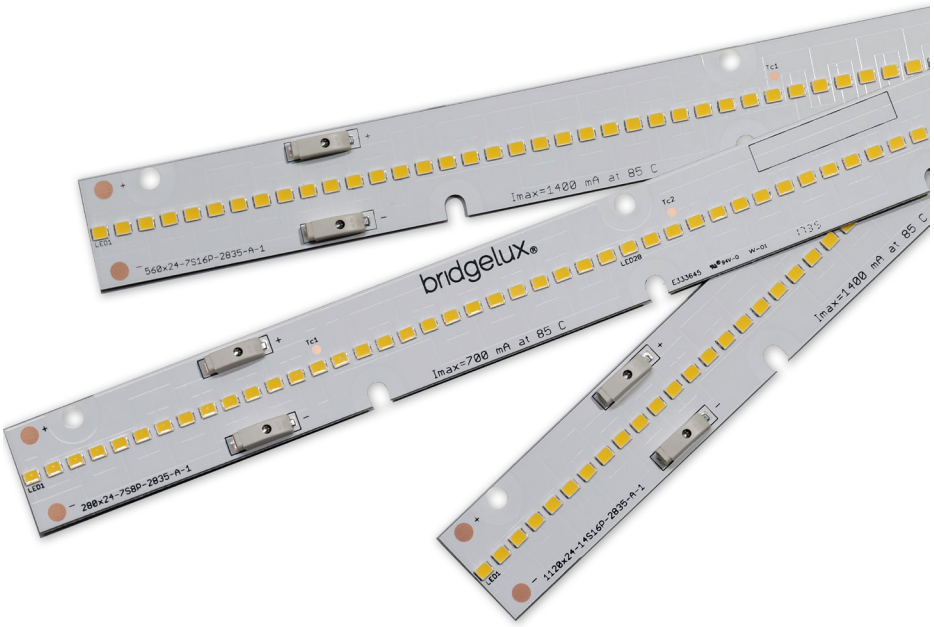


Bridgelux® EB Series™ Gen 3 Thrive

Product Data Sheet DS133

Lengths: 280mm, 560mm, 1120mm

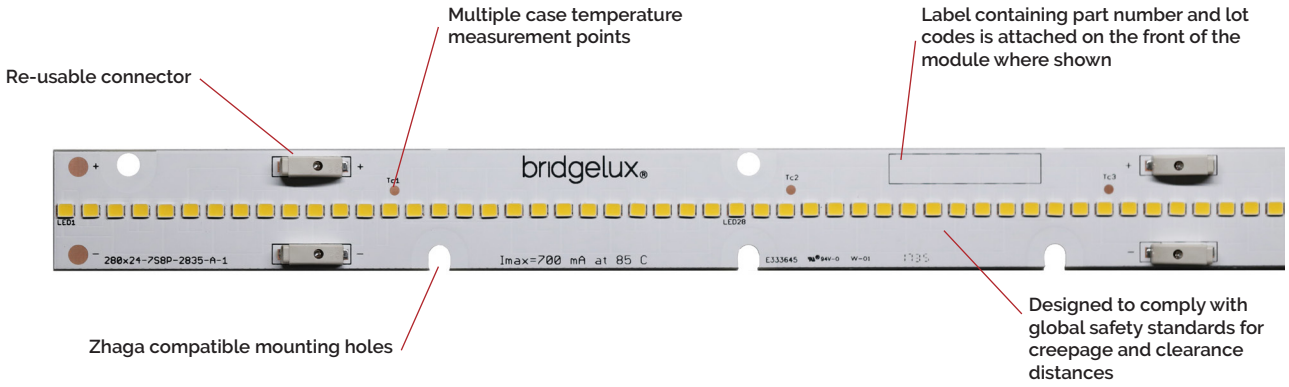
CRI: 98 Thrive

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

FIVE YEAR Warranty™

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 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:

1 2 3 4 - 5 6 78 9 10 - 11 12 13 14 15 16 - 17 – 18

BXEB – L0280Z – 30 S 2000 – C – C3

Product Family

Nominal Dimensions
L= Linear
0280 = 280 mm
0560 = 560 mm
1120 = 1120 mm
Z= Zhaga compatible width (24 mm)

Nominal CCT
27 = 2700K
30 = 3000K
35 = 3500K
40 = 4000K
50 = 5000K
57 = 5700K
65 = 6500K

CRI
S = 98
(Thrive)

Flux Indicator
1000 = 1000 lm
2000 = 2000 lm
4000 = 4000 lm

Module Configuration

Module Version
C = Gen 3
3 = 3 SDCM

Product Selection Guide

Table 1: Product Performance at 480mA/960mA nominal (T_c = 25° C)

Part Number	Nominal CCT[1] (K)	Typical CRI	Typical Flux[2,3] (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° C.
3. Bridgelux maintains a ± 7% tolerance on typical flux data (typical SMD flux bins)

Product Selection Guide

Table 2: Product Performance at 350mA/700mA nominal (T_c = 25° C)

Part Number	Nominal CCT[1] (K)	Typical CRI	Typical Flux[2,3] (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° C.
3. Bridgelux maintains a ± 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

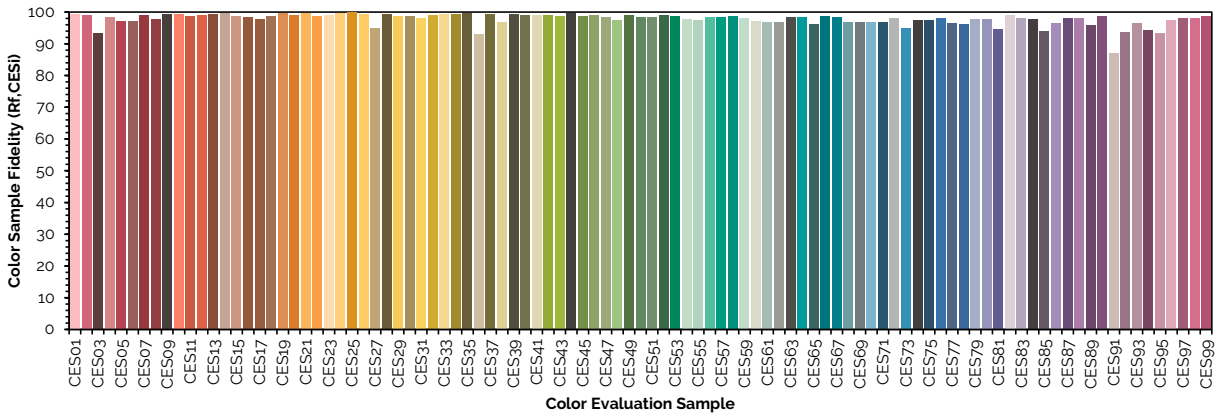
Notes for Table 3:

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 ± 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 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

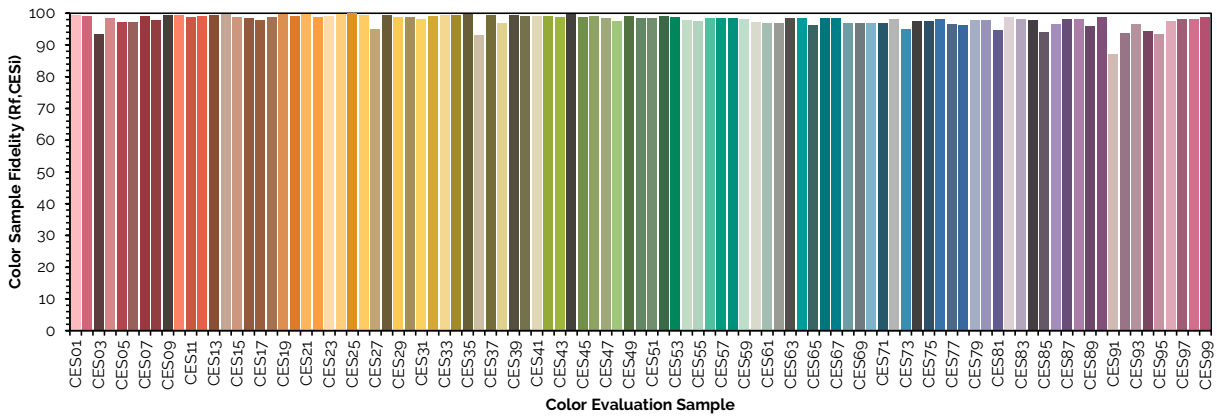


Figure 3: 3500K TM-30 Color Sample Fidelity

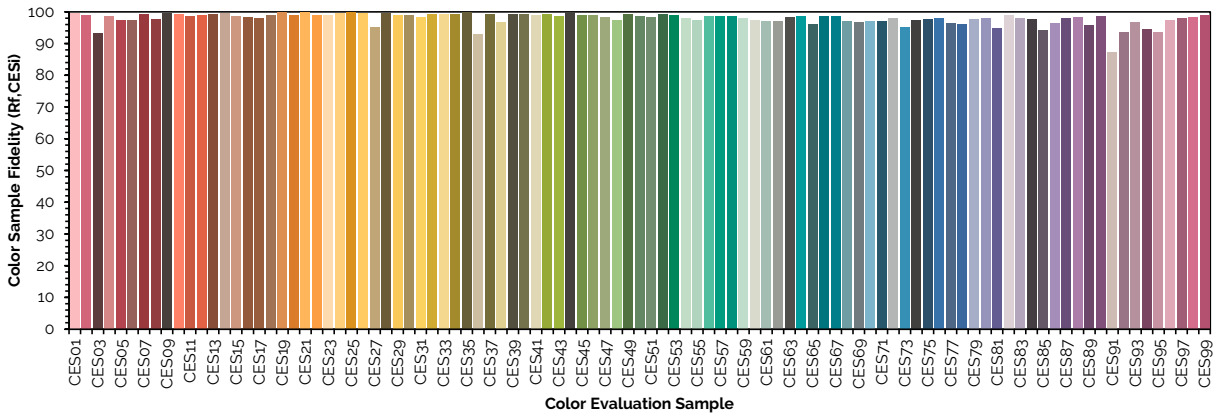
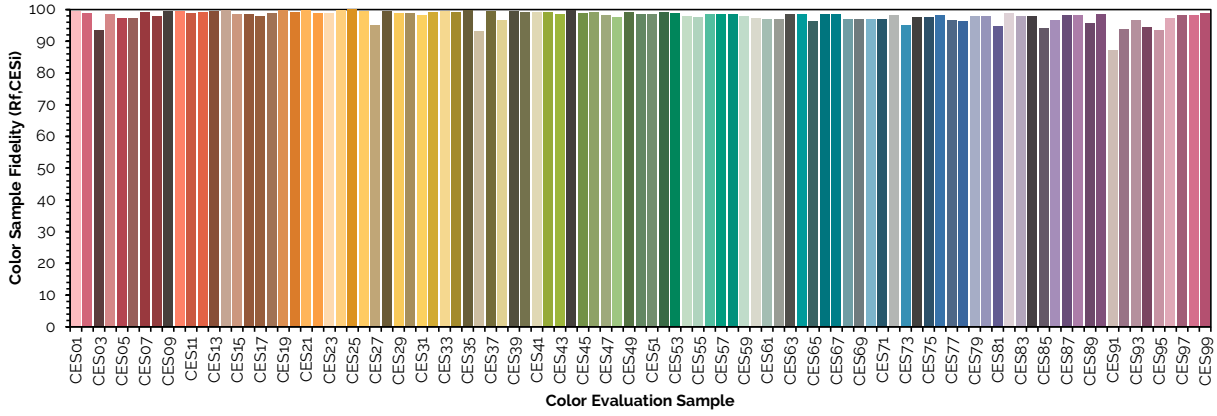


Figure 4: 4000K TM-30 Color Sample Fidelity



Thrive Color Metrics

Figure 5: 5000K TM-30 Color Sample Fidelity

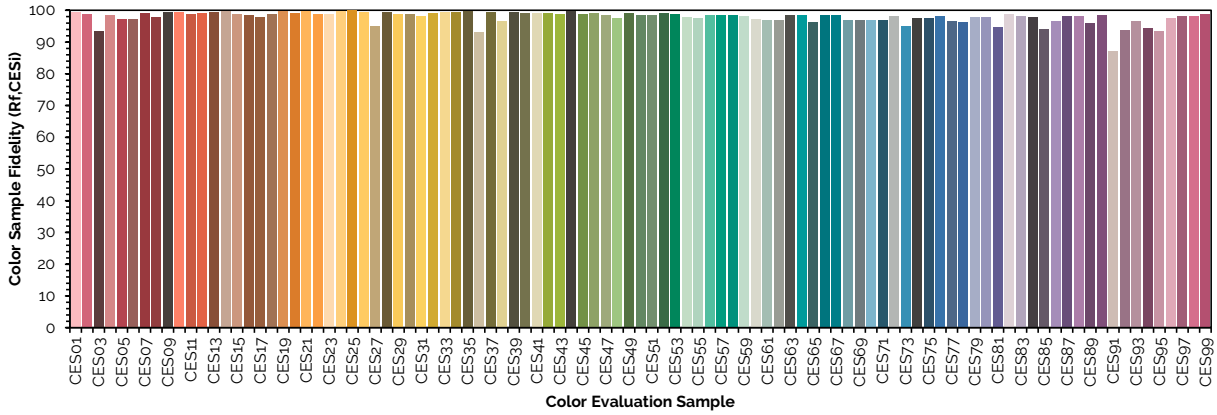


Figure 6: 5700K TM-30 Color Sample Fidelity

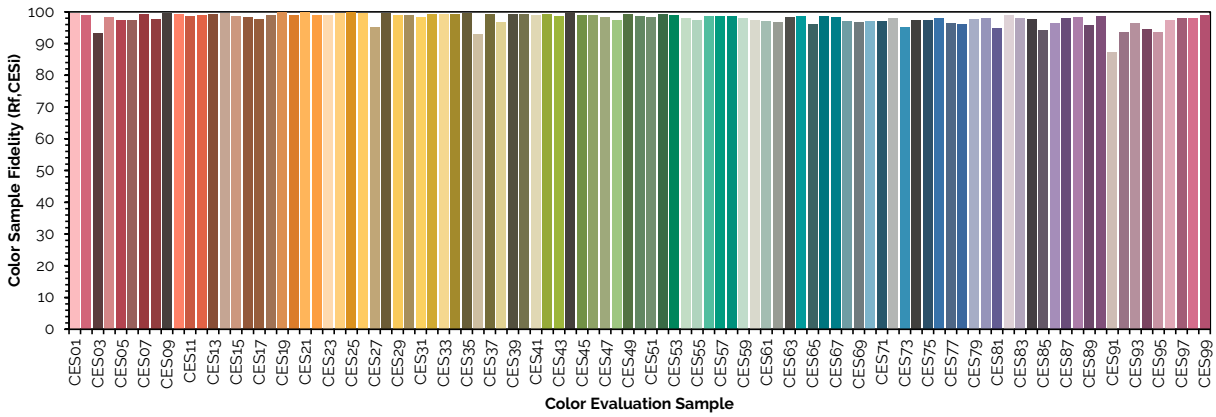
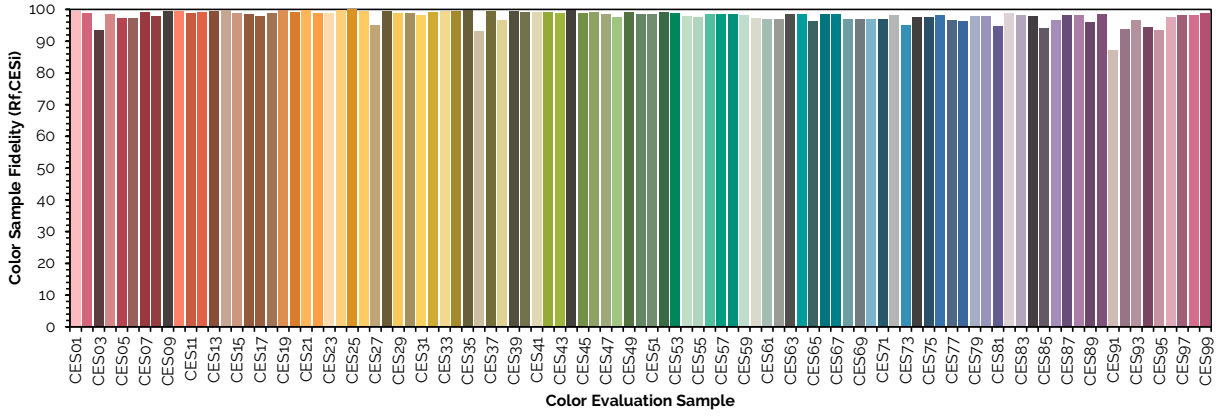


Figure 7: 6500K TM-30 Color Sample Fidelity



Electrical Characteristics

Table 4: Electrical Characteristics

Part Number	Drive Current (mA)	Forward Voltage T_{c2} = 25° C (V) [1, 2, 3]			Typical Coefficient of Forward Voltage[4] $\Delta V_f/\Delta T$ (mV/° C)	Driver Selection Voltages[5] (V)	
		Minimum	Typical	Maximum		V_f Min, Hot T_{c2} = 85° C (V)	V_f Max, Cold T_{c2} = -40° 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 ± 0.1 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 ± 0.1 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[2] (T_c)	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˚C

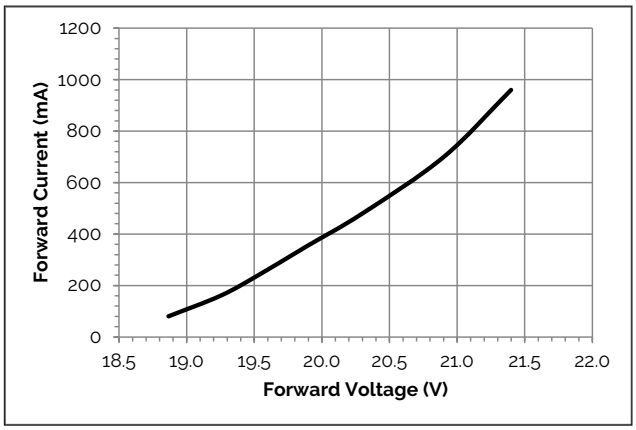


Figure 9: 280mm Relative Flux vs. Current, T_c=25˚C

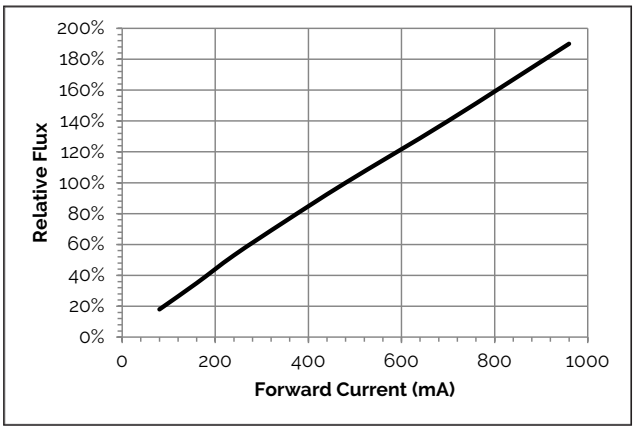


Figure 10: 560mm Current vs. Forward Voltage, T_c=25˚C

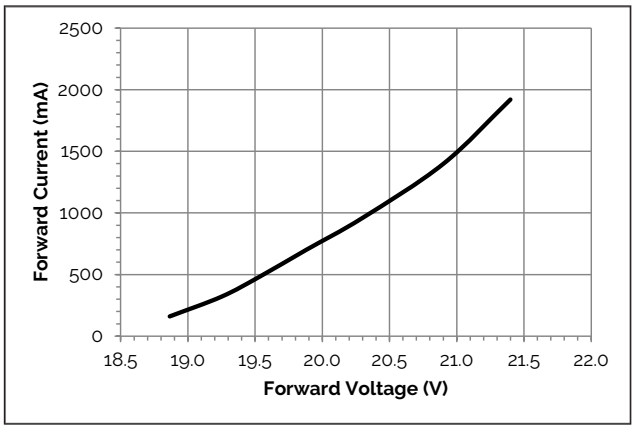


Figure 11: 560mm Relative Flux vs. Current, T_c=25˚C

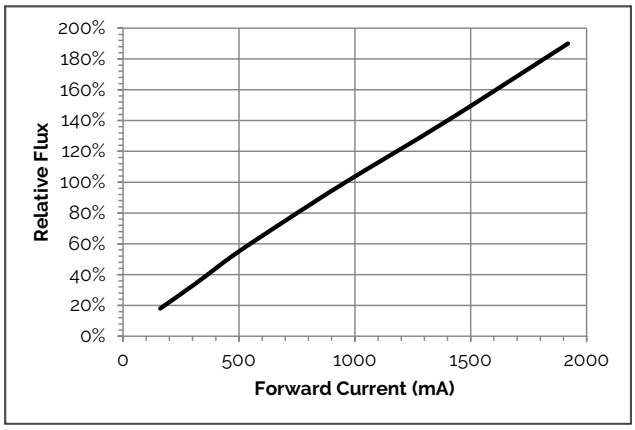


Figure 12: 1120mm Current vs. Forward Voltage, T_c=25˚C

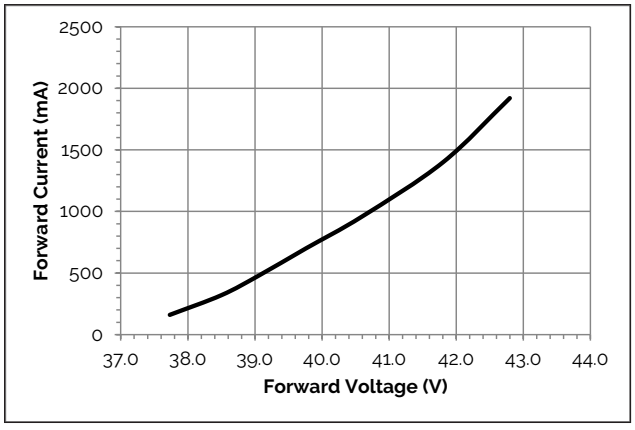
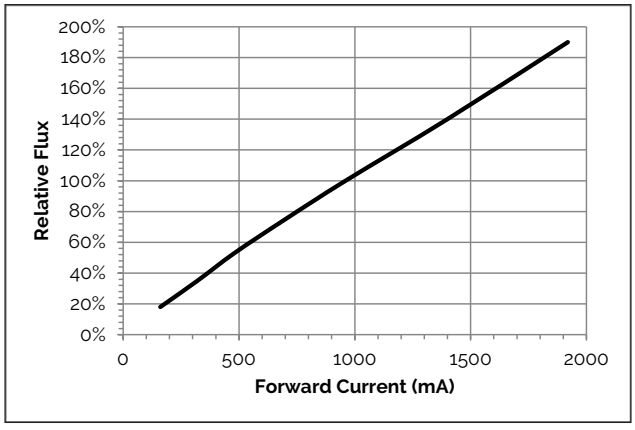


Figure 13: 1120mm Relative Flux vs. Current, T_c=25˚C



Performance Curves

Figure 14: Relative Voltage vs. Case Temperature

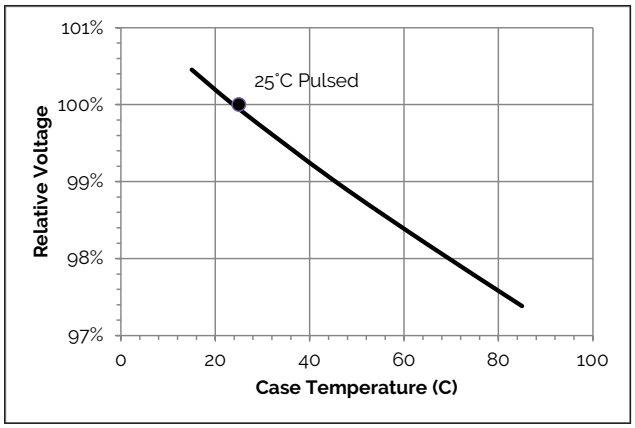
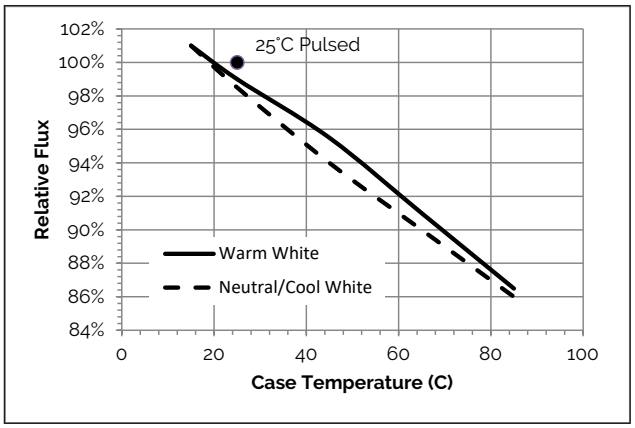
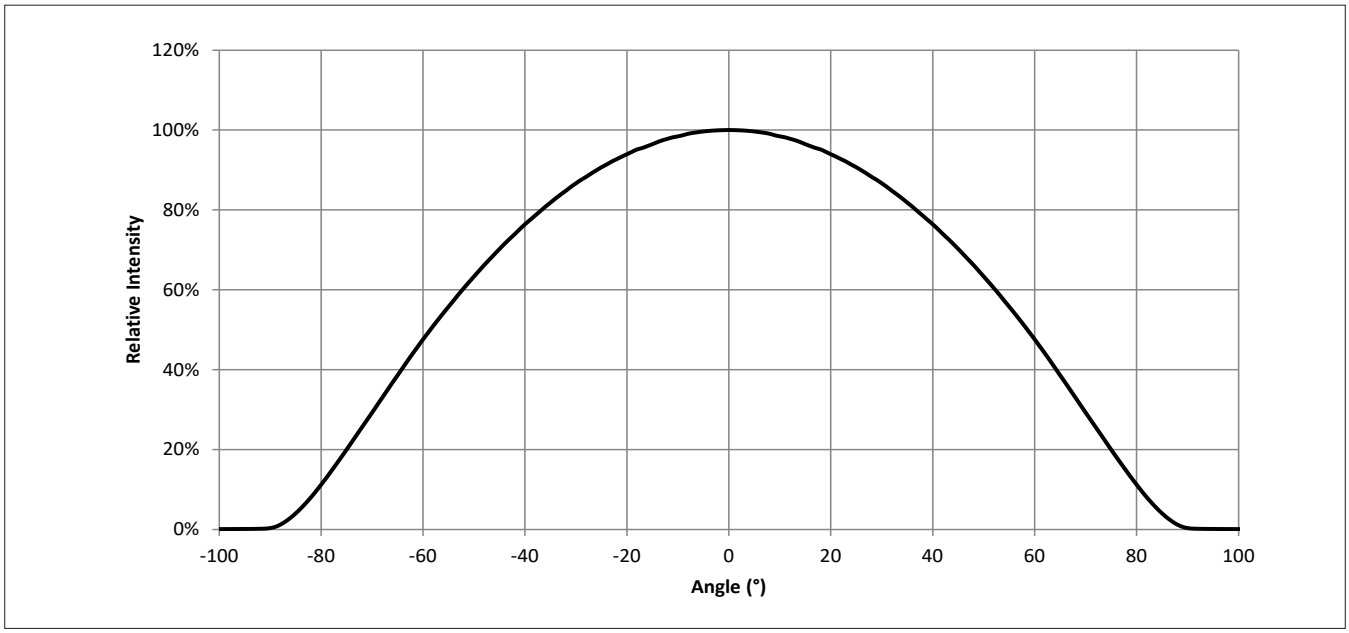


Figure 15: Relative Flux vs. Case Temperature



Typical Radiation Pattern

Figure 16: Typical Spatial Radiation Pattern

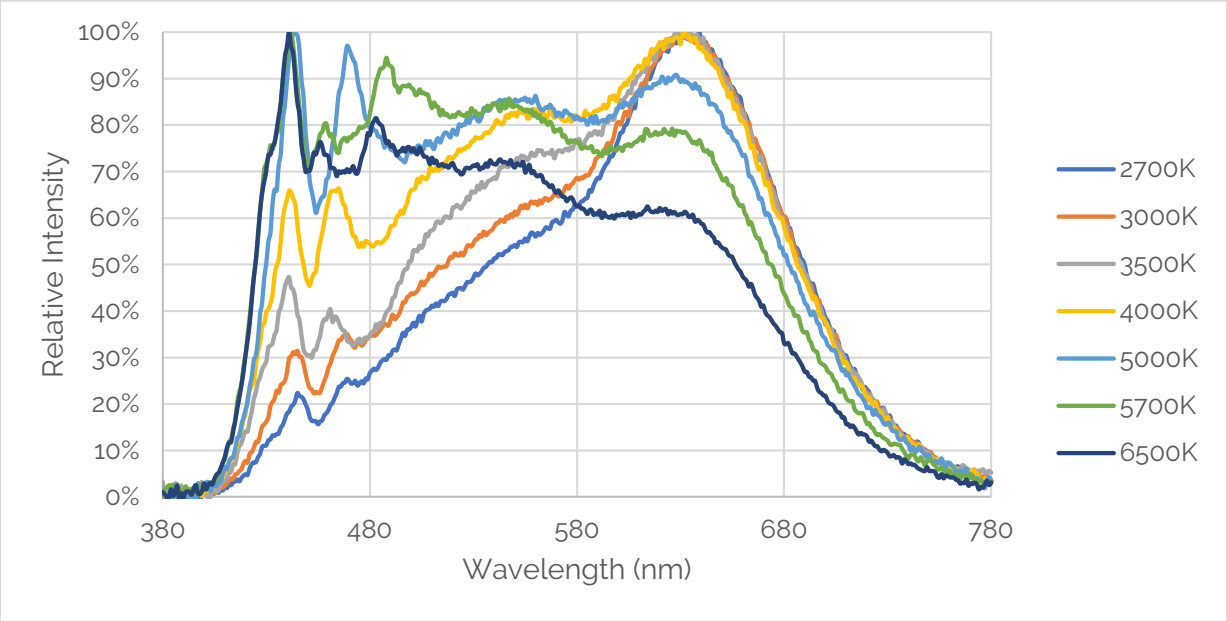


Notes for Figure 16:

1. Typical viewing angle is 120°.
2. The viewing angle is defined as the off axis angle from the centerline where Iv is ½ 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°C

Mechanical Dimensions

Figure 18: Drawing Overview for 280mm

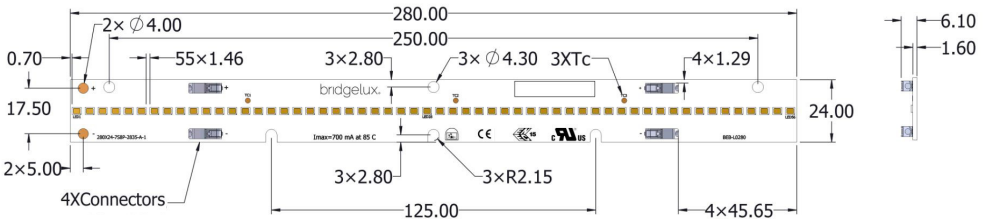


Figure 19: Drawing Overview for 560mm

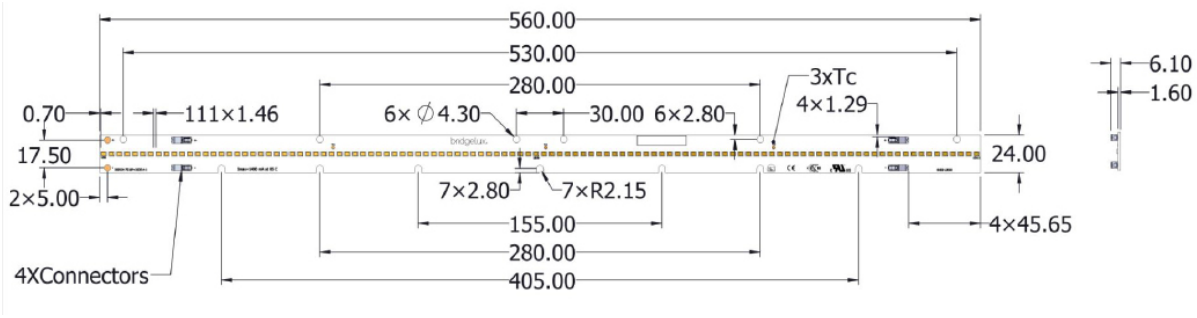
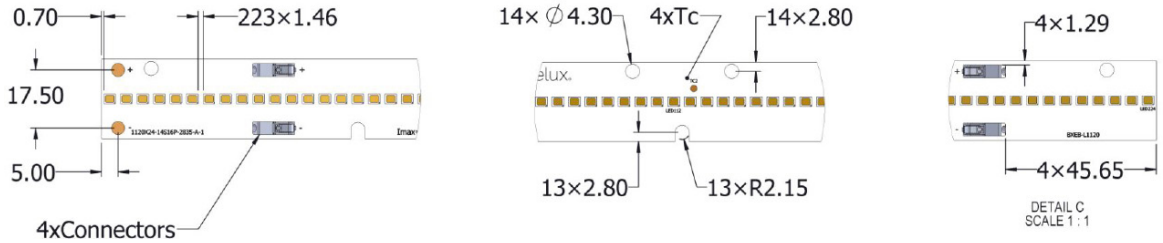


Figure 20: Drawing Overview for 1120mm



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

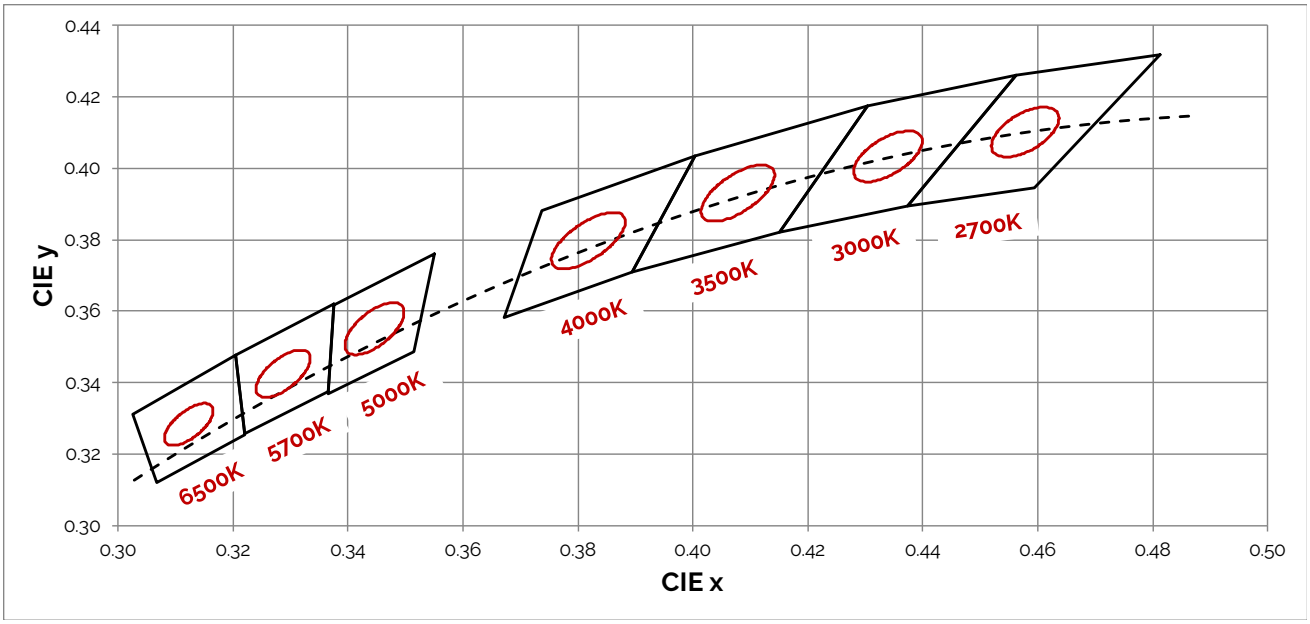


Table 7: Bin Coordinates and Associated Typical CCT

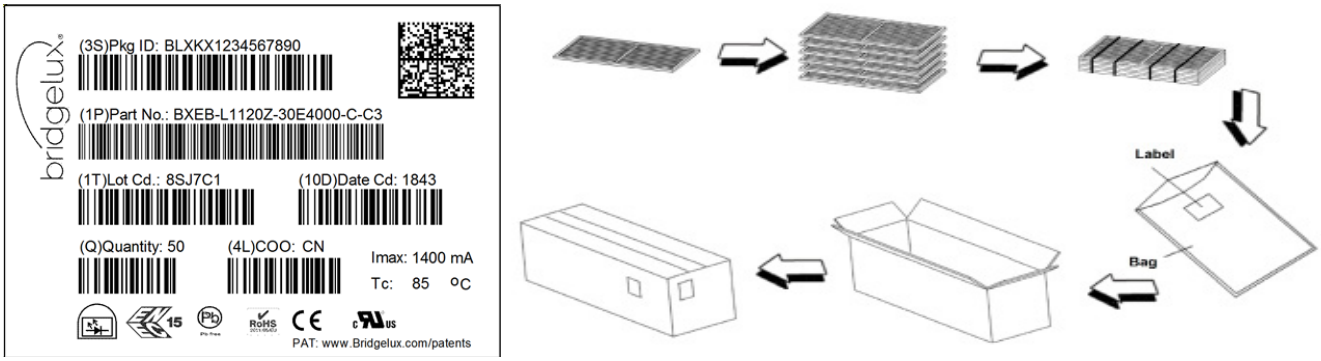
CCT	Color Consistency	CIE Center Point (x, y)	Corresponding CCT Range
2700K	3 SDCM	(0.458, 0.410)	2651K - 2794K
3000K	3 SDCM	(0.434, 0.403)	2968K - 3136K
3500K	3 SDCM	(0.407, 0.392)	3369K - 3586K
4000K	3 SDCM	(0.382, 0.380)	3851K - 4130K
5000K	3 SDCM	(0.3445, 0.355)	4835K - 5215K
5700K	3 SDCM	(0.329, 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 ± 0.007 on x and y color coordinates in the CIE 1931 color space.

Packaging and Labeling

Figure 22: EB Series Packaging and Labeling



Note: This label & packaging diagram is for illustration only and may differ from actual product label and packaging for this product

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.

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.

Optical Source Models

Optical source models and ray set files are available for all Bridgelux products. For a list of available formats, visit www.bridgelux.com.

3D CAD Models

Three dimensional CAD models depicting the product outline of all Bridgelux 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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