Bridgelux® Vesta™ Series Tunable White Linear

Product Data Sheet DS154

Introduction

Vesta™ Series

Vesta™ Series Tunable White Linears deliver 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 Linears are designed for linear troffers, pendants and other luminaires in indoor commercial and industrial applications.

Available in 280 mm and 560 mm lengths, the linear products can be connected end-to-end thereby providing flexibility in designing luminaires. The Zhaga compatible linear products further simplify design by providing easy mounting options, reusable poke-in connectors and by being compatible with a variety of off-the-shelf optics.

Features

- Tuning range from 2700K-5000K
- Efficacy of 135 lm/W typical
- Uniform, high quality illumination
- Minimum 90 CRI option
- Designed following Zhaga Book 7 standards L28W4 and L56W4
- Easy wiring enabled by poke-in connectors
- ENERGY STAR® / ANSI compliant 3 SDCM color binning structure

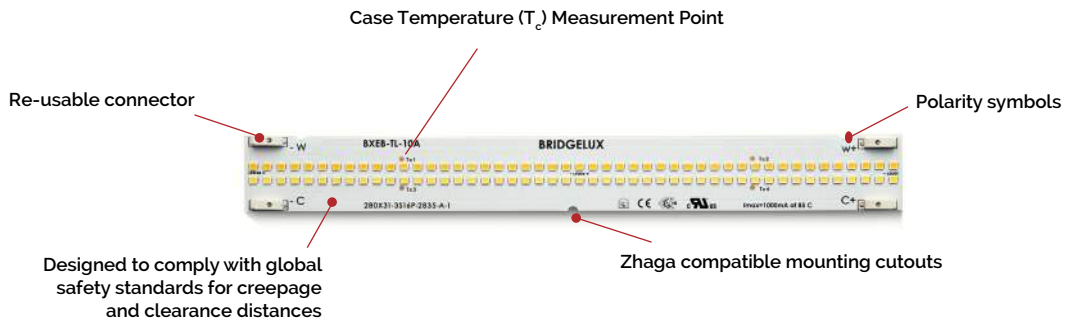
Benefits

- Superior color mixing
- Compact system design
- High quality, true color reproduction
- Enhanced optical control
- Uniform, consistent white light
- Reliable use at elevated currents enables greater design flexibility
- Easy installation using mounting cutout and connector

Contents

Product Feature Map

Bridgelux Vesta Series Linears 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 Vesta Series family of products.



Product Nomenclature

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

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 – 16 17 18

BXEB – TL – 2750 G – xxxx – A – 1 3

Product Family

Tunable White Linear

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

Minimum CRI
G = 90 CRI

Form Factor Designator
1000 = 280mm
3000 = 560mm

Configuration

Generation
1 = Gen 1

CCT Bin Options
13 = 3 SDCM

Product Selection Guide

The following product configurations are available:

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

Part Number	Nominal CCT[1] (K)	CRI[2]	Nominal Drive Current (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-2750G-1000-A-13	2700	90	500	24.8	12.4	129	1596	1484
	5000	90	500	24.8	12.4	135	1676	1596
BXEB-TL-2750G-3000-A-13	2700	90	1000	24.8	24.8	129	3192	2969
	5000	90	1000	24.8	24.8	135	3352	3192

Notes for Table 1:

1. Nominal CCT as defined by ANSI C78.377-2011.
2. CRI values are minimums. Minimum R9 value for 90 CRI products is 50, Bridgelux maintains a ±3 tolerance on all R9 values.
3. Products tested at nominal test current where temperature of center case temperature point Tc= 25° C. Values may vary depending on the thermal design of the luminaire and/or the exposed 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.

Electrical Characteristics

Table 2: Electrical Characteristics

Part Number	Nominal Drive Current (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-2750G-1000-A-13	500	23.6	24.8	26.0	-8.0	23.1	26.5
	1000	25.0	26.3	27.6	-8.0	24.5	28.1
BXEB-TL-2750G-3000-A-13	1000	23.6	24.8	26.0	-8.0	23.1	26.5
	2000	25.0	26.3	27.6	-8.0	24.5	28.1

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 1240 V. The working voltage designated for the insulation is 120V d.c. 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)	85˚C	
Soldering Temperature[2]	350˚C or lower for a maximum of 5 seconds	
Maximum Reverse Voltage	Linear products are not designed to be driven in reverse bias	
	BXEB-TL-2750G-1000-A-13	BXEB-TL-2750G-3000-A-13
Maximum Drive Current[3]	1000mA	2000mA

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 Tunable White Linears.
3. 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 linear products. Contact your Bridgelux sales representatives for LM-80 report.

Performance Curves

Figure 1: 280mm Current vs. Forward Voltage, T_c=25˚C

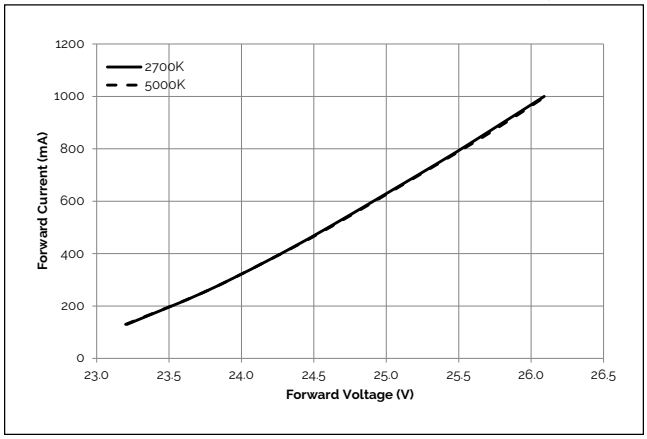


Figure 2: 560mm Current vs. Forward Voltage, T_c=25˚C

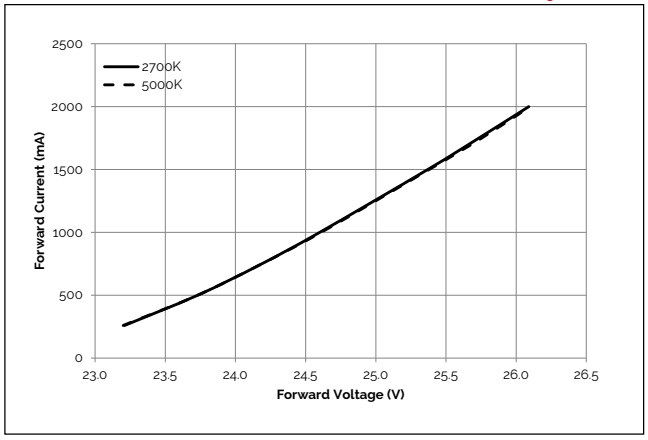


Figure 3: 280mm Relative Flux vs. Current, Tc=25˚C

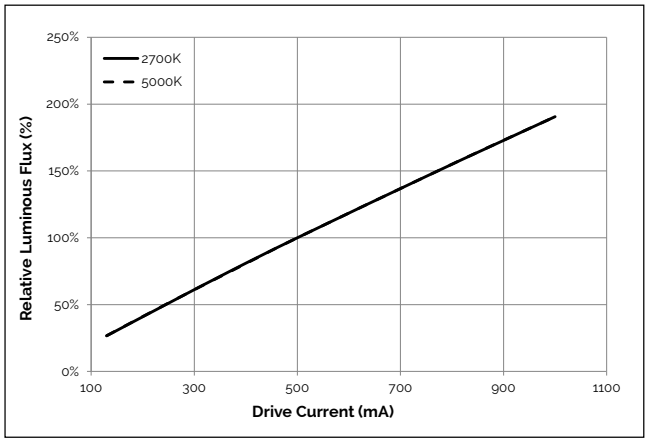


Figure 4: 560mm Relative Flux vs. Current, Tc=25˚C

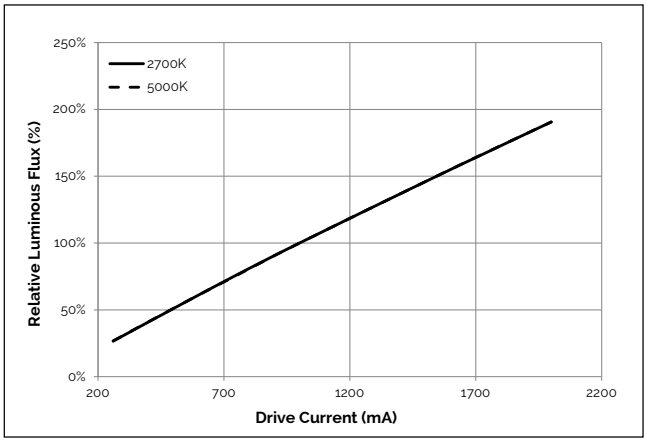


Figure 5: Relative Flux vs. Case Temperature

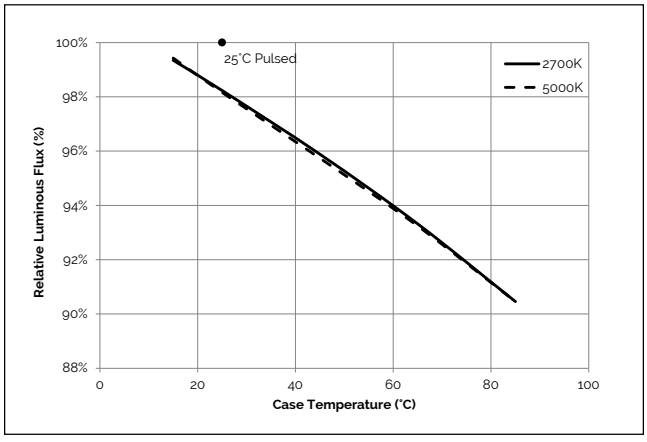
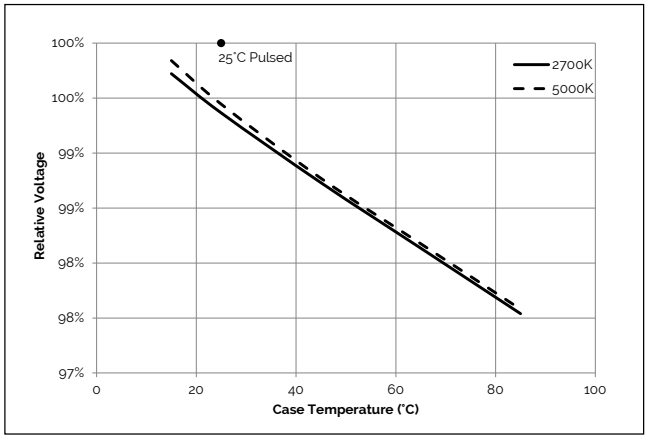


Figure 6: Relative Voltage vs. Case Temperature



Performance Curves

Figure 7: 280mm Color shift vs. Forward Current

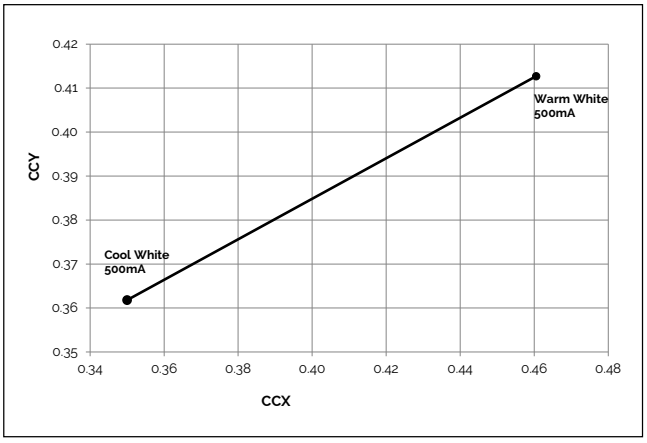


Figure 8: 560mm Color shift vs. Forward Current

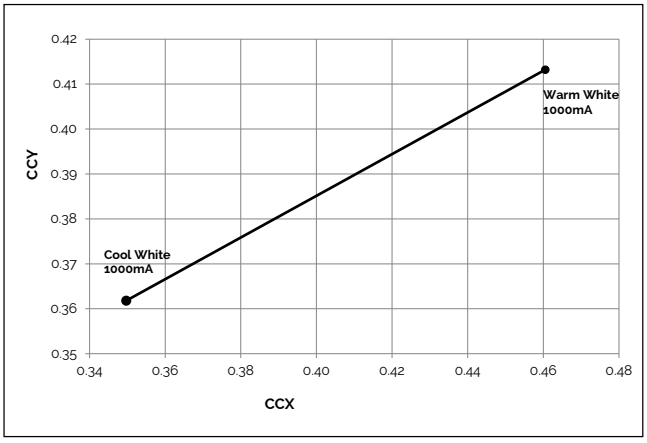


Figure 9: Relative Flux vs. Warm White Current Ratio

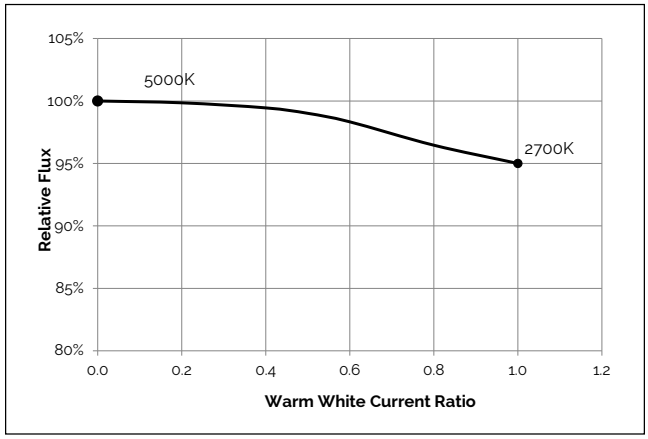
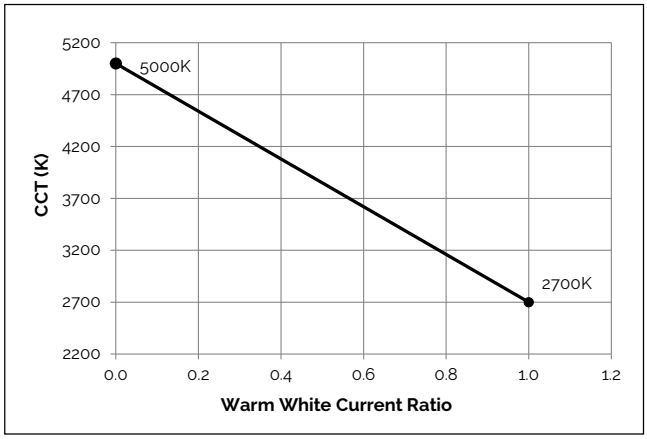
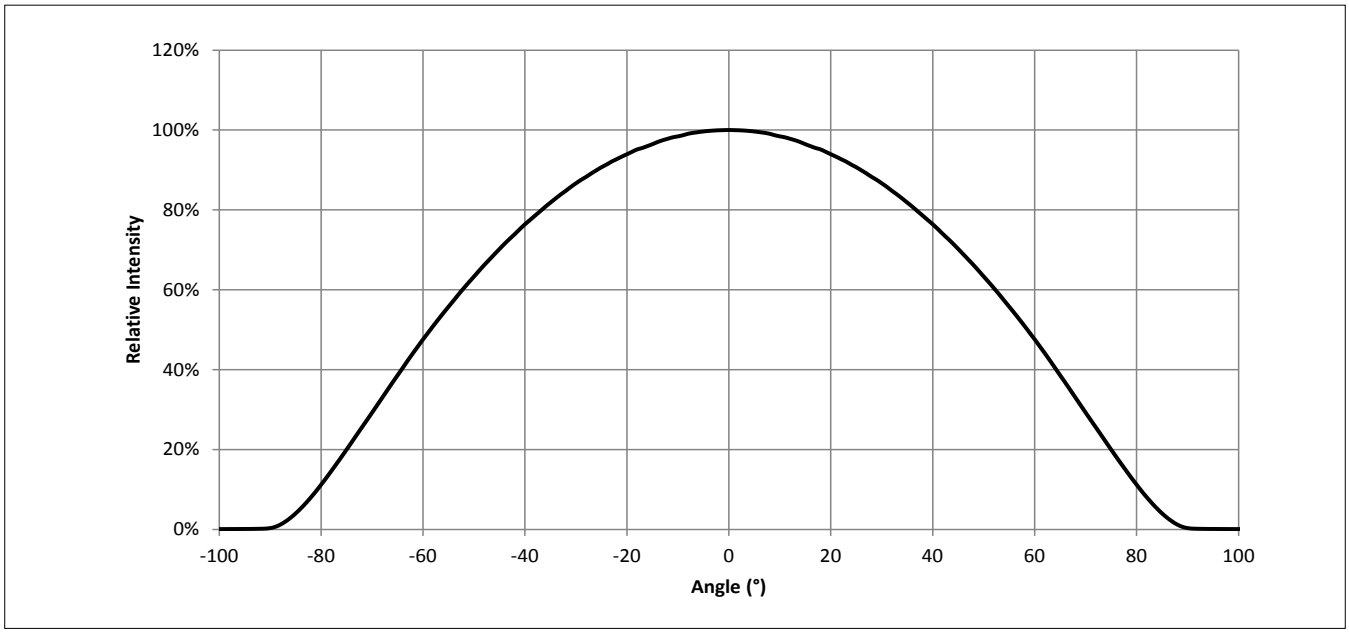


Figure 10: CCT vs. Warm White Current Ratio



Typical Radiation Pattern

Figure 11: **Typical Spatial Radiation Pattern**

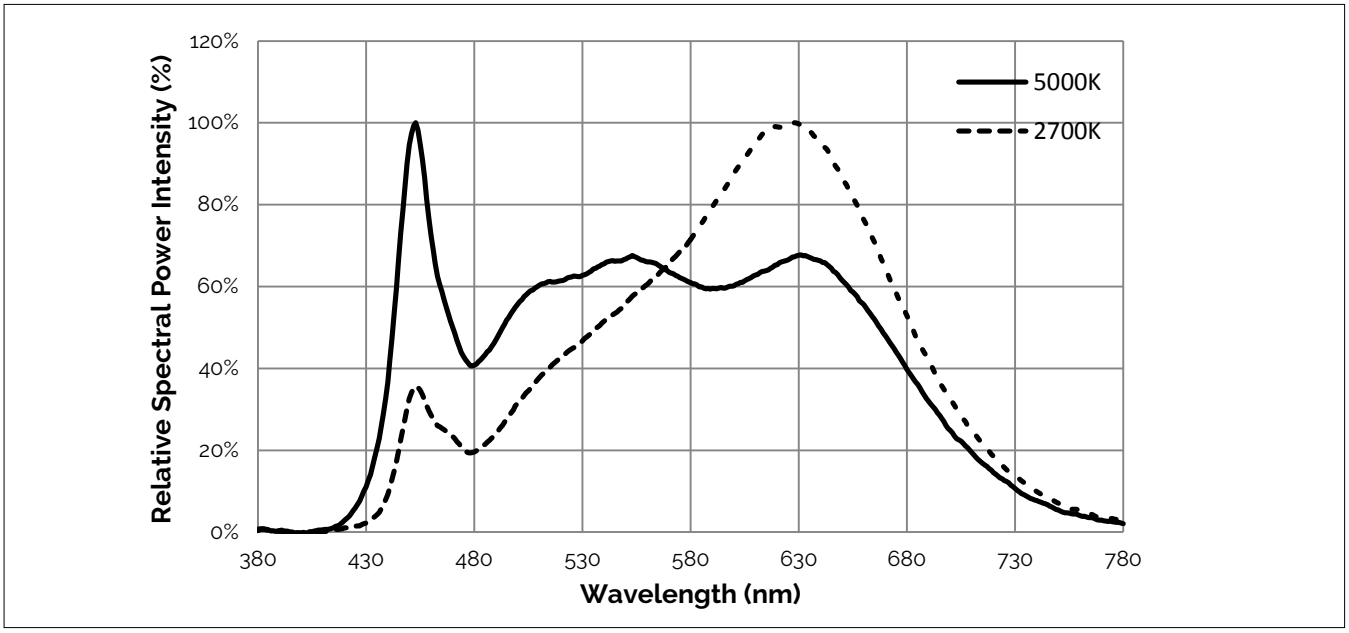


Notes for Figure 11:

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 12: Typical Color Spectrum



Note for Figure 12:

1. Color spectra measured at nominal current for T_j = T_c = 25°C.

Mechanical Dimensions

Figure 13: Drawing for Vesta™ Tunable White 280mm Linear

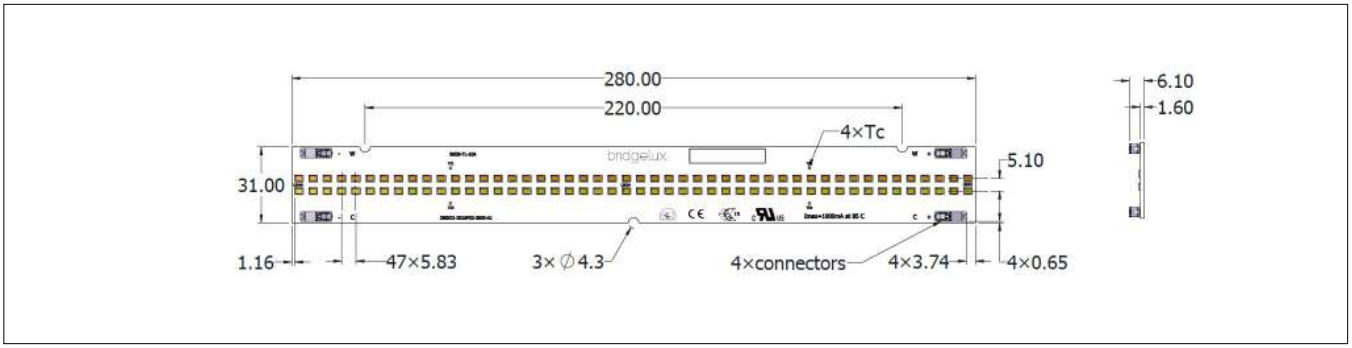


Table 4: Dimensions for 280mm Linear

Parameter	Specification	Unit
Linear length	280	mm
Linear width	31	mm
Linear thickness	6.1	mm
PCB thickness	1.6	mm

Figure 14: Drawing for Vesta™ Tunable White 560mm Linear

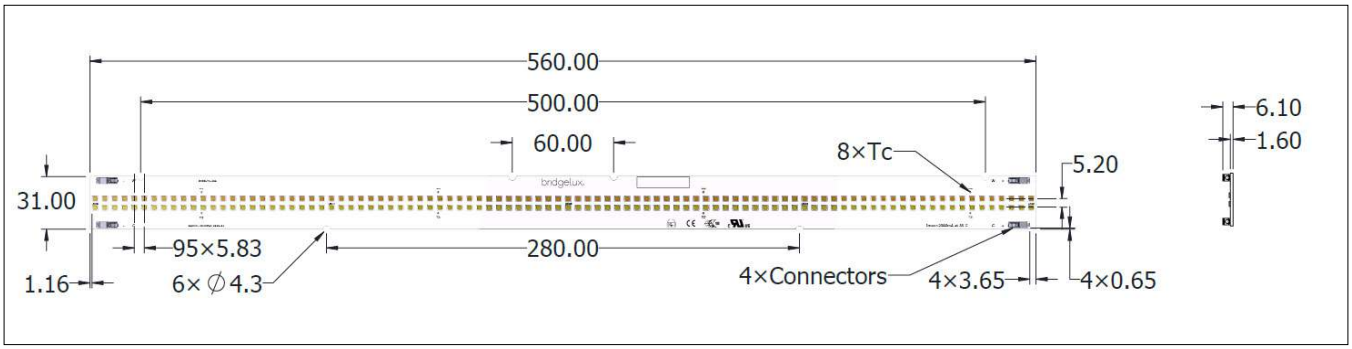


Table 5: Dimensions for 560mm Linear

Parameter	Specification	Unit
Linear length	560	mm
Linear width	31	mm
Linear thickness	6.1	mm
PCB thickness	1.6	mm

Notes for Figure 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 ± 0.10mm..

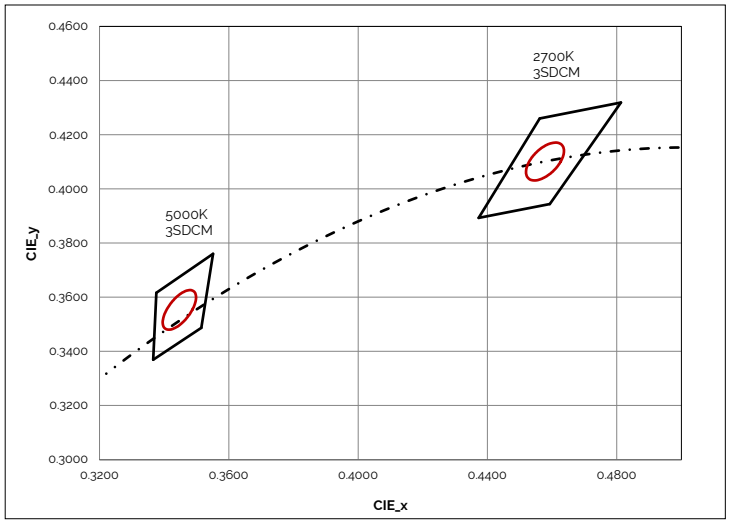
Mechanical Dimensions

Table 6: Connector and wiring

Parameter	Specification
Input wire cross-section	18-24 AWG
Terminal strip length	7-9 mm

Color Binning Information

Figure 15: Graph of Test Bins in xy Color Space



Note: Pulsed Test Conditions, T_c = 25°C

Table 7: Bin Coordinates and Associated Typical CCT

Bin Code	2700K	5000K
ANSI Bin (for reference only)	(2580K - 2870K)	(4745K - 5311K)
3 (3SDCM)	(2651K - 2794K)	(4835K-5215K)
Center Point (x,y)	(0.4578, 0.4101)	(0.3447, 0.3553)

Packaging and Labeling

Figure 16: Vesta Series Packaging and Labeling

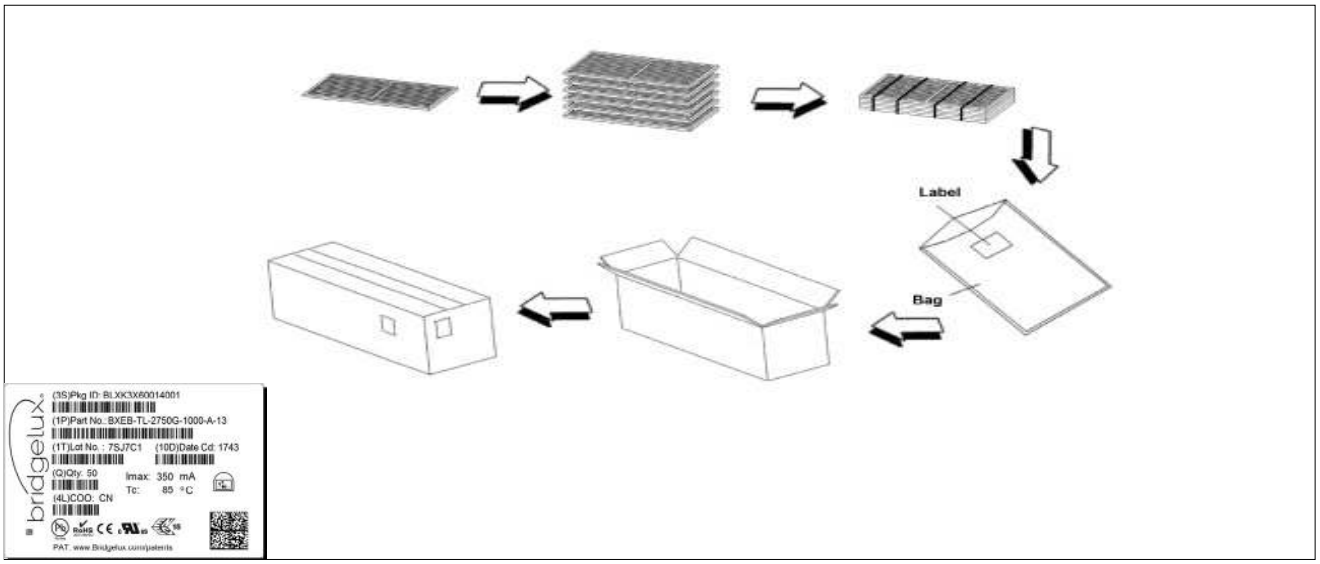


Table 8: Packaging Structure

280mm	Tray	Box
Quantity	32	160
Dimension	63 cm x 39 cm x 2.37 cm	63.7 cm x 41.7 cm x 15 cm
560mm	**Tray**	**Box**
Quantity	16	80
Dimension	63 cm x 39 cm x 2.37 cm	63.7 cm x 41.7 cm x 15 cm

Figure 17: Product Labeling

Bridgelux Vesta Series Tunable White Linears 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 linear product.

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

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 Vesta Series Tunable White 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 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 Tunable White 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 Vesta Series Tunable White Linears during operation. Allow the linear products to cool for a sufficient period of time before handling. The Vesta Series Tunable White 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 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: We Build Light That Transforms

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
bridgelux.com
twitter.com/Bridgelux
facebook.com/Bridgelux
youtube.com/user/Bridgelux
linkedin.com/company/bridgelux-inc-_2
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