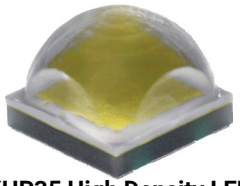
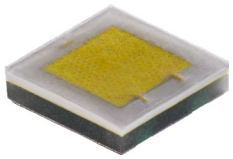
Cree® XLamp® XHP35 LEDs



XHP35 High Density LED



XHP35 High Intensity LED

PRODUCT DESCRIPTION

The XLamp® XHP35 LED brings the performance of Cree's Extreme High Power LEDs to the XP footprint, setting a new standard for performance delivered by a 3.45 x 3.45 mm LED. Leveraging the breakthrough 12-V monolithic power die built on Cree's innovative architecture and uniquely enabled by the SC5 Technology® Platform, the XHP35 LED allows the use of readily available cost--optimized drivers to unleash the capabilities of Cree's high-power LEDs. Available in both high-density and high-intensity versions, the XHP35 LED is application optimized to enable new designs and radically lower system costs.

FEATURES

- Available in white in high-density and high-intensity versions for design flexibility
- XHP35 High Intensity LED is optimized to deliver maximum candela through secondary optics
- Available in 5-step EasyWhite® bins at 2700 K to 5700 K CCT and 3-step EasyWhite bins at 2700 K to 3500 K CCT
- Available in ANSI white bins at 2700 K to 7000 K CCT
- Available in standard, 70-, 80-, 85- and 90-minimum CRI options
- Binned at 85 °C
- Maximum drive current: 1050 mA
- Low thermal resistance: 1.8 °C/W
- Wide viewing angle: 115° for high intensity, 125° for high density
- Unlimited floor life at ≤ 30 ºC/85% RH
- Reflow solderable - JEDEC J-STD-020C
- RoHS and REACh compliant
- UL® recognized component (E349212)

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CHARACTERISTICS

Characteristics	Unit	Minimum	Typical	Maximum
Thermal resistance, junction to solder point	°C/W		1.8	
Viewing angle (FWHM) - High Density	degrees		125	
Viewing angle (FWHM) - High Intensity	degrees		115	
Temperature coefficient of voltage	mV/°C		-8	
ESD withstand voltage (HBM per Mil-Std-883D)	V			8000
DC forward current	mA			1050
Reverse voltage	V			-5
Forward voltage (@ 350 mA, 85 °C)	V		11.3	11.9
LED junction temperature	°C			150

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FLUX CHARACTERISTICS, HIGH DENSITY EASYWHITE® ORDER CODES AND BINS (T_J = 85 °C)

The following table provides order codes for XLamp XHP35 High Density LEDs. For a complete description of how the flux and chromaticity groups are reflected in the bin code and order code nomenclature, please see the Bin and Order Code Formats section (page 29).

Nominal CCT	CRI		Minimum Luminous Flux @350 mA			3-Step		5-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Group	Order Code	Group	Order Code
5700 K	70		E4	635	706			57E	XHP35A-00-0000-0D0BE457E
			E2	590	656				XHP35A-00-0000-0D0BE257E
			D4	550	612				XHP35A-00-0000-0D0BD457E
	80		D4	550	612			57E	XHP35A-00-0000-0D0HD457E
			D2	510	567				XHP35A-00-0000-0D0HD257E
	90		C4	475	528			57E	XHP35A-00-0000-0D0UC457E
			C2	440	489				XHP35A-00-0000-0D0UC257E
			B4	410	456				XHP35A-00-0000-0D0UB457E
5000 K	70		E4	635	706			50E	XHP35A-00-0000-0D0BE450E
			E2	590	656				XHP35A-00-0000-0D0BE250E
			D4	550	612				XHP35A-00-0000-0D0BD450E
	80		D4	550	612			50E	XHP35A-00-0000-0D0HD450E
			D2	510	567				XHP35A-00-0000-0D0HD250E
	90		C4	475	528			50E	XHP35A-00-0000-0D0UC450E
			C2	440	489				XHP35A-00-0000-0D0UC250E
			B4	410	456				XHP35A-00-0000-0D0UB450E
4500 K	70		E2	590	656			45E	XHP35A-00-0000-0D0BE245E
			D4	550	612				XHP35A-00-0000-0D0BD445E
	80		D4	550	612			45E	XHP35A-00-0000-0D0HD445E
			D2	510	567				XHP35A-00-0000-0D0HD245E
	90		C2	440	489			45E	XHP35A-00-0000-0D0UC245E
			B4	410	456				XHP35A-00-0000-0D0UB445E

Notes:

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 31).
- Cree XLamp XHP35 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 are for reference only.

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FLUX CHARACTERISTICS, HIGH DENSITY EASYWHITE® ORDER CODES AND BINS (T_J = 85 °C) - CONTINUED

Nominal CCT	CRI		Minimum Luminous Flux @350 mA			3-Step		5-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Group	Order Code	Group	Order Code
4000 K	70		E2	590	656			40E	XHP35A-00-0000-0D0BE240E
			D4	550	612				XHP35A-00-0000-0D0BD440E
			D2	510	567				XHP35A-00-0000-0D0BD240E
	80		D4	550	612			40E	XHP35A-00-0000-0D0HD440E
			D2	510	567				XHP35A-00-0000-0D0HD240E
	90		C2	440	489			40E	XHP35A-00-0000-0D0UC240E
			B4	410	456				XHP35A-00-0000-0D0UB440E
3500 K	70		E2	590	656			35E	XHP35A-00-0000-0D0BE235E
			D4	550	612				XHP35A-00-0000-0D0BD435E
			D2	510	567				XHP35A-00-0000-0D0BD235E
	80		D4	550	612	35G	XHP35A-00-0000-0D0HD435G	35E	XHP35A-00-0000-0D0HD435E
			D2	510	567		XHP35A-00-0000-0D0HD235G		XHP35A-00-0000-0D0HD235E
			C4	475	528		XHP35A-00-0000-0D0HC435G		XHP35A-00-0000-0D0HC435E
	90		C2	440	489	35G	XHP35A-00-0000-0D0UC235G	35E	XHP35A-00-0000-0D0UC235E
			B4	410	456		XHP35A-00-0000-0D0UB435G		XHP35A-00-0000-0D0UB435E
3000 K	70		D4	550	612			30E	XHP35A-00-0000-0D0BD430E
			D2	510	567				XHP35A-00-0000-0D0BD230E
	80		D2	510	567	30G	XHP35A-00-0000-0D0HD230G	30E	XHP35A-00-0000-0D0HD230E
			C4	475	528		XHP35A-00-0000-0D0HC430G		XHP35A-00-0000-0D0HC430E
	90		C2	440	489	30G	XHP35A-00-0000-0D0UC230G	30E	XHP35A-00-0000-0D0UC230E
			B4	410	456		XHP35A-00-0000-0D0UB430G		XHP35A-00-0000-0D0UB430E
			B2	380	423		XHP35A-00-0000-0D0UB230G		XHP35A-00-0000-0D0UB230E
2700 K	80		C4	475	528	27G	XHP35A-00-0000-0D0HC427G	27E	XHP35A-00-0000-0D0HC427E
			C2	440	489		XHP35A-00-0000-0D0HC227G		XHP35A-00-0000-0D0HC227E
	90		B4	410	456	27G	XHP35A-00-0000-0D0UB427G	27E	XHP35A-00-0000-0D0UB427E
			B2	380	423		XHP35A-00-0000-0D0UB227G		XHP35A-00-0000-0D0UB227E

Notes:

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 31).
- Cree XLamp XHP35 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 are for reference only.

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FLUX CHARACTERISTICS, HIGH DENSITY ANSI WHITE ORDER CODES AND BINS (T_J = 85 °C)

The following table provides order codes for XLamp XHP35 High Density LEDs. For a complete description of how the flux and chromaticity groups are reflected in the bin code and order code nomenclature, please see the Bin and Order Code Formats section (page 29).

Nomimal CCT	Chromaticity Regions	CRI		Minimum Luminous Flux @ 350 mA			Order Code
		Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	
7000 K	0A, 0B, 0C, 0D, 0R, 0S, 0T, 0U, 1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U	0	68	E4	635	706	XHP35A-00-0000-0D00E40DT
				E2	590	656	XHP35A-00-0000-0D00E20DT
				D4	550	612	XHP35A-00-0000-0D00D40DT
		70		E4	635	706	XHP35A-00-0000-0D0BE40DT
				E2	590	656	XHP35A-00-0000-0D0BE20DT
				D4	550	612	XHP35A-00-0000-0D0BD40DT
		80		D4	550	612	XHP35A-00-0000-0D0HD40DT
				D2	510	567	XHP35A-00-0000-0D0HD20DT
		90		C4	475	528	XHP35A-00-0000-0D0UC40DT
				C2	440	489	XHP35A-00-0000-0D0UC20DT
				B4	410	456	XHP35A-00-0000-0D0UB40DT
6500 K	1A, 1B, 1C, 1D	0	68	E4	635	706	XHP35A-00-0000-0D00E40E1
				E2	590	656	XHP35A-00-0000-0D00E20E1
				D4	550	612	XHP35A-00-0000-0D00D40E1
		70		E4	635	706	XHP35A-00-0000-0D0BE40E1
				E2	590	656	XHP35A-00-0000-0D0BE20E1
				D4	550	612	XHP35A-00-0000-0D0BD40E1
		80		D4	550	612	XHP35A-00-0000-0D0HD40E1
				D2	510	567	XHP35A-00-0000-0D0HD20E1
		90		C4	475	528	XHP35A-00-0000-0D0UC40E1
				C2	440	489	XHP35A-00-0000-0D0UC20E1
				B4	410	456	XHP35A-00-0000-0D0UB40E1
6000 K	1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 2U	0	68	E4	635	706	XHP35A-00-0000-0D00E40DV
				E2	590	656	XHP35A-00-0000-0D00E20DV
				D4	550	612	XHP35A-00-0000-0D00D40DV
		70		E4	635	706	XHP35A-00-0000-0D0BE40DV
				E2	590	656	XHP35A-00-0000-0D0BE20DV
				D4	550	612	XHP35A-00-0000-0D0BD40DV
		80		D4	550	612	XHP35A-00-0000-0D0HD40DV
				D2	510	567	XHP35A-00-0000-0D0HD20DV
		90		C4	475	528	XHP35A-00-0000-0D0UC40DV
				C2	440	489	XHP35A-00-0000-0D0UC20DV
				B4	410	456	XHP35A-00-0000-0D0UB40DV

Notes:

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 31).
- Cree XLamp XHP35 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 are for reference only.

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FLUX CHARACTERISTICS, HIGH DENSITY ANSI ORDER CODES AND BINS (T_J = 85 °C) - CONTINUED

Nomimal CCT	Chromaticity Regions	CRI		Minimum Luminous Flux @ 350 mA			Order Code
		Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	
5700 K	2A, 2B, 2C, 2D	0	68	E4	635	706	XHP35A-00-0000-0D00E40E2
				E2	590	656	XHP35A-00-0000-0D00E20E2
				D4	550	612	XHP35A-00-0000-0D00D40E2
		70		E4	635	706	XHP35A-00-0000-0D0BE40E2
				E2	590	656	XHP35A-00-0000-0D0BE20E2
				D4	550	612	XHP35A-00-0000-0D0BD40E2
		80		D4	550	612	XHP35A-00-0000-0D0HD40E2
				D2	510	567	XHP35A-00-0000-0D0HD20E2
		90		C4	475	528	XHP35A-00-0000-0D0UC40E2
				C2	440	489	XHP35A-00-0000-0D0UC20E2
				B4	410	456	XHP35A-00-0000-0D0UB40E2
5000 K	3A, 3B, 3C, 3D	0	68	E4	635	706	XHP35A-00-0000-0D00E40E3
				E2	590	656	XHP35A-00-0000-0D00E20E3
				D4	550	612	XHP35A-00-0000-0D00D40E3
		70		E4	635	706	XHP35A-00-0000-0D0BE40E3
				E2	590	656	XHP35A-00-0000-0D0BE20E3
				D4	550	612	XHP35A-00-0000-0D0BD40E3
		80		D4	550	612	XHP35A-00-0000-0D0HD40E3
				D2	510	567	XHP35A-00-0000-0D0HD20E3
		90		C4	475	528	XHP35A-00-0000-0D0UC40E3
				C2	440	489	XHP35A-00-0000-0D0UC20E3
				B4	410	456	XHP35A-00-0000-0D0UB40E3
4500 K	4A, 4B, 4C, 4D	0	68	E2	590	656	XHP35A-00-0000-0D00E20E4
				D4	550	612	XHP35A-00-0000-0D00D40E4
		70		E2	590	656	XHP35A-00-0000-0D0BE20E4
				D4	550	612	XHP35A-00-0000-0D0BD40E4
		80		D4	550	612	XHP35A-00-0000-0D0HD40E4
				D2	510	567	XHP35A-00-0000-0D0HD20E4
		90		C4	475	528	XHP35A-00-0000-0D0UC40E4
				C2	440	489	XHP35A-00-0000-0D0UC20E4
				B4	410	456	XHP35A-00-0000-0D0UB40E4

Notes:

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 31).
- Cree XLamp XHP35 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 are for reference only.

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FLUX CHARACTERISTICS, HIGH DENSITY ANSI ORDER CODES AND BINS (T_J = 85 °C) - CONTINUED

Nomimal CCT	Chromaticity Regions	CRI		Minimum Luminous Flux @ 350 mA			Order Code
		Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	
4000 K	5A, 5B, 5C, 5D	0	68	E2	590	656	XHP35A-00-0000-0D00E20E5
				D4	550	612	XHP35A-00-0000-0D00D40E5
				D2	510	567	XHP35A-00-0000-0D00D20E5
		70		E2	590	656	XHP35A-00-0000-0D0BE20E5
				D4	550	612	XHP35A-00-0000-0D0BD40E5
				D2	510	567	XHP35A-00-0000-0D0BD20E5
		80		D4	550	612	XHP35A-00-0000-0D0HD40E5
				D2	510	567	XHP35A-00-0000-0D0HD20E5
		90		C2	440	489	XHP35A-00-0000-0D0UC20E5
				B4	410	456	XHP35A-00-0000-0D0UB40E5
3500 K	6A, 6B, 6C, 6D	70		E2	590	656	XHP35A-00-0000-0D0BE20E6
				D4	550	612	XHP35A-00-0000-0D0BD40E6
				D2	510	567	XHP35A-00-0000-0D0BD20E6
		80		D4	550	612	XHP35A-00-0000-0D0HD40E6
				D2	510	567	XHP35A-00-0000-0D0HD20E6
				C4	475	528	XHP35A-00-0000-0D0HC40E6
		90		C2	440	489	XHP35A-00-0000-0D0UC20E6
				B4	410	456	XHP35A-00-0000-0D0UB40E6
3000 K	7A, 7B, 7C, 7D	70		D4	550	612	XHP35A-00-0000-0D0BD40E7
				D2	510	567	XHP35A-00-0000-0D0BD20E7
		80		D2	510	567	XHP35A-00-0000-0D0HD20E7
				C4	475	528	XHP35A-00-0000-0D0HC40E7
		90		C2	440	489	XHP35A-00-0000-0D0UC20E7
				B4	410	456	XHP35A-00-0000-0D0UB40E7
				B2	380	423	XHP35A-00-0000-0D0UB20E7
2700 K	8A, 8B, 8C, 8D	80		C4	475	528	XHP35A-00-0000-0D0HC40E8
				C2	440	489	XHP35A-00-0000-0D0HC20E8
		90		B4	410	456	XHP35A-00-0000-0D0UB40E8
				B2	380	423	XHP35A-00-0000-0D0UB20E8

Notes:

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 31).
- Cree XLamp XHP35 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 are for reference only.

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FLUX CHARACTERISTICS, HIGH INTENSITY EASYWHITE® ORDER CODES AND BINS (T_J = 85 °C)

The following table provides order codes for XLamp XHP35 High Intensity LEDs. For a complete description of how the flux and chromaticity groups are reflected in the bin code and order code nomenclature, please see the Bin and Order Code Formats section (page 29).

Nominal CCT	CRI		Minimum Luminous Flux @350 mA			3-Step		5-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Group	Order Code	Group	Order Code
5700 K	70		D4	550	612			57E	XHP35A-H0-0000-0D0BD457E
			D2	510	567				XHP35A-H0-0000-0D0BD257E
			C4	475	528				XHP35A-H0-0000-0D0BC457E
	80		D2	510	567			57E	XHP35A-H0-0000-0D0HD257E
			C4	475	528				XHP35A-H0-0000-0D0HC457E
			C2	440	489				XHP35A-H0-0000-0D0HC257E
	90		C2	440	489			57E	XHP35A-H0-0000-0D0UC257E
			B4	410	456				XHP35A-H0-0000-0D0UB457E
			B2	380	423				XHP35A-H0-0000-0D0UB257E
			A4	355	395				XHP35A-H0-0000-0D0UA457E
5000 K	70		D4	550	612			50E	XHP35A-H0-0000-0D0BD450E
			D2	510	567				XHP35A-H0-0000-0D0BD250E
			C4	475	528				XHP35A-H0-0000-0D0BC450E
	80		D2	510	567			50E	XHP35A-H0-0000-0D0HD250E
			C4	475	528				XHP35A-H0-0000-0D0HC450E
			C2	440	489				XHP35A-H0-0000-0D0HC250E
	90		C2	440	489			50E	XHP35A-H0-0000-0D0UC250E
			B4	410	456				XHP35A-H0-0000-0D0UB450E
			B2	380	423				XHP35A-H0-0000-0D0UB250E
			A4	355	395				XHP35A-H0-0000-0D0UA450E

Notes:

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 31).
- Cree XLamp XHP35 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 are for reference only.

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FLUX CHARACTERISTICS, HIGH INTENSITY EASYWHITE® ORDER CODES AND BINS (T_J = 85 °C) - CONTINUED

Nominal CCT	CRI		Minimum Luminous Flux @350 mA			3-Step		5-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Group	Order Code	Group	Order Code
4500 K	70		D4	550	612			45E	XHP35A-H0-0000-0D0BD445E
			D2	510	567				XHP35A-H0-0000-0D0BD245E
			C4	475	528				XHP35A-H0-0000-0D0BC445E
	80		D2	510	567			45E	XHP35A-H0-0000-0D0HD245E
			C4	475	528				XHP35A-H0-0000-0D0HC445E
			C2	440	489				XHP35A-H0-0000-0D0HC245E
	90		B4	410	456			45E	XHP35A-H0-0000-0D0UB445E
			B2	380	423				XHP35A-H0-0000-0D0UB245E
			A4	355	395				XHP35A-H0-0000-0D0UA445E
4000 K	70		D4	550	612			40E	XHP35A-H0-0000-0D0BD440E
			D2	510	567				XHP35A-H0-0000-0D0BD240E
			C4	475	528				XHP35A-H0-0000-0D0BC440E
			C2	440	489				XHP35A-H0-0000-0D0BC240E
	80		C4	475	528			40E	XHP35A-H0-0000-0D0HC440E
			C2	440	489				XHP35A-H0-0000-0D0HC240E
	90		B4	410	456			40E	XHP35A-H0-0000-0D0UB440E
			B2	380	423				XHP35A-H0-0000-0D0UB240E
			A4	355	395				XHP35A-H0-0000-0D0UA440E
3500 K	70		D2	510	567			35E	XHP35A-H0-0000-0D0BD235E
			C4	475	528				XHP35A-H0-0000-0D0BC435E
			C2	440	489				XHP35A-H0-0000-0D0BC235E
	80		C4	475	528		XHP35A-H0-0000-0D0HC435G	35E	XHP35A-H0-0000-0D0HC435E
			C2	440	489	35G	XHP35A-H0-0000-0D0HC235G		XHP35A-H0-0000-0D0HC235E
			B4	410	456		XHP35A-H0-0000-0D0HB435G		XHP35A-H0-0000-0D0HB435E
	90		B2	380	423	35G	XHP35A-H0-0000-0D0UB235G	35E	XHP35A-H0-0000-0D0UB235E
			A4	355	395		XHP35A-H0-0000-0D0UA435G		XHP35A-H0-0000-0D0UA435E

Notes:

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 31).
- Cree XLamp XHP35 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 are for reference only.

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FLUX CHARACTERISTICS, HIGH INTENSITY EASYWHITE® ORDER CODES AND BINS (T_J = 85 °C) - CONTINUED

Nominal CCT	CRI		Minimum Luminous Flux @350 mA			3-Step		5-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	Group	Order Code	Group	Order Code
3000 K	70		D2	510	567			30E	XHP35A-H0-0000-0D0BD230E
			C4	475	528				XHP35A-H0-0000-0D0BC430E
			C2	440	489				XHP35A-H0-0000-0D0BC230E
	80		C2	440	489	30G	XHP35A-H0-0000-0D0HC230G	30E	XHP35A-H0-0000-0D0HC230E
			B4	410	456		XHP35A-H0-0000-0D0HB430G		XHP35A-H0-0000-0D0HB430E
	90		B2	380	423	30G	XHP35A-H0-0000-0D0UB230G	30E	XHP35A-H0-0000-0D0UB230E
			A4	355	395		XHP35A-H0-0000-0D0UA430G		XHP35A-H0-0000-0D0UA430E
			A2	330	367		XHP35A-H0-0000-0D0UA230G		XHP35A-H0-0000-0D0UA230E
2700 K	80		C2	440	489	27G	XHP35A-H0-0000-0D0HC227G	27E	XHP35A-H0-0000-0D0HC227E
			B4	410	456		XHP35A-H0-0000-0D0HB427G		XHP35A-H0-0000-0D0HB427E
			B2	380	423		XHP35A-H0-0000-0D0HB227G		XHP35A-H0-0000-0D0HB227E
	90		A4	355	395	27G	XHP35A-H0-0000-0D0UA427G	27E	XHP35A-H0-0000-0D0UA427E
			A2	330	367		XHP35A-H0-0000-0D0UA227G		XHP35A-H0-0000-0D0UA227E

Notes:

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 31).
- Cree XLamp XHP35 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.

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FLUX CHARACTERISTICS, HIGH INTENSITY ANSI WHITE ORDER CODES AND BINS (T_J = 85 °C)

The following table provides order codes for XLamp XHP35 High Intensity LEDs. For a complete description of how the flux and chromaticity groups are reflected in the bin code and order code nomenclature, please see the Bin and Order Code Formats section (page 29).

Nomimal CCT	Chromaticity Regions	CRI		Minimum Luminous Flux @ 350 mA			Order Code
		Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	
7000 K	0A, 0B, 0C, 0D, 0R, 0S, 0T, 0U, 1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U	0	68	D4	550	612	XHP35A-H0-0000-0D00D40DT
				D2	510	567	XHP35A-H0-0000-0D00D20DT
				C4	475	528	XHP35A-H0-0000-0D00C40DT
		70		D4	550	612	XHP35A-H0-0000-0D0BD40DT
				D2	510	567	XHP35A-H0-0000-0D0BD20DT
				C4	475	528	XHP35A-H0-0000-0D0BC40DT
		80		D2	510	567	XHP35A-H0-0000-0D0HD20DT
				C4	475	528	XHP35A-H0-0000-0D0HC40DT
				C2	440	489	XHP35A-H0-0000-0D0HC20DT
		90		B4	410	456	XHP35A-H0-0000-0D0UB40DT
				B2	380	423	XHP35A-H0-0000-0D0UB20DT
				A4	355	395	XHP35A-H0-0000-0D0UA40DT
6500 K	1A, 1B, 1C, 1D	0	68	D4	550	612	XHP35A-H0-0000-0D00D40E1
				D2	510	567	XHP35A-H0-0000-0D00D20E1
				C4	475	528	XHP35A-H0-0000-0D00C40E1
		70		D4	550	612	XHP35A-H0-0000-0D0BD40E1
				D2	510	567	XHP35A-H0-0000-0D0BD20E1
				C4	475	528	XHP35A-H0-0000-0D0BC40E1
		80		D2	510	567	XHP35A-H0-0000-0D0HD20E1
				C4	475	528	XHP35A-H0-0000-0D0HC40E1
				C2	440	489	XHP35A-H0-0000-0D0HC20E1
		90		B4	410	456	XHP35A-H0-0000-0D0UB40E1
				B2	380	423	XHP35A-H0-0000-0D0UB20E1
				A4	355	395	XHP35A-H0-0000-0D0UA40E1

Notes:

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 31).
- Cree XLamp XHP35 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 are for reference only.

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FLUX CHARACTERISTICS, HIGH INTENSITY ANSI ORDER CODES AND BINS (T_J = 85 °C) - CONTINUED

Nomimal CCT	Chromaticity Regions	CRI		Minimum Luminous Flux @ 350 mA			Order Code
		Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	
6000 K	1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 2U	0	68	D4	550	612	XHP35A-H0-0000-0D00D40DV
				D2	510	567	XHP35A-H0-0000-0D00D20DV
				C4	475	528	XHP35A-H0-0000-0D00C40DV
		70		D4	550	612	XHP35A-H0-0000-0D0BD40DV
				D2	510	567	XHP35A-H0-0000-0D0BD20DV
				C4	475	528	XHP35A-H0-0000-0D0BC40DV
		80		D2	510	567	XHP35A-H0-0000-0D0HD20DV
				C4	475	528	XHP35A-H0-0000-0D0HC40DV
				C2	440	489	XHP35A-H0-0000-0D0HC20DV
		90		C2	440	489	XHP35A-H0-0000-0D0UC20DV
				B4	410	456	XHP35A-H0-0000-0D0UB40DV
				B2	380	423	XHP35A-H0-0000-0D0UB20DV
				A4	355	395	XHP35A-H0-0000-0D0UA40DV
5700 K	2A, 2B, 2C, 2D	0	68	D4	550	612	XHP35A-H0-0000-0D00D40E2
				D2	510	567	XHP35A-H0-0000-0D00D20E2
				C4	475	528	XHP35A-H0-0000-0D00C40E2
		70		D4	550	612	XHP35A-H0-0000-0D0BD40E2
				D2	510	567	XHP35A-H0-0000-0D0BD20E2
				C4	475	528	XHP35A-H0-0000-0D0BC40E2
		80		D2	510	567	XHP35A-H0-0000-0D0HD20E2
				C4	475	528	XHP35A-H0-0000-0D0HC40E2
				C2	440	489	XHP35A-H0-0000-0D0HC20E2
		90		C2	440	489	XHP35A-H0-0000-0D0UC20E2
				B4	410	456	XHP35A-H0-0000-0D0UB40E2
				B2	380	423	XHP35A-H0-0000-0D0UB20E2
				A4	355	395	XHP35A-H0-0000-0D0UA40E2

Notes:

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 31).
- Cree XLamp XHP35 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.

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FLUX CHARACTERISTICS, HIGH INTENSITY ANSI ORDER CODES AND BINS (T_J = 85 °C) - CONTINUED

Nomimal CCT	Chromaticity Regions	CRI		Minimum Luminous Flux @ 350 mA			Order Code
		Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	
5000 K	3A, 3B, 3C, 3D	0	68	D4	550	612	XHP35A-H0-0000-0D00D40E3
				D2	510	567	XHP35A-H0-0000-0D00D20E3
				C4	475	528	XHP35A-H0-0000-0D00C40E3
		70		D4	550	612	XHP35A-H0-0000-0D0BD40E3
				D2	510	567	XHP35A-H0-0000-0D0BD20E3
				C4	475	528	XHP35A-H0-0000-0D0BC40E3
		80		D2	510	567	XHP35A-H0-0000-0D0HD20E3
				C4	475	528	XHP35A-H0-0000-0D0HC40E3
				C2	440	489	XHP35A-H0-0000-0D0HC20E3
		90		C2	440	489	XHP35A-H0-0000-0D0UC20E3
				B4	410	456	XHP35A-H0-0000-0D0UB40E3
				B2	380	423	XHP35A-H0-0000-0D0UB20E3
				A4	355	395	XHP35A-H0-0000-0D0UA40E3
4500 K	4A, 4B, 4C, 4D	0	68	D4	550	612	XHP35A-H0-0000-0D00D40E4
				D2	510	567	XHP35A-H0-0000-0D00D20E4
				C4	475	528	XHP35A-H0-0000-0D00C40E4
		70		D4	550	612	XHP35A-H0-0000-0D0BD40E4
				D2	510	567	XHP35A-H0-0000-0D0BD20E4
				C4	475	528	XHP35A-H0-0000-0D0BC40E4
		80		D2	510	567	XHP35A-H0-0000-0D0HD20E4
				C4	475	528	XHP35A-H0-0000-0D0HC40E4
				C2	440	489	XHP35A-H0-0000-0D0HC20E4
		90		B4	410	456	XHP35A-H0-0000-0D0UB40E4
				B2	380	423	XHP35A-H0-0000-0D0UB20E4
				A4	355	395	XHP35A-H0-0000-0D0UA40E4

Notes:

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 31).
- Cree XLamp XHP35 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.

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FLUX CHARACTERISTICS, HIGH INTENSITY ANSI ORDER CODES AND BINS (T_J = 85 °C) - CONTINUED

Nomimal CCT	Chromaticity Regions	CRI		Minimum Luminous Flux @ 350 mA			Order Code
		Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	
4000 K	5A, 5B, 5C, 5D	0	68	D4	550	612	XHP35A-H0-0000-0D00D40E5
				D2	510	567	XHP35A-H0-0000-0D00D20E5
				C4	475	528	XHP35A-H0-0000-0D00C40E5
				C2	440	489	XHP35A-H0-0000-0D00C20E5
		70		D4	550	612	XHP35A-H0-0000-0D0BD40E5
				D2	510	567	XHP35A-H0-0000-0D0BD20E5
				C4	475	528	XHP35A-H0-0000-0D0BC40E5
				C2	440	489	XHP35A-H0-0000-0D0BC20E5
		80		C4	475	528	XHP35A-H0-0000-0D0HC40E5
				C2	440	489	XHP35A-H0-0000-0D0HC20E5
		90		B4	410	456	XHP35A-H0-0000-0D0UB40E5
				B2	380	423	XHP35A-H0-0000-0D0UB20E5
				A4	355	395	XHP35A-H0-0000-0D0UA40E5
3500 K	6A, 6B, 6C, 6D	70		D2	510	567	XHP35A-H0-0000-0D0BD20E6
				C4	475	528	XHP35A-H0-0000-0D0BC40E6
				C2	440	489	XHP35A-H0-0000-0D0BC20E6
		80		C4	475	528	XHP35A-H0-0000-0D0HC40E6
				C2	440	489	XHP35A-H0-0000-0D0HC20E6
				B4	410	456	XHP35A-H0-0000-0D0HB40E6
		90		B2	380	423	XHP35A-H0-0000-0D0UB20E6
				A4	355	395	XHP35A-H0-0000-0D0UA40E6
3000 K	7A, 7B, 7C, 7D	70		D2	510	567	XHP35A-H0-0000-0D0BD20E7
				C4	475	528	XHP35A-H0-0000-0D0BC40E7
				C2	440	489	XHP35A-H0-0000-0D0BC20E7
		80		C2	420	489	XHP35A-H0-0000-0D0HC20E7
				B4	410	456	XHP35A-H0-0000-0D0HB40E7
		90		B2	380	423	XHP35A-H0-0000-0D0UB20E7
				A4	355	395	XHP35A-H0-0000-0D0UA40E7
				A2	330	367	XHP35A-H0-0000-0D0UA20E7
2700 K	8A, 8B, 8C, 8D	80		C2	420	489	XHP35A-H0-0000-0D0HC20E8
				B4	410	456	XHP35A-H0-0000-0D0HB40E8
				B2	380	423	XHP35A-H0-0000-0D0HB20E8
		90		A4	355	395	XHP35A-H0-0000-0D0UA40E8
				A2	330	367	XHP35A-H0-0000-0D0UA20E8

Notes:

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 31).
- Cree XLamp XHP35 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.

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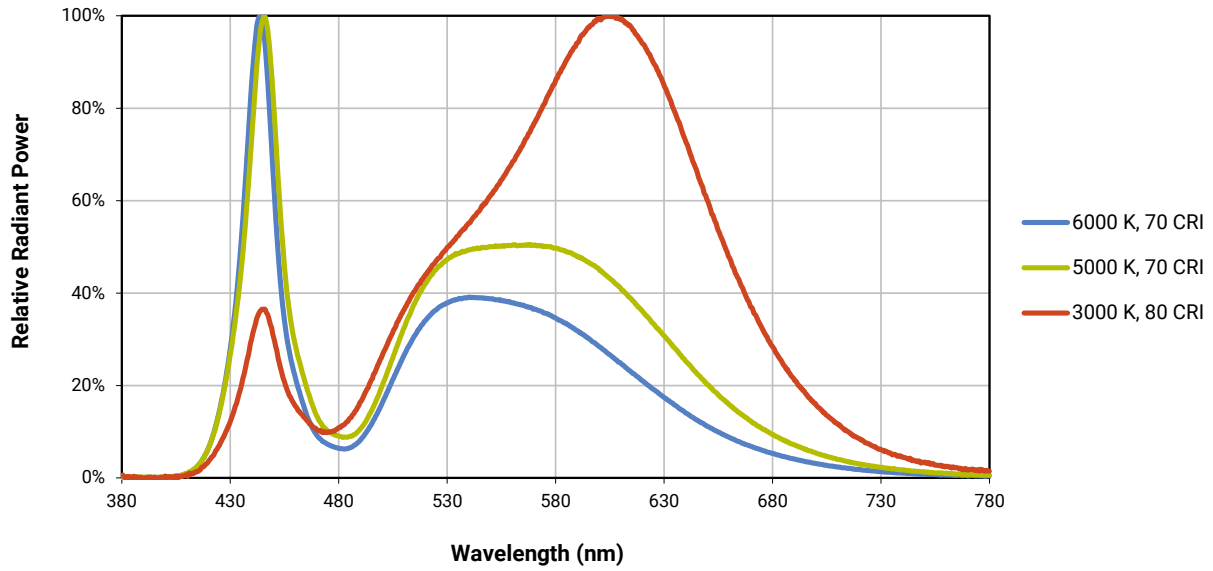
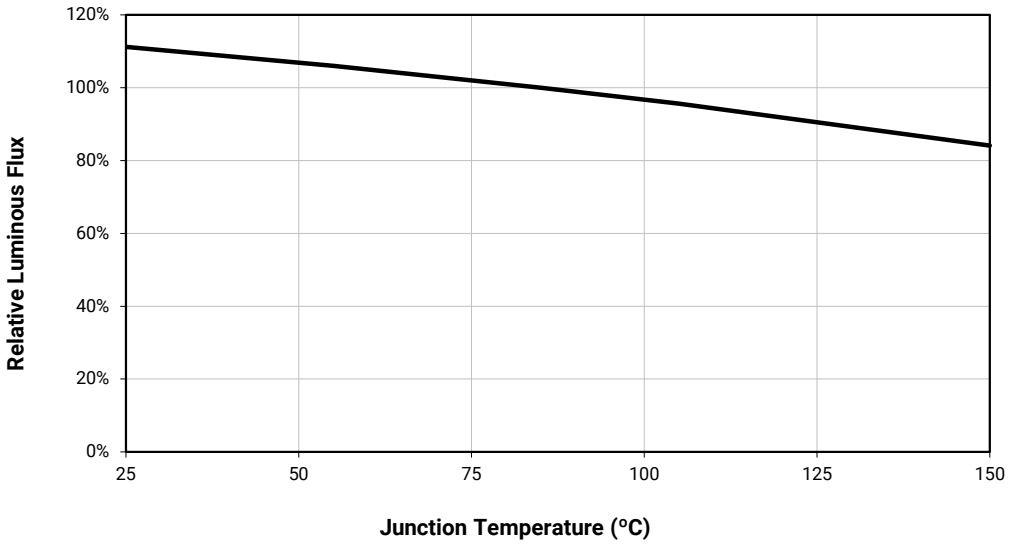


RELATIVE FLUX VS. JUNCTION TEMPERATURE (I_F = 350 mA)



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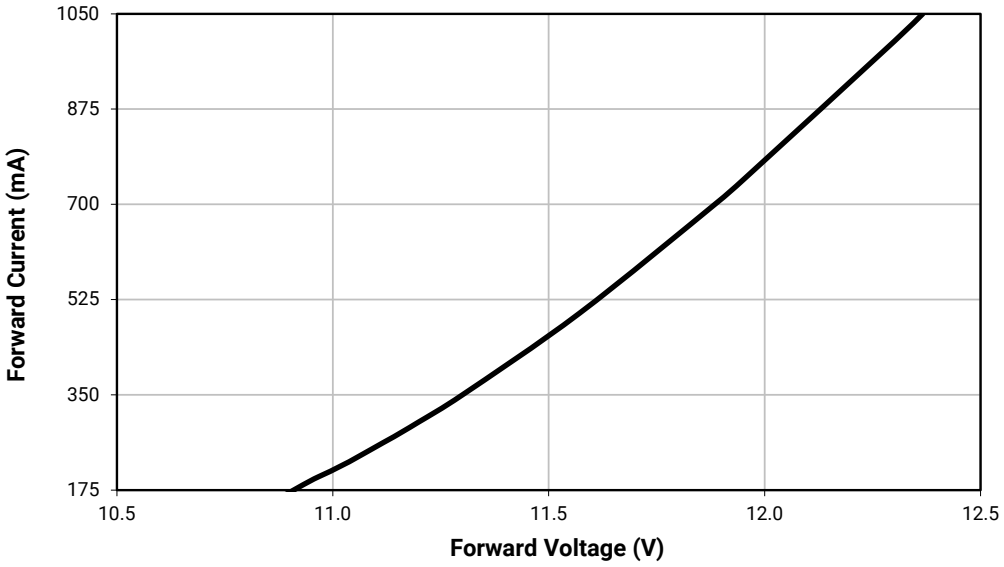
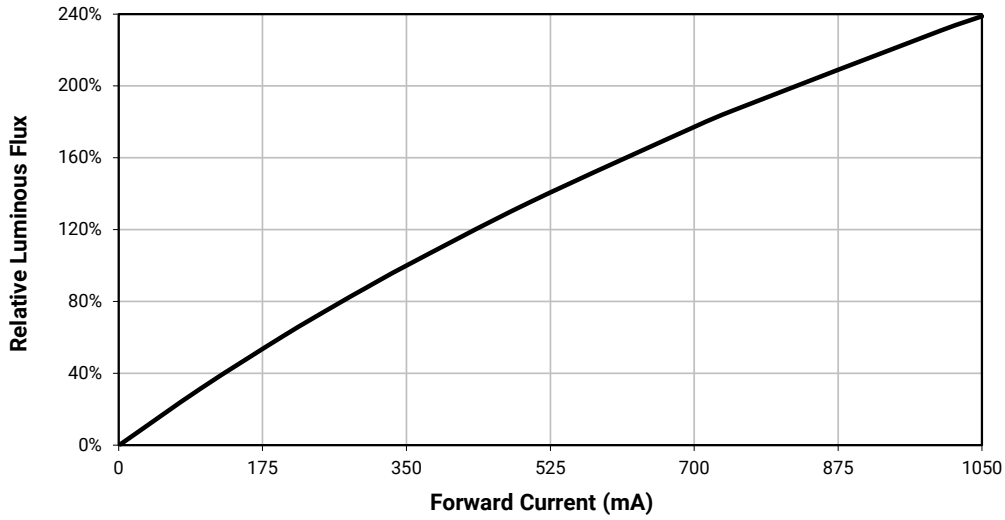
ELECTRICAL CHARACTERISTICS (T_J = 85 °C)



RELATIVE FLUX VS. CURRENT (T_J = 85 °C)



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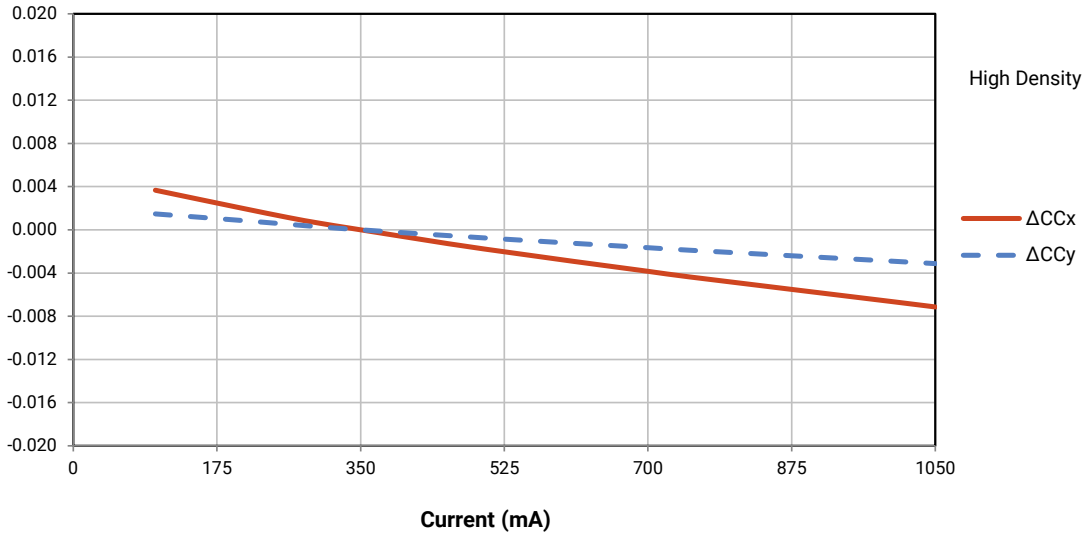
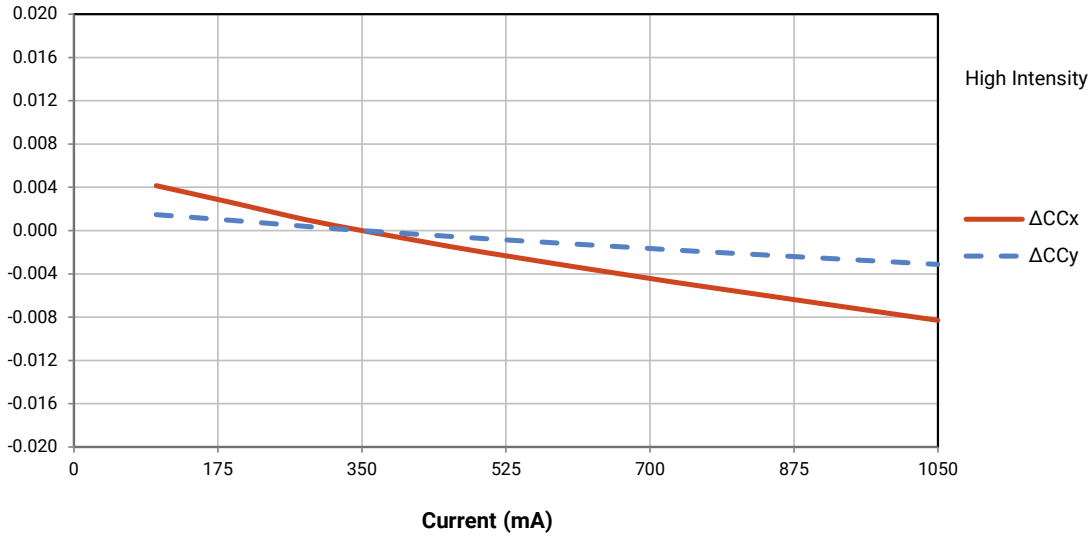
RELATIVE CHROMATICITY VS. CURRENT (WARM WHITE)





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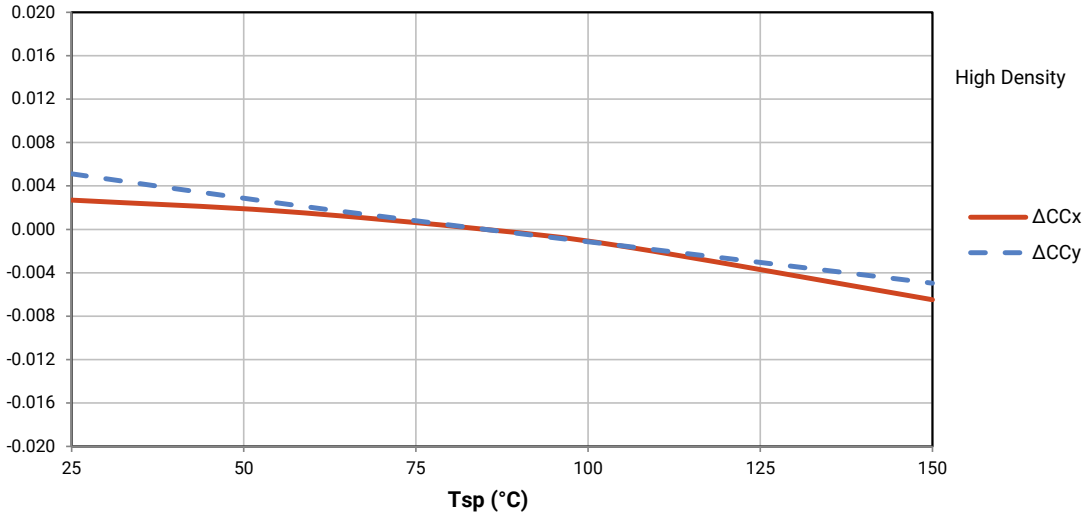
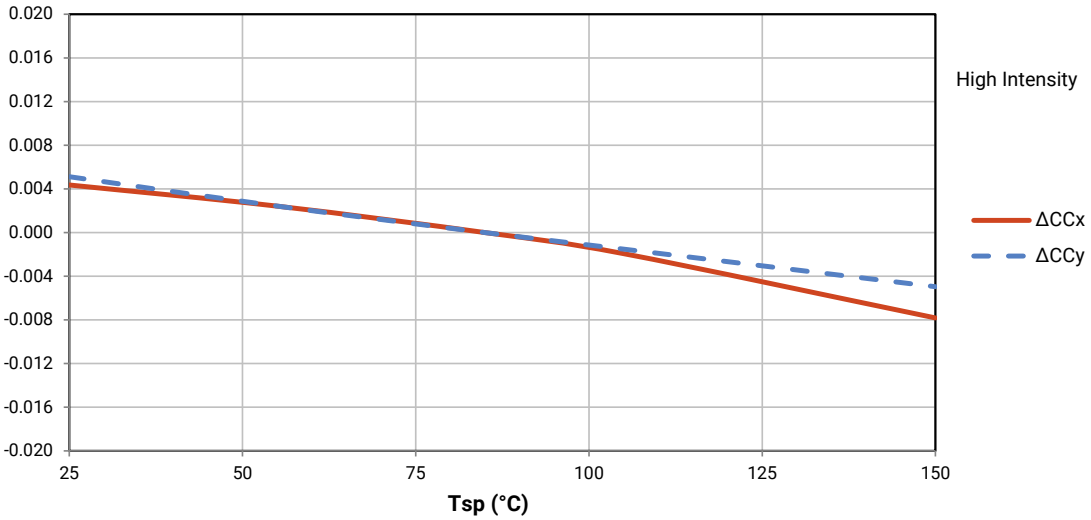
RELATIVE CHROMATICITY VS. TEMPERATURE (WARM WHITE)





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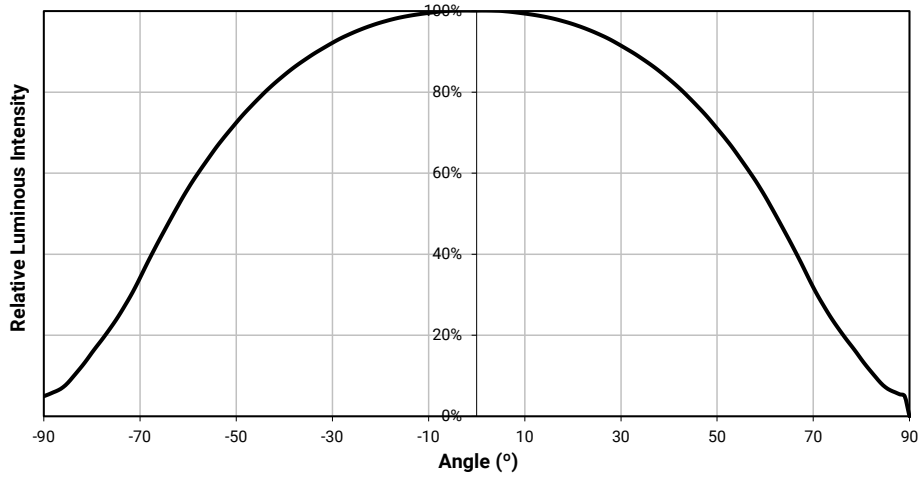
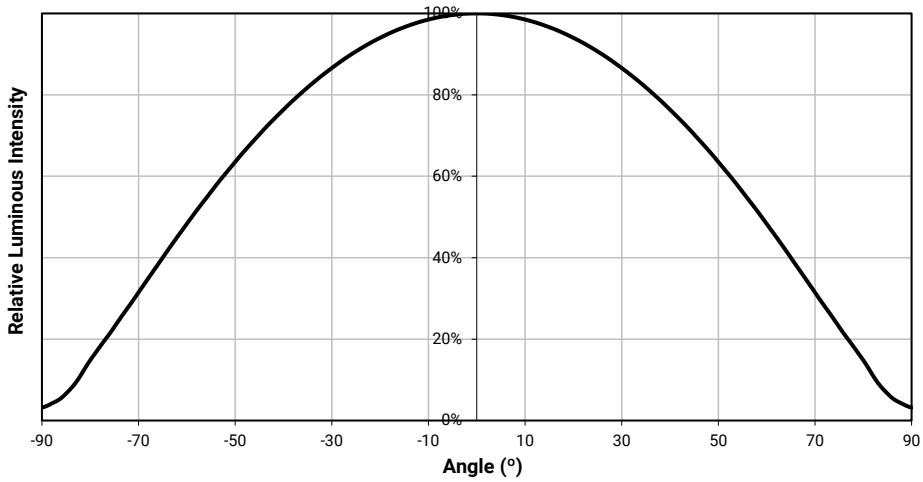
TYPICAL SPATIAL DISTRIBUTION



High Density



High Intensity

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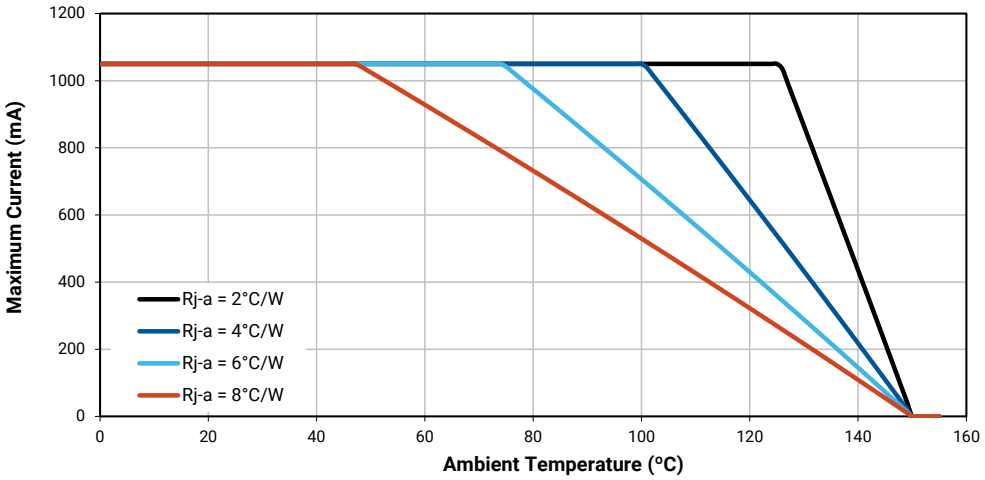
THERMAL DESIGN

The maximum forward current is determined by the thermal resistance between the LED junction and ambient. It is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the solder point to ambient in order to optimize lamp life and optical characteristics.



PERFORMANCE GROUPS – LUMINOUS FLUX (T_J = 85 °C)

XLamp XHP35 LEDs are tested for luminous flux and placed into one of the following luminous-flux groups.

Group Code	Minimum Luminous Flux	Maximum Luminous Flux
A2	330	355
A4	355	380
B2	380	410
B4	410	440
C2	440	475
C4	475	510
D2	510	550
D4	550	590
E2	590	635
E4	635	680
F2	680	730

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PERFORMANCE GROUPS – CHROMATICITY

XLamp XHP35 LEDs are tested for chromaticity and placed into one of the regions defined by the following bounding coordinates.

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

EasyWhite Color Temperatures – 5-Step Ellipse						
Bin Code	CCT	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
		x	y	a	b	
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
45E	4500 K	0.3611	0.3658	0.01420	0.00550	61.5
40E	4000 K	0.3818	0.3797	0.01565	0.00670	53.7
35E	3500 K	0.4073	0.3917	0.01545	0.00690	54.0
30E	3000 K	0.4338	0.4030	0.01390	0.00680	53.2
27E	2700 K	0.4577	0.4099	0.01350	0.00700	48.5

ANSI White Bins			
CCT	Bin Code	x	y
7000 K	0A0	0.2950	0.2970
		0.2920	0.3060
		0.2984	0.3133
		0.3009	0.3042
	0B0	0.2920	0.3060
		0.2895	0.3135
		0.2962	0.3220
		0.2984	0.3133
	0C0	0.2984	0.3133
		0.2962	0.3220
		0.3028	0.3304
		0.3048	0.3207
	0D0	0.2984	0.3133
		0.3048	0.3207
		0.3068	0.3113
		0.3009	0.3042

ANSI White Bins			
CCT	Bin Code	x	y
7000 K	0R0	0.2980	0.2880
		0.2950	0.2970
		0.3009	0.3042
		0.3037	0.2937
	0S0	0.2895	0.3135
		0.2870	0.3210
		0.2937	0.3312
		0.2962	0.3220
	0T0	0.2962	0.3220
		0.2937	0.3312
		0.3005	0.3415
		0.3028	0.3304
	0U0	0.3037	0.2937
		0.3009	0.3042
		0.3068	0.3113
		0.3093	0.2993

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PERFORMANCE GROUPS – CHROMATICITY (CONTINUED)

ANSI White Bins			
CCT	Bin Code	x	y
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			
CCT	Bin Code	x	y
6500 K	1R0	0.3068	0.3113
		0.3144	0.3186
		0.3161	0.3059
		0.3093	0.2993
	1S0	0.3005	0.3415
		0.3099	0.3509
		0.3115	0.3391
		0.3028	0.3304
	1T0	0.3099	0.3509
		0.3196	0.3602
		0.3205	0.3481
		0.3115	0.3391
	1U0	0.3144	0.3186
		0.3221	0.3261
		0.3231	0.3120
		0.3161	0.3059

ANSI White Bins			
CCT	Bin Code	x	y
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			
CCT	Bin Code	x	y
5700 K	2R0	0.3222	0.3243
		0.3290	0.3300
		0.3290	0.3180
		0.3231	0.3120
	2S0	0.3196	0.3602
		0.3290	0.3690
		0.3290	0.3538
		0.3207	0.3462
	2T0	0.3290	0.3690
		0.3381	0.3762
		0.3376	0.3616
		0.3290	0.3538
	2U0	0.3290	0.3300
		0.3366	0.3369
		0.3361	0.3245
		0.3290	0.3180

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PERFORMANCE GROUPS – CHROMATICITY (CONTINUED)

ANSI White Bins			
CCT	Bin Code	x	y
5000 K	3A0	0.3371	0.3490
		0.3451	0.3554
		0.3440	0.3427
		0.3366	0.3369
	3B0	0.3376	0.3616
		0.3463	0.3687
		0.3451	0.3554
		0.3371	0.3490
	3C0	0.3463	0.3687
		0.3551	0.3760
		0.3533	0.3620
		0.3451	0.3554
	3D0	0.3451	0.3554
		0.3533	0.3620
		0.3515	0.3487
		0.3440	0.3427

ANSI White Bins			
CCT	Bin Code	x	y
4500 K	4A0	0.3530	0.3597
		0.3615	0.3659
		0.3512	0.3465
		0.3515	0.3487
	4B0	0.3548	0.3736
		0.3641	0.3804
		0.3530	0.3597
		0.3533	0.3620
	4C0	0.3641	0.3804
		0.3736	0.3874
		0.3702	0.3722
		0.3615	0.3659
	4D0	0.3615	0.3659
		0.3702	0.3722
		0.3670	0.3578
		0.3590	0.3521

ANSI White Bins			
CCT	Bin Code	x	y
4000 K	5A0	0.3670	0.3578
		0.3702	0.3722
		0.3825	0.3798
		0.3783	.3646
	5B0	0.3702	0.3722
		0.3736	0.3874
		0.3869	0.3958
		0.3825	0.3798
	5C0	0.3825	0.3798
		0.3869	0.3958
		.04006	0.4044
		0.3950	0.3875
	5D0	0.3783	0.3646
		0.3825	0.3798
		0.3950	0.3875
		0.3898	0.3716

ANSI White Bins			
CCT	Bin Code	x	y
3500 K	6A0	0.3889	0.3690
		0.3941	0.3848
		0.4080	0.3916
		0.4017	0.3751
	6B0	0.3941	0.3848
		0.3996	0.4015
		.04146	0.4089
		.04080	0.3916
	6C0	0.4080	0.3916
		0.4146	0.4089
		0.4299	0.4165
		0.4221	0.3984
	6D0	0.4017	0.3751
		0.4080	0.3916
		0.4221	0.3984
		0.4147	0.3814

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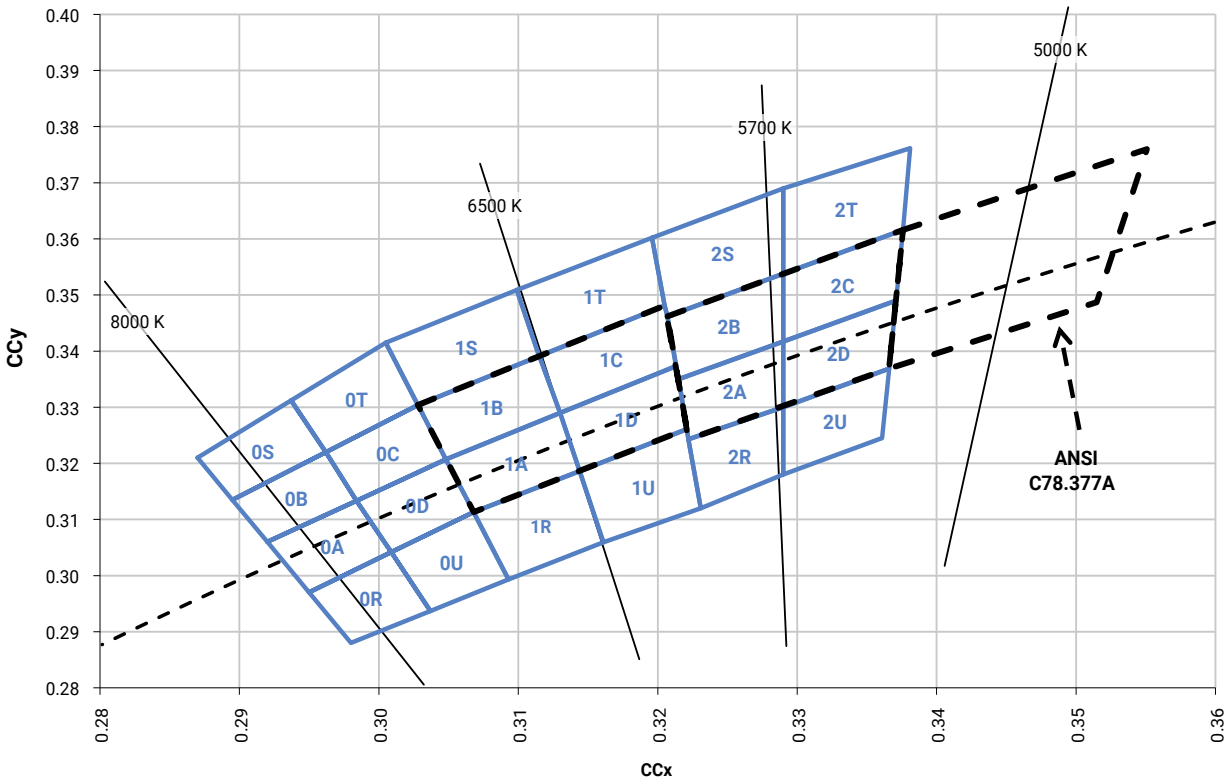
PERFORMANCE GROUPS – CHROMATICITY (CONTINUED)

ANSI White Bins			
CCT	Bin Code	x	y
3000 K	7A0	0.4147	0.3814
		0.4221	0.3984
		0.4342	0.4028
		0.4259	0.3853
	7B0	0.4221	0.3984
		0.4299	0.4165
		0.4430	0.4212
		0.4342	.04028
	7C0	0.4342	0.4028
		0.4430	0.4212
		0.4562	0.4260
		0.4465	0.4071
	7D0	0.4259	0.3853
		0.4342	0.4028
		0.4465	0.4071
		0.4373	0.3893

ANSI White Bins			
CCT	Bin Code	x	y
2700 K	8A0	0.4373	0.3893
		0.4465	0.4071
		0.4582	0.4099
		0.4483	0.3919
	8B0	0.4465	.04071
		0.4562	0.4260
		0.4687	0.4289
		.04582	0.4099
	8C0	0.4582	0.4099
		0.4687	0.4289
		0.4813	0.4319
		0.4700	0.4126
	8D0	0.4483	0.3919
		0.4582	0.4099
		0.4700	0.4126
		0.4593	0.3944

CREE'S EASYWHITE® CHROMATICITY REGIONS PLOTTED ON THE 1931 CIE CURVE

ANSI Cool White



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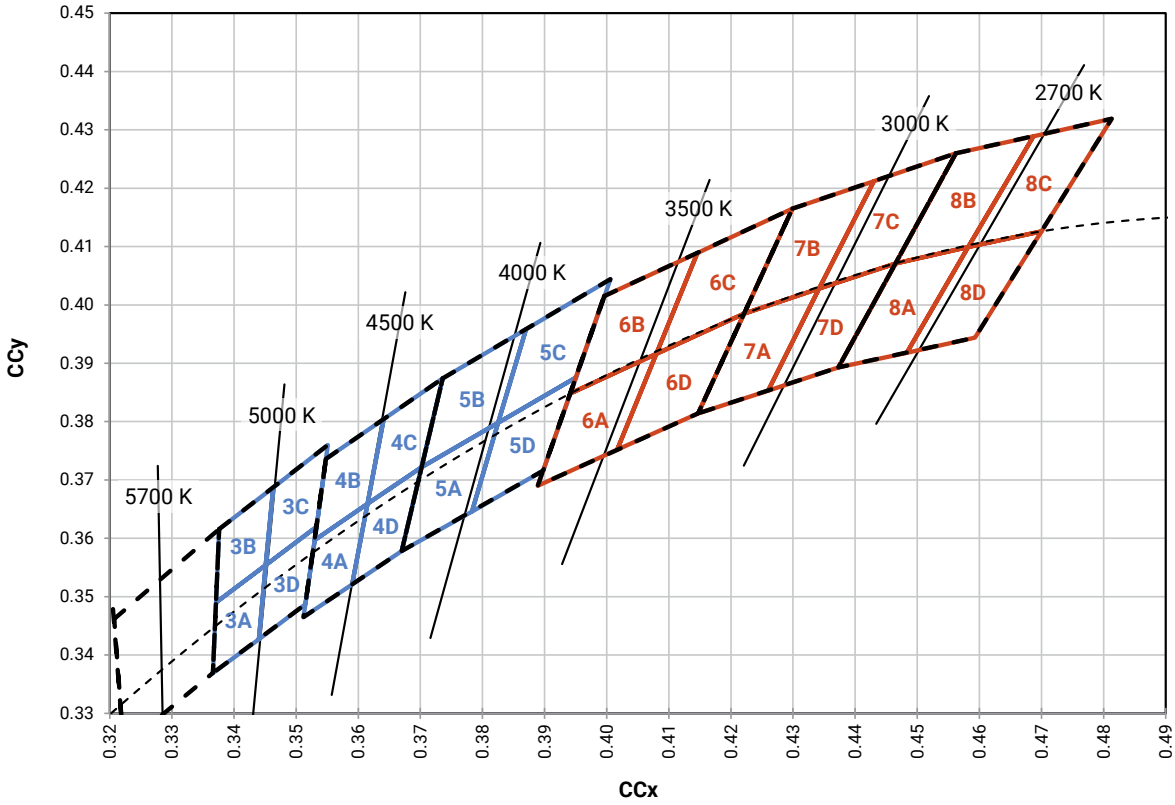
CREE'S EASYWHITE® CHROMATICITY REGIONS PLOTTED ON THE 1931 CIE CURVE - CONTINUED

ANSI Neutral White and ANSI Warm White



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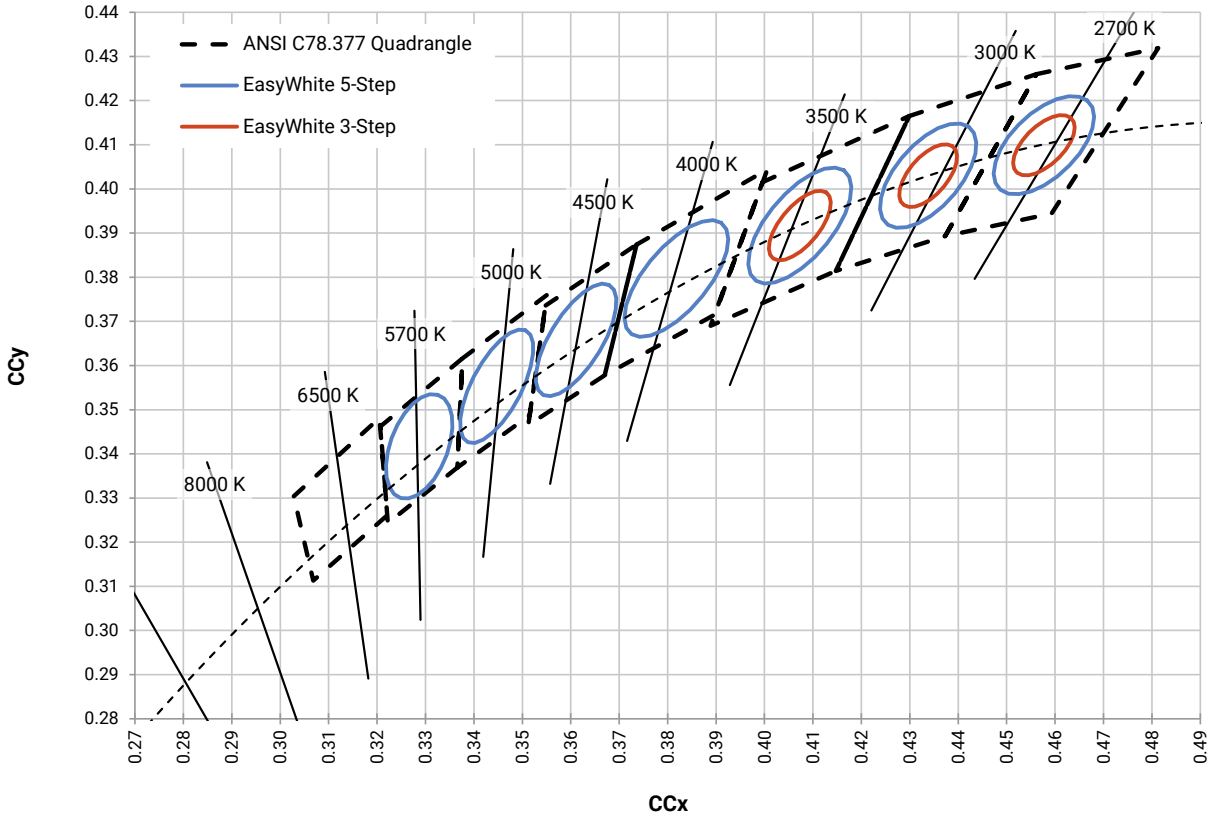
CREE'S EASYWHITE® CHROMATICITY REGIONS PLOTTED ON THE 1931 CIE CURVE - CONTINUED



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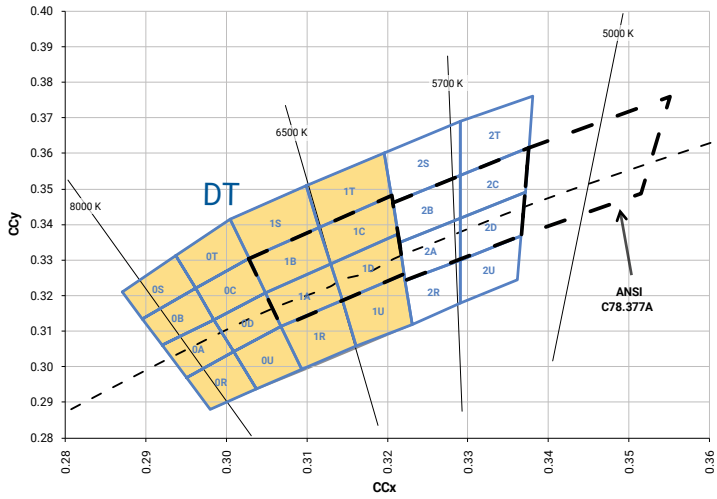
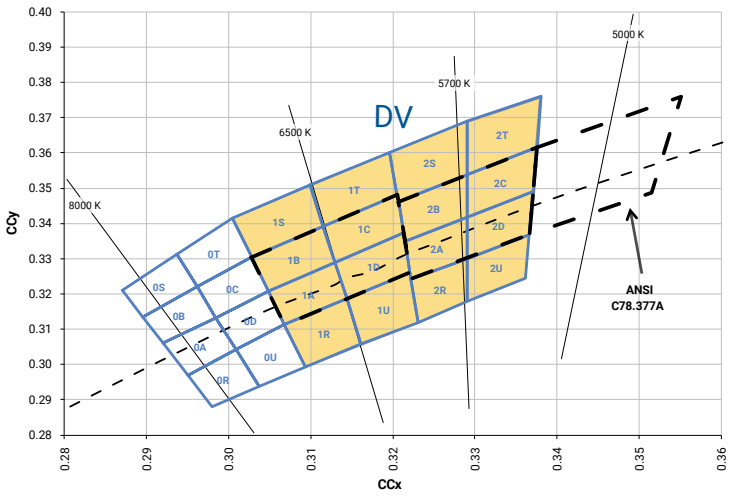
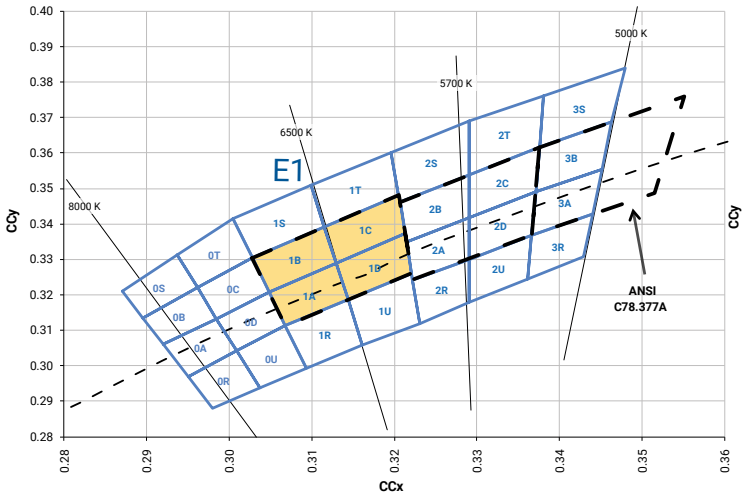
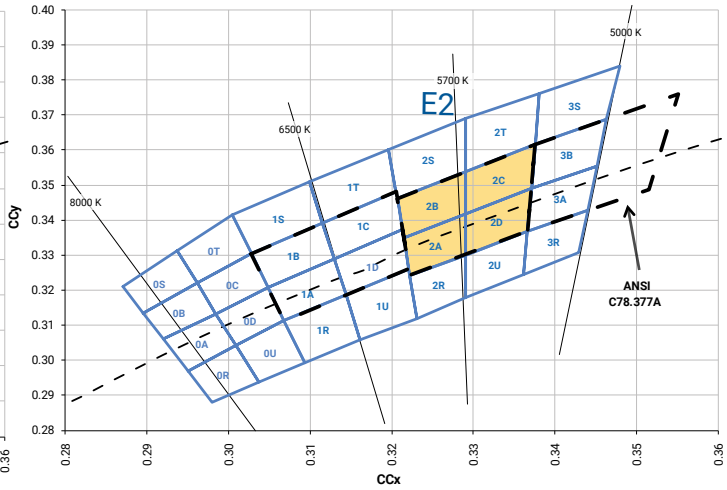
CREE'S STANDARD COOL WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS









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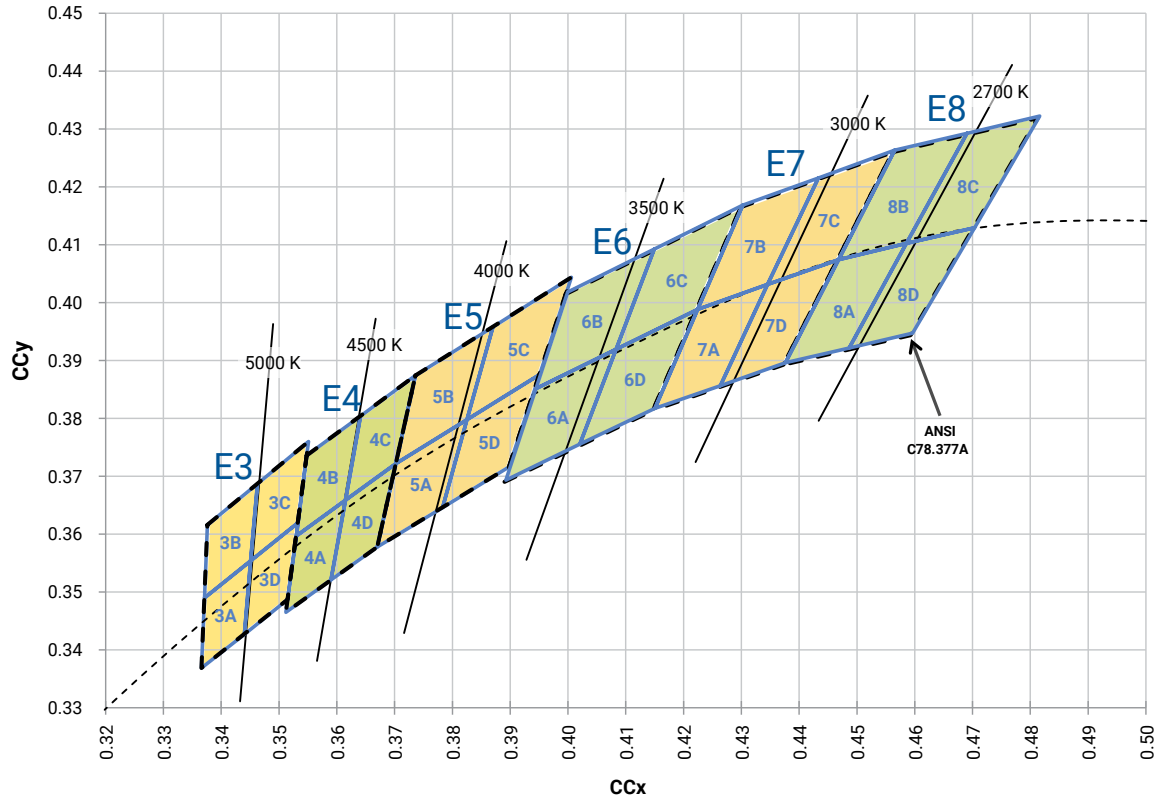
CREE'S STANDARD WARM AND NEUTRAL WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS



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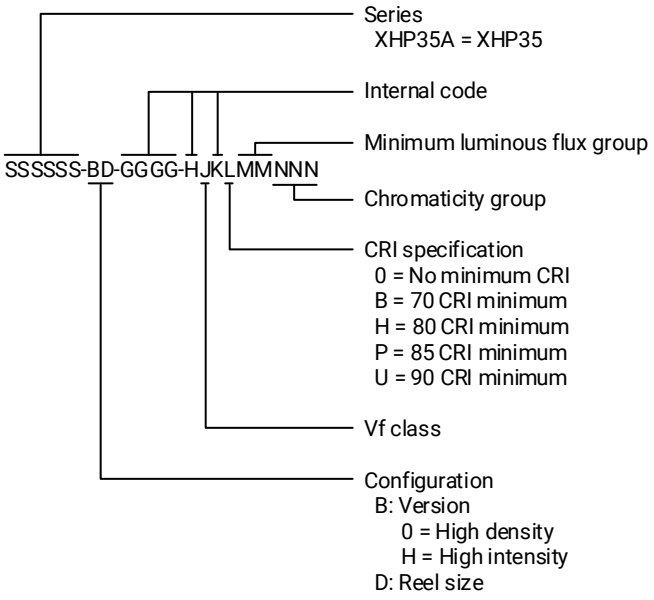
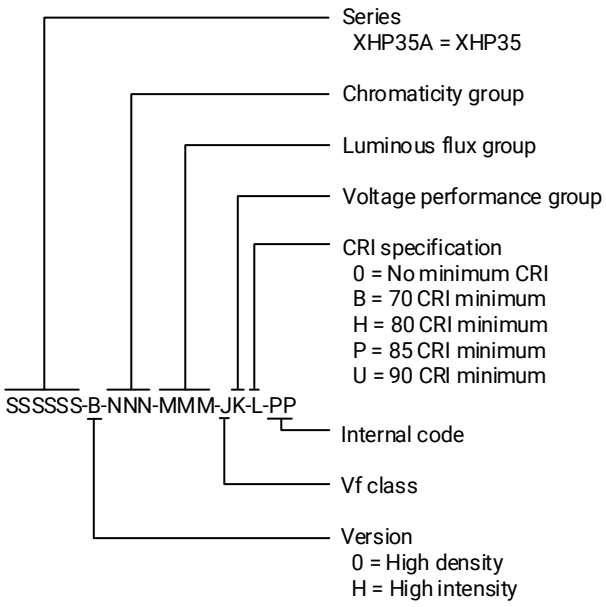
BIN AND ORDER CODE FORMATS

Bin codes and order codes for XHP35 LEDs are configured in the following manner:

Order Code



Bin Code



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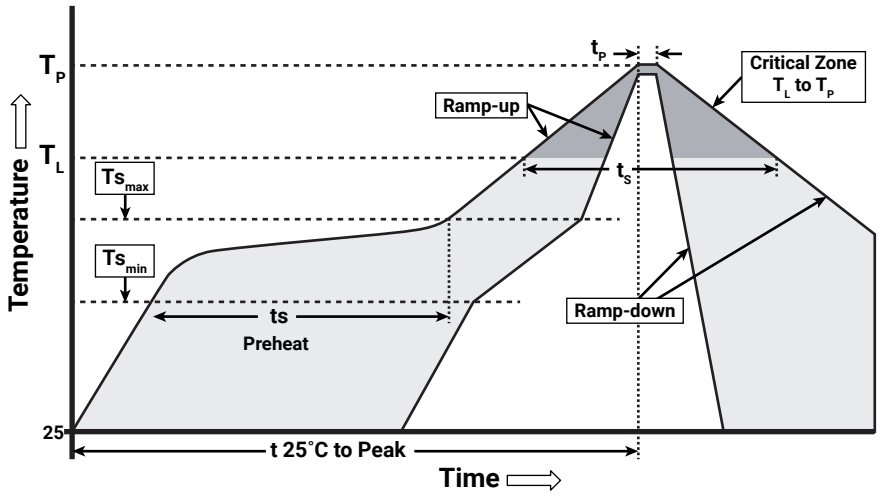
REFLOW SOLDERING CHARACTERISTICS

In testing, Cree has found XLamp XHP35 LEDs to be compatible with JEDEC J-STD-020C, using the parameters listed below. As a general guideline, Cree recommends that users follow the recommended soldering profile provided by the manufacturer of the solder paste used, and therefore it is the lamp or luminaire manufacturer's responsibility to determine applicable soldering requirements.

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



IPC/JEDEC J-STD-020C

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

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

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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'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 applies to ensure long-term reliability for XLamp LEDs and details of Cree's pre-release qualification testing for XLamp LEDs.

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.

Moisture Sensitivity

Cree recommends keeping XLamp LEDs in the provided, resealable moisture-barrier packaging (MBP) until immediately prior to soldering. Unopened MBPs that contain XLamp LEDs do not need special storage for moisture sensitivity.

Once the MBP is opened, XLamp XHP35 LEDs may be stored as MSL 1 per JEDEC J-STD-033, meaning they have unlimited floor life in conditions of ≤ 30 ºC/85% relative humidity (RH). Regardless of the storage condition, Cree recommends sealing any unsoldered LEDs in the original MBP.

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 Ecology section of the Cree 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 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.

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NOTES - CONTINUED

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 refer to the LED Eye Safety application note.

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MECHANICAL DIMENSIONS

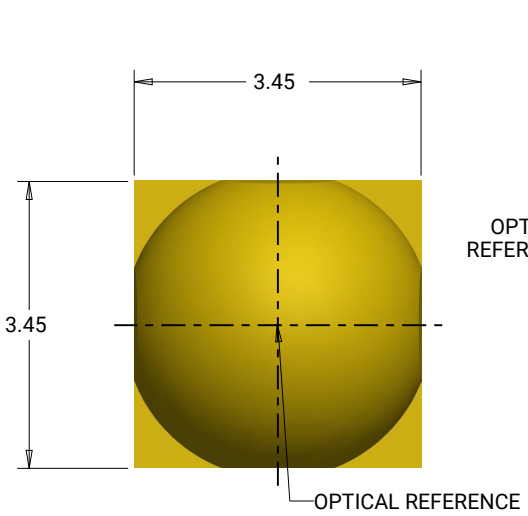
Thermal vias, if present, are not shown on these drawings.

All dimensions are ±.13 mm unless otherwise indicated.

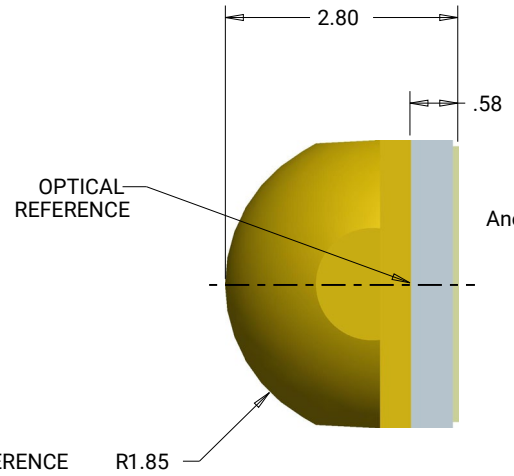
XHP35 High Density

XHP35A-**0**x-xxxx-xxxxxxxxx

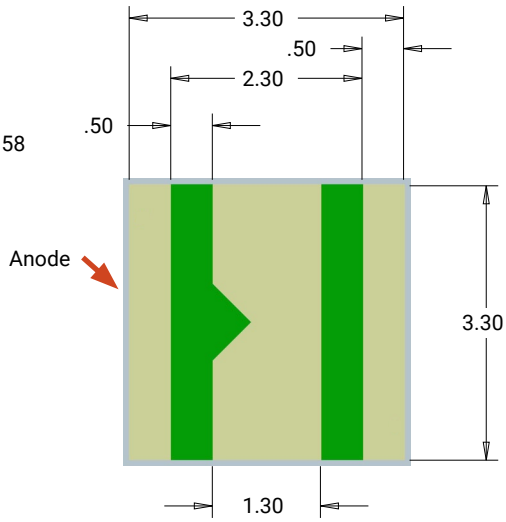
XHP35 High Density



Top View



Side View

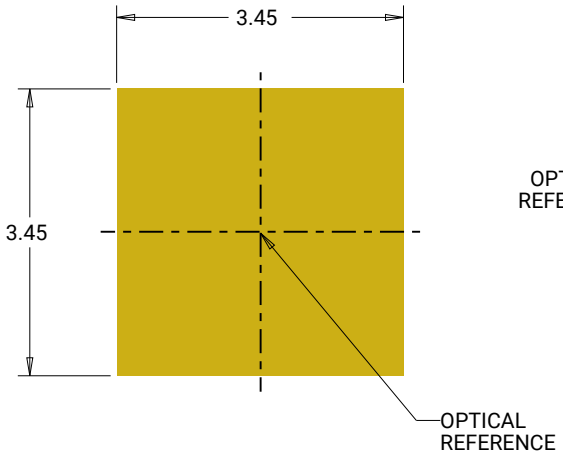


Bottom View

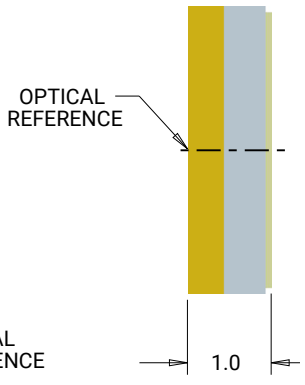
XHP35 High Intensity

XHP35A-**H**x-xxxx-xxxxxxxxx

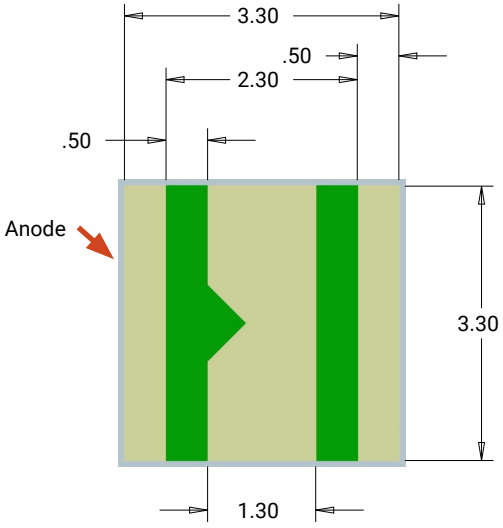
XHP35 High Intensity



Top View



Side View



Bottom View

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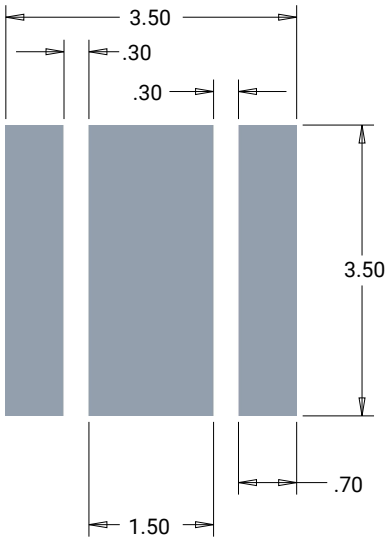
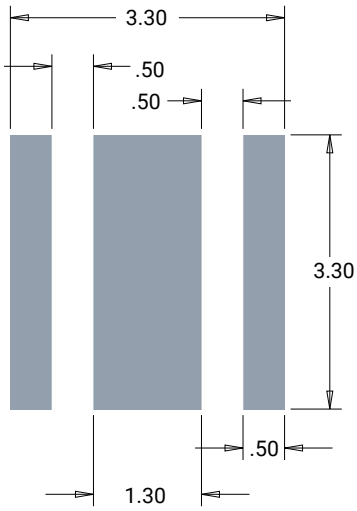
MECHANICAL DIMENSIONS - CONTINUED

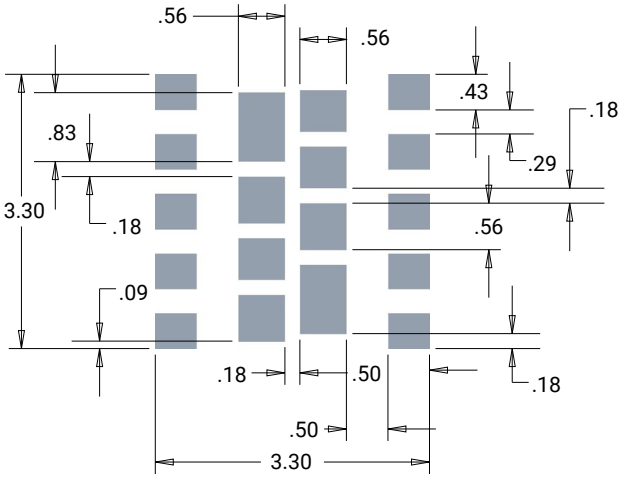
XHP35 High Density and XHP35 High Intensity



Recommended Copper Layout



Recommended Solder Pad (Solder Resist Pattern)



Recommended Stencil Openings*

Notes:

- Cree recommends using thermal pad kickouts to maximize component thermal performance.
- Cree recommends using white solder mask material to minimize system optical loss.

* This stencil has been tested and optimized for the avoidance of voiding when using ALPHA® LUMET® P30 Maxrel solder paste. For other solder pastes, a “window pane” design for the thermal pad stencil may result in a lower voiding percentage. Contact your local Cree Field Applications Engineer for consultation regarding your specific application.

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TAPE AND REEL

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

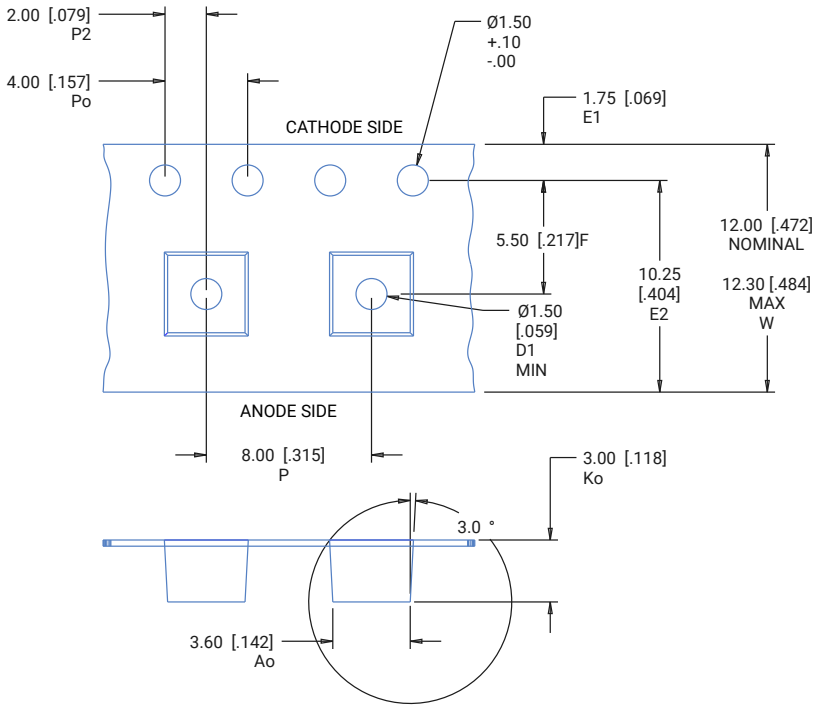
Except as noted, all dimensions in mm [inches]

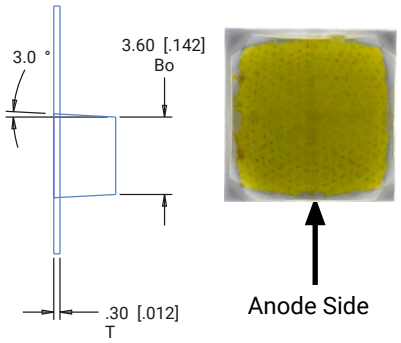
XHP35 High Density

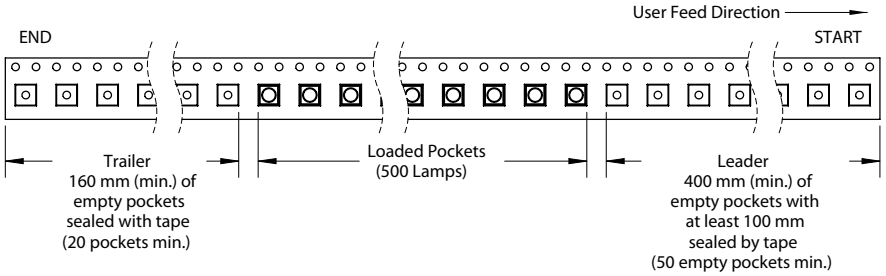
XHP35A-**0**x-xxxx-xxxxxxxxx

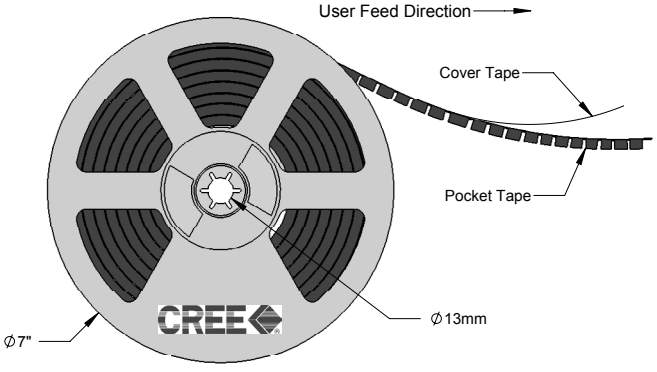
XHP35 High Density

POCKET SIZE	
Ao -	3.60 mm [.142"]
Bo -	3.60 mm [.142"]
Ko -	3.00 mm [.118"]









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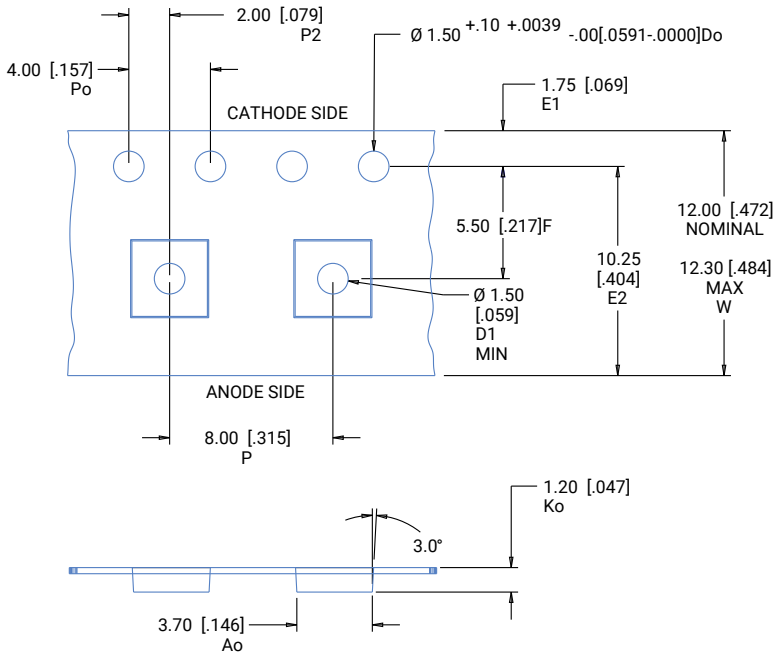
TAPE AND REEL - CONTINUED

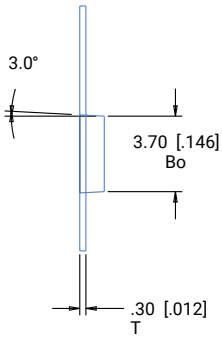
XHP35 High Intensity

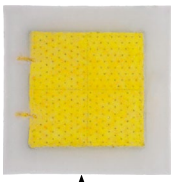
XHP35A-Hx-xxxx-xxxxxxxxx

XHP35 High Intensity

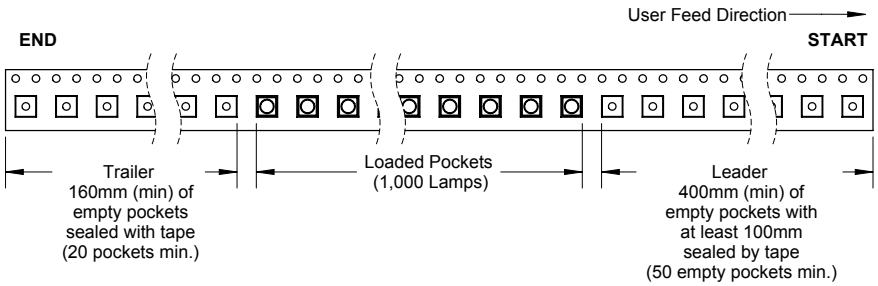
POCKET SIZE	
Ao -	3.70 mm [.146"]
Bo -	3.70 mm [.146"]
Ko -	1.20 mm [.047"]

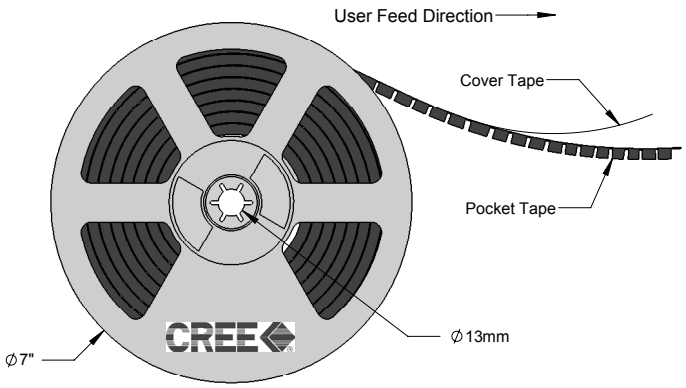






Anode Side





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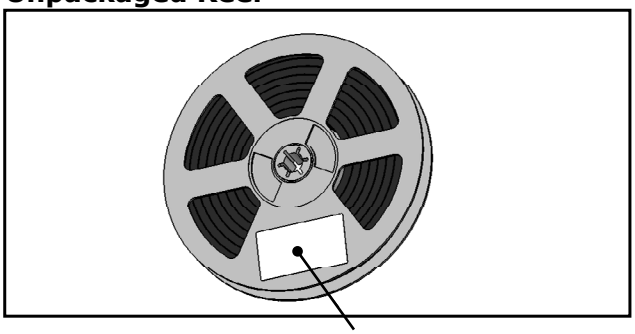
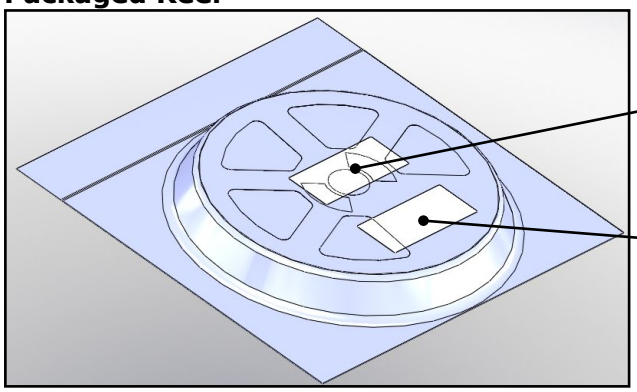
PACKAGING

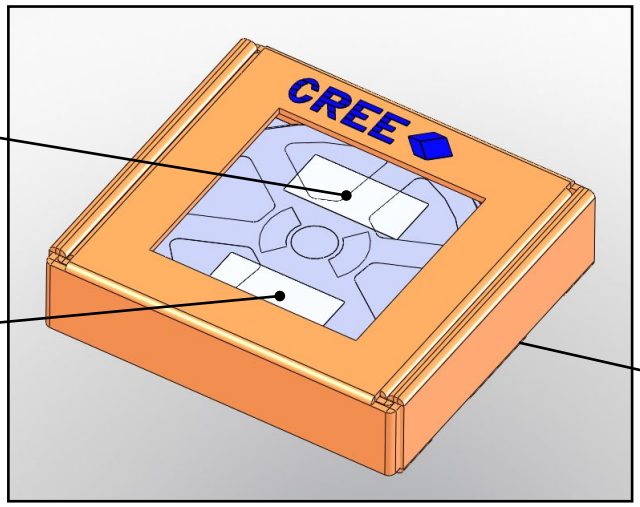
Unpackaged Reel



Packaged Reel



Boxed Reel



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