# XLamp<sup>®</sup> CXB1830 LED



### **PRODUCT DESCRIPTION**

The XLamp<sup>®</sup> CXB1830 LED Array is a • member of the second generation of the . CXA family that delivers up to 30% higher efficacy and up to 20% higher lumens than • the first generation in the same LES. The higher performance second generation . CXA LED Arrays provide a drop-in . performance upgrade to existing CXA LED . designs to shorten product development . time. In addition, the CXB LEDs also · allow lighting manufacturers to achieve the same or better performance with a . smaller LES, enabling a smaller, more . impactful luminaire. Available in 2-step, . 3-step and 5-step EasyWhite® bins and . 2-step and 3-step Premium Color bins, the • CXB1830 LED delivers high lumen output and high efficacy in a single, easy-to-use package that eliminates the need for reflow soldering.

The CX Family LED Design Guide provides basic information on the requirements to use the CXB1830 LED successfully in luminaire designs.

### **FEATURES**

- 14-mm optical source
- Optical design consistent with CXA1830 LEDs
- Available in 70-, 80-, 90- and 95-minimum CRI options
- EasyWhite<sup>®</sup> 2-, 3- and 5-step binning
- Premium Color 2- and 3-step binning
- Forward voltage option: 36-V class
- 85 °C binning and characterization
- Extremely uniform color over viewing angle
- Top-side solder connections
- Thermocouple attach point
- NEMA SSL-3 2011 standard flux bins
- RoHS and REACH compliant
- UL<sup>®</sup> recognized component (E349212)

#### **TABLE OF CONTENTS**

| Characteristics 2                                   |
|---|
| Operating Limits2                                   |
| Flux Characteristics, EasyWhite® Order              |
| Codes and Bins 3                                    |
| Flux Characteristics, Premium Color Order           |
| Codes and Bins 6                                    |
| Relative Spectral Power Distribution,               |
| EasyWhite®7   |
| Relative Spectral Power Distribution,               |
| Premium Color7                                      |
| Electrical Characteristics                          |
| Relative Luminous Flux9                             |
| Typical Spatial Distribution10                      |
| Performance Groups - Brightness 10                  |
| EasyWhite® Performance Groups -                     |
| Chromaticity 11                                     |
| Premium Color Performance Groups -                  |
| Chromaticity 12                                     |
| EasyWhite <sup>®</sup> Bins Plotted on the 1931 CIE |
| Color Space 13                                      |
| Premium Color Bins Plotted on the 1931              |
| CIE Color Space 14                                  |
| Bin and Order Code Formats16                        |
| Mechanical Dimensions 16                            |
| Thermal Design 17                                   |
| Notes 18  |
| Packaging19   |



Cree LED / 4001 E. Hwy. 54, Suite 2000 / Durham, NC 27709 USA / +1.919.313.5330 / www.cree-led.com

© 2015-2023 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo, XLamp® and EasyWhite® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

## **CHARACTERISTICS**

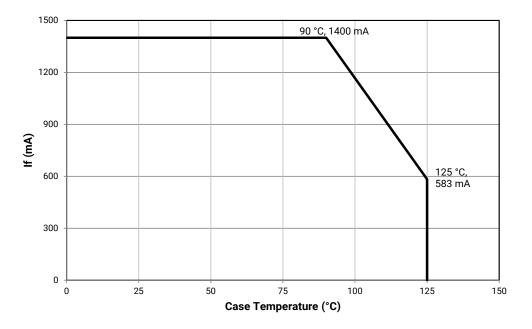
| Characteristics                              | Unit    | Minimum | Typical | Maximum |
|--|---------|---------|---------|---------|
| Viewing angle (FWHM)                         | degrees |         | 115     |         |
| ESD withstand voltage (HBM per Mil-Std-883D) | V       |         |         | 8000    |
| DC forward current                           | mA      |         |         | 1400*   |
| Reverse current                              | mA      |         |         | 0.1     |
| Forward voltage (@ 800 mA, 85 °C)            | V       |         | 35      | 38      |

\* Refer to the Operating Limits section.

## **OPERATING LIMITS**

The maximum current rating of the CXB1830 depends on the case temperature (Tc) when the LED has reached thermal equilibrium under steady-state operation. The graph shown below assumes that the system design employs good thermal management (thermal interface material and heat sink) and may vary when poor thermal management is employed. Please refer to the Mechanical Dimensions section on page 16 for the location of the Tc measurement point.

Another important factor in good thermal management is the temperature of the Light Emitting Surface (LES). Cree LED recommends a maximum LES temperature of 135 °C to ensure optimal LED lifetime. Please refer to the Thermal Design section on page 17 for more information on LES temperature measurement.



# FLUX CHARACTERISTICS, EASYWHITE<sup>®</sup> ORDER CODES AND BINS ( $I_F = 800 \text{ mA}, T_J = 85 \text{ °C}$ )

The following table provides order codes for XLamp CXB1830 LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 16).

|                | CI  | RI* | Minir | num Lumino           | ous Flux                  |       | 2-Step     |       | 3-Step                       | 5-Step |                              |
|----------------|-----|-----|-------|----------------------|---------------------------|-------|------------|-------|------------------------------|--------|------------------------------|
| Nominal<br>CCT | Min | Тур | Group | Flux (lm)<br>@ 85 °C | Flux<br>(Im) @<br>25 °C** | Group | Order Code | Group | Order Code                   | Group  | Order Code                   |
|                |     |     | U4    | 3955                 | 4332                      |       |            |       |                              |        | CXB1830-0000-<br>000N0BU465E |
|                | 70  |     | V2    | 4230                 | 4633                      |       |            |       |                              | 65E    | CXB1830-0000-<br>000N0BV265E |
| 6500 K         |     |     | V4    | 4545                 | 4978                      |       |            |       |                              |        | CXB1830-0000-<br>000N0BV465E |
|                | 80  |     | U4    | 3955                 | 4332                      |       |            |       |                              | 65E    | CXB1830-0000-<br>000N0HU465E |
|                | 00  |     | V2    | 4230                 | 4633                      |       |            |       |                              | 03E    | CXB1830-0000-<br>000N0HV265E |
|                |     |     | U4    | 3955                 | 4332                      |       |            |       |                              |        | CXB1830-0000-<br>000N0BU457E |
|                | 70  |     | V2    | 4230                 | 4633                      |       |            |       |                              | 57E    | CXB1830-0000-<br>000N0BV257E |
| 5700 K         |     |     | V4    | 4545                 | 4978                      |       |            |       |                              |        | CXB1830-0000-<br>000N0BV457E |
|                | 80  |     | U4    | 3955                 | 4332                      |       |            |       |                              | 57E    | CXB1830-0000-<br>000N0HU457E |
|                | 00  |     | V2    | 4230                 | 4633                      |       |            |       |                              | J/L    | CXB1830-0000-<br>000N0HV257E |
|                |     |     | U4    | 3955                 | 4332                      |       |            |       |                              |        | CXB1830-0000-<br>000N0BU450E |
|                | 70  |     | V2    | 4230                 | 4633                      |       |            |       |                              | 50E    | CXB1830-0000-<br>000N0BV250E |
|                |     |     | V4    | 4545                 | 4978                      |       |            |       |                              |        | CXB1830-0000-<br>000N0BV450E |
| 5000 K         | 80  |     | U4    | 3955                 | 4332                      |       |            | 50G   | CXB1830-0000-<br>000N0HU450G | 50E    | CXB1830-0000-<br>000N0HU450E |
| 3000 K         | 00  |     | V2    | 4230                 | 4633                      |       |            | 50G   | CXB1830-0000-<br>000N0HV250G | JUE    | CXB1830-0000-<br>000N0HV250E |
|                |     |     | T4    | 3440                 | 3768                      |       |            |       | CXB1830-0000-<br>000N0UT450G |        |                              |
|                | 90  | 92  | U2    | 3680                 | 4031                      |       |            | 50G   | CXB1830-0000-<br>000N0UU250G |        |                              |
|                |     |     | U4    | 3955                 | 4332                      |       |            |       | CXB1830-0000-<br>000N0UU450G |        |                              |

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 18).
- CXB1830 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 bin restrictions specified by the order code.
- \* For 80 CRI minimum LEDs, CRI R9 minimum is 0 with a ±2 tolerance. For 90 CRI minimum LEDs, CRI R9 typical is 60.
- \*\* Flux values @ 25 °C are calculated and for reference only.



# FLUX CHARACTERISTICS, EASYWHITE<sup>®</sup> ORDER CODES AND BINS ( $I_F = 800 \text{ mA}, T_J = 85 \text{ °C}$ ) - CONTINUED

|                | CF  | <b>{ </b> * | Minin | num Lumin            | ous Flux                  |       | 2-Step                       |       | 3-Step                       |       | 5-Step                       |
|----------------|-----|-------------|-------|----------------------|---------------------------|-------|------------------------------|-------|------------------------------|-------|------------------------------|
| Nominal<br>CCT | Min | Тур         | Group | Flux (lm)<br>@ 85 °C | Flux<br>(lm) @<br>25 °C** | Group | Order Code                   | Group | Order Code                   | Group | Order Code                   |
|                |     |             | U4    | 3955                 | 4332                      |       |                              |       |                              |       | CXB1830-0000-<br>000N0BU440E |
|                | 70  |             | V2    | 4230                 | 4633                      |       |                              |       |                              | 40E   | CXB1830-0000-<br>000N0BV240E |
|                |     |             | V4    | 4545                 | 4978                      |       |                              |       |                              |       | CXB1830-0000-<br>000N0BV440E |
|                |     |             | U2    | 3680                 | 4031                      |       | CXB1830-0000-<br>000N0HU240H |       | CXB1830-0000-<br>000N0HU240G |       |                              |
| 4000 K         | 80  |             | U4    | 3955                 | 4332                      | 40H   | CXB1830-0000-<br>000N0HU440H | 40G   | CXB1830-0000-<br>000N0HU440G |       |                              |
|                |     |             | V2    | 4230                 | 4633                      |       | CXB1830-0000-<br>000N0HV240H |       | CXB1830-0000-<br>000N0HV240G |       |                              |
|                |     |             | T2    | 3200                 | 3505                      |       | CXB1830-0000-<br>000N0UT240H |       | CXB1830-0000-<br>000N0UT240G |       |                              |
|                | 90  | 92          | Т4    | 3440                 | 3768                      | 40H   | CXB1830-0000-<br>000N0UT440H | 40G   | CXB1830-0000-<br>000N0UT440G |       |                              |
|                |     |             | U2    | 3680                 | 4031                      |       | CXB1830-0000-<br>000N0UU240H |       | CXB1830-0000-<br>000N0UU240G |       |                              |
|                |     |             | U2    | 3680                 | 4031                      |       | CXB1830-0000-<br>000N0HU235H |       | CXB1830-0000-<br>000N0HU235G |       |                              |
|                | 80  |             | U4    | 3955                 | 4332                      | 35H   | CXB1830-0000-<br>000N0HU435H | 35G   | CXB1830-0000-<br>000N0HU435G |       |                              |
|                |     |             | V2    | 4230                 | 4633                      |       | CXB1830-0000-<br>000N0HV235H |       | CXB1830-0000-<br>000N0HV235G |       |                              |
| 3500 K         |     |             | S4    | 2990                 | 3275                      |       | CXB1830-0000-<br>000N0US435H |       | CXB1830-0000-<br>000N0US435G |       |                              |
|                | 90  | 92          | T2    | 3200                 | 3505                      | 35H   | CXB1830-0000-<br>000N0UT235H | 35G   | CXB1830-0000-<br>000N0UT235G |       |                              |
|                | 50  | 52          | Τ4    | 3440                 | 3768                      | 0011  | CXB1830-0000-<br>000N0UT435H | 000   | CXB1830-0000-<br>000N0UT435G |       |                              |
|                |     |             | U2    | 3680                 | 4031                      |       | CXB1830-0000-<br>000N0UU235H |       | CXB1830-0000-<br>000N0UU235G |       |                              |
|                | 80  |             | U2    | 3680                 | 4031                      | 30H   | CXB1830-0000-<br>000N0HU230H | 30G   | CXB1830-0000-<br>000N0HU230G |       |                              |
|                | 00  |             | U4    | 3955                 | 4332                      | 3011  | CXB1830-0000-<br>000N0HU430H | 500   | CXB1830-0000-<br>000N0HU430G |       |                              |
| 3000 K         |     |             | S4    | 2990                 | 3275                      |       | CXB1830-0000-<br>000N0US430H |       | CXB1830-0000-<br>000N0US430G |       |                              |
|                | 90  | 92          | T2    | 3200                 | 3505                      | 30H   | CXB1830-0000-<br>000N0UT230H | 30G   | CXB1830-0000-<br>000N0UT230G |       |                              |
|                |     |             | T4    | 3440                 | 3768                      |       | CXB1830-0000-<br>000N0UT430H |       | CXB1830-0000-<br>000N0UT430G |       |                              |

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 18).
- CXB1830 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 bin restrictions specified by the order code.
- \* For 80 CRI minimum LEDs, CRI R9 minimum is 0 with a ±2 tolerance. For 90 CRI minimum LEDs, CRI R9 typical is 60.
- \*\* Flux values @ 25 °C are calculated and for reference only.



|                | CI  | CRI* M |       | Minimum Luminous Flux |                           |       | 2-Step                       |       | 3-Step                       |       | 5-Step     |  |
|----------------|-----|--------|-------|-----------------------|---------------------------|-------|------------------------------|-------|------------------------------|-------|------------|--|
| Nominal<br>CCT | Min | Тур    | Group | Flux (lm)<br>@ 85 °C  | Flux<br>(lm) @<br>25 °C** | Group | Order Code                   | Group | Order Code                   | Group | Order Code |  |
|                |     |        | T4    | 3440                  | 3768                      |       | CXB1830-0000-<br>000N0HT427H |       | CXB1830-0000-<br>000N0HT427G |       |            |  |
|                | 80  |        | U2    | 3680                  | 4031                      | 27H   | CXB1830-0000-<br>000N0HU227H | 27G   | CXB1830-0000-<br>000N0HU227G |       |            |  |
| 2700 K         |     |        | U4    | 3955                  | 4332                      |       | CXB1830-0000-<br>000N0HU427H |       | CXB1830-0000-<br>000N0HU427G |       |            |  |
| 2700 K         |     |        | S2    | 2780                  | 3045                      |       | CXB1830-0000-<br>000N0US227H |       | CXB1830-0000-<br>000N0US227G |       |            |  |
|                | 90  | 92     | S4    | 2990                  | 3275                      | 27H   | CXB1830-0000-<br>000N0US427H | 27G   | CXB1830-0000-<br>000N0US427G |       |            |  |
|                |     |        | T2    | 3200                  | 3505                      |       | CXB1830-0000-<br>000N0UT227H |       | CXB1830-0000-<br>000N0UT227G |       |            |  |
| 2200 K         | 80  |        | T2    | 3200                  | 3505                      |       |                              | 22G   | CXB1830-0000-<br>000N0HT222G |       |            |  |

# FLUX CHARACTERISTICS, EASYWHITE $^{\circ}$ ORDER CODES AND BINS (I<sub>F</sub> = 800 mA, T<sub>J</sub> = 85 °C) - CONTINUED

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 18).
- CXB1830 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 bin restrictions specified by the order code.
- \* For 80 CRI minimum LEDs, CRI R9 minimum is 0 with a ±2 tolerance. For 90 CRI minimum LEDs, CRI R9 typical is 60.
- \*\* Flux values @ 25 °C are calculated and for reference only.

## FLUX CHARACTERISTICS, PREMIUM COLOR ORDER CODES AND BINS (I<sub>F</sub> = 800 mA, T<sub>J</sub> = 85 °C)

### Fidelity

|                | CRI* |     | Minin | num Lumin            | ous Flux                  | Typical                          | 2-Step                       |                          |  |
|----------------|------|-----|-------|----------------------|---------------------------|----------------------------------|------------------------------|--------------------------|--|
| Nominal<br>CCT | Min  | Тур | Group | Flux (lm)<br>@ 85 °C | Flux<br>(Im) @<br>25 °C** | Luminous<br>Flux (Im)<br>@ 85 °C | Group                        | Order Code               |  |
| 4000 K         | 95   | 98  | S4    | 2990                 | 3275                      | 3346                             | L5A CXB1830-0000-000N0ZS4L5A |                          |  |
| 3500 K         | 95   | 98  | S4    | 2990                 | 3275                      | 3222                             | 35H                          | CXB1830-0000-000N0ZS435H |  |
| 3000 K         | 95   | 98  | S2    | 2780                 | 3045                      | 3098                             | 30H                          | CXB1830-0000-000N0ZS230H |  |
| 2700 K         | 95   | 98  | S2    | 2780                 | 3045                      | 2923                             | 27H CXB1830-0000-000N0ZS227H |                          |  |

### Specialty

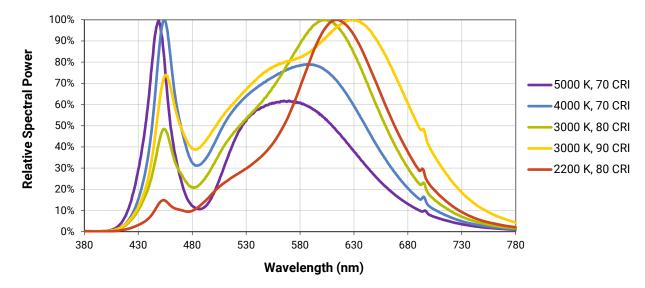
|                | С   | RI  | Minin | num Lumin            | ous Flux                  | Typical                          |       | 2-Step                       |       | 3-Si                         | tep   |                              |
|----------------|-----|-----|-------|----------------------|---------------------------|----------------------------------|-------|------------------------------|-------|------------------------------|-------|------------------------------|
| Nominal<br>CCT | Min | Тур | Group | Flux (lm)<br>@ 85 °C | Flux<br>(Im) @<br>25 °C** | Luminous<br>Flux (lm)<br>@ 85 °C | Group | Order Code                   | Group | Order Code                   | Group | Order Code                   |
| 0100 K         | 90  | 92  | S4    | 2990                 | 3275                      | 0571                             |       |                              | 210   | CXB1830-0000-<br>000N0US431Q |       |                              |
| 3100 K         | 90  | 92  | T2    | 3200                 | 3505                      | 3571                             |       |                              | 31Q   | CXB1830-0000-<br>000N0UT231Q |       |                              |
|                | 80  |     | U2    | 3680                 | 4031                      | 4152                             | L7B   | CXB1830-0000-<br>000N0HU2L7B |       |                              |       |                              |
|                |     |     | S2    | 2780                 | 3030                      |                                  |       |                              |       |                              |       | CXB1830-0000-<br>000N0US230U |
| 3000 K         | 90  | 92  | S4    | 2990                 | 3275                      | 3571                             |       |                              | 30Q   | CXB1830-0000-<br>000N0US430Q | 30U   | CXB1830-0000-<br>000N0US430U |
|                |     |     | T2    | 3200                 | 3505                      |                                  |       |                              |       | CXB1830-0000-<br>000N0UT230Q |       | CXB1830-0000-<br>000N0UT230U |
|                | 95  | 98  | R4    | 2600                 | 2848                      | 3098                             | L7C   | CXB1830-0000-<br>000N0ZR4L7C |       |                              |       |                              |

Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 18).
- CXB1830 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 bin restrictions specified by the order code.
- \* For 80 CRI minimum LEDs, CRI R9 minimum is 0 with a ±2 tolerance. For 90 CRI minimum LEDs, CRI R9 typical is 60.
- \*\* Flux values @ 25 °C are calculated and for reference only.



## **RELATIVE SPECTRAL POWER DISTRIBUTION, EASYWHITE®**

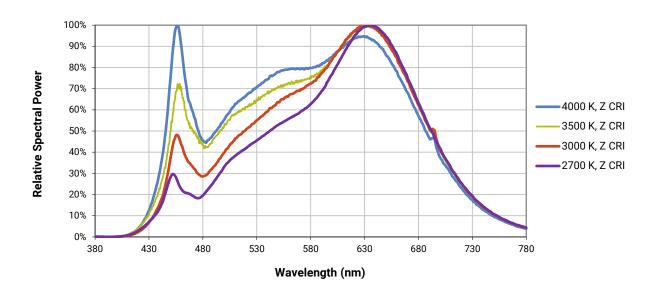


The following graph is the result of a series of pulsed measurements at 800 mA and  $T_J$  = 85 °C.

## **RELATIVE SPECTRAL POWER DISTRIBUTION, PREMIUM COLOR**

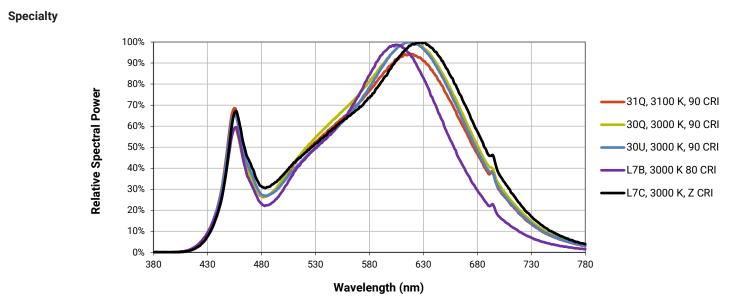
The following graphs are the result of a series of pulsed measurements at 800 mA and  $T_J$  = 85 °C.

Fidelity



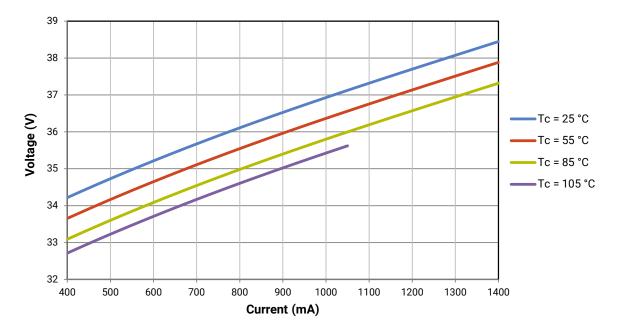


## **RELATIVE SPECTRAL POWER DISTRIBUTION, PREMIUM COLOR - CONTINUED**



## **ELECTRICAL CHARACTERISTICS**

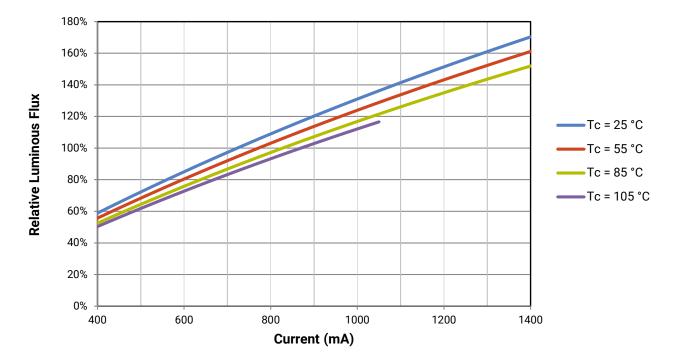
The following graph is the result of a series of steady-state measurements.



## **RELATIVE LUMINOUS FLUX**

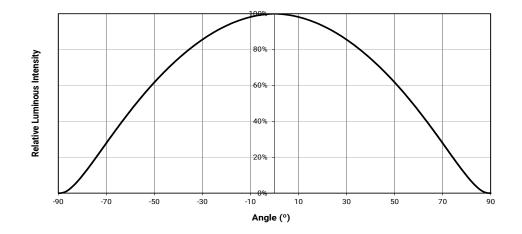
The relative luminous flux values provided below are the ratio of measurements of the CXB1830 LED at steady-state operation at the given conditions, divided by the flux measured during binning, which is a pulsed measurement at 800 mA at  $T_1 = 85$  °C.

For example, at steady-state operation of Tc = 25 °C,  $I_F$  = 900 mA, the relative luminous flux ratio is 120% in the chart below. A CXB1830 LED that measures 3200 lm during binning will deliver 3840 lm (3200 \* 1.2) at steady-state operation of Tc = 25 °C,  $I_F$  = 900 mA.





## **TYPICAL SPATIAL DISTRIBUTION**



# **PERFORMANCE GROUPS - BRIGHTNESS (I<sub>F</sub> = 800 mA, T<sub>J</sub> = 85 °C)**

| Group Code | Minimum Luminous Flux | Maximum Luminous Flux |  |  |
|------------|-----------------------|-----------------------|--|--|
| R4         | 2600                  | 2780                  |  |  |
| S2         | 2780                  | 2990                  |  |  |
| S4         | 2990                  | 3200                  |  |  |
| T2         | 3200                  | 3440                  |  |  |
| Τ4         | 3440                  | 3680                  |  |  |
| U2         | 3680                  | 3955                  |  |  |
| U4         | 3955                  | 4230                  |  |  |
| V2         | 4230                  | 4545                  |  |  |
| V4         | 4545                  | 4860                  |  |  |
| W2         | 4860                  | 5225                  |  |  |

XLamp CXB1830 LEDs are tested for luminous flux and placed into one of the following bins.

## EASYWHITE<sup>®</sup> PERFORMANCE GROUPS - CHROMATICITY (T<sub>1</sub> = 85 °C)

XLamp CXB1830 LEDs are tested for chromaticity and placed into one of the regions defined by the following bounding coordinates.

| EasyW | /hite Color Ter | nperatures – 2 | 2-Step |
|-------|-----------------|----------------|--------|
| Code  | сст             | x              | у      |
|       |                 | 0.3777         | 0.3739 |
| 40H   | 4000 K          | 0.3797         | 0.3816 |
| 40H   | 4000 K          | 0.3861         | 0.3855 |
|       |                 | 0.3838         | 0.3777 |
|       |                 | 0.4022         | 0.3858 |
| 35H   | 3500 K          | 0.4053         | 0.3942 |
| 300   | 3300 K          | 0.4125         | 0.3977 |
|       |                 | 0.4091         | 0.3891 |
|       |                 | 0.4287         | 0.3975 |
| 30H   | 3000 K          | 0.4328         | 0.4064 |
| 3011  | 3000 K          | 0.4390         | 0.4086 |
|       |                 | 0.4347         | 0.3996 |
|       |                 | 0.4524         | 0.4048 |
| 27H   | 2700 K          | 0.4574         | 0.4140 |
| 2711  | 2700 K          | 0.4633         | 0.4154 |
|       |                 | 0.4581         | 0.4062 |

|          | EasyWhite Color Temperatures – 3-Step Ellipse |        |         |            |            |                |  |  |  |  |  |  |
|----------|---|--------|---------|------------|------------|----------------|--|--|--|--|--|--|
|          | сст   | Center | r Point | Major Axis | Minor Axis | Rotation Angle |  |  |  |  |  |  |
| Bin Code | 661   | x      | у       | а          | b          | (°)            |  |  |  |  |  |  |
| 50G      | 5000 K  | 0.3447 | 0.3553  | 0.00840    | 0.00312    | 65.0           |  |  |  |  |  |  |
| 40G      | 4000 K  | 0.3818 | 0.3797  | 0.00939    | 0.00402    | 53.7           |  |  |  |  |  |  |
| 35G      | 3500 K  | 0.4073 | 0.3917  | 0.00927    | 0.00414    | 54.0           |  |  |  |  |  |  |
| 30G      | 3000 K  | 0.4338 | 0.4030  | 0.00834    | 0.00408    | 53.2           |  |  |  |  |  |  |
| 27G      | 2700 K  | 0.4577 | 0.4099  | 0.00834    | 0.00420    | 48.5           |  |  |  |  |  |  |
| 22G      | 2200 K  | 0.5066 | 0.4158  | 0.00980    | 0.00480    | 45.5           |  |  |  |  |  |  |

|           | EasyWhite Color Temperatures – 5-Step Ellipse |        |         |            |            |                       |  |  |  |  |  |  |
|-----------|---|--------|---------|------------|------------|-----------------------|--|--|--|--|--|--|
| Bin Code  |   | Center | r Point | Major Axis | Minor Axis | Rotation Angle<br>(°) |  |  |  |  |  |  |
| Bill Code | ССТ   | x      | у       | а          | b          |                       |  |  |  |  |  |  |
| 65E       | 6500 K  | 0.3123 | 0.3282  | 0.01110    | 0.00550    | 61.0                  |  |  |  |  |  |  |
| 57E       | 5700 K  | 0.3287 | 0.3417  | 0.01230    | 0.00600    | 72.0                  |  |  |  |  |  |  |
| 50E       | 5000 K  | 0.3447 | 0.3553  | 0.01400    | 0.00520    | 65.0                  |  |  |  |  |  |  |
| 40E       | 4000 K  | 0.3818 | 0.3797  | 0.01565    | 0.00670    | 53.7                  |  |  |  |  |  |  |

# PREMIUM COLOR PERFORMANCE GROUPS - CHROMATICITY (T<sub>J</sub> = 85 °C)

XLamp CXB1830 LEDs are tested for chromaticity and placed into one of the regions defined by the following bounding coordinates.

Fidelity

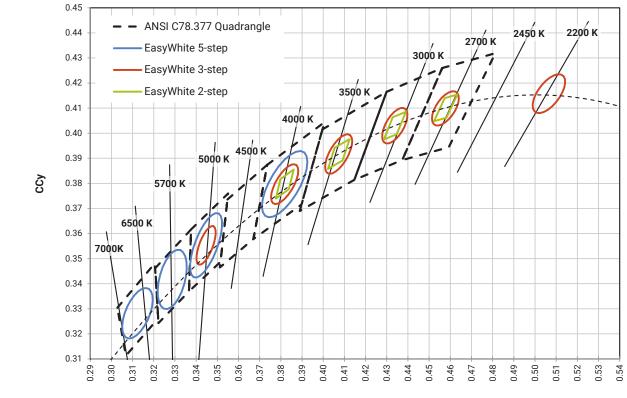
| EasyV | /hite Color Ter | nperatures – : | 2-Step |
|-------|-----------------|----------------|--------|
| Code  | сст             | x              | у      |
|       |                 | 0.3764         | 0.3711 |
| L5A   | 4000 K          | 0.3784         | 0.3787 |
| LJA   | 4000 K          | 0.3847         | 0.3826 |
|       |                 | 0.3825         | 0.3748 |
|       |                 | 0.4022         | 0.3858 |
| 35H   | 3500 K          | 0.4053         | 0.3942 |
| 300   | 3300 K          | 0.4125         | 0.3977 |
|       |                 | 0.4091         | 0.3891 |
|       |                 | 0.4287         | 0.3975 |
| 30H   | 3000 K          | 0.4328         | 0.4064 |
| 300   | 3000 K          | 0.4390         | 0.4086 |
|       |                 | 0.4347         | 0.3996 |
|       |                 | 0.4524         | 0.4048 |
| 27H   | 2700 K          | 0.4574         | 0.4140 |
| 2/П   | 2700 K          | 0.4633         | 0.4154 |
|       |                 | 0.4581         | 0.4062 |

Specialty

| EasyWhite Color Temperatures – 2-Step |        |        |        |  |  |  |  |
|---------------------------------------|--------|--------|--------|--|--|--|--|
| Code                                  | сст    | x      | у      |  |  |  |  |
| L7B                                   | 3000 K | 0.4263 | 0.3848 |  |  |  |  |
|                                       |        | 0.4296 | 0.3916 |  |  |  |  |
|                                       |        | 0.4361 | 0.3938 |  |  |  |  |
|                                       |        | 0.4326 | 0.3868 |  |  |  |  |
| L7C                                   | 3000 K | 0.4192 | 0.3754 |  |  |  |  |
|                                       |        | 0.4224 | 0.3823 |  |  |  |  |
|                                       |        | 0.4291 | 0.3847 |  |  |  |  |
|                                       |        | 0.4257 | 0.3777 |  |  |  |  |

| EasyWhite Color Temperatures – 3-Step Ellipse |        |              |        |            |            |                |  |  |
|---|--------|--------------|--------|------------|------------|----------------|--|--|
| Bin Code CCT                                  | CCT    | Center Point |        | Major Axis | Minor Axis | Rotation Angle |  |  |
|   | CCI    | x            | у      | а          | b          | (°)            |  |  |
| 31Q   | 3100 K | 0.4236       | 0.3888 | 0.00848    | 0.00455    | 50.3           |  |  |
| 30Q   | 3000 K | 0.4305       | 0.3935 | 0.00834    | 0.00408    | 53.2           |  |  |
| 30U   | 3000 K | 0.4274       | 0.3837 | 0.00834    | 0.00408    | 53.2           |  |  |





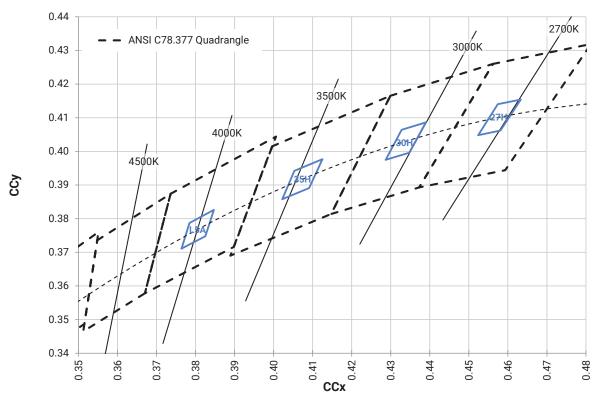
# EASYWHITE® BINS PLOTTED ON THE 1931 CIE COLOR SPACE (T<sub>J</sub> = 85 °C)

CCx



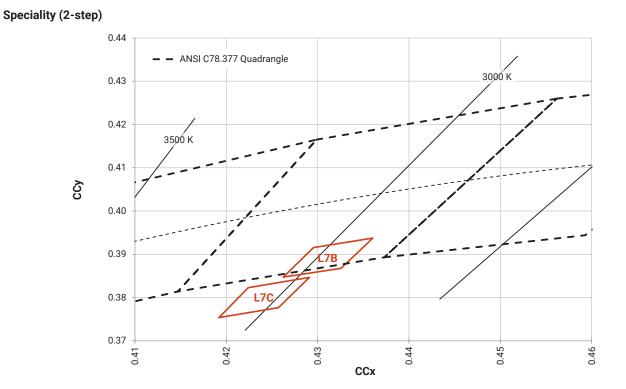
## PREMIUM COLOR BINS PLOTTED ON THE 1931 CIE COLOR SPACE (T<sub>1</sub> = 85 °C)

## Fidelity (2-step)

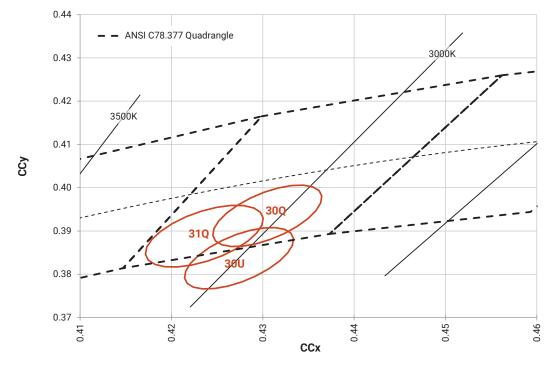




# PREMIUM COLOR BINS PLOTTED ON THE 1931 CIE COLOR SPACE (T<sub>J</sub> = 85 °C) - CONTINUED



Speciality (3-step)

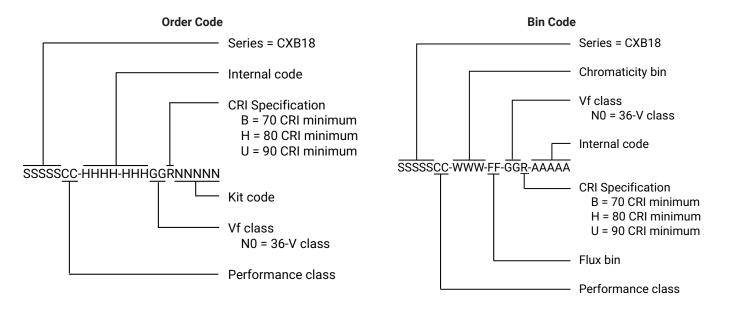




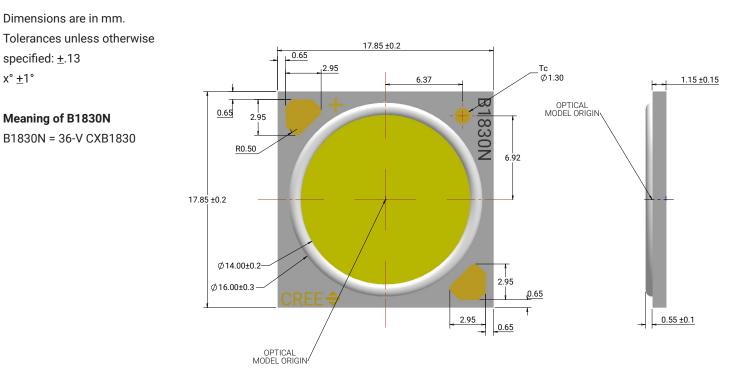


## **BIN AND ORDER CODE FORMATS**

Bin codes and order codes are configured as follows:



## **MECHANICAL DIMENSIONS**



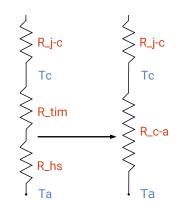
### **THERMAL DESIGN**

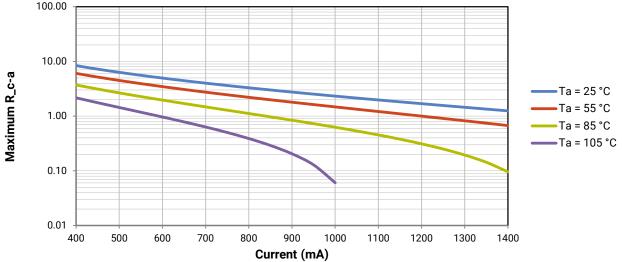
The CXB family of LED arrays can include over a hundred different LED die inside one package, and thus over a hundred different junction temperatures ( $T_j$ ). Cree LED has intentionally removed junction-temperature-based operating limits and replaced the commonplace maximum  $T_j$  calculations with maximum ratings based on forward current ( $I_F$ ) and case temperature (Tc). No additional calculations are required to ensure that the CXB LED is being operated within its designed limits. LES temperature measurement provides additional verification of good thermal design. Please refer to page 2 for the Operating Limit specifications.

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 XLamp LEDs, please refer to the Thermal Management application note. For CXB soldering recommendations and more information on thermal interface materials (TIM), LES temperature measurement, and connection methods, please refer to the XLamp CX Family LEDs soldering and handling document. The CX Family LED Design Guide provides basic information on the requirements to use XLamp CXB LEDs successfully in luminaire designs.

To keep the CXB1830 LED at or below the maximum rated Tc, 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).





### **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.

### Lumen Maintenance

Cree LED 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.

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

#### **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 Declaration. REACH banned substance information (REACH Article 67) is also available upon request.

#### **UL® Recognized Component**

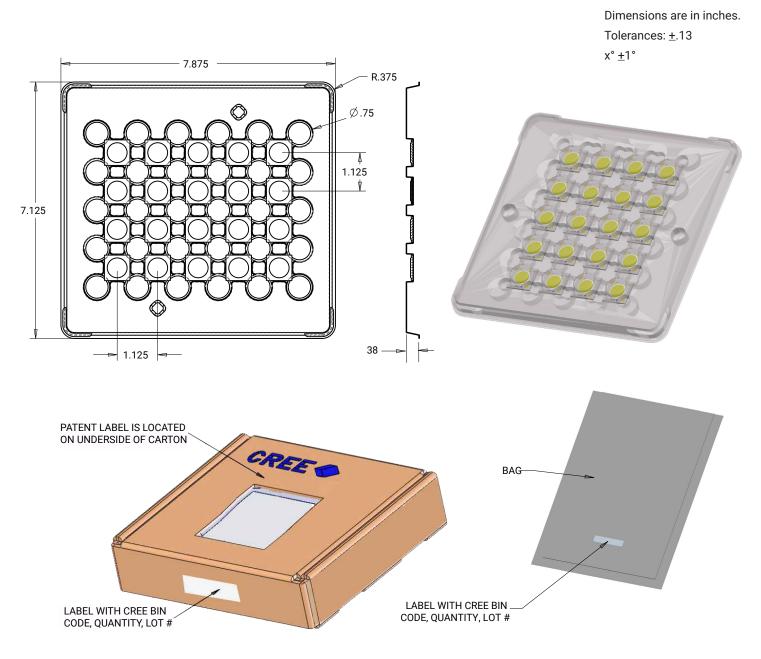
This product meets the requirements to be considered a UL Recognized Component with Level 4 enclosure consideration. The LED package or a portion thereof has been investigated as a fire and electrical enclosure per ANSI/UL 8750.

### **Vision Advisory**

WARNING: Do not look at an exposed lamp in operation. Eye injury can result. For more information about LEDs and eye safety, please rrefer to the LED Eye Safety application note.

## PACKAGING

CXB1830 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.



# **X-ON Electronics**

Largest Supplier of Electrical and Electronic Components

Click to view similar products for High Power LEDs - White category:

Click to view products by Cree manufacturer:

Other Similar products are found below :

LTW-K140SZR40 LTPL-P00DWS57 LTW-K140SZR30 LZP-D0WW00-0000 JK2835AWT-00-0000-000B0HL227E-BLK LTW-K140SZR57 LTW-K140SZR27 BXRC-35E10K0-D-73 MP-5050-6100-65-80 KW CSLPM2.CC-8L8M-4L8N KW CSLPM2.CC-8L8M-4O9Q KW DPLS32.SB-6H6J-E5P7-EG-Z264 L1V1-507003V500000 BXRE-27E1000-C-83 BXRE-27G0800-D-83 BXRE-27G2000-B-83 BXRE-50C2001-C-84 BXRH-35S1001-B-73 BXRH-30E0300-B-83 BXRH-30E1000-G-83 115780 LM1311D4W-12B4C12(Ra4)-DS ELJU(9)-K40M3-0LTHE-R4000 ELJU(9)-K40M3-0LTHE-R3000 LM1311D4W-12B2C24(Ra4)-DS KW2 CFLNM2.TK-D2D9-4L07M0-SC6B XEGAWT-H2-0000-000-00000UT122G XHP35B-H0-0000-0D0ZA230G XHP35B-H0-0000-0D0ZA440G XHP35B-H0-0000-0D0ZA227G XHP35B-H0-0000-0D0ZA235G CTM-9-4018-90-36-TWD6-F3-3 CVM-32-56-95-54-AC00-F2-2 SST-12-W65S-A120-H4652 CXM-4-24-90-18-AC40-F5-2 CXM-4-22-90-18-AC40-F5-2 LM002H384W-7B3C12(Ra5)(ANSI-2700K) LM002H384W-9B4C12(Ra2)(ANSI-2700K) LM002H384W-7B3C12(Ra7)(ANSI-2700K) LM002H384W-9B4C12(Ra2)(ANSI-3000K) LM002H384W-9B4C12(Ra4)-S(ANSI-3500K) LM002H384W-7B3C12(Ra7)(ANSI-4000K) LM002H384W-7B3C12(Ra2)-S(ANSI-3000K) LM002H384W-7B3C12(Ra5)(ANSI-4000K) LM002H384W-7B3C12(Ra7)(ANSI-4000K) HL-LM002H384W-5B2C5(Ra4)(ANSI-3000K) HL-LM002H384W-7B1C18(Ra4)(ANSI-6000K) LM002H384W-7B3C12(Ra5)(ANSI-3500K) HL-LM002H384W-5B2C5(Ra4)(ANSI-4000K) HL-LM002H384W-5B2C5(Ra4)(ANSI-6000K)