

# Bridgelux® EB Series™ Gen 3 Thrive

Product Data Sheet DS133

Lengths: 280mm, 560mm, 1120mm

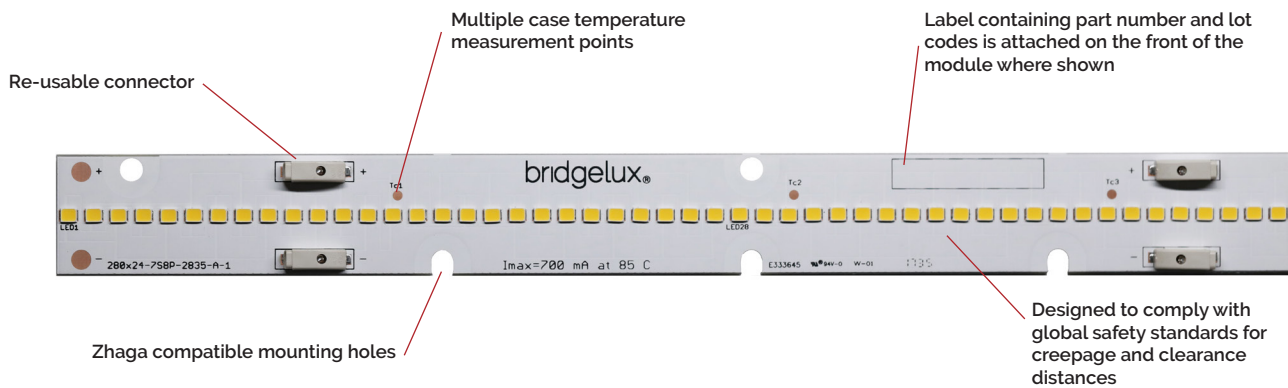
CRI: 98 Thrive

CCTs: 2700K, 3000K, 3500K, 4000K, 5000K, 5700K, 6500K



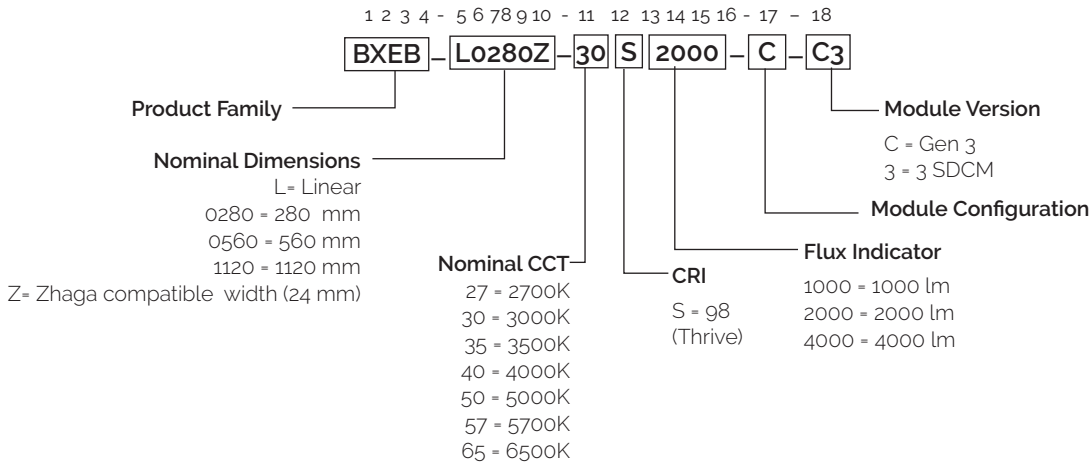
# Product Feature Map

Bridgelux EB Series Thrive modules are fully engineered devices that provide consistent thermal and optical performance on an engineered mechanical platform. The linear products incorporate several features to simplify design integration and assembly. Please visit [www.bridgelux.com](http://www.bridgelux.com) for more information on the EB Series family of products.



## Product Nomenclature

The part number designation for Bridgelux EB Series Gen 3 Thrive is explained as follows:



# Product Selection Guide

**Table 1: Product Performance at 480mA/960mA nominal ( $T_c = 25^\circ \text{C}$ )**

| Part Number              | Nominal CCT <sup>1</sup> (K) | Typical CRI | Typical Flux <sup>2,3</sup> (lm) | Nominal Drive Current (mA) | Typical $V_f$ (V) | Typical Power (W) | Typical Efficacy (lm/W) |
|--------------------------|------------------------------|-------------|----------------------------------|----------------------------|-------------------|-------------------|-------------------------|
| BXEB-L0280Z-27S1000-C-C3 | 2700                         | 98          | 1185                             | 480                        | 20.3              | 9.7               | 122                     |
| BXEB-L0280Z-30S1000-C-C3 | 3000                         |             | 1235                             |                            |                   |                   | 127                     |
| BXEB-L0280Z-35S1000-C-C3 | 3500                         |             | 1345                             |                            |                   |                   | 138                     |
| BXEB-L0280Z-40S1000-C-C3 | 4000                         |             | 1345                             |                            |                   |                   | 138                     |
| BXEB-L0280Z-50S1000-C-C3 | 5000                         |             | 1345                             |                            |                   |                   | 138                     |
| BXEB-L0280Z-57S1000-C-C3 | 5700                         |             | 1345                             |                            |                   |                   | 138                     |
| BXEB-L0280Z-65S1000-C-C3 | 6500                         |             | 1345                             |                            |                   |                   | 138                     |
| BXEB-L0560Z-27S2000-C-C3 | 2700                         | 98          | 2370                             | 960                        | 20.3              | 19.5              | 122                     |
| BXEB-L0560Z-30S2000-C-C3 | 3000                         |             | 2470                             |                            |                   |                   | 127                     |
| BXEB-L0560Z-35S2000-C-C3 | 3500                         |             | 2690                             |                            |                   |                   | 138                     |
| BXEB-L0560Z-40S2000-C-C3 | 4000                         |             | 2690                             |                            |                   |                   | 138                     |
| BXEB-L0560Z-50S2000-C-C3 | 5000                         |             | 2690                             |                            |                   |                   | 138                     |
| BXEB-L0560Z-57S2000-C-C3 | 5700                         |             | 2690                             |                            |                   |                   | 138                     |
| BXEB-L0560Z-65S2000-C-C3 | 6500                         |             | 2690                             |                            |                   |                   | 138                     |
| BXEB-L1120Z-27S4000-C-C3 | 2700                         | 98          | 4740                             | 960                        | 40.6              | 39.0              | 122                     |
| BXEB-L1120Z-30S4000-C-C3 | 3000                         |             | 4940                             |                            |                   |                   | 127                     |
| BXEB-L1120Z-35S4000-C-C3 | 3500                         |             | 5380                             |                            |                   |                   | 138                     |
| BXEB-L1120Z-40S4000-C-C3 | 4000                         |             | 5380                             |                            |                   |                   | 138                     |
| BXEB-L1120Z-50S4000-C-C3 | 5000                         |             | 5380                             |                            |                   |                   | 138                     |
| BXEB-L1120Z-57S4000-C-C3 | 5700                         |             | 5380                             |                            |                   |                   | 138                     |
| BXEB-L1120Z-65S4000-C-C3 | 6500                         |             | 5380                             |                            |                   |                   | 138                     |

Notes for Table 1:

1. Nominal CCT as defined by ANSI C78.377-2011.
2. Data is at nominal test current where temperature of center case temperature point  $T_c = 25^\circ \text{C}$ .
3. Bridgelux maintains a  $\pm 7\%$  tolerance on typical flux data (typical SMD flux bins)

# Product Selection Guide

**Table 2: Product Performance at 350mA/700mA nominal ( $T_c = 25^\circ \text{C}$ )**

| Part Number              | Nominal CCT <sup>1</sup> (K) | Typical CRI | Typical Flux <sup>2,3</sup> (lm) | Nominal Drive Current (mA) | Typical $V_f$ (V) | Typical Power (W) | Typical Efficacy (lm/W) |
|--------------------------|------------------------------|-------------|----------------------------------|----------------------------|-------------------|-------------------|-------------------------|
| BXEB-L0280Z-27S1000-C-C3 | 2700                         | 98          | 890                              | 350                        | 19.9              | 7.0               | 128                     |
| BXEB-L0280Z-30S1000-C-C3 | 3000                         |             | 930                              |                            |                   |                   | 134                     |
| BXEB-L0280Z-35S1000-C-C3 | 3500                         |             | 1010                             |                            |                   |                   | 145                     |
| BXEB-L0280Z-40S1000-C-C3 | 4000                         |             | 1010                             |                            |                   |                   | 145                     |
| BXEB-L0280Z-50S1000-C-C3 | 5000                         |             | 1010                             |                            |                   |                   | 145                     |
| BXEB-L0280Z-57S1000-C-C3 | 5700                         |             | 1010                             |                            |                   |                   | 145                     |
| BXEB-L0280Z-65S1000-C-C3 | 6500                         |             | 1010                             |                            |                   |                   | 145                     |
| BXEB-L0560Z-27S2000-C-C3 | 2700                         | 98          | 1780                             | 700                        | 19.9              | 13.9              | 128                     |
| BXEB-L0560Z-30S2000-C-C3 | 3000                         |             | 1860                             |                            |                   |                   | 134                     |
| BXEB-L0560Z-35S2000-C-C3 | 3500                         |             | 2020                             |                            |                   |                   | 145                     |
| BXEB-L0560Z-40S2000-C-C3 | 4000                         |             | 2020                             |                            |                   |                   | 145                     |
| BXEB-L0560Z-50S2000-C-C3 | 5000                         |             | 2020                             |                            |                   |                   | 145                     |
| BXEB-L0560Z-57S2000-C-C3 | 5700                         |             | 2020                             |                            |                   |                   | 145                     |
| BXEB-L0560Z-65S2000-C-C3 | 6500                         |             | 2020                             |                            |                   |                   | 145                     |
| BXEB-L1120Z-27S4000-C-C3 | 2700                         | 98          | 3560                             | 700                        | 39.8              | 27.8              | 128                     |
| BXEB-L1120Z-30S4000-C-C3 | 3000                         |             | 3720                             |                            |                   |                   | 134                     |
| BXEB-L1120Z-35S4000-C-C3 | 3500                         |             | 4040                             |                            |                   |                   | 145                     |
| BXEB-L1120Z-40S4000-C-C3 | 4000                         |             | 4040                             |                            |                   |                   | 145                     |
| BXEB-L1120Z-50S4000-C-C3 | 5000                         |             | 4040                             |                            |                   |                   | 145                     |
| BXEB-L1120Z-57S4000-C-C3 | 5700                         |             | 4040                             |                            |                   |                   | 145                     |
| BXEB-L1120Z-65S4000-C-C3 | 6500                         |             | 4040                             |                            |                   |                   | 145                     |

Notes for Table 2:

1. Nominal CCT as defined by ANSI C78.377-2011.
2. Data is at nominal test current where temperature of center case temperature point  $T_c = 25^\circ \text{C}$ .
3. Bridgelux maintains a  $\pm 7\%$  tolerance on typical flux data (typical SMD flux bins)

# Thrive Color Metrics

**Table 3: Average Spectral Difference & Color Rendering**

| CCT   | ASD | TM-30 |     | CRI |    |    |     |    |    |    |    |    |    |     |     |     |     |     |     |
|-------|-----|-------|-----|-----|----|----|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
|       |     | Rf    | Rg  | Ra  | R1 | R2 | R3  | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 | R14 | R15 |
| 2700K | 11% | 96    | 100 | 98  | 97 | 98 | 99  | 96 | 96 | 94 | 98 | 98 | 95 | 96  | 93  | 92  | 96  | 99  | 99  |
| 3000K | 10% | 97    | 100 | 98  | 97 | 98 | 98  | 97 | 97 | 96 | 99 | 99 | 97 | 98  | 94  | 96  | 97  | 98  | 99  |
| 3500K | 11% | 97    | 101 | 98  | 99 | 98 | 95  | 98 | 98 | 97 | 98 | 97 | 92 | 94  | 97  | 93  | 99  | 96  | 98  |
| 4000K | 9%  | 97    | 100 | 98  | 99 | 99 | 96  | 98 | 99 | 98 | 99 | 99 | 97 | 96  | 97  | 94  | 99  | 97  | 99  |
| 5000K | 10% | 97    | 101 | 98  | 98 | 98 | 100 | 97 | 98 | 97 | 97 | 98 | 96 | 98  | 99  | 90  | 98  | 99  | 96  |
| 5700K | 9%  | 97    | 100 | 98  | 99 | 99 | 99  | 98 | 98 | 98 | 99 | 98 | 95 | 98  | 97  | 97  | 98  | 99  | 98  |
| 6500K | 8%  | 97    | 100 | 98  | 99 | 99 | 99  | 99 | 99 | 99 | 99 | 99 | 97 | 98  | 99  | 98  | 99  | 99  | 99  |

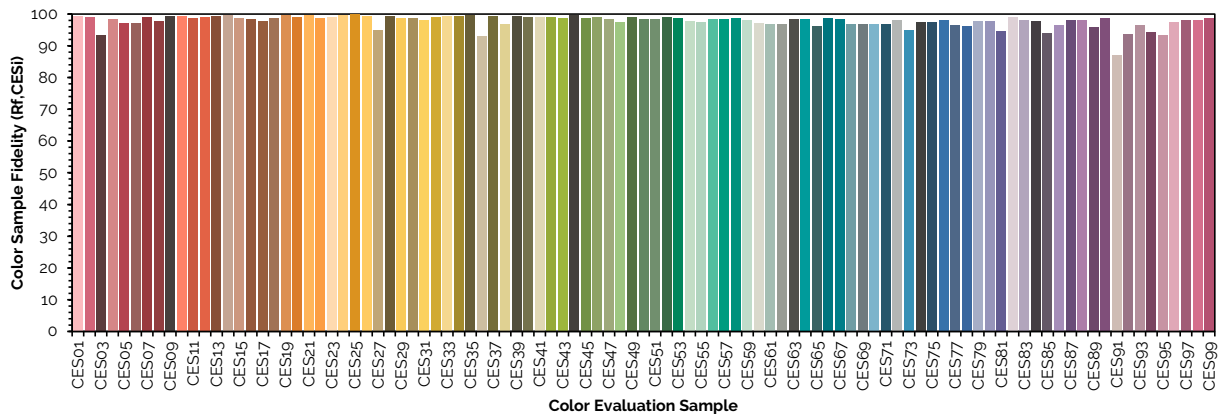
Notes for Table 3:

1. All values are typical measurements at Tsp=85C, with module drive current of 480mA (280mm) or 960mA (560mm/1120mm)
2. Bridgelux maintains a tolerance of  $\pm 3$  on Color Rendering Index R1-R15 measurements and TM-30 measurements
3. ASD (Average Spectral Difference) is a metric developed by Bridgelux that quantifies the naturalness of a light source by summing the differences between any SPD and a standardized natural light source SPD. For further information, please visit [www.bridgelux.com/products/thrive](http://www.bridgelux.com/products/thrive) and view the Bridgelux ASD White Paper.

## TM-30 Color Sample Fidelity

The following seven figures show the 99 Color Evaluation Samples (CES) defined by TM-30 for each module CCT. These are typical measurements at Tsp=85C, with module drive current of 480mA (280mm) or 960mA (560mm/1120mm)

**Figure 1: 2700K TM-30 Color Sample Fidelity**



# Thrive Color Metrics

Figure 2: 3000K TM-30 Color Sample Fidelity

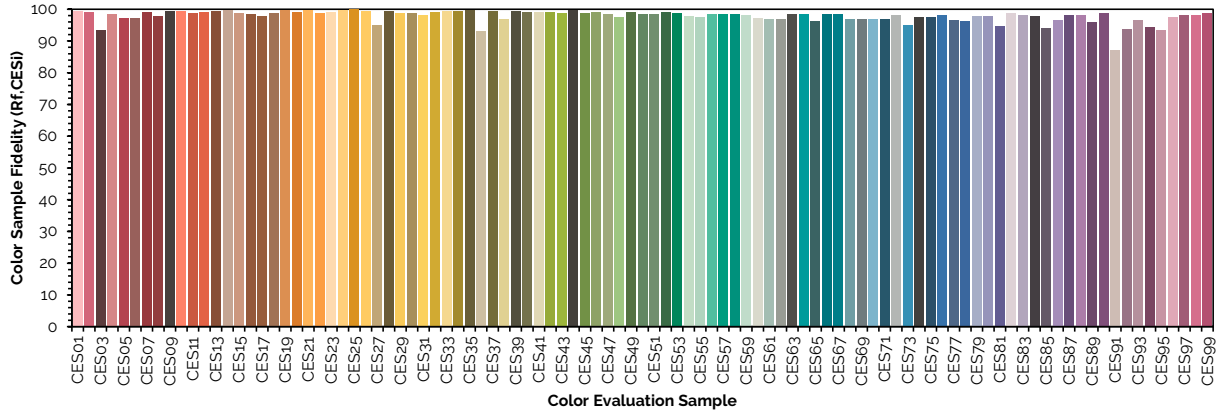


Figure 3: 3500K TM-30 Color Sample Fidelity

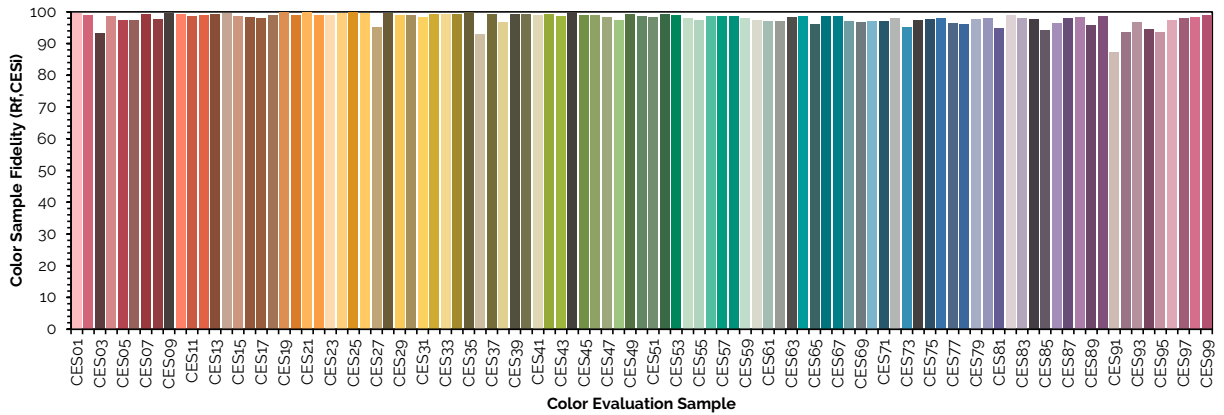
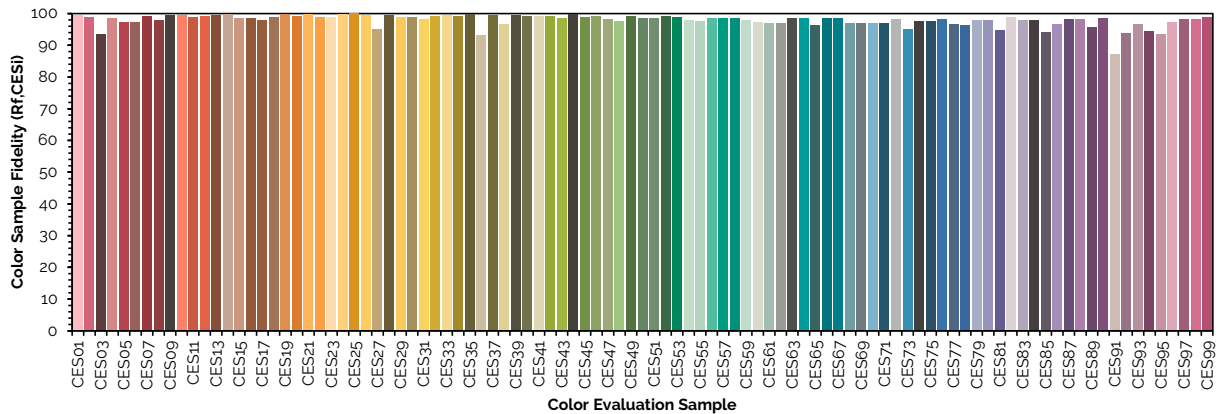


Figure 4: 4000K TM-30 Color Sample Fidelity



# Thrive Color Metrics

Figure 5: 5000K TM-30 Color Sample Fidelity

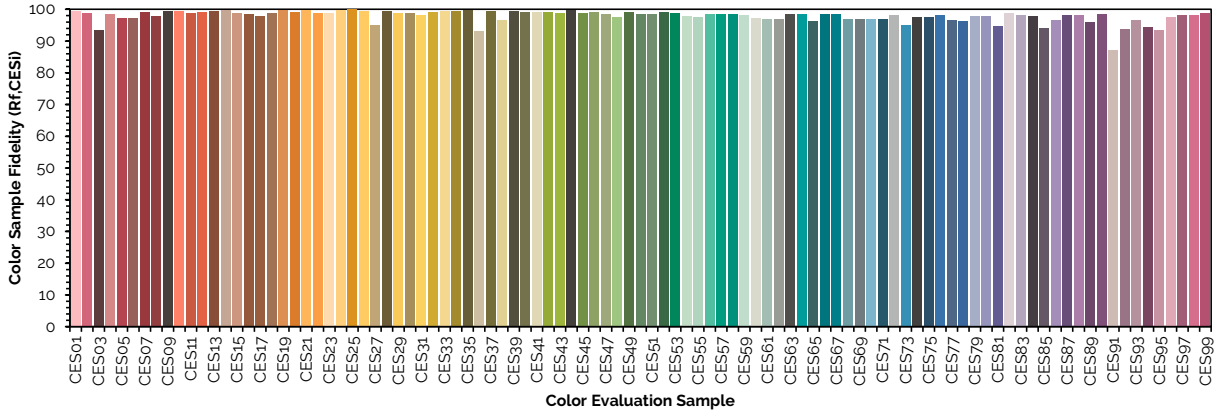


Figure 6: 5700K TM-30 Color Sample Fidelity

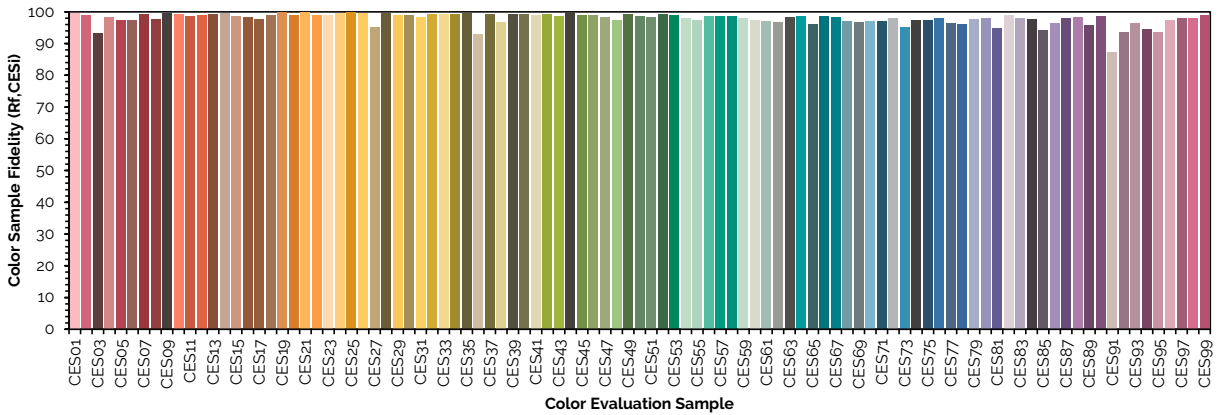
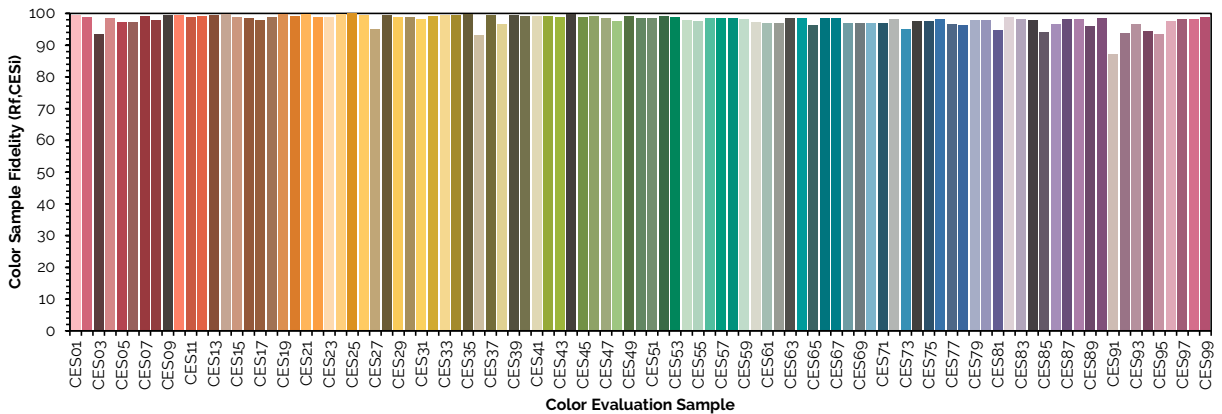


Figure 7: 6500K TM-30 Color Sample Fidelity



# Electrical Characteristics

**Table 4: Electrical Characteristics**

| Part Number              | Drive Current (mA) | Forward Voltage<br>$T_{c2} = 25^{\circ} \text{ C (V)}$ <sup>1, 2, 3</sup> |         |         | Typical Coefficient of Forward Voltage <sup>4</sup><br>$\Delta V_f / \Delta T$<br>(mV/ $^{\circ} \text{ C}$ ) | Driver Selection Voltages <sup>5</sup> (V)            |   |
|--------------------------|--------------------|---|---------|---------|---|---|---|
|                          |                    | Minimum   | Typical | Maximum |   | $V_f$ Min, Hot<br>$T_{c2} = 85^{\circ} \text{ C (V)}$ | $V_f$ Max, Cold<br>$T_{c2} = -40^{\circ} \text{ C (V)}$ |
| BXEB-L0280Z-xxS1000-C-C3 | 350                | 18.5  | 19.9    | 21.3    | -8.5  | 18.0  | 21.8  |
|                          | 480                | 18.9  | 20.3    | 21.7    |   | 18.4  | 22.3  |
|                          | 700                | 19.4  | 20.9    | 22.4    |   | 18.9  | 22.9  |
|                          | 960                | 19.9  | 21.4    | 22.9    |   | 19.4  | 23.5  |
| BXEB-L0560Z-xxS2000-C-C3 | 700                | 18.5  | 19.9    | 21.3    | -8.5  | 18.0  | 21.8  |
|                          | 960                | 18.9  | 20.3    | 21.7    |   | 18.4  | 22.3  |
|                          | 1400               | 19.4  | 20.9    | 22.4    |   | 18.9  | 22.9  |
|                          | 1920               | 19.9  | 21.4    | 22.9    |   | 19.4  | 23.5  |
| BXEB-L1120Z-xxS4000-C-C3 | 700                | 37.0  | 39.8    | 42.6    | -17.0   | 36.0  | 43.7  |
|                          | 960                | 37.8  | 40.6    | 43.4    |   | 36.7  | 44.5  |
|                          | 1400               | 39.0  | 41.9    | 44.8    |   | 37.9  | 45.9  |
|                          | 1920               | 39.9  | 42.9    | 45.9    |   | 38.9  | 47.0  |

Notes for Table 4:

1. Voltage minimum and maximum are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a tolerance of  $\pm 0.1 \text{ V}$  on forward voltage data.
3. This product has been designed and manufactured per IEC 62031:2018. The working voltage designated for the insulation is 60 V d.c. The maximum allowable voltage across the module must be determined in the end product application.
4. Typical coefficient of forward voltage tolerance is  $\pm 0.1 \text{ mV}$  for nominal current.
5.  $V_f$  min hot and max cold values are provided as reference only and are not guaranteed. 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  |                          |                          |
|---|---|--------------------------|--------------------------|
| Storage Temperature                                       | -40°C to +85°C  |                          |                          |
| Operating Case Temperature <sup>2</sup> (T <sub>c</sub> ) | 85°C  |                          |                          |
| Soldering Temperature                                     | 350°C or lower for a maximum of 5 seconds             |                          |                          |
| Maximum Reverse Voltage                                   | Modules are not designed to be driven in reverse bias |                          |                          |
|   | BXEB-L0280Z-xxS1000-C-C3                              | BXEB-L0560Z-xxS2000-C-C3 | BXEB-L1120Z-xxS4000-C-C3 |
| Maximum Drive Current                                     | 960 mA  | 1920 mA                  | 1920 mA                  |

Notes for Table 5

1. For IEC 62717 requirement, please consult your Bridgelux sales representative.
2. Lumen maintenance (L70) and lifetime predictions are valid for drive current and case temperature conditions used for LM-80 testing as included in the applicable LM-80 test report for the SMDs used in the modules. Contact your Bridgelux sales representatives for LM-80 report.

# Performance Curves

Figure 8: 280mm Current vs. Forward Voltage,  $T_c=25^\circ\text{C}$

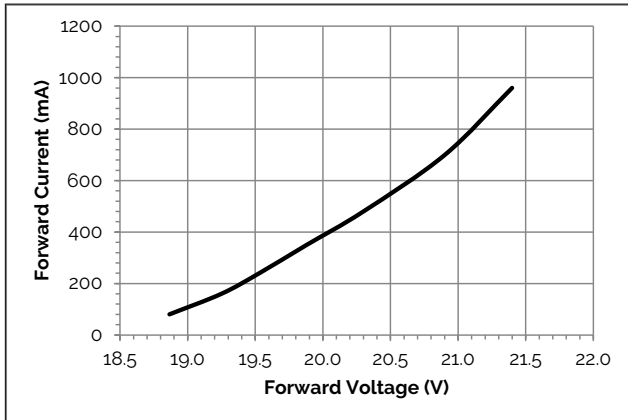


Figure 9: 280mm Relative Flux vs. Current,  $T_c=25^\circ\text{C}$

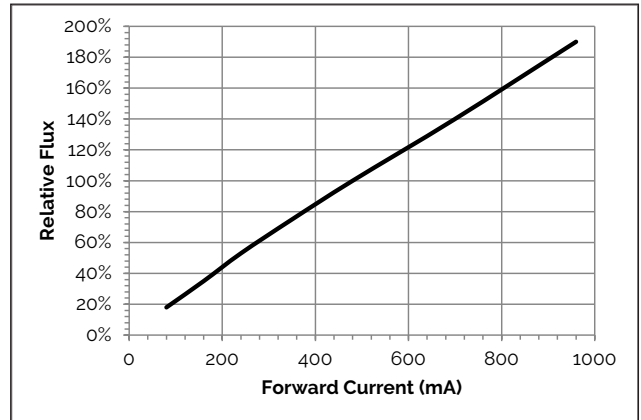


Figure 10: 560mm Current vs. Forward Voltage,  $T_c=25^\circ\text{C}$

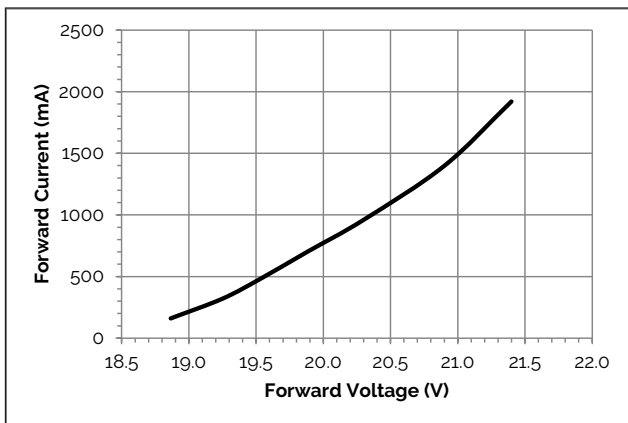


Figure 11: 560mm Relative Flux vs. Current,  $T_c=25^\circ\text{C}$

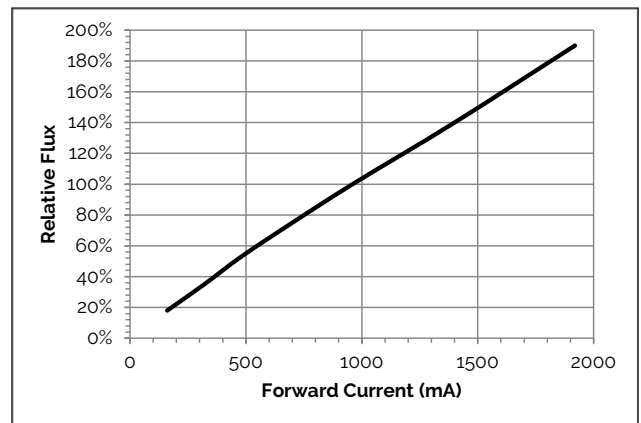


Figure 12: 1120mm Current vs. Forward Voltage,  $T_c=25^\circ\text{C}$

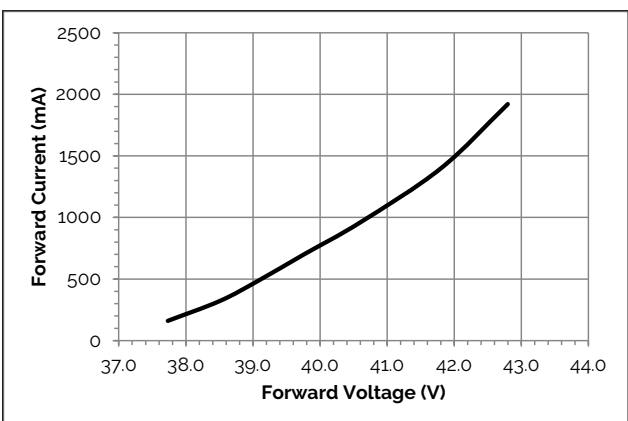
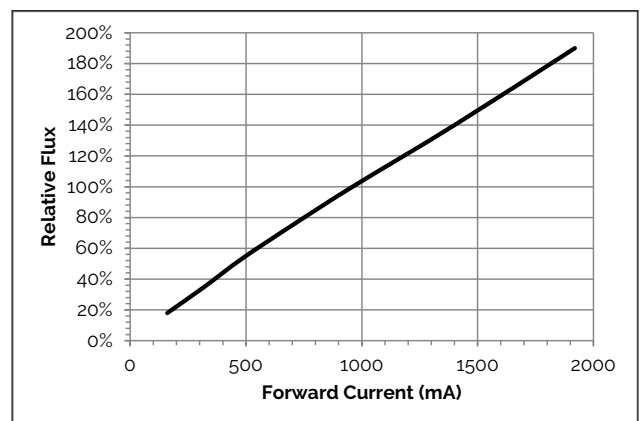


Figure 13: 1120mm Relative Flux vs. Current,  $T_c=25^\circ\text{C}$



# Performance Curves

Figure 14: Relative Voltage vs. Case Temperature

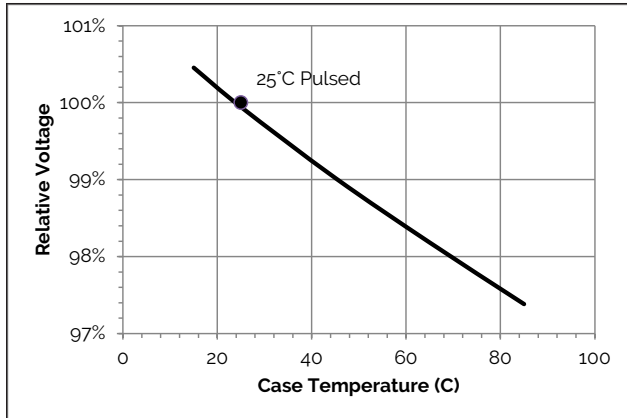
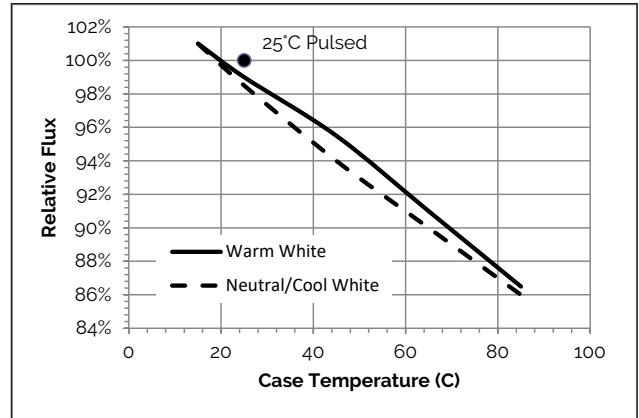
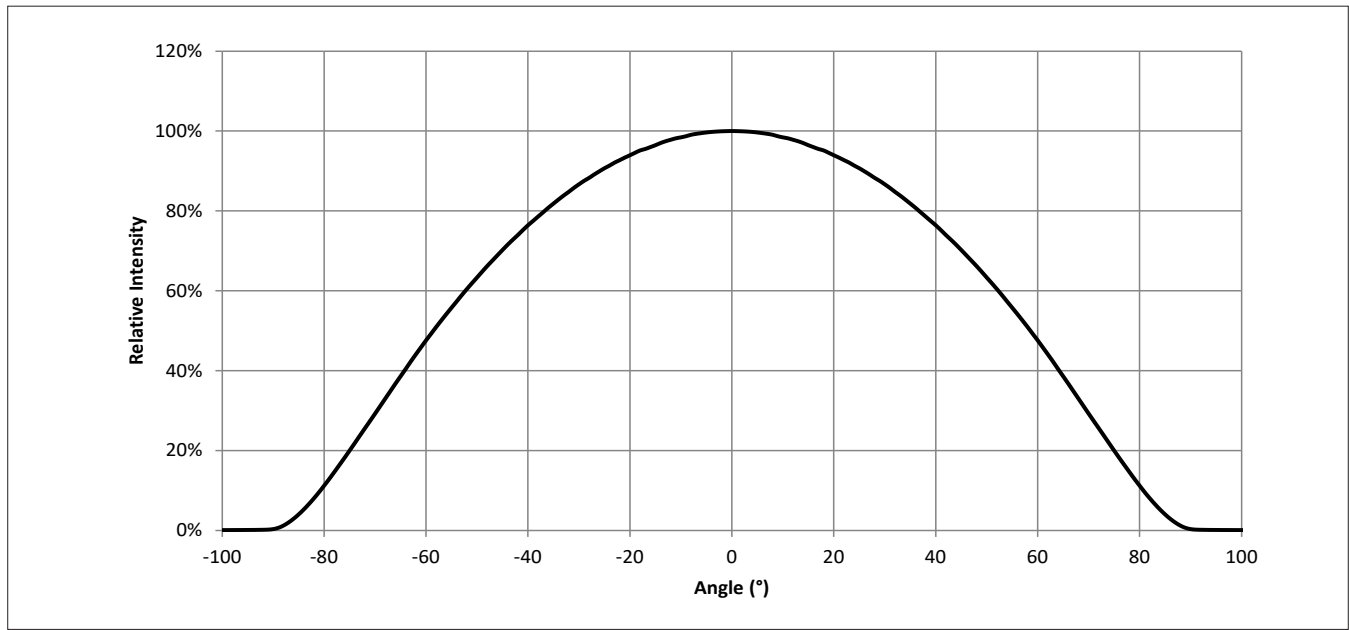


Figure 15: Relative Flux vs. Case Temperature



# Typical Radiation Pattern

**Figure 16: Typical Spatial Radiation Pattern**

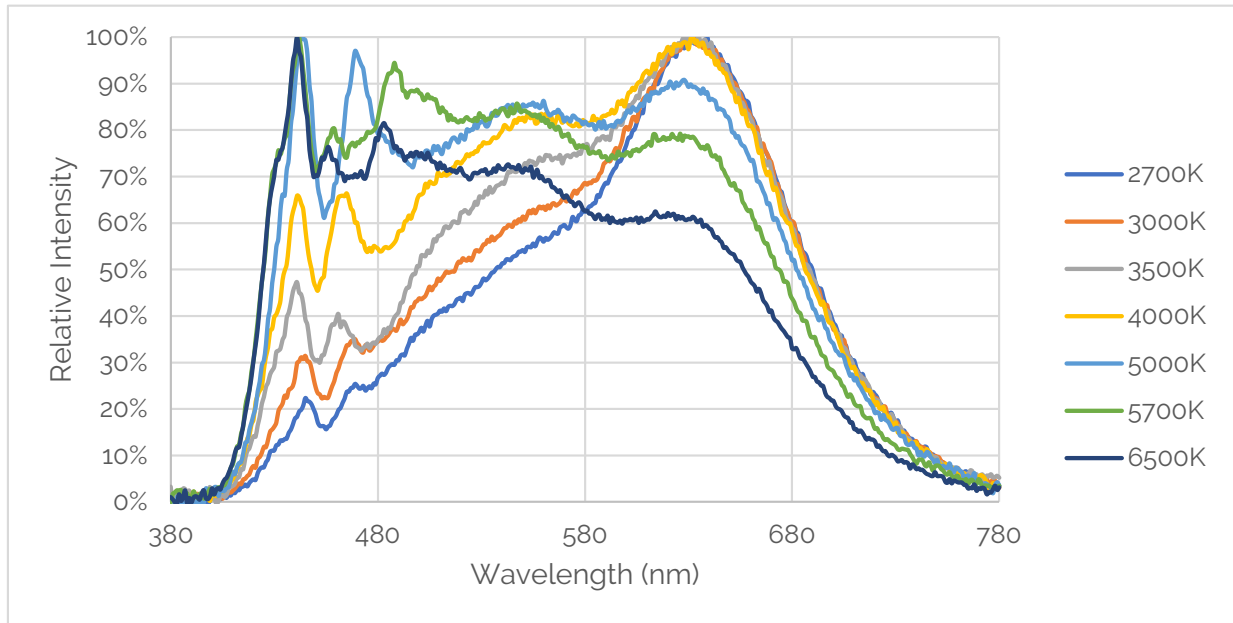


Notes for Figure 16:

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

# Typical Color Spectrum

Figure 17: Typical Spectral Power Distribution

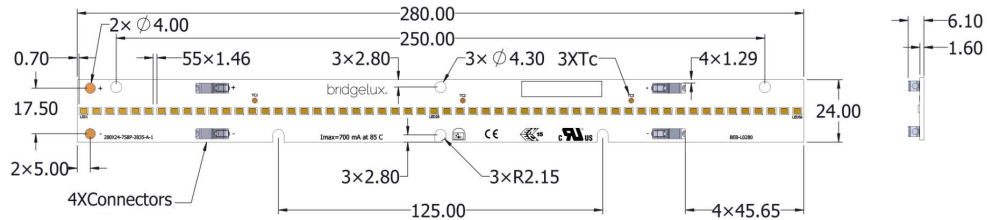


Note for Figure 17:

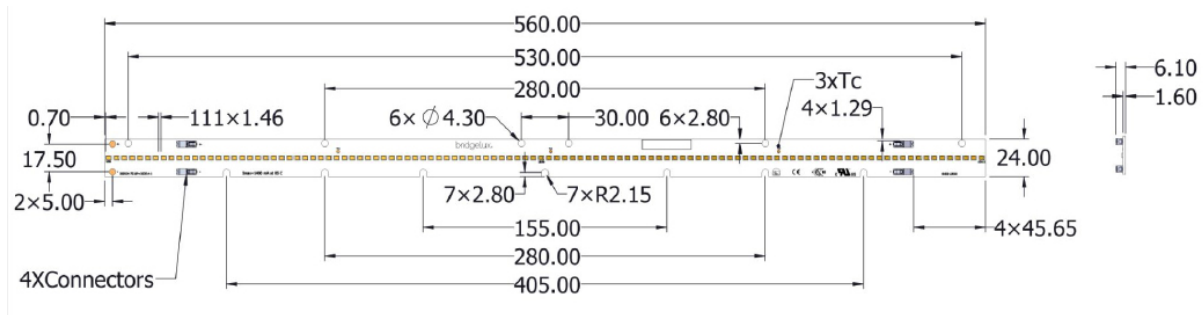
1. Color spectra measured at nominal current for  $T_c = 65^\circ\text{C}$

# Mechanical Dimensions

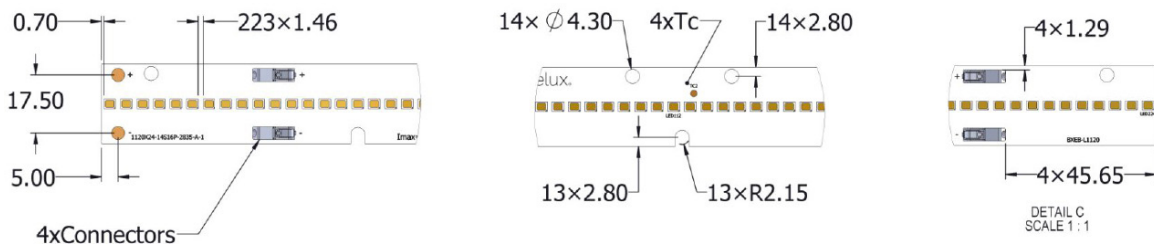
**Figure 18: Drawing Overview for 280mm**



**Figure 19: Drawing Overview for 560mm**



**Figure 20: Drawing Overview for 1120mm**



Notes for Figures 18-20:

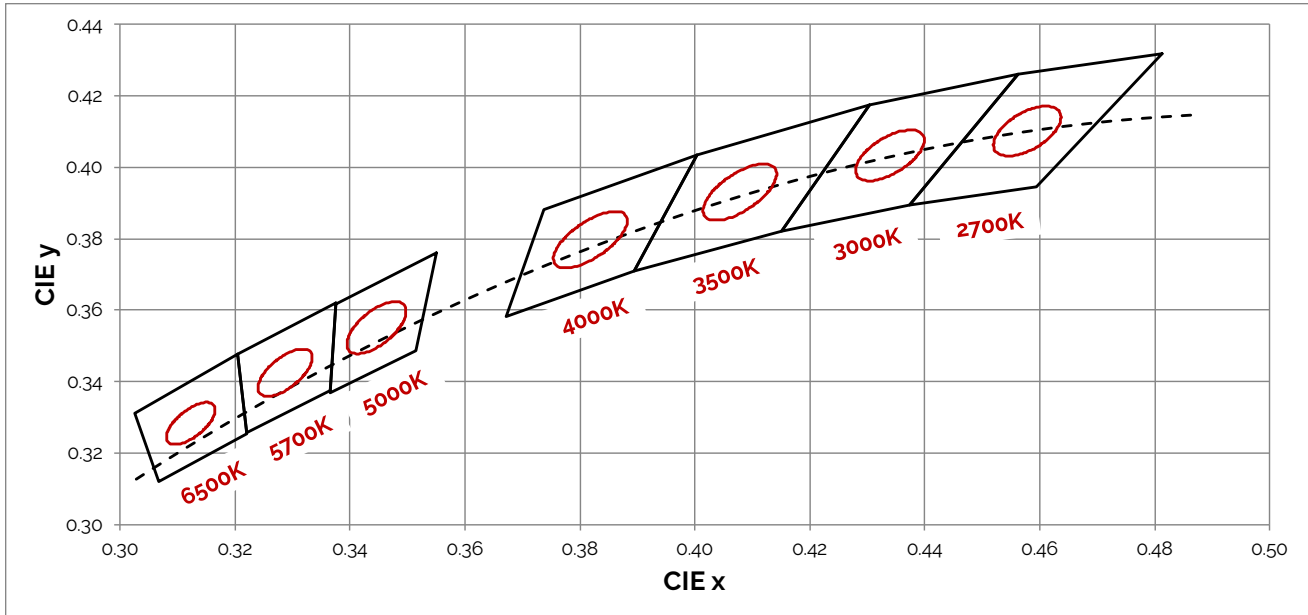
1. Solder pads are labeled "+" to denote positive polarity, and "-" to denote negative polarity.
2. Drawing dimensions are in millimeters.
3. Refer to Bridgelux assembly drawing 15-000682, 15-000683, and 15-000684 for complete product configuration

**Table 6: Module Dimensions & Connector Wiring**

| Parameter                | BXEB-L0280Z-xxS1000-C-C3 | BXEB-L0560Z-xxS2000-C-C3 | BXEB-L1120Z-xxS4000-C-C3 |
|--------------------------|--------------------------|--------------------------|--------------------------|
| Linear length            | 280.0 mm                 | 560.0 mm                 | 1120.0 mm                |
| Linear width             |                          | 24 mm                    |                          |
| Overall thickness        |                          | 6.1 mm                   |                          |
| PCB thickness            |                          | 1.6 mm                   |                          |
| Input wire cross-section |                          | 18-24 AWG                |                          |
| Wire strip length        |                          | 7-9 mm                   |                          |

# Color Binning Information

**Figure 21: 3 SDCM Color Bins in CIE 1931 xy Color Space**



**Table 7: Bin Coordinates and Associated Typical CCT**

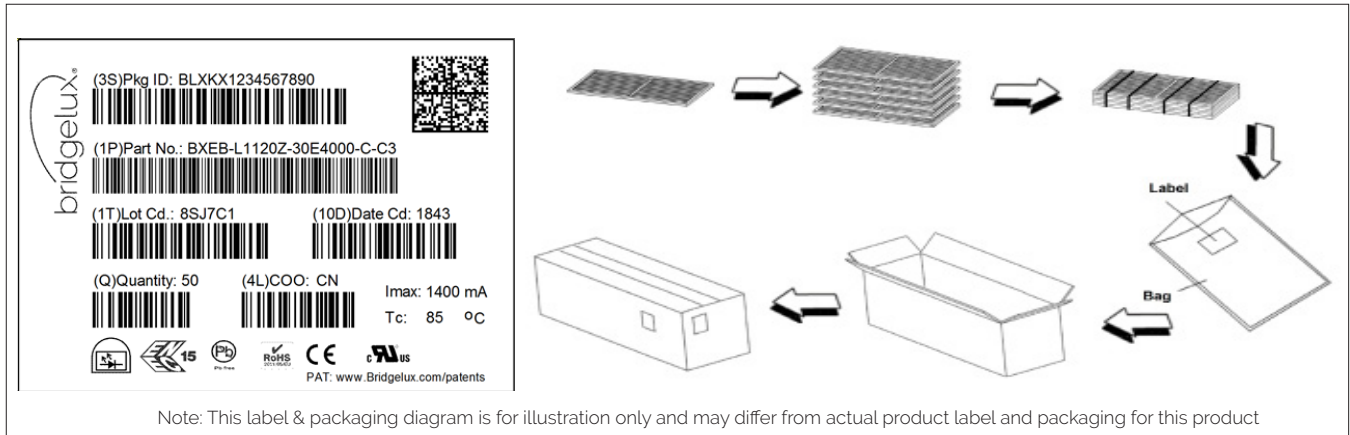
| CCT   | Color Consistency | CIE Center Point (x, y) | Corresponding CCT Range |
|-------|-------------------|-------------------------|-------------------------|
| 2700K | 3 SDCM            | (0.458, 0.410)          | 2651K - 2794K           |
| 3000K | 3 SDCM            | (0.434, 0.403)          | 2968K - 3136K           |
| 3500K | 3 SDCM            | (0.407, 0.392)          | 3369K - 3586K           |
| 4000K | 3 SDCM            | (0.382, 0.380)          | 3851K - 4130K           |
| 5000K | 3 SDCM            | (0.3445, 0.355)         | 4835K - 5215K           |
| 5700K | 3 SDCM            | (0.329, 0.342)          | 5490K - 5820K           |
| 6500K | 3 SDCM            | (0.312, 0.328)          | 6250K - 6745K           |

Notes for Table 7:

1. Color binning at solder point temperature  $T_{sp}$  of SMDs at 85°C.
2. Bridgelux maintains a tolerance of  $\pm 0.007$  on x and y color coordinates in the CIE 1931 color space.

# Packaging and Labeling

**Figure 22: EB Series Packaging and Labeling**



**Table 8: Packaging Structure**

| Box Parameter   | BXEB-L0280Z-xxS1000-C-C3    | BXEB-L0560Z-xxS2000-C-C3    | BXEB-L1120Z-xxS4000-C-C3     |
|-----------------|-----------------------------|-----------------------------|------------------------------|
| Module Quantity | 200                         | 100                         | 100                          |
| Dimensions      | 34.6 cm x 29.6 cm x 16.9 cm | 60.0 cm x 19.4 cm x 16.9 cm | 115.9 cm x 19.4 cm x 16.9 cm |
| Weight          | 7.9 kg                      | 7.9 kg                      | 15.6 kg                      |

## Product Labeling

Bridgelux EB Series modules contain a label on the front to help with product identification. In addition to the product identification markings, Bridgelux EB Series modules 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 module.



EB Series Thrive  
1ft 2000lm 960mA

Customer Use- 2D Barcode  
Scannable barcode provides  
product part number and other  
Bridgelux internal production  
information.



# Design Resources

## Application Notes

Bridgelux has developed a comprehensive set of application notes and design resources to assist customers in successfully designing with the EB Series product family. For a list of resources under development, visit [www.bridgelux.com](http://www.bridgelux.com).

## Optical Source Models

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

## 3D CAD Models

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

# Precautions

## CAUTION: CHEMICAL EXPOSURE HAZARD

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

## CAUTION: EYE SAFETY

Eye safety classification for the use of Bridgelux EB Series is in accordance with IEC/TR62778: Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires. EB Series linears are classified as Risk Group 1 when operated at or below the maximum drive current. Please use appropriate precautions. It is important that employees working with LEDs are trained to use them safely.

## CAUTION: RISK OF BURN

Do not touch the EB Series linears during operation. Allow the linear to cool for a sufficient period of time before handling. The EB Series linears 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 linear or apply stress to the LES (yellow phosphor resin area). Contact may cause damage to the linear.

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 EB Series linear. Use the mechanical features of the linear housing, edges and/or mounting holes to locate and secure optical devices as needed.

# Disclaimers

## STANDARD TEST CONDITIONS

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

## 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.

# 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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