

Cree® XLamp® CXA1510 LED



PRODUCT DESCRIPTION

The XLamp® CXA1510 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 CXA1510’s small, uniform emitting surface enables both directional and non-directional lighting applications including lamp retrofit and luminaire designs. Available in 2-step and 4-step color consistency, and featuring a 9-mm optical source, the CXA1510 brings new levels of flux and efficacy to this form factor.

The [CX LED Design Guide](#) provides basic information on the requirements to use the CXA1510 LED successfully in luminaire designs.

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 options: 18-V class & 36-V class
- 85 °C binning and characterization
- Maximum drive current: 900 mA (18 V), 450 mA (36 V)
- 115° viewing angle, uniform chromaticity profile
- Top-side solder connections
- Thermocouple attach point
- NEMA SSL-3 2011 standard flux bins
- UL® recognized component (E349212)



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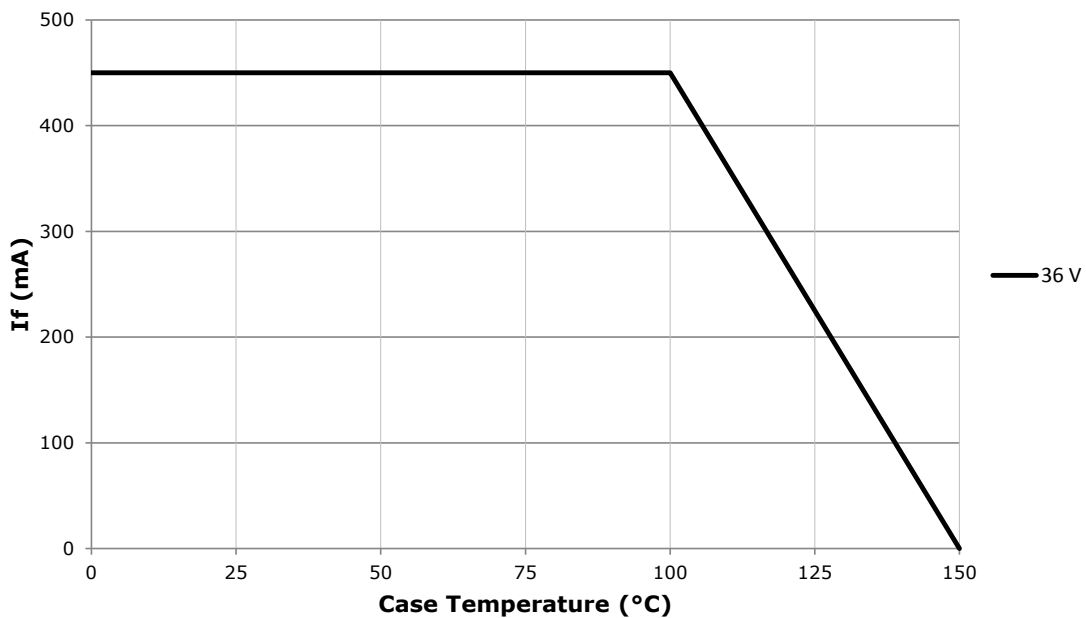
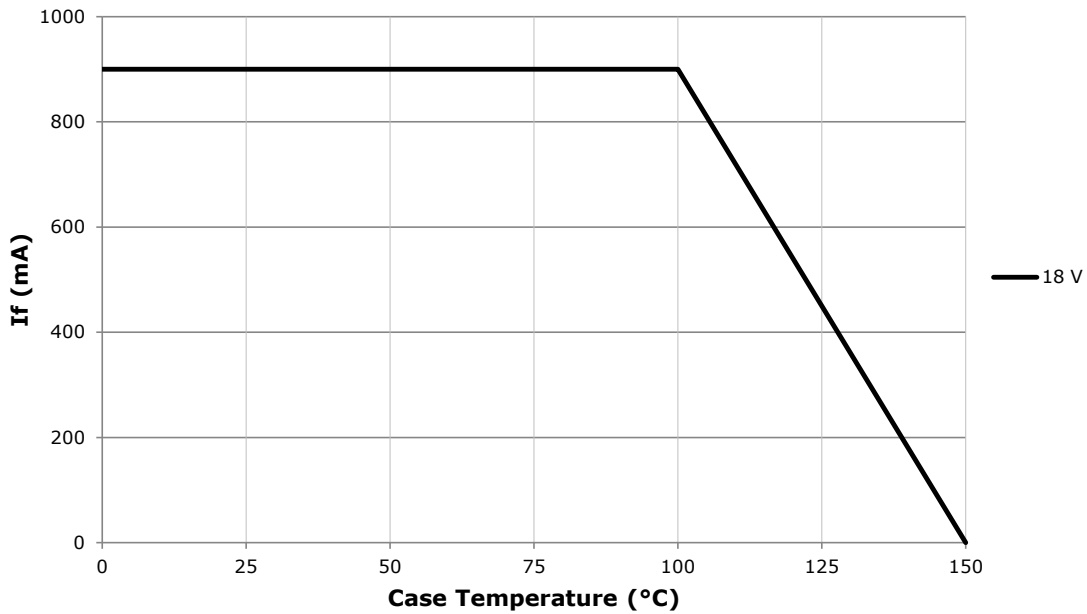
CHARACTERISTICS

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			900*
DC forward current (36 V)	mA			450*
Reverse current (18 V, 36V)	mA			0.1
Forward voltage (18 V, 500 mA, 85 °C)	V		17.5	
Forward voltage (18 V, 500 mA, 25 °C)	V			21
Forward voltage (36 V, 250 mA, 85 °C)	V		35	
Forward voltage (36 V, 250 mA, 25 °C)	V			42

* Refer to the Operating Limits section.

OPERATING LIMITS

The maximum current rating of the CXA1510 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 25 for the location of the T_c measurement point.



FLUX CHARACTERISTICS, EASYWHITE® ORDER CODES AND BINS - 18 V ($I_f = 500$ mA, $T_j = 85$ °C)

The following table provides order codes for XLamp CXA1510 LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 25).

CCT Range	CRI		Base Order Codes Min. Luminous Flux @ 500 mA			2-Step		4-Step		
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Chromaticity Region	Order Code	Chromaticity Region	Order Code	
6500 K	70	75	H4	970	1076			65F	CXA1510-0000-000F00H465F	
			J2	1040	1154		CXA1510-0000-000F00J265F			
			J4	1120	1243		CXA1510-0000-000F00J465F			
	80	---	H4	970	1076				65F	CXA1510-0000-000F0HH465F
			J2	1040	1154			CXA1510-0000-000F0HJ265F		
			J4	1120	1243			CXA1510-0000-000F0HJ465F		
	90	95	G2	780	866				65F	CXA1510-0000-000F0UG265F
			G4	840	932			CXA1510-0000-000F0UG465F		
			H2	900	999			CXA1510-0000-000F0UH265F		
5700 K	70	75	H4	970	1076			57F	CXA1510-0000-000F00H457F	
			J2	1040	1154		CXA1510-0000-000F00J257F			
			J4	1120	1243		CXA1510-0000-000F00J457F			
	80	---	H4	970	1076				57F	CXA1510-0000-000F0HH457F
			J2	1040	1154			CXA1510-0000-000F0HJ257F		
			J4	1120	1243			CXA1510-0000-000F0HJ457F		
	90	95	G2	780	866				57F	CXA1510-0000-000F0UG257F
			G4	840	932			CXA1510-0000-000F0UG457F		
			H2	900	999			CXA1510-0000-000F0UH257F		

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. See the Measurements section (page 28).
- Cree XLamp CXA1510 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_F = 500 mA, T_J = 85 °C) - CONTINUED

CCT Range	CRI		Base Order Codes Min. Luminous Flux @ 500 mA			2-Step		4-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Chromaticity Region	Order Code	Chromaticity Region	Order Code
5000 K	70	75	H4	970	1076	50H	CXA1510-0000-000F00H450H	50F	CXA1510-0000-000F00H450F
			J2	1040	1154		CXA1510-0000-000F00J250H		CXA1510-0000-000F00J250F
			J4	1120	1243		CXA1510-0000-000F00J450H		CXA1510-0000-000F00J450F
	80	---	H4	970	1076	50H	CXA1510-0000-000F0HH450H	50H	CXA1510-0000-000F0HH450F
			J2	1040	1154		CXA1510-0000-000F0HJ250H		CXA1510-0000-000F0HJ250F
			J4	1120	1243		CXA1510-0000-000F0HJ450H		CXA1510-0000-000F0HJ450F
	90	95	G2	780	866	50H	CXA1510-0000-000F0UG250H	50F	CXA1510-0000-000F0UG250F
			G4	840	932		CXA1510-0000-000F0UG450H		CXA1510-0000-000F0UG450F
			H2	900	999		CXA1510-0000-000F0UH250H		CXA1510-0000-000F0UH250F
4000 K	70	75	H4	970	1076	40H	CXA1510-0000-000F00H440H	40F	CXA1510-0000-000F00H440F
			J2	1040	1154		CXA1510-0000-000F00J240H		CXA1510-0000-000F00J240F
			J4	1120	1243		CXA1510-0000-000F00J440H		CXA1510-0000-000F00J440F
	80	---	H4	970	1076	40H	CXA1510-0000-000F0HH440H	40F	CXA1510-0000-000F0HH440F
			J2	1040	1154		CXA1510-0000-000F0HJ240H		CXA1510-0000-000F0HJ240F
			J4	1120	1243		CXA1510-0000-000F0HJ440H		CXA1510-0000-000F0HJ440F
	90	95	G2	780	866	40H	CXA1510-0000-000F0UG240H	40F	CXA1510-0000-000F0UG240F
			G4	840	932		CXA1510-0000-000F0UG440H		CXA1510-0000-000F0UG440F
			H2	900	999		CXA1510-0000-000F0UH240H		CXA1510-0000-000F0UH240F
3500 K	80	---	H2	900	999	35H	CXA1510-0000-000F00H235H	35F	CXA1510-0000-000F00H235F
			H4	970	1076		CXA1510-0000-000F00H435H		CXA1510-0000-000F00H435F
			J2	1040	1154		CXA1510-0000-000F00J235H		CXA1510-0000-000F00J235F
	90	95	F2	680	755	35H	CXA1510-0000-000F0UF235H	35F	CXA1510-0000-000F0UF235F
			F4	730	810		CXA1510-0000-000F0UF435H		CXA1510-0000-000F0UF435F
			G2	780	866		CXA1510-0000-000F0UG235H		CXA1510-0000-000F0UG235F
	93	95	F2	680	755	35H	CXA1510-0000-000F0YF235H	35F	CXA1510-0000-000F0YF235F
			F4	730	810		CXA1510-0000-000F0YF435H		CXA1510-0000-000F0YF435F
			G2	780	866		CXA1510-0000-000F0YG235H		CXA1510-0000-000F0YG235F

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 28).
- Cree XLamp CXA1510 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 ($I_F = 500$ mA, $T_j = 85$ °C) - CONTINUED

CCT Range	CRI		Base Order Codes Min. Luminous Flux @ 500 mA			2-Step		4-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Chromaticity Region	Order Code	Chromaticity Region	Order Code
3000 K	80	---	H2	900	999	30H	CXA1510-0000-000F00H230H	30F	CXA1510-0000-000F00H230F
			H4	970	1076		CXA1510-0000-000F00H430H		CXA1510-0000-000F00H430F
			J2	1040	1154		CXA1510-0000-000F00J230H		CXA1510-0000-000F00J230F
	90	---	F2	680	755	30H	CXA1510-0000-000F0UF230H	30F	CXA1510-0000-000F0UF230F
			F4	730	810		CXA1510-0000-000F0UF430H		CXA1510-0000-000F0UF430F
			G2	780	866		CXA1510-0000-000F0UG230H		CXA1510-0000-000F0UG230F
	93	95	F2	680	755	30H	CXA1510-0000-000F0YF230H	30F	CXA1510-0000-000F0YF230F
			F4	730	810		CXA1510-0000-000F0YF430H		CXA1510-0000-000F0YF430F
			G2	780	866		CXA1510-0000-000F0YG230H		CXA1510-0000-000F0YG230F
2700 K	80	---	G4	840	932	27H	CXA1510-0000-000F00G427H	27F	CXA1510-0000-000F00G427F
			H2	900	999		CXA1510-0000-000F00H227H		CXA1510-0000-000F00H227F
			H4	970	1076		CXA1510-0000-000F00H427H		CXA1510-0000-000F00H427F
	90	---	E4	635	707	27H	CXA1510-0000-000F0UE427H	27F	CXA1510-0000-000F0UE427F
			F2	680	755		CXA1510-0000-000F0UF227H		CXA1510-0000-000F0UF227F
			F4	730	810		CXA1510-0000-000F0UF427H		CXA1510-0000-000F0UF427F
	93	95	E4	635	707	27H	CXA1510-0000-000F0YE427H	27F	CXA1510-0000-000F0YE427F
			F2	680	755		CXA1510-0000-000F0YF227H		CXA1510-0000-000F0YF227F
			F4	730	810		CXA1510-0000-000F0YF427H		CXA1510-0000-000F0YF427F

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. See the Measurements section (page 28).
- Cree XLamp CXA1510 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 ($I_f = 500$ mA, $T_j = 85$ °C)

The following table provides order codes for XLamp CXA1510 LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 25).

CCT Range	CRI		Base Order Codes Min. Luminous Flux @ 500 mA			Chromaticity Regions	Order Code
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*		
6500 K	70	75	H4	970	1076	1A0, 1B0, 1C0, 1D0	CXA1510-0000-000F00H40E1
			J2	1040	1154		CXA1510-0000-000F00J20E1
			J4	1120	1243		CXA1510-0000-000F00J40E1
	80	---	H4	970	1076	1A0, 1B0, 1C0, 1D0	CXA1510-0000-000F0HH40E1
			J2	1040	1154		CXA1510-0000-000F0HJ20E1
			J4	1120	1243		CXA1510-0000-000F0HJ40E1
	90	95	G2	780	866	1A0, 1B0, 1C0, 1D0	CXA1510-0000-000F0UG20E1
			G4	840	932		CXA1510-0000-000F0UG40E1
			H2	900	999		CXA1510-0000-000F0UH20E1
5700 K	70	75	H4	970	1076	2A0, 2B0, 2C0, 1D0	CXA1510-0000-000F00H40E2
			J2	1040	1154		CXA1510-0000-000F00J20E2
			J4	1120	1243		CXA1510-0000-000F00J40E2
	80	---	H4	970	1076	2A0, 2B0, 2C0, 1D0	CXA1510-0000-000F0HH40E2
			J2	1040	1154		CXA1510-0000-000F0HJ20E2
			J4	1120	1243		CXA1510-0000-000F0HJ40E2
	90	95	G2	780	866	2A0, 2B0, 2C0, 1D0	CXA1510-0000-000F0UG20E2
			G4	840	932		CXA1510-0000-000F0UG40E2
			H2	900	999		CXA1510-0000-000F0UH20E2

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. See the Measurements section (page 28).
- Cree XLamp CXA1510 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 ($I_f = 500$ mA, $T_j = 85$ °C) - CONTINUED

CCT Range	CRI		Base Order Codes Min. Luminous Flux @ 500 mA			Chromaticity Regions	Order Code
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*		
5000 K	70	75	H4	970	1076	3A0, 3B0, 3C0, 3D0	CXA1510-0000-000F00H40E3
			J2	1040	1154		CXA1510-0000-000F00J20E3
			J4	1120	1243		CXA1510-0000-000F00J40E3
	80	---	H4	970	1076	3A0, 3B0, 3C0, 3D0	CXA1510-0000-000F0HH40E3
			J2	1040	1154		CXA1510-0000-000F0HJ20E3
			J4	1120	1243		CXA1510-0000-000F0HJ40E3
	90	95	G2	780	866	3A0, 3B0, 3C0, 3D0	CXA1510-0000-000F0UG20E3
			G4	840	932		CXA1510-0000-000F0UG40E3
			H2	900	999		CXA1510-0000-000F0UH20E3
4000 K	70	75	H4	970	1076	5A0, 5B0, 5C0, 5D0	CXA1510-0000-000F00H40E5
			J2	1040	1154		CXA1510-0000-000F00J20E5
			J4	1120	1243		CXA1510-0000-000F00J40E5
	80	---	H4	970	1076	5A0, 5B0, 5C0, 5D0	CXA1510-0000-000F0HH40E5
			J2	1040	1154		CXA1510-0000-000F0HJ20E5
			J4	1120	1243		CXA1510-0000-000F0HJ40E5
	90	95	G2	780	866	5A0, 5B0, 5C0, 5D0	CXA1510-0000-000F0UG20E5
			G4	840	932		CXA1510-0000-000F0UG40E5
			H2	900	999		CXA1510-0000-000F0UH20E5
3500 K	80	---	H2	900	999	6A0, 6B0, 6C0, 6D0	CXA1510-0000-000F00H20E6
			H4	970	1076		CXA1510-0000-000F00H40E6
			J2	1040	1154		CXA1510-0000-000F00J20E6
	90	95	F2	680	755	6A0, 6B0, 6C0, 6D0	CXA1510-0000-000F0UF20E6
			F4	730	810		CXA1510-0000-000F0UF40E6
			G2	780	866		CXA1510-0000-000F0UG20E6
	93	95	F2	680	755	6A0, 6B0, 6C0, 6D0	CXA1510-0000-000F0YF20E6
			F4	730	810		CXA1510-0000-000F0YF40E6
			G2	780	866		CXA1510-0000-000F0YG20E6

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. See the Measurements section (page 28).
- Cree XLamp CXA1510 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 ($I_f = 500$ mA, $T_j = 85$ °C) - CONTINUED

CCT Range	CRI		Base Order Codes Min. Luminous Flux @ 500 mA			Chromaticity Regions	Order Code
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*		
3000 K	80	---	H2	900	999	7A0, 7B0, 7C0, 7D0	CXA1510-0000-000F00H20E7
			H4	970	1076		CXA1510-0000-000F00H40E7
			J2	1040	1154		CXA1510-0000-000F00J20E7
	90	---	F2	680	755	7A0, 7B0, 7C0, 7D0	CXA1510-0000-000F0UF20E7
			F4	730	810		CXA1510-0000-000F0UF40E7
			G2	780	866		CXA1510-0000-000F0UG20E7
	93	95	F2	680	755	7A0, 7B0, 7C0, 7D0	CXA1510-0000-000F0YF20E7
			F4	730	810		CXA1510-0000-000F0YF40E7
			G2	780	866		CXA1510-0000-000F0YG20E7
2700 K	80	---	G4	840	932	8A0, 8B0, 8C0, 8D0	CXA1510-0000-000F00G40E8
			H2	900	999		CXA1510-0000-000F00H20E8
			H4	970	1076		CXA1510-0000-000F00H40E8
	90	---	E4	635	707	8A0, 8B0, 8C0, 8D0	CXA1510-0000-000F0UE40E8
			F2	680	755		CXA1510-0000-000F0UF20E8
			F4	730	810		CXA1510-0000-000F0UF40E8
	93	95	E4	635	707	8A0, 8B0, 8C0, 8D0	CXA1510-0000-000F0YE40E8
			F2	680	755		CXA1510-0000-000F0YF20E8
			F4	730	810		CXA1510-0000-000F0YF40E8

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. See the Measurements section (page 28).
- Cree XLamp CXA1510 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 ($I_f = 250$ mA, $T_j = 85$ °C)

The following table provides order codes for XLamp CXA1510 LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 25).

CCT Range	CRI		Base Order Codes Min. Luminous Flux @ 250 mA			2-Step		4-Step			
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Chromaticity Region	Order Code	Chromaticity Region	Order Code		
6500 K	70	75	H4	970	1076			65F	CXA1510-0000-000N00H465F		
			J2	1040	1154				CXA1510-0000-000N00J265F		
			J4	1120	1243				CXA1510-0000-000N00J465F		
	80	---	H4	970	1076					65F	CXA1510-0000-000N0HH465F
			J2	1040	1154						CXA1510-0000-000N0HJ265F
			J4	1120	1243						CXA1510-0000-000N0HJ465F
	90	95	G2	780	866					65F	CXA1510-0000-000N0UG265F
			G4	840	932						CXA1510-0000-000N0UG465F
			H2	900	999						CXA1510-0000-000N0UH265F
5700 K	70	75	H4	970	1076			57F	CXA1510-0000-000N00H457F		
			J2	1040	1154				CXA1510-0000-000N00J257F		
			J4	1120	1243				CXA1510-0000-000N00J457F		
	80	---	H4	970	1076					57F	CXA1510-0000-000N0HH457F
			J2	1040	1154						CXA1510-0000-000N0HJ257F
			J4	1120	1243						CXA1510-0000-000N0HJ457F
	90	95	G2	780	866					57F	CXA1510-0000-000N0UG257F
			G4	840	932						CXA1510-0000-000N0UG457F
			H2	900	999						CXA1510-0000-000N0UH257F

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. See the Measurements section (page 28).
- Cree XLamp CXA1510 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_F = 250 mA, T_J = 85 °C) - CONTINUED

CCT Range	CRI		Base Order Codes Min. Luminous Flux @ 250 mA			2-Step		4-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Chromaticity Region	Order Code	Chromaticity Region	Order Code
5000 K	70	75	H4	970	1076	50H	CXA1510-0000-000N00H450H	50F	CXA1510-0000-000N00H450F
			J2	1040	1154		CXA1510-0000-000N00J250H		CXA1510-0000-000N00J250F
			J4	1120	1243		CXA1510-0000-000N00J450H		CXA1510-0000-000N00J450F
	80	---	H4	970	1076	50H	CXA1510-0000-000N0HH450H	50H	CXA1510-0000-000N0HH450F
			J2	1040	1154		CXA1510-0000-000N0HJ250H		CXA1510-0000-000N0HJ250F
			J4	1120	1243		CXA1510-0000-000N0HJ450H		CXA1510-0000-000N0HJ450F
	90	95	G2	780	866	50H	CXA1510-0000-000N0UG250H	50F	CXA1510-0000-000N0UG250F
			G4	840	932		CXA1510-0000-000N0UG450H		CXA1510-0000-000N0UG450F
			H2	900	999		CXA1510-0000-000N0UH250H		CXA1510-0000-000N0UH250F
4000 K	70	75	H4	970	1076	40H	CXA1510-0000-000N00H440H	40F	CXA1510-0000-000N00H440F
			J2	1040	1154		CXA1510-0000-000N00J240H		CXA1510-0000-000N00J240F
			J4	1120	1243		CXA1510-0000-000N00J440H		CXA1510-0000-000N00J440F
	80	---	H4	970	1076	40H	CXA1510-0000-000N0HH440H	40F	CXA1510-0000-000N0HH440F
			J2	1040	1154		CXA1510-0000-000N0HJ240H		CXA1510-0000-000N0HJ240F
			J4	1120	1243		CXA1510-0000-000N0HJ440H		CXA1510-0000-000N0HJ440F
	90	95	G2	780	866	40H	CXA1510-0000-000N0UG240H	40F	CXA1510-0000-000N0UG240F
			G4	840	932		CXA1510-0000-000N0UG440H		CXA1510-0000-000N0UG440F
			H2	900	999		CXA1510-0000-000N0UH240H		CXA1510-0000-000N0UH240F
3500 K	80	---	H2	900	999	35H	CXA1510-0000-000N00H235H	35F	CXA1510-0000-000N00H235F
			H4	970	1076		CXA1510-0000-000N00H435H		CXA1510-0000-000N00H435F
			J2	1040	1154		CXA1510-0000-000N00J235H		CXA1510-0000-000N00J235F
	90	95	F2	680	755	35H	CXA1510-0000-000N0UF235H	35F	CXA1510-0000-000N0UF235F
			F4	730	810		CXA1510-0000-000N0UF435H		CXA1510-0000-000N0UF435F
			G2	780	866		CXA1510-0000-000N0UG235H		CXA1510-0000-000N0UG235F
	93	95	F2	680	755	35H	CXA1510-0000-000N0YF235H	35F	CXA1510-0000-000N0YF235F
			F4	730	810		CXA1510-0000-000N0YF435H		CXA1510-0000-000N0YF435F
			G2	780	866		CXA1510-0000-000N0YG235H		CXA1510-0000-000N0YG235F

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 28).
- Cree XLamp CXA1510 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 ($I_f = 250$ mA, $T_j = 85$ °C) - CONTINUED

CCT Range	CRI		Base Order Codes Min. Luminous Flux @ 250 mA			2-Step		4-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Chromaticity Region	Order Code	Chromaticity Region	Order Code
3000 K	80	---	H2	900	999	30H	CXA1510-0000-000N00H230H	30F	CXA1510-0000-000N00H230F
			H4	970	1076		CXA1510-0000-000N00H430H		CXA1510-0000-000N00H430F
			J2	1040	1154		CXA1510-0000-000N00J230H		CXA1510-0000-000N00J230F
	90	---	F2	680	755	30H	CXA1510-0000-000N0UF230H	30F	CXA1510-0000-000N0UF230F
			F4	730	810		CXA1510-0000-000N0UF430H		CXA1510-0000-000N0UF430F
			G2	780	866		CXA1510-0000-000N0UG230H		CXA1510-0000-000N0UG230F
	93	95	F2	680	755	30H	CXA1510-0000-000N0YF230H	30F	CXA1510-0000-000N0YF230F
			F4	730	810		CXA1510-0000-000N0YF430H		CXA1510-0000-000N0YF430F
			G2	780	866		CXA1510-0000-000N0YG230H		CXA1510-0000-000N0YG230F
2700 K	80	---	G4	840	932	27H	CXA1510-0000-000N00G427H	27F	CXA1510-0000-000N00G427F
			H2	900	999		CXA1510-0000-000N00H227H		CXA1510-0000-000N00H227F
			H4	970	1076		CXA1510-0000-000N00H427H		CXA1510-0000-000N00H427F
	90	---	E4	635	707	27H	CXA1510-0000-000N0UE427H	27F	CXA1510-0000-000N0UE427F
			F2	680	755		CXA1510-0000-000N0UF227H		CXA1510-0000-000N0UF227F
			F4	730	810		CXA1510-0000-000N0UF427H		CXA1510-0000-000N0UF427F
	93	95	E4	635	707	27H	CXA1510-0000-000N0YE427H	27F	CXA1510-0000-000N0YE427F
			F2	680	755		CXA1510-0000-000N0YF227H		CXA1510-0000-000N0YF227F
			F4	730	810		CXA1510-0000-000N0YF427H		CXA1510-0000-000N0YF427F

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. See the Measurements section (page 28).
- Cree XLamp CXA1510 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 ($I_f = 250 \text{ mA}$, $T_j = 85 \text{ °C}$)

The following table provides order codes for XLamp CXA1510 LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 25).

CCT Range	CRI		Base Order Codes Min. Luminous Flux @ 250 mA			Chromaticity Regions	Order Code
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*		
6500 K	70	75	H4	970	1076	1A0, 1B0, 1C0, 1D0	CXA1510-0000-000N00H40E1
			J2	1040	1154		CXA1510-0000-000N00J20E1
			J4	1120	1243		CXA1510-0000-000N00J40E1
	80	---	H4	970	1076	1A0, 1B0, 1C0, 1D0	CXA1510-0000-000N0HH40E1
			J2	1040	1154		CXA1510-0000-000N0HJ20E1
			J4	1120	1243		CXA1510-0000-000N0HJ40E1
	90	95	G2	780	866	1A0, 1B0, 1C0, 1D0	CXA1510-0000-000N0UG20E1
			G4	840	932		CXA1510-0000-000N0UG40E1
			H2	900	999		CXA1510-0000-000N0UH20E1
5700 K	70	75	H4	970	1076	2A0, 2B0, 2C0, 1D0	CXA1510-0000-000N00H40E2
			J2	1040	1154		CXA1510-0000-000N00J20E2
			J4	1120	1243		CXA1510-0000-000N00J40E2
	80	---	H4	970	1076	2A0, 2B0, 2C0, 1D0	CXA1510-0000-000N0HH40E2
			J2	1040	1154		CXA1510-0000-000N0HJ20E2
			J4	1120	1243		CXA1510-0000-000N0HJ40E2
	90	95	G2	780	866	2A0, 2B0, 2C0, 1D0	CXA1510-0000-000N0UG20E2
			G4	840	932		CXA1510-0000-000N0UG40E2
			H2	900	999		CXA1510-0000-000N0UH20E2

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. See the Measurements section (page 28).
- Cree XLamp CXA1510 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 ($I_f = 250$ mA, $T_j = 85$ °C) - CONTINUED

CCT Range	CRI		Base Order Codes Min. Luminous Flux @ 250 mA			Chromaticity Regions	Order Code
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*		
5000 K	70	75	H4	970	1076	3A0, 3B0, 3C0, 3D0	CXA1510-0000-000N00H40E3
			J2	1040	1154		CXA1510-0000-000N00J20E3
			J4	1120	1243		CXA1510-0000-000N00J40E3
	80	---	H4	970	1076	3A0, 3B0, 3C0, 3D0	CXA1510-0000-000N0HH40E3
			J2	1040	1154		CXA1510-0000-000N0HJ20E3
			J4	1120	1243		CXA1510-0000-000N0HJ40E3
	90	95	G2	780	866	3A0, 3B0, 3C0, 3D0	CXA1510-0000-000N0UG20E3
			G4	840	932		CXA1510-0000-000N0UG40E3
			H2	900	999		CXA1510-0000-000N0UH20E3
4000 K	70	75	H4	970	1076	5A0, 5B0, 5C0, 5D0	CXA1510-0000-000N00H40E5
			J2	1040	1154		CXA1510-0000-000N00J20E5
			J4	1120	1243		CXA1510-0000-000N00J40E5
	80	---	H4	970	1076	5A0, 5B0, 5C0, 5D0	CXA1510-0000-000N0HH40E5
			J2	1040	1154		CXA1510-0000-000N0HJ20E5
			J4	1120	1243		CXA1510-0000-000N0HJ40E5
	90	95	G2	780	866	5A0, 5B0, 5C0, 5D0	CXA1510-0000-000N0UG20E5
			G4	840	932		CXA1510-0000-000N0UG40E5
			H2	900	999		CXA1510-0000-000N0UH20E5
3500 K	80	---	H2	900	999	6A0, 6B0, 6C0, 6D0	CXA1510-0000-000N00H20E6
			H4	970	1076		CXA1510-0000-000N00H40E6
			J2	1040	1154		CXA1510-0000-000N00J20E6
	90	95	F2	680	755	6A0, 6B0, 6C0, 6D0	CXA1510-0000-000N0UF20E6
			F4	730	810		CXA1510-0000-000N0UF40E6
			G2	780	866		CXA1510-0000-000N0UG20E6
	93	95	F2	680	755	6A0, 6B0, 6C0, 6D0	CXA1510-0000-000N0YF20E6
			F4	730	810		CXA1510-0000-000N0YF40E6
			G2	780	866		CXA1510-0000-000N0YG20E6

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. See the Measurements section (page 28).
- Cree XLamp CXA1510 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 ($I_f = 250$ mA, $T_j = 85$ °C) - CONTINUED

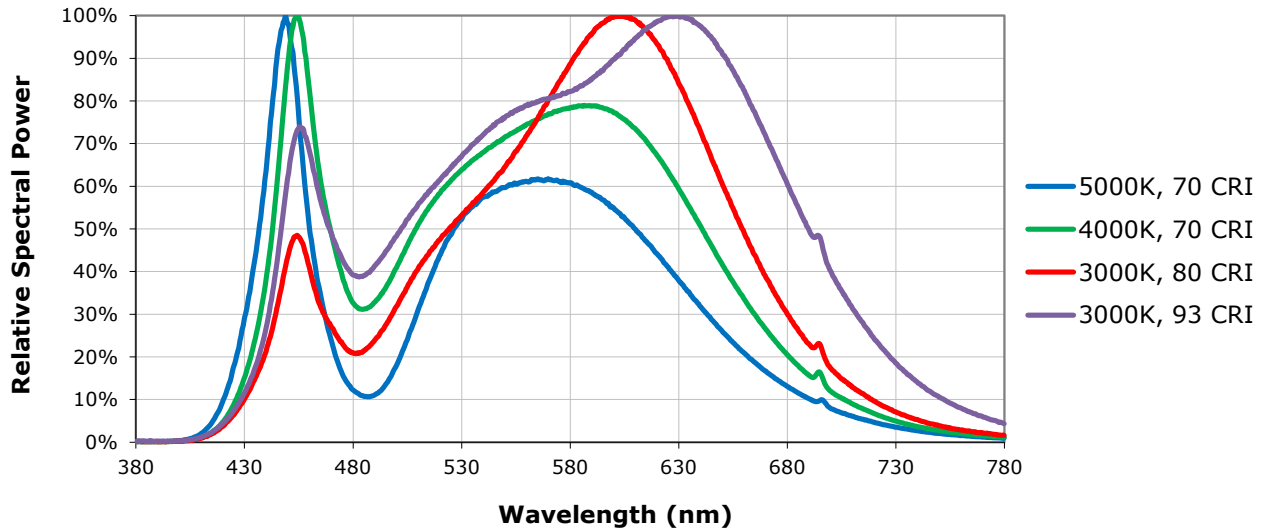
CCT Range	CRI		Base Order Codes Min. Luminous Flux @ 250 mA			Chromaticity Regions	Order Code
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*		
3000 K	80	---	H2	900	999	7A0, 7B0, 7C0, 7D0	CXA1510-0000-000N00H20E7
			H4	970	1076		CXA1510-0000-000N00H40E7
			J2	1040	1154		CXA1510-0000-000N00J20E7
	90	---	F2	680	755	7A0, 7B0, 7C0, 7D0	CXA1510-0000-000N00UF20E7
			F4	730	810		CXA1510-0000-000N00UF40E7
			G2	780	866		CXA1510-0000-000N00UG20E7
	93	95	F2	680	755	7A0, 7B0, 7C0, 7D0	CXA1510-0000-000N00YF20E7
			F4	730	810		CXA1510-0000-000N00YF40E7
			G2	780	866		CXA1510-0000-000N00YG20E7
2700 K	80	---	G4	840	932	8A0, 8B0, 8C0, 8D0	CXA1510-0000-000N00G40E8
			H2	900	999		CXA1510-0000-000N00H20E8
			H4	970	1076		CXA1510-0000-000N00H40E8
	90	---	E4	635	707	8A0, 8B0, 8C0, 8D0	CXA1510-0000-000N00E40E8
			F2	680	755		CXA1510-0000-000N00UF20E8
			F4	730	810		CXA1510-0000-000N00UF40E8
	93	95	E4	635	707	8A0, 8B0, 8C0, 8D0	CXA1510-0000-000N00YE40E8
			F2	680	755		CXA1510-0000-000N00YF20E8
			F4	730	810		CXA1510-0000-000N00YF40E8

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. See the Measurements section (page 28).
- Cree XLamp CXA1510 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.

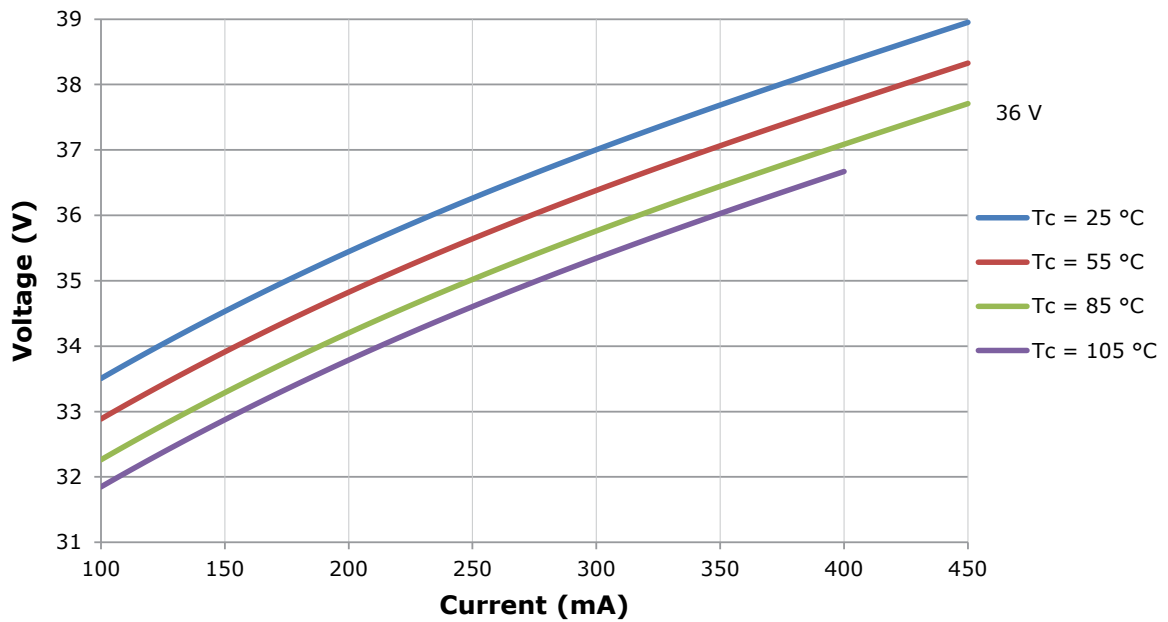
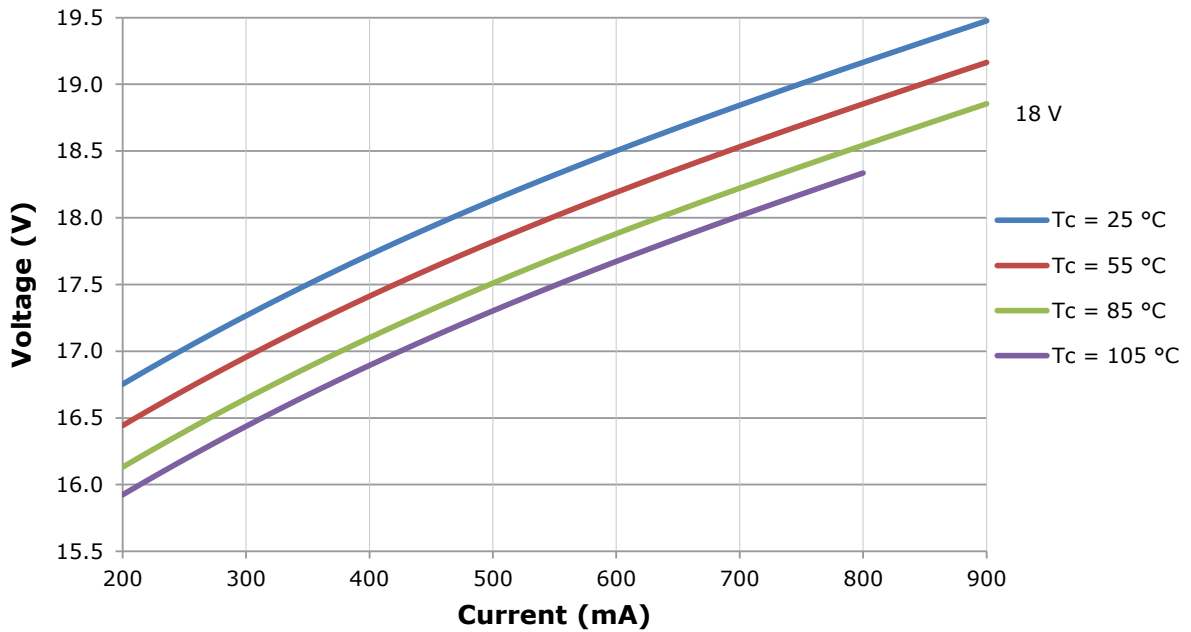
RELATIVE SPECTRAL POWER DISTRIBUTION

The following graph is the result of a series of pulsed measurements at 500 mA for the 18-V CXA1510 LED and 250 mA for the 36-V CXA1510 LED and $T_j = 85\text{ }^\circ\text{C}$.



ELECTRICAL CHARACTERISTICS

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

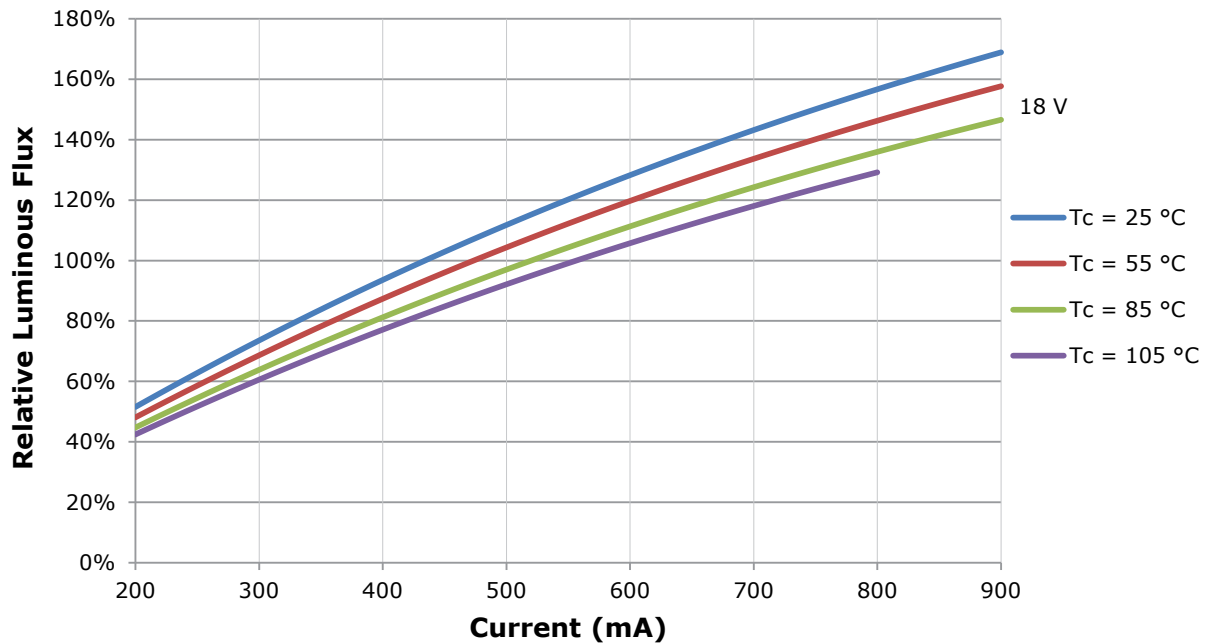


RELATIVE LUMINOUS FLUX

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

- Measurements of CXA1510 at steady-state operation at the given conditions, divided by
- Flux measured during binning, which is a pulsed measurement at 500 mA at $T_j = 85\text{ }^\circ\text{C}$.

Using the 18-V CXA1510 LED as an example, at steady-state operation of $T_c = 55\text{ }^\circ\text{C}$, $I_f = 600\text{ mA}$, the relative luminous flux ratio is 120% in the chart below. A CXA1510 LED that measures 1120 lm during binning will deliver 1344 lm ($1120 * 1.2$) at steady-state operation of $T_c = 55\text{ }^\circ\text{C}$, $I_f = 600\text{ mA}$.

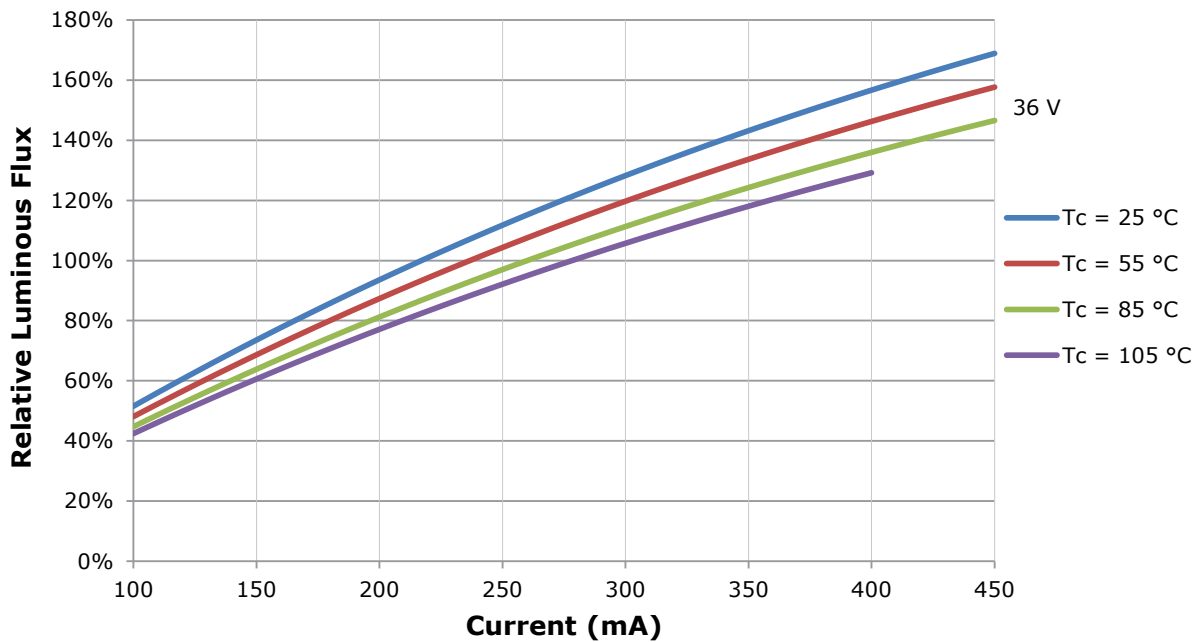


RELATIVE LUMINOUS FLUX - CONTINUED

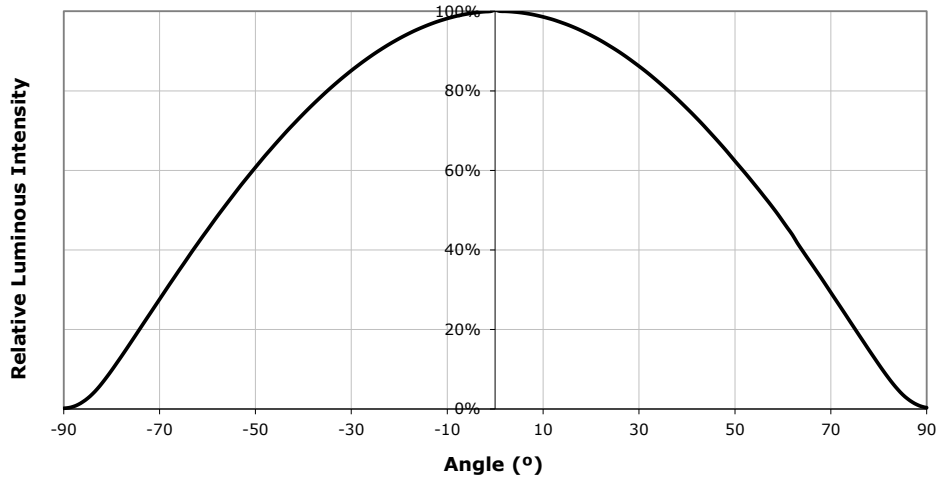
The relative luminous flux values provided below are the ratio of:

- Measurements of CXA1510 at steady-state operation at the given conditions, divided by
- Flux measured during binning, which is a pulsed measurement at 250 mA at $T_j = 85\text{ }^\circ\text{C}$.

Using the 36-V CXA1510 LED as an example, or example, at steady-state operation of $T_c = 55\text{ }^\circ\text{C}$, $I_f = 300\text{ mA}$, the relative luminous flux ratio is 120% in the chart below. A CXA1510 LED that measures 1120 lm during binning will deliver 1344 lm (1120×1.2) at steady-state operation of $T_c = 55\text{ }^\circ\text{C}$, $I_f = 300\text{ mA}$.



TYPICAL SPATIAL DISTRIBUTION



PERFORMANCE GROUPS - BRIGHTNESS (18 V, I_F = 500 mA; 36 V, I_F = 250 mA, T_J = 85 °C)

XLamp CXA1510 LEDs are tested for luminous flux and placed into one of the following bins.

Group Code	Min. Luminous Flux	Max. Luminous Flux
E4	635	680
F2	680	730
F4	730	780
G2	780	840
G4	840	900
H2	900	970
H4	970	1040
J2	1040	1120
J4	1120	1200
K2	1200	1290

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

XLamp CXA1510 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	0.3097	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

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

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

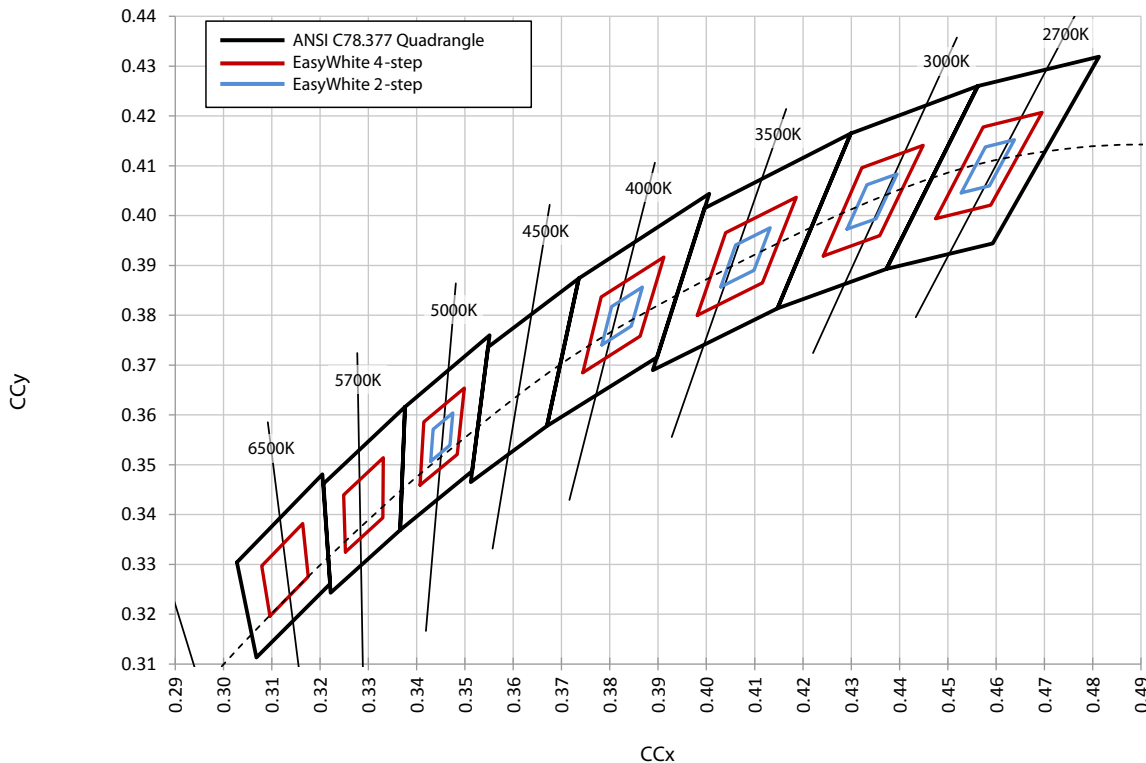
ANSI White Bins				
Code	CCT	Bin Code	x	y
0E6	3500 K	6A0	.3889	.3690
			.3941	.3848
			.4080	.3916
			.4017	.3751
		6B0	.3941	.3848
			.3996	.4015
			.4146	.4089
			.4080	.3916
		6C0	.4080	.3916
			.4146	.4089
			.4299	.4165
			.4221	.3984
		6D0	.4017	.3751
			.4080	.3916
			.4221	.3984
			.4147	.3814

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

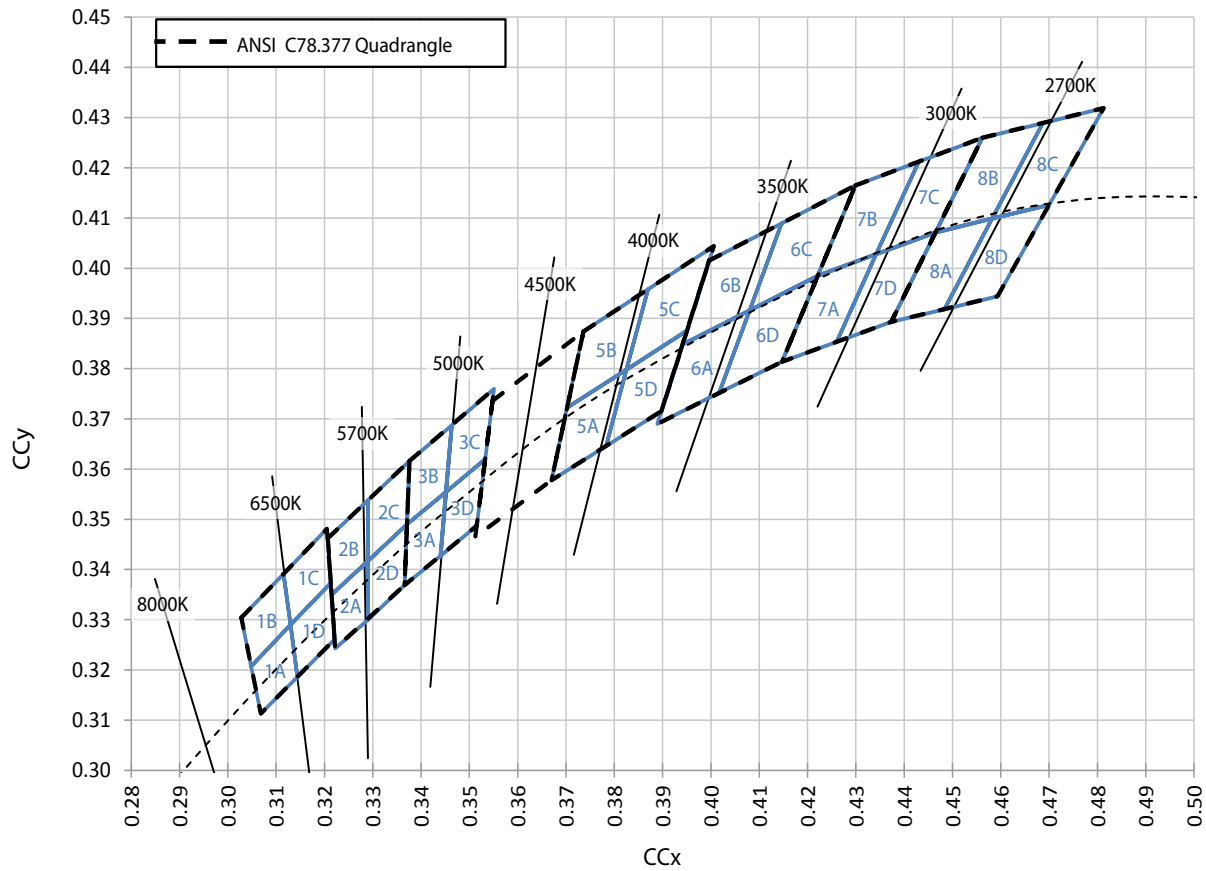
ANSI White Bins				
Code	CCT	Bin Code	x	y
0E7	3000 K	7A0	.4147	.3814
			.4221	.3984
			.4342	.4028
			.4259	.3853
		7B0	.4221	.3984
			.4299	.4165
			.4430	.4212
			.4342	.4028
		7C0	.4342	.4028
			.4430	.4212
			.4562	.4260
			.4465	.4071
		7D0	.4259	.3853
			.4342	.4028
			.4465	.4071
			.4373	.3893

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 1931 CIE COLOR SPACE ($T_j = 85\text{ }^\circ\text{C}$)



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



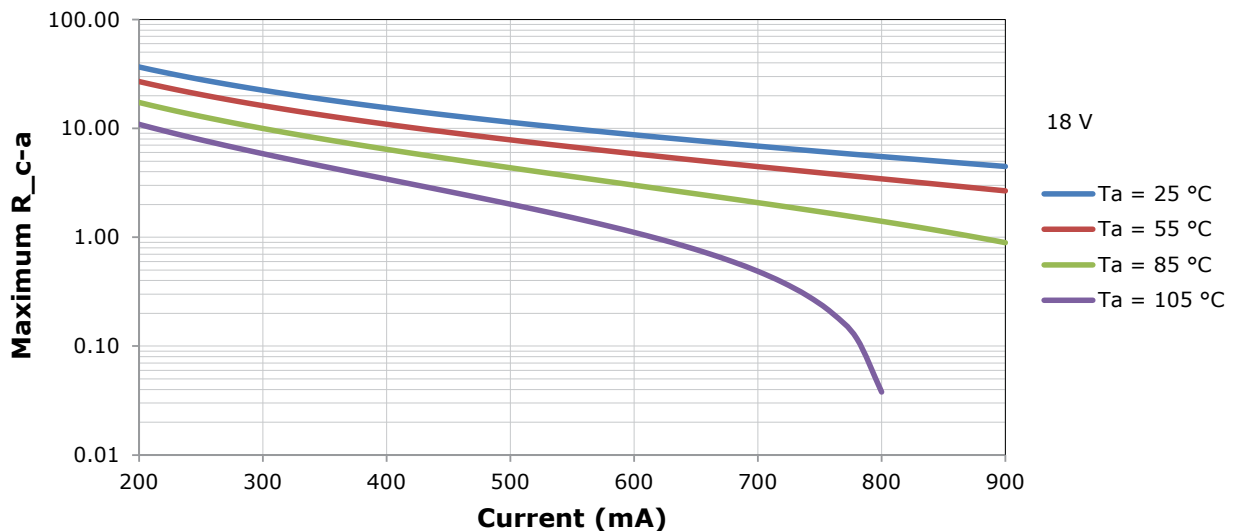
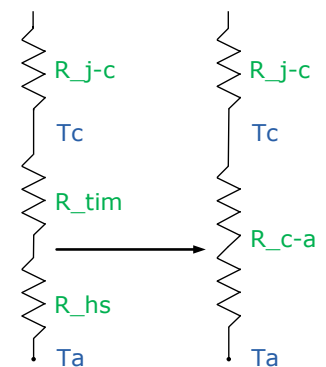
THERMAL DESIGN

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.

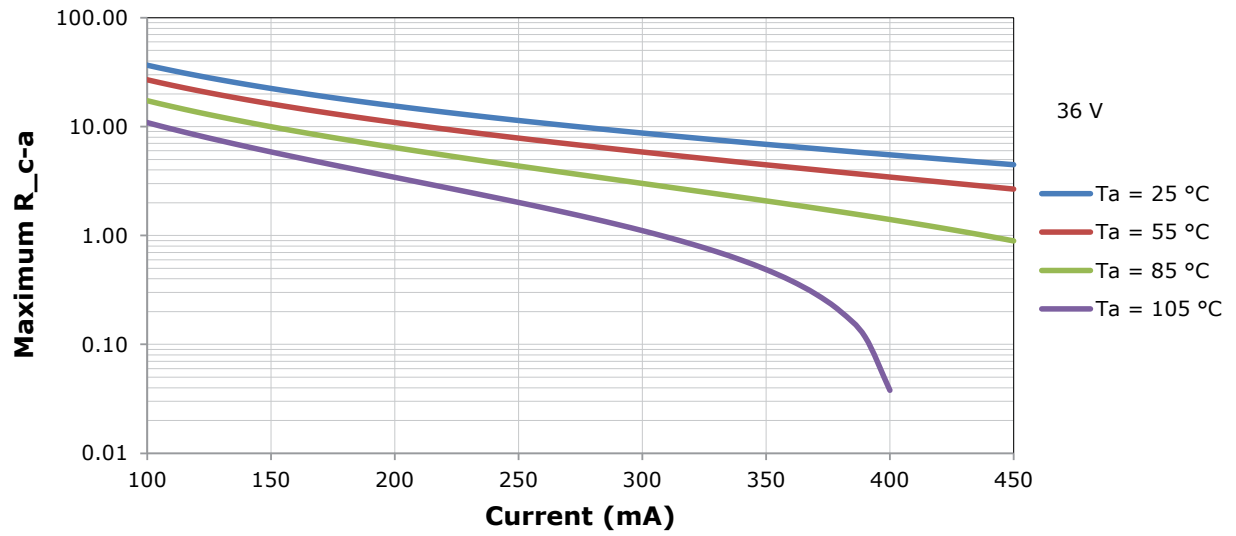
There is no need to calculate for T_j inside the package, as the thermal management design process, specifically from solder point (T_{sp}) to ambient (T_a), remains identical to any other LED component. For more information on thermal management of Cree XLamp LEDs, please refer to the [Thermal Management application note](#). For CXA soldering recommendations and more information on thermal interface materials (TIM) and connection methods, please refer to the [Cree XLamp 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 CXA1510 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

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.

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.

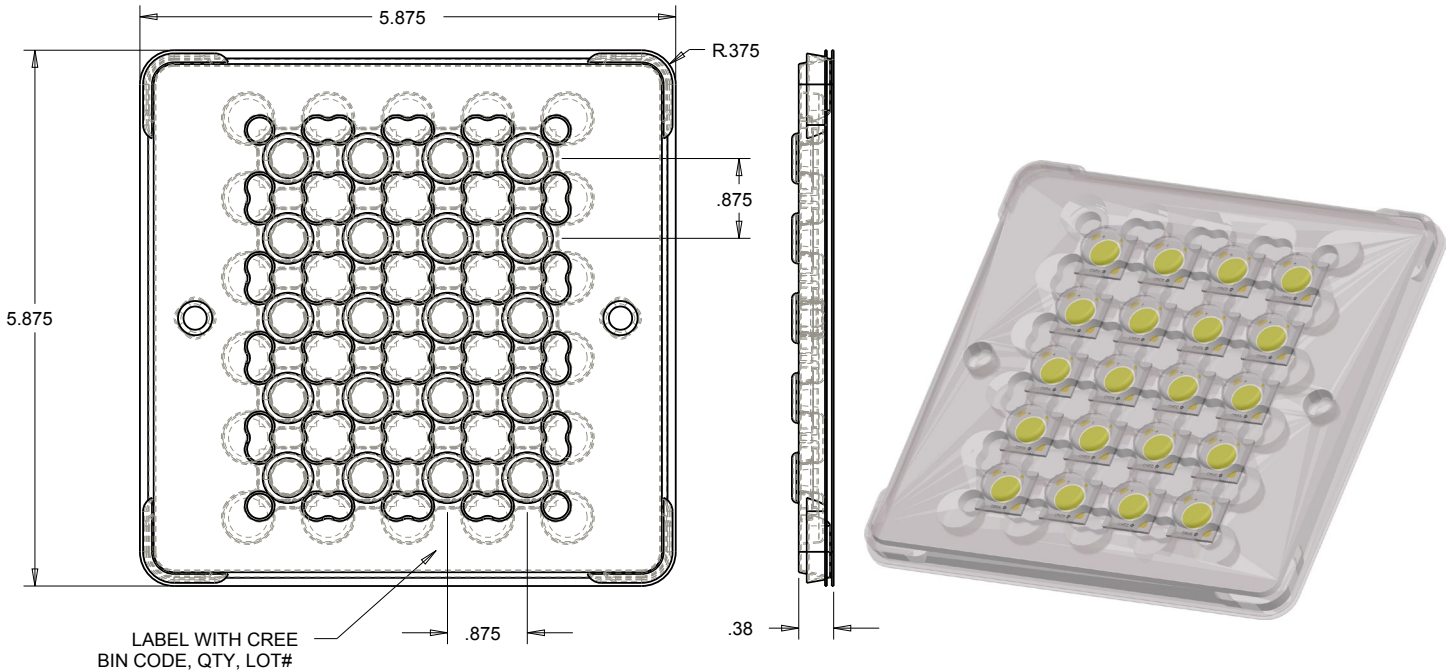
Vision Advisory

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

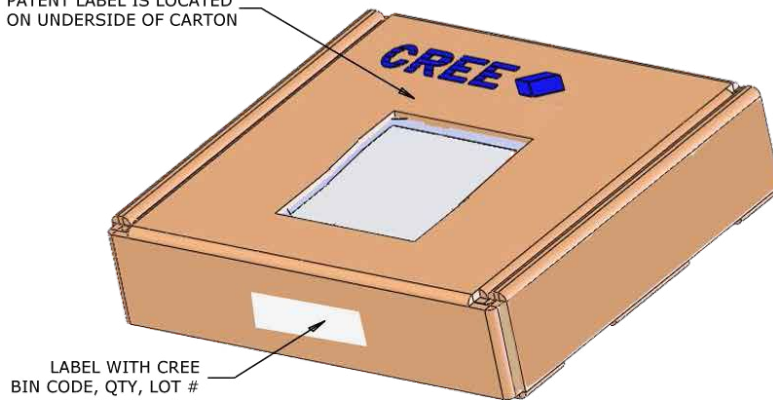
Cree CXA1510 LEDs are packaged in trays of 20. Five trays are sealed in an anti-static bag and placed inside a carton, for a total of 100 LEDs per carton. Each carton contains 100 LEDs from the same performance bin.

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

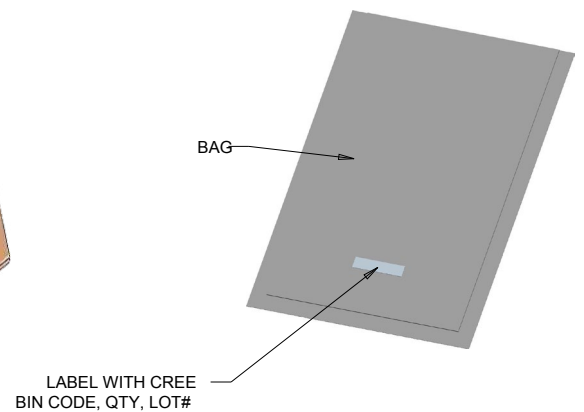


LABEL WITH CREE
BIN CODE, QTY, LOT#

PATENT LABEL IS LOCATED
ON UNDERSIDE OF CARTON



LABEL WITH CREE
BIN CODE, QTY, LOT #



LABEL WITH CREE
BIN CODE, QTY, LOT#