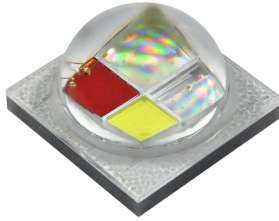
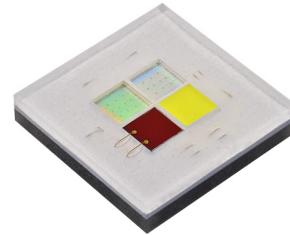


XLamp® XM-L® Color Gen 2 LEDs



XM-L Color Gen 2 High Density



XM-L Color Gen 2 High Intensity

PRODUCT DESCRIPTION

The XLamp® XM-L® Gen 2 LEDs are multi-color RGBW LEDs that deliver the combination of high lumen output and great color mixing in a small 5.0 x 5.0 mm package. The XLamp XM-L Color Gen 2 LEDs feature the smallest possible distance between LED die, creating a small optical source for excellent optical control and efficient color mixing. Compared to the first generation LED, Gen 2 features a 75% higher maximum drive current and significant improvements in light output and efficacy, enabling almost double the maximum light output. Gen 2 also includes a new High Intensity version that further reduces the optical source size for even greater levels of optical control.

XLamp XM-L Color Gen 2 LEDs are optimized for all high-performance RGBW lighting applications, including color-changing, stage, architectural and entertainment.

FEATURES

- Available in red, green, blue and white in a single 5 mm x 5 mm package
- Maximum drive current per LED die: 1.75 A
- Individually addressable LEDs
- Reflow solderable – JEDEC J-STD-020
- Electrically neutral thermal path
- RoHS and REACH compliant
- UL® recognized component (E349212)

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Cree LED / 4400 Silicon Drive / Durham, NC 27703 USA / +1.919.313.5330 / www.cree-led.com

CHARACTERISTICS - COMPLETE PACKAGE

The following table lists the product characteristics for the XLamp XM-L Color Gen 2 LED package, measured with all LED dies on simultaneously and each LED die connected to independent drive circuits at 350 mA.

| Characteristics | Unit | Minimum | Typical | Maximum |
|--|-------------|---------|---------|---------|
| Thermal resistance, junction to solder point | °C/W | | 0.8 | |
| Viewing angle - High Density (FWHM) | degrees (°) | | 120 | |
| Viewing angle - High Intensity (FWHM) | degrees (°) | | 118 | |
| ESD withstand voltage (HBM per Mil-Std-883D) | V | | | 8000 |
| LED junction temperature | °C | | | 150 |

CHARACTERISTICS - PER LED DIE

The following table lists the product characteristics for each LED die within the XLamp XM-L Color Gen 2 LED package.

| Characteristics | Unit | Minimum | Typical | Maximum |
|--|-------|---------|---------|---------|
| Temperature coefficient of voltage - red | mV/°C | | -1.7 | |
| Temperature coefficient of voltage - green | mV/°C | | -1 | |
| Temperature coefficient of voltage - blue, white | mV/°C | | -1.2 | |
| DC forward current - red, green, blue, white | mA | | | 1750 |
| Forward voltage (@ 350 mA, 25 °C) - red | V | | 2.1 | 2.7 |
| Forward voltage (@ 350 mA, 25 °C) - green | V | | 2.6 | 3.0 |
| Forward voltage (@ 350 mA, 25 °C) - blue, white | V | | 2.9 | 3.2 |

FLUX CHARACTERISTICS - HIGH DENSITY ($T_j = 25\text{ }^\circ\text{C}$)

The following table provides order codes for XM-L Gen 2 High-Density Color LEDs. For a complete description of the order code nomenclature, please refer to the Order and Bin Code Formats section (page 11).

| Color | | CCT / Dominant Wavelength Range | | Minimum Luminous Flux @ 350 mA | | Typical Luminous Flux @ 350 mA | Order Code |
|-----------------------|---------------|---------------------------------|---------|--------------------------------|-----------|--------------------------------|--------------------------|
| | | Minimum | Maximum | Group | Flux (lm) | Flux (lm) | |
| Color + Cool White | Red | 620 nm | 630 nm | C5 | 60 | 80 | XMLDCL-00-0000-00C5AAAA1 |
| | Green | 520 nm | 535 nm | | 140 | 155 | |
| | Blue | 450 nm | 465 nm | | 18 | 23 | |
| | Cool White | 5700 K | 8000 K | | 140 | 155 | |
| | Red | 620 nm | 630 nm | C5 | 60 | 80 | XMLDCL-00-0000-00C5AAA02 |
| | Green | 520 nm | 535 nm | | 140 | 155 | |
| | Blue | 450 nm | 465 nm | | 18 | 23 | |
| | Cool White | 5700 K | 8000 K | | 140 | 155 | |
| | Red | 620 nm | 630 nm | C5 | 60 | 80 | XMLDCL-00-0000-00C5AAAA |
| | Green | 520 nm | 535 nm | | 140 | 155 | |
| | Blue | 450 nm | 465 nm | | 18 | 23 | |
| | Cool White | 5700 K | 8000 K | | 140 | 155 | |
| | Red | 620 nm | 630 nm | C5 | 60 | 80 | XMLDCL-00-0000-00C5AAAA2 |
| | Green | 520 nm | 535 nm | | 140 | 155 | |
| | Blue | 450 nm | 465 nm | | 18 | 23 | |
| | Cool White | 5700 K | 8000 K | | 140 | 155 | |
| Color + Neutral White | Red | 620 nm | 630 nm | C4 | 60 | 80 | XMLDCL-00-0000-00C4AAAE5 |
| | Green | 520 nm | 535 nm | | 140 | 155 | |
| | Blue | 450 nm | 465 nm | | 18 | 23 | |
| | Neutral White | 3700 K | 4300 K | | 120 | 145 | |
| | Red | 620 nm | 630 nm | C4 | 60 | 80 | XMLDCL-00-0000-00C4AAAB1 |
| | Green | 520 nm | 535 nm | | 140 | 155 | |
| | Blue | 450 nm | 465 nm | | 18 | 23 | |
| | Neutral White | 3700 K | 4300 K | | 120 | 145 | |

Notes:

- Cree LED maintains a tolerance of $\pm 7\%$ on flux and power measurements, ± 0.005 on chromaticity (CCx, CCy) measurements and ± 1 nm on dominant wavelength measurements. See the Measurements section (page 18).
- Flux and chromaticity are measured with each LED die connected to independent drive circuits at 350 mA. The flux and chromaticity of each LED die within the XLamp XM-L Color Gen 2 LED package are measured individually.

FLUX CHARACTERISTICS - HIGH DENSITY ($T_J = 25\text{ }^\circ\text{C}$) - CONTINUED

| Color | | CCT / Dominant Wavelength Range | | Minimum Luminous Flux @ 350 mA | | Typical Luminous Flux @ 350 mA | Order Code |
|--------------------|------------|---------------------------------|---------|--------------------------------|-----------|--------------------------------|--------------------------|
| | | Minimum | Maximum | Group | Flux (lm) | Flux (lm) | |
| Color + Warm White | Red | 620 nm | 630 nm | C3 | 60 | 80 | XMLDCL-00-0000-00C3AAAE7 |
| | Green | 520 nm | 535 nm | | 140 | 155 | |
| | Blue | 450 nm | 465 nm | | 18 | 23 | |
| | Warm White | 2700 K | 3200 K | | 100 | 130 | |
| | Red | 620 nm | 630 nm | C3 | 60 | 80 | XMLDCL-00-0000-00C3AAAC1 |
| | Green | 520 nm | 535 nm | | 140 | 155 | |
| | Blue | 450 nm | 465 nm | | 18 | 23 | |
| | Warm White | 2700 K | 3200 K | | 100 | 130 | |

Notes:

- Cree LED maintains a tolerance of $\pm 7\%$ on flux and power measurements, ± 0.005 on chromaticity (CCx, CCy) measurements and ± 1 nm on dominant wavelength measurements. See the Measurements section (page 18).
- Flux and chromaticity are measured with each LED die connected to independent drive circuits at 350 mA. The flux and chromaticity of each LED die within the XLamp XM-L Color Gen 2 LED package are measured individually.

FLUX CHARACTERISTICS - HIGH INTENSITY (T_J = 25 °C)

The following table provides order codes for XM-L Gen 2 High-Intensity Color LEDs. For a complete description of the order code nomenclature, please refer to the Order and Bin Code Formats section (page 11).

| Color | | CCT / Dominant Wavelength Range | | Minimum Luminous Flux @ 350 mA | | Typical Luminous Flux @ 350 mA | Order Code |
|-----------------------|---------------|---------------------------------|---------|--------------------------------|-----------|--------------------------------|--------------------------|
| | | Minimum | Maximum | Group | Flux (lm) | Flux (lm) | |
| Color + Cool White | Red | 620 nm | 630 nm | A4 | 50 | 65 | XMLDCL-H0-0000-00A4AAAA1 |
| | Green | 520 nm | 535 nm | | 120 | 140 | |
| | Blue | 450 nm | 465 nm | | 14 | 17 | |
| | Cool White | 5700 K | 8000 K | | 120 | 140 | |
| | Red | 620 nm | 630 nm | A4 | 50 | 65 | XMLDCL-H0-0000-00A4AAAA2 |
| | Green | 520 nm | 535 nm | | 120 | 140 | |
| | Blue | 450 nm | 465 nm | | 14 | 17 | |
| | Cool White | 5700 K | 8000 K | | 120 | 140 | |
| | Red | 620 nm | 630 nm | A4 | 50 | 65 | XMLDCL-H0-0000-00A4AAAAA |
| | Green | 520 nm | 535 nm | | 120 | 140 | |
| | Blue | 450 nm | 465 nm | | 14 | 17 | |
| | Cool White | 5700 K | 8000 K | | 120 | 140 | |
| | Red | 620 nm | 630 nm | A4 | 50 | 65 | XMLDCL-H0-0000-00A4AAAA2 |
| | Green | 520 nm | 535 nm | | 120 | 140 | |
| | Blue | 450 nm | 465 nm | | 14 | 17 | |
| | Cool White | 5700 K | 8000 K | | 120 | 140 | |
| Color + Neutral White | Red | 620 nm | 630 nm | A4 | 50 | 65 | XMLDCL-H0-0000-00A4AAAE5 |
| | Green | 520 nm | 535 nm | | 120 | 140 | |
| | Blue | 450 nm | 465 nm | | 14 | 17 | |
| | Neutral White | 3700 K(| 4300 K | | 120 | 135 | |
| | Red | 620 nm | 630 nm | A4 | 50 | 65 | XMLDCL-H0-0000-00A4AAAB1 |
| | Green | 520 nm | 535 nm | | 120 | 140 | |
| | Blue | 450 nm | 465 nm | | 14 | 17 | |
| | Neutral White | 3700 K | 4300 K | | 120 | 135 | |

Notes:

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±1 nm on dominant wavelength measurements. See the Measurements section (page 18).
- Flux and chromaticity are measured with each LED die connected to independent drive circuits at 350 mA. The flux and chromaticity of each LED die within the XLamp XM-L Color Gen 2 LED package are measured individually.

FLUX CHARACTERISTICS - HIGH INTENSITY ($T_j = 25\text{ }^\circ\text{C}$) - CONTINUED

| Color | | CCT / Dominant Wavelength Range | | Minimum Luminous Flux @ 350 mA | | Typical Luminous Flux @ 350 mA | Order Code |
|--------------------|------------|---------------------------------|---------|--------------------------------|-----------|--------------------------------|--------------------------|
| | | Minimum | Maximum | Group | Flux (lm) | Flux (lm) | |
| Color + Warm White | Red | 620 nm | 630 nm | A3 | 50 | 65 | XMLDCL-H0-0000-00A3AAAE7 |
| | Green | 520 nm | 535 nm | | 120 | 140 | |
| | Blue | 450 nm | 465 nm | | 14 | 17 | |
| | Warm White | 2700 K | 3200 K | | 100 | 120 | |
| | Red | 620 nm | 630 nm | A3 | 50 | 65 | XMLDCL-H0-0000-00A3AAAC1 |
| | Green | 520 nm | 535 nm | | 120 | 140 | |
| | Blue | 450 nm | 465 nm | | 14 | 17 | |
| | Warm White | 2700 K | 3200 K | | 100 | 120 | |

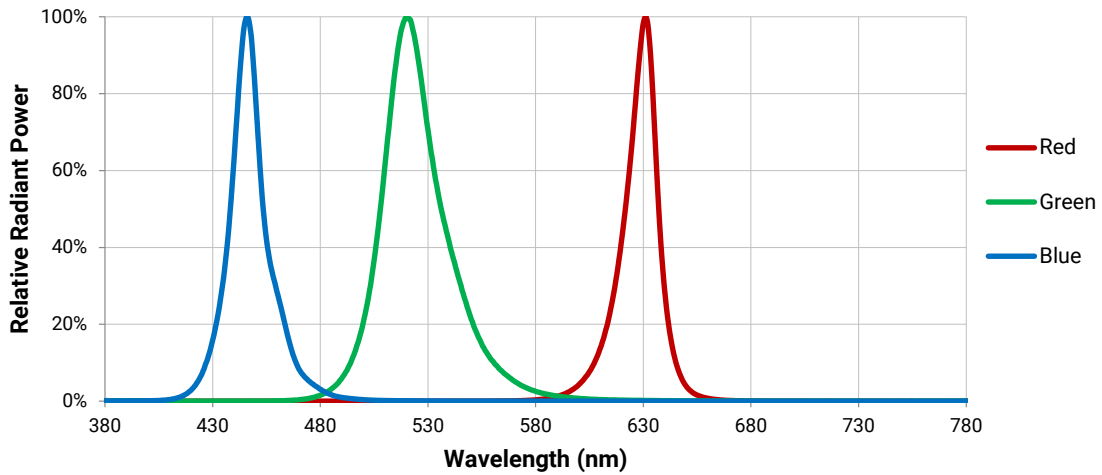
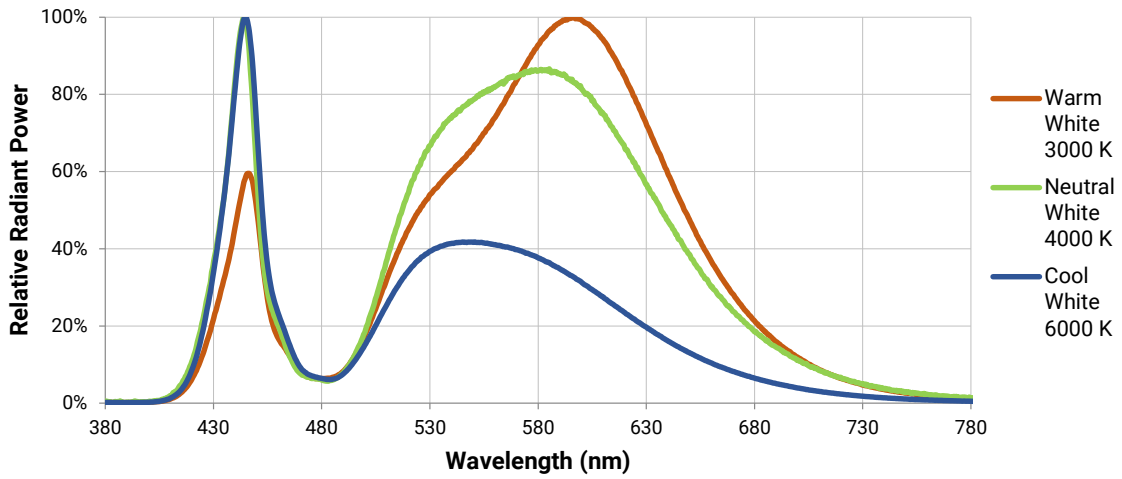
Notes:

- Cree LED maintains a tolerance of $\pm 7\%$ on flux and power measurements, ± 0.005 on chromaticity (CCx, CCy) measurements and ± 1 nm on dominant wavelength measurements. See the Measurements section (page 18).
- Flux and chromaticity are measured with each LED die connected to independent drive circuits at 350 mA. The flux and chromaticity of each LED die within the XLamp XM-L Color Gen 2 LED package are measured individually.

RELATIVE SPECTRAL POWER DISTRIBUTION ($I_F = 350 \text{ mA PER LED DIE, } 25 \text{ }^\circ\text{C}$)

The following graph represents typical spectral output of the XLamp XM-L Color Gen 2 LED with each LED die on independently.

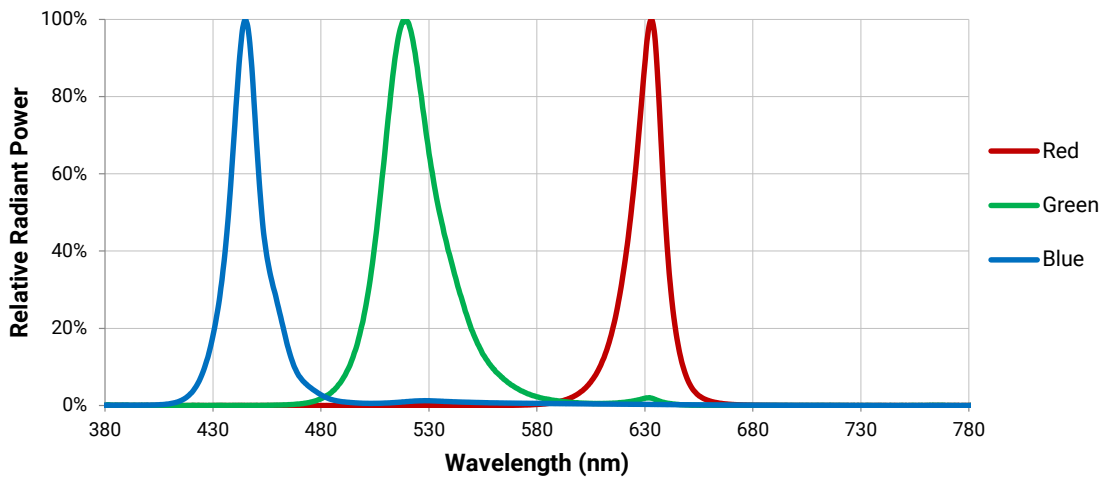
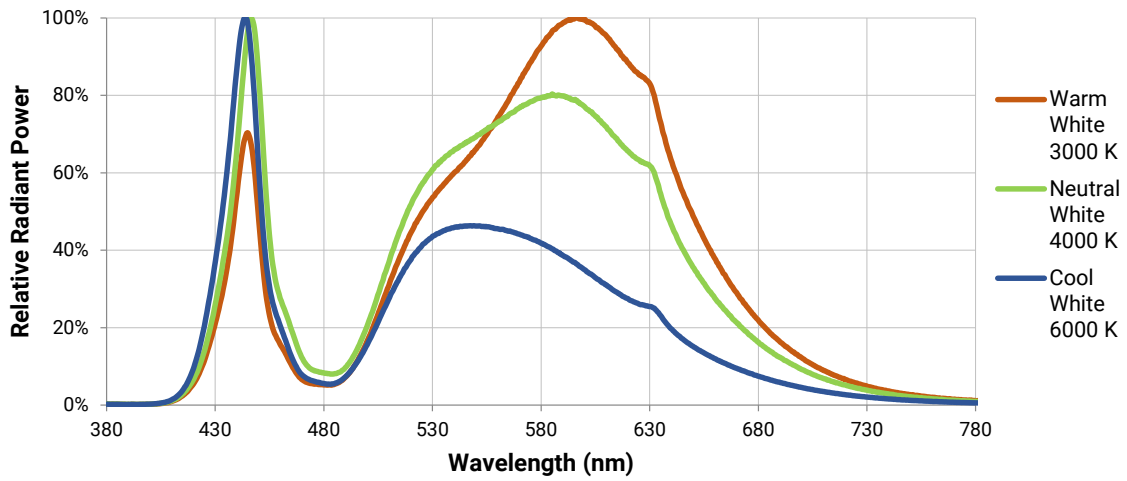
High Density



RELATIVE SPECTRAL POWER DISTRIBUTION ($I_F = 350 \text{ mA PER LED DIE, } 25 \text{ }^\circ\text{C}$) - CONTINUED

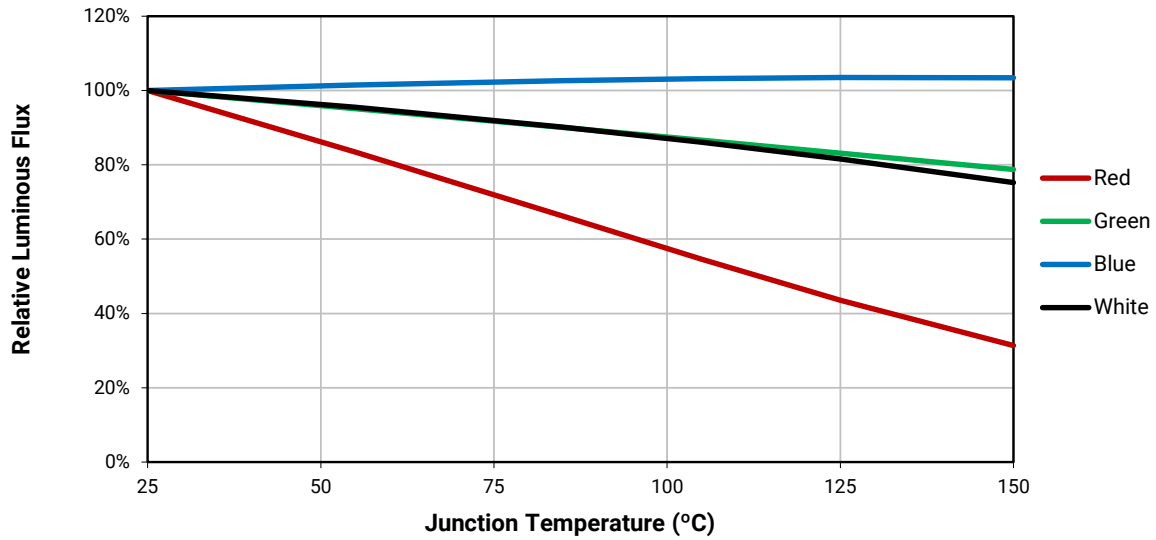
The following graph represents typical spectral output of the XLamp XM-L Color Gen 2 LED with each LED die on independently.

High Intensity



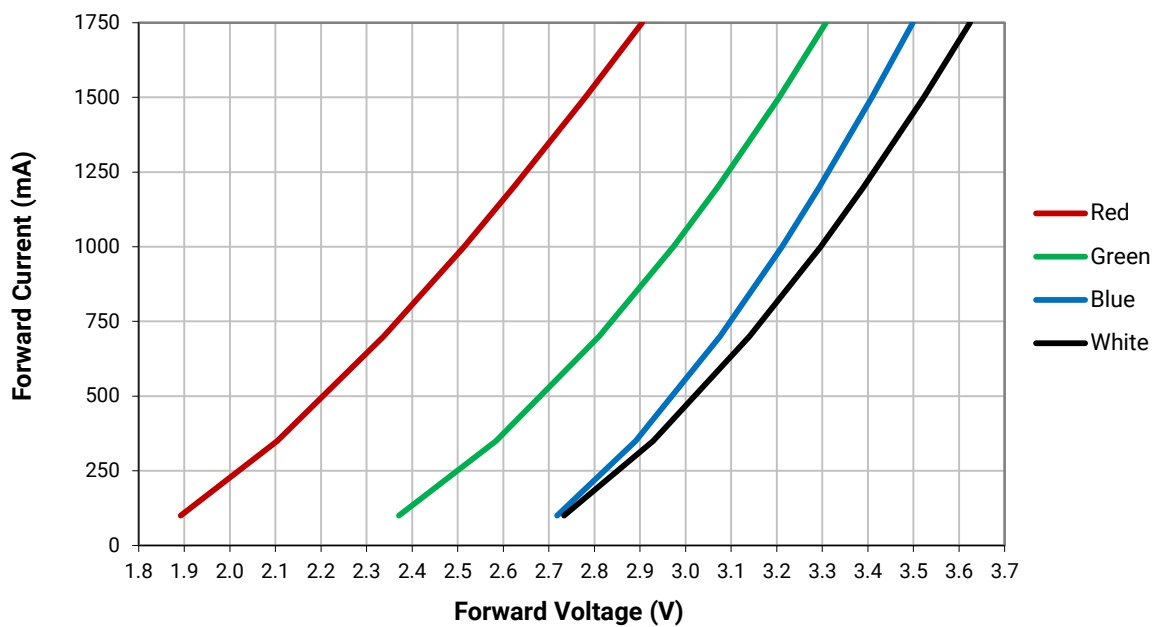
RELATIVE FLUX VS JUNCTION TEMPERATURE ($I_F = 350 \text{ mA}$)

The following graph represents typical performance of each LED die in the XLamp XM-L Color Gen 2 LED.



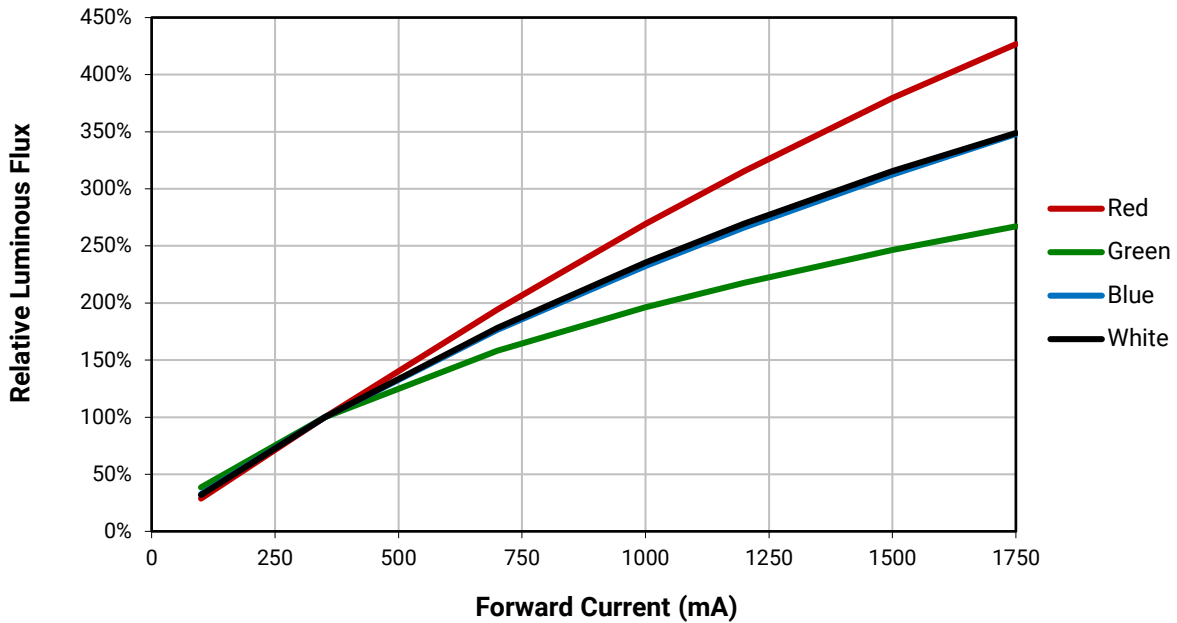
ELECTRICAL CHARACTERISTICS ($T_J = 25 \text{ °C}$)

The following graph represents typical performance of each LED die in the XLamp XM-L Color Gen 2 LED.



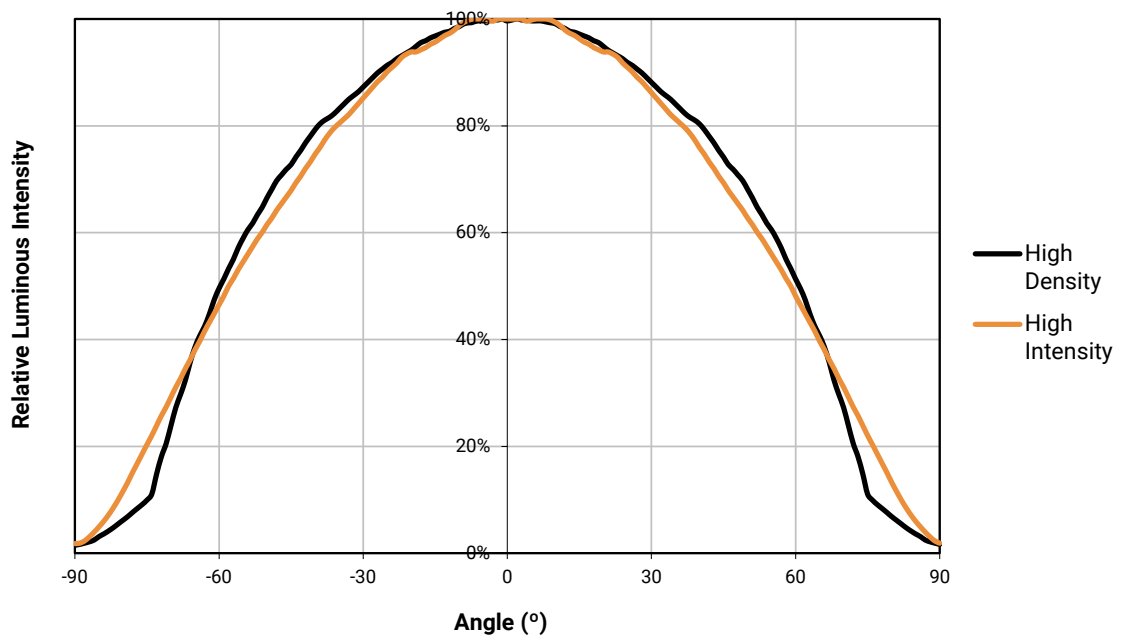
RELATIVE FLUX VS. CURRENT (T_j = 25 °C)

The following graph represents typical performance of each LED die in the XLamp XM-L Color Gen 2 LED.



TYPICAL SPATIAL DISTRIBUTION

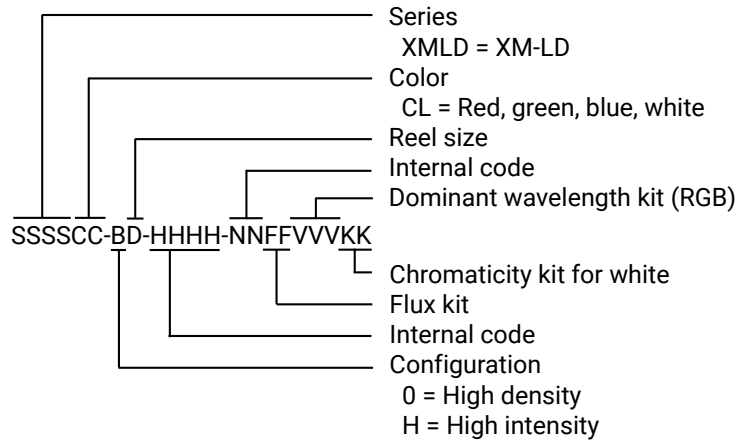
The following graph represents typical output of the XLamp XM-L Color Gen 2 LED with all four LEDs on simultaneously.



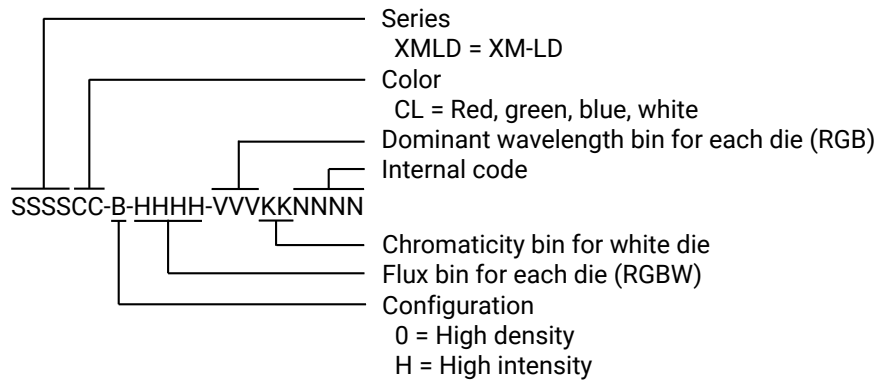
ORDER AND BIN CODE FORMATS

Order codes and bin codes are configured in the following manner:

Order Code



Bin Code



PERFORMANCE GROUPS – LUMINOUS FLUX

Each LED die in the XLamp XM-L Color Gen 2 LED is tested individually for luminous flux and placed into one of the following luminous-flux groups.

High Density

| Color | Flux Code | Minimum Luminous Flux (lm) @ 350 mA | Maximum Luminous Flux (lm) @ 350 mA |
|-------|-----------|-------------------------------------|-------------------------------------|
| Red | G | 60 | 100 |
| | H | 100 | 140 |
| Green | N | 140 | 180 |
| | P | 180 | 220 |
| Blue | B | 18 | 45 |
| | C | 45 | 70 |
| White | 3 | 100 | 120 |
| | 4 | 120 | 140 |
| | 5 | 140 | 160 |
| | 6 | 160 | 180 |

High Intensity

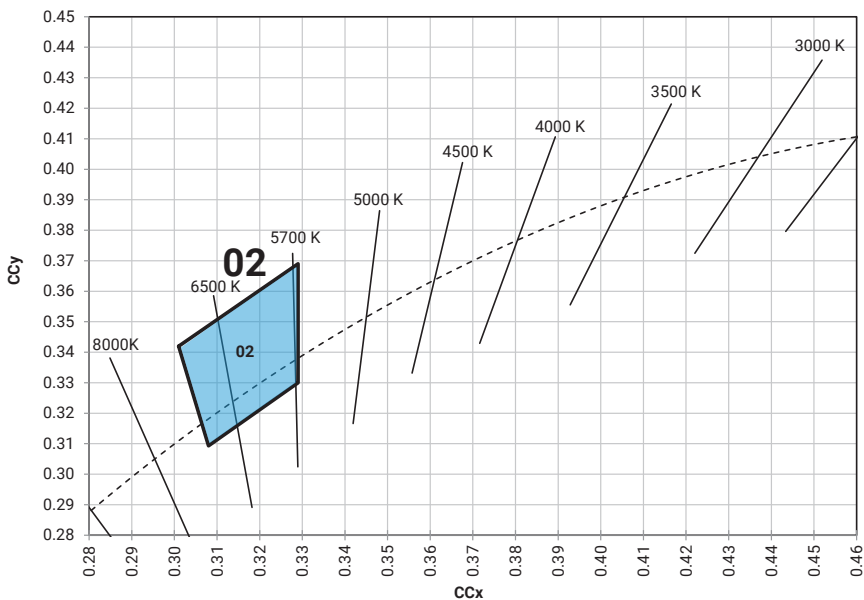
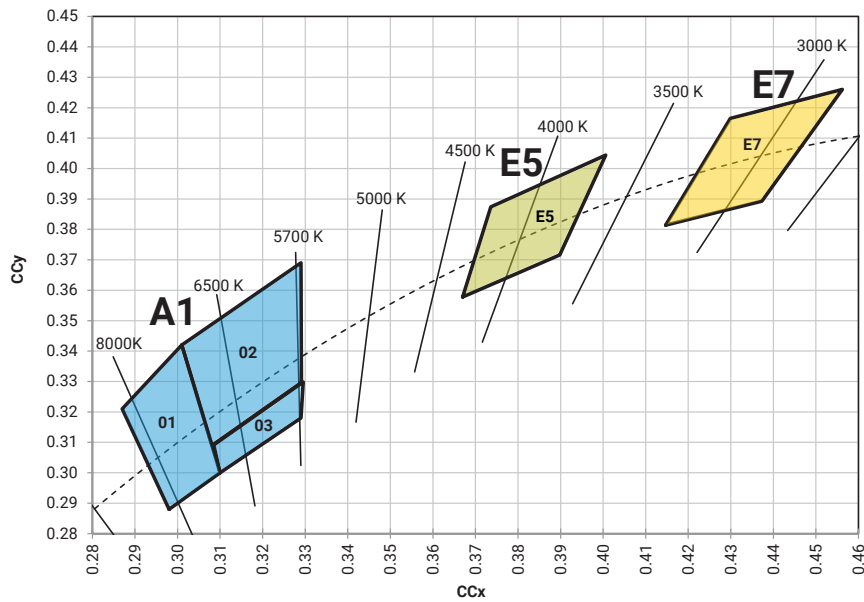
| Color | Flux Code | Minimum Luminous Flux (lm) @ 350 mA | Maximum Luminous Flux (lm) @ 350 mA |
|-------|-----------|-------------------------------------|-------------------------------------|
| Red | F | 50 | 100 |
| | G | 60 | 100 |
| | H | 100 | 140 |
| Green | M | 120 | 180 |
| | N | 140 | 180 |
| | P | 180 | 220 |
| Blue | A | 14 | 45 |
| | B | 18 | 45 |
| | C | 45 | 70 |
| White | 2 | 80 | 100 |
| | 3 | 100 | 120 |
| | 4 | 120 | 140 |
| | 5 | 140 | 160 |

- Flux and chromaticity are measured with each LED die connected to independent drive circuits at 350 mA.

PERFORMANCE GROUPS – CHROMATICITY ($I_F = 350$ mA PER LED DIE)

The white LED die in the XLamp XM-L Color Gen 2 LED is individually tested for chromaticity at 350 mA and placed into one of the regions defined by the bounding coordinates shown below.

| Region | x | y | Region | x | y | Region | x | y | Region | x | y | Region | x | y |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 01 | 0.2980 | 0.2880 | 02 | 0.3010 | 0.3420 | 03 | 0.3100 | 0.3000 | E5 | 0.3670 | 0.3578 | E7 | 0.4147 | 0.3814 |
| | 0.2870 | 0.3210 | | 0.3080 | 0.3093 | | 0.3080 | 0.3093 | | 0.3736 | 0.3874 | | 0.4299 | 0.4165 |
| | 0.3010 | 0.3420 | | 0.3290 | 0.3300 | | 0.3290 | 0.3300 | | 0.4006 | 0.4044 | | 0.4562 | 0.4260 |
| | 0.3100 | 0.3000 | | 0.3290 | 0.3690 | | 0.3290 | 0.3180 | | 0.3898 | 0.3716 | | 0.4373 | 0.3893 |

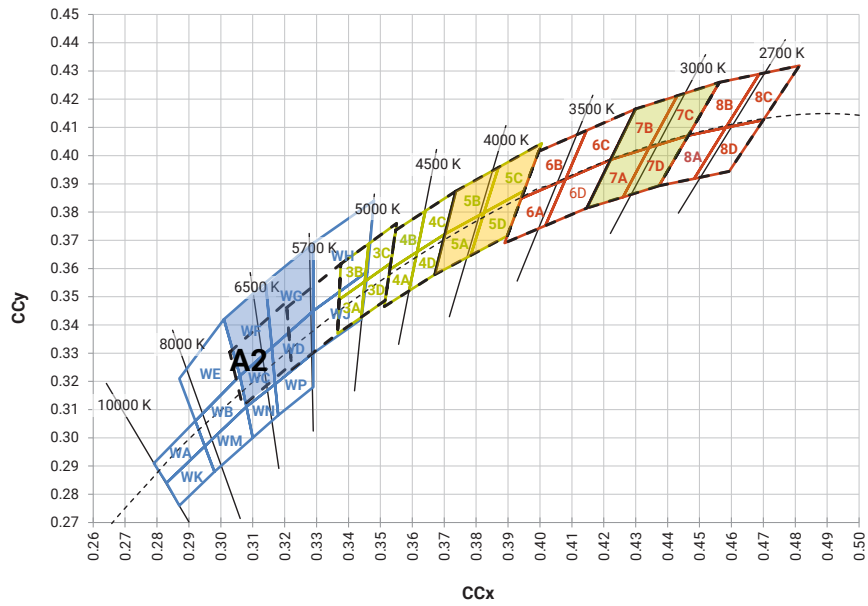
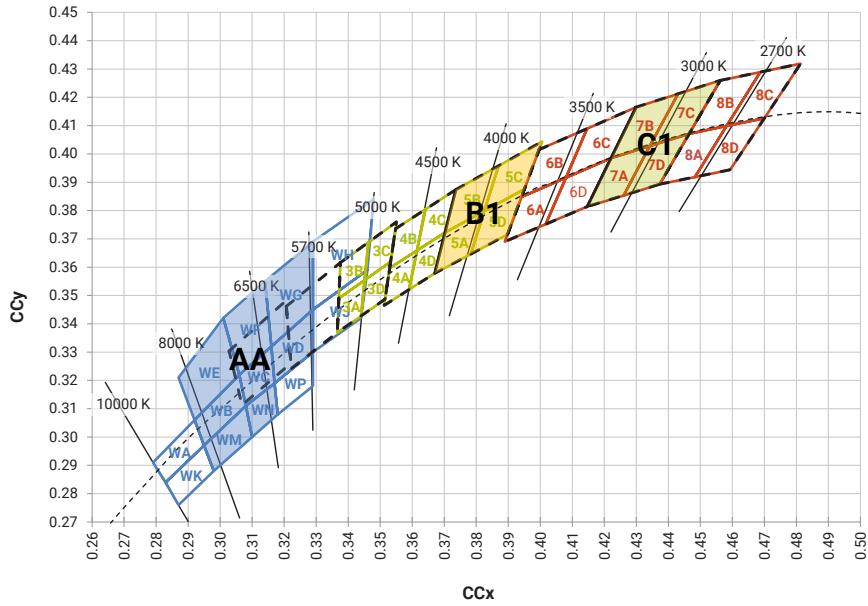


PERFORMANCE GROUPS – CHROMATICITY ($I_F = 350$ mA PER LED DIE) - CONTINUED

| Region | x | y | Region | x | y |
|--------|-------|-------|--------|-------|-------|
| WM | 0.295 | 0.297 | WC | 0.316 | 0.332 |
| | 0.308 | 0.311 | | 0.317 | 0.319 |
| | 0.310 | 0.300 | | 0.308 | 0.311 |
| | 0.298 | 0.288 | | 0.306 | 0.322 |
| WB | 0.306 | 0.322 | WF | 0.314 | 0.355 |
| | 0.308 | 0.311 | | 0.316 | 0.332 |
| | 0.295 | 0.297 | | 0.306 | 0.322 |
| | 0.292 | 0.306 | | 0.301 | 0.342 |
| WE | 0.301 | 0.342 | WD | 0.329 | 0.345 |
| | 0.306 | 0.322 | | 0.329 | 0.330 |
| | 0.292 | 0.306 | | 0.317 | 0.319 |
| | 0.287 | 0.321 | | 0.316 | 0.332 |
| WN | 0.308 | 0.311 | WG | 0.329 | 0.369 |
| | 0.317 | 0.319 | | 0.329 | 0.345 |
| | 0.318 | 0.308 | | 0.316 | 0.332 |
| | 0.310 | 0.300 | | 0.314 | 0.355 |

| Region | x | y | Region | x | y | Region | x | y | Region | x | y |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 5A | 0.3670 | 0.3578 | 5B | 0.3702 | 0.3722 | 5C | 0.3825 | 0.3798 | 5D | 0.3783 | 0.3646 |
| | 0.3702 | 0.3722 | | 0.3736 | 0.3874 | | 0.3869 | 0.3958 | | 0.3825 | 0.3798 |
| | 0.3825 | 0.3798 | | 0.3869 | 0.3958 | | 0.4006 | 0.4044 | | 0.3950 | 0.3875 |
| | 0.3783 | 0.3646 | | 0.3825 | 0.3798 | | 0.3950 | 0.3875 | | 0.3898 | 0.3716 |
| 7A | 0.4147 | 0.3814 | 7B | 0.4221 | 0.3984 | 7C | 0.4342 | 0.4028 | 7D | 0.4259 | 0.3853 |
| | 0.4221 | 0.3984 | | 0.4299 | 0.4165 | | 0.4430 | 0.4212 | | 0.4342 | 0.4028 |
| | 0.4342 | 0.4028 | | 0.4430 | 0.4212 | | 0.4562 | 0.4260 | | 0.4465 | 0.4071 |
| | 0.4259 | 0.3853 | | 0.4342 | 0.4028 | | 0.4465 | 0.4071 | | 0.4373 | 0.3893 |

PERFORMANCE GROUPS – CHROMATICITY ($I_F = 350$ mA PER LED DIE) - CONTINUED



PERFORMANCE GROUPS – DOMINANT WAVELENGTH

The red, green and blue LED dies in the XLamp XM-L Color Gen 2 LED are tested individually for dominant wavelength (DWL) and sorted into one of the DWL bins defined below.

| Color | DWL Group | Minimum DWL @ 350 mA | Maximum DWL @ 350 mA |
|-------|-----------|----------------------|----------------------|
| Red | A | 620 | 630 |
| Green | 2 | 520 | 525 |
| | 3 | 525 | 530 |
| | 4 | 530 | 535 |
| Blue | K | 450 | 455 |
| | L | 455 | 460 |
| | M | 460 | 465 |

PERFORMANCE GROUPS – CHROMATICITY BINS

The following table lists standard kit numbers and chromaticity bins. Kit numbers completely describe an order code's color or chromaticity bins and luminous flux range. For other flux and chromaticity combinations, contact Cree LED or an authorized distributor.

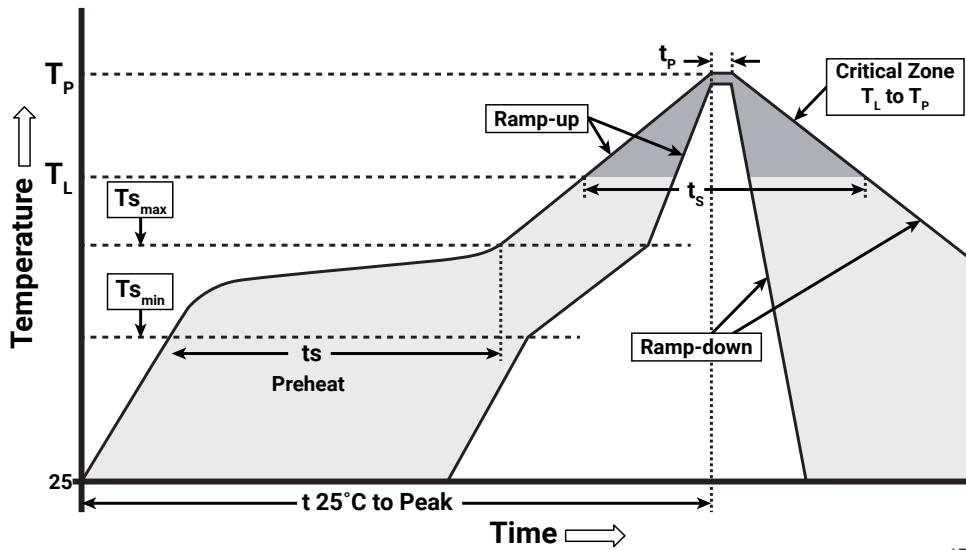
| Color | Chromaticity Bins | Kit Code |
|---------------|--------------------------------|----------|
| Cool White | 01, 02, 03 | AAAA1 |
| | 02 | AAA02 |
| | WC, WD, WF, WG, WB, WE, WM, WN | AAAAA |
| | WC, WD, WF, WG | AAAA2 |
| Neutral White | E5 | AAAE5 |
| | 5A, 5B, 5C, 5D | AAAB1 |
| Warm White | E7 | AAAE7 |
| | 7A, 7B, 7C, 7D | AAAC1 |

- XLamp XM-L Color Gen 2 LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity or DWL bin restrictions specified by the order code.

REFLOW SOLDERING CHARACTERISTICS

In testing, Cree LED has found XLamp XM-L Color Gen 2 LEDs to be compatible with JEDEC J-STD-020C, using the parameters listed below. As a general guideline, Cree LED recommends that users follow the recommended soldering profile provided by the manufacturer of the solder paste used, and therefore it is the lamp or luminaire manufacturer’s responsibility to determine applicable soldering requirements.

Note that this general guideline may not apply to all PCB designs and configurations of reflow soldering equipment.



IPC/JEDEC J-STD-020C

| Profile Feature | Lead-Free Solder |
|---|------------------|
| Average Ramp-Up Rate ($T_{s_{max}}$ to T_p) | 1.2 °C/second |
| Preheat: Temperature Min ($T_{s_{min}}$) | 120 °C |
| Preheat: Temperature Max ($T_{s_{max}}$) | 170 °C |
| Preheat: Time ($t_{s_{min}}$ to $t_{s_{max}}$) | 65-150 seconds |
| Time Maintained Above: Temperature (T_L) | 217 °C |
| Time Maintained Above: Time (t_L) | 45-90 seconds |
| Peak/Classification Temperature (T_p) | 235 - 245 °C |
| Time Within 5 °C of Actual Peak Temperature (t_p) | 20-40 seconds |
| Ramp-Down Rate | 1 - 6 °C/second |
| Time 25 °C to Peak Temperature | 4 minutes max. |

Note: All temperatures refer to the topside of the package, measured on the package body surface.

NOTES

Measurements

The luminous flux, radiant power, chromaticity, forward voltage and CRI measurements in this document are binning specifications only and solely represent product measurements as of the date of shipment. These measurements will change over time based on a number of factors that are not within Cree LED's control and are not intended or provided as operational specifications for the products. Calculated values are provided for informational purposes only and are not intended or provided as specifications.

Pre-Release Qualification Testing

Please read the [LED Reliability Overview](#) for details of the qualification process Cree LED applies to ensure long-term reliability for XLamp LEDs and details of Cree LED's pre-release qualification testing for XLamp LEDs.

RoHS Compliance

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS2), as implemented January 2, 2013. RoHS Declarations for this product can be obtained from your Cree LED representative or from the [Product Ecology](#) section of the Cree LED website.

REACH Compliance

REACH substances of very high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact a Cree LED representative to insure you get the most up-to-date REACH SVHC Declaration. REACH banned substance information (REACH Article 67) is also available upon request.

UL® Recognized Component

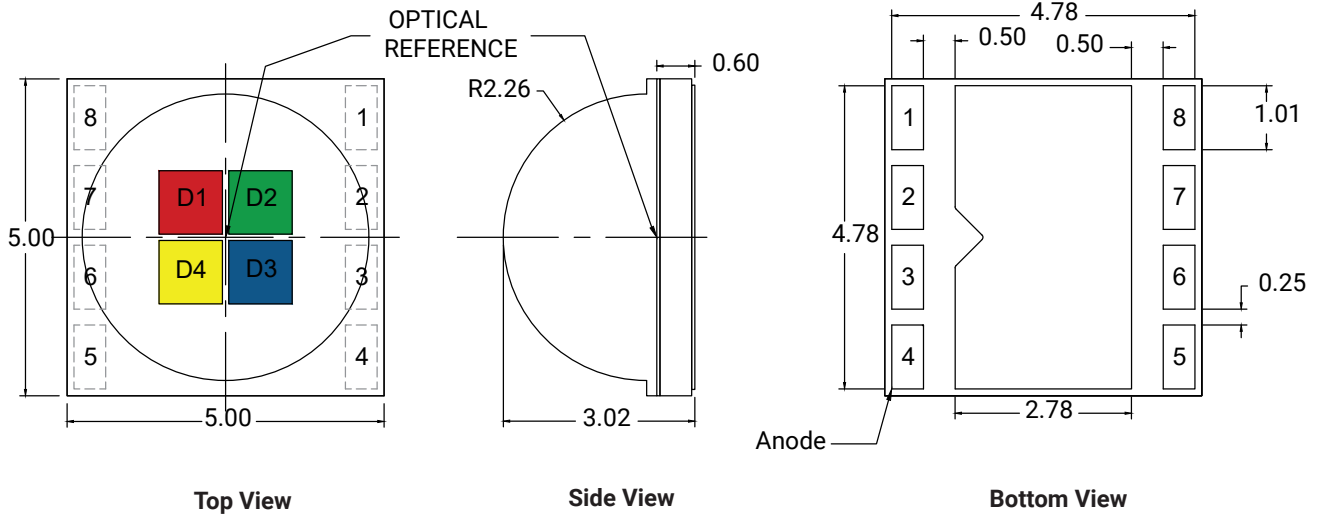
This product meets the requirements to be considered a UL Recognized Component with Level 4 enclosure consideration. The LED package or a portion thereof has been investigated as a fire and electrical enclosure per ANSI/UL 8750.

MECHANICAL DIMENSIONS

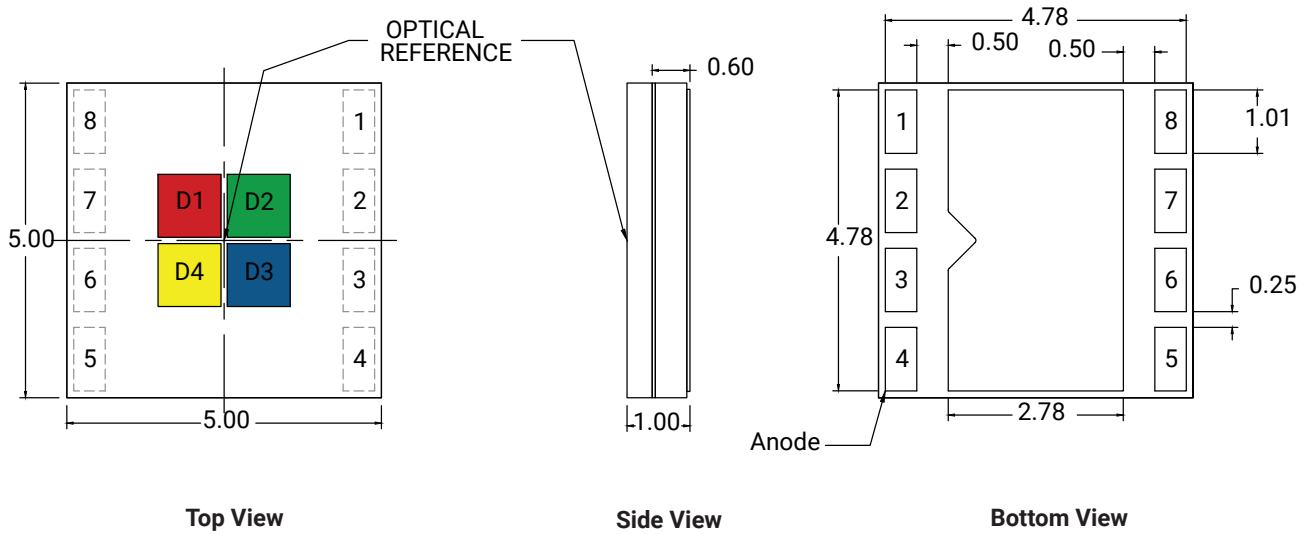
Thermal vias, if present, are not shown on these drawings.

All measurements are ± 0.13 mm unless otherwise indicated.

High Density



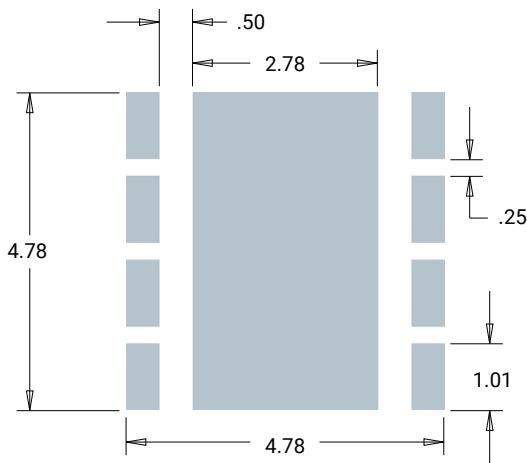
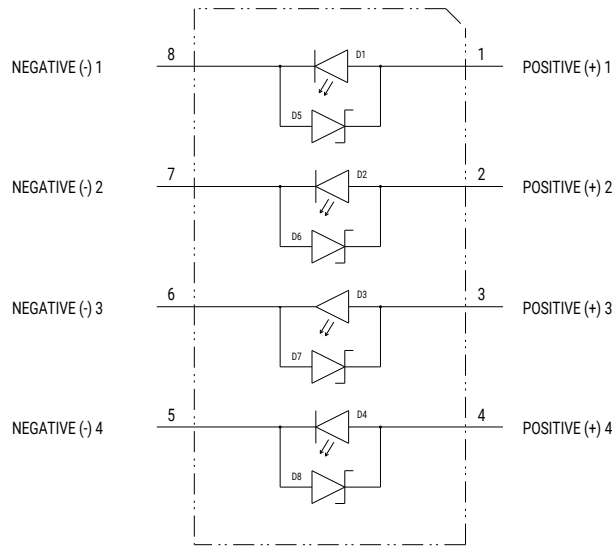
High Intensity



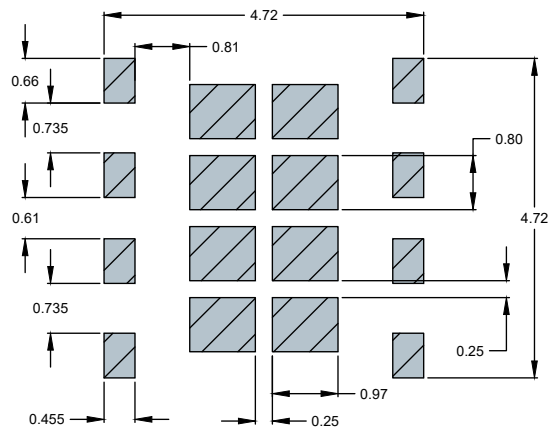
MECHANICAL DIMENSIONS - CONTINUED

High Density & High Intensity

COLOR
 D1: RED
 D2: GREEN
 D3: BLUE
 D4: WHITE



Recommended PCB Solder Pad



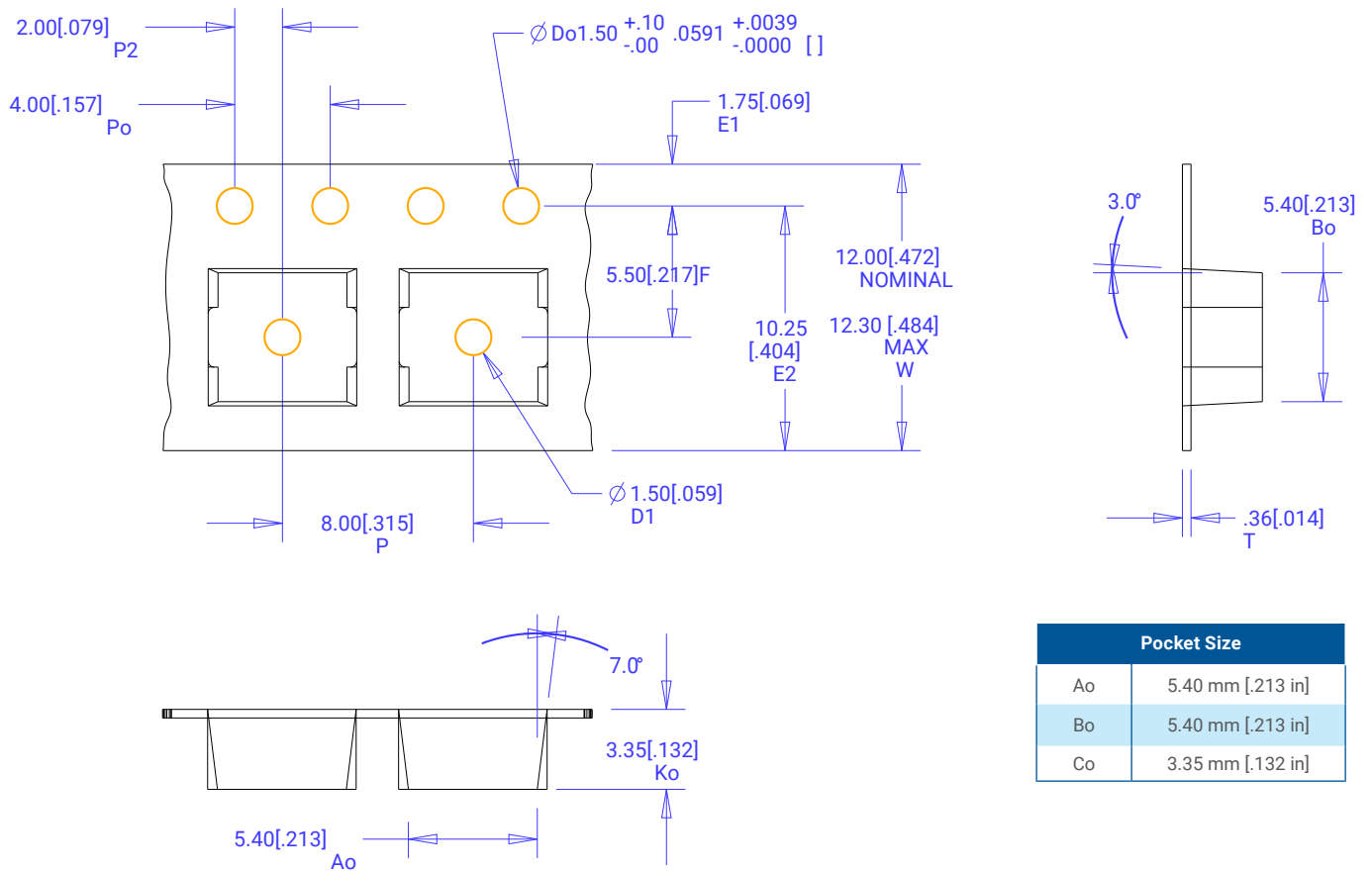
**Recommended Stencil Pattern
 (Shaded Area Is Open)**

TAPE AND REEL

All Cree LED carrier tapes conform to EIA-481D, Automated Component Handling Systems Standard.

All dimensions in mm [in.].

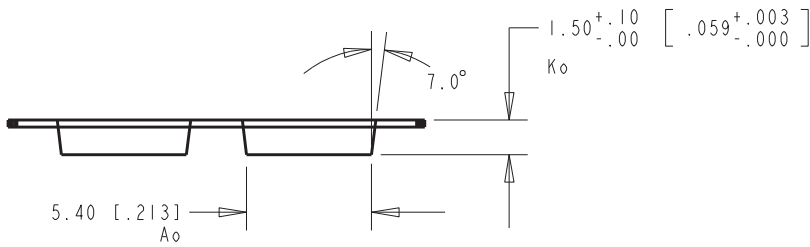
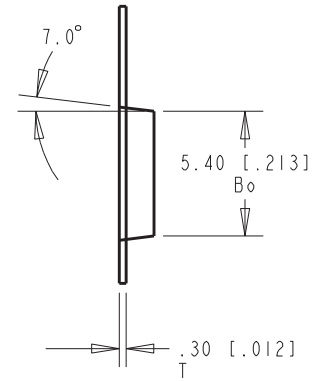
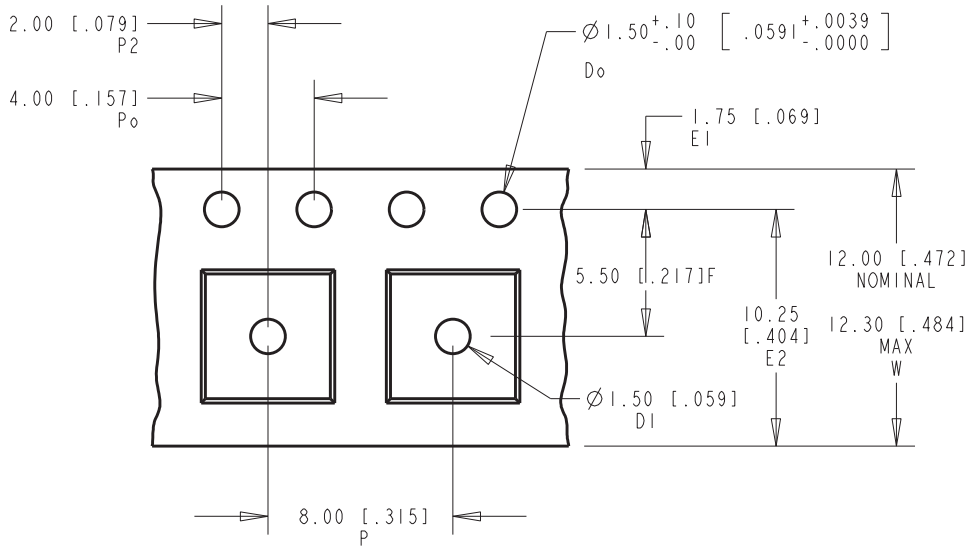
High Density



| Pocket Size | |
|-------------|-------------------|
| A_o | 5.40 mm [.213 in] |
| B_o | 5.40 mm [.213 in] |
| C_o | 3.35 mm [.132 in] |

TAPE AND REEL - CONTINUED

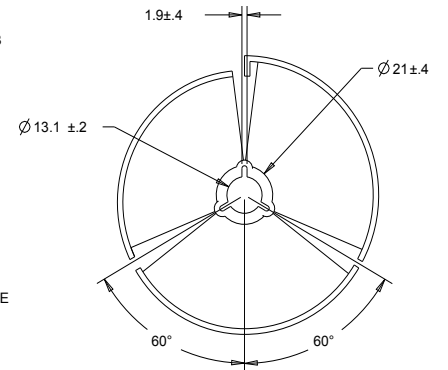
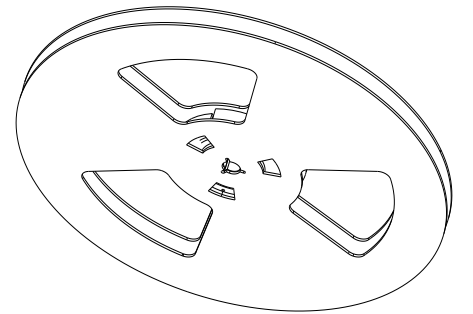
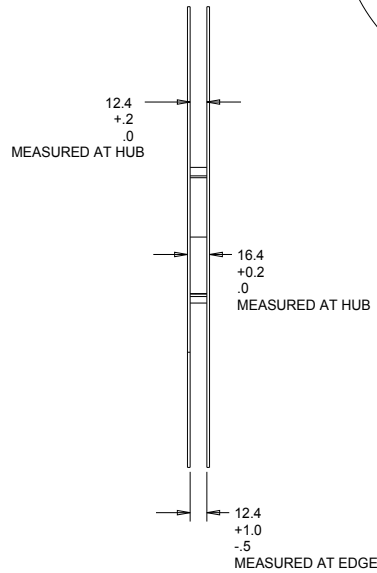
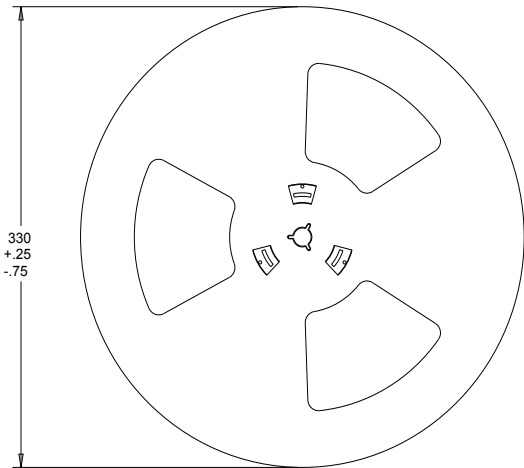
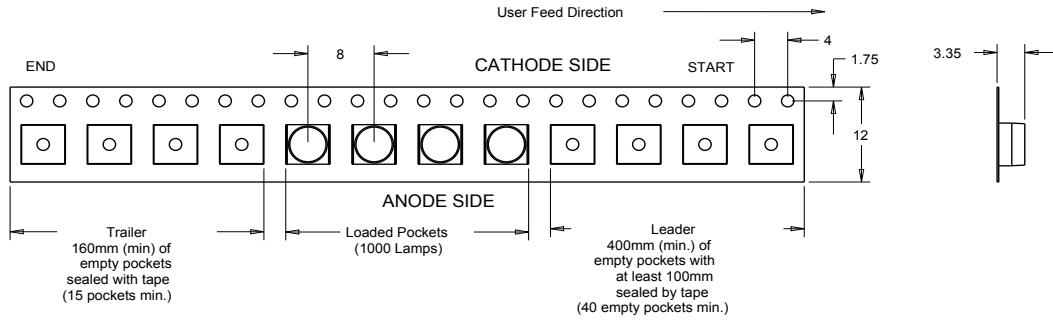
High Intensity



| Pocket Size | |
|-------------|-------------------|
| Ao | 5.40 mm [.213 in] |
| Bo | 5.40 mm [.213 in] |
| Co | 1.50 mm [.069 in] |

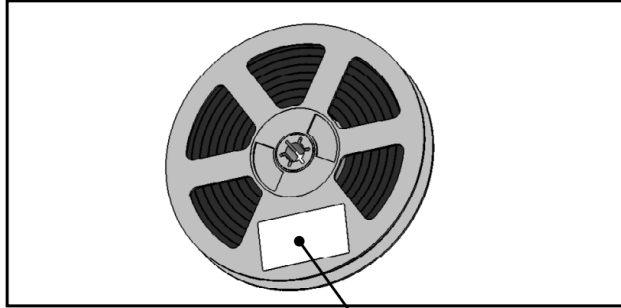
TAPE AND REEL - CONTINUED

High Density & High Intensity



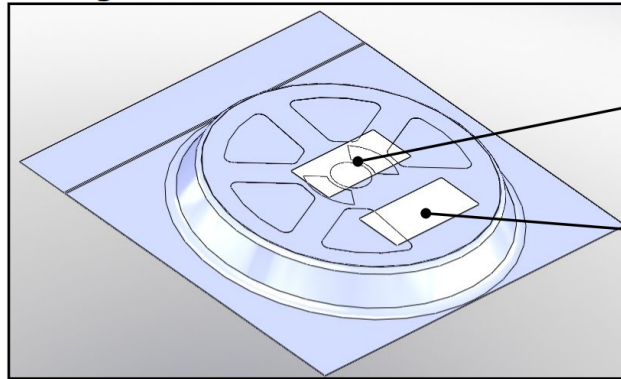
PACKAGING

Unpackaged Reel



Label with Cree LED Bin Code, Quantity, Reel ID

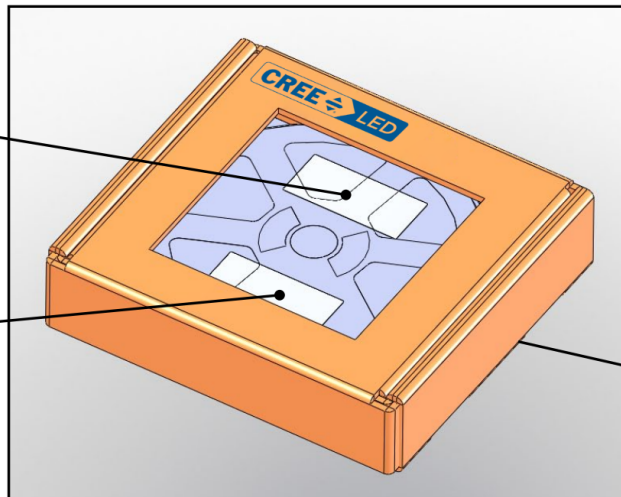
Packaged Reel



Label with Cree LED Order Code, Quantity, Reel ID, PO#

Label with Cree LED Bin Code, Quantity, Reel ID

Boxed Reel



Label with Cree LED Order Code, Quantity, Reel ID, PO#

Label with Cree LED Bin Code, Quantity, Reel ID

Patent Label (on bottom of box)