Bridgelux® Vesta® Series Edge

Product Data Sheet DS157

Introduction

Vesta® Series

Vesta Series Edge delivers adaptable light in a solid state lighting package. Vesta Series products tap into the powerful mediums of light and color to influence experience, well-being, and human emotion. They allow designers to mimic daylight to increase productivity and well-being and retailers to influence shopper behavior. Vesta Series Edge is designed for tunable white edge lighting applications such as commercial panel lights.

Features

- Slim in-line tunable white module for use in edge lit systems
- Excellent color mixing with a very short mixing distance
- 2700K to 5000K tunable range with CRI >90
- Delivers 2730 lm with up to 2X overdrive capability to 5320 lm
- High efficacy up to 143lm/W
- Metal core PCB for advanced thermal performance

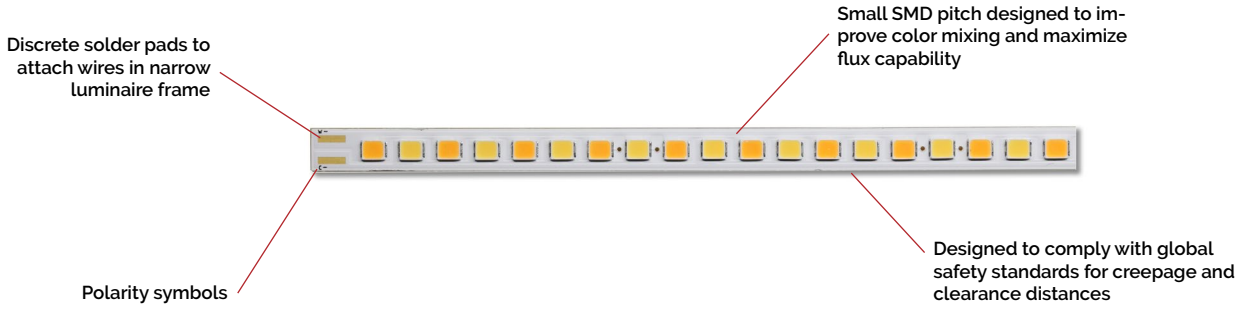
Benefits

- Ideal for selectable CCT or human centric lighting applications
- Drop in replacement for 2x2 panel lights
- Aluminum PCB enables excellent thermal coupling
- Long lifetime (L70, B50 > 50,000 hours)
- High quality, true color reproduction
- Reliable use at elevated currents for greater design flexibility

Contents

Product Feature Map

Bridgelux Vesta Series Edge modules are fully engineered devices that provide consistent thermal and optical performance on an engineered mechanical platform. The Edge products incorporate several features to simplify design integration and assembly. Please visit www.bridgelux.com for more information on the Vesta Series family of products.



Product Nomenclature

The part number designation for Bridgelux Vesta Series Edge is explained as follows:

1,2,3,4		5,6		7,8,9,10,11,12		13,14,15,16	17	18,19,20,21		22		23	24
BXEB	-	TL	-	L0570A	-	2750	G	2000	-	E	-	A	3

Product Family

Tunable White Linear

Nominal Dimensions
L = Linear
0570 = 570mm long
A = 6mm wide

CCT Range
27 = 2,700K
50 = 5,000K

Minimum CRI
G = 90 CRI

Flux Designator
2000 = 2xxx lumen range

Configuration
E = Edge

Version

Color Accuracy
3 = 3 SDCM

Product Selection Guide & Electrical Characteristics

The following product configurations are available:

Table 1: Selection Guide, Measurement Data (T_c = 25°C.)

Part Number	CRI[1]	Nominal CCT[2] (K)	Drive Current (per channel) (mA)	Typical V_f T_c=25°C (V)	Typical Power T_c=25°C (W)	Typical Efficacy T_c=25°C (lm/W)	Typical Pulsed Flux [3, 4] T_c=25°C (lm)	Minimum Pulsed Flux [4, 5] T_c=25°C (lm)
BXEB-TL-L0570A-2750G2000-E-A3	90	2700	300	33.0	9.9	133	1320	1260
			600	34.6	20.8	122	2540	2425
			1200	36.8	44.2	112	4950	4725
		5000	300	33.0	9.9	143	1420	1350
			600	34.6	20.8	132	2730	2600
			1200	36.8	44.2	120	5320	5070

Notes for Table 1:

1. CRI values are minimums. Minimum R9 value is 50,
2. Nominal CCT as defined by ANSI C78.377-2011.
3. Products tested at nominal test current where center case temperature point Tc= 25˚ C. Values may vary depending on the thermal design of the luminaire and/or the environment to which the product is subjected.
4. Bridgelux maintains a ±7% tolerance on flux measurements.
5. Minimum performance values are provided as reference only and are not a guarantee of performance.

Table 2: Electrical Characteristics

Part Number	Drive Current (per channel) (mA)	Forward Voltage Pulsed, T_c = 25°C (V) [1, 2, 3]			Typical Coefficient of Forward Voltage[4] $\Delta V_f/\Delta T_c$ (mV/°C)	Driver Selection Voltages[5] (V)	
		Minimum	Typical	Maximum		V_f Min. Hot T_c = 85°C (V)	V_f Max. Cold T_c = -40°C (V)
BXEB-TL-L0570A-2750G2000-E-A3	300	31.9	33.0	34.1	-17	30.9	35.2
	600	33.5	34.6	35.7	-17	32.5	36.8
	1200	35.6	36.8	38.0	-17	34.6	39.1

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 ± 0.10 V on forward voltage measurements.
3. This product has been designed and manufactured per IEC 62031:2014. This product has passed dielectric withstand voltage testing at 1500 V. The working voltage designated for the insulation is 250V. The maximum allowable voltage across the array must be determined in the end product application.
4. Typical coefficient of forward voltage tolerance is ± 0.1 mV for nominal current.
5. Vf 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[1] (T_c)	90˚C
Soldering Temperature [2]	350˚C or lower for a maximum of 5 seconds
Maximum Reverse Voltage	Not designed to be driven in reverse bias
Maximum Drive Current Per Channel [3,4]	1200mA
Maximum Total Drive Current[5]	1200mA

Notes for Table 3:

1. For IEC 62717 requirement, please consult your Bridgelux sales representative.
2. Refer to Bridgelux Design Guide for handling Vesta Series Edge modules.
3. Lumen maintenance 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 this product. Contact your Bridgelux sales representatives for the LM-80 report.
4. Maximum Drive Current is maximum combined drive currents between both 2700K and 5000K channels. For example, if 1200mA is applied to the 2700K channel, no current may be applied to the 5000K channel of the module. If 600mA is applied to the 2700K channel, then a maximum of 600mA may be applied to the 5000K channel.
5. Maximum Total Drive Current is defined as the sum of the drive currents of both the 2700K and 5000K channels.

Performance Curves

Figure 1: Current vs. Forward Voltage, T_c=25°C

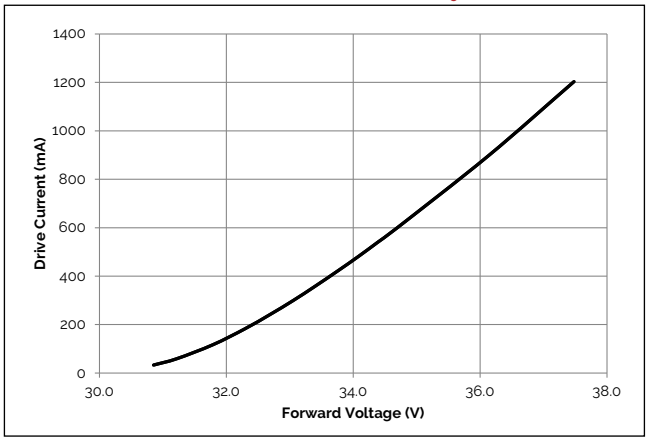


Figure 2: Relative Flux vs. Current, T_c=25°C

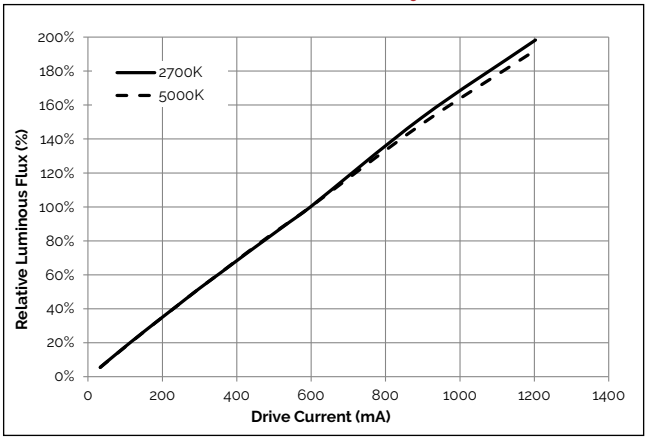


Figure 3: Relative Flux vs. Case Temperature

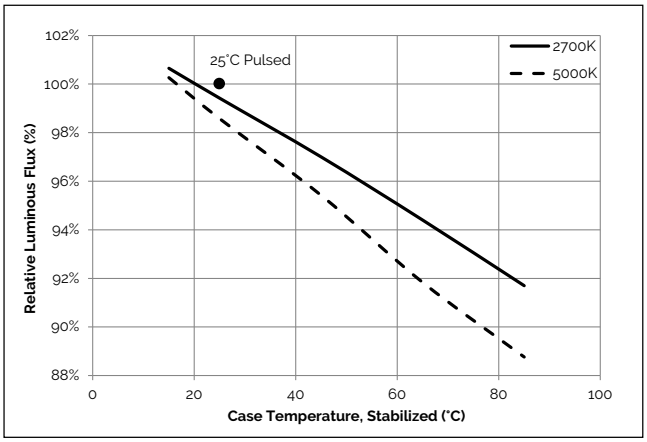
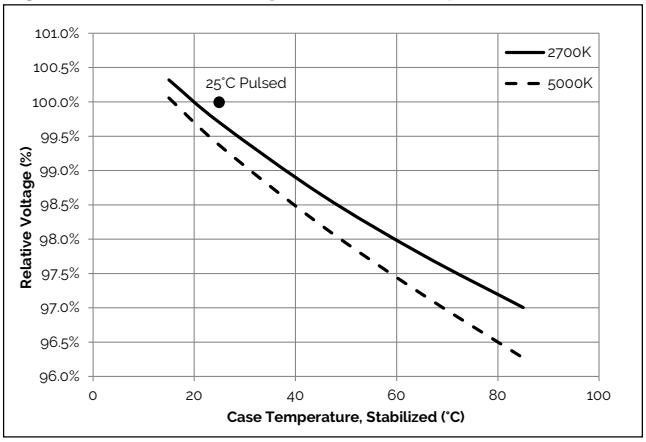


Figure 4: Relative Voltage vs. Case Temperature



Performance Curves

Figure 5: CCT vs. Warm White Current Ratio

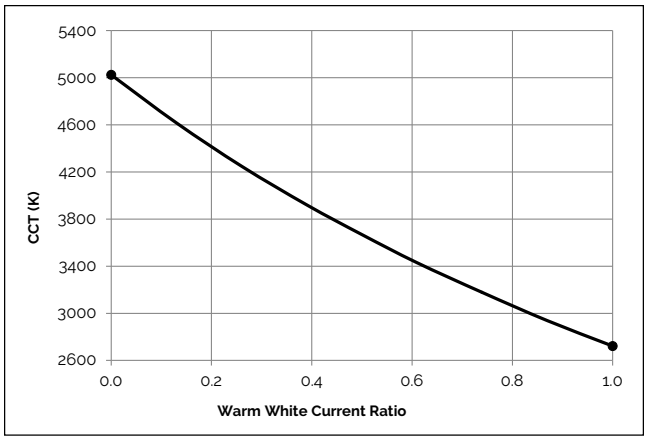


Figure 6: Relative Flux vs Warm White Current Ratio

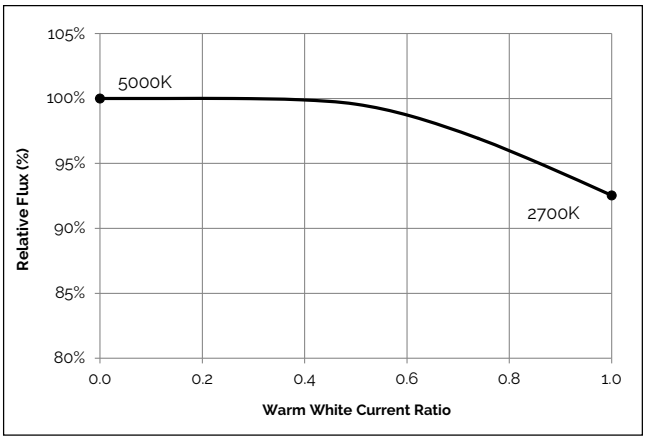
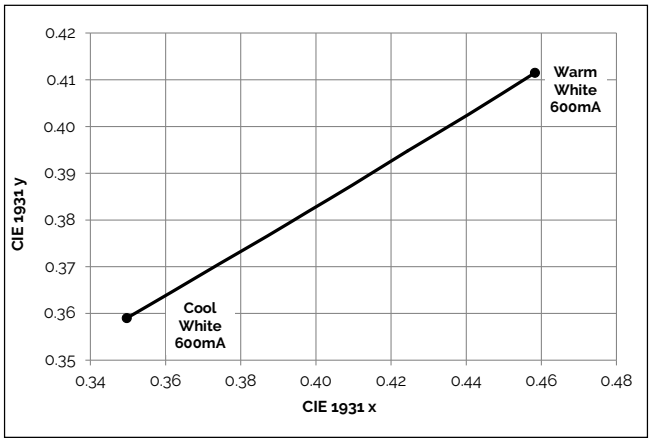
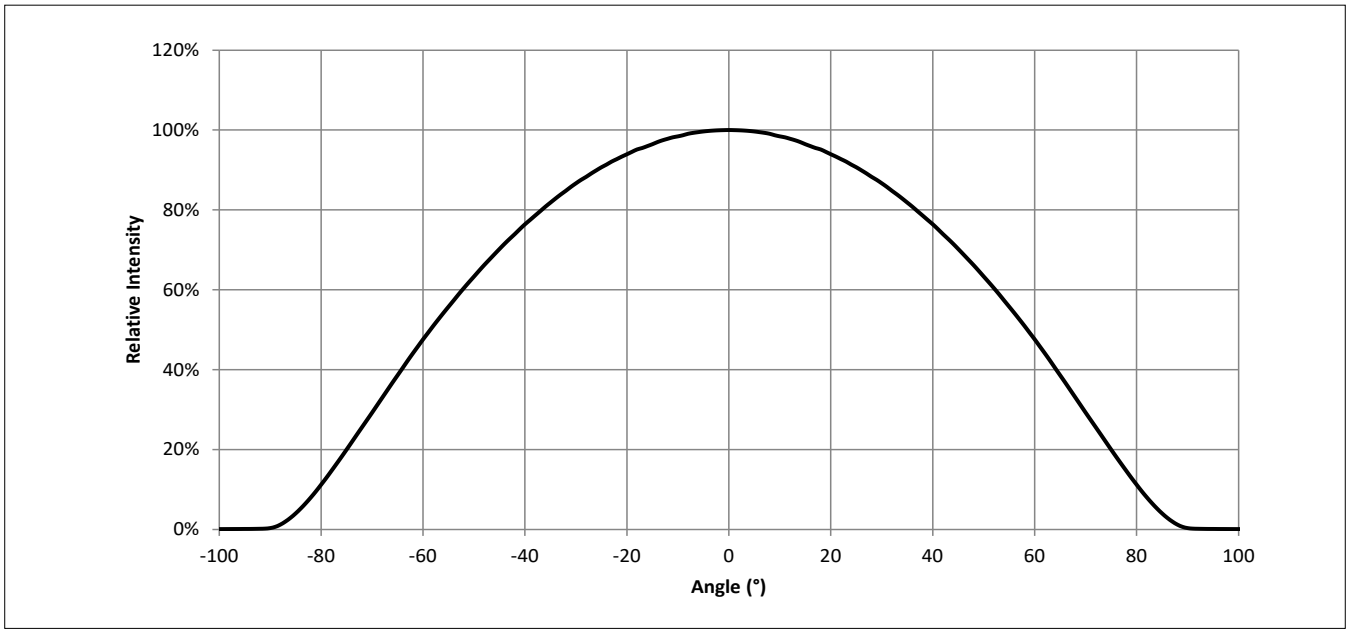


Figure 7: Color Shift vs. Warm White Current Ratio



Typical Radiation Pattern

Figure 8: Typical Spatial Radiation Pattern

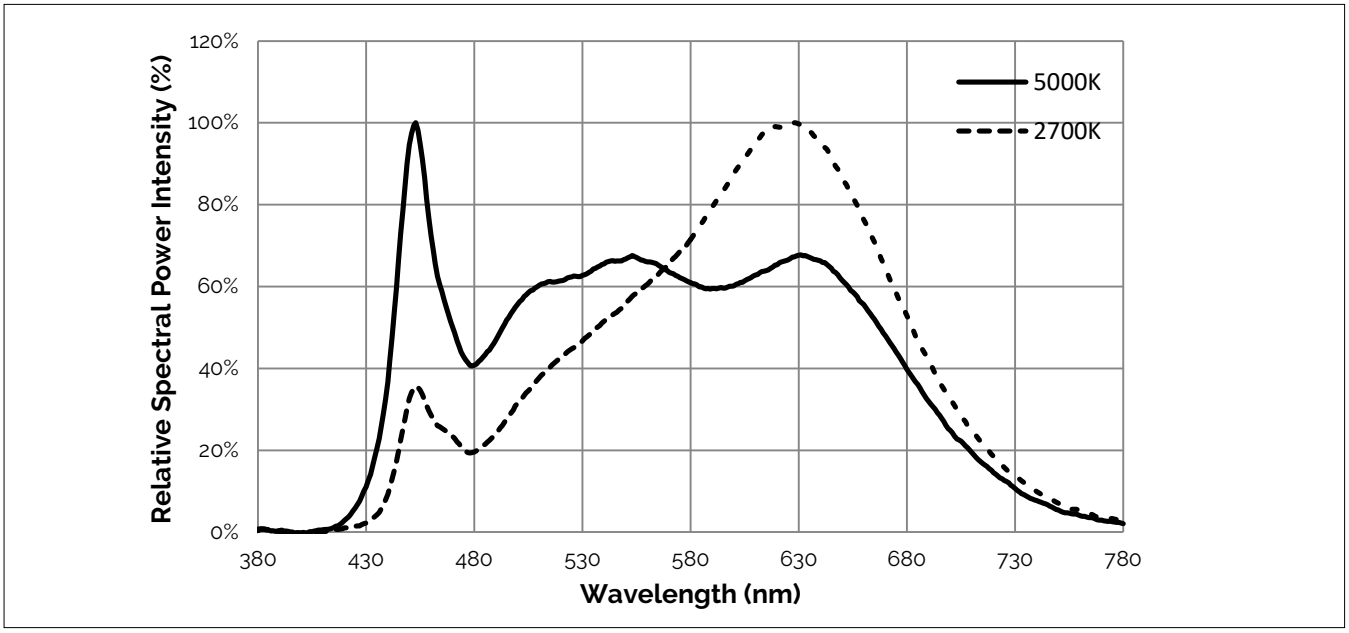


Notes for Figure 8:

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

Typical Color Spectrum

Figure 9: Typical Color Spectrum

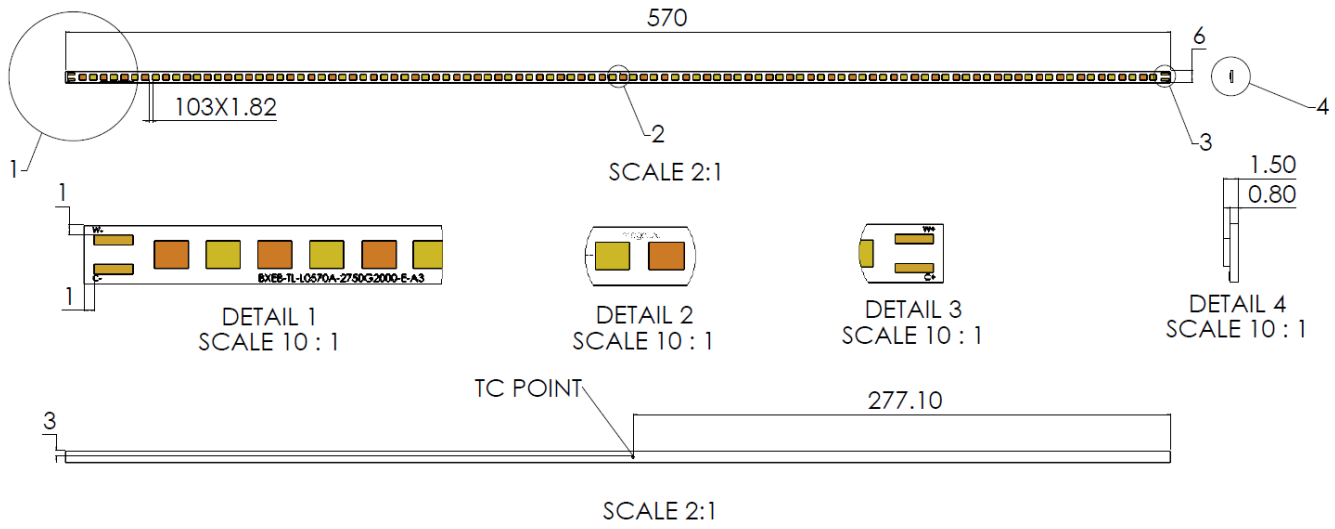


Note for Figure 9:

1. Color spectra measured at nominal current for $T_J = T_c = 25^{\circ}C$.

Mechanical Dimensions

Figure 10: Mechanical Drawing



Notes for Figure 10:

1. Solder pads are labeled "+" to denote positive polarity, and "-" to denote negative polarity.
2. "W" label represents 2700K (warm white) channel and "C" label represents 5000K (cool white) channel
3. Drawing dimensions are in millimeters.
4. Unless otherwise specified, the tolerances are ± 0.10mm..

Table 4: Dimensions

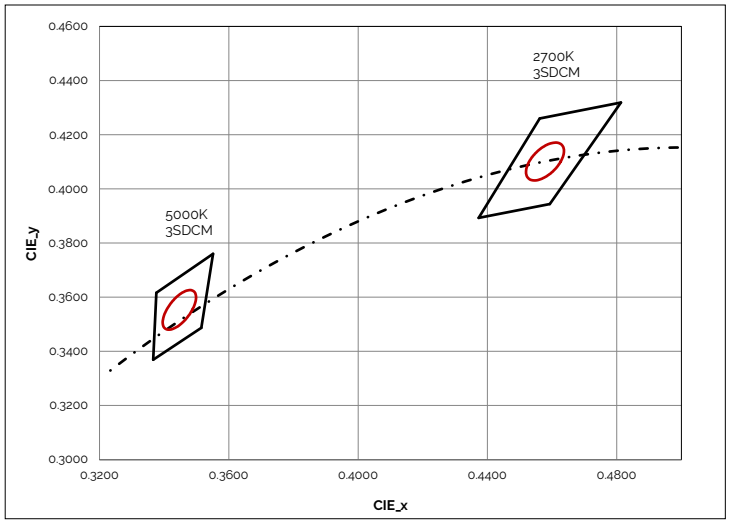
Parameter	Specification	Unit
Module length	570	mm
Module width	6	mm
Module thickness	1.5	mm
PCB thickness	0.8	mm

Table 5: Wiring Recommendations

Parameter	Specification
Wire size	24-26 AWG
Wire strip length	2-3 mm

Color Binning Information

Figure 11: Graph of Test Bins in xy Color Space



Note for Figure 11:

1. Color binning at solder point temperature (Tsp) of SMDs at 85°C.

Table 6: Bin Coordinates and Associated Typical CCT

	2700K	5000K
ANSI Bin (for reference only)	2580K - 2870K	4745K - 5311K
3 SDCM	2651K - 2794K	4835K-5215K
Center Point (x,y)	(0.458, 0.410)	(0.345, 0.355)

Notes for Table 6

1. Color binning at solder point temperature (Tsp) 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 12: Packaging and Labeling

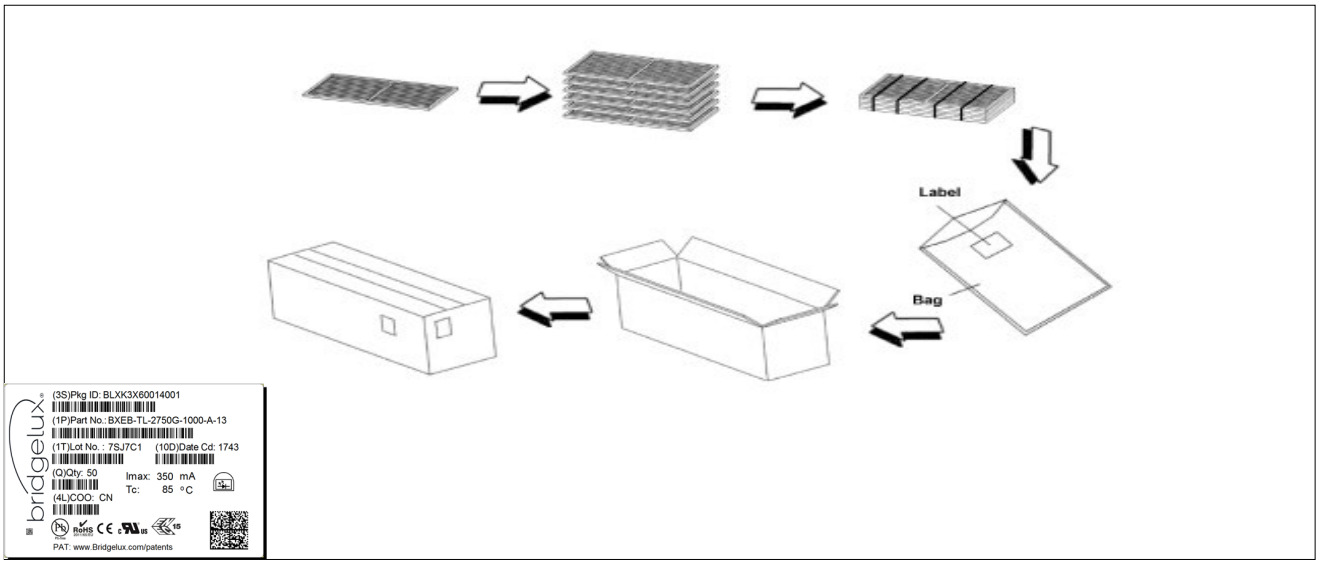


Table 7: Packaging Structure

	Tray	Box
Quantity	26 Edge modules	858 Edge modules
Dimension	63 cm x 39 cm x 0.7 cm	63.7 cm x 41.7 cm x 15 cm

Design Resources

Application Notes

Bridgelux has developed a comprehensive set of application notes and design resources to assist customers in successfully designing with the Vesta Series product family. For a list of resources under development, visit www.bridgelux.com.

Optical Source Models

Photometric files are available for this product. For a list of available formats, visit www.bridgelux.com.

3D CAD Models

Three dimensional CAD models depicting the product outline of all Bridgelux modules 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 linear products. Please consult Bridgelux Application Note for additional information.

CAUTION: EYE SAFETY

Eye safety classification for the use of Bridgelux Vesta Series is in accordance with IEC/TR62778: Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires. Vesta Series Edge is 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 Vesta Series Edge module during operation. Allow the linear products to cool for a sufficient period of time before handling. The module may reach elevated temperatures 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 products or apply stress to the LES (yellow phosphor resin area). Contact may cause damage to the linear products.

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

Disclaimers

STANDARD TEST CONDITIONS

Unless otherwise stated, the linear product 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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Bridgelux Vesta Series Edge Data Sheet DS157 Rev. A (03/2019)