



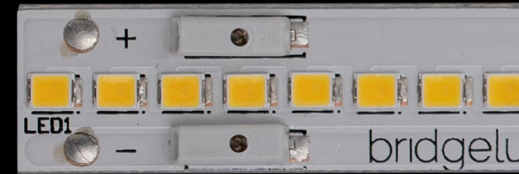
# Bridgelux® EB Series™ Slim Gen 3

Product Data Sheet DS171



# Introduction

EB Series™



EB Slim Gen 3 linear modules are designed for use in premium indoor applications where high efficacy is required. The new generation uses the high-efcacy SMDs to achieve over 200lm/W, which enables designers and fixture manufacturers to meet DLC Premium requirements. They are designed for linear troffers, pendants and other luminaires in indoor commercial applications.

Available in 340 mm, 590 mm, and 1190 mm lengths, the modules can be connected end-to-end thereby providing flexibility in designing luminaires. The "slim" width of the module enables easy integration into space constrained luminaires. These modules are easily mountable and offer reusable poke-in connectors. The modules have long lifetimes of greater than 50,000 hours.

## Features

- High efficacy of up to 200 lm/W (nominal)
- Available in both 80 CRI and 90 CRI
- Available in a variety of color temperatures from 2700K to 5700K
- Wide lumen range with 2.4x overdrive capability
- Long lifetime (L80, B50 > 50,000 hours)

## Benefits

- Achieve over 200 lm/W by under-driving
- Heat-sinking may not be required at low drive currents
- Reliable use at elevated currents for greater design flexibility
- Easy installation using mounting holes and poke-in connectors



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# Product Selection Guide

**Table 1: Product Performance ( $T_c = 25^\circ\text{C}$ )**

| Part Number              | Nominal CCT <sup>1</sup> (K) | Min CRI | Typical Flux <sup>2,3</sup><br>$T_c = 25^\circ\text{C}$<br>(lm) | Nominal Drive Current (mA) | Typical $V_f$ (V) | Typical Power (W) | Typical Efficacy (lm/W) |
|--------------------------|------------------------------|---------|---|----------------------------|-------------------|-------------------|-------------------------|
| BXEB-L0340U-27E0750-C-C3 | 2700                         | 80      | 1360  | 700                        | 10.9              | 7.6               | 178                     |
| BXEB-L0340U-27G0750-C-C3 |                              | 90      | 1190  |                            |                   |                   | 156                     |
| BXEB-L0340U-30E0750-C-C3 | 3000                         | 80      | 1425  |                            |                   |                   | 186                     |
| BXEB-L0340U-30G0750-C-C3 |                              | 90      | 1255  |                            |                   |                   | 164                     |
| BXEB-L0340U-35E0750-C-C3 | 3500                         | 80      | 1425  |                            |                   |                   | 186                     |
| BXEB-L0340U-35G0750-C-C3 |                              | 90      | 1255  |                            |                   |                   | 164                     |
| BXEB-L0340U-40E0750-C-C3 | 4000                         | 80      | 1530  |                            |                   |                   | 200                     |
| BXEB-L0340U-40G0750-C-C3 |                              | 90      | 1255  |                            |                   |                   | 164                     |
| BXEB-L0340U-50E0750-C-C3 | 5000                         | 80      | 1530  |                            |                   |                   | 200                     |
| BXEB-L0340U-50G0750-C-C3 |                              | 90      | 1255  |                            |                   |                   | 164                     |
| BXEB-L0340U-57E0750-C-C3 | 5700                         | 80      | 1530  |                            |                   |                   | 200                     |
| BXEB-L0340U-57G0750-C-C3 |                              | 90      | 1255  |                            |                   |                   | 164                     |
| BXEB-L0590U-27E1500-C-C3 | 2700                         | 80      | 2380  | 700                        | 19.1              | 13.4              | 178                     |
| BXEB-L0590U-27G1500-C-C3 |                              | 90      | 2085  |                            |                   |                   | 156                     |
| BXEB-L0590U-30E1500-C-C3 | 3000                         | 80      | 2490  |                            |                   |                   | 186                     |
| BXEB-L0590U-30G1500-C-C3 |                              | 90      | 2195  |                            |                   |                   | 164                     |
| BXEB-L0590U-35E1500-C-C3 | 3500                         | 80      | 2490  |                            |                   |                   | 186                     |
| BXEB-L0590U-35G1500-C-C3 |                              | 90      | 2195  |                            |                   |                   | 164                     |
| BXEB-L0590U-40E1500-C-C3 | 4000                         | 80      | 2675  |                            |                   |                   | 200                     |
| BXEB-L0590U-40G1500-C-C3 |                              | 90      | 2195  |                            |                   |                   | 164                     |
| BXEB-L0590U-50E1500-C-C3 | 5000                         | 80      | 2675  |                            |                   |                   | 200                     |
| BXEB-L0590U-50G1500-C-C3 |                              | 90      | 2195  |                            |                   |                   | 164                     |
| BXEB-L0590U-57E1500-C-C3 | 5700                         | 80      | 2675  |                            |                   |                   | 200                     |
| BXEB-L0590U-57G1500-C-C3 |                              | 90      | 2195  |                            |                   |                   | 164                     |
| BXEB-L1190U-27E3000-C-C3 | 2700                         | 80      | 4760  | 700                        | 38.2              | 26.8              | 178                     |
| BXEB-L1190U-27G3000-C-C3 |                              | 90      | 4160  |                            |                   |                   | 155                     |
| BXEB-L1190U-30E3000-C-C3 | 3000                         | 80      | 4980  |                            |                   |                   | 186                     |
| BXEB-L1190U-30G3000-C-C3 |                              | 90      | 4390  |                            |                   |                   | 164                     |
| BXEB-L1190U-35E3000-C-C3 | 3500                         | 80      | 4980  |                            |                   |                   | 186                     |
| BXEB-L1190U-35G3000-C-C3 |                              | 90      | 4390  |                            |                   |                   | 164                     |
| BXEB-L1190U-40E3000-C-C3 | 4000                         | 80      | 5350  |                            |                   |                   | 200                     |
| BXEB-L1190U-40G3000-C-C3 |                              | 90      | 4390  |                            |                   |                   | 164                     |
| BXEB-L1190U-50E3000-C-C3 | 5000                         | 80      | 5350  |                            |                   |                   | 200                     |
| BXEB-L1190U-50G3000-C-C3 |                              | 90      | 4390  |                            |                   |                   | 164                     |
| BXEB-L1190U-57E3000-C-C3 | 5700                         | 80      | 5350  |                            |                   |                   | 200                     |
| BXEB-L1190U-57G3000-C-C3 |                              | 90      | 4390  |                            |                   |                   | 164                     |

Notes for Table 1:

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

# Electrical Characteristics

**Table 2: 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/°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-L0340U-xxx0750-C-C3 | 700                | 10.1   | 10.9    | 11.7    | -4.1  | 9.9  | 11.9   |
|                          | 1700               | 11.0   | 11.8    | 12.6    | -4.1  | 10.7   | 12.9   |
| BXEB-L0590U-xxx1500-C-C3 | 700                | 17.8   | 19.1    | 20.4    | -7.2  | 17.3   | 20.9   |
|                          | 1700               | 19.3   | 20.7    | 22.1    | -7.2  | 18.8   | 22.6   |
| BXEB-L1190U-xxx3000-C-C3 | 700                | 35.5   | 38.2    | 40.9    | -14.3   | 34.7   | 41.8   |
|                          | 1700               | 38.6   | 41.5    | 44.4    | -14.3   | 37.7   | 45.3   |

Notes for Table 2:

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 62031:2014. 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 3: Maximum Ratings**

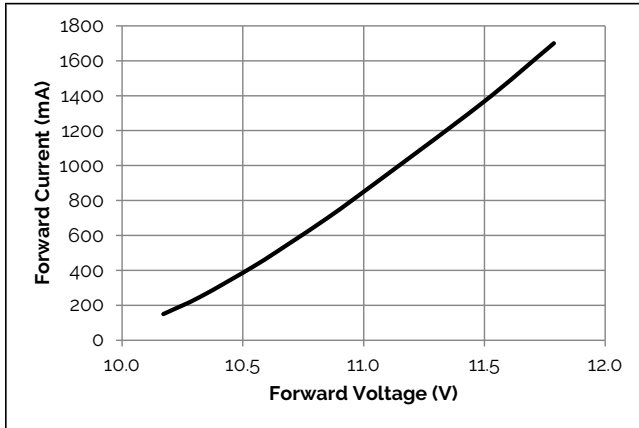
| Parameter   | Maximum Rating  |
|---|---|
| Storage Temperature                                       | -40°C to +85°C  |
| Operating Case Temperature <sup>2</sup> (T <sub>c</sub> ) | 85°C  |
| Soldering Temperature                                     | 350°C or lower for a maximum of 5 seconds             |
| Maximum Reverse Voltage                                   | Modules are not designed to be driven in reverse bias |
| Maximum Drive Current                                     | 1700mA  |

Notes for Table 3:

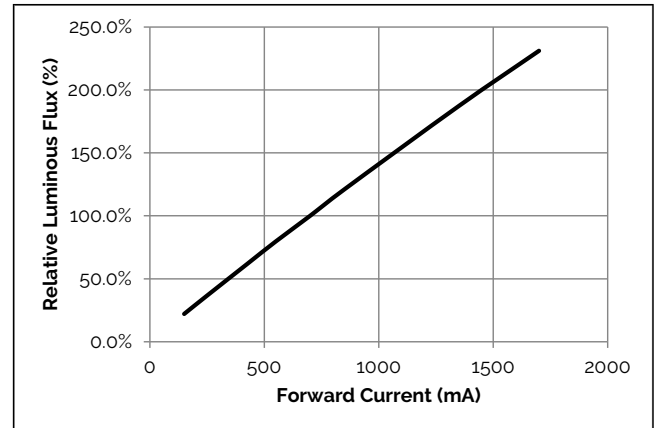
1. For IEC 62717 requirement, please consult your Bridgelux sales representative.
2. Lumen maintenance (L70) and lifetime predictions are valid for drive current and case temperature conditions used for LM-80 testing as included in the applicable LM-80 test report for the SMDs used in the modules. Contact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

# Performance Curves

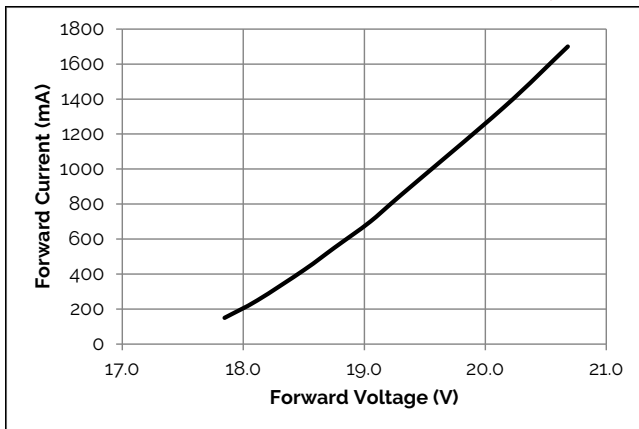
**Figure 1: 340mm Current vs. Forward Voltage,  $T_c=25^\circ\text{C}$**



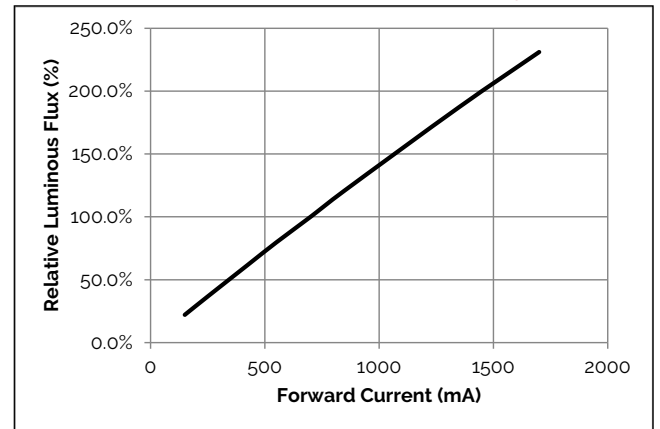
**Figure 2: 340mm Relative Flux vs. Current,  $T_c=25^\circ\text{C}$**



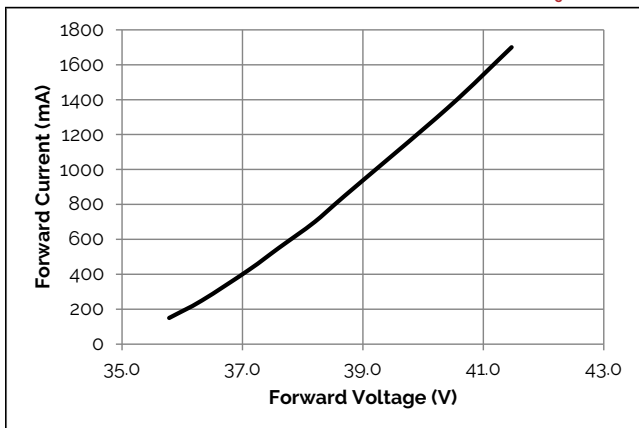
**Figure 3: 590mm Current vs. Forward Voltage,  $T_c=25^\circ\text{C}$**



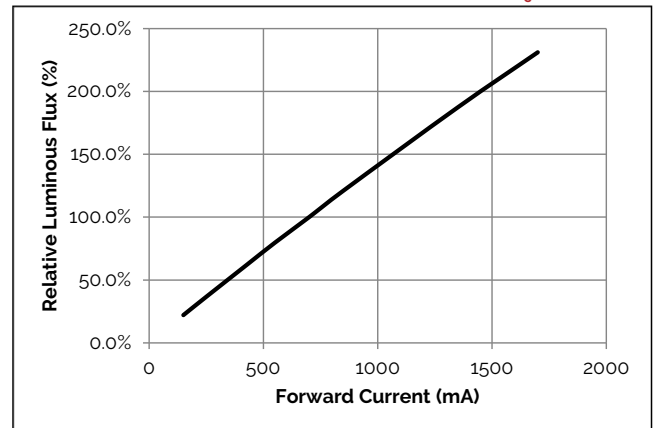
**Figure 4: 590mm Relative Flux vs. Current,  $T_c=25^\circ\text{C}$**



**Figure 5: 1190mm Current vs. Forward Voltage,  $T_c=25^\circ\text{C}$**



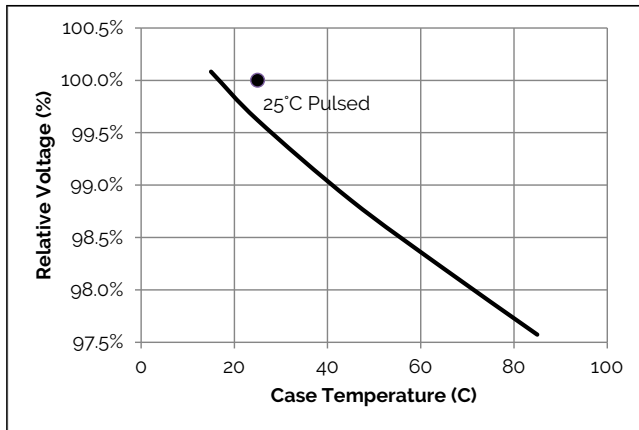
**Figure 6: 1190mm Relative Flux vs. Current,  $T_c=25^\circ\text{C}$**



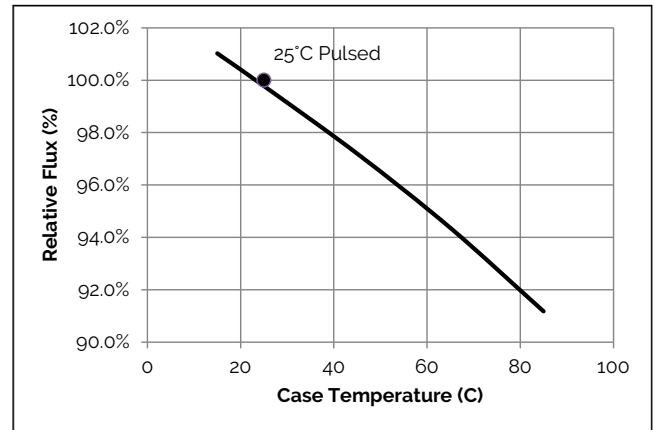


# Performance Curves

**Figure 7: Relative Voltage vs. Case Temperature**

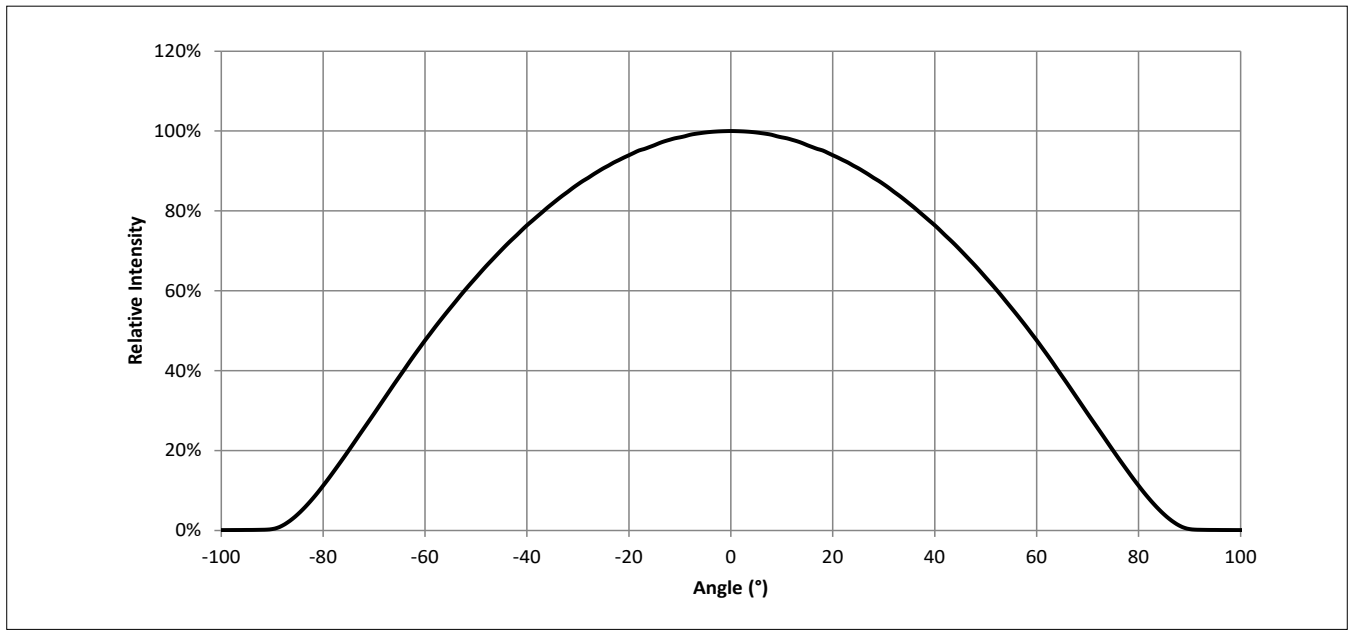


**Figure 8: Relative Flux vs. Case Temperature**



# Typical Radiation Pattern

**Figure 9: Typical Spatial Radiation Pattern**



Notes for Figure 9:

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 10: Typical Color Spectra, 80 CRI

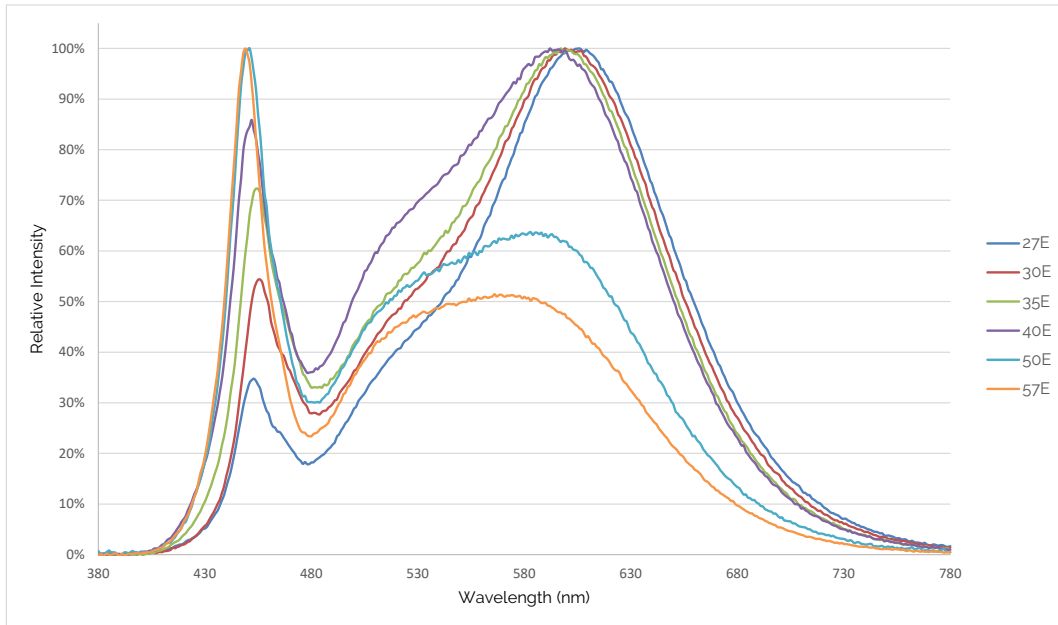
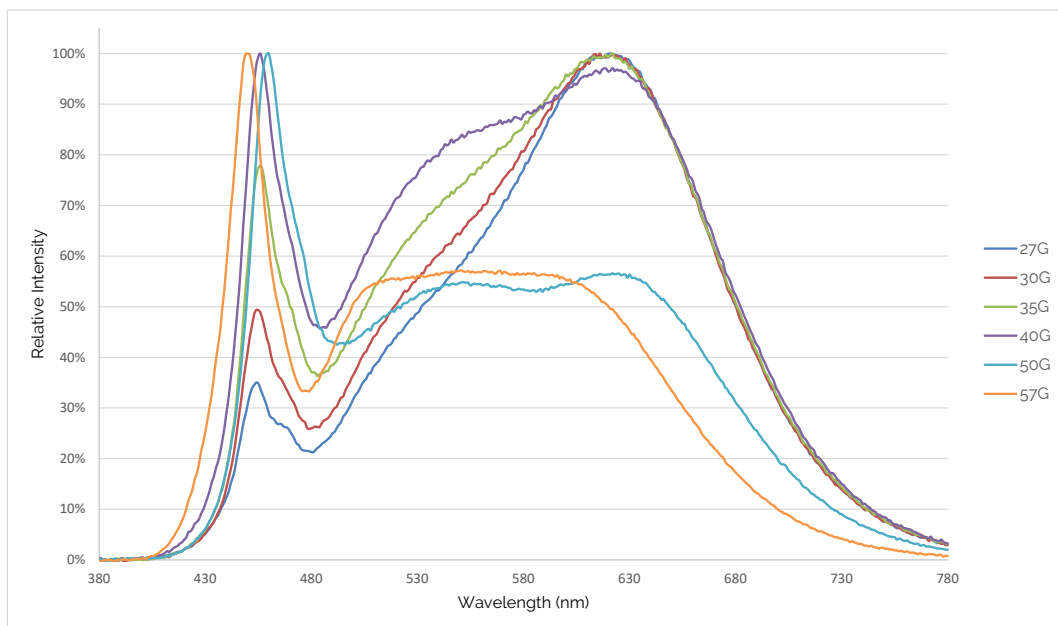


Figure 11: Typical Color Spectra, 90 CRI



Note for Figures 10 & 11:

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

# Mechanical Dimensions

Figure 12: Drawing for BXEB-Lo340U-xxx0750-C-C3

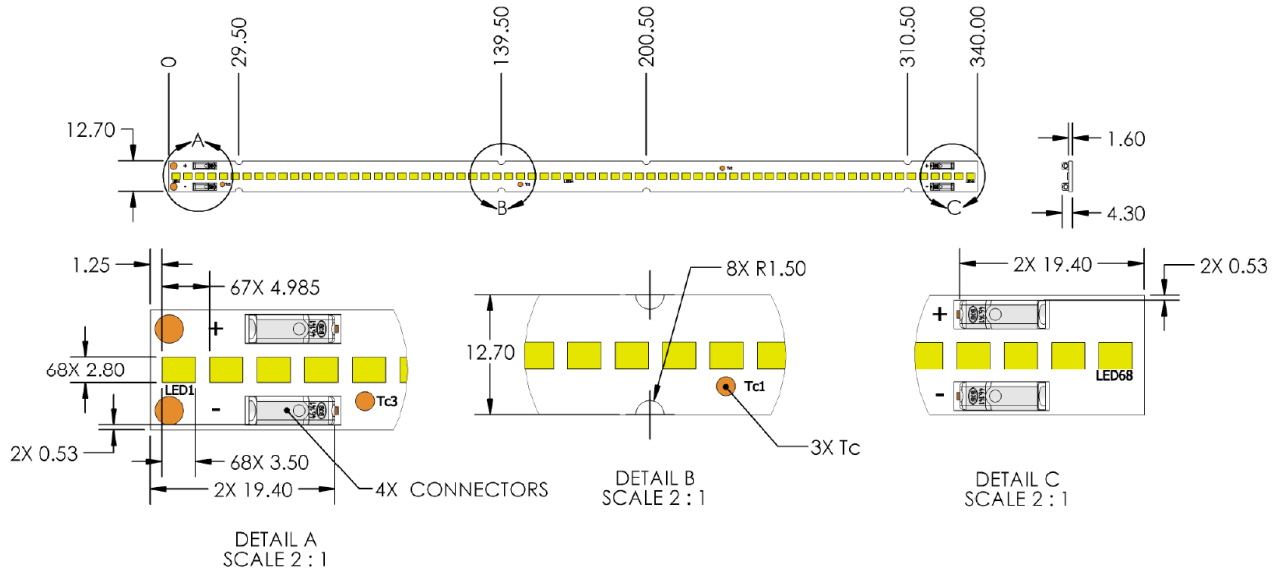
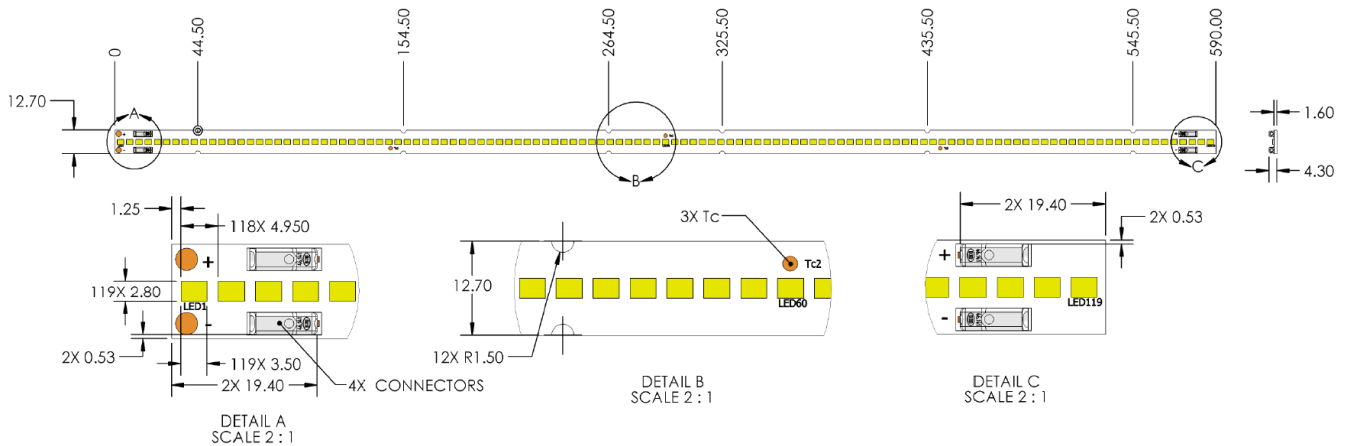
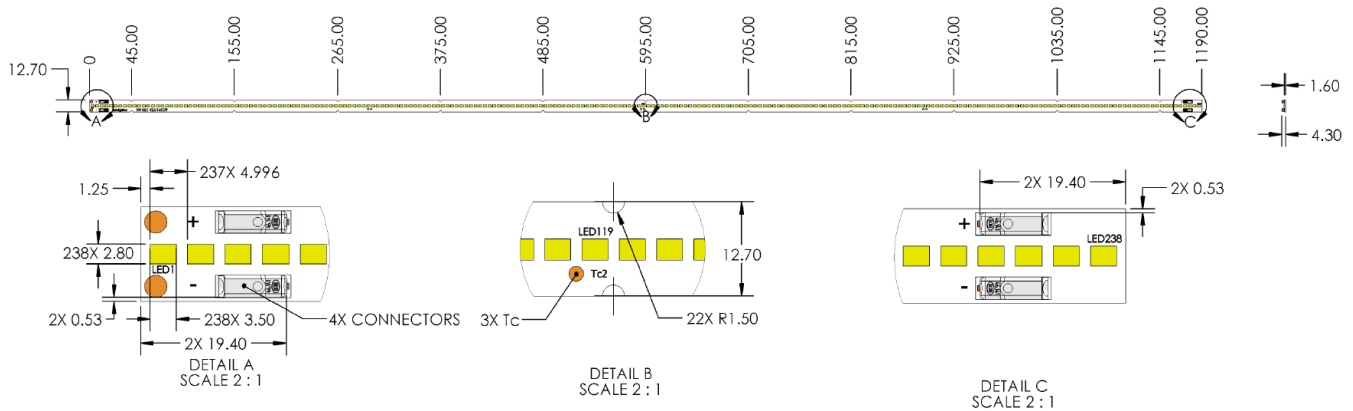


Figure 13: Drawing for BXEB-Lo590U-xxx1500-C-C3



# Mechanical Dimensions

**Figure 14: Drawing for BXEB-L1190U-xxx3000-C-C3**



Notes for Figures 12, 13 & 14:

1. Solder pads are labeled "+" to denote positive polarity, and "-" to denote negative polarity.
2. Drawings are not to scale.
3. Drawing dimensions are in millimeters.
4. Unless otherwise specified, the tolerances are  $\pm 0.10\text{mm}$ .

**Table 4: Module dimensions**

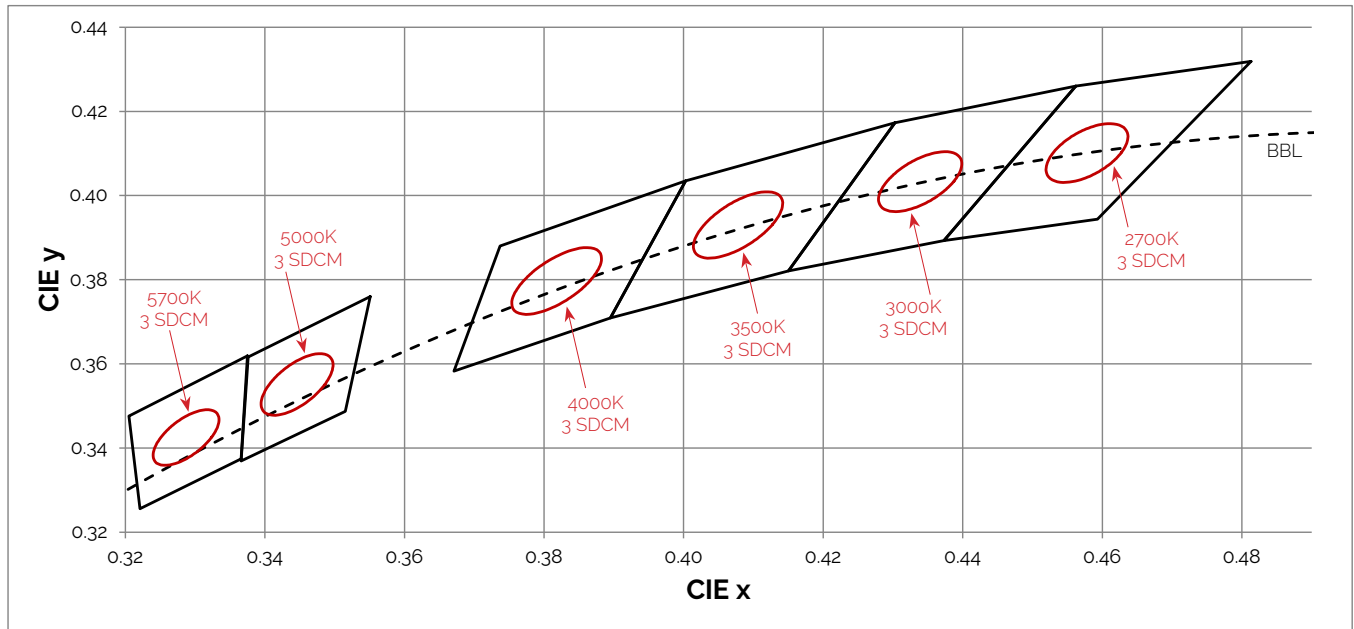
| Part Number              | Board Length | Board Width |
|--------------------------|--------------|-------------|
| BXEB-L0340U-xxx0750-C-C3 | 340 mm       | 12.7 mm     |
| BXEB-L0590U-xxx1500-C-C3 | 590 mm       | 12.7 mm     |
| BXEB-L1190U-xxx3000-C-C3 | 1190 mm      | 12.7 mm     |

**Table 5: Connector and wiring**

| Parameter                | Specification |
|--------------------------|---------------|
| Input wire cross-section | 20-24 AWG     |
| Wire strip length        | 6.5-7.5 mm    |

# Color Binning Information

**Figure 15: Color Point Test Bins in CIE 1931 xy Color Space**



**Table 6: Bin Coordinates and Associated Typical CCT**

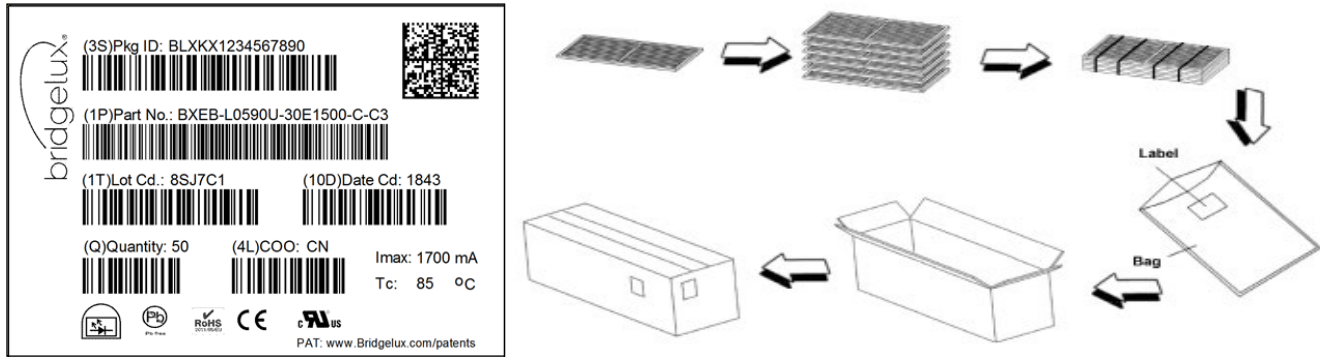
| 3 SDCM Bin                       | 2700K           | 3000K           | 3500 K          | 4000K           | 5000K           | 5700K           |
|----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| CCT Range                        | 2651K - 2794K   | 2968K - 3136K   | 3369K - 3586K   | 3851K - 4130K   | 4835K - 5215K   | 5490K - 5820K   |
| Center Point (x, y)              | (0.458, 0.410)  | (0.434, 0.403)  | (0.407, 0.392)  | (0.382, 0.380)  | (0.3445, 0.355) | (0.329, 0.342)  |
| ANSI Bin<br>(for reference only) | (2580K - 2870K) | (2870K - 3220K) | (3220K - 3710K) | (3710K - 4260K) | (4745K - 5311K) | (5312K - 6022K) |

Notes for Table 6:

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 16: Packaging and Labeling**



**Table 7: Packaging Structure**

| L0340modules  | Tray                     | Box                         |
|---------------|--------------------------|-----------------------------|
| Quantity      | 28                       | 140                         |
| Dimension     | 38 cm x 33.5 cm x 2.4 cm | 41 cm x 36 cm x 15.5 cm     |
| L0590 modules | Tray                     | Box                         |
| Quantity      | 36                       | 180                         |
| Dimension     | 63 cm x 39 cm x 2.4 cm   | 65.5 cm x 41.5 cm x 15.5 cm |
| L1190 modules | Tray                     | Box                         |
| Quantity      | 36                       | 180                         |
| Dimension     | 123 cm x 39 cm x 2.4 cm  | 134 cm x 44 cm x 18.5 cm    |

**Figure 17: Product Labeling**

Bridgelux EB Series Slim Gen 3 modules contain a label on the front to help with product identification. In addition to the product identification markings, 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.



BXEB-L0340U-xxx0750-C-C3

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 modules 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.

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**WeChat ID: BridgeluxInChina**



46430 Fremont Blvd  
Fremont, CA 94538 USA  
Tel (925) 583-8400  
Fax (925) 583-8401  
**[www.bridgelux.com](http://www.bridgelux.com)**

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**Bridgelux EB Series Slim Gen3 Data Sheet DS171 Rev. A (06/2019)**

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