

# Cree® XLamp® CXA1507 LED



## PRODUCT DESCRIPTION

The XLamp® CXA1507 LED array expands Cree’s family of high-flux, multi-die arrays in a smaller, easy-to-use platform. With XLamp LED lighting-class reliability, the CXA1507’s small, uniform emitting surface enables both directional and non-directional lighting applications including lamp retrofit and luminaire designs. Available in 2-step, 3-step and 4-step color consistency, and featuring a 9-mm optical source, the CXA1507 brings new levels of flux and efficacy to this form factor.

The [CX Family LED Design Guide](#) provides basic information on the requirements to use the CXA1507 LED successfully in luminaire designs.

## FEATURES

- Available in 4-step, 3-step and 2-step EasyWhite® bins at 2700 K, 3000 K, 3500 K, 4000 K & 5000 K CCT and 4-step EasyWhite bins at 5700 K & 6500 K CCT
- Available in ANSI white bins at 4000 K, 5000 K, 5700 K & 6500 K CCT
- Available in 70-, 80-, 90- and 93-minimum CRI options
- Forward voltage options: 18-V class & 36-V class
- 85 °C binning and characterization
- Maximum drive current: 750 mA (18 V), 375 mA (36 V)
- 115° viewing angle, uniform chromaticity profile
- Top-side solder connections
- Thermocouple attach point
- NEMA SSL-3 2011 standard flux bins
- RoHS- and REACH-compliant
- UL® recognized component (E349212)

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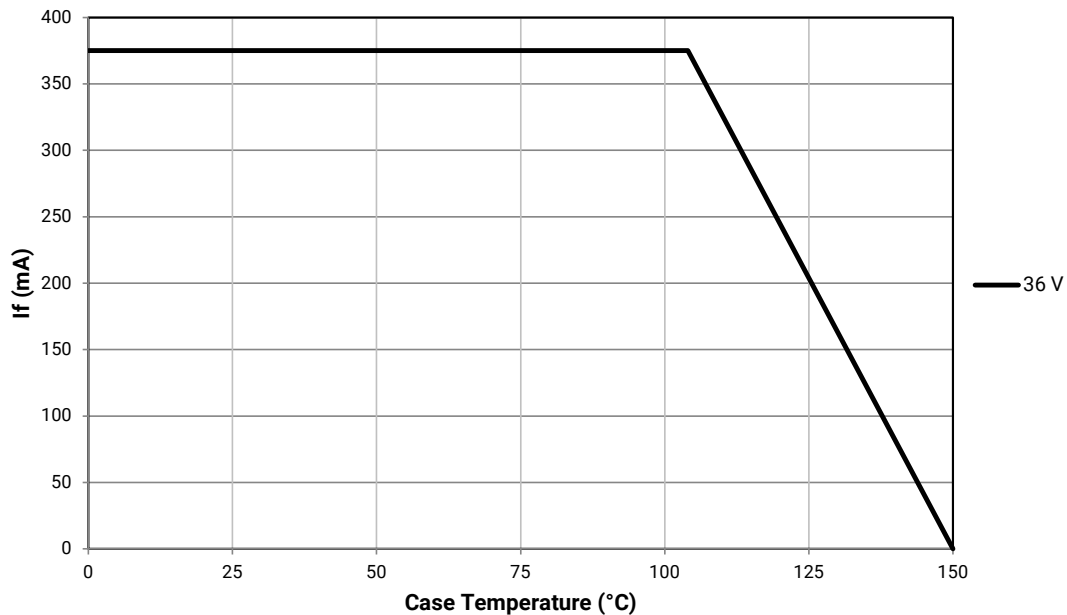
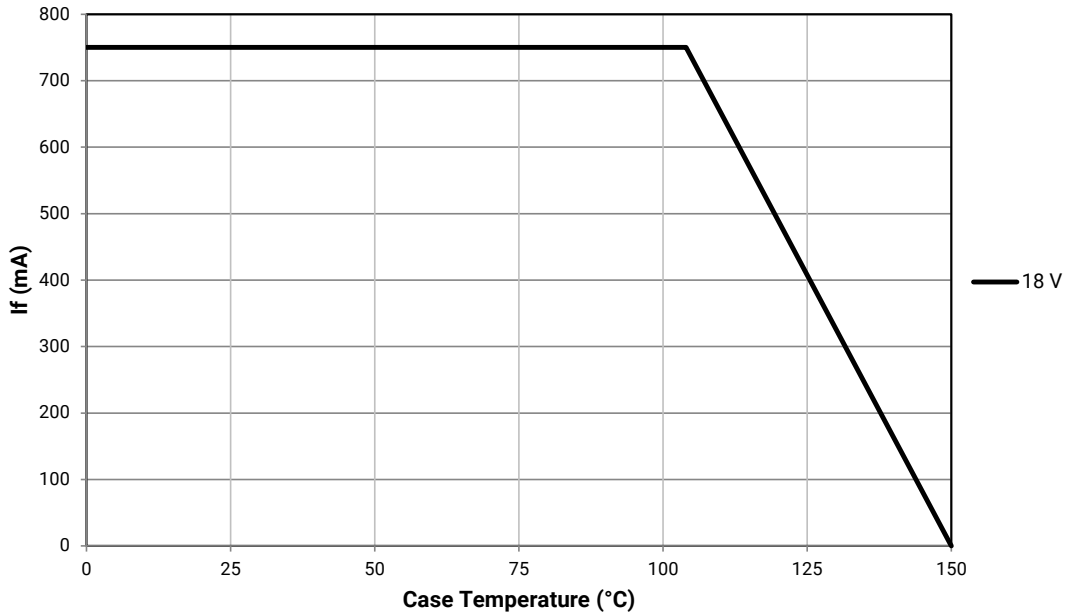
## CHARACTERISTICS

Characteristics	Unit	Minimum	Typical	Maximum
Viewing angle (FWHM)	degrees		115	
ESD withstand voltage (HBM per Mil-Std-883D)	V			8000
DC forward current (18 V)	mA			750*
DC forward current (36 V)	mA			375*
Reverse current 18 V, 36 V)	mA			0.1
Forward voltage (18 V, 400 mA, 85 °C)	V		17.5	
Forward voltage (18 V, 400 mA, 25 °C)	V			21
Forward voltage (36 V, 200 mA, 85 °C)	V		35	
Forward voltage (36 V, 200 mA, 25 °C)	V			42

\* Refer to the Operating Limits section.

**OPERATING LIMITS**

The maximum current rating of the CXA1507 is dependent on the case temperature ( $T_c$ ) when the LED has reached thermal equilibrium under steady-state operation. The graphs shown below assume 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 21 for the location of the  $T_c$  measurement point.



**FLUX CHARACTERISTICS, EASYWHITE® ORDER CODES AND BINS - 18 V ( $I_F = 400 \text{ mA}$ ,  $T_J = 85 \text{ °C}$ )**

The following table provides order codes for XLamp CXA1507 LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 21).

Nominal CCT	CRI		Minimum Luminous Flux			2-Step		3-Step		4-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Group	Order Code	Group	Order Code	Group	Order Code
6500 K	70	75	G4	840	938					65F	CXA1507-0000-000F00G465F
			H2	900	1005						CXA1507-0000-000F00H265F
			H4	970	1084						CXA1507-0000-000F00H465F
	80	---	G2	780	871					65F	CXA1507-0000-000F0HG265F
			G4	840	938						CXA1507-0000-000F0HG465F
			H2	900	1005						CXA1507-0000-000F0HH265F
5700 K	70	75	G4	840	938					57F	CXA1507-0000-000F00G457F
			H2	900	1005						CXA1507-0000-000F00H257F
			H4	970	1084						CXA1507-0000-000F00H457F
	80	---	G2	780	871					57F	CXA1507-0000-000F0HG257F
			G4	840	938						CXA1507-0000-000F0HG457F
			H2	900	1005						CXA1507-0000-000F0HH257F

- Notes**
- Cree maintains a tolerance of  $\pm 7\%$  on flux and power measurements,  $\pm 0.005$  on chromaticity (CCx, CCy) measurements and a tolerance of  $\pm 2$  on CRI measurements. See the Measurements section (page 24).
  - Cree XLamp CXA1507 LED order codes specify only a minimum flux bin and not a maximum. Cree 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.
  - \* Flux values @ 25 °C are calculated and for reference only.

**FLUX CHARACTERISTICS, EASYWHITE® ORDER CODES AND BINS - 18 V (I<sub>F</sub> = 400 mA, T<sub>J</sub> = 85 °C) - CONTINUED**

Nominal CCT	CRI		Minimum Luminous Flux			2-Step		3-Step		4-Step		
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Group	Order Code	Group	Order Code	Group	Order Code	
5000 K	70	75	G4	840	938	50H	CXA1507-0000-000F00G450H			50F	CXA1507-0000-000F00G450F	
			H2	900	1005		CXA1507-0000-000F00H250H				CXA1507-0000-000F00H250F	
			H4	970	1084		CXA1507-0000-000F00H450H				CXA1507-0000-000F00H450F	
	80	---	G2	780	871	50H	CXA1507-0000-000F0HG250H	50G		50F	CXA1507-0000-000F0HG250F	
			G4	840	938		CXA1507-0000-000F0HG450H				CXA1507-0000-000F0HG450G	CXA1507-0000-000F0HG450F
			H2	900	1005		CXA1507-0000-000F0HH250H				CXA1507-0000-000F0HH250G	CXA1507-0000-000F0HH250F
	90	95	F2	680	759	50H	CXA1507-0000-000F0UF250H	50G		50F	CXA1507-0000-000F0UF250F	
			F4	730	815		CXA1507-0000-000F0UF450H				CXA1507-0000-000F0UF450G	CXA1507-0000-000F0UF450F
			G2	780	871		CXA1507-0000-000F0UG250H				CXA1507-0000-000F0UG250G	CXA1507-0000-000F0UG250F
4000 K	70	75	G4	840	938	40H	CXA1507-0000-000F00G440H			40F	CXA1507-0000-000F00G440F	
			H2	900	1005		CXA1507-0000-000F00H240H				CXA1507-0000-000F00H240F	
			H4	970	1084		CXA1507-0000-000F00H440H				CXA1507-0000-000F00H440F	
	80	---	G2	780	871	40H	CXA1507-0000-000F0HG240H	40G		40F	CXA1507-0000-000F0G240F	
			G4	840	938		CXA1507-0000-000F0HG440H				CXA1507-0000-000F0HG440G	CXA1507-0000-000F0HG440F
			H2	900	1005		CXA1507-0000-000F0HH240H				CXA1507-0000-000F0HH240G	CXA1507-0000-000F0HH240F
	90	95	E4	635	709	40H	CXA1507-0000-000F0UE440H	40G		40F	CXA1507-0000-000F0UE440F	
			F2	680	759		CXA1507-0000-000F0UF240H				CXA1507-0000-000F0UF240G	CXA1507-0000-000F0UF240F
			F4	730	815		CXA1507-0000-000F0UF440H				CXA1507-0000-000F0UF440G	CXA1507-0000-000F0UF440F

- Notes**
- Cree 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 24).
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  - \* Flux values @ 25 °C are calculated and for reference only.

**FLUX CHARACTERISTICS, EASYWHITE® ORDER CODES AND BINS - 18 V (I<sub>F</sub> = 400 mA, T<sub>J</sub> = 85 °C) - CONTINUED**

Nominal CCT	CRI		Minimum Luminous Flux			2-Step		3-Step		4-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Group	Order Code	Group	Order Code	Group	Order Code
3500 K	80	---	G2	780	871	35H	CXA1507-0000-000F00G235H	35G	CXA1507-0000-000F00G435G	35F	CXA1507-0000-000F00G235F
			G4	840	938		CXA1507-0000-000F00G435H				CXA1507-0000-000F00G435F
			H2	900	1005		CXA1507-0000-000F00H235H				CXA1507-0000-000F00H235F
	93	95	E2	590	659	35H	CXA1507-0000-000F0YE235H	35G	CXA1507-0000-000F0YE435G	35F	CXA1507-0000-000F0YE235F
			E4	635	709		CXA1507-0000-000F0YE435H				CXA1507-0000-000F0YE435F
			F2	680	759		CXA1507-0000-000F0YF235H				CXA1507-0000-000F0YF235F
3000 K	80	---	F4	730	815	30H	CXA1507-0000-000F00F430H	30G	CXA1507-0000-000F00G230G	30F	CXA1507-0000-000F00F430F
			G2	780	871		CXA1507-0000-000F00G230H				CXA1507-0000-000F00G230F
			G4	840	938		CXA1507-0000-000F00G430H				CXA1507-0000-000F00G430F
	93	95	D4	550	614	30H	CXA1507-0000-000F0YD430H	30G	CXA1507-0000-000F0YE230G	30F	CXA1507-0000-000F0YD430F
			E2	590	659		CXA1507-0000-000F0YE230H				CXA1507-0000-000F0YE230F
			E4	635	709		CXA1507-0000-000F0YE430H				CXA1507-0000-000F0YE430F
2700 K	80	---	F4	730	815	27H	CXA1507-0000-000F00F427H	27G	CXA1507-0000-000F00G227G	27F	CXA1507-0000-000F00F427F
			G2	780	871		CXA1507-0000-000F00G227H				CXA1507-0000-000F00G227F
			G4	840	938		CXA1507-0000-000F00G427H				CXA1507-0000-000F00G427F
	93	95	D2	510	569	27H	CXA1507-0000-000F0YD227H	27G	CXA1507-0000-000F0YD427G	27F	CXA1507-0000-000F0YD227F
			D4	550	614		CXA1507-0000-000F0YD427H				CXA1507-0000-000F0YD427F
			E2	590	659		CXA1507-0000-000F0YE227H				CXA1507-0000-000F0YE227F

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- Cree 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 24).
  - Cree XLamp CXA1507 LED order codes specify only a minimum flux bin and not a maximum. Cree 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.
  - \* Flux values @ 25 °C are calculated and for reference only.

**FLUX CHARACTERISTICS, ANSI WHITE ORDER CODES AND BINS - 18 V ( $I_F = 400 \text{ mA}$ ,  $T_J = 85 \text{ °C}$ )**

The following table provides order codes for XLamp CXA1507 LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 21).

Nominal CCT	CRI		Minimum Luminous Flux			Chromaticity Regions	Order Code
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*		
6500 K	70	75	G4	840	938	1A0, 1B0, 1C0, 1D0	CXA1507-0000-000F00G40E1
			H2	900	1005		CXA1507-0000-000F00H20E1
			H4	970	1084		CXA1507-0000-000F00H40E1
	80	---	G2	780	871	1A0, 1B0, 1C0, 1D0	CXA1507-0000-000F0HG20E1
			G4	840	938		CXA1507-0000-000F0HG40E1
			H2	900	1005		CXA1507-0000-000F0HH20E1
5700 K	70	75	G4	840	938	2A0, 2B0, 2C0, 2D0	CXA1507-0000-000F00G40E2
			H2	900	1005		CXA1507-0000-000F00H20E2
			H4	970	1084		CXA1507-0000-000F00H40E2
	80	---	G2	780	871	2A0, 2B0, 2C0, 2D00	CXA1507-0000-000F0HG20E2
			G4	840	938		CXA1507-0000-000F0HG40E2
			H2	900	1005		CXA1507-0000-000F0HH20E2
5000 K	70	75	G4	840	938	3A0, 3B0, 3C0, 3D0	CXA1507-0000-000F00G40E3
			H2	900	1005		CXA1507-0000-000F00H20E3
			H4	970	1084		CXA1507-0000-000F00H40E3
	80	---	G2	780	871	3A0, 3B0, 3C0, 3D0	CXA1507-0000-000F0HG20E3
			G4	840	938		CXA1507-0000-000F0HG40E3
			H2	900	1005		CXA1507-0000-000F0HH20E3
4000 K	70	75	G4	840	938	5A0, 5B0, 5C0, 5D0	CXA1507-0000-000F00G40E5
			H2	900	1005		CXA1507-0000-000F00H20E5
			H4	970	1084		CXA1507-0000-000F00H40E5

**Notes**

- Cree maintains a tolerance of  $\pm 7\%$  on flux and power measurements,  $\pm 0.005$  on chromaticity (CCx, CCy) measurements and a tolerance of  $\pm 2$  on CRI measurements. See the Measurements section (page 24).
- Cree XLamp CXA1507 LED order codes specify only a minimum flux bin and not a maximum. Cree 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.
- \* Flux values @ 25 °C are calculated and for reference only.

**FLUX CHARACTERISTICS, EASYWHITE® ORDER CODES AND BINS - 36 V (I<sub>F</sub> = 200 mA, T<sub>J</sub> = 85 °C)**

The following table provides order codes for XLamp CXA1507 LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 21).

Nominal CCT	CRI		Minimum Luminous Flux			2-Step		3-Step		4-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Group	Order Code	Group	Order Code	Group	Order Code
6500 K	70	75	G4	840	938					65F	CXA1507-0000-000N00G465F
			H2	900	1005						CXA1507-0000-000N00H265F
			H4	970	1084						CXA1507-0000-000N00H465F
	80	---	G2	780	871					65F	CXA1507-0000-000N0HG265F
			G4	840	938						CXA1507-0000-000N0HG465F
			H2	900	1005						CXA1507-0000-000N0HH265F
5700 K	70	75	G4	840	938					57F	CXA1507-0000-000N00G457F
			H2	900	1005						CXA1507-0000-000N00H257F
			H4	970	1084						CXA1507-0000-000N00H457F
	80	---	G2	780	871					57F	CXA1507-0000-000N0HG257F
			G4	840	938						CXA1507-0000-000N0HG457F
			H2	900	1005						CXA1507-0000-000N0HH257F

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



**FLUX CHARACTERISTICS, EASYWHITE® ORDER CODES AND BINS - 36 V (I<sub>F</sub> = 200 mA, T<sub>J</sub> = 85 °C) - CONTINUED**

Nominal CCT	CRI		Minimum Luminous Flux			2-Step		3-Step		4-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Group	Order Code	Group	Order Code	Group	Order Code
5000 K	70	75	G4	840	938	50H	CXA1507-0000-000N00G450H			50F	CXA1507-0000-000N00G450F
			H2	900	1005		CXA1507-0000-000N00H250H				CXA1507-0000-000N00H250F
			H4	970	1084		CXA1507-0000-000N00H450H				CXA1507-0000-000N00H450F
	80	---	G2	780	871	50H	CXA1507-0000-000N0HG250H	50G		50F	CXA1507-0000-000N0HG250F
			G4	840	938		CXA1507-0000-000N0HG450H				CXA1507-0000-000N0HG450F
			H2	900	1005		CXA1507-0000-000N0HH250H				CXA1507-0000-000N0HH250F
	90	95	F2	680	759	50H	CXA1507-0000-000N0UF250H	50G		50F	CXA1507-0000-000N0UF250F
			F4	730	815		CXA1507-0000-000N0UF450H				CXA1507-0000-000N0UF450F
			G2	780	871		CXA1507-0000-000N0UG250H				CXA1507-0000-000N0UG250F
4000 K	70	75	G4	840	938	40H	CXA1507-0000-000N00G440H			40F	CXA1507-0000-000N00G440F
			H2	900	1005		CXA1507-0000-000N00H240H				CXA1507-0000-000N00H240F
			H4	970	1084		CXA1507-0000-000N00H440H				CXA1507-0000-000N00H440F
	80	---	G2	780	871	40H	CXA1507-0000-000N0HG240H	40G		40F	CXA1507-0000-000N0G240F
			G4	840	938		CXA1507-0000-000N0HG440H				CXA1507-0000-000N0HG440F
			H2	900	1005		CXA1507-0000-000N0HH240H				CXA1507-0000-000N0HH240F
	90	95	E4	635	709	40H	CXA1507-0000-000N0UE440H	40G		40F	CXA1507-0000-000N0UE440F
			F2	680	759		CXA1507-0000-000N0UF240H				CXA1507-0000-000N0UF240F
			F4	730	815		CXA1507-0000-000N0UF440H				CXA1507-0000-000N0UF440F

- Notes**
- Cree 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 24).
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  - \* Flux values @ 25 °C are calculated and for reference only.

**FLUX CHARACTERISTICS, EASYWHITE® ORDER CODES AND BINS - 36 V (I<sub>F</sub> = 200 mA, T<sub>J</sub> = 85 °C) - CONTINUED**

Nominal CCT	CRI		Minimum Luminous Flux			2-Step		3-Step		4-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Group	Order Code	Group	Order Code	Group	Order Code
3500 K	80	---	G2	780	871	35H	CXA1507-0000-000N00G235H	35G	CXA1507-0000-000N00G435G	35F	CXA1507-0000-000N00G235F
			G4	840	938		CXA1507-0000-000N00G435H				CXA1507-0000-000N00G435F
			H2	900	1005		CXA1507-0000-000N00H235H				CXA1507-0000-000N00H235F
	93	95	E2	590	659	35H	CXA1507-0000-000N0YE235H	35G	CXA1507-0000-000N0YE435G	35F	CXA1507-0000-000N0YE235F
			E4	635	709		CXA1507-0000-000N0YE435H				CXA1507-0000-000N0YE435F
			F2	680	759		CXA1507-0000-000N0YF235H				CXA1507-0000-000N0YF235F
3000 K	80	---	F4	730	815	30H	CXA1507-0000-000N00F430H	30G	CXA1507-0000-000N00G230G	30F	CXA1507-0000-000N00F430F
			G2	780	871		CXA1507-0000-000N00G230H				CXA1507-0000-000N00G230F
			G4	840	938		CXA1507-0000-000N00G430H				CXA1507-0000-000N00G430F
	93	95	D4	550	614	30H	CXA1507-0000-000N0YD430H	30G	CXA1507-0000-000N0YE230G	30F	CXA1507-0000-000N0YD430F
			E2	590	659		CXA1507-0000-000N0YE230H				CXA1507-0000-000N0YE230F
			E4	635	709		CXA1507-0000-000N0YE430H				CXA1507-0000-000N0YE430F
2700 K	80	---	F4	730	815	27H	CXA1507-0000-000N00F427H	27G	CXA1507-0000-000N00G227G	27F	CXA1507-0000-000N00F427F
			G2	780	871		CXA1507-0000-000N00G227H				CXA1507-0000-000N00G227F
			G4	840	938		CXA1507-0000-000N00G427H				CXA1507-0000-000N00G427F
	93	95	D2	510	569	27H	CXA1507-0000-000N0YD227H	27G	CXA1507-0000-000N0YD427G	27F	CXA1507-0000-000N0YD227F
			D4	550	614		CXA1507-0000-000N0YD427H				CXA1507-0000-000N0YD427F
			E2	590	659		CXA1507-0000-000N0YE227H				CXA1507-0000-000N0YE227F

- Notes
- Cree 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 24).
  - Cree XLamp CXA1507 LED order codes specify only a minimum flux bin and not a maximum. Cree 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.
  - \* Flux values @ 25 °C are calculated and for reference only.

**FLUX CHARACTERISTICS, ANSI WHITE ORDER CODES AND BINS - 36 V ( $I_F = 200 \text{ mA}$ ,  $T_J = 85 \text{ °C}$ )**

The following table provides order codes for XLamp CXA1507 LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 21).

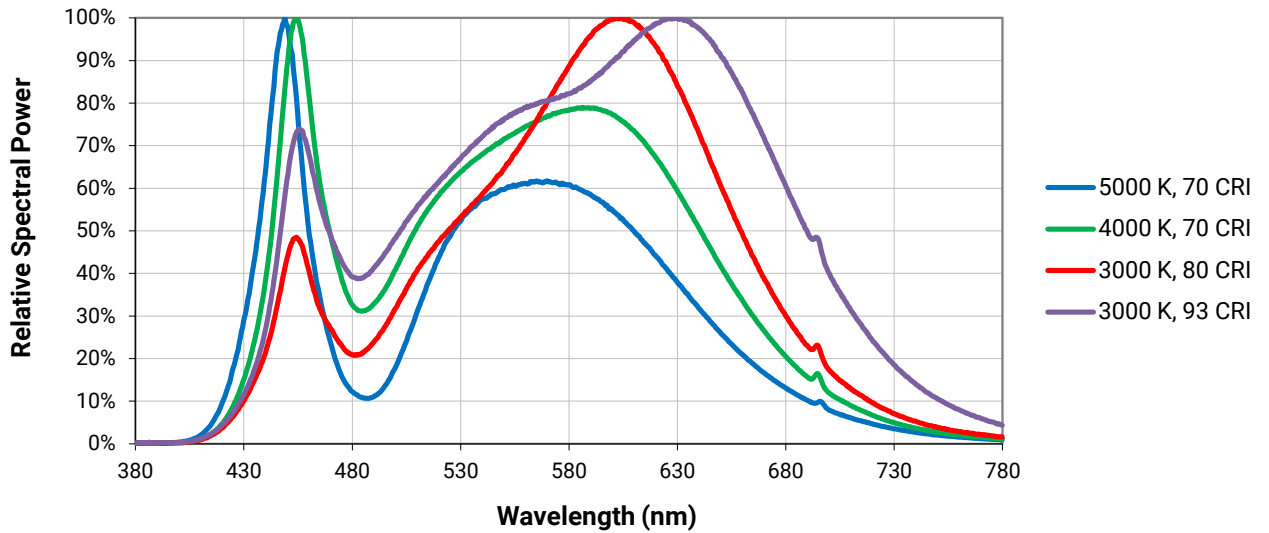
Nominal CCT	CRI		Minimum Luminous Flux			Chromaticity Regions	Order Code
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*		
6500 K	70	75	G4	840	938	1A0, 1B0, 1C0, 1D0	CXA1507-0000-000N00G40E1
			H2	900	1005		CXA1507-0000-000N00H20E1
			H4	970	1084		CXA1507-0000-000N00H40E1
	80	---	G2	780	871	1A0, 1B0, 1C0, 1D0	CXA1507-0000-000N0HG20E1
			G4	840	938		CXA1507-0000-000N0HG40E1
			H2	900	1005		CXA1507-0000-000N0HH20E1
5700 K	70	75	G4	840	938	2A0, 2B0, 2C0, 2D0	CXA1507-0000-000N00G40E2
			H2	900	1005		CXA1507-0000-000N00H20E2
			H4	970	1084		CXA1507-0000-000N00H40E2
	80	---	G2	780	871	2A0, 2B0, 2C0, 2D00	CXA1507-0000-000N0HG20E2
			G4	840	938		CXA1507-0000-000N0HG40E2
			H2	900	1005		CXA1507-0000-000N0HH20E2
5000 K	70	75	G4	840	938	3A0, 3B0, 3C0, 3D0	CXA1507-0000-000N00G40E3
			H2	900	1005		CXA1507-0000-000N00H20E3
			H4	970	1084		CXA1507-0000-000N00H40E3
	80	---	G2	780	871	3A0, 3B0, 3C0, 3D0	CXA1507-0000-000N0HG20E3
			G4	840	938		CXA1507-0000-000N0HG40E3
			H2	900	1005		CXA1507-0000-000N0HH20E3
4000 K	70	75	G4	840	938	5A0, 5B0, 5C0, 5D0	CXA1507-0000-000N00G40E5
			H2	900	1005		CXA1507-0000-000N00H20E5
			H4	970	1084		CXA1507-0000-000N00H40E5

**Notes**

- Cree maintains a tolerance of  $\pm 7\%$  on flux and power measurements,  $\pm 0.005$  on chromaticity (CCx, CCy) measurements and a tolerance of  $\pm 2$  on CRI measurements. See the Measurements section (page 24).
- Cree XLamp CXA1507 LED order codes specify only a minimum flux bin and not a maximum. Cree 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.
- \* Flux values @ 25 °C are calculated and for reference only.

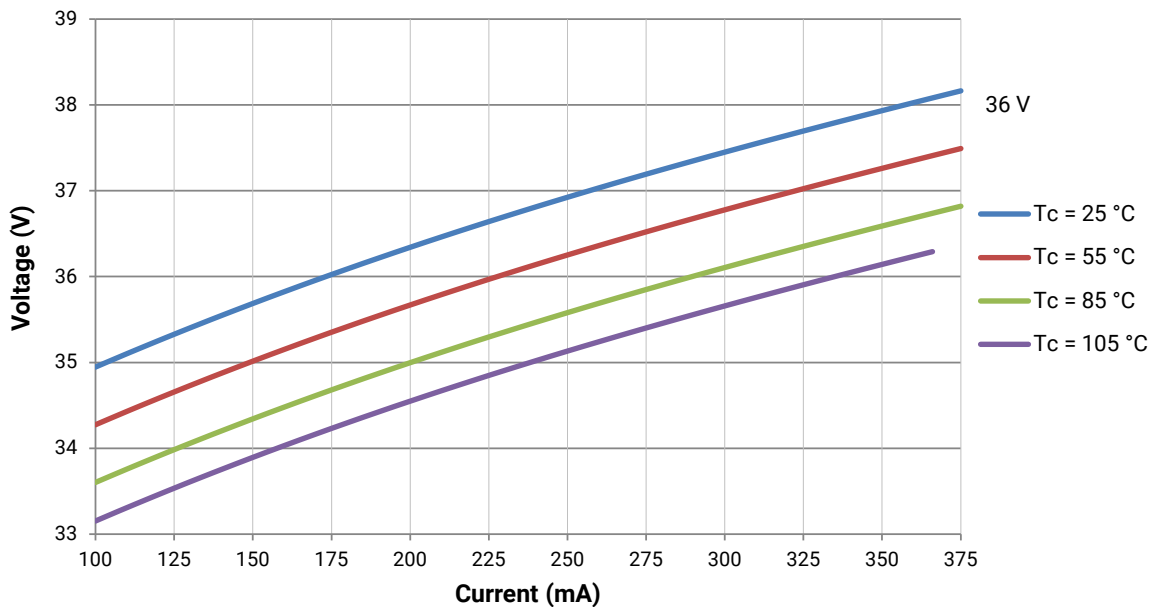
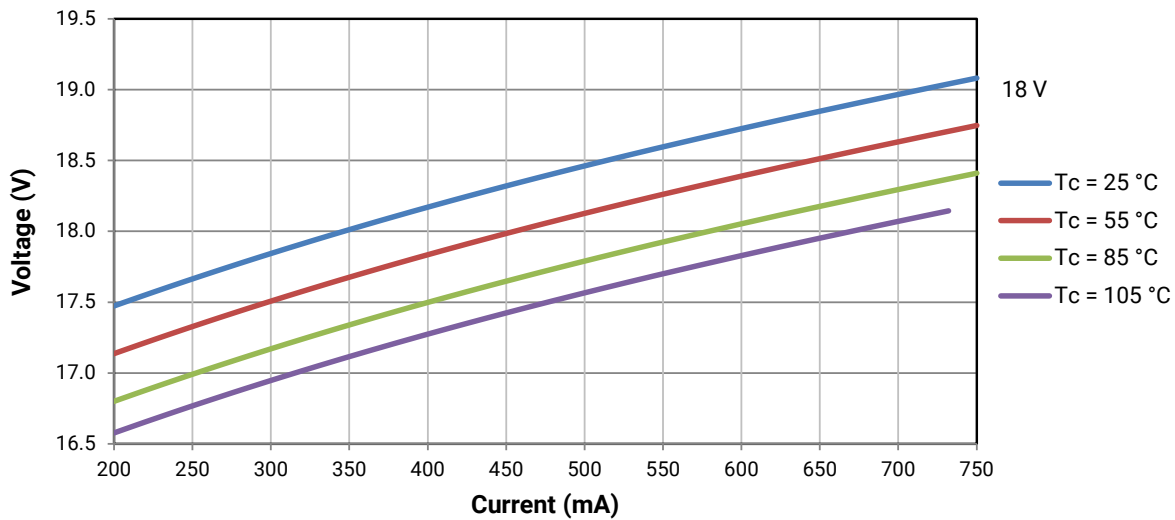
**RELATIVE SPECTRAL POWER DISTRIBUTION**

The following graph is the result of a series of pulsed measurements at 400 mA for the 18-V CXA1507 LED and 200 mA for the 36-V CXA1507 LED and  $T_j = 85\text{ }^\circ\text{C}$ .



**ELECTRICAL CHARACTERISTICS**

The following graphs are the result of a series of steady-state measurements.

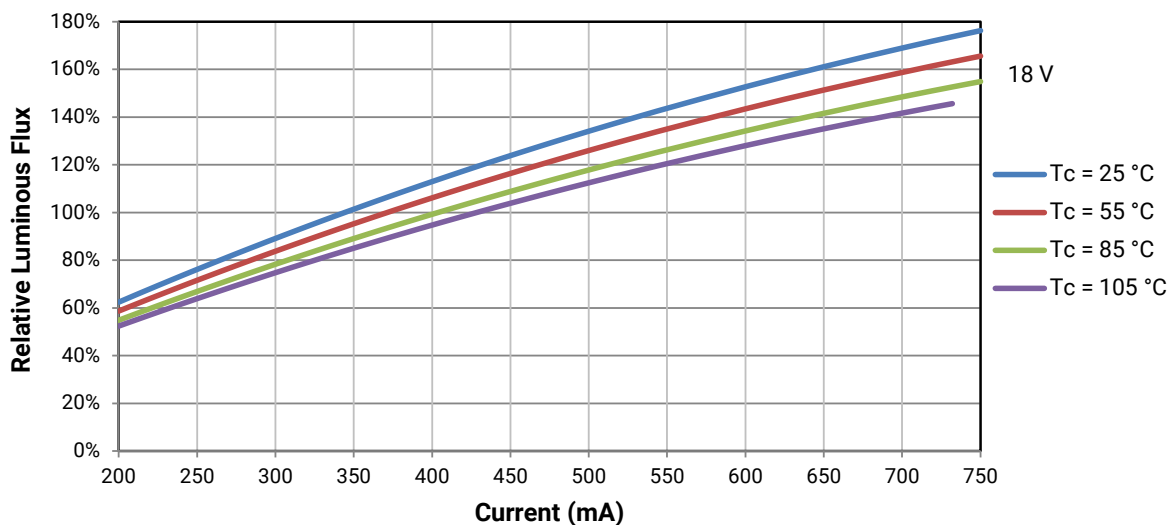


**RELATIVE LUMINOUS FLUX**

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

- Measurements of CXA1507 at steady-state operation at the given conditions, divided by
- Flux measured during binning, which is a pulsed measurement at 400 mA at  $T_j = 85\text{ }^\circ\text{C}$  for the 18-V CXA1507 LED.

Using the 18-V CXA1507 LED as an example, at steady-state operation of  $T_c = 25\text{ }^\circ\text{C}$ ,  $I_f = 650\text{ mA}$ , the relative luminous flux ratio is 160% in the chart below. A CXA1507 LED that measures 710 lm during binning will deliver 1136 lm ( $710 \times 1.6$ ) at steady-state operation of  $T_c = 25\text{ }^\circ\text{C}$ ,  $I_f = 650\text{ mA}$ .

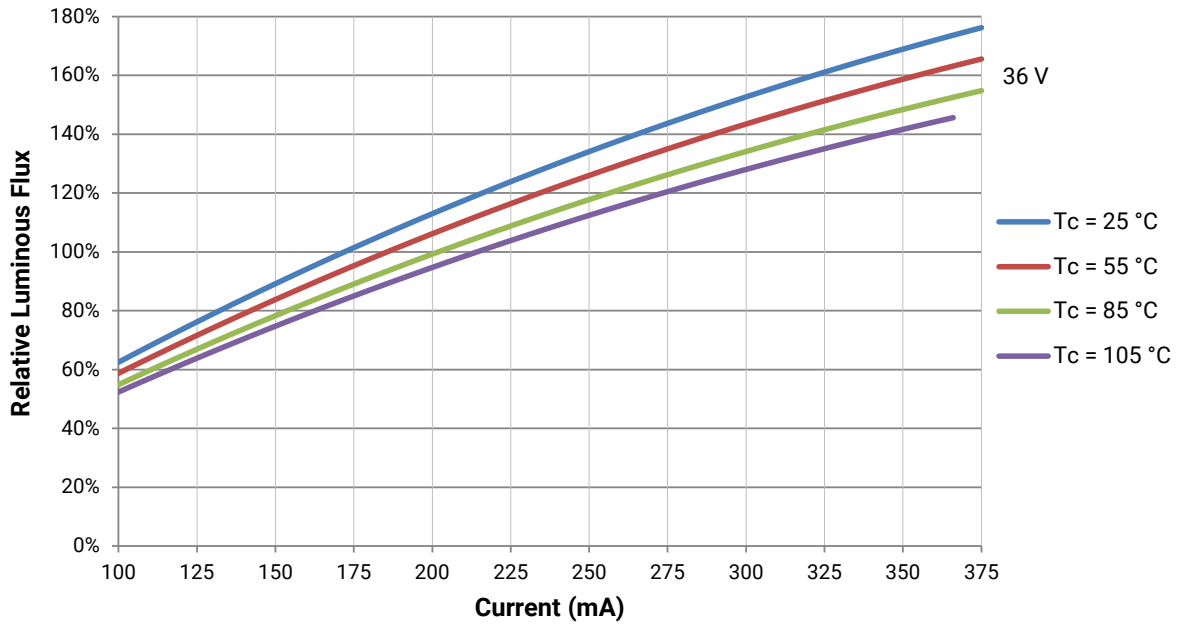


RELATIVE LUMINOUS FLUX - CONTINUED

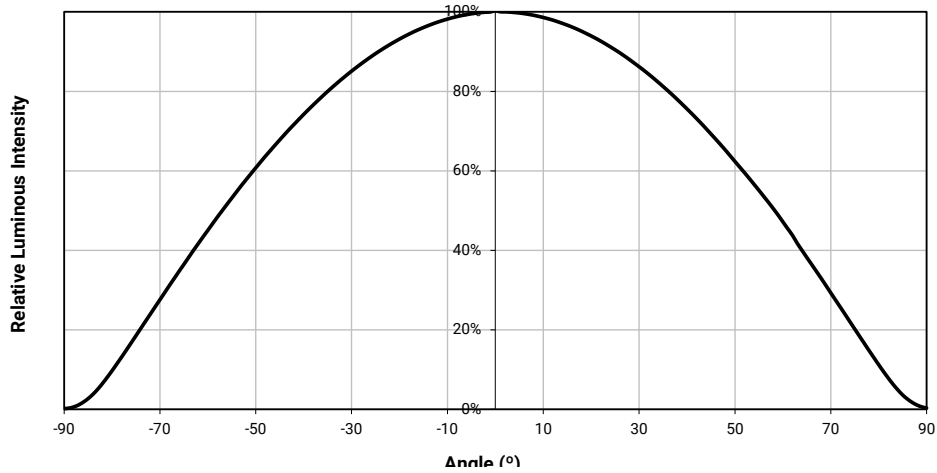
The relative luminous flux values provided below are the ratio of:

- Measurements of CXA1507 at steady-state operation at the given conditions, divided by
- Flux measured during binning, which is a pulsed measurement at 200 mA at  $T_j = 85\text{ }^\circ\text{C}$  for the 36-V CXA1507 LED.

Using the 36-V CXA1507 LED as an example, at steady-state operation of  $T_c = 25\text{ }^\circ\text{C}$ ,  $I_f = 325\text{ mA}$ , the relative luminous flux ratio is 150% in the chart below. A CXA1507 LED that measures 710 lm during binning will deliver 1136 lm ( $710 \times 1.6$ ) at steady-state operation of  $T_c = 25\text{ }^\circ\text{C}$ ,  $I_f = 325\text{ mA}$ .



**TYPICAL SPATIAL DISTRIBUTION**



**PERFORMANCE GROUPS - BRIGHTNESS (18 V, I<sub>F</sub> = 400 mA; 36 V, I<sub>F</sub> = 200 mA, T<sub>J</sub> = 85 °C)**

XLamp CXA1507 LEDs are tested for luminous flux and placed into one of the following bins.

Group Code	Min. Luminous Flux	Max. Luminous Flux
D2	510	550
D4	550	590
E2	590	635
E4	635	680
F2	680	730
F4	730	780
G2	780	840
G4	840	900
H2	900	970
H4	970	1040
J2	1040	1120



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

XLamp CXA1507 LEDs are tested for chromaticity and placed into one of the regions defined by the following bounding coordinates.

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

EasyWhite Color Temperatures – 3-Step Ellipse						
Bin Code	CCT	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
		x	y	a	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

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

EasyWhite Color Temperatures – 4-Step			
Code	CCT	x	y
65F	6500 K	0.3097	0.3196
		0.3079	0.3297
		0.3164	0.3382
		0.3176	0.3275
57F	5700 K	0.3253	0.3325
		0.3249	0.3439
		0.3331	0.3514
		0.3330	0.3393
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

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

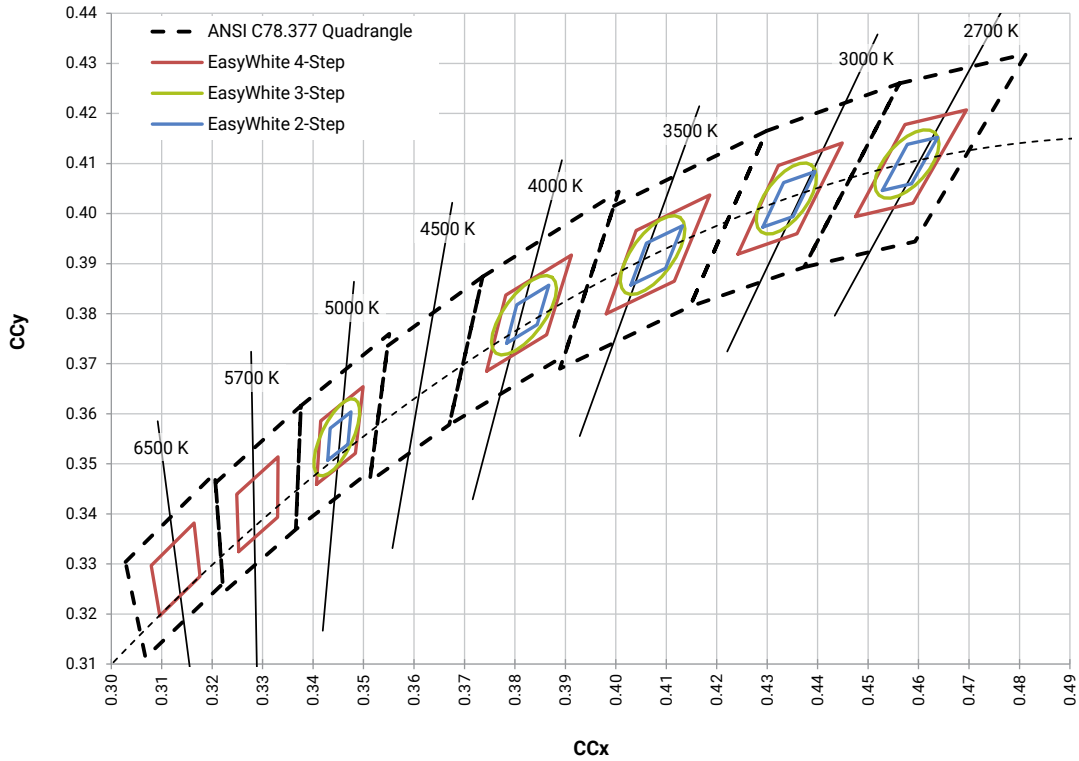
ANSI White Bins				
Code	CCT	Bin Code	x	y
0E1	6500 K	1A0	0.3048	0.3207
			0.3130	0.3290
			0.3144	0.3186
			0.3068	0.3113
		1B0	0.3028	0.3304
			0.3115	0.3391
			0.3130	0.3290
			0.3048	0.3207
		1C0	0.3115	0.3391
			0.3205	0.3481
			0.3213	0.3373
			0.3130	0.3290
		1D0	0.3130	0.3290
			0.3213	0.3373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

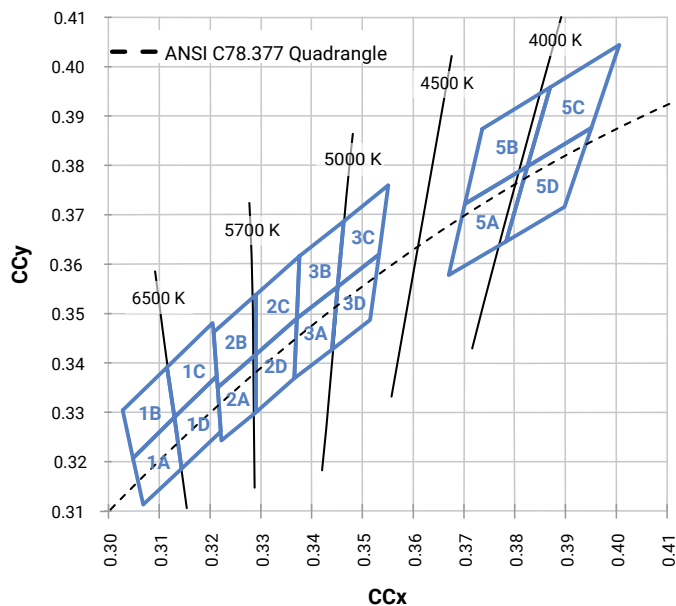
ANSI White Bins				
Code	CCT	Bin Code	x	y
0E3	5000 K	3A0	.3371	.3490
			.3451	.3554
			.3440	.3427
			.3366	.3369
		3B0	.3376	.3616
			.3463	.3687
			.3451	.3554
			.3371	.3490
		3C0	.3463	.3687
			.3551	.3760
			.3533	.3620
			.3451	.3554
		3D0	.3451	.3554
			.3533	.3620
			.3515	.3487
			.3440	.3427

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

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

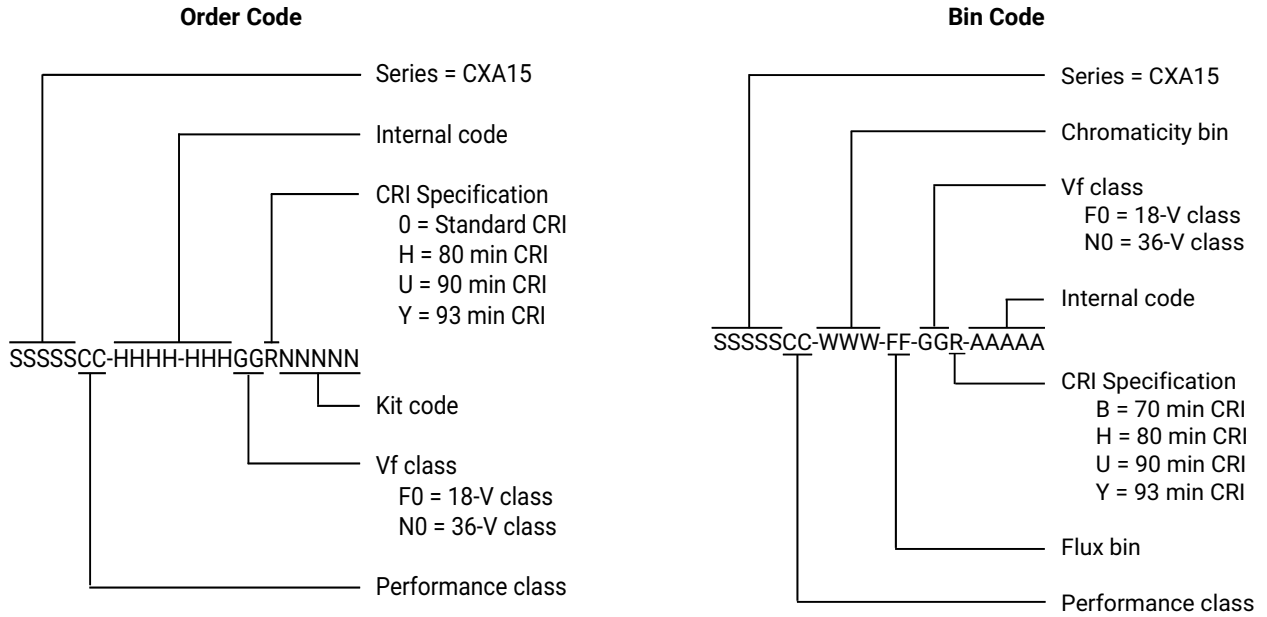


**CREE ANSI WHITE BINS PLOTTED ON THE 1931 CIE COLOR SPACE ( $T_j = 85\text{ }^\circ\text{C}$ )**



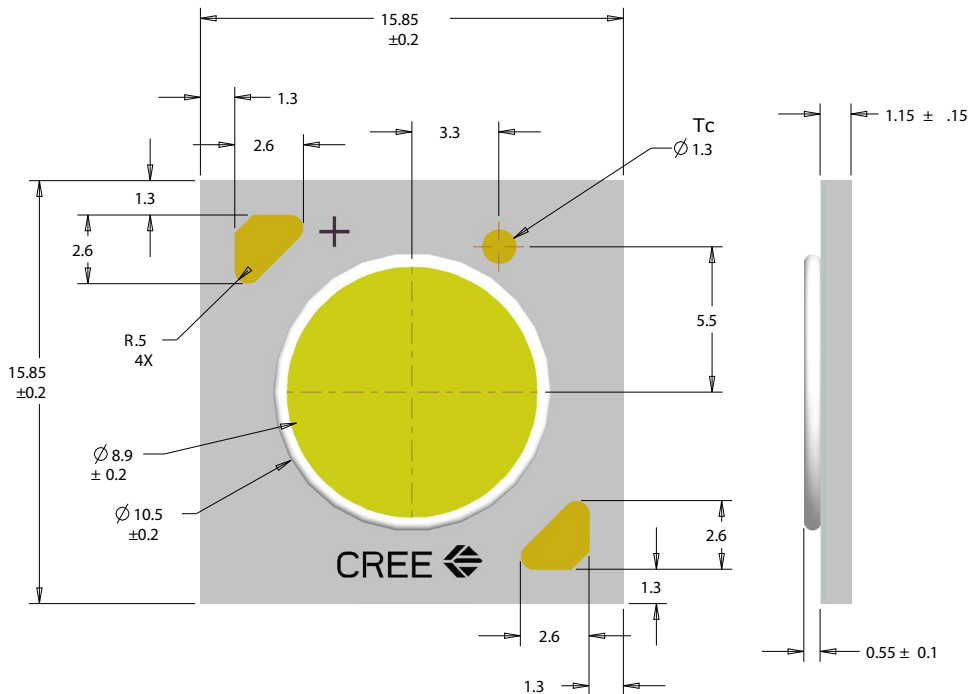
**BIN AND ORDER CODE FORMATS**

Bin codes and order codes are configured as follows:



**MECHANICAL DIMENSIONS**

Dimensions are in mm.  
Tolerances unless otherwise specified:  $\pm 0.13$   
 $\alpha^\circ \pm 1^\circ$



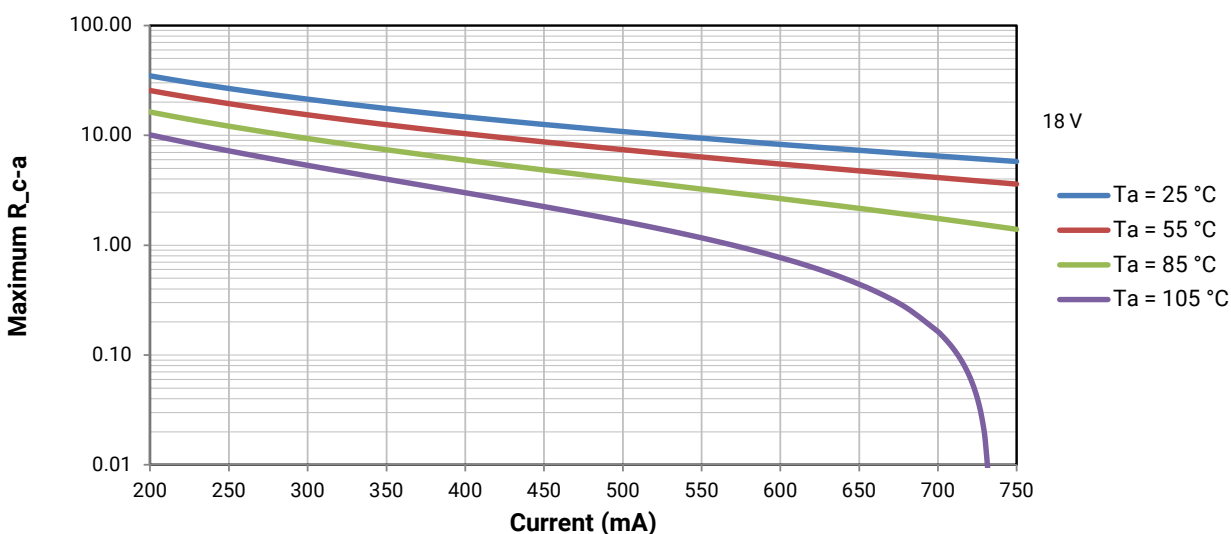
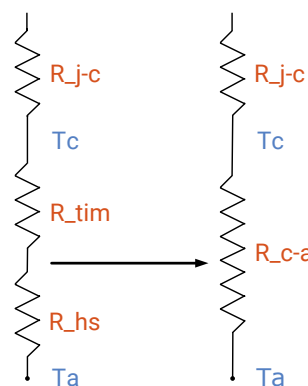
**THERMAL DESIGN**

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 3 for the Operating Limit specification.

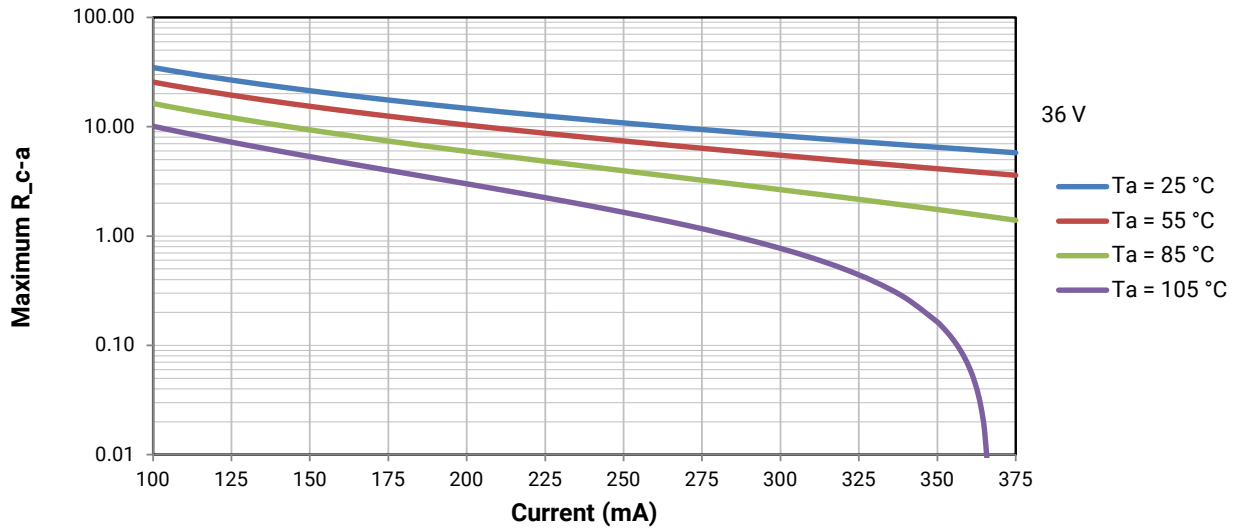
There is no need to calculate for  $T_j$  inside the package, as the thermal management design process, specifically from solder point ( $T_{sp}$ ) to ambient ( $T_a$ ), remains identical to any other LED component. For more information on thermal management of Cree XLamp LEDs, please refer to the [Thermal Management application note](#). For CXA soldering recommendations and more information on thermal interface materials (TIM) and connection methods, please refer to the [Cree CX Family LEDs soldering and handling document](#). The [CX Family LED Design Guide](#) provides basic information on the requirements to use Cree XLamp CXA LEDs successfully in luminaire designs.

To keep the CXA1507 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 graphs, depending on the operating environment. The y-axis in the graphs 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 ( $R_{hs}$ ).



**THERMAL DESIGN - CONTINUED**



## NOTES

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### Measurements

The luminous flux, radiant power, chromaticity 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'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 as specifications.

### Lumen Maintenance

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](#).

Please read the [Long-Term Lumen Maintenance application note](#) for more details on Cree'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 representative or from the Product Documentation sections of [www.cree.com](http://www.cree.com).

### REACH Compliance

REACH substances of 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 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

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

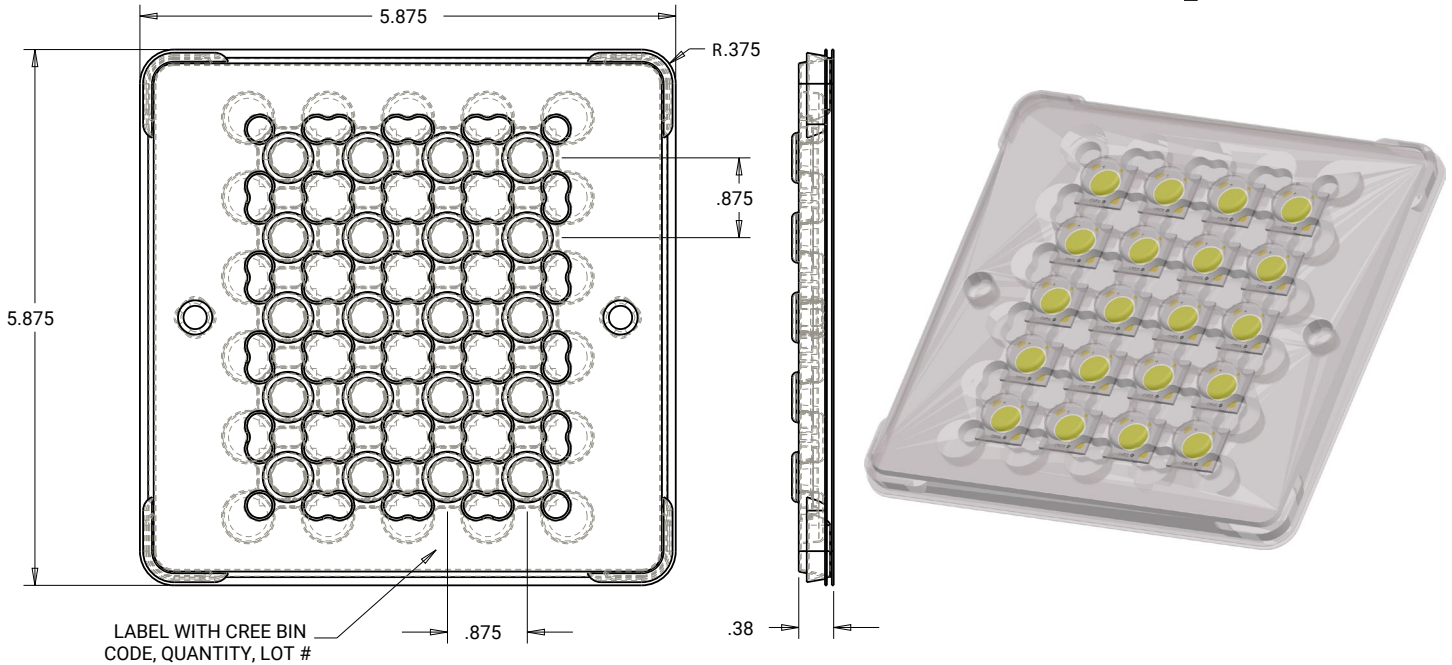
WARNING: Do not look at an exposed lamp in operation. Eye injury can result. For more information about LEDs and eye safety, please refer to the [LED Eye Safety application note](#).



**PACKAGING**

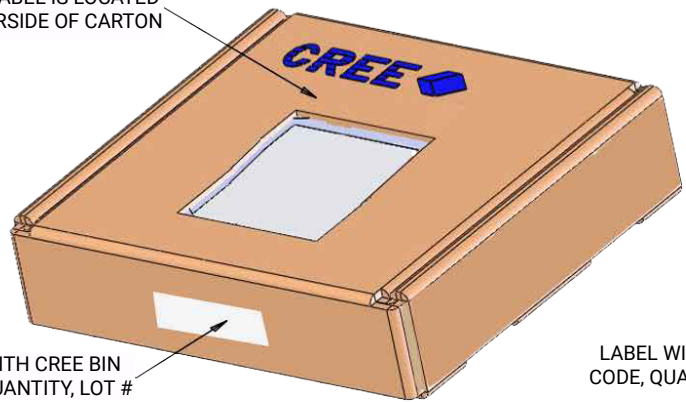
Cree CXA1507 LEDs are packaged in trays of 20. Five trays are sealed in an anti-static bag and placed inside a carton, for a total of 100 LEDs per carton. Each carton contains 100 LEDs from the same performance bin.

Dimensions are in inches.  
Tolerances:  $\pm .13$   
 $x^\circ \pm 1^\circ$



PATENT LABEL IS LOCATED ON UNDERSIDE OF CARTON

LABEL WITH CREE BIN CODE, QUANTITY, LOT #



BAG

LABEL WITH CREE BIN CODE, QUANTITY, LOT #

