

PRELIMINARY

Cree® XLamp® CXA1850 LED



PRODUCT DESCRIPTION

The XLamp CXA1850 expands Cree’s family of High Density (HD) LED arrays, featuring a 12-mm optical source and enabling lighting manufacturers to create a new generation of products that delivers the same intensity and light quality as 70-W ceramic metal halide (CMH) at up to 50 percent lower power. The new HD class of CXA arrays provide unrivaled lumen density that can reduce system cost for the next generation of LED spotlights.

The CXA LED Design Guide provides basic information on the requirements to use the CXA1850 LED successfully in luminaire designs.¹

FEATURES

- Available in ANSI white bins as well as 4-step and 2-step EasyWhite® bins at 2700 K, 3000 K, 3500 K, 4000 K and 5000 K CCT
- Available in ANSI white bins as well as 4-step EasyWhite bins at 5700 K and 6500 K CCT
- Available in 70-, 80-, 90- and 93-minimum CRI options
- Forward voltage: 35 V
- 85 °C binning and characterization
- Maximum drive current: 2100 mA
- 115° viewing angle, uniform chromaticity profile
- Top-side solder connections
- Thermocouple attach point
- NEMA SSL-3 2011 standard flux bins

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¹ Cree XLamp CXA LED Design Guide, Design Guide DG02, www.cree.com/xlamp_app_notes/cxa_design_guide

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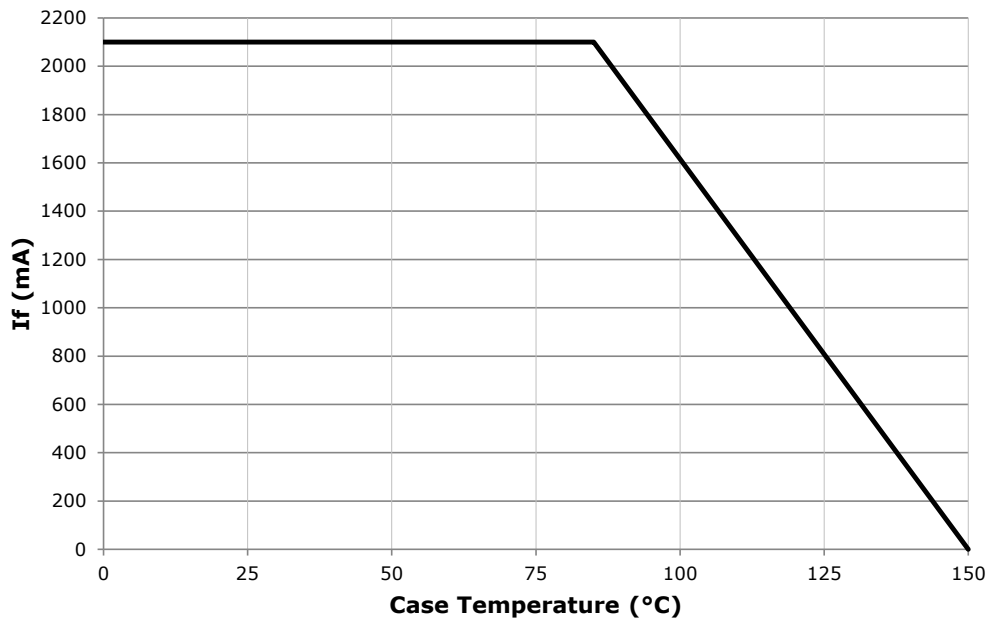
CHARACTERISTICS

| Characteristics | Unit | Minimum | Typical | Maximum |
|--|---------|---------|---------|---------|
| Viewing angle (FWHM) | degrees | | 115 | |
| ESD withstand voltage (HBM per Mil-Std-883D) | V | | | 8000 |
| DC forward current | mA | | | 2100* |
| Reverse current | mA | | | 0.1 |
| Forward voltage (@ 1400 mA, $T_j = 85\text{ }^\circ\text{C}$) | V | | 35 | |
| Forward voltage (@ 1400 mA, $T_j = 25\text{ }^\circ\text{C}$) | V | | | 42 |

* Refer to the Operating Limits section.

OPERATING LIMITS

The maximum current rating of the CXA1850 is dependent on the case temperature (T_c) when the LED has reached thermal equilibrium under steady-state operation. Please refer to the Mechanical Dimensions section on page 16 for the location of the T_c measurement point.



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FLUX CHARACTERISTICS, EASYWHITE ORDER CODES AND BINS ($I_f = 1400 \text{ mA}$, $T_j = 85 \text{ }^\circ\text{C}$)

The following tables provide order codes for XLamp CXA1850 LEDs. For a complete description of the order code nomenclature, please reference Bin and Order Code Formats (page 16).

| CCT Range | CRI | | Base Order Codes Min. Luminous Flux @ 1400 mA | | | 2-Step Order Code | | 4-Step Order Code | |
|-----------|-----|-----|---|-------------------|--------------------|---------------------|--|---------------------|--------------------------|
| | Min | Typ | Group | Flux (lm) @ 85 °C | Flux (lm) @ 25 °C* | Chromaticity Region | | Chromaticity Region | |
| 6500 K | 70 | 75 | V4 | 4545 | 5231 | | | 65F | CXA1850-0000-000N00V465F |
| | | | W2 | 4860 | 5593 | | | | CXA1850-0000-000N00W265F |
| | | | W4 | 5225 | 6014 | | | | CXA1850-0000-000N00W465F |
| | 80 | --- | V2 | 4230 | 4868 | | | 65F | CXA1850-0000-000N0HV265F |
| | | | V4 | 4545 | 5231 | | | | CXA1850-0000-000N0HV465F |
| | | | W2 | 4860 | 5593 | | | | CXA1850-0000-000N0HW265F |
| 5700 K | 70 | 75 | V4 | 4545 | 5231 | | | 57F | CXA1850-0000-000N00V457F |
| | | | W2 | 4860 | 5593 | | | | CXA1850-0000-000N00W257F |
| | | | W4 | 5225 | 6014 | | | | CXA1850-0000-000N00W457F |
| | 80 | --- | V2 | 4230 | 4868 | | | 57F | CXA1850-0000-000N0HV257F |
| | | | V4 | 4545 | 5231 | | | | CXA1850-0000-000N0HV457F |
| | | | W2 | 4860 | 5593 | | | | CXA1850-0000-000N0HW257F |
| 5000 K | 70 | 75 | V4 | 4545 | 5231 | 50H | | 50F | CXA1850-0000-000N00V450H |
| | | | W2 | 4860 | 5593 | | | | CXA1850-0000-000N00W250H |
| | | | W4 | 5225 | 6014 | | | | CXA1850-0000-000N00W450H |
| | 80 | --- | V2 | 4230 | 4868 | 50H | | 50F | CXA1850-0000-000N0HV250H |
| | | | V4 | 4545 | 5231 | | | | CXA1850-0000-000N0HV450H |
| | | | W2 | 4860 | 5593 | | | | CXA1850-0000-000N0HW250H |
| | 90 | 95 | T4 | 3440 | 3959 | 50H | | 50F | CXA1850-0000-000N0UT450H |
| | | | U2 | 3680 | 4235 | | | | CXA1850-0000-000N0UU250H |
| | | | U4 | 3955 | 4551 | | | | CXA1850-0000-000N0UU450H |

Notes

- Cree maintains a tolerance of $\pm 7\%$ on flux and power measurements, ± 0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ± 2 on CRI measurements.
- * Flux values @ 25 °C are calculated and for reference only.

PRELIMINARY

FLUX CHARACTERISTICS, EASYWHITE ORDER CODES AND BINS ($I_f = 1400 \text{ mA}$, $T_j = 85 \text{ }^\circ\text{C}$) - CONTINUED

| CCT Range | CRI | | Base Order Codes Min. Luminous Flux @ 1400 mA | | | 2-Step Order Code | | 4-Step Order Code | |
|-----------|-----|-----|---|-------------------|--------------------|---------------------|--------------------------|---------------------|--------------------------|
| | Min | Typ | Group | Flux (lm) @ 85 °C | Flux (lm) @ 25 °C* | Chromaticity Region | | Chromaticity Region | |
| 4000 K | 70 | 75 | V2 | 4230 | 4868 | 40H | CXA1850-0000-000N00V240H | 40F | CXA1850-0000-000N00V240F |
| | | | V4 | 4545 | 5231 | | CXA1850-0000-000N00V440H | | CXA1850-0000-000N00V440F |
| | | | W2 | 4860 | 5593 | | CXA1850-0000-000N00W240H | | CXA1850-0000-000N00W240F |
| | 80 | --- | U4 | 3955 | 4551 | 40H | CXA1850-0000-000N0HU440H | 40F | CXA1850-0000-000N0HU440F |
| | | | V2 | 4230 | 4868 | | CXA1850-0000-000N0HV240H | | CXA1850-0000-000N0HV240F |
| | | | V4 | 4545 | 5231 | | CXA1850-0000-000N0HV440H | | CXA1850-0000-000N0HV440F |
| | 90 | 95 | T2 | 3200 | 3683 | 40H | CXA1850-0000-000N0UT240H | 40F | CXA1850-0000-000N0UT240F |
| | | | T4 | 3440 | 3959 | | CXA1850-0000-000N0UT440H | | CXA1850-0000-000N0UT440F |
| | | | U2 | 3680 | 4235 | | CXA1850-0000-000N0UU240H | | CXA1850-0000-000N0UU240F |
| 3500 K | 80 | --- | U4 | 3955 | 4551 | 35H | CXA1850-0000-000N00U435H | 35F | CXA1850-0000-000N00U435F |
| | | | V2 | 4230 | 4868 | | CXA1850-0000-000N00V235H | | CXA1850-0000-000N00V235F |
| | | | V4 | 4545 | 5231 | | CXA1850-0000-000N00V435H | | CXA1850-0000-000N00V435F |
| | 93 | 95 | T2 | 3200 | 3683 | 35H | CXA1850-0000-000N0YT235H | 35F | CXA1850-0000-000N0YT235F |
| | | | T4 | 3440 | 3959 | | CXA1850-0000-000N0YT435H | | CXA1850-0000-000N0YT435F |
| | | | U2 | 3680 | 4235 | | CXA1850-0000-000N0YU235H | | CXA1850-0000-000N0YU235F |
| 3000 K | 80 | --- | U4 | 3955 | 4551 | 30H | CXA1850-0000-000N00U430H | 30F | CXA1850-0000-000N00U430F |
| | | | V2 | 4230 | 4868 | | CXA1850-0000-000N00V230H | | CXA1850-0000-000N00V230F |
| | | | V4 | 4545 | 5231 | | CXA1850-0000-000N00V430H | | CXA1850-0000-000N00V430F |
| | 90 | --- | T2 | 3200 | 3683 | 30H | CXA1850-0000-000N0UT230H | 30F | CXA1850-0000-000N0UT230F |
| | | | T4 | 3440 | 3959 | | CXA1850-0000-000N0UT430H | | CXA1850-0000-000N0UT430F |
| | | | U2 | 3680 | 4235 | | CXA1850-0000-000N0UU230H | | CXA1850-0000-000N0UU230F |
| | 93 | 95 | S4 | 2990 | 3441 | 30H | CXA1850-0000-000N0YS430H | 30F | CXA1850-0000-000N0YS430F |
| | | | T2 | 3200 | 3683 | | CXA1850-0000-000N0YT230H | | CXA1850-0000-000N0YT230F |
| | | | T4 | 3440 | 3959 | | CXA1850-0000-000N0YT430H | | CXA1850-0000-000N0YT430F |

Notes

- Cree maintains a tolerance of $\pm 7\%$ on flux and power measurements, ± 0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ± 2 on CRI measurements.
- * Flux values @ 25 °C are calculated and for reference only.

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FLUX CHARACTERISTICS, EASYWHITE ORDER CODES AND BINS ($I_f = 1400 \text{ mA}$, $T_j = 85 \text{ }^\circ\text{C}$) - CONTINUED

| CCT Range | CRI | | Base Order Codes Min. Luminous Flux @ 1400 mA | | | 2-Step Order Code | | 4-Step Order Code | |
|-----------|-----|-----|---|-------------------|--------------------|---------------------|--------------------------|---------------------|--------------------------|
| | Min | Typ | Group | Flux (lm) @ 85 °C | Flux (lm) @ 25 °C* | Chromaticity Region | | Chromaticity Region | |
| 2700 K | 80 | --- | U2 | 3680 | 4235 | 27H | CXA1850-0000-000N00U227H | 27F | CXA1850-0000-000N00U227F |
| | | | U4 | 3955 | 4551 | | CXA1850-0000-000N00U427H | | CXA1850-0000-000N00U427F |
| | | | V2 | 4230 | 4868 | | CXA1850-0000-000N00V227H | | CXA1850-0000-000N00V227F |
| | 90 | --- | S4 | 2990 | 3441 | 27H | CXA1850-0000-000N0US427H | 27F | CXA1850-0000-000N0US427F |
| | | | T2 | 3200 | 3683 | | CXA1850-0000-000N0UT227H | | CXA1850-0000-000N0UT227F |
| | | | T4 | 3440 | 3959 | | CXA1850-0000-000N0UT427H | | CXA1850-0000-000N0UT427F |
| | 93 | 95 | S2 | 2780 | 3199 | 27H | CXA1850-0000-000N0YS227H | 27F | CXA1850-0000-000N0YS227F |
| | | | S4 | 2990 | 3441 | | CXA1850-0000-000N0YS427H | | CXA1850-0000-000N0YS427F |
| | | | T2 | 3200 | 3683 | | CXA1850-0000-000N0YT227H | | CXA1850-0000-000N0YT227F |

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PRELIMINARY

FLUX CHARACTERISTICS, ANSI WHITE ORDER CODES AND BINS ($I_F = 1400 \text{ mA}$, $T_j = 85 \text{ }^\circ\text{C}$)

The following tables provide order codes for XLamp CXA1850 LEDs. For a complete description of the order code nomenclature, please reference Bin and Order Code Formats (page 16).

| CCT Range | CRI | | Base Order Codes Min Luminous Flux @ 1400 mA | | | Chromaticity Regions | Order Code |
|-----------|-----|-----|--|----------------------|-----------------------|----------------------|--------------------------|
| | Min | Typ | Group | Flux (lm) @ 85 °C | Flux (lm) @ 25 °C* | | |
| 6500 K | 70 | 75 | V4 | 4545 | 5231 | 1A0, 1B0, 1C0, 1D0 | CXA1850-0000-000N00V40E1 |
| | | | W2 | 4860 | 5593 | | CXA1850-0000-000N00W20E1 |
| | | | W4 | 5225 | 6014 | | CXA1850-0000-000N00W40E1 |
| | 80 | --- | V2 | 4230 | 4868 | 1A0, 1B0, 1C0, 1D0 | CXA1850-0000-000N0HV20E1 |
| | | | V4 | 4545 | 5231 | | CXA1850-0000-000N0HV40E1 |
| | | | W2 | 4860 | 5593 | | CXA1850-0000-000N0HW20E1 |
| 5700 K | 70 | 75 | V4 | 4545 | 5231 | 2A0, 2B0, 2C0, 2D0 | CXA1850-0000-000N00V40E2 |
| | | | W2 | 4860 | 5593 | | CXA1850-0000-000N00W20E2 |
| | | | W4 | 5225 | 6014 | | CXA1850-0000-000N00W40E2 |
| | 80 | --- | V2 | 4230 | 4868 | 2A0, 2B0, 2C0, 2D0 | CXA1850-0000-000N0HV20E2 |
| | | | V4 | 4545 | 5231 | | CXA1850-0000-000N0HV40E2 |
| | | | W2 | 4860 | 5593 | | CXA1850-0000-000N0HW20E2 |
| 5000 K | 70 | 75 | V4 | 4545 | 5231 | 3A0, 3B0, 3C0, 3D0 | CXA1850-0000-000N00V40E3 |
| | | | W2 | 4860 | 5593 | | CXA1850-0000-000N00W20E3 |
| | | | W4 | 5225 | 6014 | | CXA1850-0000-000N00W40E3 |
| | 80 | --- | V2 | 4230 | 4868 | 3A0, 3B0, 3C0, 3D0 | CXA1850-0000-000N0HV20E3 |
| | | | V4 | 4545 | 5231 | | CXA1850-0000-000N0HV40E3 |
| | | | W2 | 4860 | 5593 | | CXA1850-0000-000N0HW20E3 |
| | 90 | 95 | T4 | 3440 | 3959 | 3A0, 3B0, 3C0, 3D0 | CXA1850-0000-000N0UT40E3 |
| | | | U2 | 3680 | 4235 | | CXA1850-0000-000N0UU20E3 |
| | | | U4 | 3955 | 4551 | | CXA1850-0000-000N0UU40E3 |

Notes

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PRELIMINARY

FLUX CHARACTERISTICS, ANSI WHITE ORDER CODES AND BINS ($I_F = 1400 \text{ mA}$, $T_J = 85 \text{ }^\circ\text{C}$) - CONTINUED

| CCT Range | CRI | | Base Order Codes Min Luminous Flux @ 1400 mA | | | Chromaticity Regions | Order Code |
|-----------|-----|-----|--|----------------------|-----------------------|----------------------|---------------------------|
| | Min | Typ | Group | Flux (lm) @ 85 °C | Flux (lm) @ 25 °C* | | |
| 4000 K | 70 | 75 | V2 | 4230 | 4868 | 5A0, 5B0, 5C0, 5D0 | CXA1850-0000-000N00V20E5 |
| | | | V4 | 4545 | 5231 | | CXA1850-0000-000N00V40E5 |
| | | | W2 | 4860 | 5593 | | CXA1850-0000-000N00W20E5 |
| | 80 | --- | U4 | 3955 | 4551 | 5A0, 5B0, 5C0, 5D0 | CXA1850-0000-000N00HU40E5 |
| | | | V2 | 4230 | 4868 | | CXA1850-0000-000N00HV20E5 |
| | | | V4 | 4545 | 5231 | | CXA1850-0000-000N00HV40E5 |
| | 90 | 95 | T2 | 3200 | 3683 | 5A0, 5B0, 5C0, 5D0 | CXA1850-0000-000N00T20E5 |
| | | | T4 | 3440 | 3959 | | CXA1850-0000-000N00T40E5 |
| | | | U2 | 3680 | 4235 | | CXA1850-0000-000N00U20E5 |
| 3500 K | 80 | --- | U4 | 3955 | 4551 | 6A0, 6B0, 6C0, 6D0 | CXA1850-0000-000N00U40E6 |
| | | | V2 | 4230 | 4868 | | CXA1850-0000-000N00V20E6 |
| | | | V4 | 4545 | 5231 | | CXA1850-0000-000N00V40E6 |
| | 93 | 95 | T2 | 3200 | 3683 | 6A0, 6B0, 6C0, 6D0 | CXA1850-0000-000N00YT20E6 |
| | | | T4 | 3440 | 3959 | | CXA1850-0000-000N00YT40E6 |
| | | | U2 | 3680 | 4235 | | CXA1850-0000-000N00YU20E6 |
| 3000 K | 80 | --- | U4 | 3955 | 4551 | 7A0, 7B0, 7C0, 7D0 | CXA1850-0000-000N00U40E7 |
| | | | V2 | 4230 | 4868 | | CXA1850-0000-000N00V20E7 |
| | | | V4 | 4545 | 5231 | | CXA1850-0000-000N00V40E7 |
| | 90 | --- | T2 | 3200 | 3683 | 7A0, 7B0, 7C0, 7D0 | CXA1850-0000-000N00T20E7 |
| | | | T4 | 3440 | 3959 | | CXA1850-0000-000N00T40E7 |
| | | | U2 | 3680 | 4235 | | CXA1850-0000-000N00U20E7 |
| | 93 | 95 | S4 | 2990 | 3441 | 7A0, 7B0, 7C0, 7D0 | CXA1850-0000-000N00YS40E7 |
| | | | T2 | 3200 | 3683 | | CXA1850-0000-000N00YT20E7 |
| | | | T4 | 3440 | 3959 | | CXA1850-0000-000N00YT40E7 |

Notes

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- * Flux values @ 25 °C are calculated and for reference only.

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| CCT Range | CRI | | Base Order Codes Min Luminous Flux @ 1400 mA | | | Chromaticity Regions | Order Code |
|-----------|-----|-----|--|----------------------|-----------------------|----------------------|--------------------------|
| | Min | Typ | Group | Flux (lm) @ 85 °C | Flux (lm) @ 25 °C* | | |
| 2700 K | 80 | --- | U2 | 3680 | 4235 | 8A0, 8B0, 8C0, 8D0 | CXA1850-0000-000N00U20E8 |
| | | | U4 | 3955 | 4551 | | CXA1850-0000-000N00U40E8 |
| | | | V2 | 4230 | 4868 | | CXA1850-0000-000N00V20E8 |
| | 90 | --- | S4 | 2990 | 3441 | 8A0, 8B0, 8C0, 8D0 | CXA1850-0000-000N00S40E8 |
| | | | T2 | 3200 | 3683 | | CXA1850-0000-000N00T20E8 |
| | | | T4 | 3440 | 3959 | | CXA1850-0000-000N00T40E8 |
| | 93 | 95 | S2 | 2780 | 3199 | 8A0, 8B0, 8C0, 8D0 | CXA1850-0000-000N00S20E8 |
| | | | S4 | 2990 | 3441 | | CXA1850-0000-000N00S40E8 |
| | | | T2 | 3200 | 3683 | | CXA1850-0000-000N00T20E8 |

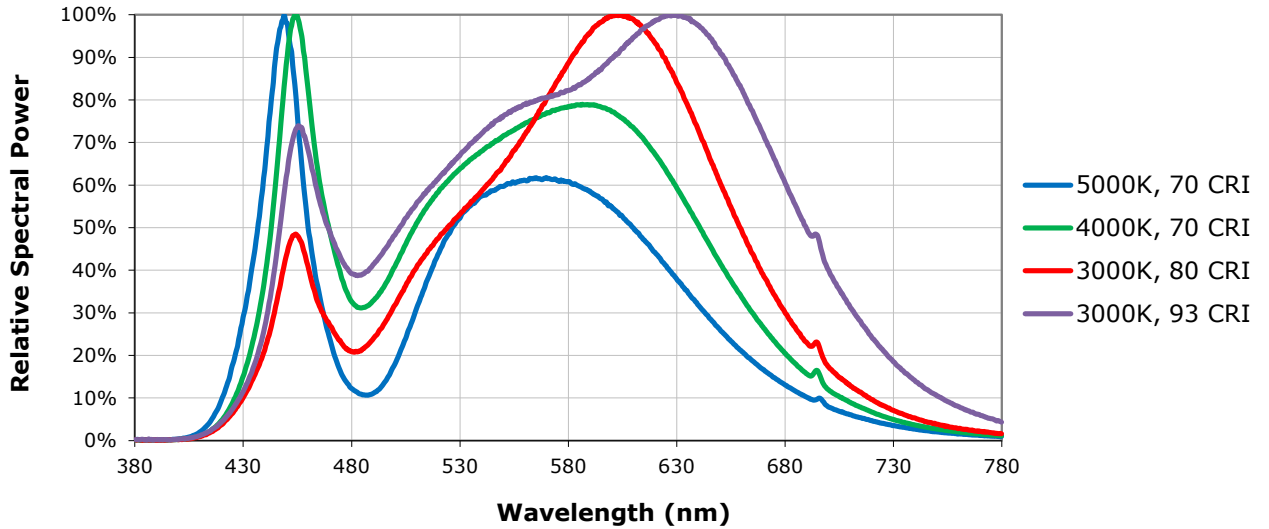
Notes

- Cree maintains a tolerance of $\pm 7\%$ on flux and power measurements, ± 0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ± 2 on CRI measurements.
- * Flux values @ 25 °C are calculated and for reference only.

PRELIMINARY

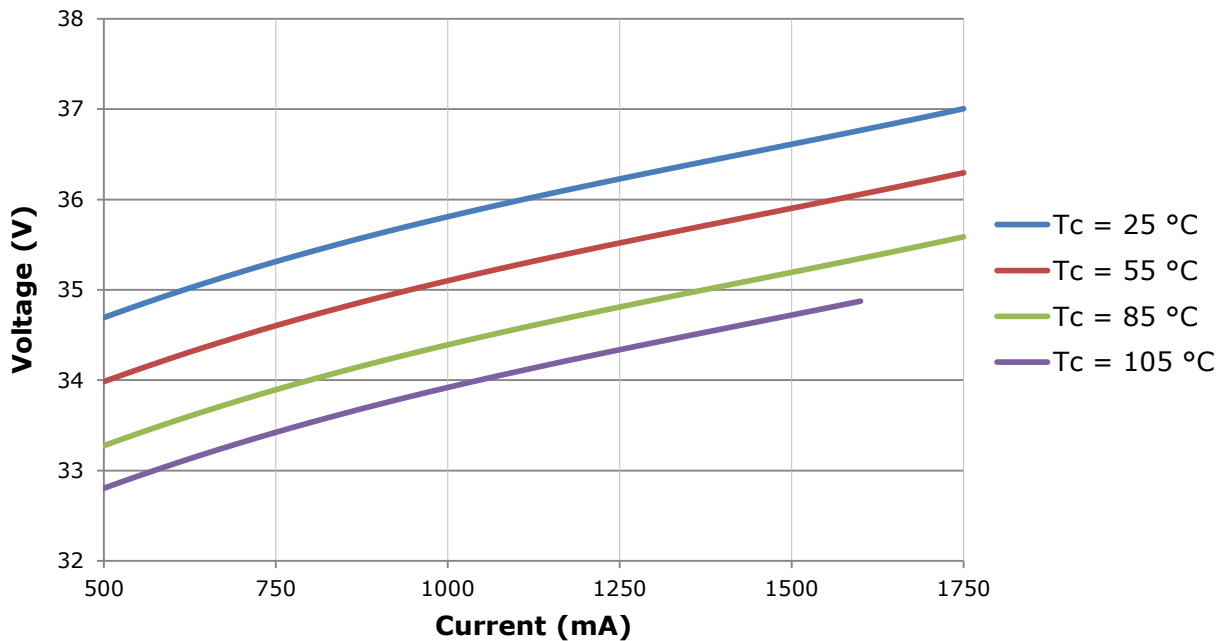
RELATIVE SPECTRAL POWER DISTRIBUTION ($I_f = 1400 \text{ mA}$, $T_j = 85 \text{ }^\circ\text{C}$)

The following graph is the result of a series of pulsed measurements at 1400 mA and $T_j = 85 \text{ }^\circ\text{C}$.



ELECTRICAL CHARACTERISTICS

The following graph is the result of a series of steady-state measurements.



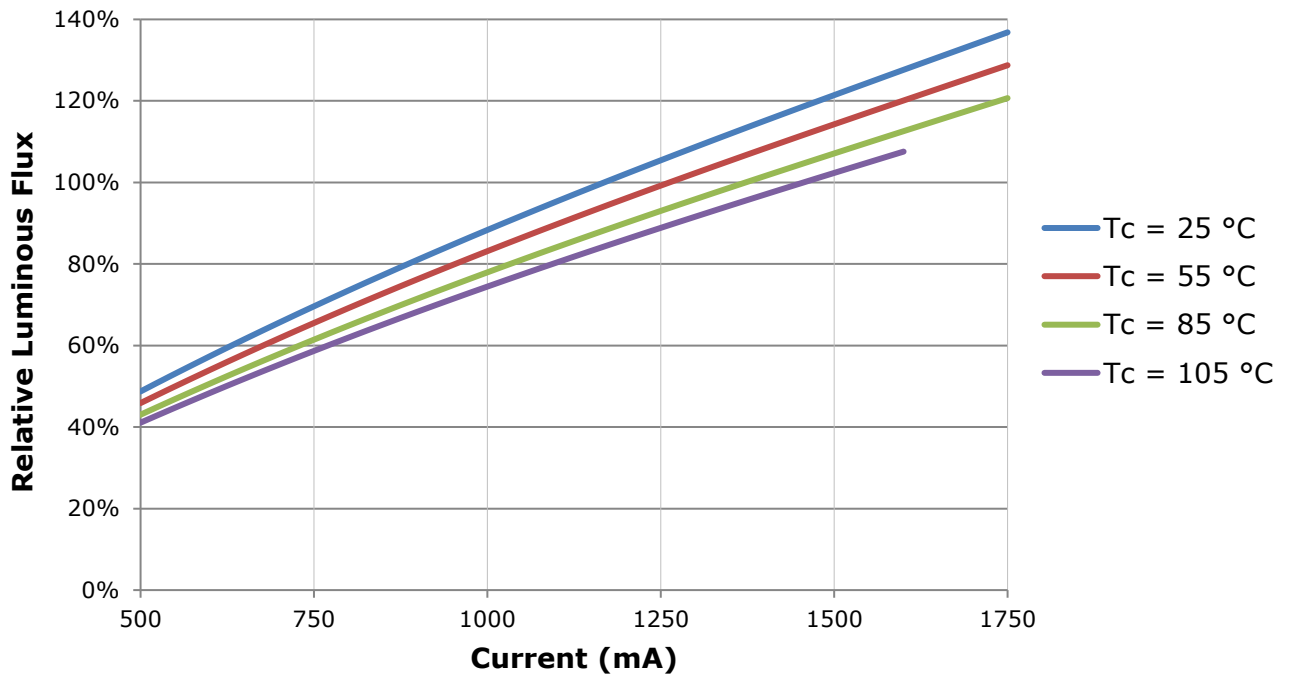
PRELIMINARY

RELATIVE LUMINOUS FLUX

The relative luminous flux values provided below are the ratio of:

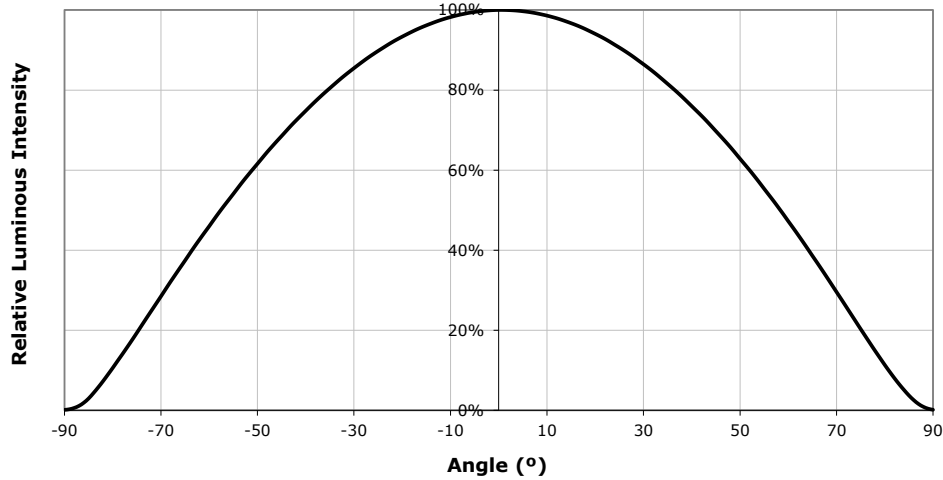
- Measurements of CXA1850 at steady-state operation at the given conditions, divided by
- Flux measured during binning, which is a pulsed measurement at 1400 mA at $T_j = 85\text{ }^\circ\text{C}$.

For example, at steady-state operation of $T_c = 25\text{ }^\circ\text{C}$, $I_f = 1500\text{ mA}$, the relative luminous flux ratio is 120% in the chart below. A CXA1850 LED that measures 6010 lm during binning will deliver 7212 lm (6010×1.2) at steady-state operation of $T_c = 25\text{ }^\circ\text{C}$, $I_f = 1500\text{ mA}$.



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TYPICAL SPATIAL DISTRIBUTION



PERFORMANCE GROUPS - BRIGHTNESS ($I_f = 1400 \text{ mA}$, $T_j = 85 \text{ °C}$)

XLamp CXA1850 LEDs are tested for luminous flux and placed into one of the following bins.

| Group Code | Min. Luminous Flux @ 1400 mA | Max. Luminous Flux @ 1400 mA |
|------------|------------------------------|------------------------------|
| U2 | 3680 | 3955 |
| U4 | 3955 | 4230 |
| V2 | 4230 | 4545 |
| V4 | 4545 | 4860 |
| W2 | 4860 | 5225 |
| W4 | 5225 | 5590 |
| X2 | 5590 | 6010 |
| X4 | 6010 | 6430 |
| Y2 | 6430 | 6910 |

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PERFORMANCE GROUPS - CHROMATICITY ($T_j = 85\text{ }^\circ\text{C}$)

XLamp CXA1850 LEDs are tested for chromaticity and placed into one of the regions defined by the following bounding coordinates.

| EasyWhite Color Temperatures – 4-Step | | | |
|---------------------------------------|--------|--------|--------|
| Code | CCT | x | y |
| 65F | 6500 K | 0.3253 | 0.3325 |
| | | 0.3249 | 0.3439 |
| | | 0.3331 | 0.3514 |
| | | 0.3330 | 0.3393 |
| 57F | 5700 K | 0.3097 | 0.3196 |
| | | 0.3079 | 0.3297 |
| | | 0.3164 | 0.3382 |
| | | 0.3176 | 0.3275 |
| 50F | 5000 K | 0.3407 | 0.3459 |
| | | 0.3415 | 0.3586 |
| | | 0.3499 | 0.3654 |
| | | 0.3484 | 0.3521 |
| 40F | 4000 K | 0.3744 | 0.3685 |
| | | 0.3782 | 0.3837 |
| | | 0.3912 | 0.3917 |
| | | 0.3863 | 0.3758 |
| 35F | 3500 K | 0.3981 | 0.3800 |
| | | 0.4040 | 0.3966 |
| | | 0.4186 | 0.4037 |
| | | 0.4116 | 0.3865 |
| 30F | 3000 K | 0.4242 | 0.3919 |
| | | 0.4322 | 0.4096 |
| | | 0.4449 | 0.4141 |
| | | 0.4359 | 0.3960 |
| 27F | 2700 K | 0.4475 | 0.3994 |
| | | 0.4573 | 0.4178 |
| | | 0.4695 | 0.4207 |
| | | 0.4589 | 0.4021 |

| EasyWhite Color Temperatures – 2-Step | | | |
|---------------------------------------|--------|--------|--------|
| Code | CCT | x | y |
| 50H | 5000 K | 0.3429 | 0.3507 |
| | | 0.3434 | 0.3571 |
| | | 0.3475 | 0.3604 |
| | | 0.3469 | 0.3539 |
| 40H | 4000 K | 0.3784 | 0.3741 |
| | | 0.3804 | 0.3818 |
| | | 0.3867 | 0.3857 |
| | | 0.3844 | 0.3778 |
| 35H | 3500 K | 0.4030 | 0.3857 |
| | | 0.4061 | 0.3941 |
| | | 0.4132 | 0.3976 |
| | | 0.4099 | 0.3890 |
| 30H | 3000 K | 0.4291 | 0.3973 |
| | | 0.4333 | 0.4062 |
| | | 0.4395 | 0.4084 |
| | | 0.4351 | 0.3994 |
| 27H | 2700 K | 0.4528 | 0.4046 |
| | | 0.4578 | 0.4138 |
| | | 0.4638 | 0.4152 |
| | | 0.4586 | 0.4060 |

PRELIMINARY

PERFORMANCE GROUPS - CHROMATICITY ($T_j = 85\text{ }^\circ\text{C}$) - CONTINUED

| ANSI White Bins | | | | |
|-----------------|--------|----------|--------|--------|
| Code | CCT | Bin Code | x | y |
| 0E1 | 6500 K | 1A0 | 0.3048 | 0.3207 |
| | | | 0.3130 | 0.3290 |
| | | | 0.3144 | 0.3186 |
| | | | 0.3068 | 0.3113 |
| | | 1B0 | 0.3028 | 0.3304 |
| | | | 0.3115 | 0.3391 |
| | | | 0.3130 | 0.3290 |
| | | | 0.3048 | 0.3207 |
| | | 1C0 | 0.3115 | 0.3391 |
| | | | 0.3205 | 0.3481 |
| | | | 0.3213 | 0.3373 |
| | | | 0.3130 | 0.3290 |
| | | 1D0 | 0.3130 | 0.3290 |
| | | | 0.3213 | 0.3373 |
| | | | 0.3221 | 0.3261 |
| | | | 0.3144 | 0.3186 |

| ANSI White Bins | | | | |
|-----------------|--------|----------|--------|--------|
| Code | CCT | Bin Code | x | y |
| 0E2 | 5700 K | 2A0 | 0.3215 | 0.3350 |
| | | | 0.3290 | 0.3417 |
| | | | 0.3290 | 0.3300 |
| | | | 0.3222 | 0.3243 |
| | | 2B0 | 0.3207 | 0.3462 |
| | | | 0.3290 | 0.3538 |
| | | | 0.3290 | 0.3417 |
| | | | 0.3215 | 0.3350 |
| | | 2C0 | 0.3290 | 0.3538 |
| | | | 0.3376 | 0.3616 |
| | | | 0.3371 | 0.3490 |
| | | | 0.3290 | 0.3417 |
| | | 2D0 | 0.3290 | 0.3417 |
| | | | 0.3371 | 0.3490 |
| | | | 0.3366 | 0.3369 |
| | | | 0.3290 | 0.3300 |

| ANSI White Bins | | | | |
|-----------------|--------|----------|-------|-------|
| Code | CCT | Bin Code | x | y |
| 0E3 | 5000 K | 3A0 | .3371 | .3490 |
| | | | .3451 | .3554 |
| | | | .3440 | .3427 |
| | | | .3366 | .3369 |
| | | 3B0 | .3376 | .3616 |
| | | | .3463 | .3687 |
| | | | .3451 | .3554 |
| | | | .3371 | .3490 |
| | | 3C0 | .3463 | .3687 |
| | | | .3551 | .3760 |
| | | | .3533 | .3620 |
| | | | .3451 | .3554 |
| | | 3D0 | .3451 | .3554 |
| | | | .3533 | .3620 |
| | | | .3515 | .3487 |
| | | | .3440 | .3427 |

| ANSI White Bins | | | | |
|-----------------|--------|----------|-------|-------|
| Code | CCT | Bin Code | x | y |
| 0E5 | 4000 K | 5A0 | .3670 | .3578 |
| | | | .3702 | .3722 |
| | | | .3825 | .3798 |
| | | | .3783 | .3646 |
| | | 5B0 | .3702 | .3722 |
| | | | .3736 | .3874 |
| | | | .3869 | .3958 |
| | | | .3825 | .3798 |
| | | 5C0 | .3825 | .3798 |
| | | | .3869 | .3958 |
| | | | .4006 | .4044 |
| | | | .3950 | .3875 |
| | | 5D0 | .3783 | .3646 |
| | | | .3825 | .3798 |
| | | | .3950 | .3875 |
| | | | .3898 | .3716 |

| ANSI White Bins | | | | |
|-----------------|--------|----------|-------|-------|
| Code | CCT | Bin Code | x | y |
| 0E6 | 3500 K | 6A0 | .3889 | .3690 |
| | | | .3941 | .3848 |
| | | | .4080 | .3916 |
| | | | .4017 | .3751 |
| | | 6B0 | .3941 | .3848 |
| | | | .3996 | .4015 |
| | | | .4146 | .4089 |
| | | | .4080 | .3916 |
| | | 6C0 | .4080 | .3916 |
| | | | .4146 | .4089 |
| | | | .4299 | .4165 |
| | | | .4221 | .3984 |
| | | 6D0 | .4017 | .3751 |
| | | | .4080 | .3916 |
| | | | .4221 | .3984 |
| | | | .4147 | .3814 |

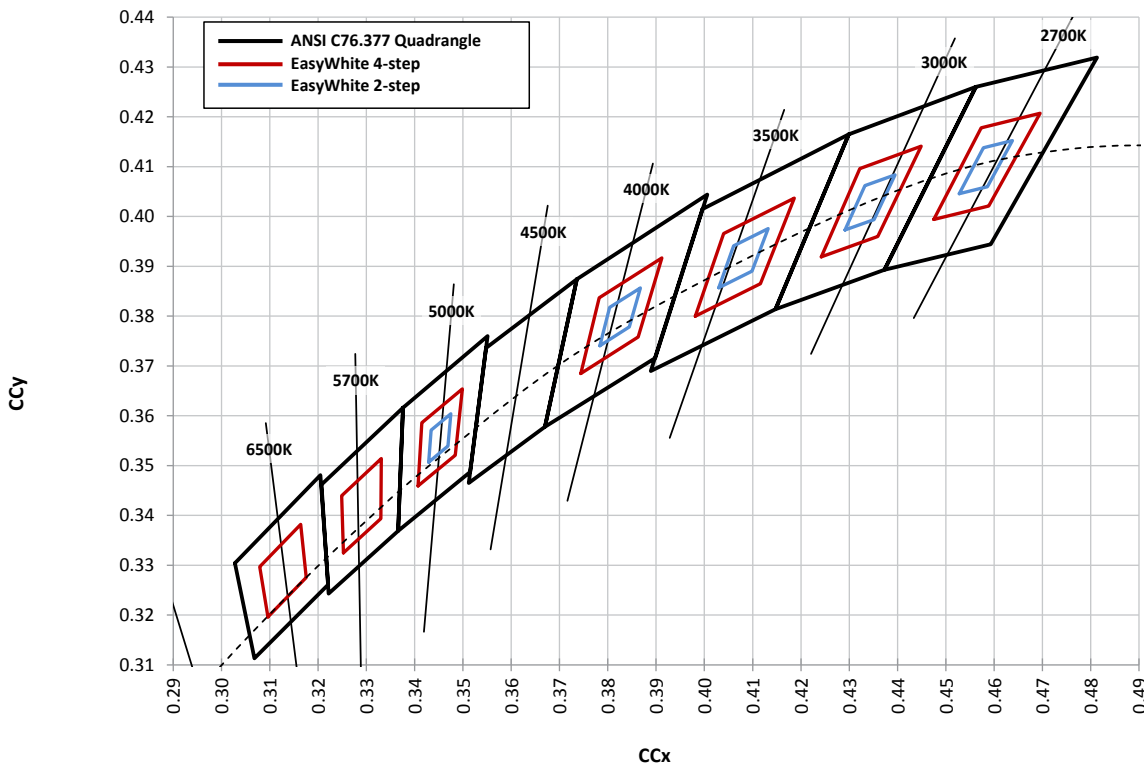
PRELIMINARY

PERFORMANCE GROUPS - CHROMATICITY ($T_j = 85\text{ }^\circ\text{C}$) - CONTINUED

| ANSI White Bins | | | | |
|-----------------|--------|----------|-------|-------|
| Code | CCT | Bin Code | x | y |
| 0E7 | 3000 K | 7A0 | .4147 | .3814 |
| | | | .4221 | .3984 |
| | | | .4342 | .4028 |
| | | | .4259 | .3853 |
| | | 7B0 | .4221 | .3984 |
| | | | .4299 | .4165 |
| | | | .4430 | .4212 |
| | | | .4342 | .4028 |
| | | 7C0 | .4342 | .4028 |
| | | | .4430 | .4212 |
| | | | .4562 | .4260 |
| | | | .4465 | .4071 |
| | | 7D0 | .4259 | .3853 |
| | | | .4342 | .4028 |
| | | | .4465 | .4071 |
| | | | .4373 | .3893 |

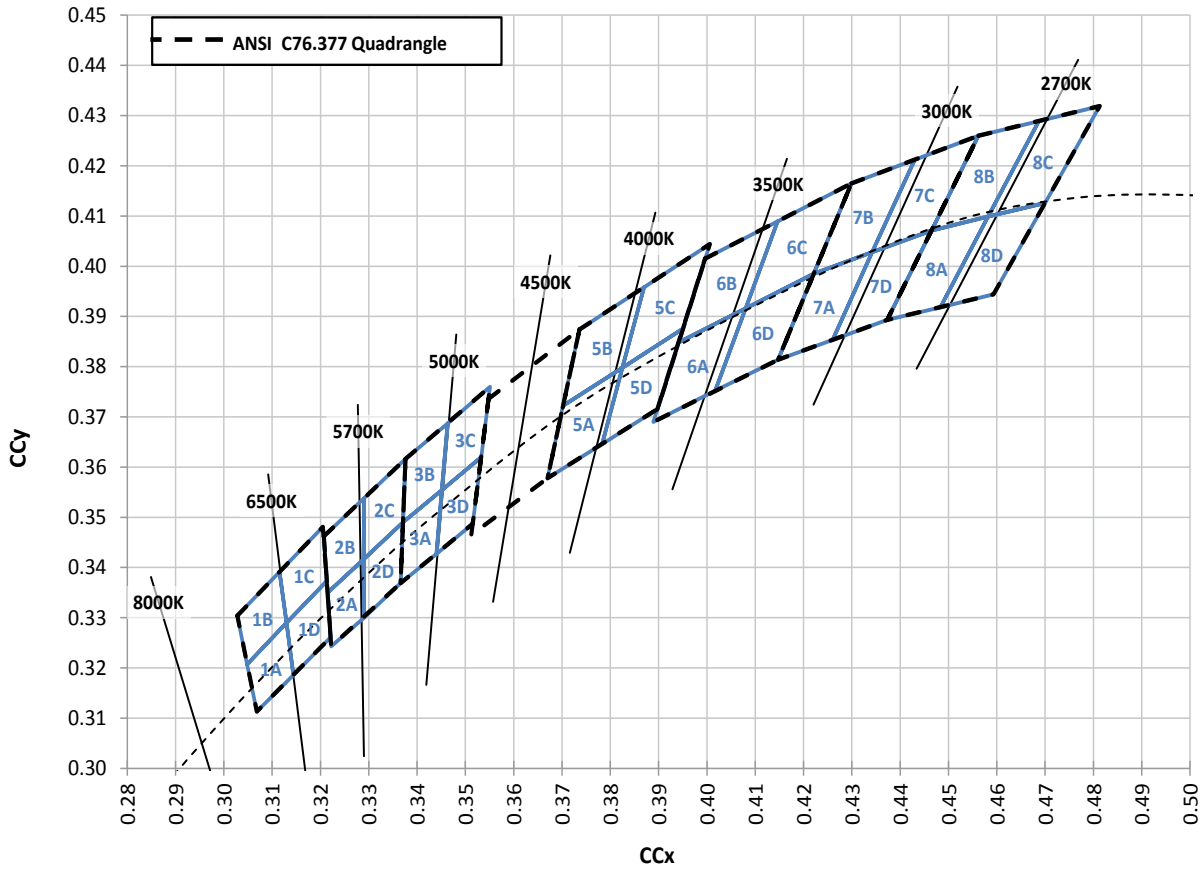
| ANSI White Bins | | | | |
|-----------------|--------|----------|-------|-------|
| Code | CCT | Bin Code | x | y |
| 0E8 | 2700 K | 8A0 | .4373 | .3893 |
| | | | .4465 | .4071 |
| | | | .4582 | .4099 |
| | | | .4483 | .3919 |
| | | 8B0 | .4465 | .4071 |
| | | | .4562 | .4260 |
| | | | .4687 | .4289 |
| | | | .4582 | .4099 |
| | | 8C0 | .4582 | .4099 |
| | | | .4687 | .4289 |
| | | | .4813 | .4319 |
| | | | .4700 | .4126 |
| | | 8D0 | .4483 | .3919 |
| | | | .4582 | .4099 |
| | | | .4700 | .4126 |
| | | | .4593 | .3944 |

CREE EASYWHITE BINS PLOTTED ON THE CIE 1931 COLOR SPACE ($T_j = 85\text{ }^\circ\text{C}$)



PRELIMINARY

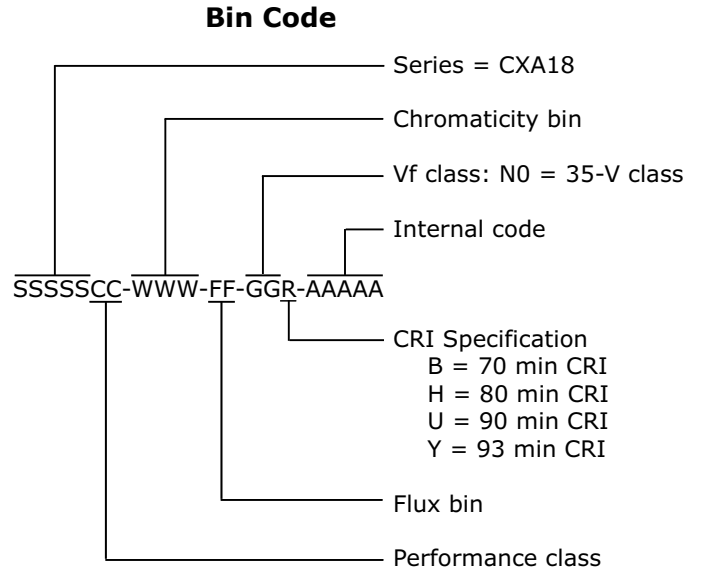
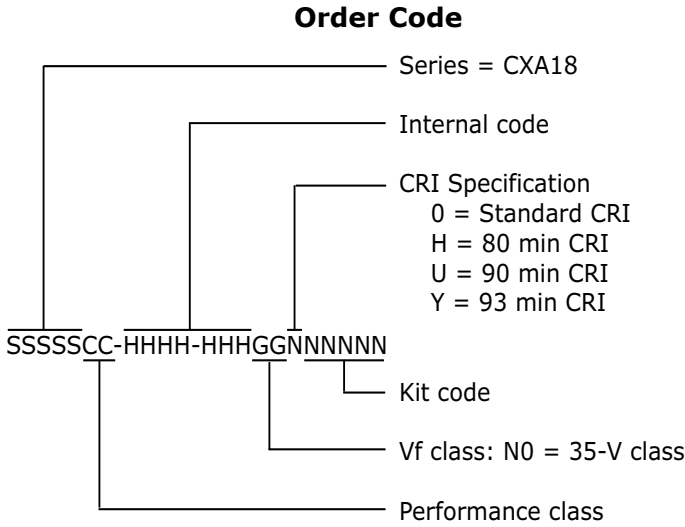
CREE ANSI WHITE BINS PLOTTED ON THE CIE 1931 COLOR SPACE ($T_j = 85^\circ\text{C}$)



PRELIMINARY

BIN AND ORDER CODE FORMATS

Bin codes and order codes are configured as follows:



MECHANICAL DIMENSIONS

Dimensions are in mm.

Tolerances unless otherwise

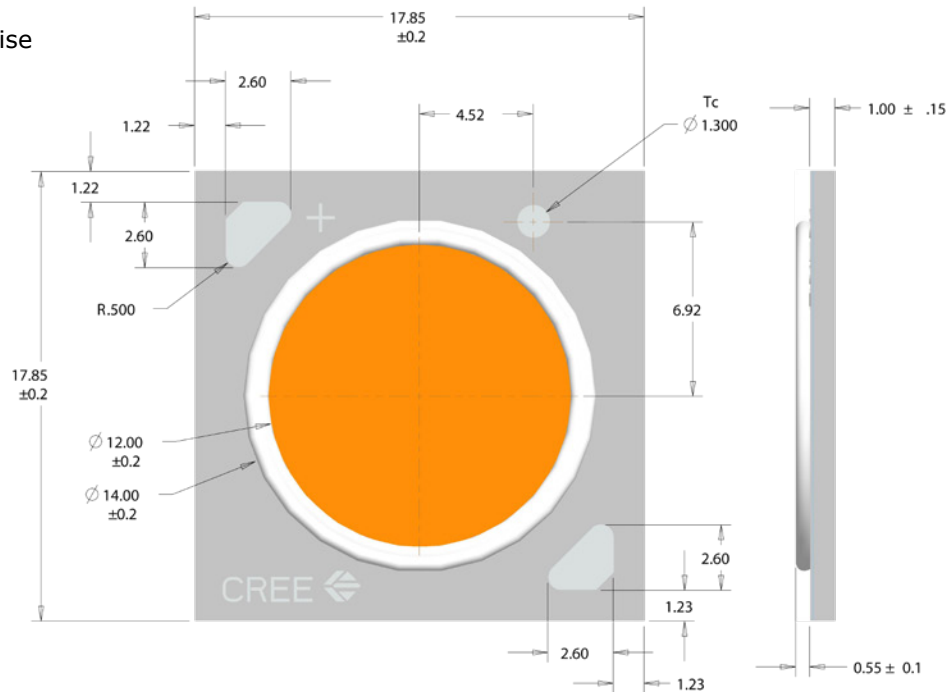
specified:

.x ± .10

.xx ± .03

.xxx ± .010

x° ± 1°



PRELIMINARY

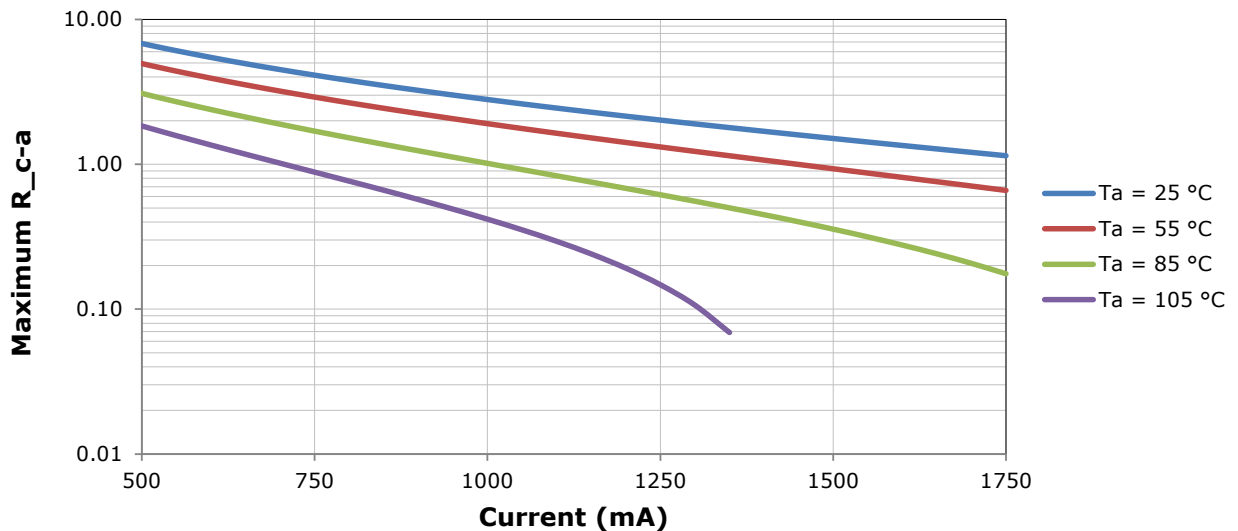
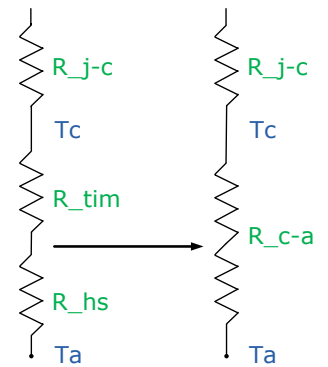
THERMAL DESIGN

The CXA family of LED arrays can include over a hundred different LED die inside one package, and thus over a hundred different junction temperatures (T_j). Cree has intentionally removed junction-temperature-based operating limits and replaced the commonplace maximum T_j calculations with maximum ratings based on forward current (I_f) and case temperature (T_c). No additional calculations are required to ensure the CXA LED is being operated within its designed limits. Please refer to page 2 for the Operating Limit specification.

Cree has measured the temperature at the bottom of the package, commonly referred to as the solder point (T_{sp}), and found this value to be equivalent to the temperature at the T_c location at the top of the package once the LED has reached thermal equilibrium. There is no need to calculate for T_j inside the package, as the thermal management design process, specifically from T_{sp} to ambient (T_a), remains identical to any other LED component. For more information on thermal management of Cree XLamp LEDs, please refer to the XLamp Thermal Management application note at www.cree.com/xlamp_app_notes/thermal_management. For CXA soldering recommendations and more information on thermal interface materials (TIM) and connection methods, please refer to the Cree XLamp CXA Family LEDs soldering and handling document at www.cree.com/xlamp_app_notes/CXA_SH.

To keep the CXA1850 LED at or below the maximum rated T_c , the case to ambient temperature thermal resistance (R_{c-a}) must be at or below the maximum R_{c-a} value shown on the following graph, depending on the operating environment. The y-axis in the graph is a base 10 logarithmic scale.

As the figure at right shows, the R_{c-a} value is the sum of the thermal resistance of the TIM (R_{tim}) plus the thermal resistance of the heat sink (R_{hs}).



PRELIMINARY

NOTES

Lumen Maintenance Projections

Cree now uses standardized IES LM-80-08 and TM-21-11 methods for collecting long-term data and extrapolating LED lumen maintenance. For information on the specific LM-80 data sets available for this LED, refer to the public LM-80 results document at www.cree.com/xlamp_app_notes/LM80_results.

Please read the XLamp Long-Term Lumen Maintenance application note at www.cree.com/xlamp_app_notes/lumen_maintenance for more details on Cree's lumen maintenance testing and forecasting. Please read the XLamp Thermal Management application note at www.cree.com/xlamp_app_notes/thermal_management for details on how thermal design, ambient temperature, and drive current affect the LED junction temperature.

Vision Advisory Claim

Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.

PRELIMINARY

PACKAGING

Cree CXA1830 LEDs are packaged in trays of 20. Five trays are sealed in an anti-static bag and placed inside a carton, for a total of 100 LEDs per carton. Each carton contains 100 LEDs from the same performance bin.

Dimensions are in inches.

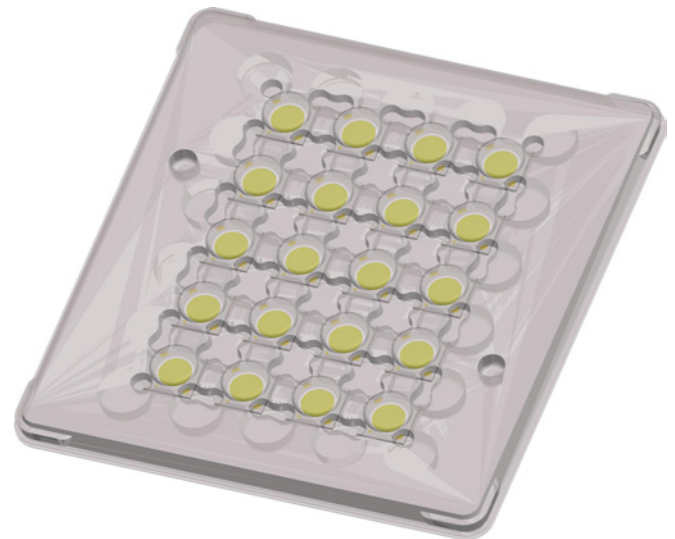
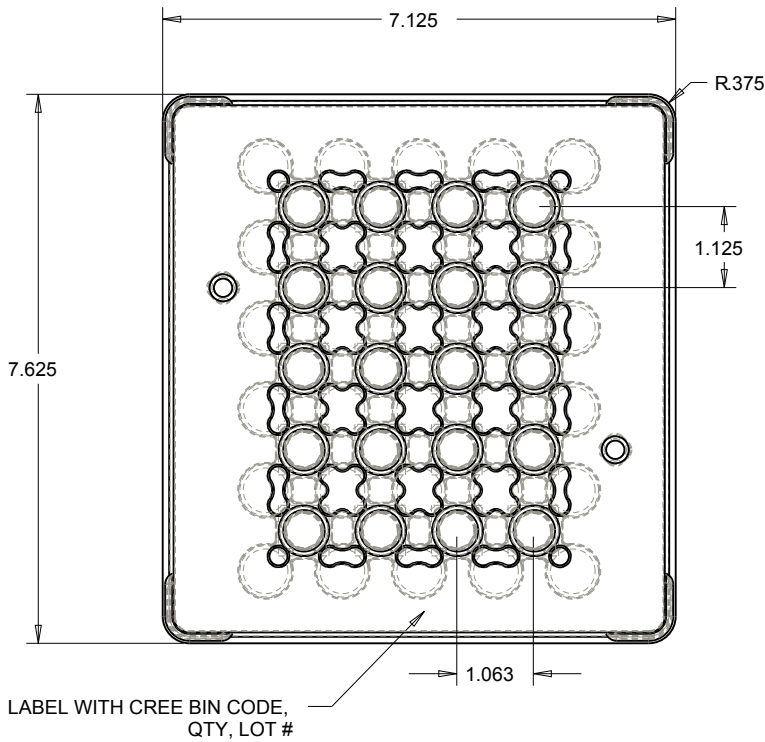
Tolerances:

.x ± .1

.xx ± .05

.xxx ± .005

x° ± 1°



PATENT LABEL IS LOCATED ON UNDERSIDE OF CARTON



BAG

