$



Notes for Figures 1-6:

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.
2. Characteristics shown for neutral white based on 3000K and 80 CRI.
3. For other color SKUs, the shift in color will vary. Please contact your Bridgelux sales representative for more information.

Performance Curves

Figure 7 Typical Pulsed Flux vs. T_j Temperature

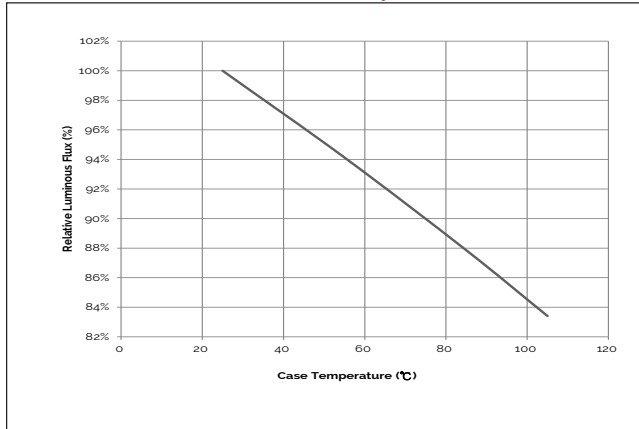


Figure 8: Typical Pulsed ccx Shift vs. T_j Temperature

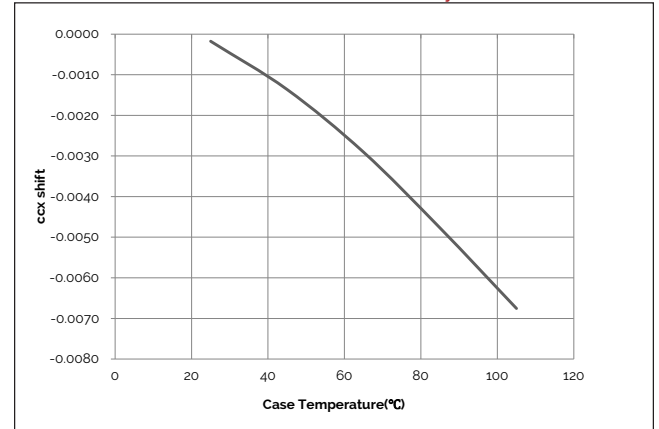
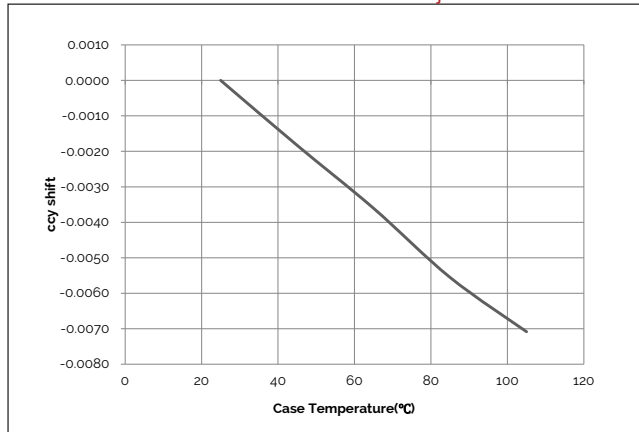


Figure 9: Typical Pulsed ccy Shift vs. T_j Temperature

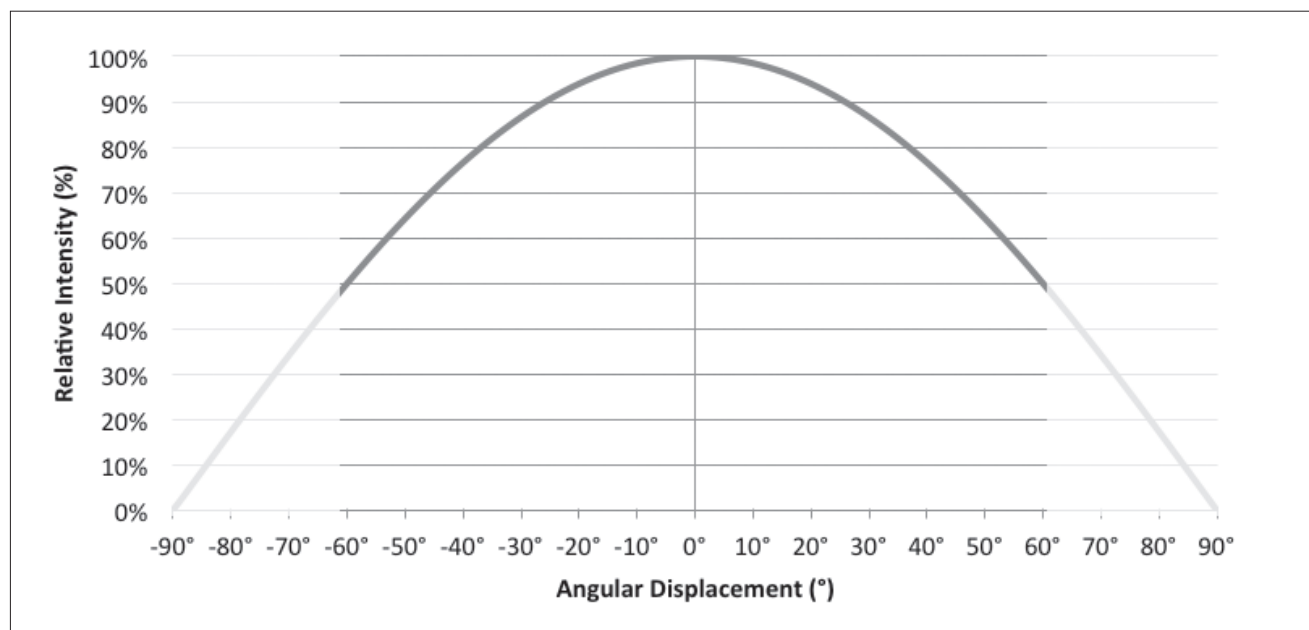


Notes for Figures 7-9:

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 neutral white based on 3000K and 80 CRI.
3. For other color SKUs, the shift in color will vary. Please contact your Bridgelux sales representative for more information.

Typical Radiation Pattern

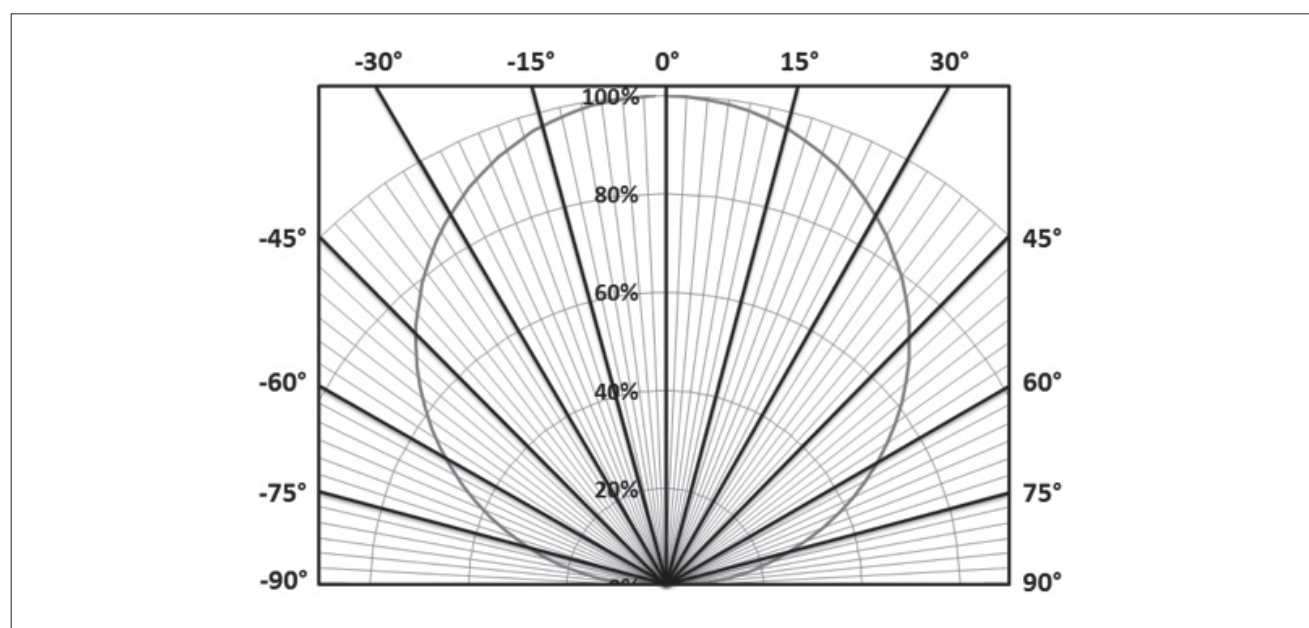
Figure 10: Typical Spatial Radiation Pattern



Notes for Figure 10:

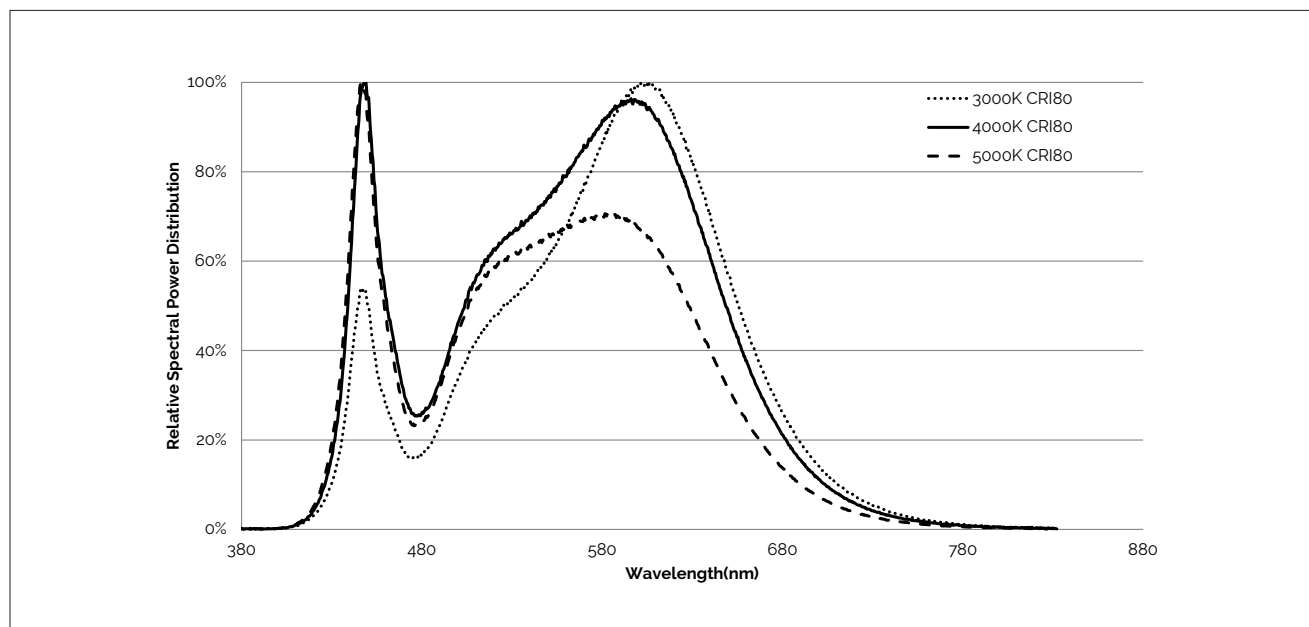
1. Typical viewing angle is 120°.
2. The viewing angle is defined as the off axis angle from the centerline where intensity is $\frac{1}{2}$ of the peak value.

Figure 11: Typical Polar Radiation Pattern



Typical Color Spectrum

Figure 12: Typical Color Spectrum

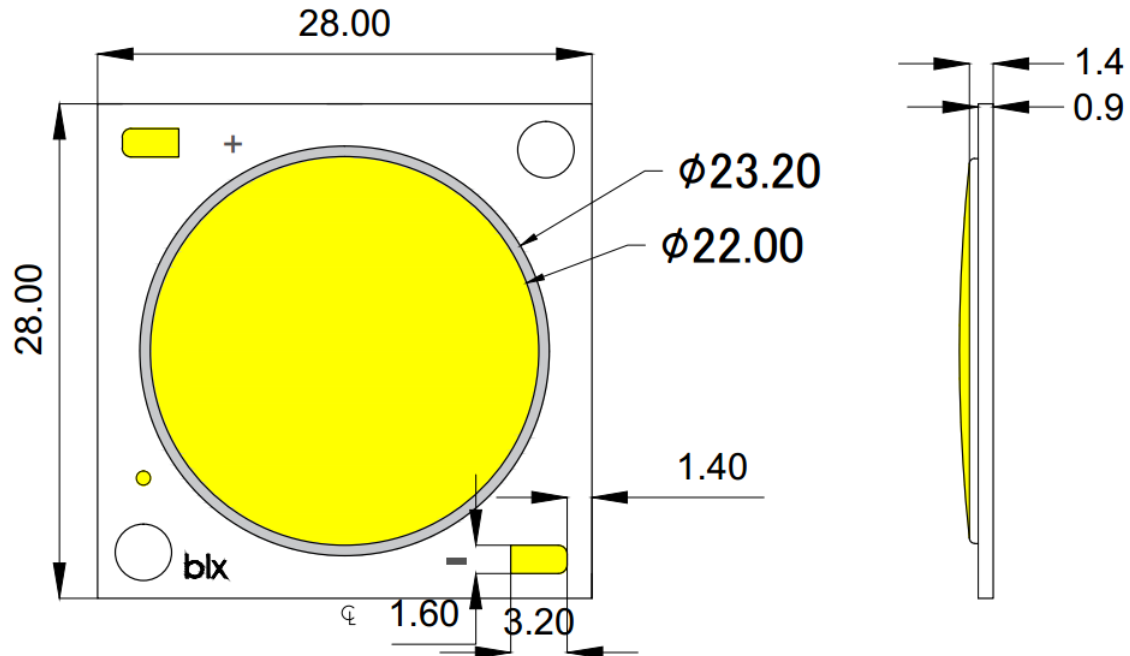


Notes for Figure 12:

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 80 CRI.

Mechanical Dimensions

Figure 13: Bridgelux E22 LED Array



Notes for Figure 13:

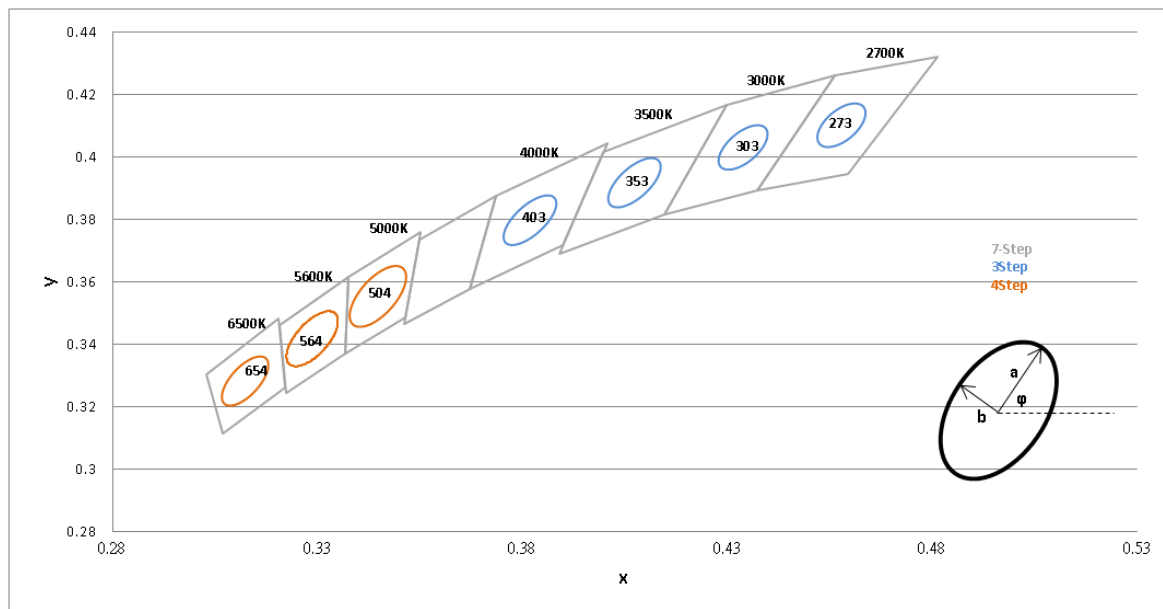
1. Drawings are not to scale.
2. Drawing dimensions are in millimeters.
3. Unless otherwise specified, tolerances are ± 0.1 mm.
4. Mounting holes (2X) are for M2.5 screws.
5. Screws with flat shoulders (pan, dome, button, round, truss, mushroom) provide optimal torque control. Do NOT use flat, countersink, or raised head screws.
6. The optical center of the LED Array is nominally defined by the mechanical center of the array to a tolerance of ± 0.2 mm.
7. Bridgelux maintains a flatness of 0.10mm across the mounting surface of the array.

Color Binning Information

Table 7: xy Bin Coordinates and Associated Typical CCT

CCT	Center Point		Degree	3 step		4 step	
	x	y		a	b	a	b
2700K	0.4578	0.4101	53.700	0.0081	0.0042	N/A	N/A
3000K	0.4338	0.403	53.217	0.0083	0.0041	N/A	N/A
3500K	0.4073	0.3917	54.000	0.0093	0.0041	N/A	N/A
4000K	0.3818	0.3797	53.717	0.0094	0.0040	N/A	N/A
5000K	0.3447	0.3553	59.617	N/A	N/A	0.01096	0.00472
5600K	0.3287	0.3417	59.060	N/A	N/A	0.00992	0.00424
6500K	0.3123	0.3282	58.567	N/A	N/A	0.00896	0.00384

Figure 14: Typical Color Spectrum



Notes for Figure 14:

1. Pulsed Test Conditions at $T_j = 85^{\circ}\text{C}$.
2. Bridgelux maintains a tolerance of ± 0.007 on x and y color coordinates in the CIE 1931 color space.

Design Resources

LM80

LM80 testing has been completed and the LM80 report is now available. Please contact your Bridgelux sales representative for the LM80 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 AN31 for additional information.

CAUTION: EYE SAFETY

The Bridgelux E series LED array emits visible light, that, under certain circumstances, could be harmful to the eye. Proper safeguards must be used.

CAUTION: RISK OF BURN

Do not touch the Bridgelux E series LED array during operation. Allow the array to cool for a sufficient period of time before handling. The Bridgelux E 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). 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: 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
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WeChat ID: BridgeluxInChina



46410 Fremont Boulevard
Fremont, CA 94538 USA
Tel (925) 583-8400
Fax (925) 583-8401
www.bridgelux.com

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