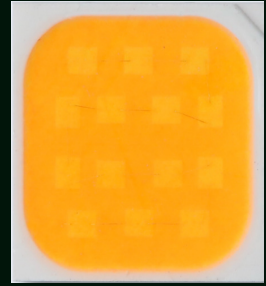


# Bridgelux® SMD 7070 8W 27V

Product Data Sheet DS214

# 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

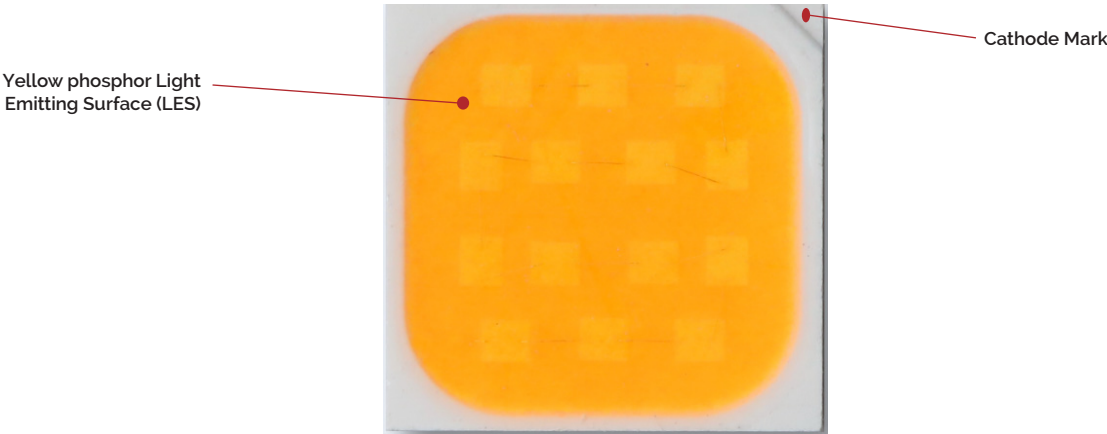
- Lower operating and manufacturing costs
- Ease of design and rapid go-to-market
- Uniform, consistent white light
- Compliant with environmental standards
- Design flexibility

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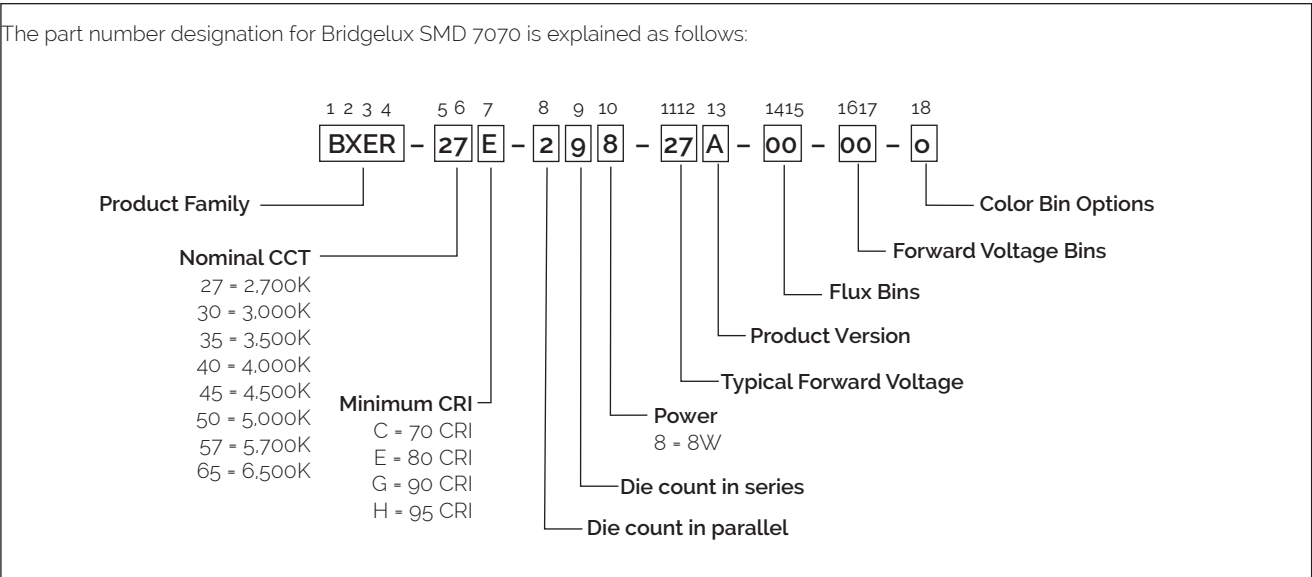
# Product Feature Map

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 300mA 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 300mA ( $T_j=T_{sp}=25^{\circ}\text{C}$ )

Part Number <sup>2,5</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 (lm) <sup>4</sup>	Typical Power (W)	Typical Efficacy (lm/W)
				Min	Typical	Max			
BXER-27C-298-27A-00-00-0	2700	70	300	25.2	26.6	29.9	1232	8.0	154
BXER-27E-298-27A-00-00-0	2700	80	300	25.2	26.6	29.9	1110	8.0	139
BXER-27G-298-27A-00-00-0	2700	90	300	25.2	26.6	29.9	957	8.0	120
BXER-27H-298-27A-00-00-0	2700	95	300	25.2	26.6	29.9	875	8.0	110
BXER-30C-298-27A-00-00-0	3000	70	300	25.2	26.6	29.9	1272	8.0	159
BXER-30E-298-27A-00-00-0	3000	80	300	25.2	26.6	29.9	1146	8.0	143
BXER-30G-298-27A-00-00-0	3000	90	300	25.2	26.6	29.9	986	8.0	123
BXER-30H-298-27A-00-00-0	3000	95	300	25.2	26.6	29.9	909	8.0	114
BXER-35C-298-27A-00-00-0	3500	70	300	25.2	26.6	29.9	1316	8.0	165
BXER-35E-298-27A-00-00-0	3500	80	300	25.2	26.6	29.9	1186	8.0	148
BXER-40C-298-27A-00-00-0	4000	70	300	25.2	26.6	29.9	1361	8.0	170
BXER-40E-298-27A-00-00-0	4000	80	300	25.2	26.6	29.9	1226	8.0	153
BXER-40G-298-27A-00-00-0	4000	90	300	25.2	26.6	29.9	1057	8.0	132
BXER-40H-298-27A-00-00-0	4000	95	300	25.2	26.6	29.9	973	8.0	122
BXER-45C-298-27A-00-00-0	4500	70	300	25.2	26.6	29.9	1361	8.0	170
BXER-45E-298-27A-00-00-0	4500	80	300	25.2	26.6	29.9	1226	8.0	153
BXER-50C-298-27A-00-00-0	5000	70	300	25.2	26.6	29.9	1361	8.0	170
BXER-50E-298-27A-00-00-0	5000	80	300	25.2	26.6	29.9	1226	8.0	153
BXER-57C-298-27A-00-00-0	5700	70	300	25.2	26.6	29.9	1347	8.0	169
BXER-57E-298-27A-00-00-0	5700	80	300	25.2	26.6	29.9	1226	8.0	153
BXER-65C-298-27A-00-00-0	6500	70	300	25.2	26.6	29.9	1347	8.0	169
BXER-65E-298-27A-00-00-0	6500	80	300	25.2	26.6	29.9	1214	8.0	152

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-298-27A-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, 2x9 die configuration, 8w power, 26.6V 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  $\pm 2$  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 ( $T_{sp} = 85^{\circ}\text{C}$ )<sup>6,7</sup>

Part Number <sup>2,5</sup>	Nominal CCT <sup>2</sup> (K)	CRI <sup>3,4</sup>	Nominal Drive Current (mA)	Forward Voltage <sup>4</sup> (V)			Typical DC Flux (lm) <sup>4</sup>	Typical DC Power (W)	Typical DC Effi- cacy (lm/W)
				Min	Typical	Max			
BXER-27C-298-27A-00-00-0	2700	70	300	24.5	25.9	29.2	1065	7.8	137
BXER-27E-298-27A-00-00-0	2700	80	300	24.5	25.9	29.2	960	7.8	124
BXER-27G-298-27A-00-00-0	2700	90	300	24.5	25.9	29.2	827	7.8	106
BXER-27H-298-27A-00-00-0	2700	95	300	24.5	25.9	29.2	756	7.8	97
BXER-30C-298-27A-00-00-0	3000	70	300	24.5	25.9	29.2	1099	7.8	141
BXER-30E-298-27A-00-00-0	3000	80	300	24.5	25.9	29.2	990	7.8	127
BXER-30G-298-27A-00-00-0	3000	90	300	24.5	25.9	29.2	852	7.8	110
BXER-30H-298-27A-00-00-0	3000	95	300	24.5	25.9	29.2	786	7.8	101
BXER-35C-298-27A-00-00-0	3500	70	300	24.5	25.9	29.2	1138	7.8	146
BXER-35E-298-27A-00-00-0	3500	80	300	24.5	25.9	29.2	1025	7.8	132
BXER-40C-298-27A-00-00-0	4000	70	300	24.5	25.9	29.2	1176	7.8	151
BXER-40E-298-27A-00-00-0	4000	80	300	24.5	25.9	29.2	1060	7.8	136
BXER-40G-298-27A-00-00-0	4000	90	300	24.5	25.9	29.2	914	7.8	118
BXER-40H-298-27A-00-00-0	4000	95	300	24.5	25.9	29.2	841	7.8	108
BXER-45C-298-27A-00-00-0	4500	70	300	24.5	25.9	29.2	1176	7.8	151
BXER-45E-298-27A-00-00-0	4500	80	300	24.5	25.9	29.2	1060	7.8	136
BXER-50C-298-27A-00-00-0	5000	70	300	24.5	25.9	29.2	1176	7.8	151
BXER-50E-298-27A-00-00-0	5000	80	300	24.5	25.9	29.2	1060	7.8	136
BXER-57C-298-27A-00-00-0	5700	70	300	24.5	25.9	29.2	1165	7.8	150
BXER-57E-298-27A-00-00-0	5700	80	300	24.5	25.9	29.2	1060	7.8	136
BXER-65C-298-27A-00-00-0	6500	70	300	24.5	25.9	29.2	1165	7.8	150
BXER-65E-298-27A-00-00-0	6500	80	300	24.5	25.9	29.2	1049	7.8	135

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-27E-298-27A-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, 2x9 die configuration, 8w power, 26.6V 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  $\pm 2$  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  $85^{\circ}\text{C}$ . 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 <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 DC Flux <sup>3</sup> $T_{sp} = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_{sp} = 25^\circ\text{C}$ (lm/W)
BXER-27C-298-27A-00-00-0	70	100	24.4	2.4	452	412	185
		200	25.6	5.1	859	762	168
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1232</b>	<b>1065</b>	<b>154</b>
		400	27.6	11.0	1574	1324	143
BXER-27E-298-27A-00-00-0	80	100	24.4	2.4	407	371	167
		200	25.6	5.1	774	687	151
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1110</b>	<b>960</b>	<b>139</b>
		400	27.6	11.0	1418	1193	129
BXER-27G-298-27A-00-00-0	90	100	24.4	2.4	351	320	144
		200	25.6	5.1	667	592	131
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>957</b>	<b>827</b>	<b>120</b>
		400	27.6	11.0	1223	1028	111
BXER-27H-298-27A-00-00-0	95	100	24.4	2.4	321	292	131
		200	25.6	5.1	610	541	119
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>875</b>	<b>756</b>	<b>110</b>
		400	27.6	11.0	1118	940	101
BXER-30C-298-27A-00-00-0	70	100	24.4	2.4	466	425	191
		200	25.6	5.1	887	787	173
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1272</b>	<b>1099</b>	<b>159</b>
		400	27.6	11.0	1625	1367	147
BXER-30E-298-27A-00-00-0	80	100	24.4	2.4	420	383	172
		200	25.6	5.1	799	709	156
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1146</b>	<b>990</b>	<b>143</b>
		400	27.6	11.0	1464	1231	133
BXER-30G-298-27A-00-00-0	90	100	24.4	2.4	361	329	148
		200	25.6	5.1	687	610	134
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>986</b>	<b>852</b>	<b>123</b>
		400	27.6	11.0	1259	1059	114

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 <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 DC Flux <sup>3</sup> $T_{sp} = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_{sp} = 25^\circ\text{C}$ (lm/W)
BXER-30H-298-27A-00-00-0	95	100	24.4	2.4	333	304	137
		200	25.6	5.1	634	563	124
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>909</b>	<b>786</b>	<b>114</b>
		400	27.6	11.0	1162	977	105
BXER-35C-298-27A-00-00-0	70	100	24.4	2.4	482	440	198
		200	25.6	5.1	918	815	180
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1316</b>	<b>1138</b>	<b>165</b>
		400	27.6	11.0	1682	1415	153
BXER-35E-298-27A-00-00-0	80	100	24.4	2.4	435	396	178
		200	25.6	5.1	827	734	162
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1186</b>	<b>1025</b>	<b>149</b>
		400	27.6	11.0	1515	1274	137
BXER-40C-298-27A-00-00-0	70	100	24.4	2.4	499	455	204
		200	25.6	5.1	949	842	186
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1361</b>	<b>1176</b>	<b>170</b>
		400	27.6	11.0	1739	1462	158
BXER-40E-298-27A-00-00-0	80	100	24.4	2.4	449	410	184
		200	25.6	5.1	855	759	167
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1226</b>	<b>1060</b>	<b>154</b>
		400	27.6	11.0	1566	1317	142
BXER-40G-298-27A-00-00-0	90	100	24.4	2.4	387	353	159
		200	25.6	5.1	737	654	144
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1057</b>	<b>914</b>	<b>132</b>
		400	27.6	11.0	1350	1136	122
BXER-40H-298-27A-00-00-0	95	100	24.4	2.4	357	325	146
		200	25.6	5.1	678	602	133
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>973</b>	<b>841</b>	<b>122</b>
		400	27.6	11.0	1243	1046	113
BXER-45C-298-27A-00-00-0	70	100	24.4	2.4	499	455	204
		200	25.6	5.1	949	842	186
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1361</b>	<b>1176</b>	<b>170</b>
		400	27.6	11.0	1739	1462	158

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 <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 DC Flux <sup>3</sup> $T_{sp} = 85^\circ\text{C}$ (lm)	Typical Efficacy $T_{sp} = 25^\circ\text{C}$ (lm/W)
BXER-45E-298-27A-00-00-0	80	100	24.4	2.4	449	410	184
		200	25.6	5.1	855	759	167
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1226</b>	<b>1060</b>	<b>154</b>
		400	27.6	11.0	1566	1317	142
BXER-50C-298-27A-00-00-0	70	100	24.4	2.4	499	455	204
		200	25.6	5.1	949	842	186
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1361</b>	<b>1176</b>	<b>170</b>
		400	27.6	11.0	1739	1462	158
BXER-50E-298-27A-00-00-0	80	100	24.4	2.4	449	410	184
		200	25.6	5.1	855	759	167
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1226</b>	<b>1060</b>	<b>154</b>
		400	27.6	11.0	1566	1317	142
BXER-57C-298-27A-00-00-0	70	100	24.4	2.4	494	450	202
		200	25.6	5.1	940	834	184
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1347</b>	<b>1165</b>	<b>169</b>
		400	27.6	11.0	1722	1448	156
BXER-57E-298-27A-00-00-0	80	100	24.4	2.4	449	410	184
		200	25.6	5.1	855	759	167
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1226</b>	<b>1060</b>	<b>154</b>
		400	27.6	11.0	1566	1317	142
BXER-65C-298-27A-00-00-0	70	100	24.4	2.4	494	450	202
		200	25.6	5.1	940	834	184
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1347</b>	<b>1165</b>	<b>169</b>
		400	27.6	11.0	1722	1448	156
BXER-65E-298-27A-00-00-0	80	100	24.4	2.4	445	405	182
		200	25.6	5.1	846	751	166
		<b>300</b>	<b>26.6</b>	<b>8.0</b>	<b>1214</b>	<b>1049</b>	<b>152</b>
		400	27.6	11.0	1551	1304	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 stabilized DC performance values are provided as reference only and are not a guarantee of performance.

# Electrical Characteristics

**Table 4:** Electrical Characteristics

Part Number <sup>1</sup>	Drive Current (mA)	Forward Voltage (V) <sup>2,3</sup>			Typical Temperature Coefficient of Forward Voltage $\Delta V_f / \Delta T$ (mV/°C)	Typical Thermal Resistance Junction to Solder Point <sup>4</sup> $R_{j-sp}$ (°C/W)
		Minimum	Typical	Maximum		
BXER-XXX-298-27A-00-00-0	300	25.2	26.6	29.9	-8.0	1.7

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-298-27A-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, 2x9 die configuration, 8w power, 26.6V 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 <sup>1</sup>	400mA
Maximum Peak Pulsed Forward Current <sup>2</sup>	600mA
Maximum Reverse Voltage <sup>3</sup>	-
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 may be limited by the solder point temperature. Please see Figure 7 for further details.
2. Bridgelux recommends a maximum duty cycle of 10% and pulse width of 10 ms when operating LED SMD at maximum peak pulsed current specified. Maximum peak pulsed current indicate values where LED SMD 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, 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 300mA,  $T_{sp}=25^{\circ}\text{C}$

Bin Code	Minimum	Maximum	Unit	Condition
B4	740	800	lm	$I_F=300\text{mA}$
B5	800	865		
B6	865	935		
B7	935	1010		
B8	1010	1090		
B9	1090	1175		
C1	1175	1270		
C2	1270	1370		
C3	1370	1480		
C4	1480	1600		

Note for Table 6:

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

**Table 7:** Forward Voltage Bin Definition at 300mA,  $T_{sp}=25^{\circ}\text{C}$

Bin Code	Minimum	Maximum	Unit	Condition
HF	24	25	V	$I_F=300\text{mA}$
HG	25	26		
HH	26	27		
HI	27	28		
KD	28	29		

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

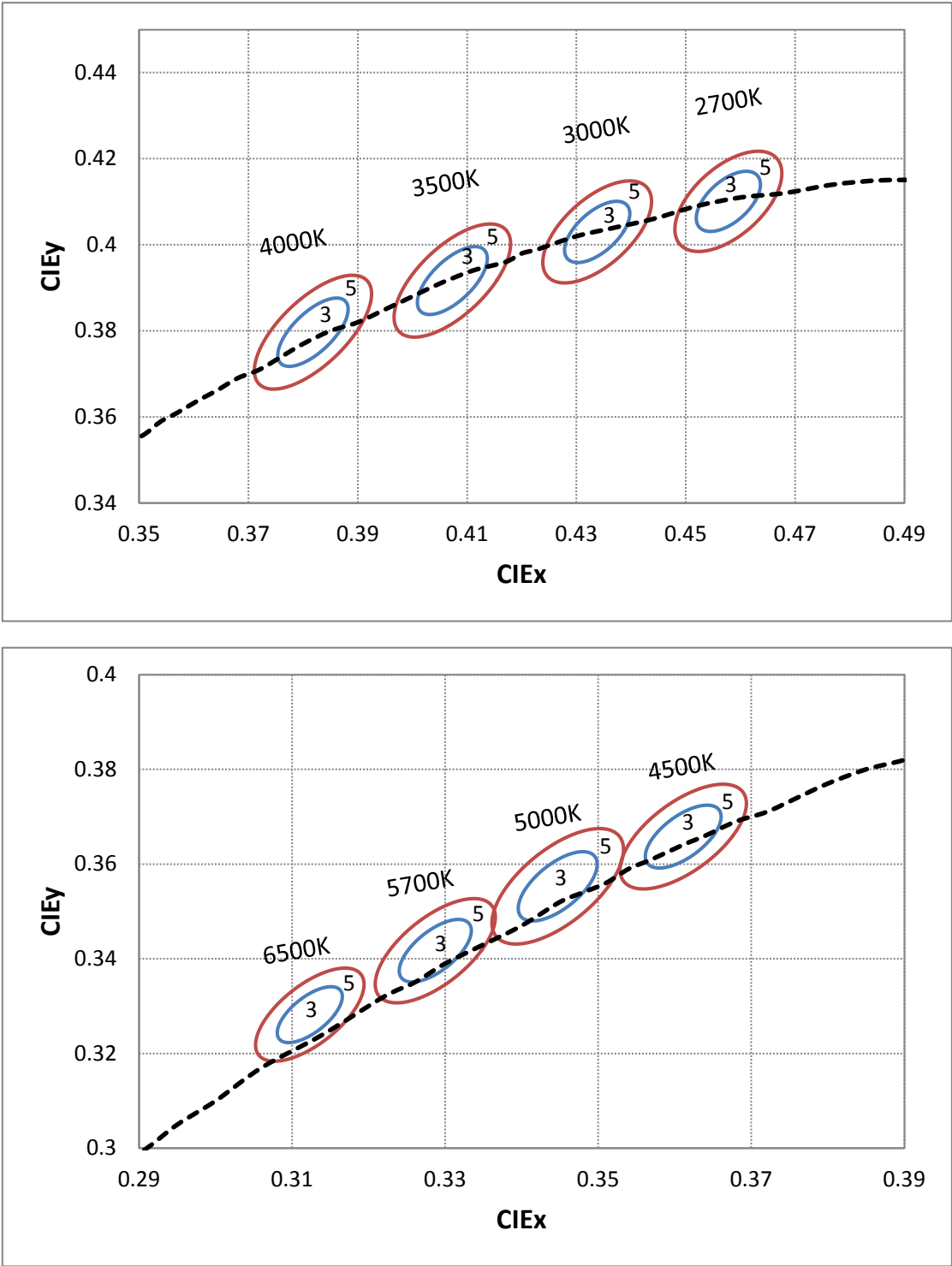
CCT	Color Space	Center Point		Major Axis	Minor Axis	Ellipse Rotation Angle	Color Bin
		X	Y				
2700K	3 SDCM	0.4578	0.4101	0.00810	0.00420	53.70	3
	5 SDCM	0.4578	0.4101	0.01350	0.00700	53.70	5
3000K	3 SDCM	0.4338	0.4030	0.00834	0.00408	53.22	3
	5 SDCM	0.4338	0.4030	0.01390	0.00680	53.22	5
3500K	3 SDCM	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  $\pm 0.007$  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 ( $T_{sp}=25^{\circ}\text{C}$ )

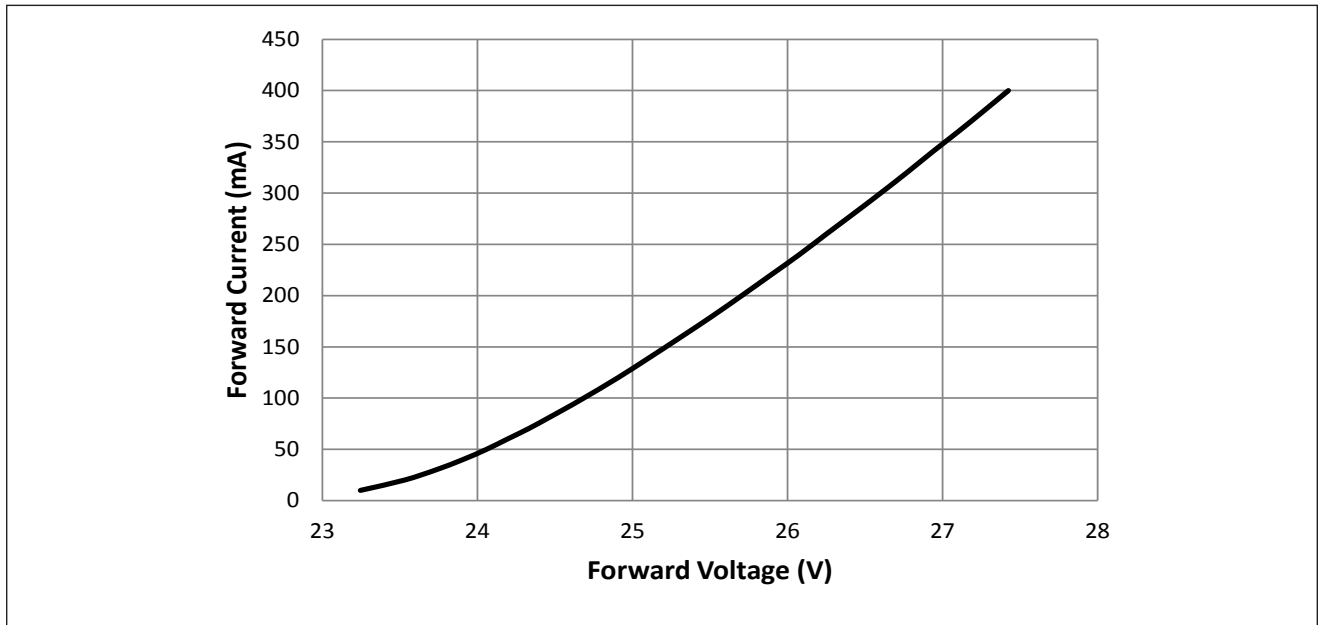
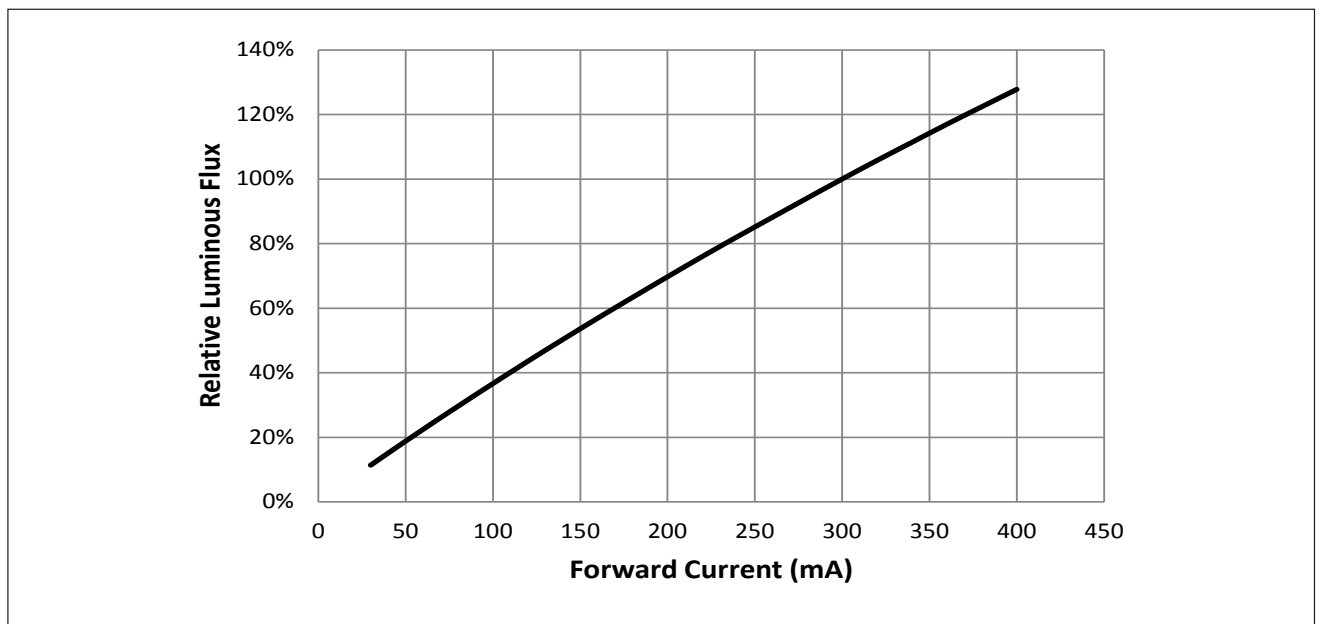


Figure 3: Typical Relative Luminous Flux vs. Drive Current ( $T_{sp}=25^{\circ}\text{C}$ )



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

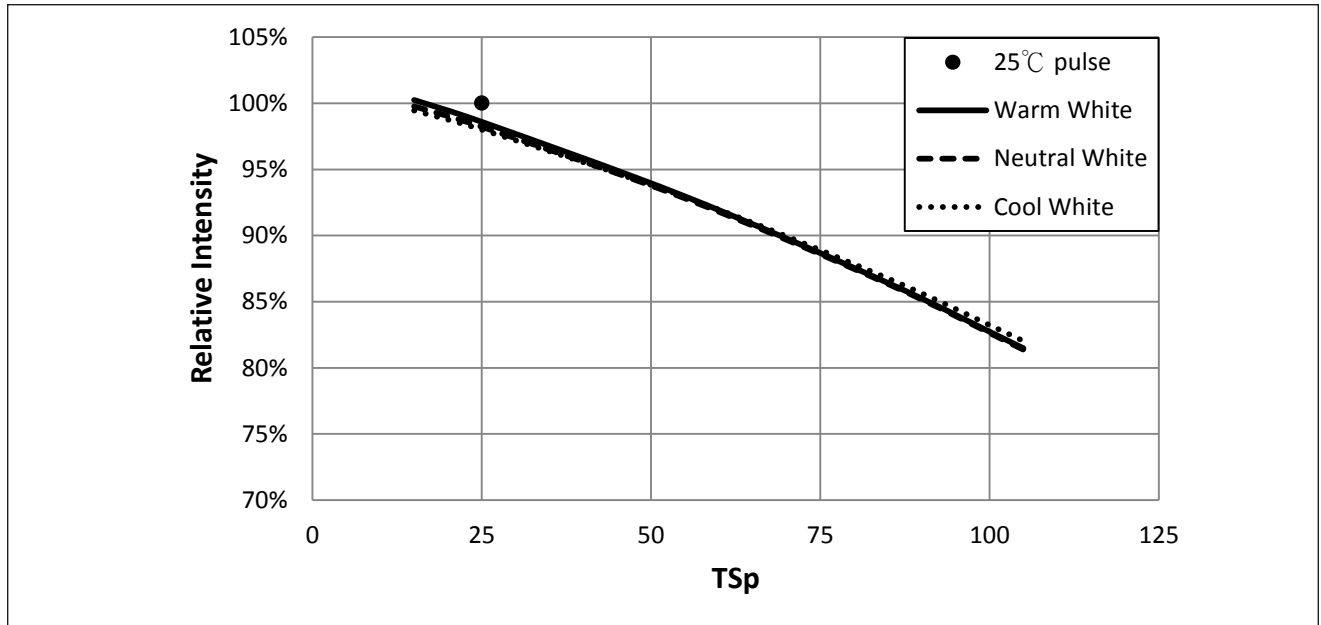
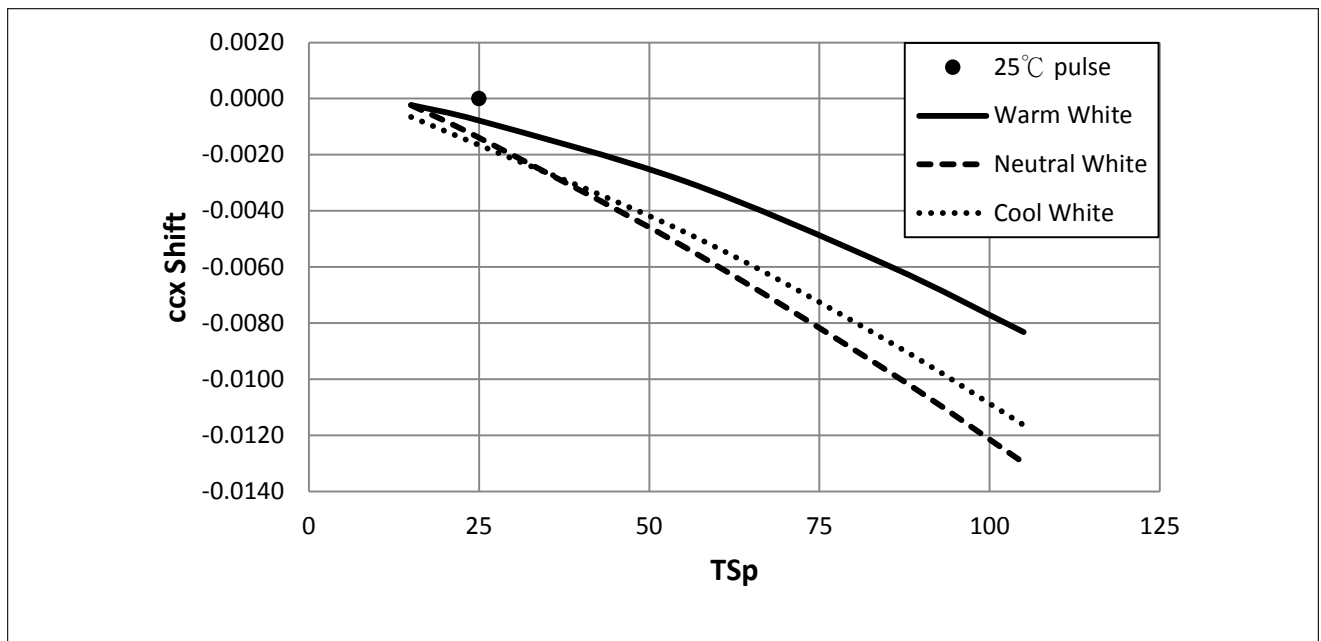


Figure 5: Typical DC ccx Shift vs. Solder Point Temperature



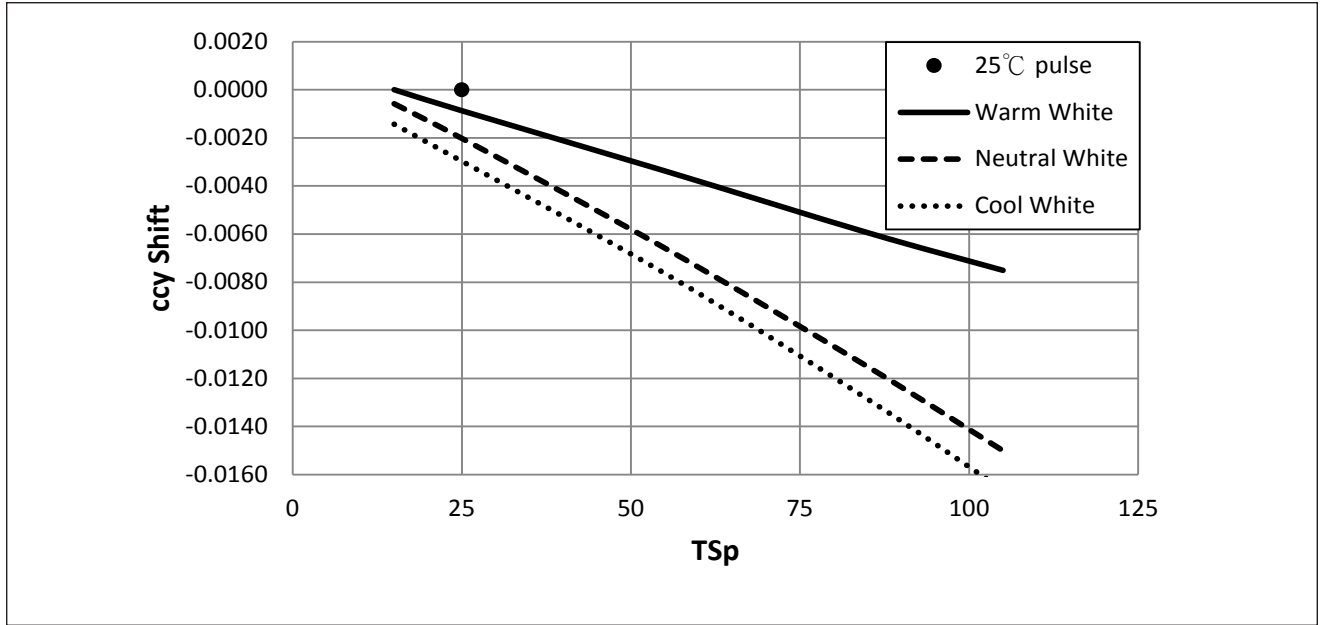
Notes for Figures 4 & 5:

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

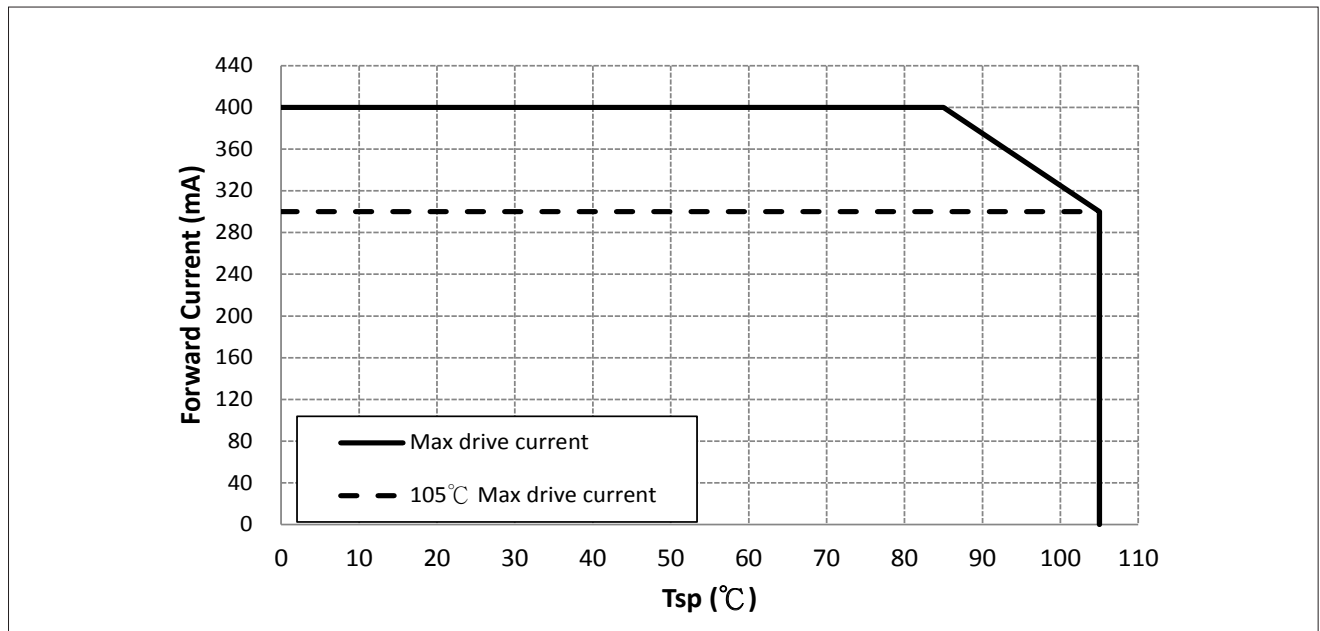
**Figure 6: Typical DC ccy Shift vs. Solder Point Temperature**



Notes for Figure 6:

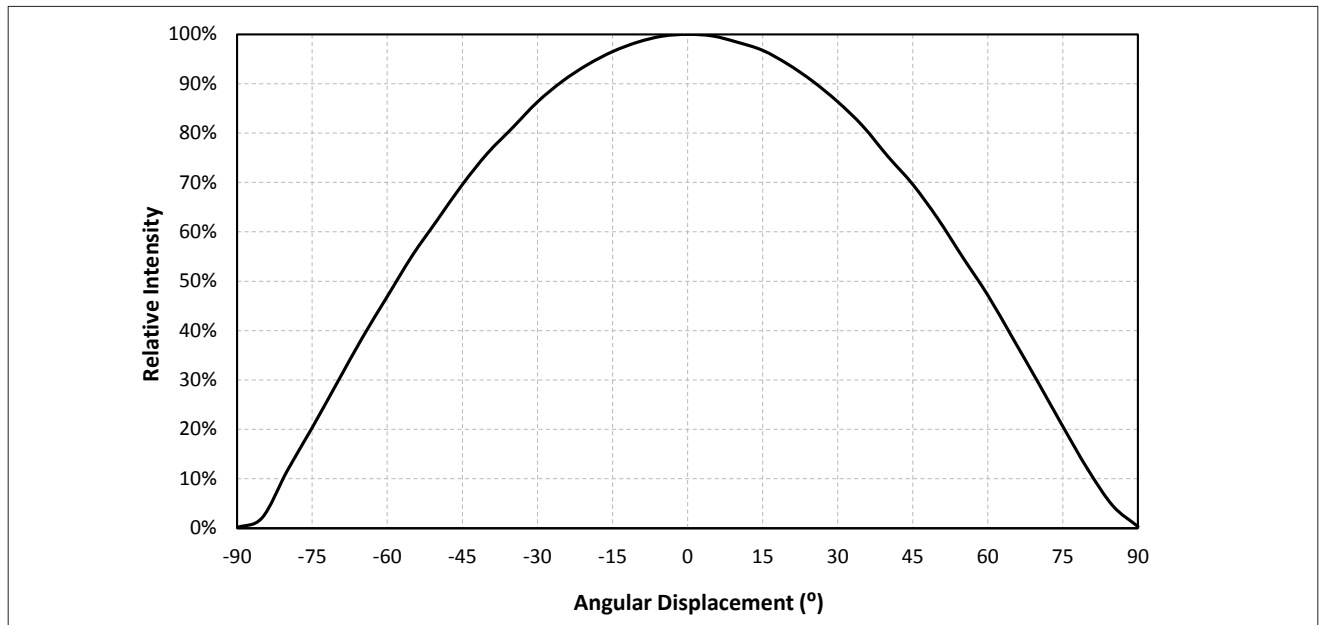
1. Characteristics shown for warm white based on 2700K and 80 CRI.
2. Characteristics shown for neutral white based on 4000K and 80 CRI.
3. Characteristics shown for cool white based on 6500K and 80 CRI.
4. For other color SKUs, the shift in color will vary. Please contact your Bridgelux Sales Representative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

**Figure 7: Drive Current Derating Curve**



# Typical Radiation Pattern

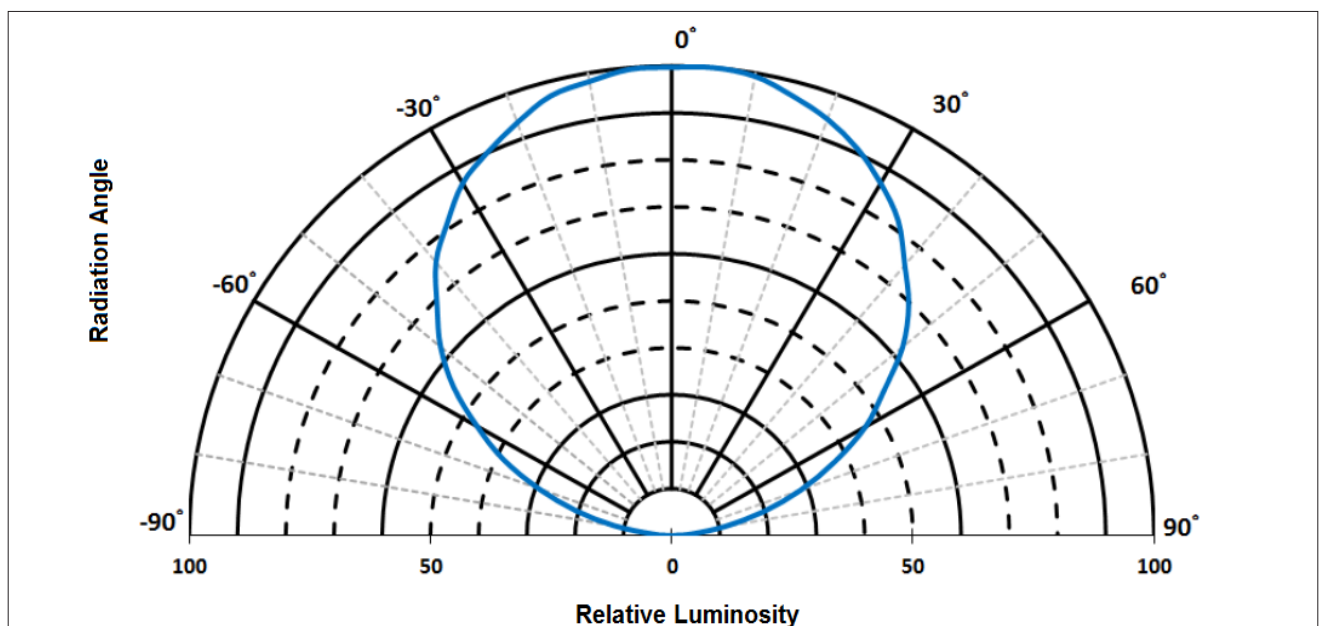
Figure 8: Typical Spatial Radiation Pattern at 300mA,  $T_{sp} = 25^{\circ}\text{C}$



Notes for Figure 8:

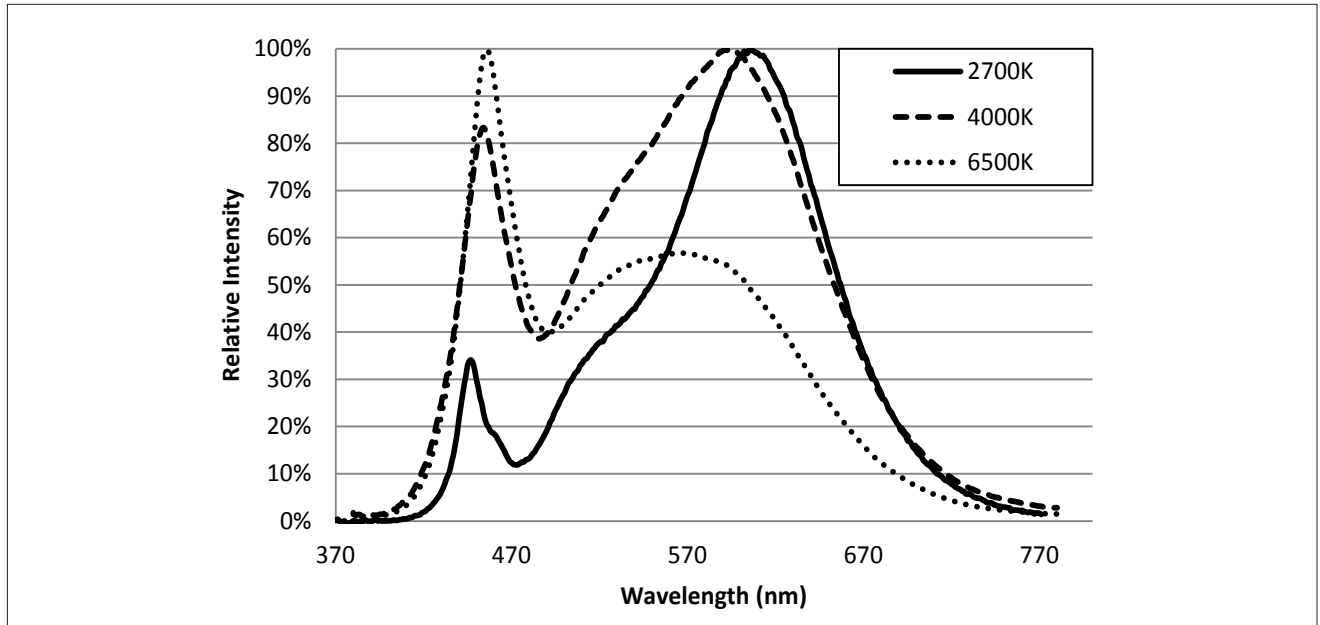
1. Typical viewing angle is  $116^{\circ}$ .
2. The viewing angle is defined as the off axis angle from the centerline where luminous intensity (lv) is  $\frac{1}{2}$  of the peak value.

Figure 9: Typical Polar Radiation Pattern at 300mA,  $T_{sp} = 25^{\circ}\text{C}$



# Typical Color Spectrum

Figure 10: Typical Color Spectrum

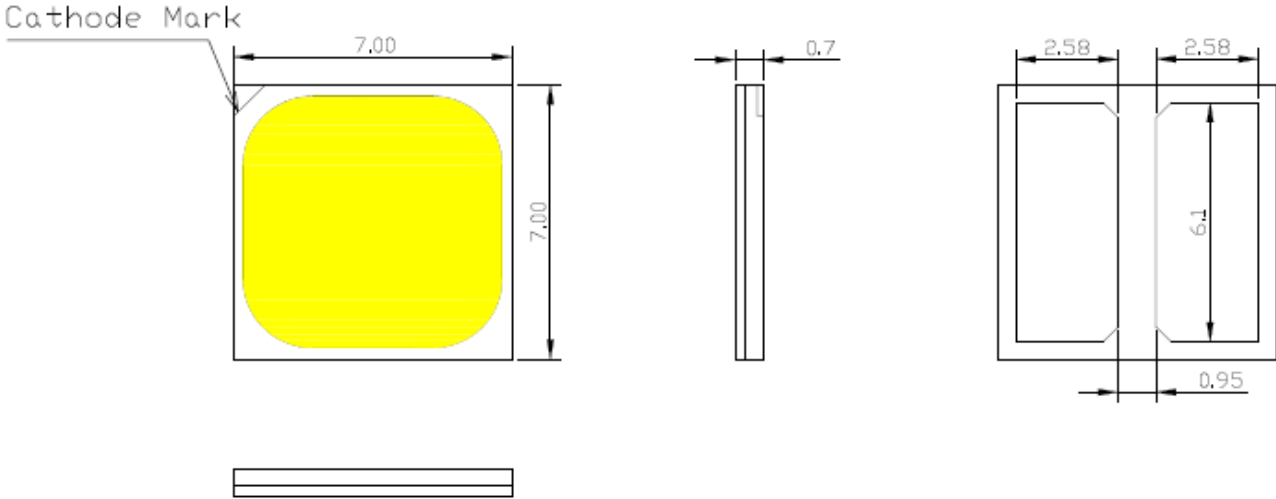


Note for Figure 10:

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

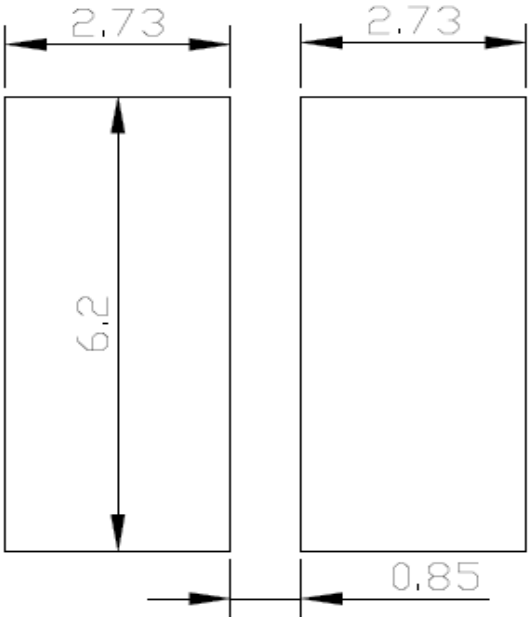
# Mechanical Dimensions

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: $60^{\circ}\text{C}$ , 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	$T_a = -40^{\circ}\text{C}$	300mA	1000 hours	0/22
5	Temperature Humidity Operating Life	JESD22-A101C	$T_{sp} = 85^{\circ}\text{C}$ , RH=85%	300mA	1000 hours	0/22
6	High Temperature Operating Life	JESD22-A108D	$T_{sp} = 105^{\circ}\text{C}$	300mA	1000 hours	0/22
7	Power switching	IEC62717:2014	$T_{sp} = 105^{\circ}\text{C}$ 30 sec on, 30 sec off	300mA	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 $\Omega$ , 100pF, Alternately positive or negative	-	-	0/22

## Passing Criteria

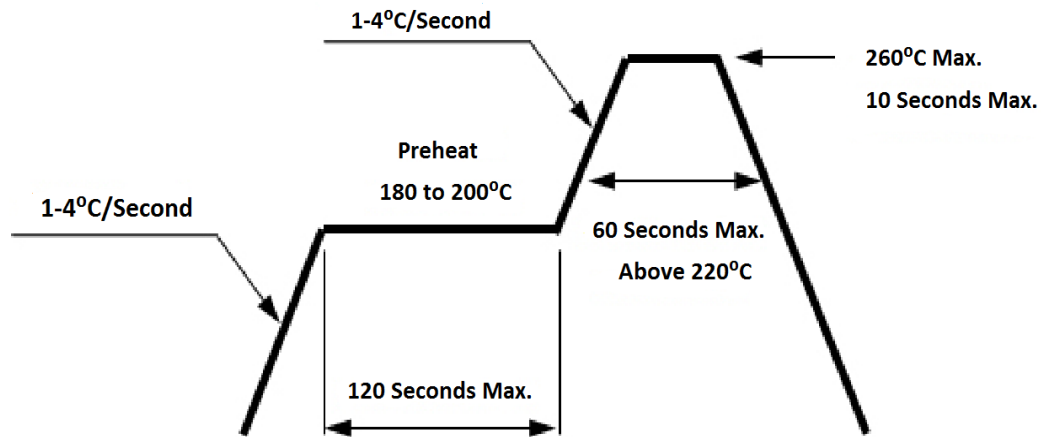
Item	Symbol	Test Condition	Passing Criteria
Forward Voltage	Vf	300mA	$\Delta V_f < 10\%$
Luminous Flux	Fv	300mA	$\Delta F_v < 30\%$
Chromaticity Coordinates	(x, y)	300mA	$\Delta u'v' < 0.007$

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

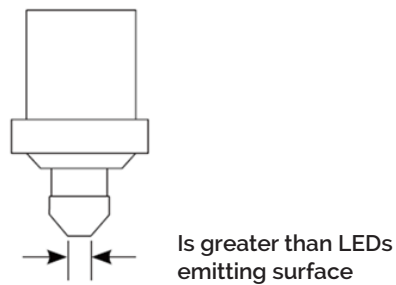
# Reflow Characteristics

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

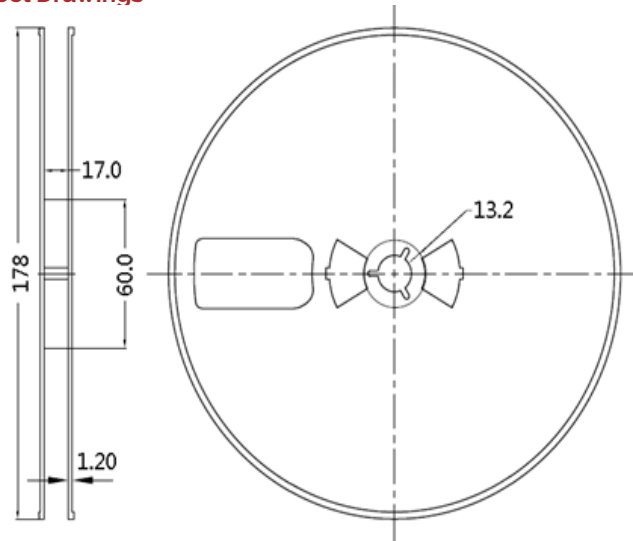


Note for Figure 13:

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

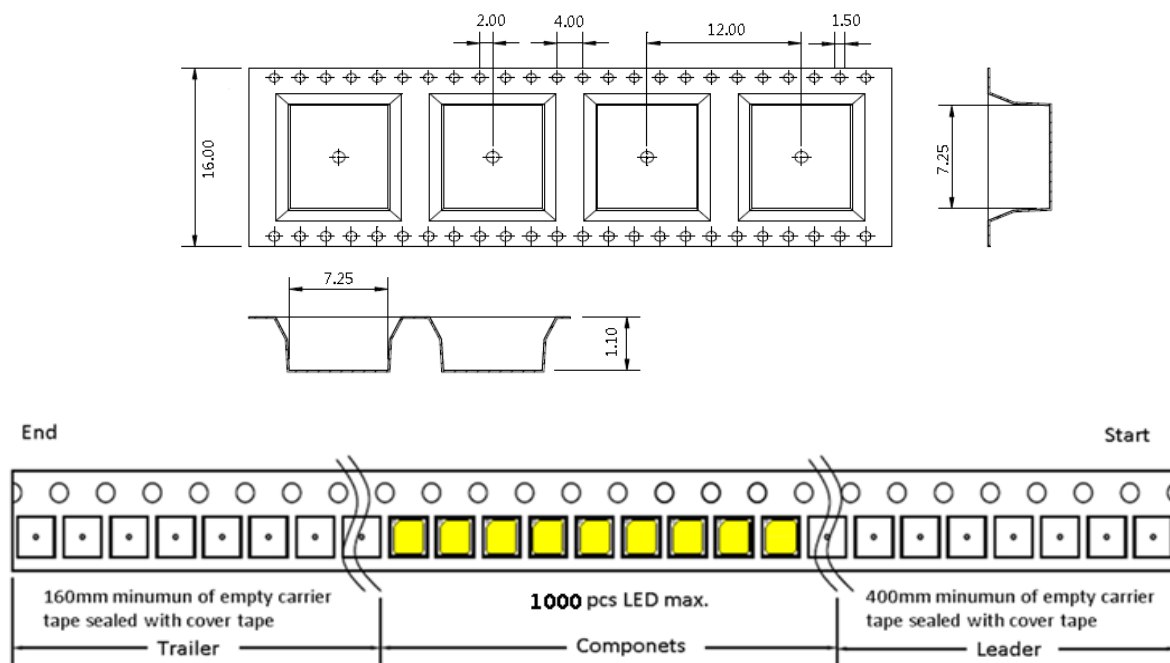
**Figure 14: Emitter Reel Drawings**



Note for Figure 14:

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

**Figure 15: Emitter Tape Drawings**

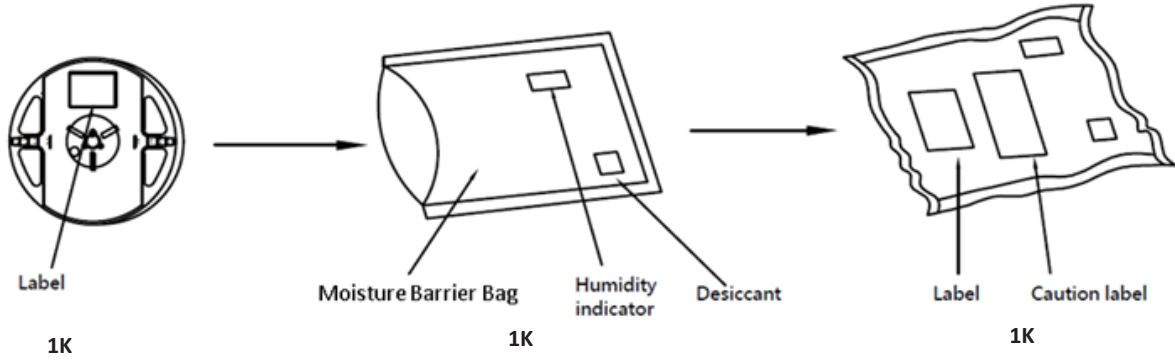


Note for Figure 15:

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.

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