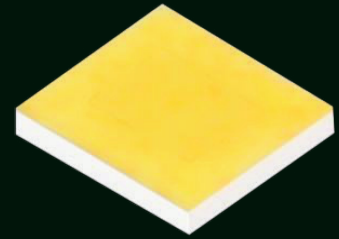


# Bridgelux® CSP 2727 Series

Product Data Sheet DS956

# Introduction

CSP 2727



The Bridgelux Chip Scale Package (CSP) 2727 LED offers exceptional performance in an ultra compact size. This CSP LED is hot-color targeted which ensures that the LEDs fall within their specified color bin at the typical application conditions of 85°C. With its superior performance without bonding wires and ability to assemble a densely populated and high luminous flux LED board, the CSP 2727 provides unparalleled design-in flexibility for indoor and outdoor lighting applications. The CSP 2727 is ideal as a drop in replacement for emitters with an industry standard 2.7mm x 2.7mm footprint.

## Features

- Competitive efficacy and lumen per dollar
- Industry-standard 2727 footprint, 1-sided emitter
- Excellent color maintenance
- Compatible with SMT
- Superior luminous flux at maximum current for reduced LED count
- Hot-color targeting ensures that color is within the ANSI bin at the typical application conditions of 85°C
- Enables 3- and 5-step MacAdam ellipse custom binning kits
- 120 degrees viewing angle
- Multiple CCT and CRI configurations for a wide range of lighting applications

## Benefits

- Lower operating and manufacturing cost
- Ease of design and rapid go-to-market
- Uniform consistent white light
- Reliable and constant white point
- Environmentally friendly, complies with standards
- Design flexibility



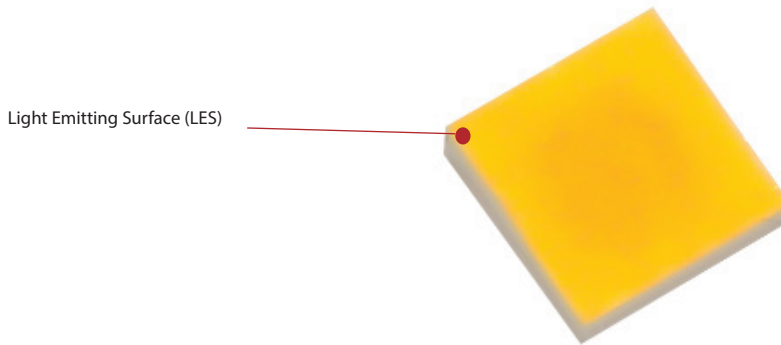
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# Product Feature Map

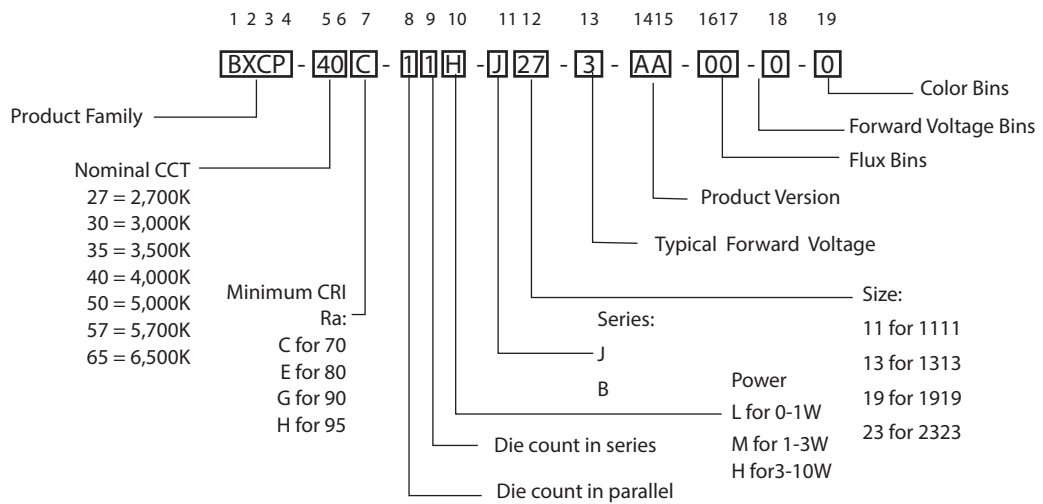
Bridgelux CSP LED products offer exceptional performance and color quality all in a highly reliable, cost effective, compact package. Our CSP products come in industry standard package sizes and follow ANSI binning standards.

These LEDs are optimized for cost and performance, helping to ensure highly competitive system lumen per dollar performance while addressing the stringent efficacy and reliability standards required for modern lighting applications.



## Product Nomenclature

The part number designation for Bridgelux CSP 2727 is explained as follows:



## Product Test Conditions

Bridgelux CSP 2727 LEDs are tested and binned with a 10ms pulse of 700mA at  $T_j$  (junction temperature) =  $T_{sp}$  (solder point temperature) = 85°C. Luminous flux, color and forward voltage are binned at  $T_j = T_{sp} = 85°C$ ,

# Product Selection Guide

The following product configurations are available:

Table 1: Selection Guide, Pulsed Measurement Data at 700mA ( $T_j=T_{sp}=25^\circ\text{C}$ )

Part Number <sup>1,6</sup>	Nominal CCT <sup>2</sup> (K)	CRI <sup>3,5</sup>	Nominal Drive Current (mA)	Forward Voltage <sup>4,5</sup> (V)			Typical Pulsed Flux <sup>4,5</sup> (lm)	Typical Power (W)	Typical Efficacy (lm/W)
				Min	Typical	Max			
BXCP-27C-11H-J27-3-A1-00-0-0	2700	70	700	2.70	2.90	3.20	331	2.0	163
BXCP-30C-11H-J27-3-A1-00-0-0	3000	70	700	2.70	2.90	3.20	353	2.0	174
BXCP-40C-11H-J27-3-A1-00-0-0	4000	70	700	2.70	2.90	3.20	385	2.0	190
BXCP-50C-11H-J27-3-A1-00-0-0	5000	70	700	2.70	2.90	3.20	385	2.0	190
BXCP-57C-11H-J27-3-A1-00-0-0	5700	70	700	2.70	2.90	3.20	385	2.0	190
BXCP-65C-11H-J27-3-A1-00-0-0	6500	70	700	2.70	2.90	3.20	385	2.0	190
BXCP-27E-11H-J27-3-A1-00-0-0	2700	80	700	2.70	2.90	3.20	299	2.0	147
BXCP-30E-11H-J27-3-A1-00-0-0	3000	80	700	2.70	2.90	3.20	316	2.0	156
BXCP-40E-11H-J27-3-A1-00-0-0	4000	80	700	2.70	2.90	3.20	342	2.0	168
BXCP-50E-11H-J27-3-A1-00-0-0	5000	80	700	2.70	2.90	3.20	342	2.0	168
BXCP-57E-11H-J27-3-A1-00-0-0	5700	80	700	2.70	2.90	3.20	342	2.0	168
BXCP-65E-11H-J27-3-A1-00-0-0	6500	80	700	2.70	2.90	3.20	342	2.0	168

Notes for Table 1:

- The last 6 characters (including hyphens '-') refer to nominal flux, nominal forward voltage, and color bins, respectively. "00-0-0" denotes the full distribution of flux, forward voltage, and 5 SDCM color.  
Example: BXCP-40C-11H-J27-3-A1-00-0-0 refers to the full distribution of flux, forward voltage, and color within a 4000K 5-step ANSI standard chromaticity region with a minimum of 70 CRI.
- Product CCT is hot targeted at  $T_{sp} = 85^\circ\text{C}$ . Nominal CCT as defined by ANSI C78.377-2011.
- Listed CRIs are minimum values and include test tolerance.
- Products tested under pulsed condition (10ms pulse width) at nominal drive current where  $T_j=T_{sp}=25^\circ\text{C}$ .
- Bridgelux maintains a  $\pm 7.5\%$  tolerance on luminous flux measurements,  $\pm 0.1\text{V}$  tolerance on forward voltage measurements, and  $\pm 2$  tolerance on CRI measurements for the CSP.
- Refer to Table 6 and Table 7 for Luminous Flux Binning and Forward Voltage Binning information.

# Product Selection Guide

Table 2: Selection Guide, Pulsed Measurement Data at 700mA ( $T_j=T_{sp}=85^\circ\text{C}$ )

Part Number <sup>1,5</sup>	Nominal CCT <sup>2</sup> (K)	CRI <sup>3,4</sup>	Nominal Drive Current (mA)	Forward Voltage <sup>4</sup> (V)			Typical Pulsed Flux <sup>4</sup> (lm)	Typical Power (W)	Typical Efficacy (lm/W)
				Min	Typical	Max			
BXCP-27C-11H-J27-3-A1-00-0-0	2700	70	700	2.60	2.80	3.00	301	2.0	154
BXCP-30C-11H-J27-3-A1-00-0-0	3000	70	700	2.60	2.80	3.00	321	2.0	164
BXCP-40C-11H-J27-3-A1-00-0-0	4000	70	700	2.60	2.80	3.00	350	2.0	179
BXCP-50C-11H-J27-3-A1-00-0-0	5000	70	700	2.60	2.80	3.00	350	2.0	179
BXCP-57C-11H-J27-3-A1-00-0-0	5700	70	700	2.60	2.80	3.00	350	2.0	179
BXCP-65C-11H-J27-3-A1-00-0-0	6500	70	700	2.60	2.80	3.00	350	2.0	179
BXCP-27E-11H-J27-3-A1-00-0-0	2700	80	700	2.60	2.80	3.00	272	2.0	139
BXCP-30E-11H-J27-3-A1-00-0-0	3000	80	700	2.60	2.80	3.00	288	2.0	147
BXCP-40E-11H-J27-3-A1-00-0-0	4000	80	700	2.60	2.80	3.00	311	2.0	159
BXCP-50E-11H-J27-3-A1-00-0-0	5000	80	700	2.60	2.80	3.00	311	2.0	159
BXCP-57E-11H-J27-3-A1-00-0-0	5700	80	700	2.60	2.80	3.00	311	2.0	159
BXCP-65E-11H-J27-3-A1-00-0-0	6500	80	700	2.60	2.80	3.00	311	2.0	159

Notes for Table 2:

- The last 6 characters (including hyphens '-') refer to nominal flux, nominal forward voltage, and color bins, respectively. "00-0-0" denotes the full distribution of flux, forward voltage, and 5 SDCM color.  
Example: BXCP-40C-11H-J27-3-A1-00-0-0 refers to the full distribution of flux, forward voltage, and color within a 4000K 5-step ANSI standard chromaticity region with a minimum of 70 CRI.
- Product CCT is hot targeted at  $T_{sp} = 85^\circ\text{C}$ . Nominal CCT as defined by ANSI C78.377-2011.
- Listed CRIs are minimum values and include test tolerance.
- Bridgelux maintains a  $\pm 7.5\%$  tolerance on luminous flux measurements,  $\pm 0.1\text{V}$  tolerance on forward voltage measurements, and  $\pm 2$  tolerance on CRI measurements for the CSP.
- Refer to Table 6 and Table 7 for Luminous Flux Binning and Forward Voltage Binning information.
- Products tested under pulsed condition (10ms pulse width) at nominal drive current where  $T_j=T_{sp}=85^\circ\text{C}$ .

# Performance at Commonly Used Drive Currents

CSP 2727 LEDs specifications at nominal drive current are shown in Table 1 and Table 2. CSP 2727 may also be driven at other drive currents dependent on specific application design requirements. The performance at any drive current can be derived from the current vs. voltage characteristics shown in Figure 2 and the relative luminous flux vs. current characteristics shown in Figure 3. The performance at commonly used drive currents is summarized in Table 3.

Table 3: Performance at Commonly Used Drive Currents

Part Number	CRI	Drive Current <sup>1</sup> (mA)	Typical $V_f$ $T_{sp} = 25^\circ\text{C}$ (V)	Typical Power $T_{sp} = 25^\circ\text{C}$ (W)	Typical Pulsed Flux <sup>2</sup> $T_{sp} = 25^\circ\text{C}$ (lm)	Typical Pulsed Flux <sup>3</sup> $T_{sp} = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_{sp} = 25^\circ\text{C}$ (lm/W)
BXCP-27C-11H-J27-3-A1-00-0-0	70	50	2.6	0.1	26	23	196
		200	2.7	0.5	102	93	189
		350	2.8	1.0	174	158	180
		700	2.9	2.0	331	301	163
		1000	3.0	3.0	454	413	151
		1200	3.1	3.7	534	486	145
		1500	3.2	4.7	641	584	135
		2000	3.3	6.7	810	737	122
BXCP-30C-11H-J27-3-A1-00-0-0	70	50	2.6	0.1	27	25	209
		200	2.7	0.5	109	99	201
		350	2.8	1.0	186	169	192
		700	2.9	2.0	353	321	174
		1000	3.0	3.0	484	440	161
		1200	3.1	3.7	569	518	155
		1500	3.2	4.7	684	623	144
		2000	3.3	6.7	863	786	130
BXCP-40C-11H-J27-3-A1-00-0-0	70	50	2.6	0.1	30	27	228
		200	2.7	0.5	118	108	220
		350	2.8	1.0	202	184	209
		700	2.9	2.0	385	350	190
		1000	3.0	3.0	527	480	176
		1200	3.1	3.7	621	565	169
		1500	3.2	4.7	746	679	157
		2000	3.3	6.7	941	857	141

Notes for Table 3:

1. Alternate drive currents in Table 3 are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a  $\pm 7.5\%$  tolerance on flux measurements.
3. Typical pulsed performance values are provided as reference only and are not a guarantee of performance.

# Performance at Commonly Used Drive Currents

Table 3: Performance at Commonly Used Drive Currents (Continued)

Part Number	CRI	Drive Current <sup>1</sup> (mA)	Typical $V_f$ $T_{sp} = 25^\circ\text{C}$ (V)	Typical Power $T_{sp} = 25^\circ\text{C}$ (W)	Typical Pulsed Flux <sup>2</sup> $T_{sp} = 25^\circ\text{C}$ (lm)	Typical Pulsed Flux <sup>3</sup> $T_{sp} = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_{sp} = 25^\circ\text{C}$ (lm/W)
BXCP-50C-11H-J27-3-A1-00-0-0	70	50	2.6	0.1	30	27	228
		200	2.7	0.5	118	108	220
		350	2.8	1.0	202	184	209
		700	2.9	2.0	385	350	190
		1000	3.0	3.0	527	480	176
		1200	3.1	3.7	621	565	169
		1500	3.2	4.7	746	679	157
		1800	3.3	5.9	876	797	149
BXCP-57C-11H-J27-3-A1-00-0-0	70	2000	3.3	6.7	941	857	141
		50	2.6	0.1	30	27	228
		200	2.7	0.5	118	108	220
		350	2.8	1.0	202	184	209
		700	2.9	2.0	385	350	190
		1000	3.0	3.0	527	480	176
		1200	3.1	3.7	621	565	169
		1500	3.2	4.7	746	679	157
BXCP-65C-11H-J27-3-A1-00-0-0	70	1800	3.3	5.9	876	797	149
		2000	3.3	6.7	941	857	141
		50	2.6	0.1	30	27	228
		200	2.7	0.5	118	108	220
		350	2.8	1.0	202	184	209
		700	2.9	2.0	385	350	190
		1000	3.0	3.0	527	480	176
		1200	3.1	3.7	621	565	169
1500	3.2	4.7	746	679	157		
1800	3.3	5.9	876	797	149		
2000	3.3	6.7	941	857	141		

Notes for Table 3:

1. Alternate drive currents in Table 3 are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a  $\pm 7.5\%$  tolerance on flux measurements.
3. Typical pulsed performance values are provided as reference only and are not a guarantee of performance.



# Performance at Commonly Used Drive Currents

Table 3: Performance at Commonly Used Drive Currents (Continued)

Part Number	CRI	Drive Current <sup>1</sup> (mA)	Typical $V_f$ $T_{sp} = 25^\circ\text{C}$ (V)	Typical Power $T_{sp} = 25^\circ\text{C}$ (W)	Typical Pulsed Flux <sup>2</sup> $T_{sp} = 25^\circ\text{C}$ (lm)	Typical Pulsed Flux <sup>3</sup> $T_{sp} = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_{sp} = 25^\circ\text{C}$ (lm/W)
BXCP-27E-11H-J27-3-A1-00-0-0	80	50	2.6	0.1	23	21	178
		200	2.7	0.5	92	84	171
		350	2.8	1.0	157	143	163
		700	2.9	2.0	299	272	147
		1000	3.0	3.0	410	373	137
		1200	3.1	3.7	482	439	131
		1500	3.2	4.7	580	527	122
		1800	3.3	5.9	681	619	116
BXCP-30E-11H-J27-3-A1-00-0-0	80	2000	3.3	6.7	732	666	110
		50	2.6	0.1	24	22	188
		200	2.7	0.5	97	89	181
		350	2.8	1.0	167	152	172
		700	2.9	2.0	316	288	156
		1000	3.0	3.0	434	395	145
		1200	3.1	3.7	511	465	139
		1500	3.2	4.7	614	559	129
BXCP-40E-11H-J27-3-A1-00-0-0	80	1800	3.3	5.9	721	656	123
		2000	3.3	6.7	775	705	116
		50	2.6	0.1	26	24	203
		200	2.7	0.5	105	96	195
		350	2.8	1.0	180	164	186
		700	2.9	2.0	342	311	168
		1000	3.0	3.0	469	426	156
		1200	3.1	3.7	551	502	150
BXCP-40E-11H-J27-3-A1-00-0-0	80	1500	3.2	4.7	663	603	140
		1800	3.3	5.9	778	708	132
		2000	3.3	6.7	836	761	126

Notes for Table 3:

1. Alternate drive currents in Table 3 are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a  $\pm 7.5\%$  tolerance on flux measurements.
3. Typical pulsed performance values are provided as reference only and are not a guarantee of performance.

# Performance at Commonly Used Drive Currents

Table 3: Performance at Commonly Used Drive Currents (Continued)

Part Number	CRI	Drive Current <sup>1</sup> (mA)	Typical $V_f$ $T_{sp} = 25^\circ\text{C}$ (V)	Typical Power $T_{sp} = 25^\circ\text{C}$ (W)	Typical Pulsed Flux <sup>2</sup> $T_{sp} = 25^\circ\text{C}$ (lm)	Typical Pulsed Flux <sup>3</sup> $T_{sp} = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_{sp} = 25^\circ\text{C}$ (lm/W)
BXCP-50E-11H-J27-3-A1-00-0-0	80	50	2.6	0.1	26	24	203
		200	2.7	0.5	105	96	195
		350	2.8	1.0	180	164	186
		700	2.9	2.0	342	311	168
		1000	3.0	3.0	469	426	156
		1200	3.1	3.7	551	502	150
		1500	3.2	4.7	663	603	140
		1800	3.3	5.9	778	708	132
BXCP-57E-11H-J27-3-A1-00-0-0	80	2000	3.3	6.7	836	761	126
		50	2.6	0.1	26	24	203
		200	2.7	0.5	105	96	195
		350	2.8	1.0	180	164	186
		700	2.9	2.0	342	311	168
		1000	3.0	3.0	469	426	156
		1200	3.1	3.7	551	502	150
		1500	3.2	4.7	663	603	140
BXCP-65E-11H-J27-3-A1-00-0-0	80	1800	3.3	5.9	778	708	132
		2000	3.3	6.7	836	761	126
		50	2.6	0.1	26	24	203
		200	2.7	0.5	105	96	195
		350	2.8	1.0	180	164	186
		700	2.9	2.0	342	311	168
		1000	3.0	3.0	469	426	156
		1200	3.1	3.7	551	502	150
1500	3.2	4.7	663	603	140		
1800	3.3	5.9	778	708	132		
2000	3.3	6.7	836	761	126		

Notes for Table 3:

1. Alternate drive currents in Table 3 are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a  $\pm 7.5\%$  tolerance on flux measurements.
3. Typical pulsed performance values are provided as reference only and are not a guarantee of performance.

# Electrical and Thermal Characteristics

Table 4: Electrical and Thermal Characteristics

Part Number <sup>1</sup>	Drive Current (mA)	Forward Voltage <sup>2,3</sup> (V)			Typical Temperature Coefficient of Forward Voltage <sup>4</sup> $\Delta V_f / \Delta T$ (mV/°C)	Typical Thermal Resistance Junction to Solder Point <sup>5,6</sup> $R_{j-sp}$ (°C/W)
		Minimum	Typical	Maximum		
BXCP-xxx-11H-J27-3-A1-00-0-0	700	2.60	2.80	3.00	-1.0	0.5

Notes for Table 4:

1. The last 6 characters (including hyphens '-') refer to nominal flux, nominal forward voltage, and color bins, respectively. "00-0-0" denotes the full distribution of flux, forward voltage, and 5 SDCM color.

Example: BXCP-40C-11H-J27-3-A1-00-0-0 refers to the full distribution of flux, forward voltage, and color within a 4000K 5-step ANSI standard chromaticity region with a minimum of 70 CRI.

2. Products tested under pulsed condition (10ms pulse width) where  $T_{sp} = 85^\circ\text{C}$ .

3. Bridgelux maintains a tolerance of  $\pm 0.1\text{V}$  on forward voltage measurements.

4. Products measured between  $25^\circ\text{C}$  and  $105^\circ\text{C}$  under pulsed condition (10ms pulse width).

5. Thermal resistance value is based on 4000K 70 CRI product.

6. Thermal resistance value was calculated using total electrical input power; optical power was not subtracted from input power.

# Absolute Maximum Ratings

Table 5: Maximum Ratings

Parameter	Maximum Rating
LED Junction Temperature ( $T_j$ )	135°C
Storage Temperature	-40°C to +125°C
Operating Solder Point Temperature ( $T_{sp}$ )	-40°C to +105°C
Soldering Temperature	260°C or lower for a maximum of 10 seconds
Maximum Drive Current <sup>1</sup>	2000mA
Maximum Peak Pulsed Forward Current <sup>2</sup>	2800mA
Maximum Reverse Voltage <sup>3</sup>	-5V
Moisture Sensitivity Rating	MSL 3
Electrostatic Discharge	2kV HBM. JEDEC-JS-001-HBM and JEDEC-JS-001-2012

Notes for Table 5:

1. Maximum drive current depends on  $T_{sp}$ . Please refer to Figure 7.
2. Bridgelux recommends a maximum duty cycle of 10% and pulse width of 10 ms when operating CSP LED at maximum peak pulsed current specified. Maximum peak pulsed currents indicate values where CSP LED can be driven without catastrophic failures.
3. Light emitting diodes are not designed to be driven in reverse voltage and will not produce light under this condition. Maximum rating provided for reference only.

# Product Bin Definitions

Table 6 lists the standard photometric luminous flux bins for Bridgelux CSP 2727 LEDs. Although several bins are outlined, product availability in a particular bin varies by production run and by product performance. Not all bins are available in all CCTs.

Table 6: Luminous Flux Bin Definitions at 700mA,  $T_{sp}=85^{\circ}\text{C}$

Bin Code	Minimum	Maximum	Unit	Condition
D9	310	330	lm	$I_f=700\text{mA}$
F6	330	350		
F7	350	370		

Note for Table 6:

1. Bridgelux maintains a tolerance of  $\pm 7.5\%$  on luminous flux measurements.

Table 7: Forward Voltage Bin Definition at 700mA,  $T_{sp}=85^{\circ}\text{C}$

Bin Code	Minimum	Maximum	Unit	Condition
C	2.6	2.8	V	$I_f=700\text{mA}$
D	2.8	3.0		

Note for Table 7:

1. Bridgelux maintains a tolerance of  $\pm 0.1\text{V}$  on forward voltage measurements.

# Product Bin Definitions

Table 8: 3- and 5-step MacAdam Ellipse Color Bin Definitions ( $T_{sp}=85^{\circ}\text{C}$ )

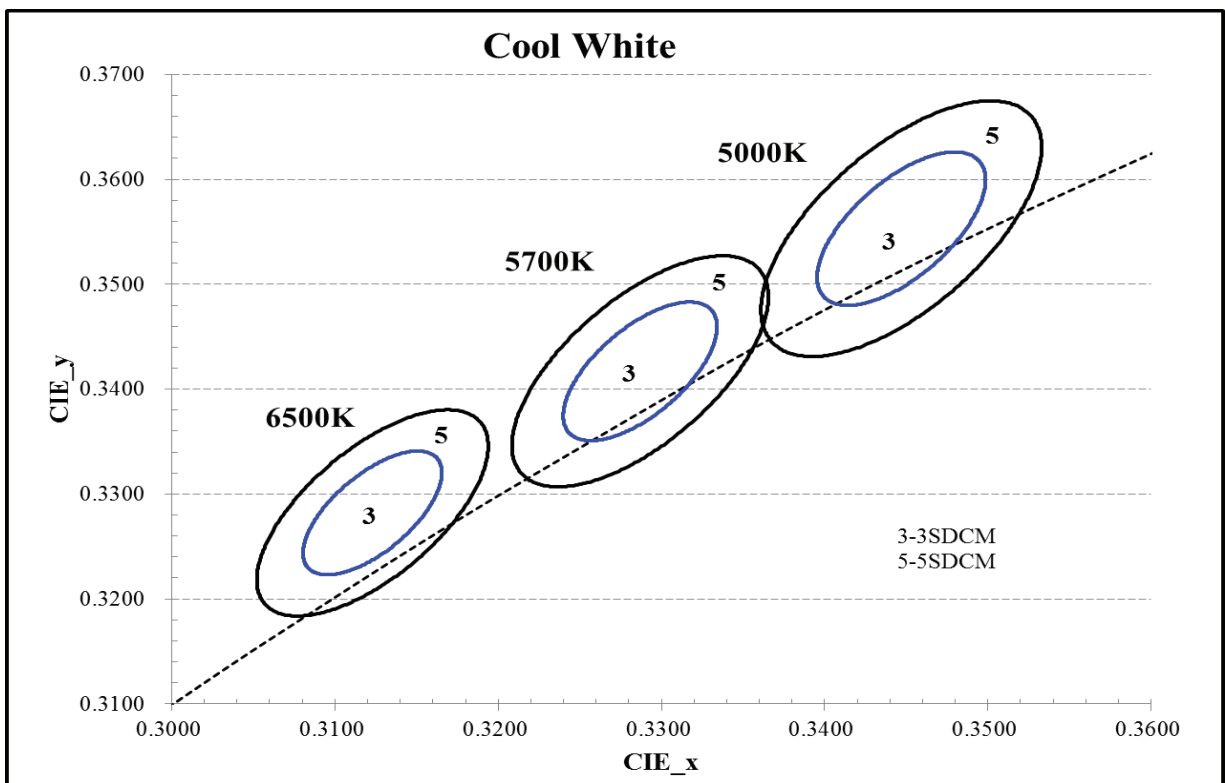
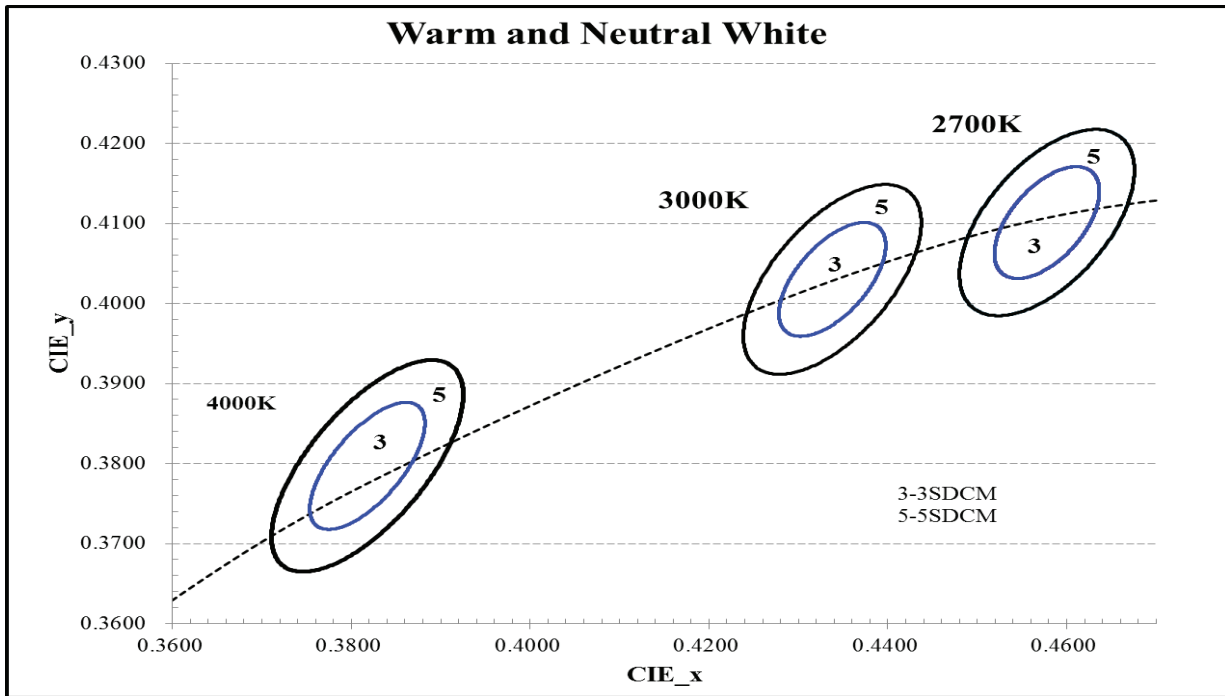
Table 8: 3- and 5-step MacAdam Ellipse Color Bin Definitions ( $T_{sp}=85^{\circ}\text{C}$ )							
CCT	Color Space	Center Point		Major Axis	minor Axis	$\theta'$ (angle)	Color Bin
		x	y				
2700K	3	0.4578	0.4101	0.0081	0.0042	53.70	3
	5			0.0135	0.0070		5
3000K	3	0.4338	0.4030	0.0083	0.0041	53.22	3
	5			0.0139	0.0068		5
4000K	3	0.3818	0.3797	0.0094	0.0040	53.72	3
	5			0.0157	0.0067		5
5000K	3	0.3447	0.3553	0.0082	0.0035	59.62	3
	5			0.0137	0.0059		5
5700K	3	0.3287	0.3417	0.0075	0.0032	59.09	3
	5			0.0124	0.0053		5
6500K	3	0.3123	0.3282	0.0067	0.0029	58.57	3
	5			0.0112	0.0048		5

Note for Table 8:

- 1..Bridgelux maintains a tolerance of  $\pm 0.007$  on x and y color coordinates in the CIE 1931 color space.
2. MacAdam Ellipse Color bin code for CRI < 90: 3(3 SDCM)/ 5(5 SDCM).

# Product Bin Definitions

Figure 1: C.I.E. 1931 Chromaticity Diagram ( Color Bin Structure,  $T_{sp}=85^{\circ}\text{C}$ )



# Performance Curves

Figure 2: Drive Current vs. Voltage ( $T_{sp}=85^{\circ}\text{C}$ )

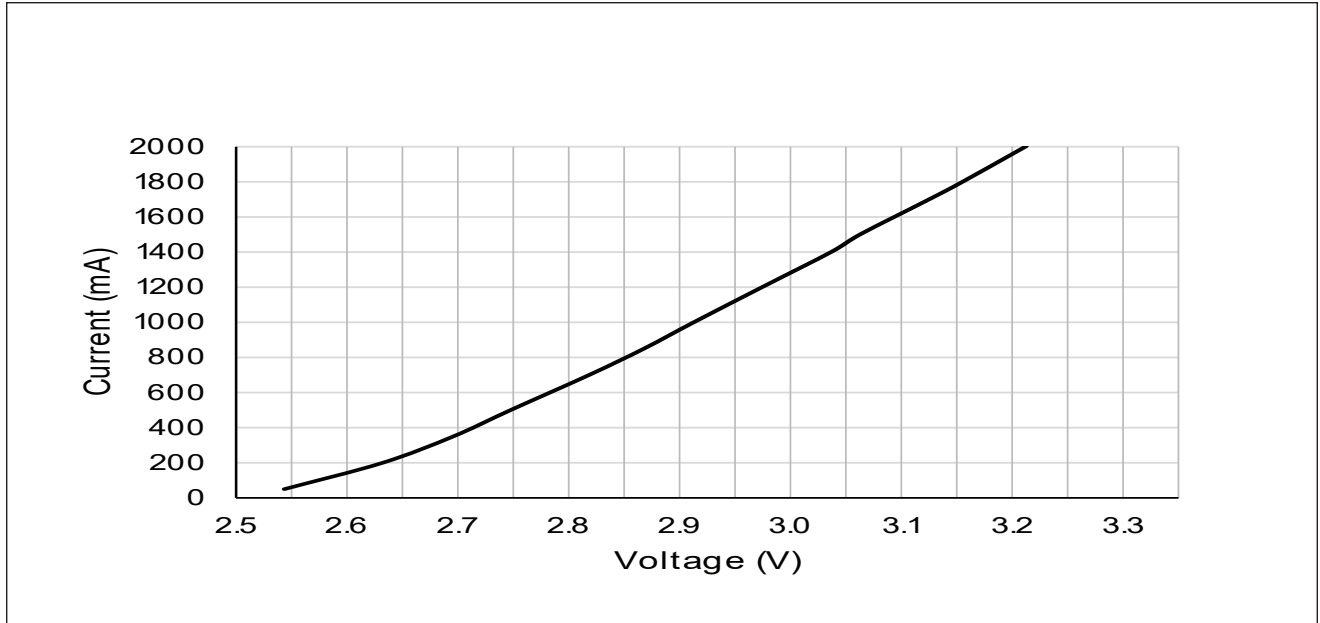
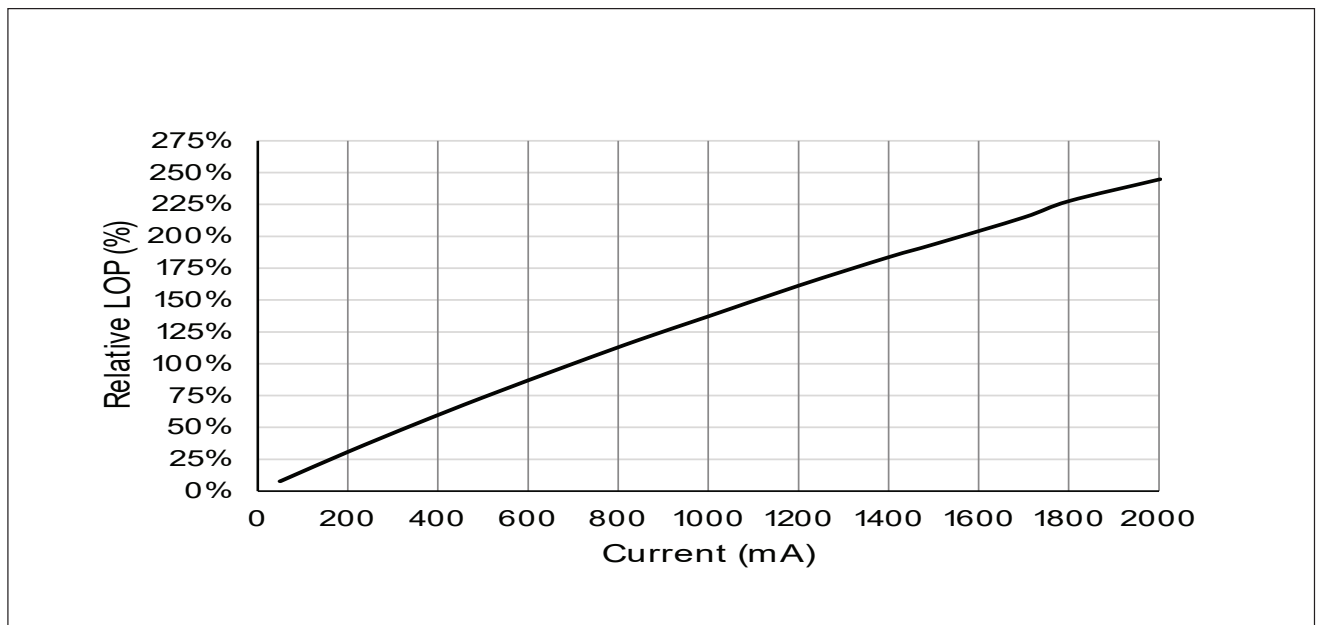


Figure 3: Typical Relative Luminous Flux vs. Drive Current ( $T_{sp}=85^{\circ}\text{C}$ )



Note for Figure 3:

1. Bridgelux does not recommend driving this CSP LED at low current ( $< 20\text{mA}$ ). Doing so may produce unpredictable results. Pulse width modulation (PWM) is recommended for dimming effects.



# Performance Curves

Figure 4: Typical Relative Flux vs. Solder Point Temperature\_700mA

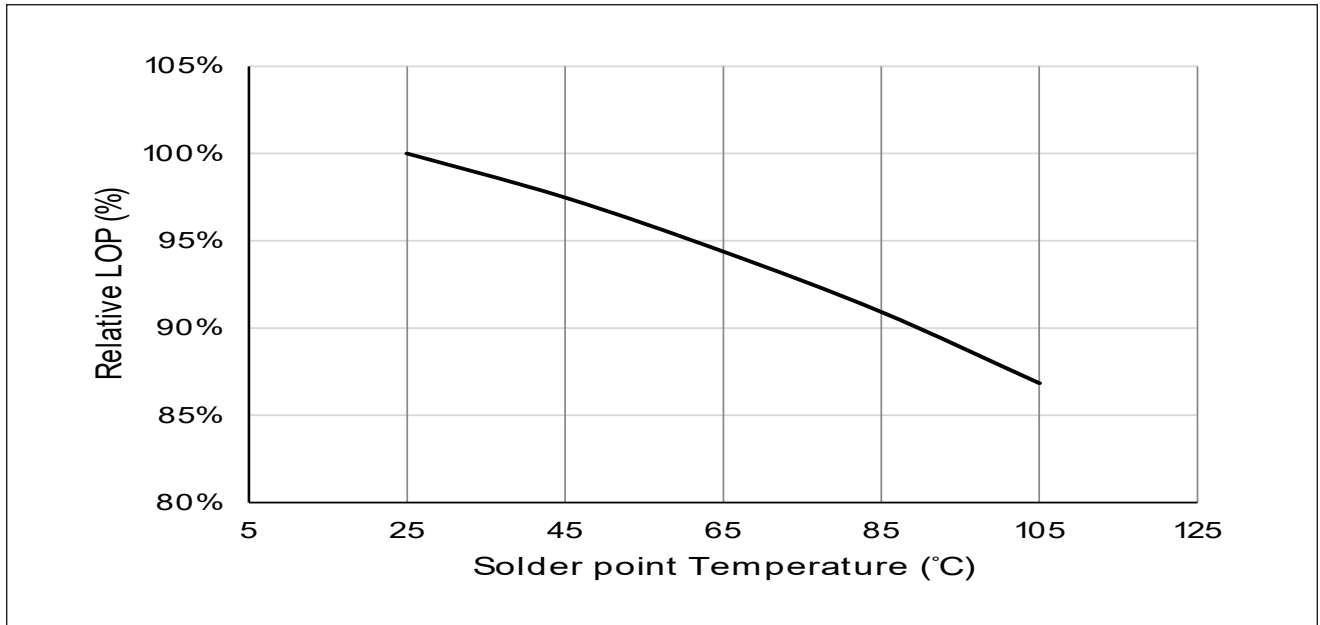
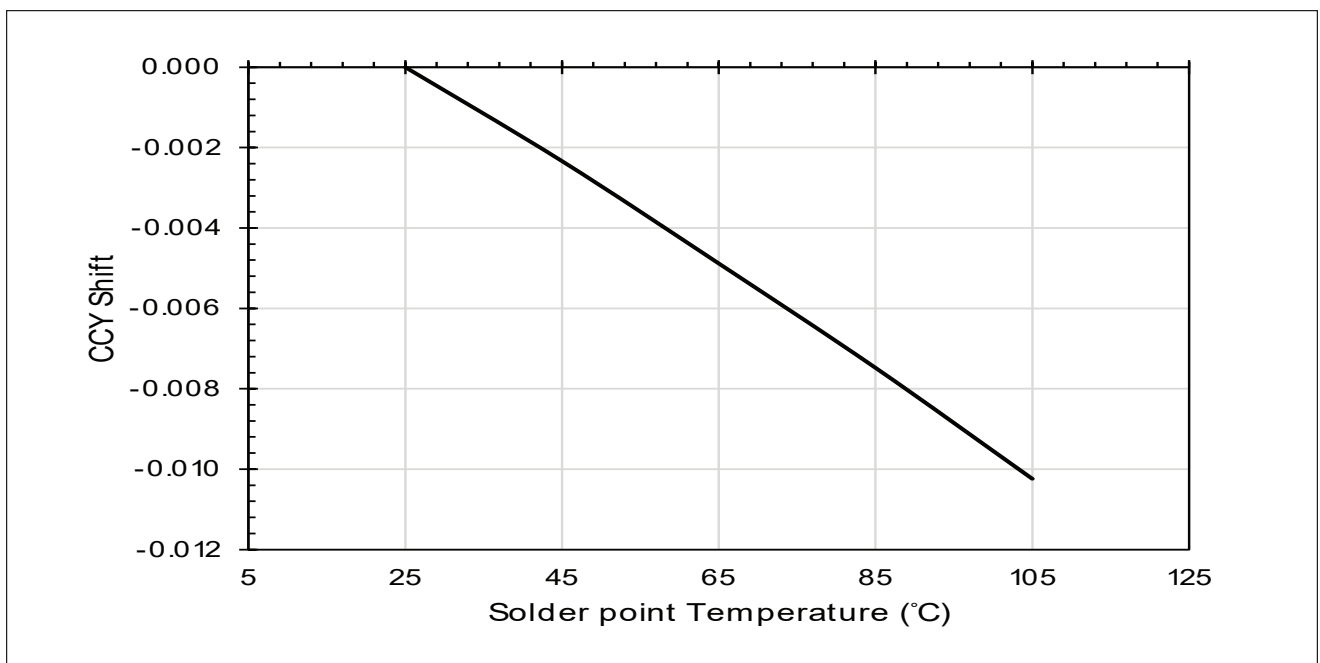


Figure 5: Typical CCY Shift vs. Solder Point Temperature\_700mA



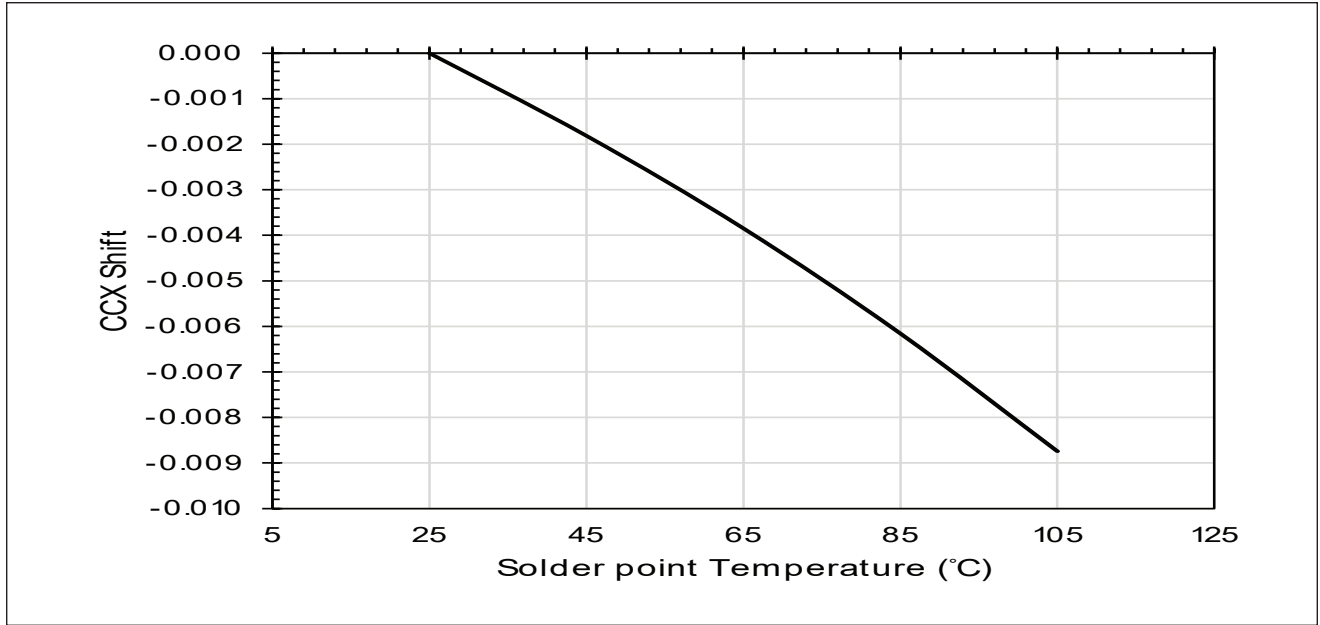
Notes for Figures 4 & 5:

1..Characteristics shown for neutral white based on 4000K and 70 CRI.

2. For other color SKUs, the shift in color will vary. Please contact your Bridgelux Sales Representative for more information.

# Performance Curves

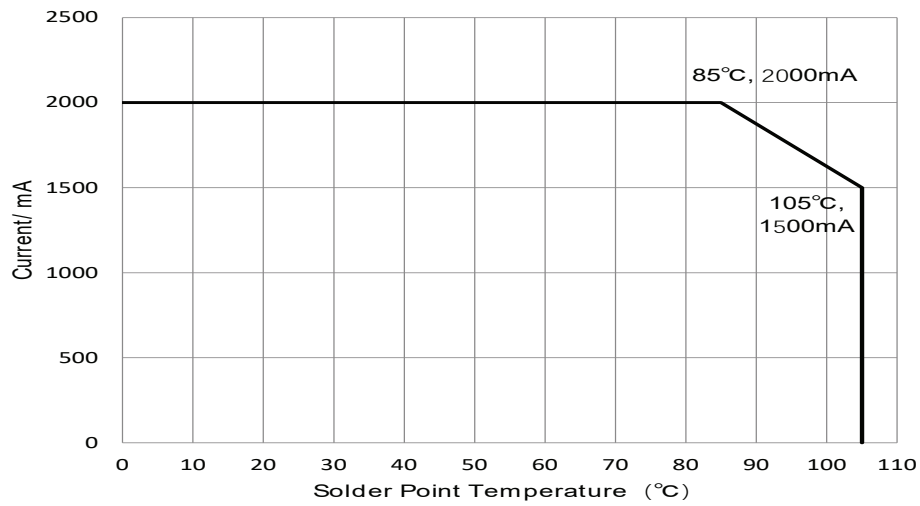
Figure 6: Typical ccx Shift vs. Solder Point Temperature\_700mA



Notes for Figure 6:

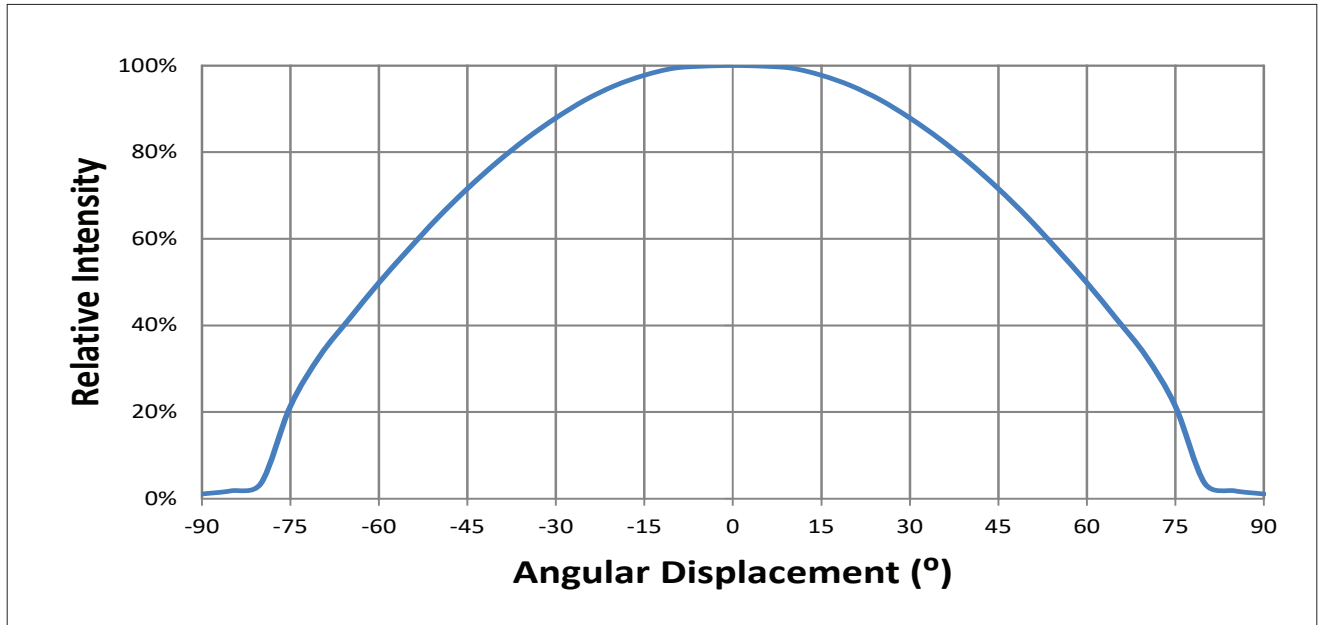
1. Characteristics shown for neutral white based on 4000K and 70 CRI.
2. For other color SKUs, the shift in color will vary. Please contact your Bridgelux Sales Representative for more information.

Figure 7: Drive Current vs Solder Point Temperature



# Typical Radiation Pattern

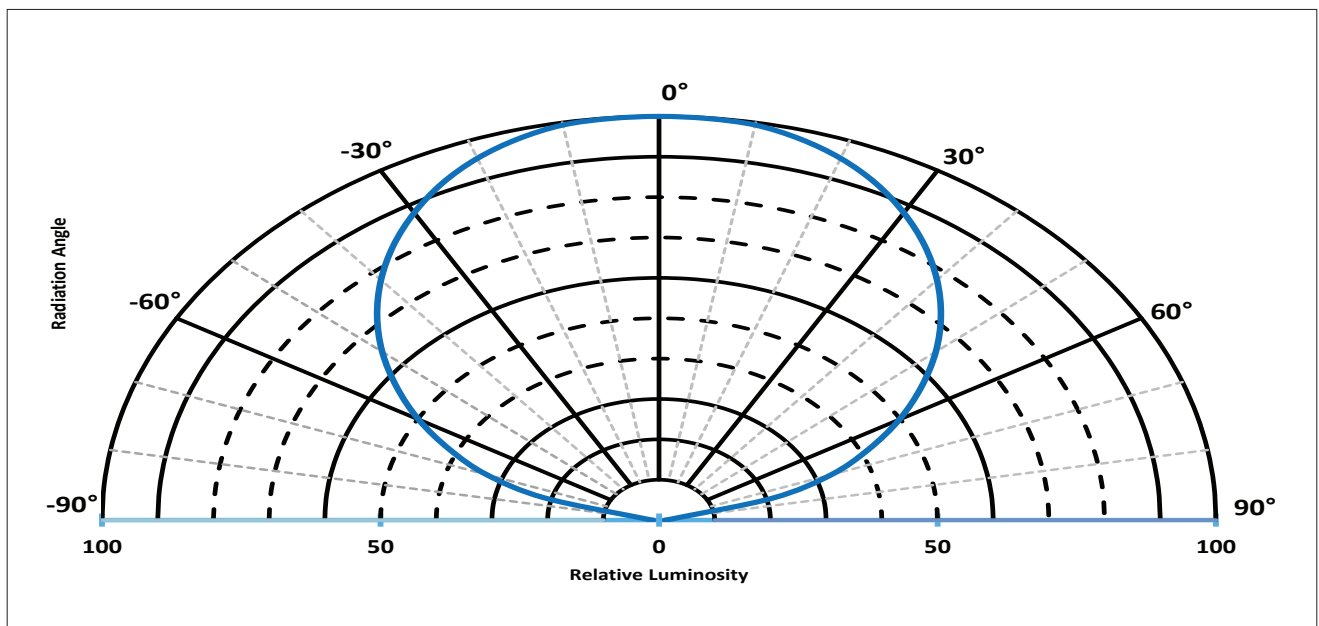
Figure 8: Typical Spatial Radiation Pattern at 700mA,  $T_{sp}=25^{\circ}\text{C}$



Notes for Figure 8:

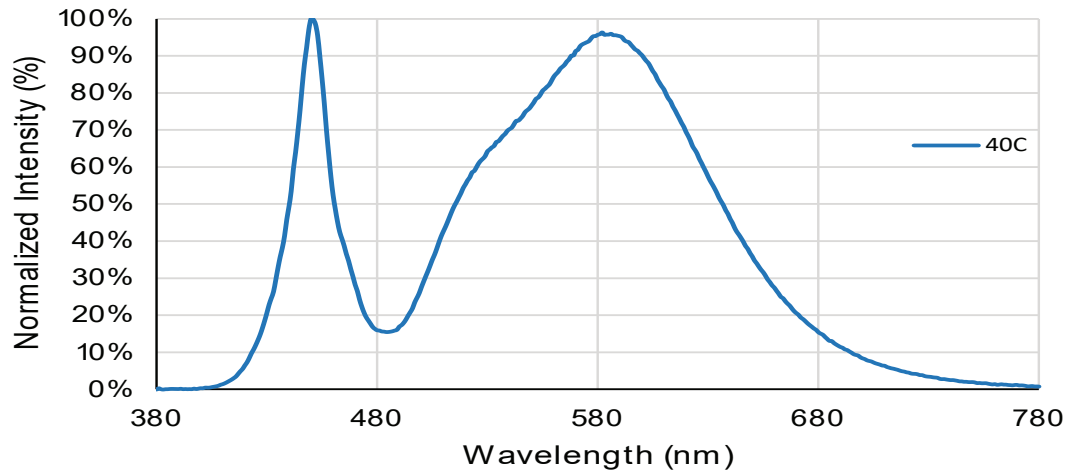
1. Typical viewing angle is  $120^{\circ}$ .
2. The viewing angle is defined as the off axis angle from the centerline where  $I_v$  is  $\frac{1}{2}$  of the peak value.

Figure 9: Typical Polar Radiation Pattern at 700mA,  $T_{sp}=25^{\circ}\text{C}$



# Typical Color Spectrum

Figure 10: Typical Color Spectrum at 700mA,  $T_{sp}=85\text{ }^{\circ}\text{C}$

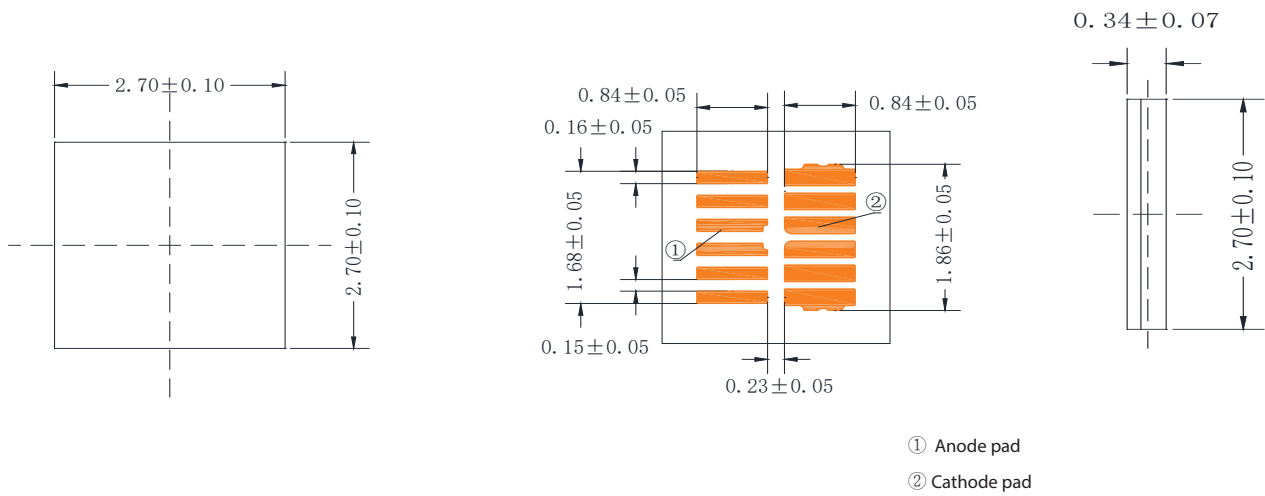


Notes for Figure 10:

1. Color spectra measured at nominal current for  $T_{sp} = 85^{\circ}\text{C}$
2. Color spectra shown for neutral white is 4000K and 70 CRI.

# Mechanical Dimensions

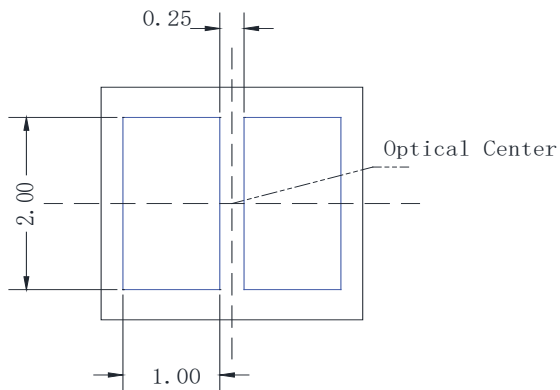
Figure 11: Drawing for CSP 2727



Notes for Figure 11:

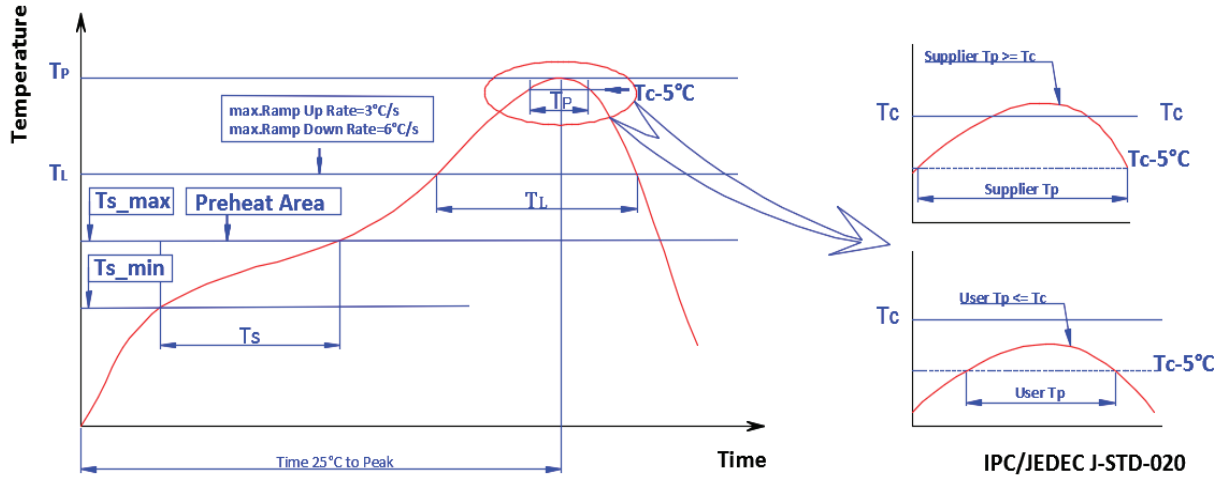
1. Drawings are not to scale.
2. Drawing dimensions are in millimeters.
3. Unless otherwise specified, tolerances are  $\pm 0.10$ mm.
4. The optical center of the LED emitter is nominally defined by the mechanical center of the emitter. The light emitting surface (LES) is centered on the mechanical center of the LED emitter to a tolerance of  $\pm 0.2$  mm

## Recommended PCB Soldering Pad Pattern



# Reflow Characteristics

Figure 12 : Reflow Profile



Profile Feature	Lead Free Assembly
Preheat: Temperature Range	$180^\circ\text{C} - 200^\circ\text{C}$
Preheat: Time (Maximum)	120 seconds
Peak Temperature	$260^\circ\text{C}$
Soldering Time (Maximum)	10 seconds
Allowable Reflow Cycles	2

# Design Resources

## Optical Source Models

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 CSP.

### CAUTION: EYE SAFETY

Eye safety classification for the use of Bridgelux CSP is in accordance with IEC specification 62471: Photobiological Safety of Lamps and Lamp Systems. Most Bridgelux CSPs are classified as Risk Group Exempt or Risk Group 1 in accordance with IEC specification 62471. However, the CSP LEDs will be classified as Risk Group 2 when operated at high power conditions with high ratio blue wavelength in the emission spectrum depending on characteristics. 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 CSP LES during operation. Allow the CSP to cool for a sufficient period of time before handling. The CSP may reach elevated temperatures such that could burn skin when touched.

## Disclaimers

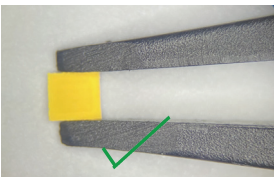
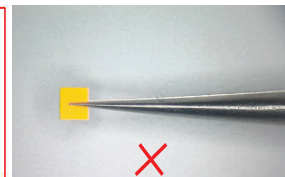
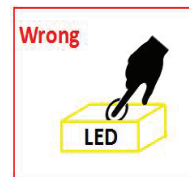
### MINOR PRODUCT CHANGE POLICY

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.

### CAUTION: PICK AND PLACE

Recommend using Teflon material for nozzle. Sharp steel material must not be used as pick up tools.

## CAUTION



### STANDARD TEST CONDITIONS

Unless otherwise stated, LED emitter testing is performed at the nominal drive current.

## 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 CSP 2727 Product Data Sheet DS956 Rev. A (01/2023)