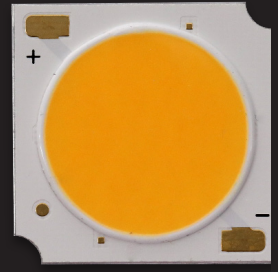


Bridgelux® E15 LED Array

Product Data Sheet DS443

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

- Wide range of performance from 2700 to 6750 lm with CCT options from 2700K – 6500K
- Compact, high flux density light source
- Uniform, high quality illumination
- Streamlined thermal path
- ENERGY STAR® / ANSI compliant color binning structure with 3 and 5 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

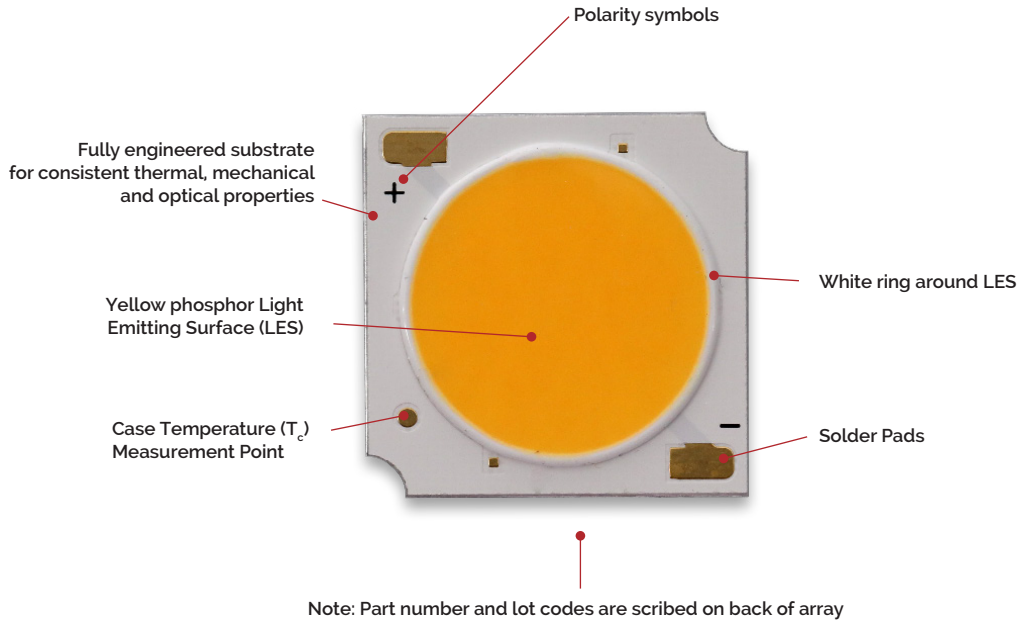


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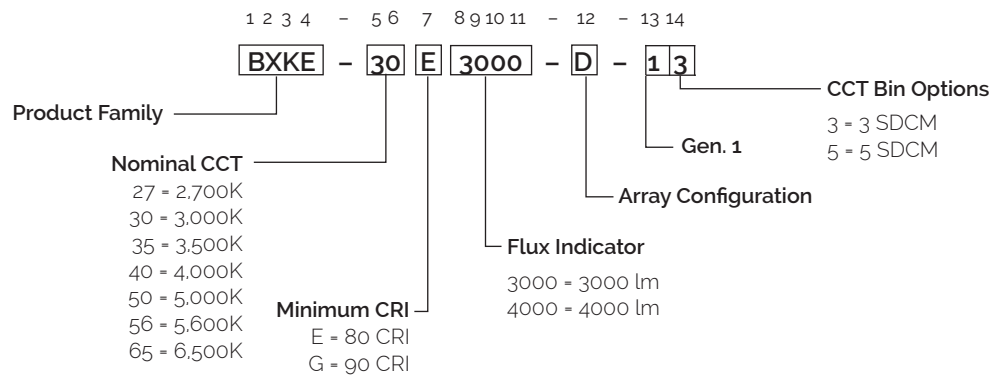
Product Feature Map

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 ($T_j = T_c = 25^\circ\text{C}$)

| Part Number | Nominal CCT ¹ (K) | CRI ² | Nominal Drive Current ³ (mA) | Typical Pulsed Flux ^{4,5,6} $T_j = 25^\circ\text{C}$ (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-27E3000-D-1X | 2700K | 80 | 720 | 3130 | 2721 | 38.7 | 27.9 | 112 |
| BXKE-27E4000-F-1X | 2700K | 80 | 960 | 4167 | 3624 | 38.0 | 36.5 | 114 |
| BXKE-27G3000-D-1X | 2700K | 90 | 720 | 2603 | 2264 | 38.7 | 27.9 | 93 |
| BXKE-27G4000-F-1X | 2700K | 90 | 960 | 3467 | 3014 | 38.0 | 36.5 | 95 |
| BXKE-30E3000-D-1X | 3000K | 80 | 720 | 3260 | 2835 | 38.7 | 27.9 | 117 |
| BXKE-30E4000-F-1X | 3000K | 80 | 960 | 4341 | 3775 | 38.0 | 36.5 | 119 |
| BXKE-30G3000-D-1X | 3000K | 90 | 720 | 2706 | 2353 | 38.7 | 27.9 | 97 |
| BXKE-30G4000-F-1X | 3000K | 90 | 960 | 3603 | 3133 | 38.0 | 36.5 | 99 |
| BXKE-35E3000-D-1X | 3500K | 80 | 720 | 3358 | 2920 | 38.7 | 27.9 | 121 |
| BXKE-35E4000-F-1X | 3500K | 80 | 960 | 4471 | 3888 | 38.0 | 36.5 | 123 |
| BXKE-35G3000-D-1X | 3500K | 90 | 720 | 2869 | 2438 | 38.7 | 27.9 | 102 |
| BXKE-35G4000-F-1X | 3500K | 90 | 960 | 3711 | 3154 | 38.0 | 36.5 | 102 |
| BXKE-40E3000-D-1X | 4000K | 80 | 720 | 3390 | 2948 | 38.7 | 27.9 | 122 |
| BXKE-40E4000-F-1X | 4000K | 80 | 960 | 4515 | 3926 | 38.0 | 36.5 | 124 |
| BXKE-40G3000-D-1X | 4000K | 90 | 720 | 3202 | 2722 | 38.7 | 27.9 | 119 |
| BXKE-40G4000-F-1X | 4000K | 90 | 960 | 4377 | 3720 | 38.0 | 36.5 | 120 |
| BXKE-50E3000-D-1X | 5000K | 80 | 720 | 3494 | 3038 | 38.7 | 27.9 | 125 |
| BXKE-50E4000-F-1X | 5000K | 80 | 960 | 4652 | 4045 | 38.0 | 36.5 | 128 |
| BXKE-50G3000-D-1X | 5000K | 90 | 720 | 3133 | 2663 | 38.7 | 27.9 | 112 |
| BXKE-50G4000-F-1X | 5000K | 90 | 960 | 4283 | 3640 | 38.0 | 36.5 | 117 |
| BXKE-56E3000-D-1X | 5600K | 80 | 720 | 3619 | 3147 | 38.7 | 27.9 | 130 |
| BXKE-56E4000-F-1X | 5600K | 80 | 960 | 4819 | 4190 | 38.0 | 36.5 | 132 |
| BXKE-65E3000-D-1X | 6500K | 80 | 720 | 3675 | 3195 | 38.7 | 27.9 | 132 |
| BXKE-65E4000-F-1X | 6500K | 80 | 960 | 4893 | 4573 | 38.0 | 36.5 | 134 |

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 DC Flux ^{4,5} $T_j = 85^\circ\text{C}$ (lm) | Minimum DC Flux ⁶ $T_j = 85^\circ\text{C}$ (lm) | Typical V_f (V) | Typical Power (W) | Typical Efficacy (lm/W) |
|-------------------|------------------------------|------------------|---|--|--|-------------------|-------------------|-------------------------|
| BXKE-27E3000-D-1X | 2700 | 80 | 720 | 2754 | 2395 | 37.3 | 26.9 | 103 |
| BXKE-27E4000-F-1X | 2700 | 80 | 960 | 3667 | 3189 | 36.8 | 35.3 | 104 |
| BXKE-27G3000-D-1X | 2700 | 90 | 720 | 2291 | 1992 | 37.3 | 26.9 | 85 |
| BXKE-27G4000-F-1X | 2700 | 90 | 960 | 3051 | 2653 | 36.8 | 35.3 | 86 |
| BXKE-30E3000-D-1X | 3000 | 80 | 720 | 2869 | 2495 | 37.3 | 26.9 | 107 |
| BXKE-30E4000-F-1X | 3000 | 80 | 960 | 3820 | 3322 | 36.8 | 35.3 | 108 |
| BXKE-30G3000-D-1X | 3000 | 90 | 720 | 2381 | 2071 | 37.3 | 26.9 | 89 |
| BXKE-30G4000-F-1X | 3000 | 90 | 960 | 3171 | 2757 | 36.8 | 35.3 | 90 |
| BXKE-35E3000-D-1X | 3500 | 80 | 720 | 2955 | 2570 | 37.3 | 26.9 | 110 |
| BXKE-35E4000-F-1X | 3500 | 80 | 960 | 3935 | 3422 | 36.8 | 35.3 | 111 |
| BXKE-35G3000-D-1X | 3500 | 90 | 720 | 2525 | 2146 | 37.3 | 26.9 | 93 |
| BXKE-35G4000-F-1X | 3500 | 90 | 960 | 3266 | 2776 | 36.8 | 35.3 | 93 |
| BXKE-40E3000-D-1X | 4000 | 80 | 720 | 2984 | 2594 | 37.3 | 26.9 | 111 |
| BXKE-40E4000-F-1X | 4000 | 80 | 960 | 3973 | 3455 | 36.8 | 35.3 | 112 |
| BXKE-40G3000-D-1X | 4000 | 90 | 720 | 2813 | 2391 | 37.3 | 26.9 | 105 |
| BXKE-40G4000-F-1X | 4000 | 90 | 960 | 3845 | 3268 | 36.8 | 35.3 | 109 |
| BXKE-50E3000-D-1X | 5000 | 80 | 720 | 3074 | 2673 | 37.3 | 26.9 | 114 |
| BXKE-50E4000-F-1X | 5000 | 80 | 960 | 4094 | 3560 | 36.8 | 35.3 | 116 |
| BXKE-50G3000-D-1X | 5000 | 90 | 720 | 2753 | 2340 | 37.3 | 26.9 | 103 |
| BXKE-50G4000-F-1X | 5000 | 90 | 960 | 3763 | 3200 | 36.8 | 35.3 | 107 |
| BXKE-56E3000-D-1X | 5600 | 80 | 720 | 3184 | 2769 | 37.3 | 26.9 | 119 |
| BXKE-56E4000-F-1X | 5600 | 80 | 960 | 4240 | 3687 | 36.8 | 35.3 | 120 |
| BXKE-65E3000-D-1X | 6500 | 80 | 720 | 3234 | 2812 | 37.3 | 26.9 | 120 |
| BXKE-65E4000-F-1X | 6500 | 80 | 960 | 4306 | 4024 | 36.8 | 35.3 | 122 |

Notes for Table 2:

1. Nominal CCT as defined by ANSI C78.377-2011.
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. Typical 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 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 and the flux vs. current characteristics shown in Figures 3-4. 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 _j = 25°C (V) | Typical Power T _j = 25°C (W) | Typical Flux ² T _j = 25°C (lm) | Typical DC Flux ³ T _j = 85°C (lm) | Typical Efficacy T _j = 25°C (lm/W) |
|-------------------|-----|---------------------------------|--|---|--|---|---|
| BXKE-27E3000-D-1X | 80 | 480 | 36.3 | 17.4 | 2217 | 1951 | 127 |
| | | 600 | 37.6 | 22.5 | 2697 | 2373 | 120 |
| | | 720 | 38.7 | 27.9 | 3130 | 2754 | 112 |
| | | 840 | 39.9 | 33.5 | 3569 | 3141 | 106 |
| | | 960 | 41.0 | 39.3 | 3963 | 3487 | 101 |
| BXKE-27E4000-F-1X | 80 | 480 | 34.6 | 16.6 | 2264 | 1992 | 136 |
| | | 720 | 36.4 | 26.2 | 3257 | 2866 | 124 |
| | | 960 | 38.0 | 36.5 | 4167 | 3667 | 114 |
| | | 1200 | 39.3 | 47.2 | 4992 | 4393 | 106 |
| | | 1440 | 40.7 | 58.9 | 5749 | 5059 | 98 |
| BXKE-27G3000-D-1X | 90 | 480 | 36.3 | 17.4 | 1843 | 1622 | 106 |
| | | 600 | 37.6 | 22.5 | 2236 | 1968 | 99 |
| | | 720 | 38.7 | 27.9 | 2603 | 2291 | 93 |
| | | 840 | 39.9 | 33.5 | 2944 | 2591 | 88 |
| | | 960 | 41.0 | 39.3 | 3259 | 2868 | 83 |
| BXKE-27G4000-F-1X | 90 | 480 | 34.6 | 16.6 | 1884 | 1658 | 113 |
| | | 720 | 36.4 | 26.2 | 2710 | 2385 | 103 |
| | | 960 | 38.0 | 36.5 | 3467 | 3051 | 95 |
| | | 1200 | 39.3 | 47.2 | 4153 | 3655 | 88 |
| | | 1440 | 40.7 | 58.9 | 4783 | 4209 | 82 |
| BXKE-30E3000-D-1X | 80 | 480 | 36.3 | 17.4 | 2296 | 2020 | 132 |
| | | 600 | 37.6 | 22.5 | 2788 | 2453 | 124 |
| | | 720 | 38.7 | 27.9 | 3260 | 2869 | 117 |
| | | 840 | 39.9 | 33.5 | 3677 | 3236 | 110 |
| | | 960 | 41.0 | 39.3 | 4074 | 3585 | 104 |
| BXKE-30E4000-F-1X | 80 | 480 | 34.6 | 16.6 | 2359 | 2075 | 142 |
| | | 720 | 36.4 | 26.2 | 3393 | 2986 | 129 |
| | | 960 | 38.0 | 36.5 | 4341 | 3820 | 119 |
| | | 1200 | 39.3 | 47.2 | 5200 | 4576 | 110 |
| | | 1440 | 40.7 | 58.9 | 5989 | 5270 | 102 |
| BXKE-30G3000-D-1X | 90 | 480 | 36.3 | 17.4 | 1909 | 1680 | 110 |
| | | 600 | 37.6 | 22.5 | 2319 | 2040 | 103 |
| | | 720 | 38.7 | 27.9 | 2706 | 2381 | 97 |
| | | 840 | 39.9 | 33.5 | 3061 | 2694 | 91 |
| | | 960 | 41.0 | 39.3 | 3393 | 2986 | 86 |

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 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

| 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 DC Flux ³ T _j = 85°C (lm) | Typical Efficacy T _j = 25°C (lm/W) |
|-------------------|-----|---------------------------------|---|--|---|--|--|
| BXKE-30G4000-F-1x | 90 | 480 | 34.6 | 16.6 | 1958 | 1723 | 118 |
| | | 720 | 36.4 | 26.2 | 2816 | 2478 | 107 |
| | | 960 | 38.0 | 36.5 | 3603 | 3171 | 99 |
| | | 1200 | 39.3 | 47.2 | 4316 | 3798 | 92 |
| | | 1440 | 40.7 | 58.9 | 4971 | 4374 | 85 |
| BXKE-35E3000-D-1x | 80 | 480 | 36.3 | 17.4 | 2372 | 2088 | 136 |
| | | 600 | 37.6 | 22.5 | 2884 | 2537 | 128 |
| | | 720 | 38.7 | 27.9 | 3358 | 2955 | 121 |
| | | 840 | 39.9 | 33.5 | 3811 | 3353 | 114 |
| | | 960 | 41.0 | 39.3 | 4227 | 3719 | 108 |
| BXKE-35E4000-F-1x | 80 | 480 | 34.6 | 16.6 | 2429 | 2138 | 146 |
| | | 720 | 36.4 | 26.2 | 3495 | 3075 | 133 |
| | | 960 | 38.0 | 36.5 | 4471 | 3935 | 123 |
| | | 1200 | 39.3 | 47.2 | 5356 | 4713 | 114 |
| | | 1440 | 40.7 | 58.9 | 6168 | 5428 | 105 |
| BXKE-35G3000-D-1x | 90 | 480 | 36.3 | 17.4 | 2020 | 1778 | 116 |
| | | 600 | 37.6 | 22.5 | 2453 | 2159 | 109 |
| | | 720 | 38.7 | 27.9 | 2869 | 2525 | 103 |
| | | 840 | 39.9 | 33.5 | 3236 | 2848 | 97 |
| | | 960 | 41.0 | 39.3 | 3585 | 3155 | 91 |
| BXKE-35G4000-F-1x | 90 | 480 | 34.6 | 16.6 | 2016 | 1775 | 121 |
| | | 720 | 36.4 | 26.2 | 2901 | 2552 | 111 |
| | | 960 | 38.0 | 36.5 | 3711 | 3266 | 102 |
| | | 1200 | 39.3 | 47.2 | 4445 | 3912 | 94 |
| | | 1440 | 40.7 | 58.9 | 5120 | 4505 | 87 |
| BXKE-40E3000-D-1x | 80 | 480 | 36.3 | 17.4 | 2398 | 2110 | 138 |
| | | 600 | 37.6 | 22.5 | 2915 | 2565 | 129 |
| | | 720 | 38.7 | 27.9 | 3390 | 2984 | 122 |
| | | 840 | 39.9 | 33.5 | 3855 | 3392 | 115 |
| | | 960 | 41.0 | 39.3 | 4277 | 3764 | 109 |
| BXKE-40E4000-F-1x | 80 | 480 | 34.6 | 16.6 | 2453 | 2159 | 148 |
| | | 720 | 36.4 | 26.2 | 3529 | 3106 | 135 |
| | | 960 | 38.0 | 36.5 | 4515 | 3973 | 124 |
| | | 1200 | 39.3 | 47.2 | 5409 | 4760 | 115 |
| | | 1440 | 40.7 | 58.9 | 6229 | 5482 | 106 |
| BXKE-40G3000-D-1x | 90 | 480 | 36.3 | 17.4 | 2281 | 2004 | 131 |
| | | 600 | 37.6 | 22.5 | 2755 | 2421 | 122 |
| | | 720 | 38.7 | 27.9 | 3202 | 2813 | 115 |
| | | 840 | 39.9 | 33.5 | 3643 | 3200 | 109 |
| | | 960 | 41.0 | 39.3 | 4045 | 3554 | 103 |
| BXKE-40G4000-F-1x | 90 | 480 | 34.6 | 16.6 | 2393 | 2102 | 144 |
| | | 720 | 36.4 | 26.2 | 3436 | 3019 | 131 |
| | | 960 | 38.0 | 36.5 | 4377 | 3845 | 120 |
| | | 1200 | 39.3 | 47.2 | 5266 | 4627 | 112 |
| | | 1440 | 40.7 | 58.9 | 6092 | 5353 | 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 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

| 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 DC Flux ³ $T_j = 85^\circ\text{C}$ (lm) | Typical Efficacy $T_j = 25^\circ\text{C}$ (lm/W) |
|-------------------|-----|---------------------------------|---|---|--|---|---|
| BXKE-50E3000-D-1X | 80 | 480 | 36.3 | 17.4 | 2455 | 2161 | 141 |
| | | 600 | 37.6 | 22.5 | 2980 | 2622 | 132 |
| | | 720 | 38.7 | 27.9 | 3494 | 3074 | 125 |
| | | 840 | 39.9 | 33.5 | 3925 | 3454 | 117 |
| | | 960 | 41.0 | 39.3 | 4346 | 3824 | 111 |
| BXKE-50E4000-F-1X | 80 | 480 | 34.6 | 16.6 | 2527 | 2224 | 152 |
| | | 720 | 36.4 | 26.2 | 3636 | 3200 | 139 |
| | | 960 | 38.0 | 36.5 | 4652 | 4094 | 128 |
| | | 1200 | 39.3 | 47.2 | 5573 | 4904 | 118 |
| | | 1440 | 40.7 | 58.9 | 6418 | 5648 | 110 |
| BXKE-50G3000-D-1X | 90 | 480 | 36.3 | 17.4 | 2232 | 1961 | 128 |
| | | 600 | 37.6 | 22.5 | 2696 | 2368 | 120 |
| | | 720 | 38.7 | 27.9 | 3133 | 2753 | 112 |
| | | 840 | 39.9 | 33.5 | 3564 | 3132 | 106 |
| | | 960 | 41.0 | 39.3 | 3958 | 3477 | 101 |
| BXKE-50G4000-F-1X | 90 | 480 | 34.6 | 16.6 | 2341 | 2057 | 141 |
| | | 720 | 36.4 | 26.2 | 3362 | 2954 | 128 |
| | | 960 | 38.0 | 36.5 | 4283 | 3763 | 117 |
| | | 1200 | 39.3 | 47.2 | 5153 | 4527 | 110 |
| | | 1440 | 40.7 | 58.9 | 5961 | 5237 | 101 |
| BXKE-56E3000-D-1X | 80 | 480 | 36.3 | 17.4 | 2553 | 2247 | 147 |
| | | 600 | 37.6 | 22.5 | 3102 | 2730 | 138 |
| | | 720 | 38.7 | 27.9 | 3619 | 3184 | 130 |
| | | 840 | 39.9 | 33.5 | 4096 | 3605 | 122 |
| | | 960 | 41.0 | 39.3 | 4541 | 3996 | 116 |
| BXKE-56E4000-F-1X | 80 | 480 | 34.6 | 16.6 | 2618 | 2304 | 158 |
| | | 720 | 36.4 | 26.2 | 3767 | 3315 | 144 |
| | | 960 | 38.0 | 36.5 | 4819 | 4240 | 132 |
| | | 1200 | 39.3 | 47.2 | 5773 | 5080 | 122 |
| | | 1440 | 40.7 | 58.9 | 6648 | 5850 | 113 |
| BXKE-65E3000-D-1X | 80 | 480 | 36.3 | 17.4 | 2597 | 2285 | 149 |
| | | 600 | 37.6 | 22.5 | 3157 | 2778 | 140 |
| | | 720 | 38.7 | 27.9 | 3675 | 3234 | 132 |
| | | 840 | 39.9 | 33.5 | 4173 | 3672 | 124 |
| | | 960 | 41.0 | 39.3 | 4629 | 4073 | 118 |
| BXKE-65E4000-F-1X | 80 | 480 | 34.6 | 16.6 | 2658 | 2339 | 160 |
| | | 720 | 36.4 | 26.2 | 3825 | 3366 | 146 |
| | | 960 | 38.0 | 36.5 | 4893 | 4306 | 134 |
| | | 1200 | 39.3 | 47.2 | 5862 | 5158 | 124 |
| | | 1440 | 40.7 | 58.9 | 6751 | 5941 | 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 $\pm 7\%$ tolerance on flux measurements.
3. Typical 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, $T_j = 25^\circ\text{C}$ (V) ^{1,2,3,8} | | | 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-xxx3000-D-1x | 720 | 35 | 38.7 | 42.7 | -14.4 | 0.72 |
| BXKE-xxx4000-F-1x | 960 | 34.5 | 38 | 42 | -15.5 | 0.54 |

Notes for Table 4:

1. Parts are tested in pulsed conditions. $T_j = 25^\circ\text{C}$. 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 5: Maximum Ratings

| Parameter | Maximum Rating | |
|---|---------------------|-------------------|
| LED Junction Temperature (T_j) | 140°C | |
| Storage Temperature | -40°C to +105°C | |
| Operating Case Temperature ^{1,2} (T_c) | 105°C | |
| Soldering Temperature | 350°C \leq 3.5sec | |
| | BXKE-xxx3000-D-1x | BXKE-xxx4000-F-1x |
| Maximum Drive Current ³ | 960 mA | 1440 mA |
| Maximum Reverse Voltage ⁴ | -60 V | -60V |

Notes for Table 5:

1. For the IEC 62717 requirement, please consult your Bridgelux sales representative.
2. Operating Case Temperature 105°C is with drive currents \leq 160mA. When drive current is Maximum drive current, Operating Case Temperature should be limited with \leq 90°C.
3. Arrays may be driven at higher currents however lumen maintenance may be reduced.
4. 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: E15D Forward Voltage vs. Forward Current, $T_c = 25^\circ\text{C}$

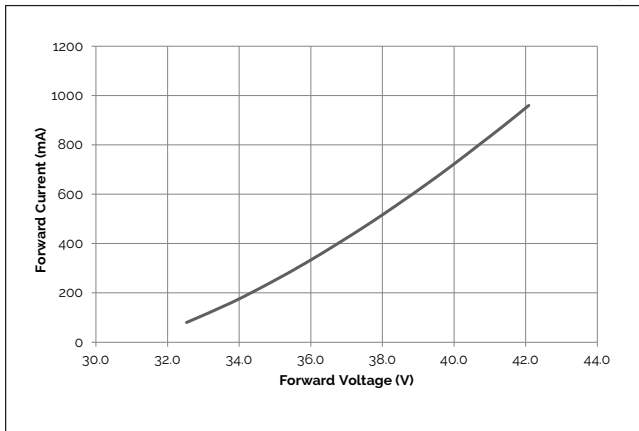


Figure 2: E15F Forward Voltage vs. Forward Current, $T_c = 25^\circ\text{C}$

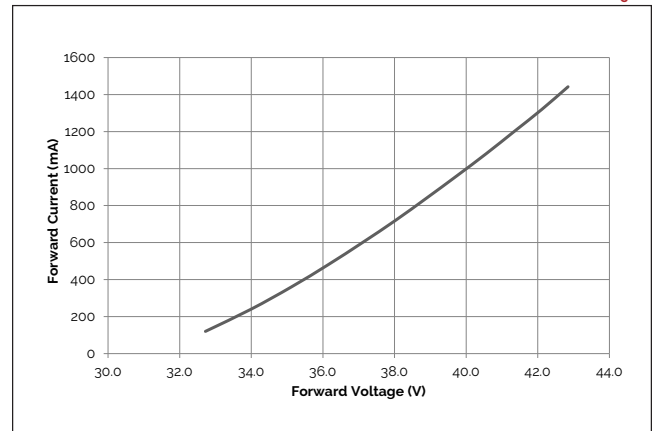


Figure 3: E15D Relative Flux vs. Drive Current $T_c = 25^\circ\text{C}$

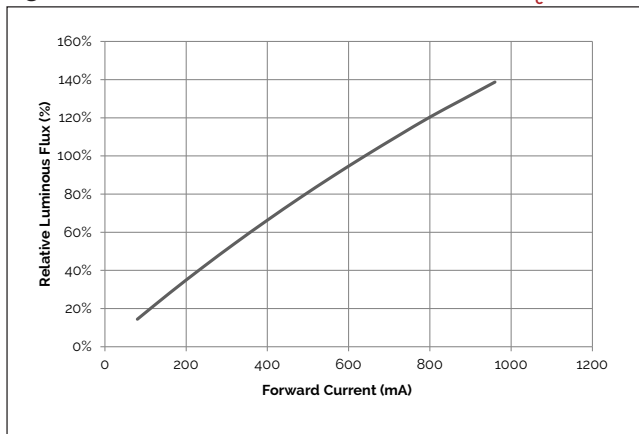


Figure 4: E15F Relative Flux vs. Drive Current $T_c = 25^\circ\text{C}$

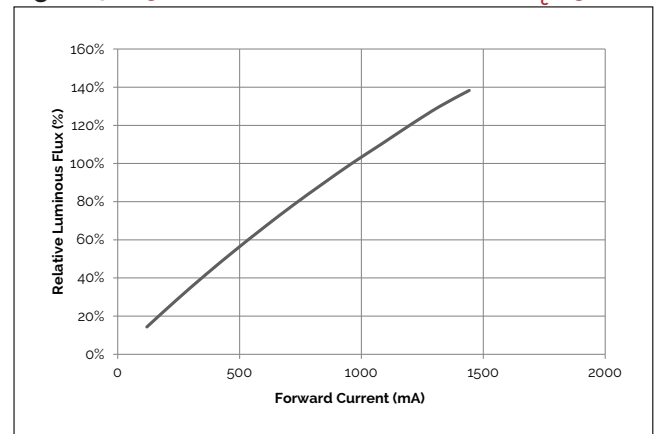


Figure 5: Typical Pulsed cxx Shift vs. T_j Temperature

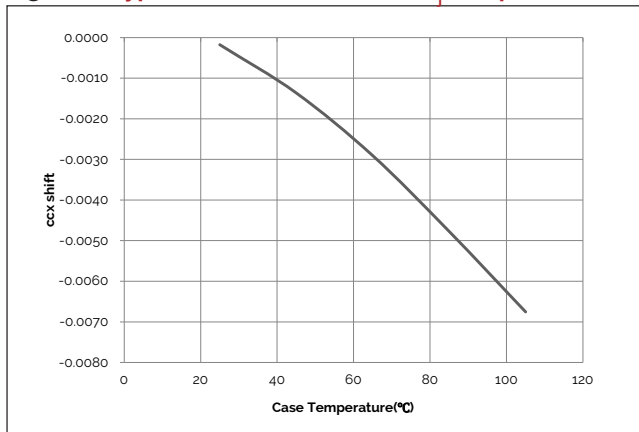
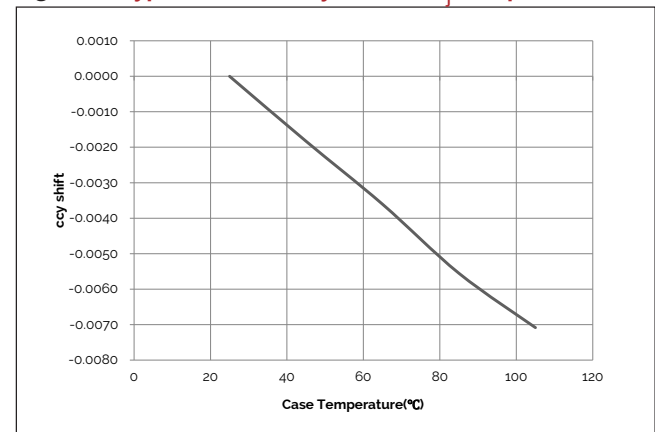


Figure 6: Typical Pulsed ccy Shift vs. T_j Temperature

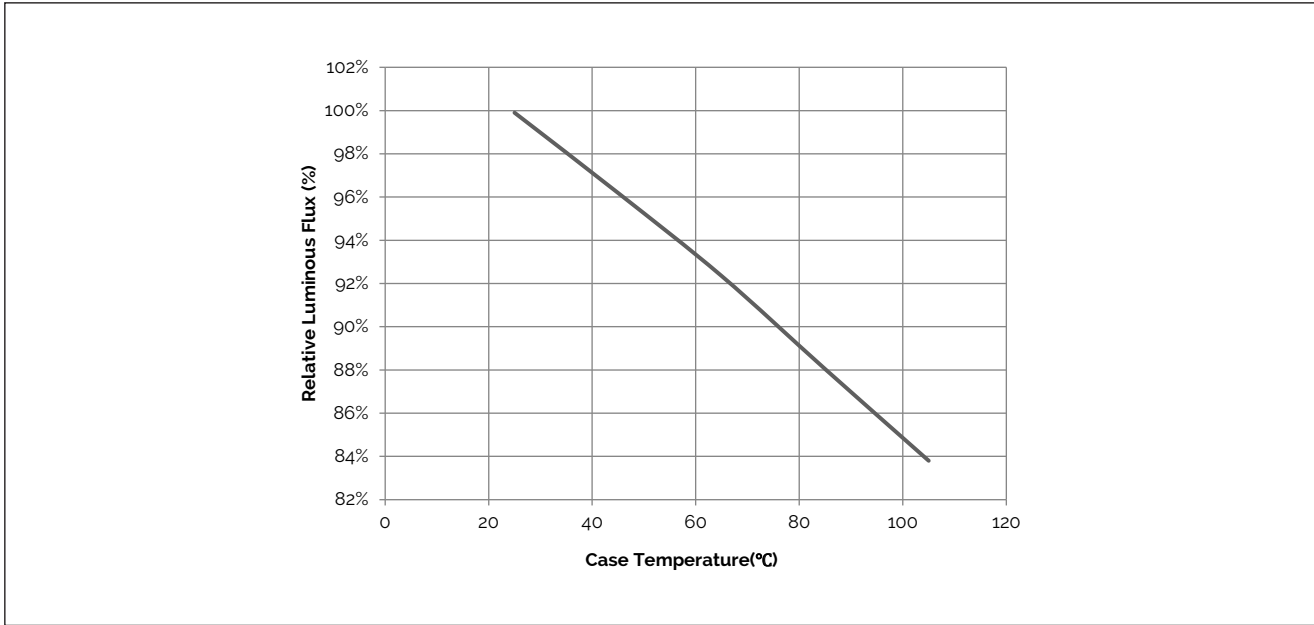


Notes for Figure 1-6:

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 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 Plused Flux vs. T_j Temperature

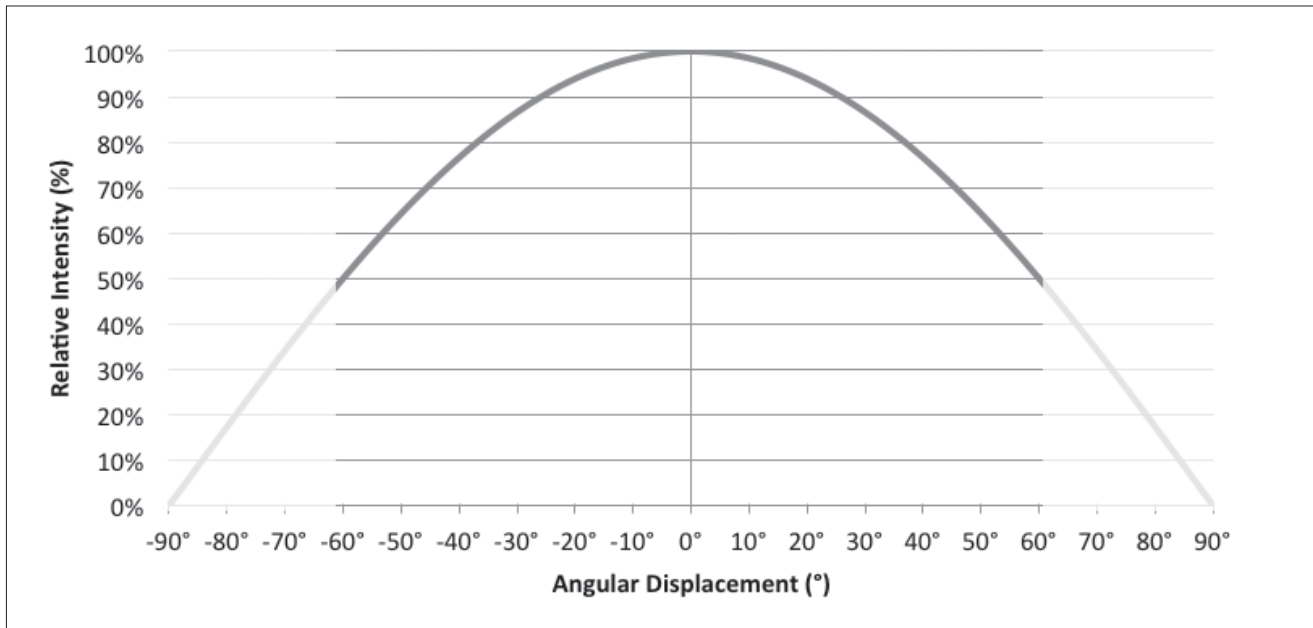


Note for Figure 7:

- 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.

Typical Radiation Pattern

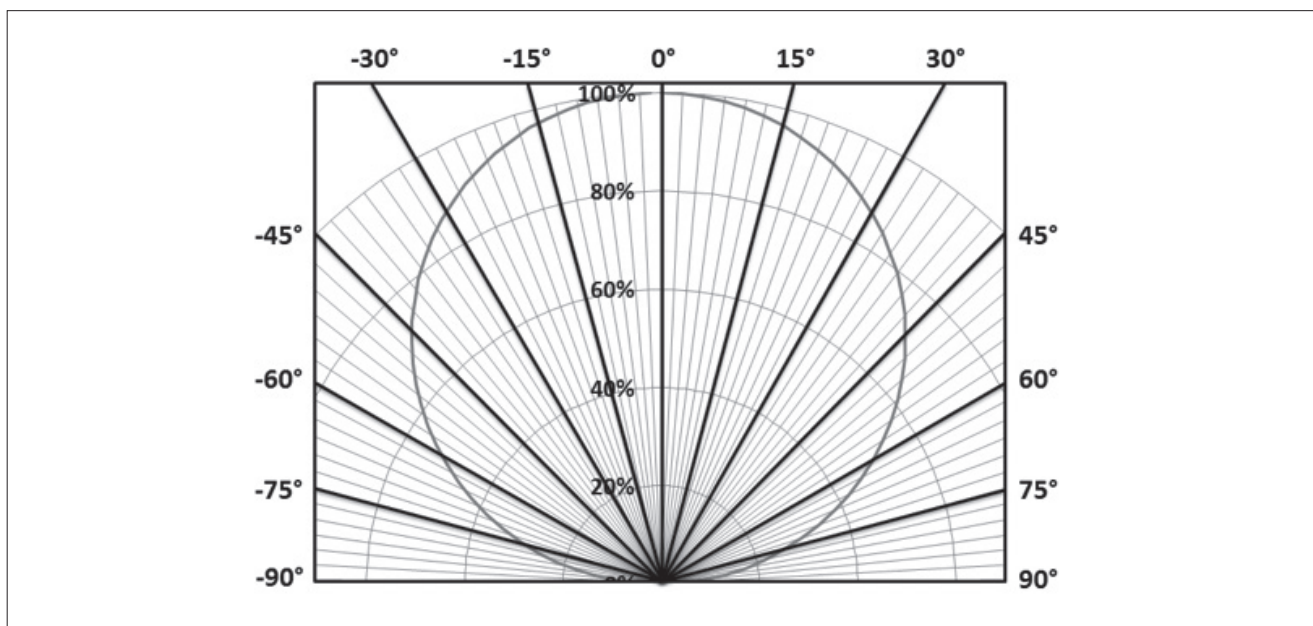
Figure 8: Typical Spatial Radiation Pattern



Notes for Figure 8:

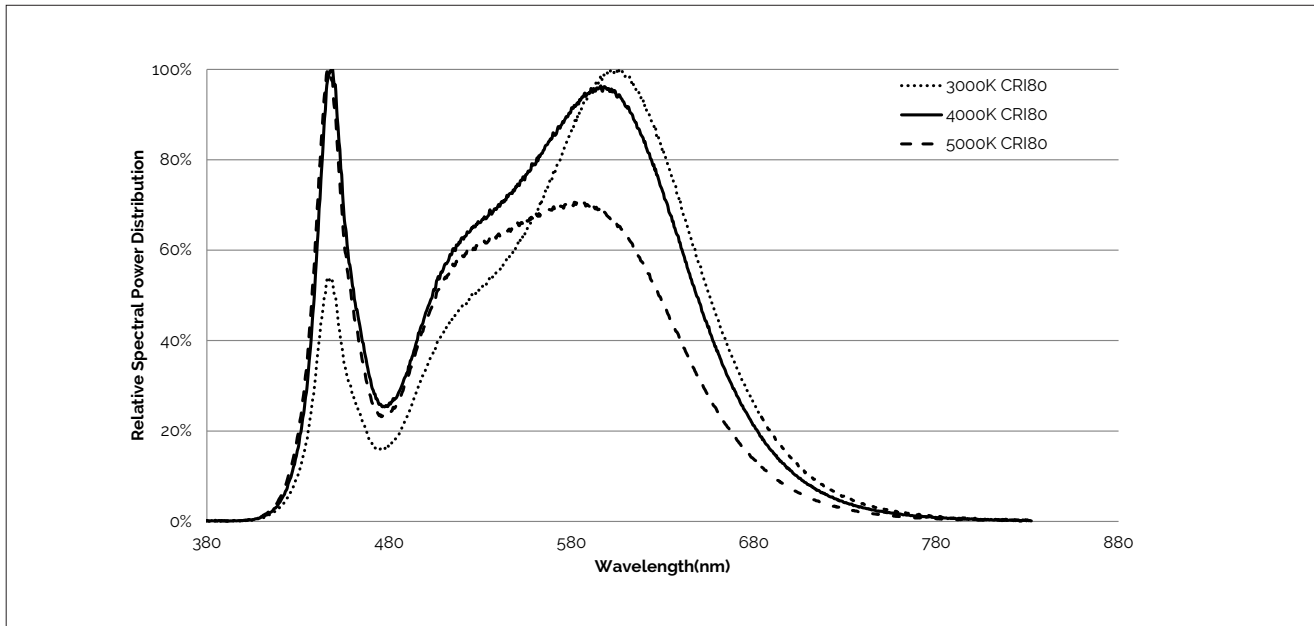
1. Typical viewing angle is 120°.
2. The viewing angle is defined as the off axis angle from the centerline where intensity is ½ of the peak value.

Figure 9: Typical Polar Radiation Pattern



Typical Color Spectrum

Figure 10: Typical Color Spectrum

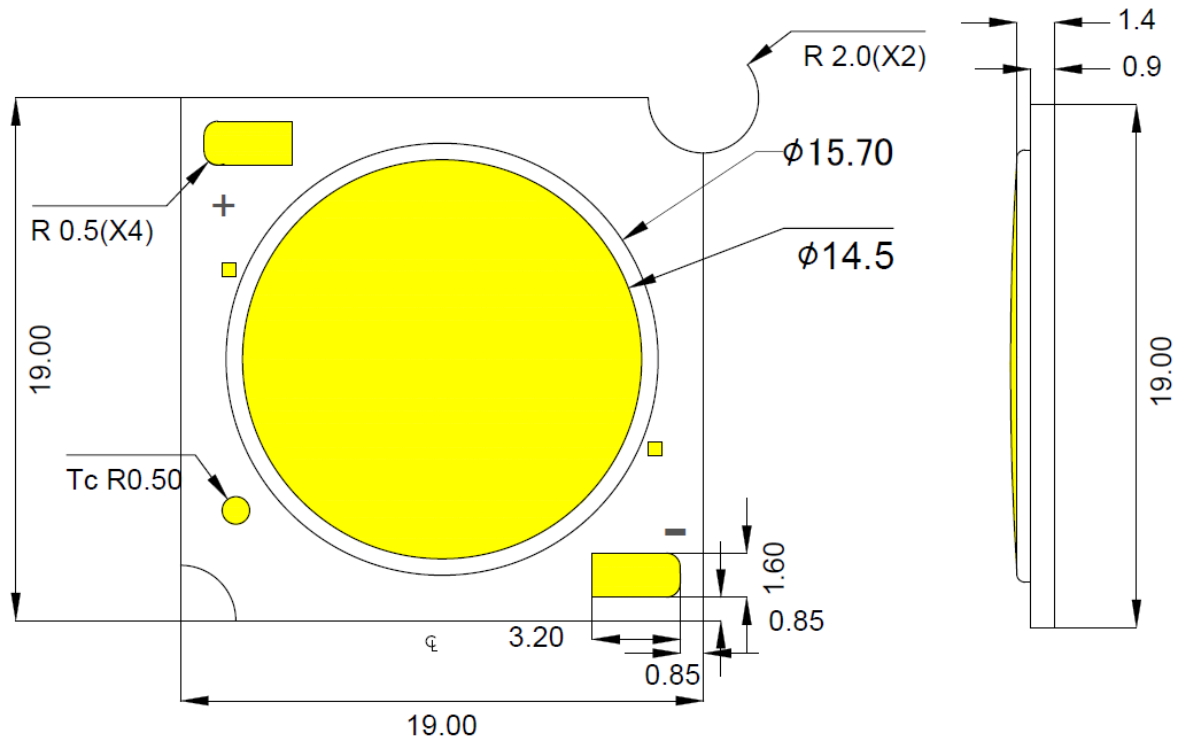


Notes for Figure 10:

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 11: Bridgelux E15 LED Array



Notes for Figure 11:

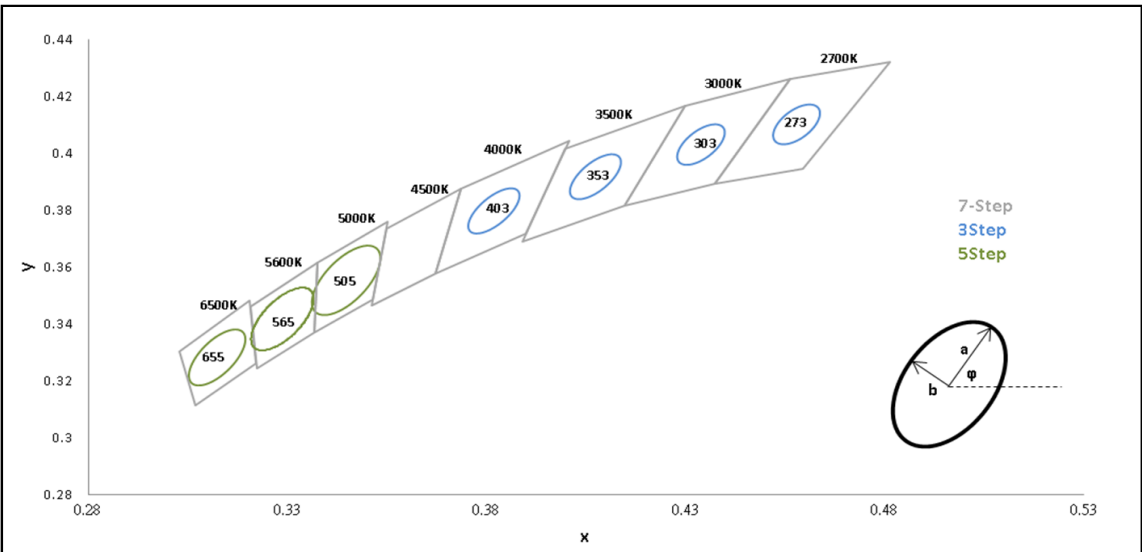
1. Drawings are not to scale.
2. Drawing dimensions are in millimeters.
3. Unless otherwise specified, tolerances are $\pm 0.1\text{mm}$.
4. Mounting holes (2X) are for M2.5 screws.
5. Screws with flat shoulders (pan, dome, button, round, truss, mushroom) provide optimal torque control. Do NOT use flat, 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 $\pm 0.2\text{mm}$.
7. Bridgelux maintains a flatness of 0.10mm across the mounting surface of the array.

Color Binning Information

Table 6: xy Bin Coordinates and Associated Typical CCT ($T_j=85^\circ\text{C}$)

| CCT | Center Point | | Degree | 3 step | | 5 step | |
|-------|--------------|--------|--------|--------------|--------|--------|--------|
| | x | y | | ($^\circ$) | a | b | a |
| 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 | 0.0110 | 0.0047 |
| 5600K | 0.3287 | 0.3417 | 59.060 | N/A | N/A | 0.0099 | 0.0042 |
| 6500K | 0.3123 | 0.3282 | 58.567 | N/A | N/A | 0.0090 | 0.0038 |

Figure 12: Typical Color Spectrum



- Notes for Figure 12:
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

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Bridgelux E Series LED Array Product Data Sheet DS441 Rev. A (02/2019)