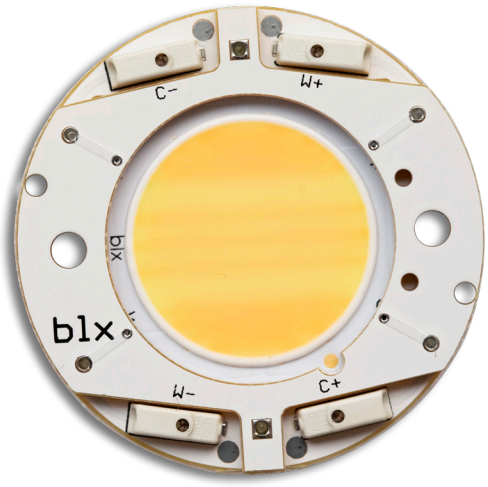
bridgelux®



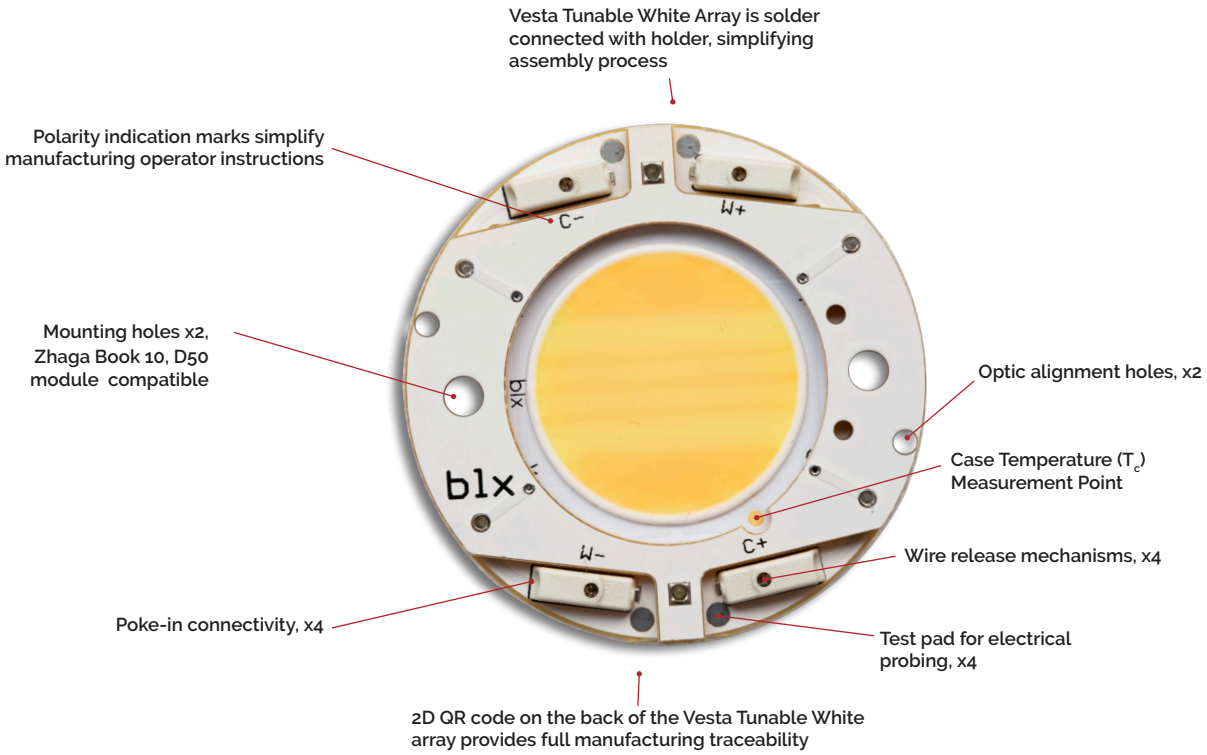
Bridgelux® Vesta® SE Series Tunable White Gen 2 22mm Integrated Array with S2 Holder

Product Data Sheet DS354

FIVE YEAR Warranty™

Product Feature Map

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



Product Nomenclature

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

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

BXRV - TR - 2750 G - 60A0 - A - 23 - S2

Product Family

Tunable White Array

Nominal CCT
27 = 2700K
50 = 5000K
65 = 6500K

Minimum CRI
G = 90 CRI

Form Factor Designator
60A0 = 18mm LES

Array Configuration
A = 47W

Gen. 2

CCT Bin Options
3 = 3 SDCM for 2700K, 5000K, 6500K

Special Edition
Vesta integrated array with holder

Holder Version
2 = Version 2

Product Selection Guide

The following product configurations are available:

Table 1: Selection Guide, Measurement Data

Part Number	Nominal CCT [1] T_c=85°C (K)	Typical CRI [2] T_c=85°C	Nominal Drive Current, per channel (mA)	Typical V_f [3] T_c=25°C (V)	Typical Power T_c=25°C (W)	Typical Pulsed Flux [3, 4, 5] T_c=25°C (lm)	Typical Efficacy T_c=25°C [5] (lm/W)	Minimum Pulsed Flux [8] T_c=25°C (lm)	Typical DC Flux T_c=85°C [6, 7] (lm)
BXRV-TR-2750G-65A0-A-23-S2	2700	93	900	52.7	47.4	5308	112	4777	4671
	5000	92	900	53.6	48.2	5966	124	5369	5190
BXRV-TR-2765G-65A0-A-23-S2	2700	93	900	52.7	47.4	5308	112	4777	4671
	6500	92	900	53.6	48.2	5966	124	5369	5190

Notes for Table 1:

1. Nominal CCT as defined by ANSI C78.377-2017.
2. For CRI 92-93 products, the minimum CRI value is 90 and the minimum R9 value is 50. Bridgelux maintains a ±3 tolerance on all R9 values.
3. Products tested under pulsed condition (10ms pulse width) at nominal test current where T_j (junction temperature) = T_c (case temperature) = 25°C.
4. Typical performance values are provided as a reference only and are not a guarantee of performance.
5. Bridgelux maintains a ±7% tolerance on flux measurements.
6. Typical stabilized DC performance values are provided as reference only and are not a guarantee of performance.
7. Typical performance is estimated based on operation under DC (direct current) with LED array mounted onto a heat sink with thermal interface material and the case temperature maintained at 85°C. Based on Bridgelux test setup, values may vary depending on the thermal design of the luminaire and/or the exposed environment to which the product is subjected.
8. Minimum flux values at nominal test current are guaranteed by 100% test.

Electrical Characteristics

Table 2: Electrical Characteristics

Part Number	Nominal CCT T_c=85°C (K)	Nominal Drive Current (mA)	Forward Voltage Pulsed, T_c = 25°C [1, 2, 3, 7]			Typical Temperature Coefficient of Forward Voltage [4] $\Delta V_f / \Delta T_c$ (mV/°C)	Typical Thermal Resistance Junction to Case [5] (°C/W)	Driver Selection Voltages [6]	
			Minimum (V)	Typical (V)	Maximum (V)			V_f Min. Hot T_c = 105°C (V)	V_f Max. Cold T_c = -40°C (V)
BXRV-TR-27xxG-65A0-A-23-S2	2700	900	49.5	52.7	55.9	-17.8	0.16	48.1	57.0
	5000/6500K	900	50.4	53.6	56.8	-17.9		48.9	58.0

Notes for Table 2:

1. Parts are tested in pulsed conditions, T_c = 25°C. Pulse width is 10ms.
2. Voltage minimum and maximum are provided for reference only and are not a guarantee of performance.
3. Bridgelux maintains a tester tolerance of ± 0.10V on forward voltage measurements.
4. Typical temperature coefficient of forward voltage tolerance is ± 0.1mV for nominal current.
5. Thermal resistance value was calculated using total electrical input power; optical power was not subtracted from input power. The thermal interface material used during testing is not included in the thermal resistance value.
6. V_f min hot and max cold values are provided as reference only and are not guaranteed by test. These values are provided to aid in driver design and selection over the operating range of the product.
7. This product has been designed and manufactured per IEC 62031:2018. This product has passed dielectric withstand voltage testing at 500 V. The working voltage designated for the insulation is 45V DC. The maximum allowable voltage across the array must be determined in the end product application

Absolute Maximum Ratings

Table 3: Maximum Ratings

Parameter	Maximum Rating	
LED Junction Temperature (T_j)	125˚C	
Storage Temperature	-40˚C to +105˚C	
Operating Case Temperature[1] (T_c)	105˚C	
Maximum Total Drive Current[4]	1400mA	
	Warm White 2700K	Cool White 5000K/6500K
Maximum Drive Current Per Channel[3,4]	1400mA	1400mA
Maximum Peak Pulsed Drive Current[5]	1680mA	1440mA
Maximum Total Power	73.9W	

Notes for Table 3:

1. For IEC 62717 requirement, please contact Bridgelux Sales Support.
2. See Bridgelux Application Note AN101 "Handling and Assembly of LED Arrays" for more information.
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. Contact your Bridgelux sales representatives for the LM-80 report.
4. Maximum Drive Current is maximum combined drive currents between both 2700K and 5000K/6500K channels. For example, if 1400mA is applied to the 2700K channel, no current may be applied to the 6500K channel of the array. If 700mA is applied to the 2700K channel, then a maximum of 700mA can be applied to the 6500K channel.
5. Bridgelux recommends a maximum duty cycle of 10% and pulse width of 20ms when operating LED arrays at the maximum peak pulsed current specified. Maximum peak pulsed currents indicate values where the LED array can be driven without catastrophic failures.

Performance Curves

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

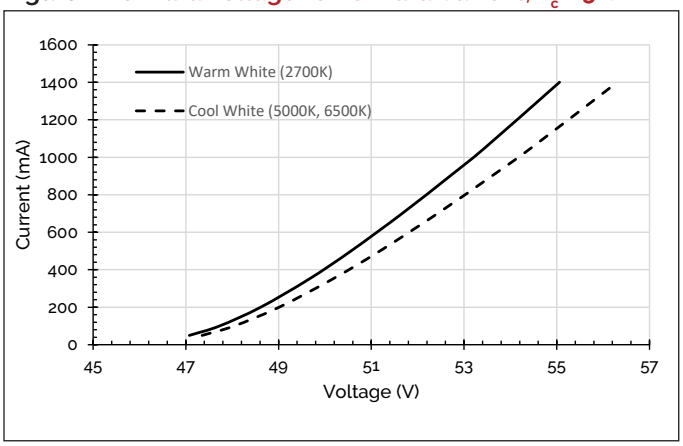


Figure 2: Relative Flux vs. Drive Current, T_c=25°C

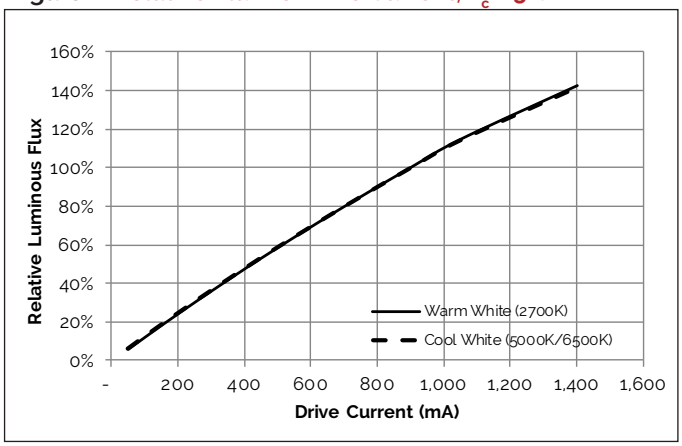


Figure 3: Relative Flux vs. Case Temperature

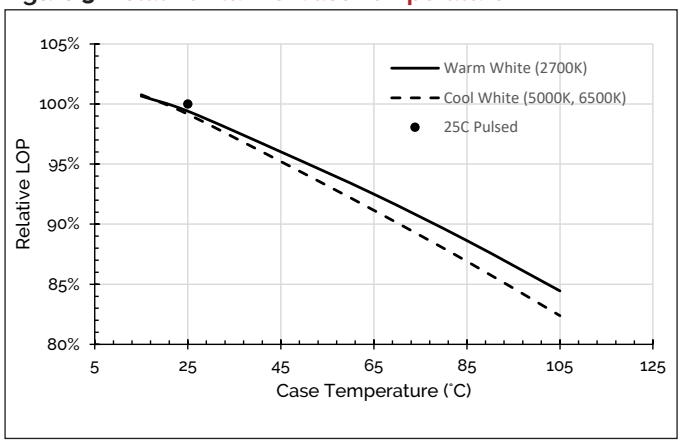


Figure 4: Relative Voltage vs. Case Temperature

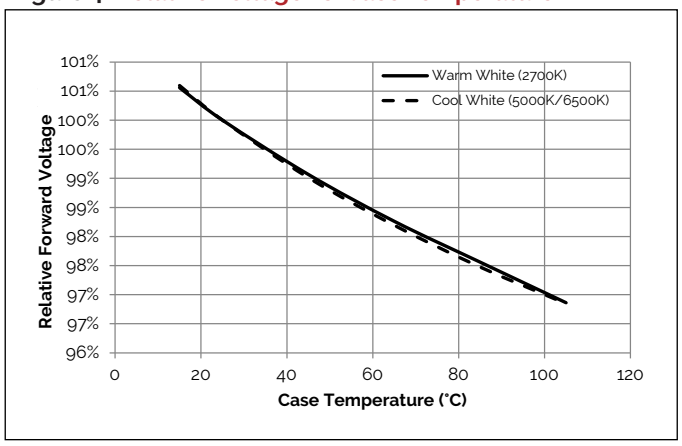


Figure 5: CCT vs. Relative Current

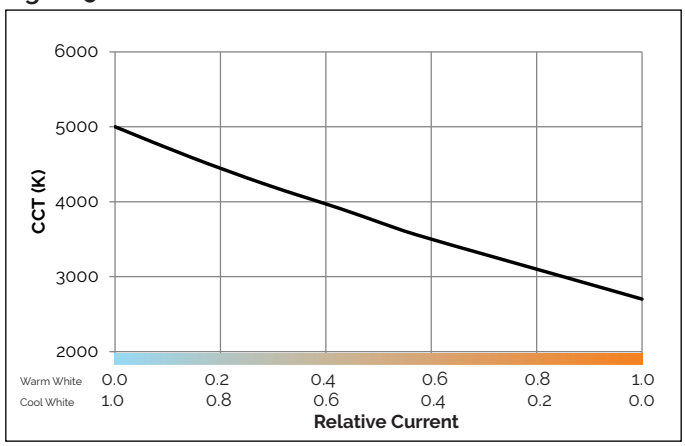
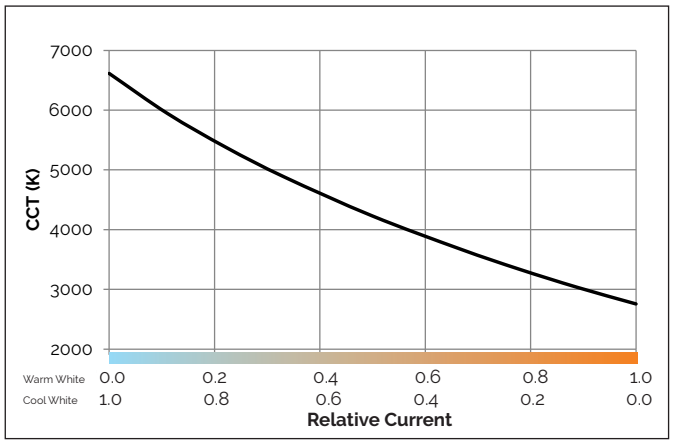


Figure 6: CCT vs. Relative Current



Performance Curves

Figure 7: CCT Tuning Range

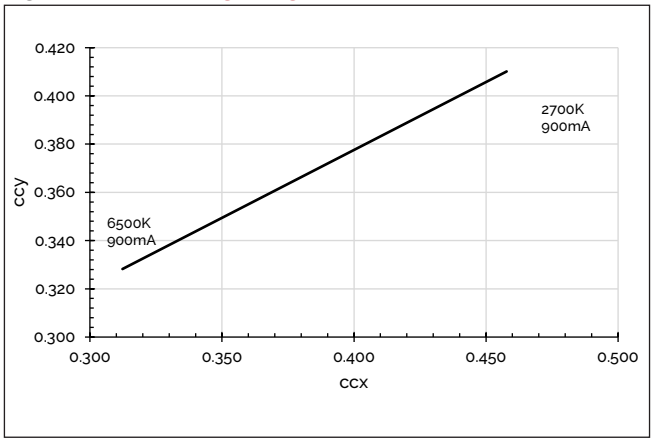


Figure 8: CCT Tuning Range

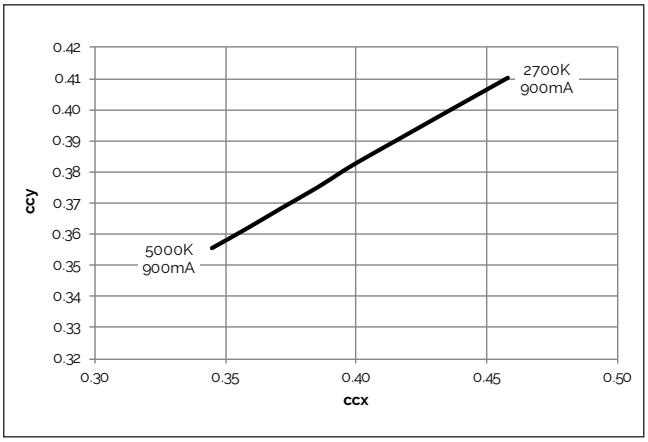
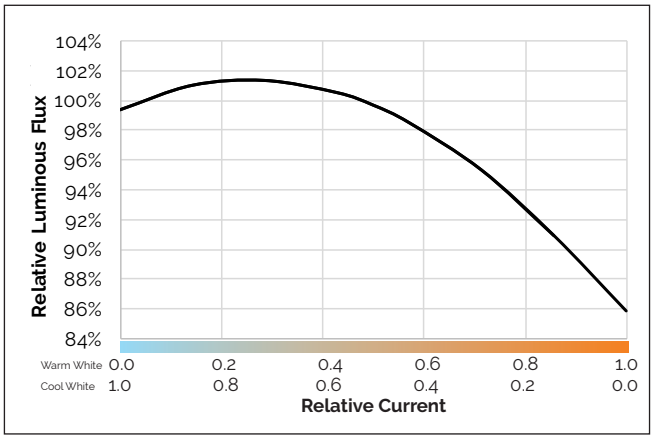
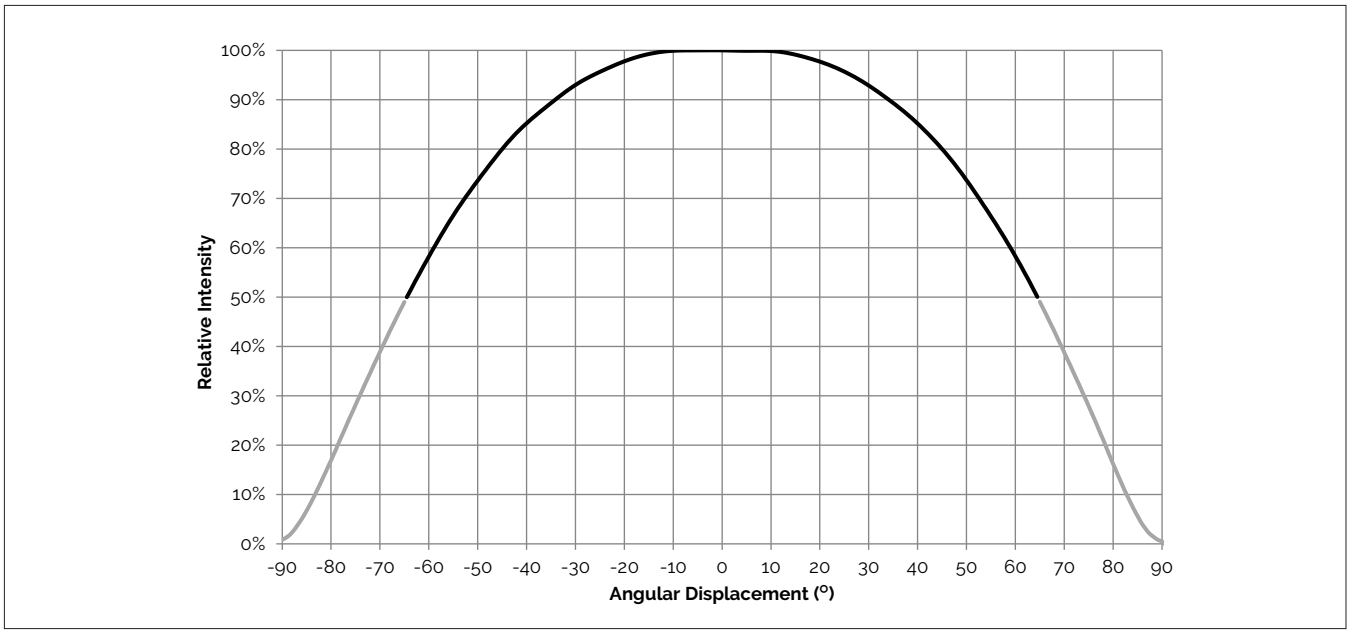


Figure 9: Relative Flux vs. Relative Current



Typical Radiation Pattern

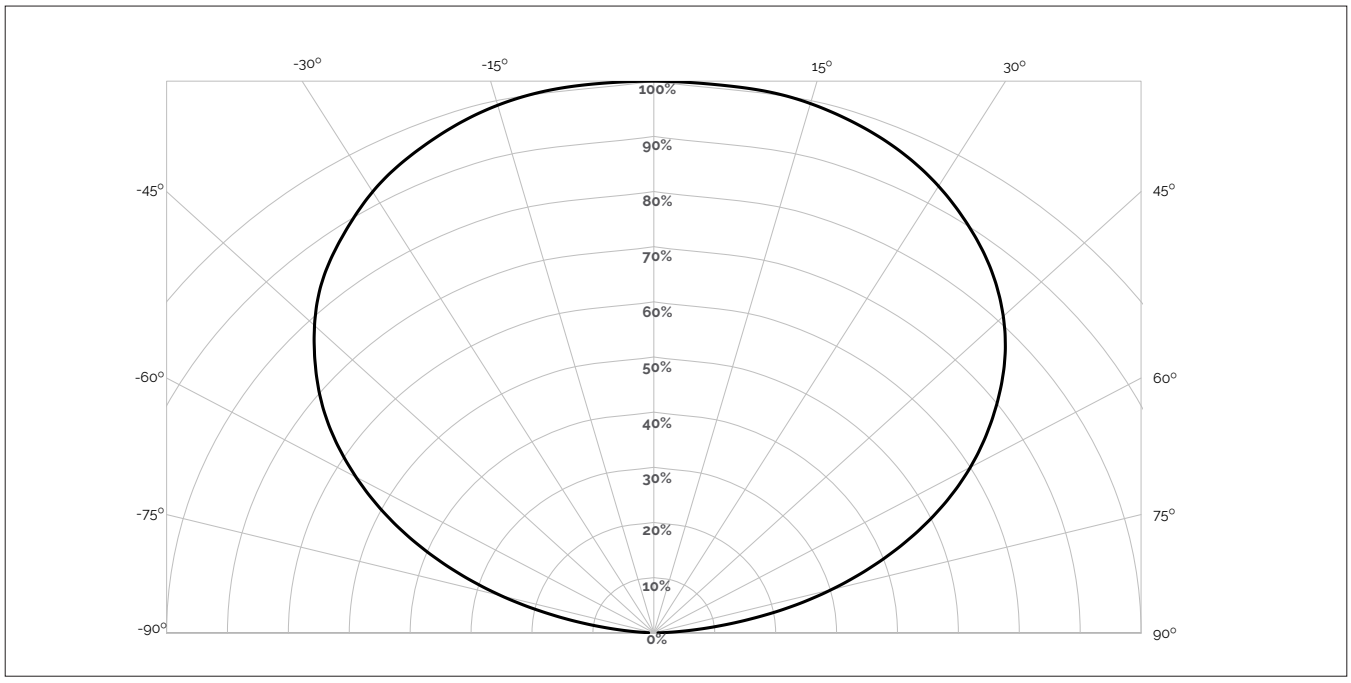
Figure 10: Typical Spatial Radiation Pattern



Notes for Figure 10:

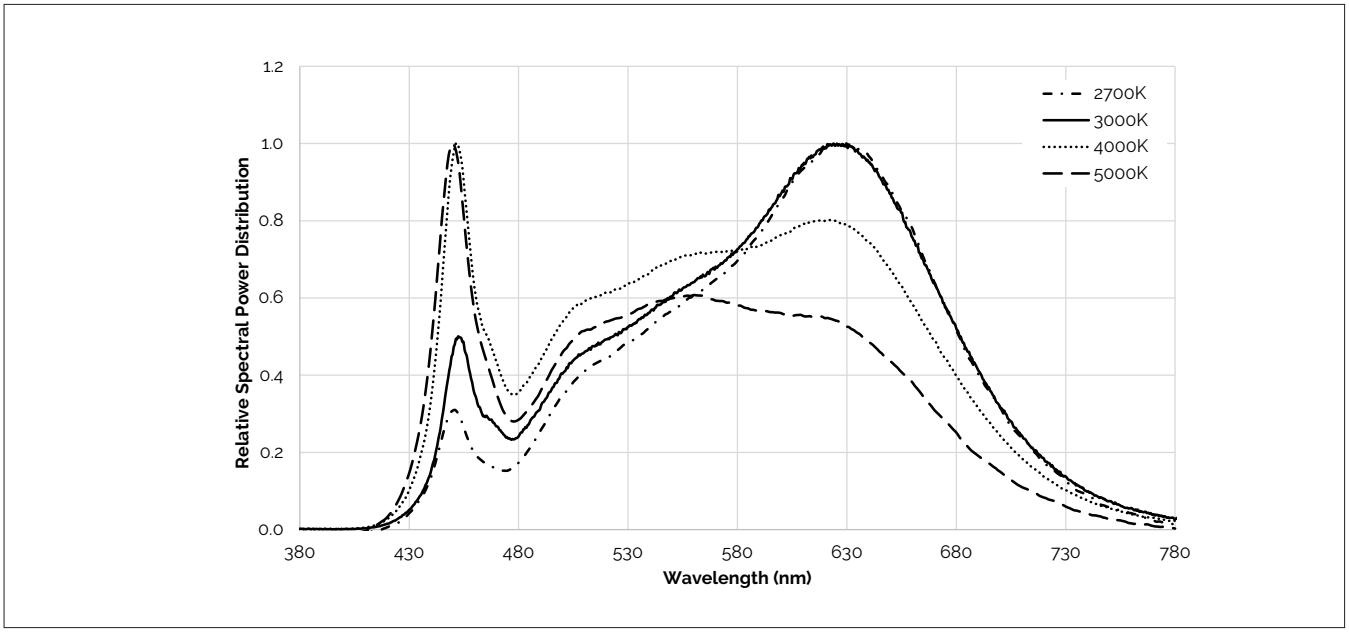
1. Typical viewing angle is 130°.
2. The viewing angle is defined as the off axis angle from the centerline where Iv is ½ of the peak value.

Figure 11: Typical Polar Radiation Pattern



Typical Color Spectrum

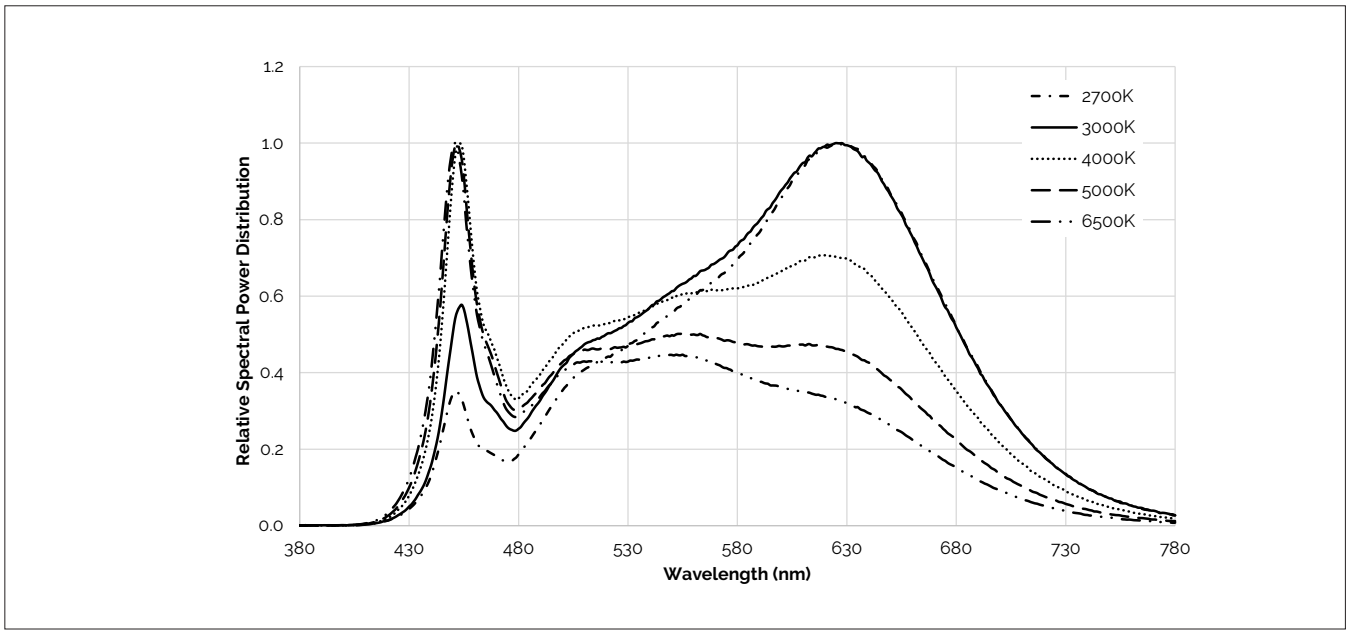
Figure 12: Typical Color Spectrum



Note for Figure 12:

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

Figure 13: Typical Color Spectrum

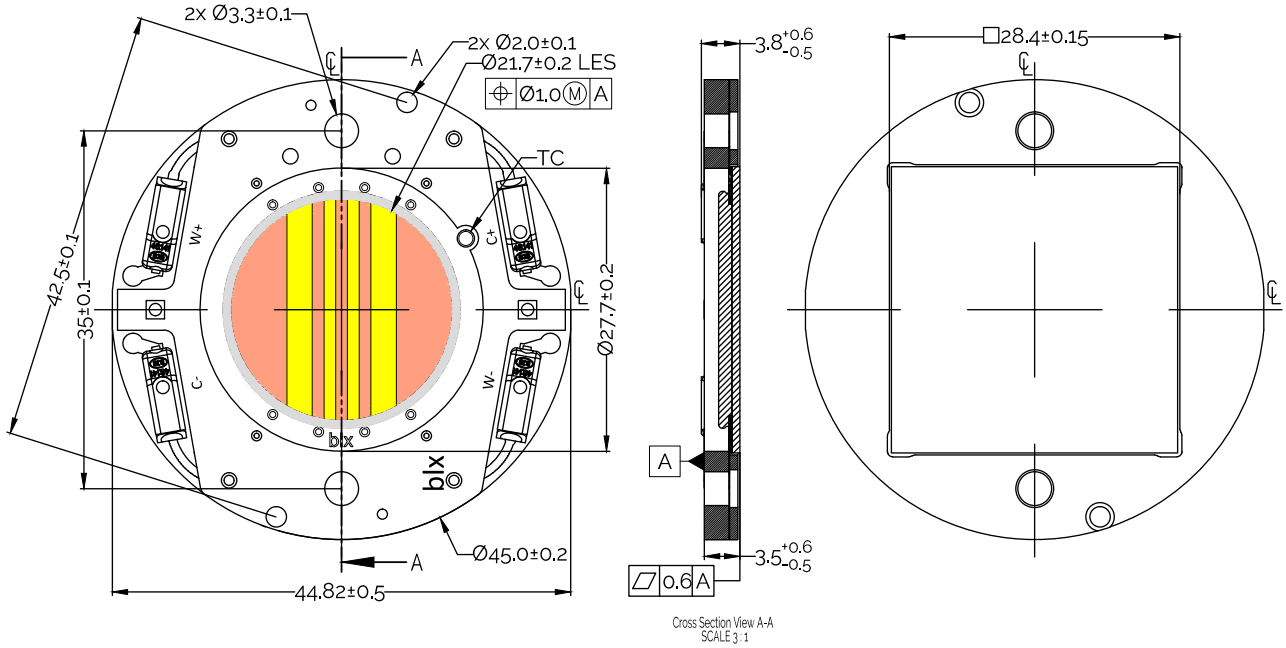


Note for Figure 13:

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

Mechanical Dimensions

Figure 14: Mechanical Specifications



Notes for Figure 14:

1. Connectors are labeled "+" to denote positive polarity and "-" to denote negative polarity of the warmer white and cooler white channels.
2. Poke-In connectors accept solid and stranded wires with AWG wire sizes 20 - 24.
3. Wires may be released by pushing into the wire release hole on the poke in connector. Bridgelux recommends the use of BJB tool 46.141.U801.89.
4. Recommended wire strip length is 7.0mm +/-0.5mm.
5. Mounting holes (2X) are for M3 screws.
6. Bridgelux recommends two tapped holes for mounting screws with 35.0 ± 0.10mm center-to-center spacing.
7. Screws with flat shoulders (pan, dome, button, round, truss, mushroom) provide optimal torque control. Do not use flat, countersink, or raised head screws.
8. The maximum mounting screw torque value is 0.3 N-m (2.7 lbf-in).
9. Drawings are not to scale.
10. Drawing dimensions are in millimeters.
11. Unless otherwise specified, tolerances are ± 0.10mm.

Color Binning Information

Figure 15: Graph of Bins in xy Color Space

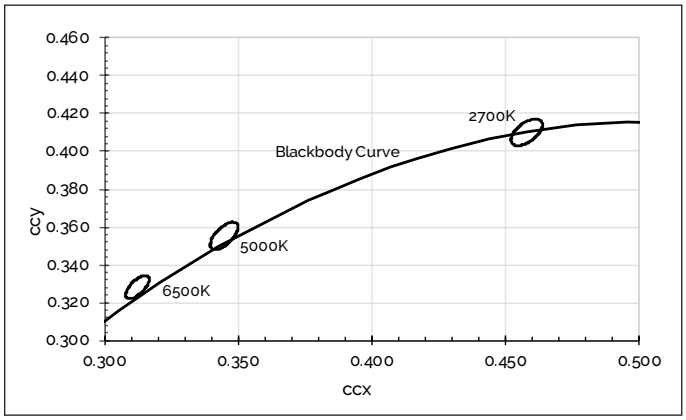


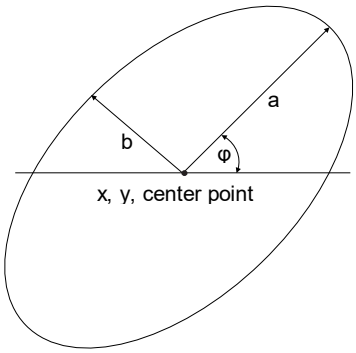
Table 4: McAdam ellipse CCT color bin definitions for product operating at T_c = 85°C

CCT	Center Point	Bin Size	Axis a	Axis b	Rotation Angle
2700K	x=0.4578 y= 0.4101	3 SDCM	0.00810	0.00420	53.70°
5000K	x=0.3447 y=0.3553	3 SDCM	0.00822	0.00354	59.62°
6500K	x=0.3123 y=0.3282	3 SDCM	0.00690	0.00285	58.57°

Notes for Table 4:

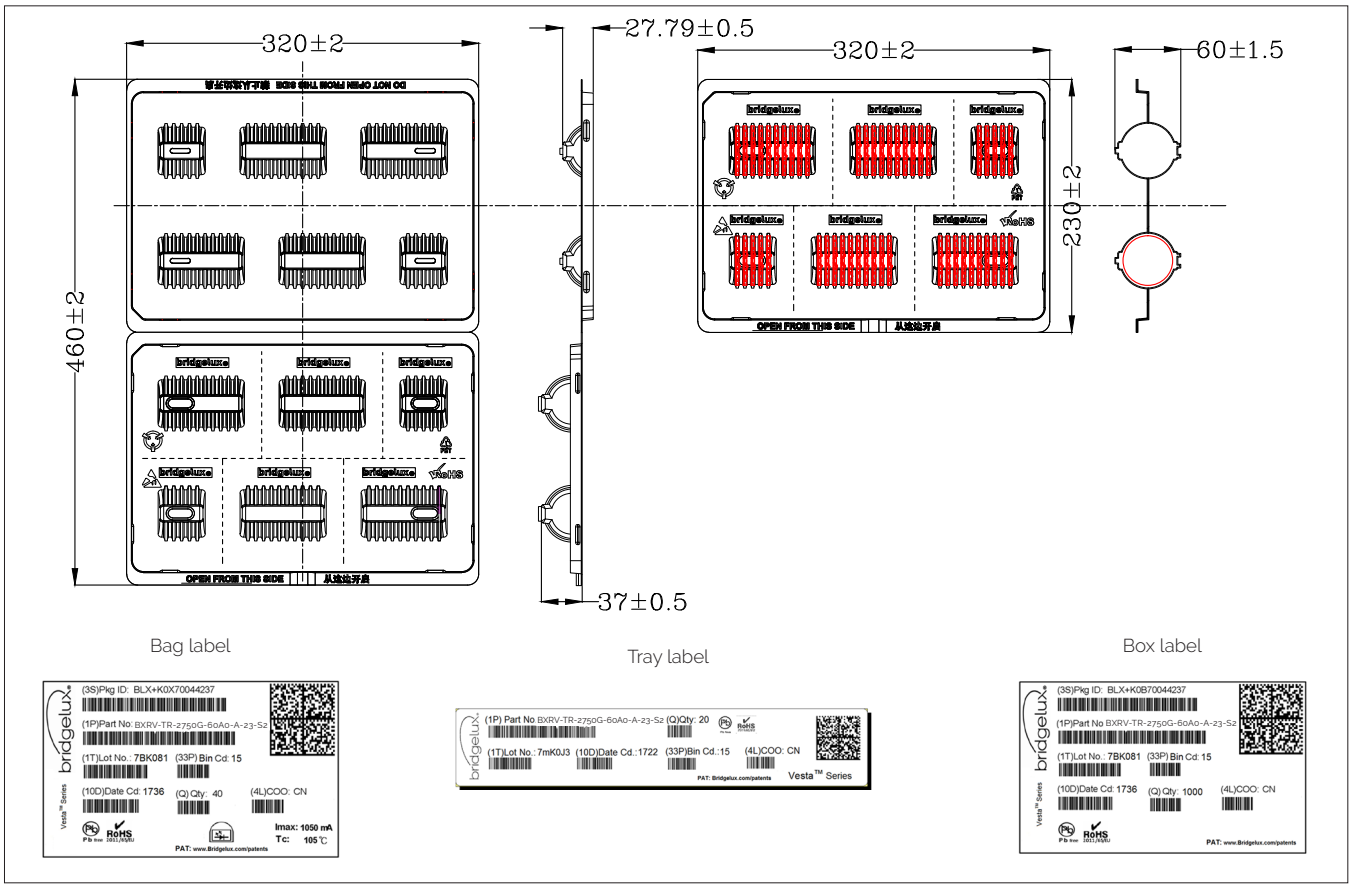
1. The x,y center points are the center points of the respective ANSI bins in the CIE 1931 xy Color Space
2. Products are binned at Tc=85˚C
3. Bridgelux maintains a tolerance of +/-0.007 on x and y color coordinates in the CIE 1931 Color Space

Figure 16: Definition of the McAdam ellipse



Packaging and Labeling

Figure 17: Packaging Specifications



Notes for Figure 17:

1. Each plastic tray holds 50 arrays.
2. Each tray is sealed in an anti-static bag. One such bag is placed in a small box and shipped. Depending on quantities ordered, a bigger shipping box, containing multiple small boxes may be used to ship products.
3. Each bag and small box is labeled as shown above.
4. The dimensions of the small shipping box are 350 x 245 x 67 mm.

Figure 18: Product Labeling

Bridgelux arrays have laser markings on the back side of the substrate to help with product identification. In addition to the product identification markings, Bridgelux arrays 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 array.

Design Resources

Application Notes

Vesta SE Series Tunable White arrays are intended for use in dry, indoor applications. Bridgelux has developed a comprehensive set of application notes and design resources to assist customers in successfully designing with the Vesta SE Series product family of LED array products. 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 SE Series LED arrays are available in both IGS and STEP formats. Please contact your Bridgelux sales representative for assistance.

LM80

Please contact your Bridgelux sales representative for more information.

Precautions

CAUTION: CHEMICAL EXPOSURE HAZARD

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

CAUTION: EYE SAFETY

Eye safety classification for the use of Bridgelux Vesta Series is ongoing. Please use appropriate precautions. It is important that employees working with LEDs are trained to use them safely. Please contact your Bridgelux sales representative for more information.

CAUTION: RISK OF BURN

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

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

Disclaimers

STANDARD TEST CONDITIONS

Unless otherwise stated, array 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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