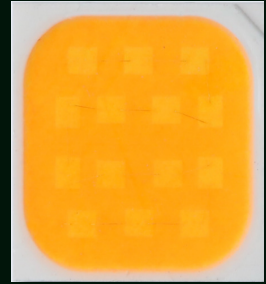


Bridgelux® SMD 7070 6.3W 42V

Product Data Sheet DS212

Introduction

SMD 7070



The Bridgelux SMD 7070 high power 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 broad lumen coverage and wide range of CCT and CRI options, the SMD 7070 provides unparalleled design-in flexibility for indoor and outdoor lighting applications. The SMD 7070 is ideal as a drop-in replacement for emitters with an industry standard 7.0mm x 7.0mm footprint.

Features

- Industry-standard 7070 footprint
- 3 and 5-step MacAdam ellipse options
- RoHS compliant and lead free
- Multiple CCT and CRI configurations available for a wide range of lighting applications
- Hot-color targeting ensures that color is within the color bin at the typical application condition of 85C

Benefits

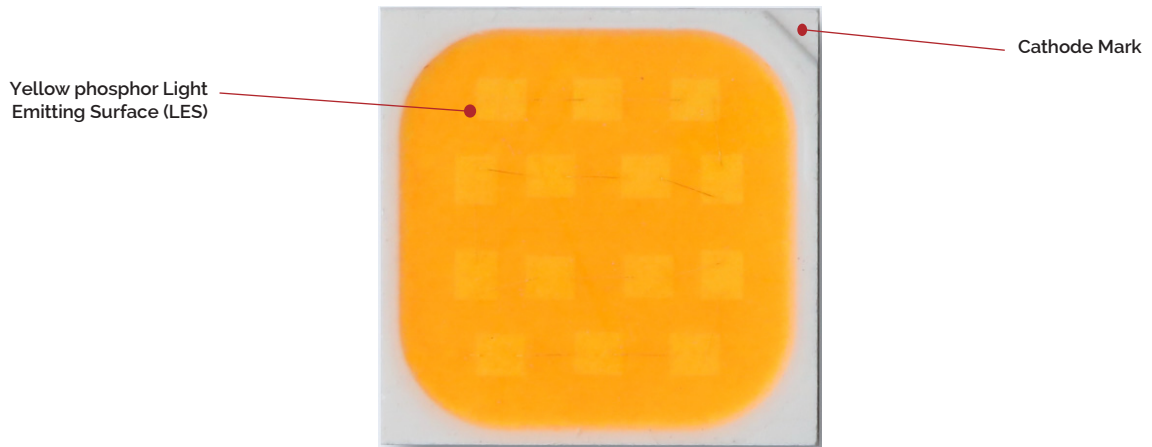
- Lower operating and manufacturing costs
- Ease of design and rapid go-to-market
- Uniform, consistent white light
- Compliant with environmental standards
- Design flexibility

Contents

Product Feature Map	2
Product Nomenclature	2
Product Test Conditions	2
Product Selection Guide	3
Performance at Commonly Used Drive Currents	5
Electrical Characteristics	8
Absolute Maximum Ratings	9
Product Bin Definitions	10
Performance Curves	13
Typical Radiation Pattern	16
Typical Color Spectrum	17
Mechanical Dimensions	18
Reliability	19
Reflow Characteristics	20
Packaging	21
Design Resources	23
Precautions	23
Disclaimers	23
About Bridgelux	24

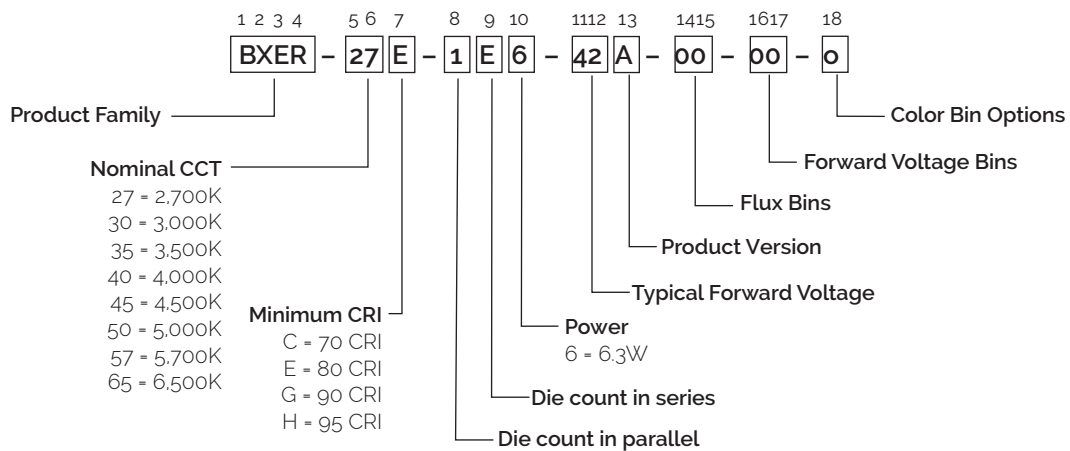
Product Feature Map

Bridgelux SMD LED 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 SMD 7070 is explained as follows:



Product Test Conditions

Bridgelux SMD 7070 LEDs are tested and binned with a 10ms pulse of 150mA at T_j (junction temperature) = T_{sp} (solder point temperature) = 25°C. Forward voltage and luminous flux are binned at a $T_j = T_{sp} = 25^\circ\text{C}$, while color is hot targeted at a T_{sp} of 85°C.

Product Selection Guide

The following product configurations are available:

Table 1: Selection Guide, Pulsed Measurement Data at 150mA ($T_j=T_{sp}=25^{\circ}\text{C}$)

Part Number ⁶	Nominal CCT ² (K)	CRI ^{3,5}	Nominal Drive Current (mA)	Forward Voltage ^{4,5} (V)			Typical Pulsed Flux (lm) ^{4,5}	Typical Power (W)	Typical Efficacy (lm/W)
				Min	Typical	Max			
BXER-27C-1E6-42A-00-00-0	2700	70	150	39.2	41.7	46.4	969	6.3	155
BXER-27E-1E6-42A-00-00-0	2700	80	150	39.2	41.7	46.4	861	6.3	138
BXER-27G-1E6-42A-00-00-0	2700	90	150	39.2	41.7	46.4	727	6.3	116
BXER-27H-1E6-42A-00-00-0	2700	95	150	39.2	41.7	46.4	644	6.3	103
BXER-30C-1E6-42A-00-00-0	3000	70	150	39.2	41.7	46.4	992	6.3	159
BXER-30E-1E6-42A-00-00-0	3000	80	150	39.2	41.7	46.4	881	6.3	141
BXER-30G-1E6-42A-00-00-0	3000	90	150	39.2	41.7	46.4	748	6.3	120
BXER-30H-1E6-42A-00-00-0	3000	95	150	39.2	41.7	46.4	667	6.3	107
BXER-35C-1E6-42A-00-00-0	3500	70	150	39.2	41.7	46.4	1016	6.3	162
BXER-35E-1E6-42A-00-00-0	3500	80	150	39.2	41.7	46.4	910	6.3	145
BXER-40C-1E6-42A-00-00-0	4000	70	150	39.2	41.7	46.4	1030	6.3	165
BXER-40E-1E6-42A-00-00-0	4000	80	150	39.2	41.7	46.4	938	6.3	150
BXER-40G-1E6-42A-00-00-0	4000	90	150	39.2	41.7	46.4	804	6.3	129
BXER-40H-1E6-42A-00-00-0	4000	95	150	39.2	41.7	46.4	691	6.3	110
BXER-45C-1E6-42A-00-00-0	4500	70	150	39.2	41.7	46.4	1030	6.3	165
BXER-45E-1E6-42A-00-00-0	4500	80	150	39.2	41.7	46.4	938	6.3	150
BXER-50C-1E6-42A-00-00-0	5000	70	150	39.2	41.7	46.4	1030	6.3	165
BXER-50E-1E6-42A-00-00-0	5000	80	150	39.2	41.7	46.4	938	6.3	150
BXER-57C-1E6-42A-00-00-0	5700	70	150	39.2	41.7	46.4	1023	6.3	164
BXER-57E-1E6-42A-00-00-0	5700	80	150	39.2	41.7	46.4	938	6.3	150
BXER-65C-1E6-42A-00-00-0	6500	70	150	39.2	41.7	46.4	1008	6.3	161
BXER-65E-1E6-42A-00-00-0	6500	80	150	39.2	41.7	46.4	935	6.3	149

Notes for Table 1:

- The last 7 characters (including hyphens '-') refer to flux bins, forward voltage bins, and color bin options, respectively. "00-00-0" denotes the full distribution of flux, forward voltage, and 5 SDCM color.
Example: BXER-27E-1E6-42A-00-00-0 refers to the full distribution of flux, forward voltage, and color within a 2700K 5-step ANSI standard chromaticity region with a minimum of 80CRI, 1x14 die configuration, 6.3w power, 41.7V typical forward voltage.
- 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 ± 2 tolerance on CRI measurements for the SMD 7070.
- Refer to Table 6 and Table 7 for Bridgelux SMD 7070 Luminous Flux Binning and Forward Voltage Binning information.

Product Selection Guide

The following product configurations are available:

Table 2: Selection Guide, Stabilized DC Performance ($T_{sp} = 85^{\circ}\text{C}$)^{6,7}

Part Number ^{2,5}	Nominal CCT ² (K)	CRI ^{3,4}	Nominal Drive Current (mA)	Forward Voltage ⁴ (V)			Typical DC Flux (lm) ⁴	Typical DC Power (W)	Typical DC Effi- cacy (lm/W)
				Min	Typical	Max			
BXER-27C-1E6-42A-00-00-0	2700	70	150	38.3	40.8	45.5	837	6.1	137
BXER-27E-1E6-42A-00-00-0	2700	80	150	38.3	40.8	45.5	744	6.1	122
BXER-27G-1E6-42A-00-00-0	2700	90	150	38.3	40.8	45.5	629	6.1	103
BXER-27H-1E6-42A-00-00-0	2700	95	150	38.3	40.8	45.5	557	6.1	91
BXER-30C-1E6-42A-00-00-0	3000	70	150	38.3	40.8	45.5	858	6.1	140
BXER-30E-1E6-42A-00-00-0	3000	80	150	38.3	40.8	45.5	762	6.1	125
BXER-30G-1E6-42A-00-00-0	3000	90	150	38.3	40.8	45.5	647	6.1	106
BXER-30H-1E6-42A-00-00-0	3000	95	150	38.3	40.8	45.5	577	6.1	94
BXER-35C-1E6-42A-00-00-0	3500	70	150	38.3	40.8	45.5	879	6.1	144
BXER-35E-1E6-42A-00-00-0	3500	80	150	38.3	40.8	45.5	786	6.1	128
BXER-40C-1E6-42A-00-00-0	4000	70	150	38.3	40.8	45.5	891	6.1	146
BXER-40E-1E6-42A-00-00-0	4000	80	150	38.3	40.8	45.5	811	6.1	132
BXER-40G-1E6-42A-00-00-0	4000	90	150	38.3	40.8	45.5	695	6.1	114
BXER-40H-1E6-42A-00-00-0	4000	95	150	38.3	40.8	45.5	597	6.1	98
BXER-45C-1E6-42A-00-00-0	4500	70	150	38.3	40.8	45.5	891	6.1	146
BXER-45E-1E6-42A-00-00-0	4500	80	150	38.3	40.8	45.5	811	6.1	132
BXER-50C-1E6-42A-00-00-0	5000	70	150	38.3	40.8	45.5	891	6.1	146
BXER-50E-1E6-42A-00-00-0	5000	80	150	38.3	40.8	45.5	811	6.1	132
BXER-57C-1E6-42A-00-00-0	5700	70	150	38.3	40.8	45.5	885	6.1	145
BXER-57E-1E6-42A-00-00-0	5700	80	150	38.3	40.8	45.5	811	6.1	132
BXER-65C-1E6-42A-00-00-0	6500	70	150	38.3	40.8	45.5	871	6.1	142
BXER-65E-1E6-42A-00-00-0	6500	80	150	38.3	40.8	45.5	808	6.1	132

Notes for Table 2:

- The last 7 characters (including hyphens '-') refer to flux bins, forward voltage bins, and color bin options, respectively. "00-00-0" denotes the full distribution of flux, forward voltage, and 5 SDCM color.
Example: BXER-30E-1E6-42A-00-00-0 refers to the full distribution of flux, forward voltage, and color within a 2700K 5-step ANSI standard chromaticity region with a minimum of 80CRI, 1x14 die configuration, 6.3w power, 41.7V typical forward voltage.
- 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 ± 2 tolerance on CRI measurements for the SMD 7070.
- Refer to Table 6 and Table 7 for Bridgelux SMD 7070 Luminous Flux Binning and Forward Voltage Binning information.
- Typical stabilized DC performance values are provided as reference only and are not a guarantee of performance.
- Typical performance is estimated based on operation under DC (direct current) with LED emitter mounted onto a heat sink with thermal interface material and the solder point 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.

Performance at Commonly Used Drive Currents

SMD 7070 LEDs are tested to the specifications shown using the nominal drive currents in Table 1. SMD 7070 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 ¹ (mA)	Typical V_f $T_{sp} = 25^\circ\text{C}$ (V)	Typical Power $T_{sp} = 25^\circ\text{C}$ (W)	Typical Pulsed Flux ² $T_{sp} = 25^\circ\text{C}$ (lm)	Typical DC Flux ³ $T_{sp} = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_{sp} = 25^\circ\text{C}$ (lm/W)
BXER-27C-1E6-42A-00-00-0	70	50	38.3	1.9	355	324	186
		100	40.1	4.0	675	599	169
		150	41.7	6.3	969	837	155
		200	43.2	8.6	1238	1041	143
BXER-27E-1E6-42A-00-00-0	80	50	38.3	1.9	315	287	165
		100	40.1	4.0	600	533	150
		150	41.7	6.3	861	744	138
		200	43.2	8.6	1100	925	127
BXER-27G-1E6-42A-00-00-0	90	50	38.3	1.9	266	243	139
		100	40.1	4.0	507	450	127
		150	41.7	6.3	727	629	116
		200	43.2	8.6	929	781	108
BXER-27H-1E6-42A-00-00-0	95	50	38.3	1.9	236	215	123
		100	40.1	4.0	449	399	112
		150	41.7	6.3	644	557	103
		200	43.2	8.6	823	692	95
BXER-30C-1E6-42A-00-00-0	70	50	38.3	1.9	364	332	190
		100	40.1	4.0	692	614	173
		150	41.7	6.3	992	858	159
		200	43.2	8.6	1268	1067	147
BXER-30E-1E6-42A-00-00-0	80	50	38.3	1.9	323	294	169
		100	40.1	4.0	615	546	153
		150	41.7	6.3	881	762	141
		200	43.2	8.6	1126	947	130
BXER-30G-1E6-42A-00-00-0	90	50	38.3	1.9	274	250	143
		100	40.1	4.0	522	463	130
		150	41.7	6.3	748	647	120
		200	43.2	8.6	956	804	111

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 stabilized DC 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 ¹ (mA)	Typical V _f T _{sp} = 25°C (V)	Typical Power T _{sp} = 25°C (W)	Typical Pulsed Flux ² T _{sp} = 25°C (lm)	Typical DC Flux ³ T _{sp} = 85°C (lm)	Typical Efficacy T _{sp} = 25°C (lm/W)
BXER-30H-1E6-42A-00-00-0	95	50	38.3	1.9	245	223	128
		100	40.1	4.0	465	413	116
		150	41.7	6.3	667	577	107
		200	43.2	8.6	853	717	99
BXER-35C-1E6-42A-00-00-0	70	50	38.3	1.9	372	340	195
		100	40.1	4.0	709	629	177
		150	41.7	6.3	1016	879	162
		200	43.2	8.6	1299	1092	150
BXER-35E-1E6-42A-00-00-0	80	50	38.3	1.9	333	304	174
		100	40.1	4.0	634	563	158
		150	41.7	6.3	910	786	145
		200	43.2	8.6	1162	978	135
BXER-40C-1E6-42A-00-00-0	70	50	38.3	1.9	378	344	197
		100	40.1	4.0	718	638	179
		150	41.7	6.3	1030	891	165
		200	43.2	8.6	1317	1107	152
BXER-40E-1E6-42A-00-00-0	80	50	38.3	1.9	344	313	180
		100	40.1	4.0	654	580	163
		150	41.7	6.3	938	811	150
		200	43.2	8.6	1198	1008	139
BXER-40G-1E6-42A-00-00-0	90	50	38.3	1.9	295	269	154
		100	40.1	4.0	561	498	140
		150	41.7	6.3	804	695	129
		200	43.2	8.6	1028	864	119
BXER-40H-1E6-42A-00-00-0	95	50	38.3	1.9	253	231	132
		100	40.1	4.0	482	428	120
		150	41.7	6.3	691	597	110
		200	43.2	8.6	883	743	102
BXER-45C-1E6-42A-00-00-0	70	50	38.3	1.9	378	344	197
		100	40.1	4.0	718	638	179
		150	41.7	6.3	1030	891	165
		200	43.2	8.6	1317	1107	152

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 ± 7.5% tolerance on flux measurements.
3. Typical stabilized DC 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 ¹ (mA)	Typical V_f $T_{sp} = 25^\circ\text{C}$ (V)	Typical Power $T_{sp} = 25^\circ\text{C}$ (W)	Typical Pulsed Flux ² $T_{sp} = 25^\circ\text{C}$ (lm)	Typical DC Flux ³ $T_{sp} = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_{sp} = 25^\circ\text{C}$ (lm/W)
BXER-45E-1E6-42A-00-00-0	80	50	38.3	1.9	344	313	180
		100	40.1	4.0	654	580	163
		150	41.7	6.3	938	811	150
		200	43.2	8.6	1198	1008	139
BXER-50C-1E6-42A-00-00-0	70	50	38.3	1.9	378	344	197
		100	40.1	4.0	718	638	179
		150	41.7	6.3	1030	891	165
		200	43.2	8.6	1317	1107	152
BXER-50E-1E6-42A-00-00-0	80	50	38.3	1.9	344	313	180
		100	40.1	4.0	654	580	163
		150	41.7	6.3	938	811	150
		200	43.2	8.6	1198	1008	139
BXER-57C-1E6-42A-00-00-0	70	50	38.3	1.9	375	342	196
		100	40.1	4.0	714	633	178
		150	41.7	6.3	1023	885	164
		200	43.2	8.6	1308	1100	151
BXER-57E-1E6-42A-00-00-0	80	50	38.3	1.9	344	313	180
		100	40.1	4.0	654	580	163
		150	41.7	6.3	938	811	150
		200	43.2	8.6	1198	1008	139
BXER-65C-1E6-42A-00-00-0	70	50	38.3	1.9	369	337	193
		100	40.1	4.0	703	624	175
		150	41.7	6.3	1008	871	161
		200	43.2	8.6	1288	1083	149
BXER-65E-1E6-42A-00-00-0	80	50	38.3	1.9	343	312	179
		100	40.1	4.0	652	579	163
		150	41.7	6.3	935	808	149
		200	43.2	8.6	1195	1005	138

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 stabilized DC performance values are provided as reference only and are not a guarantee of performance.

Electrical Characteristics

Table 4: Electrical Characteristics

Part Number ¹	Drive Current (mA)	Forward Voltage (V) ^{2,3}			Typical Temperature Coefficient of Forward Voltage $\Delta V_f / \Delta T$ (mV/°C)	Typical Thermal Resistance Junction to Solder Point ⁴ R_{j-sp} (°C/W)
		Minimum	Typical	Maximum		
BXER-XXX-1E6-42A-00-00-0	150	39.2	41.7	46.4	-13.4	2.5

Notes for Table 4:

- The last 7 characters (including hyphens '-') refer to flux bins, forward voltage bins, and color bin options, respectively. "00-00-0" denotes the full distribution of flux, forward voltage, and 5 SDCM color.
Example: BXER-27E-1E6-42A-00-00-0 refers to the full distribution of flux, forward voltage, and color within a 2700K 5-step ANSI standard chromaticity region with a minimum of 80CRI, 1x14 die configuration, 6.3w power, 41.7V typical forward voltage.
- Bridgelux maintains a tolerance of $\pm 0.1V$ on forward voltage measurements. Voltage minimum and maximum values at the nominal drive current are guaranteed by 100% test.
- Products tested under pulsed condition (10ms pulse width) at nominal drive current where $T_{sp} = 25^\circ C$.
- 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)	125°C
Storage Temperature	-40°C to +105°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 ¹	200mA
Maximum Peak Pulsed Forward Current ²	300mA
Maximum Reverse Voltage ³	-
Moisture Sensitivity Rating	MSL 3
Electrostatic Discharge	2kV HBM. JEDEC-JS-001-HBM and JEDEC-JS-001-2012

Notes for Table 5:

1. The condition of the maximum drive current is limited. Figure 7 can be reference.
2. Maximum drive current may be limited by the solder point temperature. Please see Figure 7 for further details.
3. Light emitting diodes are not designed to be driven in reverse voltage and will not produce light under this condition, no rating is provided.

Product Bin Definitions

Table 6 lists the standard photometric luminous flux bins for Bridgelux SMD 7070 LEDs. Although several bins are listed, 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 150mA, $T_{sp}=25^{\circ}\text{C}$

Bin Code	Minimum	Maximum	Unit	Condition
B1	590	635	lm	$I_F=150\text{mA}$
B2	635	685		
B3	685	740		
B4	740	800		
B5	800	865		
B6	865	935		
B7	935	1010		
B8	1010	1090		
B9	1090	1175		

Note for Table 6:

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

Table 7: Forward Voltage Bin Definition at 150mA, $T_{sp}=25^{\circ}\text{C}$

Bin Code	Minimum	Maximum	Unit	Condition
MG	38	39.5	V	$I_F=150\text{mA}$
MH	39.5	41		
MI	41	42.5		
PD	42.5	44		
PE	44	45.5		

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

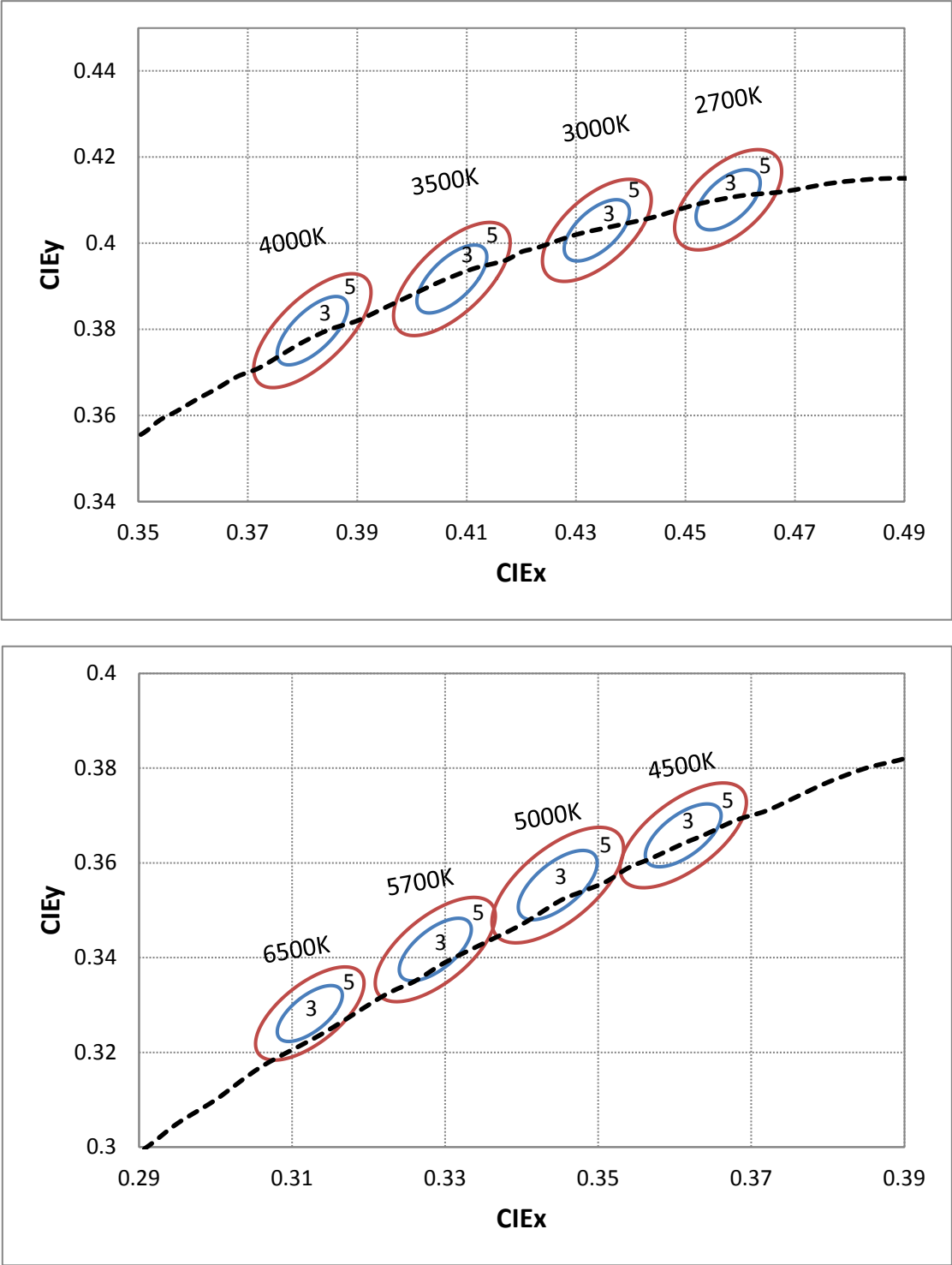
CCT	Color Space	Center Point		Major Axis	Minor Axis	Ellipse Rotation Angle	Color Bin
		X	Y				
2700K	3 SDCM	0.4578	0.4101	0.00810	0.00420	53.70	3
	5 SDCM	0.4578	0.4101	0.01350	0.00700	53.70	5
3000K	3 SDCM	0.4338	0.4030	0.00834	0.00408	53.22	3
	5 SDCM	0.4338	0.4030	0.01390	0.00680	53.22	5
3500K	3 SDCM	0.4103	0.3961	0.00927	0.00414	54.00	3
	5 SDCM	0.4103	0.3961	0.01545	0.00690	54.00	5
4000K	3 SDCM	0.3818	0.3797	0.00939	0.00402	53.72	3
	5 SDCM	0.3818	0.3797	0.01565	0.00670	53.72	5
4500K	3 SDCM	0.3611	0.3658	0.00756	0.00338	57.58	3
	5 SDCM	0.3611	0.3658	0.01260	0.00563	57.58	5
5000K	3 SDCM	0.3447	0.3553	0.00822	0.00354	59.62	3
	5 SDCM	0.3447	0.3553	0.01370	0.00590	59.62	5
5700K	3 SDCM	0.3287	0.3417	0.00746	0.00320	59.09	3
	5 SDCM	0.3287	0.3417	0.01243	0.00533	59.09	5
6500K	3 SDCM	0.3123	0.3282	0.00669	0.00285	58.57	3
	5 SDCM	0.3123	0.3282	0.01115	0.00475	58.57	5

Notes for Table 8:

1. Color binning at $T_{sp}=85^{\circ}\text{C}$
2. Bridgelux maintains a tolerance of ± 0.007 on x and y color coordinates in the CIE 1931 color space.

Product Bin Definitions

Figure 1: C.I.E. 1931 Chromaticity Diagram (2 Color Bin Structure, Hot-color Targeted at $T_{sp} = 85^{\circ}\text{C}$)



Performance Curves

Figure 2: Drive Current vs. Voltage ($T_{sp}=25^{\circ}\text{C}$)

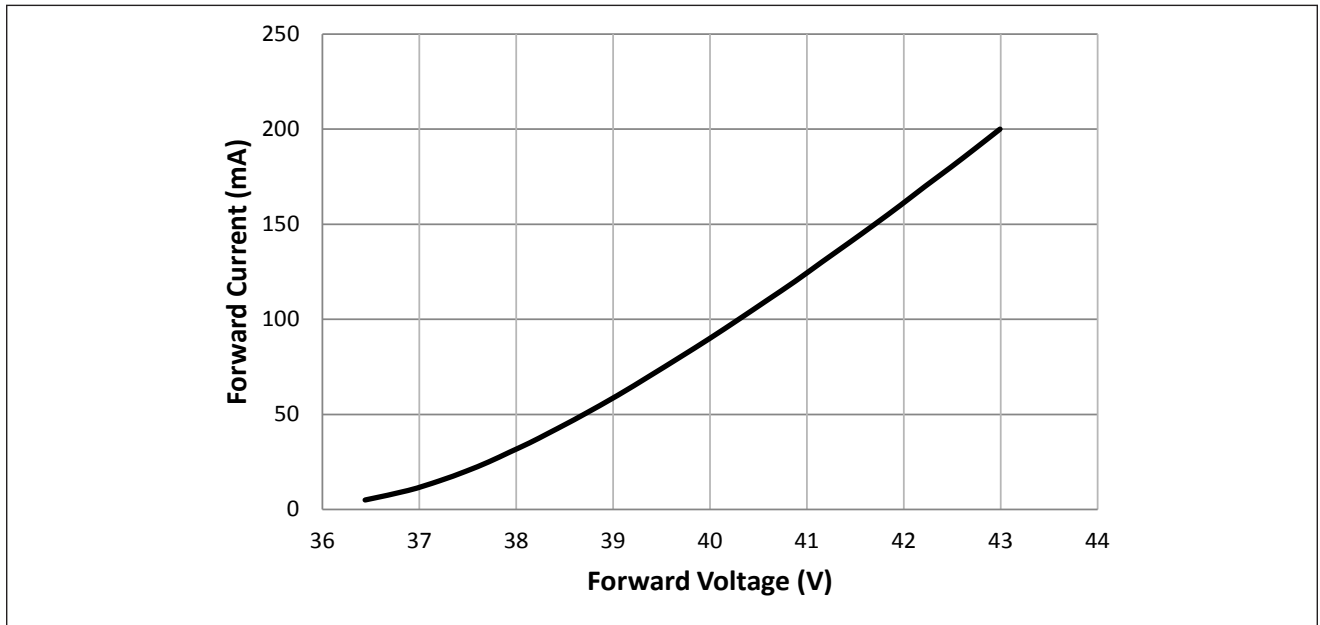
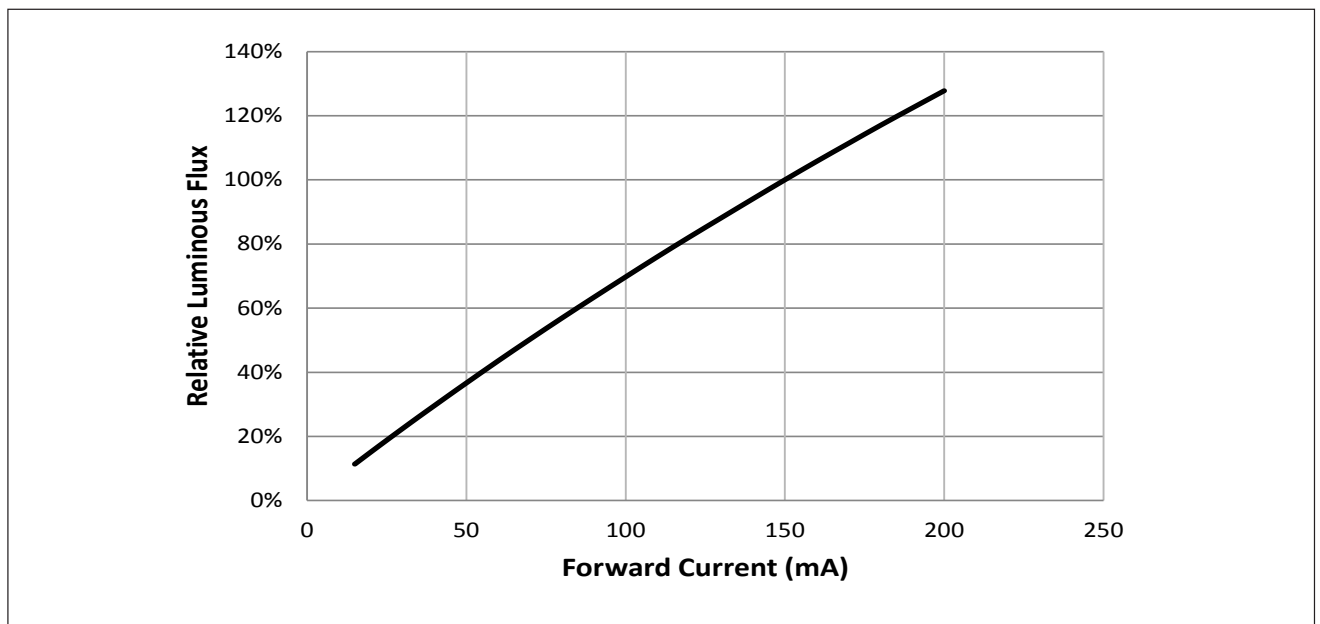


Figure 3: Typical Relative Luminous Flux vs. Drive Current ($T_{sp}=25^{\circ}\text{C}$)



Note for Figure 3:

1. Bridgelux does not recommend driving high power LEDs at low currents. Doing so may produce unpredictable results. Pulse width modulation (PWM) is recommended for dimming effects.

Performance Curves

Figure 4: Typical Relative DC Flux vs. Solder Point Temperature

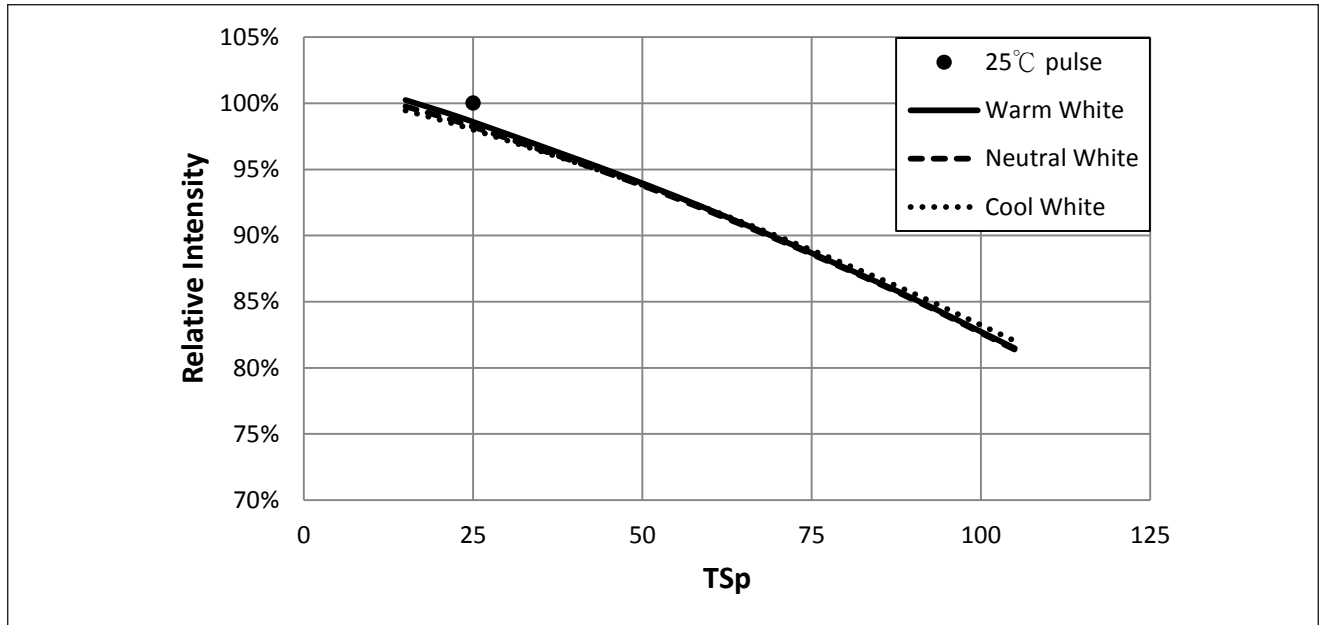
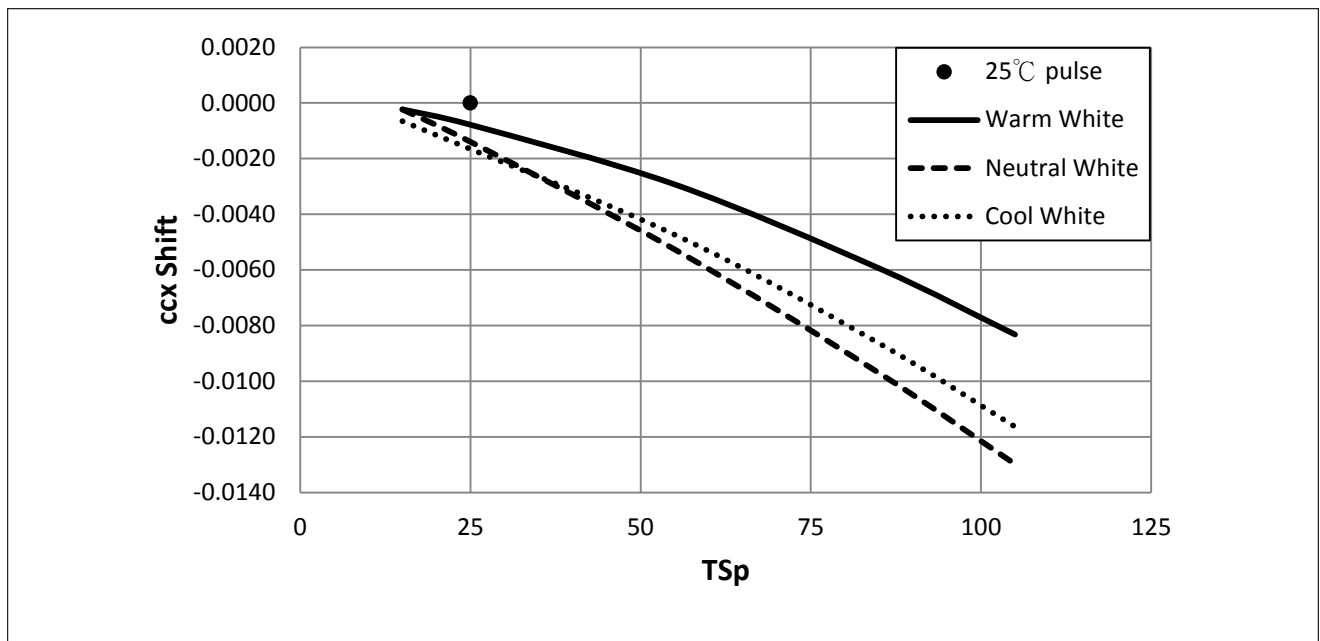


Figure 5: Typical DC ccx Shift vs. Solder Point Temperature

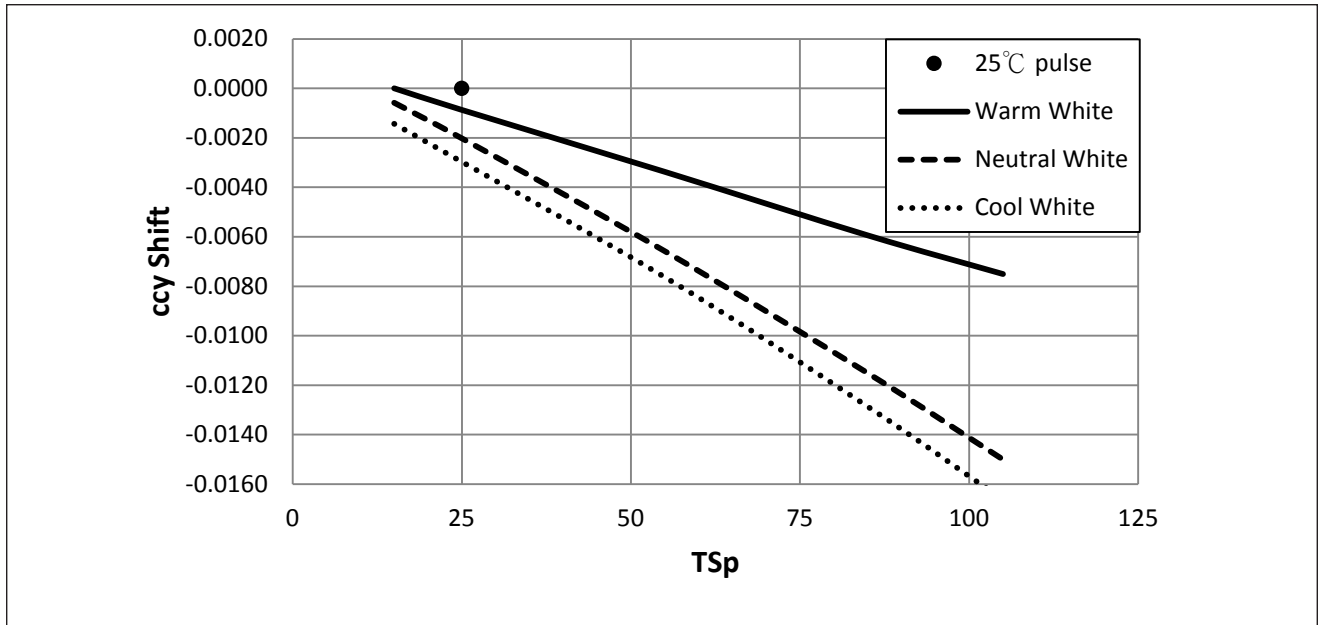


Notes for Figures 4 & 5:

1. Characteristics shown for warm white based on 2700K and 80 CRI.
2. Characteristics shown for neutral white based on 4000K and 80 CRI.
3. Characteristics shown for cool white based on 6500K and 80 CRI.
4. For other color SKUs, the shift in color will vary. Please contact your Bridgelux Sales Representative for more information.

Performance Curves

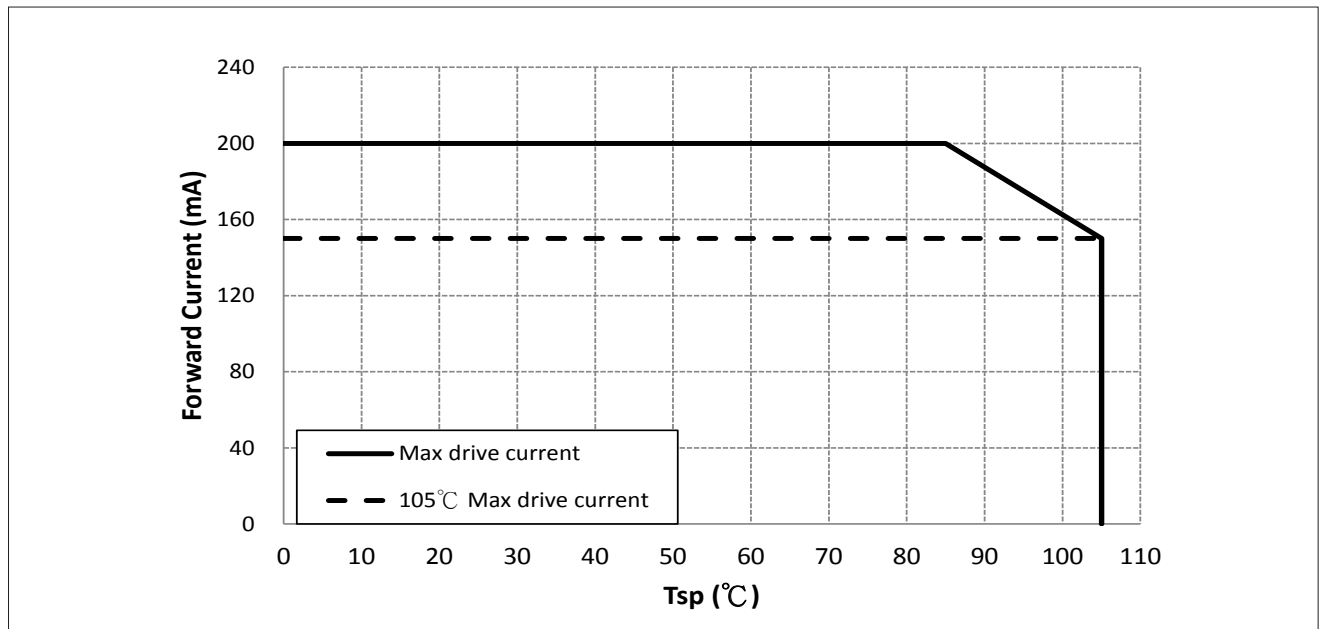
Figure 6: Typical DC ccy Shift vs. Solder Point Temperature



Notes for Figure 6:

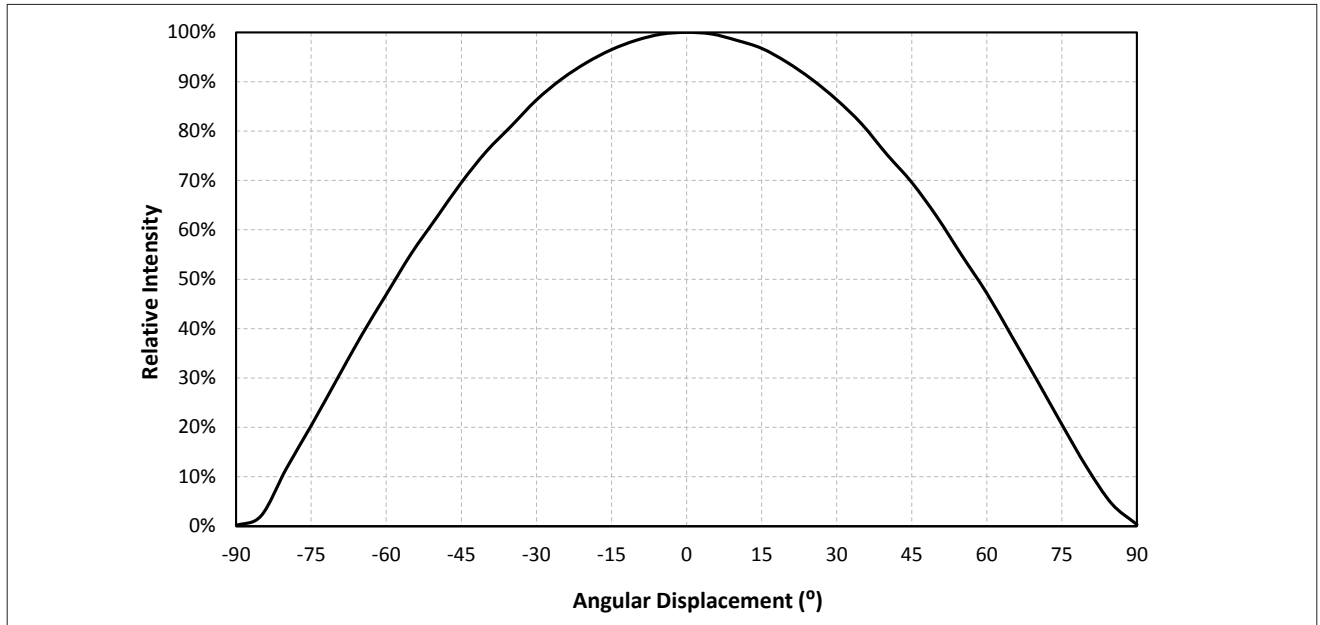
1. Characteristics shown for warm white based on 2700K and 80 CRI.
2. Characteristics shown for neutral white based on 4000K and 80 CRI.
3. Characteristics shown for cool white based on 6500K and 80 CRI.
4. For other color SKUs, the shift in color will vary. Please contact your Bridgelux Sales Representative for more information.

Figure 7: Drive Current Derating Curve



Typical Radiation Pattern

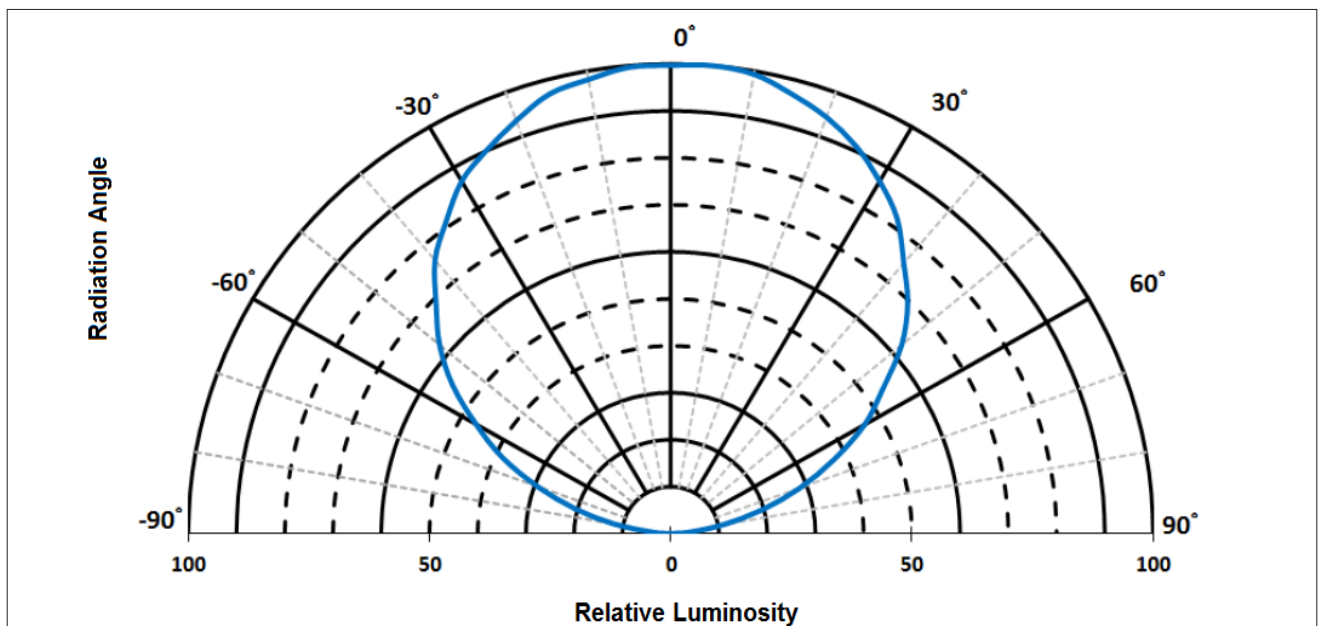
Figure 8: Typical Spatial Radiation Pattern at 150mA, $T_{sp}=25^{\circ}\text{C}$



Notes for Figure 8:

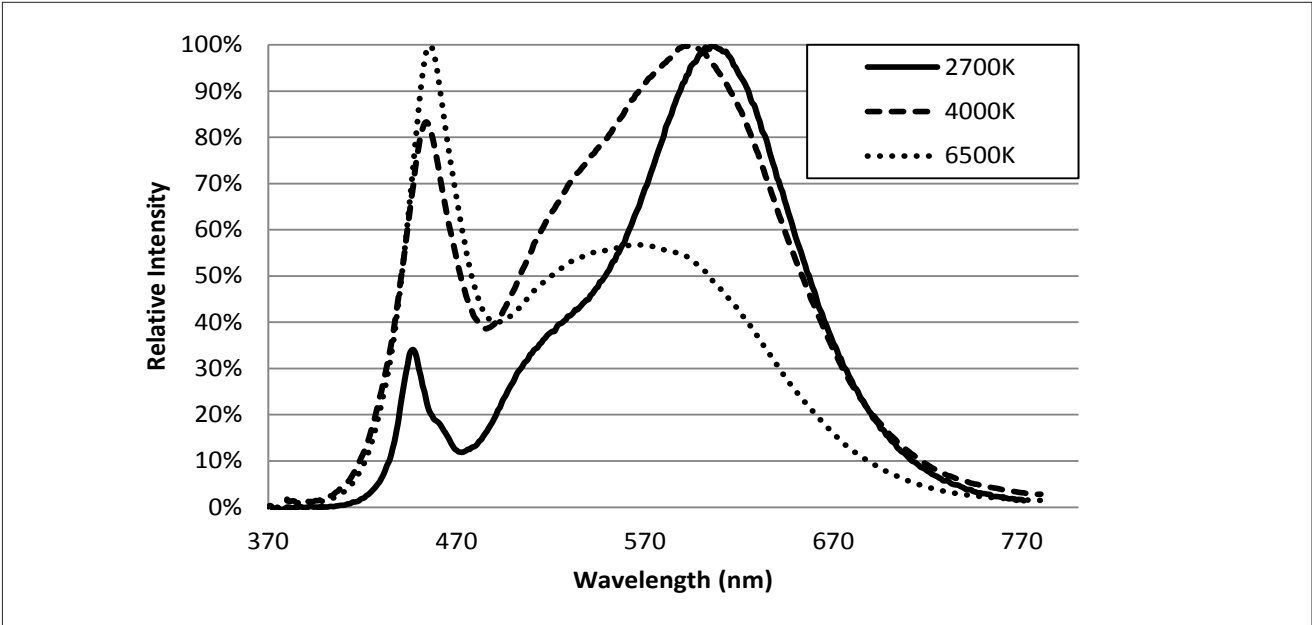
1. Typical viewing angle is 116° .
2. The viewing angle is defined as the off axis angle from the centerline where luminous intensity (lv) is $\frac{1}{2}$ of the peak value.

Figure 9: Typical Polar Radiation Pattern at 150mA, $T_{sp}=25^{\circ}\text{C}$



Typical Color Spectrum

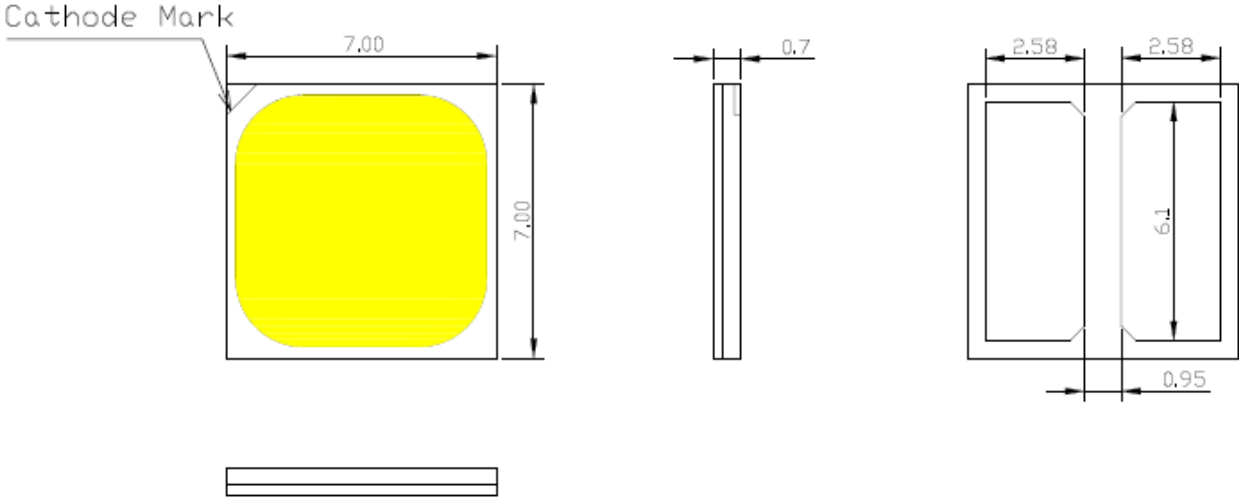
Figure 10: Typical Color Spectrum



Note for Figure 10:
1. Color spectra measured at nominal current for $T_{sp} = 25^{\circ}\text{C}$ for 80 CRI products.

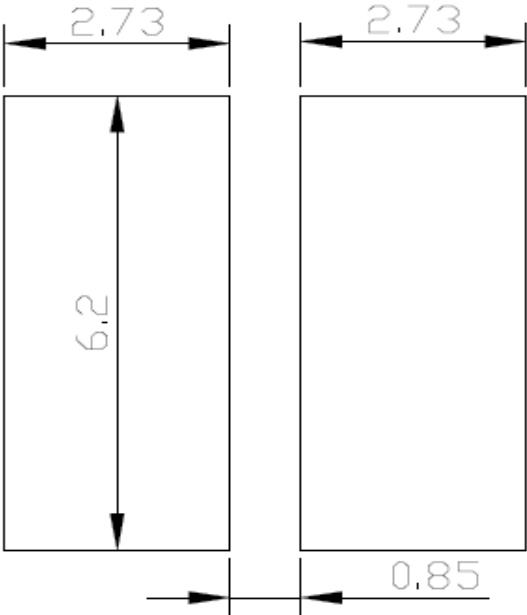
Mechanical Dimensions

Figure 11: Drawing for SMD 7070



- Notes for Figure 11:
1. Drawings are not to scale.
 2. Drawing dimensions are in millimeters.
 3. Unless otherwise specified, tolerances are $\pm 0.10\text{mm}$.

Recommended PCB Soldering Pad Pattern



Reliability

Table 9: Reliability Test Items and Conditions

No .	Items	Reference Standard	Test Conditions	Drive Current	Test Duration	Units Failed/Tested
1	Moisture/Reflow Sensitivity	J-STD-020E	$T_{sld} = 260^{\circ}\text{C}$, 10sec, Precondition: 60°C , 60%RH, 168hr	-	3 reflows	0/22
2	Low Temperature Storage	JESD22-A119	$T_a = -40^{\circ}\text{C}$	-	1000 hours	0/22
3	High Temperature Storage	JESD22-A103D	$T_a = 105^{\circ}\text{C}$	-	1000 hours	0/22
4	Low Temperature Operating Life	JESD22-A108D	$T_a = -40^{\circ}\text{C}$	150mA	1000 hours	0/22
5	Temperature Humidity Operating Life	JESD22-A101C	$T_{sp} = 85^{\circ}\text{C}$, RH=85%	150mA	1000 hours	0/22
6	High Temperature Operating Life	JESD22-A108D	$T_{sp} = 105^{\circ}\text{C}$	150mA	1000 hours	0/22
7	Power switching	IEC62717:2014	$T_{sp} = 105^{\circ}\text{C}$ 30 sec on, 30 sec off	150mA	30000 cycles	0/22
8	Thermal Shock	JESD22-A106B	$T_a = -40^{\circ}\text{C} \sim 100^{\circ}\text{C}$; Dwell : 15min; Transfer: 10sec	-	200 cycles	0/22
9	Temperature Cycle	JESD22-A104E	$T_a = -40^{\circ}\text{C} \sim 100^{\circ}\text{C}$; Dwell at extreme temperature: 15min; Ramp rate < $105^{\circ}\text{C}/\text{min}$	-	200 cycles	0/22
10	Electrostatic Discharge	JS-001-2012	HBM, 2kV, 15k Ω , 100pF, Alternately positive or negative	-	-	0/22

Passing Criteria

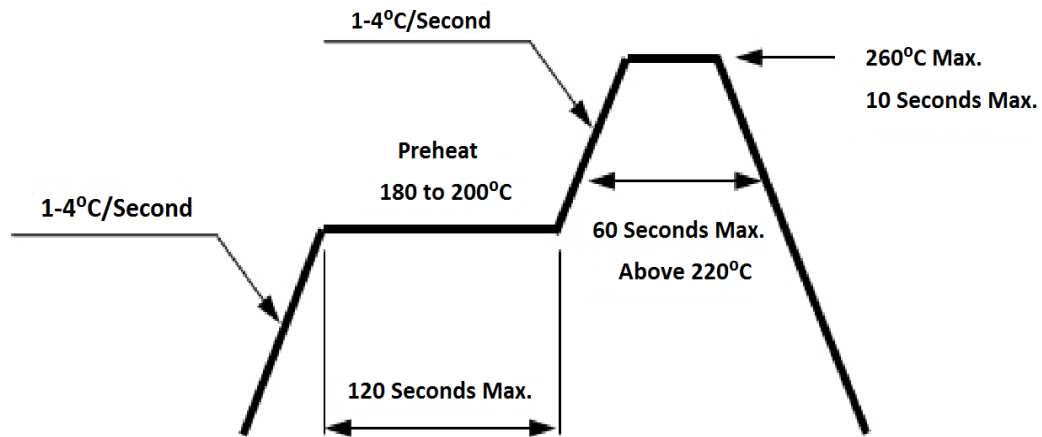
Item	Symbol	Test Condition	Passing Criteria
Forward Voltage	Vf	150mA	$\Delta V_f < 10\%$
Luminous Flux	Fv	150mA	$\Delta F_v < 30\%$
Chromaticity Coordinates	(x, y)	150mA	$\Delta u'v' < 0.007$

Notes for Table 9:

- Measurements are performed after allowing the LEDs to return to room temperature
- T_{sld} : reflow soldering temperature; T_a : ambient temperature

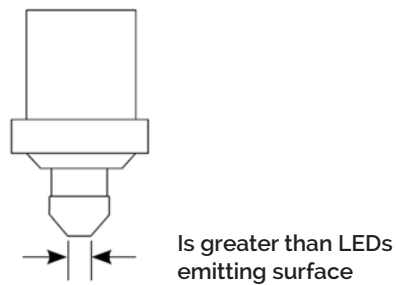
Reflowing Characteristics

Figure 12 : Reflow Profile



Profile Feature	Lead Free Assembly
Preheat: Temperature Range	180°C – 200°C
Preheat: Time (Maximum)	120 seconds
Peak Temperature	260°C
Soldering Time (Maximum)	10 seconds
Allowable Reflow Cycles	2

Figure 13 : Pick and Place

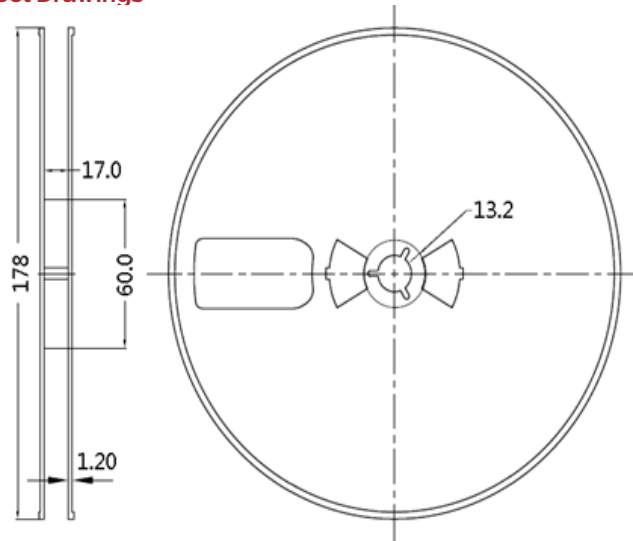


Note for Figure 13:

1. When using a pick and place machine, choose a nozzle that has a larger diameter than the LED's emitting surface. Using a Pick-and-Place nozzle with a smaller diameter than the size of the LEDs emitting surface will cause damage and may also cause the LED to not illuminate.

Packaging

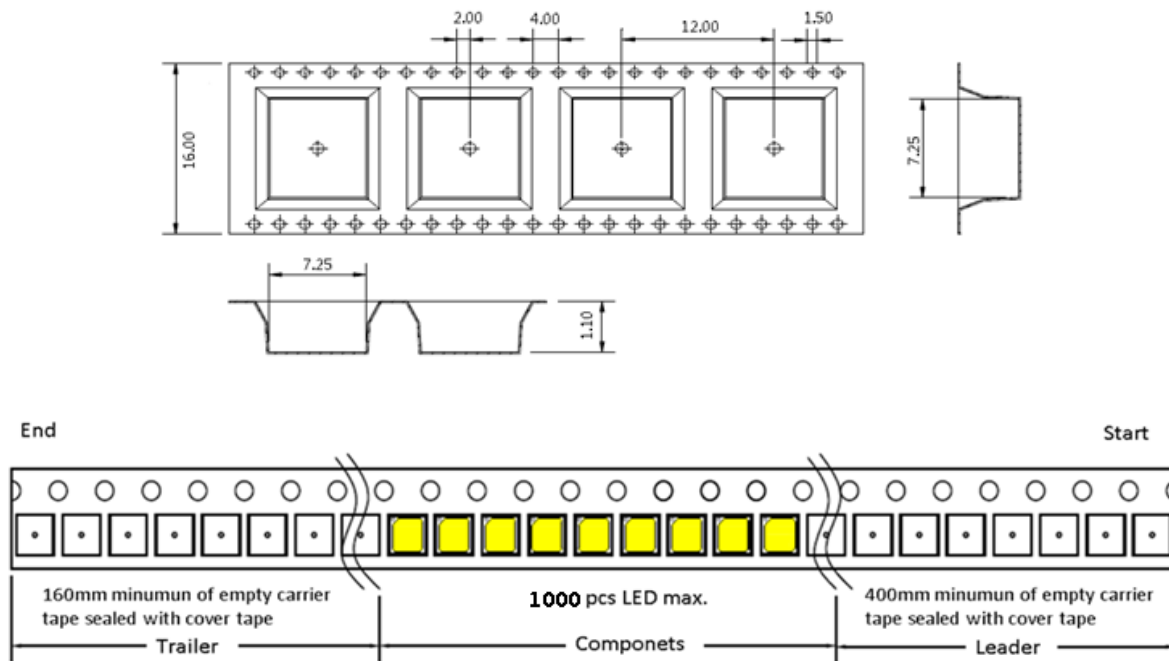
Figure 14: Emitter Reel Drawings



Note for Figure 14:

1. Drawings are not to scale. Drawing dimensions are in millimeters.

Figure 15: Emitter Tape Drawings

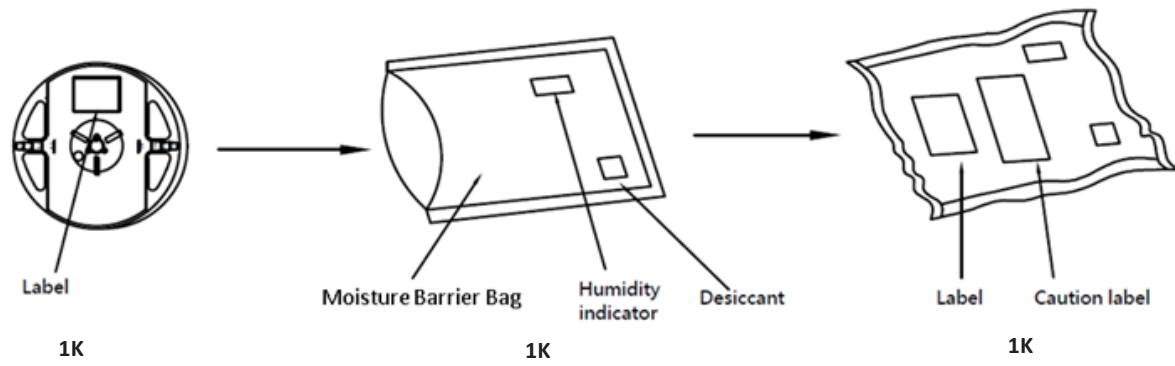


Note for Figure 15:

1. Drawings are not to scale. Drawing dimensions are in millimeters.

Packaging

Figure 16: Emitter Reel Packaging Drawings



Note for Figure 16:
1. Drawings are not to scale.

Design Resources

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 emitter. Please consult Bridgelux Application Note AN51 for additional information.

CAUTION: EYE SAFETY

Eye safety classification for the use of Bridgelux SMD LED emitter is in accordance with IEC specification EN62471: Photobiological Safety of Lamps and Lamp Systems. SMD LED emitters 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 SMD LED emitter during operation. Allow the emitter to cool for a sufficient period of time before handling. The SMD LED emitter 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 emitter or apply stress to the LES (yellow phosphor resin area). Contact may cause damage to the emitter

Optics and reflectors must not be mounted in contact with the LES (yellow phosphor resin area).

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.

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
bridgelux.com
twitter.com/Bridgelux
facebook.com/Bridgelux
youtube.com/user/Bridgelux
linkedin.com/company/bridgelux-inc-_2
WeChat ID: BridgeluxInChina



46430 Fremont Boulevard
Fremont, CA 94538 U.S.A.
Tel (925) 583-8400
www.bridgelux.com

© 2019 Bridgelux, Inc. All rights reserved 2019. Product specifications are subject to change without notice. Bridgelux and the Bridgelux stylized logo design are registered trademarks of Bridgelux, Inc. All other trademarks are the property of their respective owners.