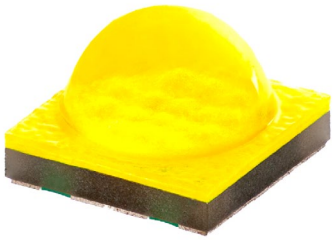
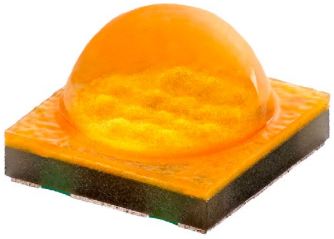
Cree® XLamp® XT-E High-Voltage White LEDs





PRODUCT DESCRIPTION

The Cree XLamp® XT-E High-Voltage White (HVW) LED provides the lighting-class performance and reliability of Cree XLamp LEDs in a small-form, high-voltage configuration. The XT-E HVW LED is an order of magnitude smaller than other high voltage LED arrays, allowing easy implementation of space-constrained lighting applications with smaller, more efficient high-voltage drivers. Among these applications are small lamps such as B10, GU10 and E17.

FEATURES

- Binned at 85 °C
- 48-V configuration
- Cree-standard mechanical footprint of 3.45 X 3.45 mm with electrically neutral thermal path
- Unlimited floor life at ≤30 °C/85% RH
- Reflow solderable
- Available in standard CRI and 80-minimum CRI configurations
- RoHS and REACh compliant
- UL® recognized component (E349212)

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Cree, Inc.
4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300

CHARACTERISTICS

Characteristics	Unit	Minimum	Typical	Maximum
Thermal resistance, junction to solder point	°C/W		6.5	
Viewing angle (FWHM)	degrees		115	
Temperature coefficient of voltage	mV/°C		-37	
ESD Classification (HBM per Mil-Std-883D)			Class 2	
DC forward current	mA			66
Reverse current	mA			-0.1
Forward voltage (@ 22 mA, 85 °C)	V		46	55
LED junction temperature	°C			150

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FLUX CHARACTERISTICS (22 mA, T_J = 85 °C)

The following tables provide order codes for XLamp XT-E HVW LEDs. For a complete description of the order code nomenclature, please see the Bin and Order Code Formats section (page 20).

Chromaticity		Minimum Luminous Flux (lm) @ 22 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	No Minimum CRI	75 CRI Typical	82 CRI Typical	80 CRI Minimum
51	6200 K	R5	139	159	XTEHVW-Q0-0000-00000LH51			
		R4	130	148	XTEHVW-Q0-0000-00000LG51			
		R3	122	139	XTEHVW-Q0-0000-00000LF51			
		R2	114	130	XTEHVW-Q0-0000-00000LE51			
		Q5	107	122	XTEHVW-Q0-0000-00000LD51			
		Q4	100	114	XTEHVW-Q0-0000-00000LC51			
53	6000 K	R5	139	159	XTEHVW-Q0-0000-00000LH53			
		R4	130	148	XTEHVW-Q0-0000-00000LG53			
		R3	122	139	XTEHVW-Q0-0000-00000LF53			
		R2	114	130	XTEHVW-Q0-0000-00000LE53			
		Q5	107	122	XTEHVW-Q0-0000-00000LD53			
		Q4	100	114	XTEHVW-Q0-0000-00000LC53			
50	6200 K	R5	139	159	XTEHVW-Q0-0000-00000LH50			
		R4	130	148	XTEHVW-Q0-0000-00000LG50			
		R3	122	139	XTEHVW-Q0-0000-00000LF50			
		R2	114	130	XTEHVW-Q0-0000-00000LE50			
		Q5	107	122	XTEHVW-Q0-0000-00000LD50			
		Q4	100	114	XTEHVW-Q0-0000-00000LC50			

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 22).
- Cree XLamp XT-E HVW 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 or DWL bin restrictions specified by the order code.

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

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FLUX CHARACTERISTICS - (22 mA, T_J = 85 °C) - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 22 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	No Minimum CRI	75 CRI Typical	82 CRI Typical	80 CRI Minimum
E1	6500 K	R5	139	159	XTEHVW-Q0-0000-00000LHE1			
		R4	130	148	XTEHVW-Q0-0000-00000LGE1			
		R3	122	139	XTEHVW-Q0-0000-00000LFE1			
		R2	114	130	XTEHVW-Q0-0000-00000LEE1			
		Q5	107	122	XTEHVW-Q0-0000-00000LDE1			
		Q4	100	114	XTEHVW-Q0-0000-00000LCE1			
E2	5700 K	R5	139	159	XTEHVW-Q0-0000-00000LHE2			
		R4	130	148	XTEHVW-Q0-0000-00000LGE2			
		R3	122	139	XTEHVW-Q0-0000-00000LFE2			
		R2	114	130	XTEHVW-Q0-0000-00000LEE2			
		Q5	107	122	XTEHVW-Q0-0000-00000LDE2			
		Q4	100	114	XTEHVW-Q0-0000-00000LCE2			
E3	5000 K	R4	130	148		XTEHVW-Q0-0000-00000LGE3		
		R3	122	139		XTEHVW-Q0-0000-00000LFE3		
		R2	114	130		XTEHVW-Q0-0000-00000LEE3		
		Q5	107	122		XTEHVW-Q0-0000-00000LDE3		
		Q4	100	114		XTEHVW-Q0-0000-00000LCE3		
		Q3	93.9	107		XTEHVW-Q0-0000-00000LBE3		

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 22).
- Cree XLamp XT-E HVW 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 or DWL bin restrictions specified by the order code.

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FLUX CHARACTERISTICS - (22 mA, T_J = 85 °C) - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 22 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	No Minimum CRI	75 CRI Typical	82 CRI Typical	80 CRI Minimum
F4	4750 K	R4	130	148		XTEHVW-Q0-0000-00000LGF4		
		R3	122	139		XTEHVW-Q0-0000-00000LFF4		
		R2	114	130		XTEHVW-Q0-0000-00000LEF4		
		Q5	107	122		XTEHVW-Q0-0000-00000LDF4		
		Q4	100	114		XTEHVW-Q0-0000-00000LCF4		
		Q3	93.9	107		XTEHVW-Q0-0000-00000LBF4		
E4	4500 K	R4	130	148		XTEHVW-Q0-0000-00000LGE4		
		R3	122	139		XTEHVW-Q0-0000-00000LFE4		
		R2	114	130		XTEHVW-Q0-0000-00000LEE4		
		Q5	107	122		XTEHVW-Q0-0000-00000LDE4		
		Q4	100	114		XTEHVW-Q0-0000-00000LCE4		
		Q3	93.9	107		XTEHVW-Q0-0000-00000LBE4		
F5	4250 K	R2	114	130		XTEHVW-Q0-0000-00000LEF5		
		Q5	107	122		XTEHVW-Q0-0000-00000LDF5		XTEHVW-Q0-0000-00000HDF5
		Q4	100	114		XTEHVW-Q0-0000-00000LCF5		XTEHVW-Q0-0000-00000HCF5
		Q3	93.9	107		XTEHVW-Q0-0000-00000LBF5		XTEHVW-Q0-0000-00000HBF5
		Q2	87.4	100		XTEHVW-Q0-0000-00000LAF5		XTEHVW-Q0-0000-00000HAF5
		P4	80.6	91.9		XTEHVW-Q0-0000-00000L9F5		XTEHVW-Q0-0000-00000H9F5

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 22).
- Cree XLamp XT-E HVW 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 or DWL bin restrictions specified by the order code.

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FLUX CHARACTERISTICS - (22 mA, T_J = 85 °C) - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 22 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	No Minimum CRI	75 CRI Typical	82 CRI Typical	80 CRI Minimum
E5	4000 K	R2	114	130		XTEHVW-Q0-0000-00000LEE5		
		Q5	107	122		XTEHVW-Q0-0000-00000LDE5		XTEHVW-Q0-0000-00000HDE5
		Q4	100	114		XTEHVW-Q0-0000-00000LCE5		XTEHVW-Q0-0000-00000HCE5
		Q3	93.9	107		XTEHVW-Q0-0000-00000LBE5		XTEHVW-Q0-0000-00000HBE5
		Q2	87.4	100		XTEHVW-Q0-0000-00000LAE5		XTEHVW-Q0-0000-00000HAE5
		P4	80.6	91.9		XTEHVW-Q0-0000-00000L9E5		XTEHVW-Q0-0000-00000H9E5
F6	3750 K	R2	114	130			XTEHVW-Q0-0000-00000LEF6	
		Q5	107	122			XTEHVW-Q0-0000-00000LDF6	XTEHVW-Q0-0000-00000HDF6
		Q4	100	114			XTEHVW-Q0-0000-00000LCF6	XTEHVW-Q0-0000-00000HCF6
		Q3	93.9	107			XTEHVW-Q0-0000-00000LBF6	XTEHVW-Q0-0000-00000HBF6
		Q2	87.4	100			XTEHVW-Q0-0000-00000LAF6	XTEHVW-Q0-0000-00000HAF6
		P4	80.6	91.9			XTEHVW-Q0-0000-00000L9F6	XTEHVW-Q0-0000-00000H9F6
		P3	73.9	84.3			XTEHVW-Q0-0000-00000L8F6	XTEHVW-Q0-0000-00000H8F6
E6	3500 K	R2	114	130			XTEHVW-Q0-0000-00000LEE6	
		Q5	107	122			XTEHVW-Q0-0000-00000LDE6	XTEHVW-Q0-0000-00000HDE6
		Q4	100	114			XTEHVW-Q0-0000-00000LCE6	XTEHVW-Q0-0000-00000HCE6
		Q3	93.9	107			XTEHVW-Q0-0000-00000LBE6	XTEHVW-Q0-0000-00000HBE6
		Q2	87.4	100			XTEHVW-Q0-0000-00000LAE6	XTEHVW-Q0-0000-00000HAE6
		P4	80.6	91.9			XTEHVW-Q0-0000-00000L9E6	XTEHVW-Q0-0000-00000H9E6
		P3	73.9	84.3			XTEHVW-Q0-0000-00000L8E6	XTEHVW-Q0-0000-00000H8E6

Notes:

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- Cree XLamp XT-E HVW 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 or DWL bin restrictions specified by the order code.

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FLUX CHARACTERISTICS - (22 mA, T_J = 85 °C) - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 22 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	No Minimum CRI	75 CRI Typical	82 CRI Typical	80 CRI Minimum
F7	3250 K	Q5	107	122			XTEHVW-Q0-0000-00000LDF7	XTEHVW-Q0-0000-00000HDF7
		Q4	100	114			XTEHVW-Q0-0000-00000LCF7	XTEHVW-Q0-0000-00000HCF7
		Q3	93.9	107			XTEHVW-Q0-0000-00000LBF7	XTEHVW-Q0-0000-00000HBF7
		Q2	87.4	100			XTEHVW-Q0-0000-00000LAF7	XTEHVW-Q0-0000-00000HAF7
		P4	80.6	91.9			XTEHVW-Q0-0000-00000L9F7	XTEHVW-Q0-0000-00000H9F7
		P3	73.9	84.3			XTEHVW-Q0-0000-00000L8F7	XTEHVW-Q0-0000-00000H8F7
E7	3000 K	Q5	107	122			XTEHVW-Q0-0000-00000LDE7	XTEHVW-Q0-0000-00000HDE7
		Q4	100	114			XTEHVW-Q0-0000-00000LCE7	XTEHVW-Q0-0000-00000HCE7
		Q3	93.9	107			XTEHVW-Q0-0000-00000LBE7	XTEHVW-Q0-0000-00000HBE7
		Q2	87.4	100			XTEHVW-Q0-0000-00000LAE7	XTEHVW-Q0-0000-00000HAE7
		P4	80.6	91.9			XTEHVW-Q0-0000-00000L9E7	XTEHVW-Q0-0000-00000H9E7
		P3	73.9	84.3			XTEHVW-Q0-0000-00000L8E7	XTEHVW-Q0-0000-00000H8E7
F8	2850 K	Q4	100	114			XTEHVW-Q0-0000-00000LCF8	XTEHVW-Q0-0000-00000HCF8
		Q3	93.9	107			XTEHVW-Q0-0000-00000LBF8	XTEHVW-Q0-0000-00000HBF8
		Q2	87.4	100			XTEHVW-Q0-0000-00000LAF8	XTEHVW-Q0-0000-00000HAF8
		P4	80.6	91.9			XTEHVW-Q0-0000-00000L9F8	XTEHVW-Q0-0000-00000H9F8
		P3	73.9	84.3			XTEHVW-Q0-0000-00000L8F8	XTEHVW-Q0-0000-00000H8F8
		P2	67.2	76.7			XTEHVW-Q0-0000-00000L7F8	XTEHVW-Q0-0000-00000H7F8

Notes:

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- Cree XLamp XT-E HVW 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 or DWL bin restrictions specified by the order code.

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FLUX CHARACTERISTICS - (22 mA, T_J = 85 °C) - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 22 mA			Order Codes			
Kit	CCT	Code	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C*	No Minimum CRI	75 CRI Typical	82 CRI Typical	80 CRI Minimum
E8	2700 K	Q4	100	114			XTEHVW-Q0-0000-00000LCE8	XTEHVW-Q0-0000-00000HCE8
		Q3	93.9	107			XTEHVW-Q0-0000-00000LBE8	XTEHVW-Q0-0000-00000HBE8
		Q2	87.4	100			XTEHVW-Q0-0000-00000LAE8	XTEHVW-Q0-0000-00000HAE8
		P4	80.6	91.9			XTEHVW-Q0-0000-00000L9E8	XTEHVW-Q0-0000-00000H9E8
		P3	73.9	84.3			XTEHVW-Q0-0000-00000L8E8	XTEHVW-Q0-0000-00000H8E8
		P2	67.2	76.7			XTEHVW-Q0-0000-00000L7E8	XTEHVW-Q0-0000-00000H7E8

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 22).
- Cree XLamp XT-E HVW 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 or DWL bin restrictions specified by the order code.

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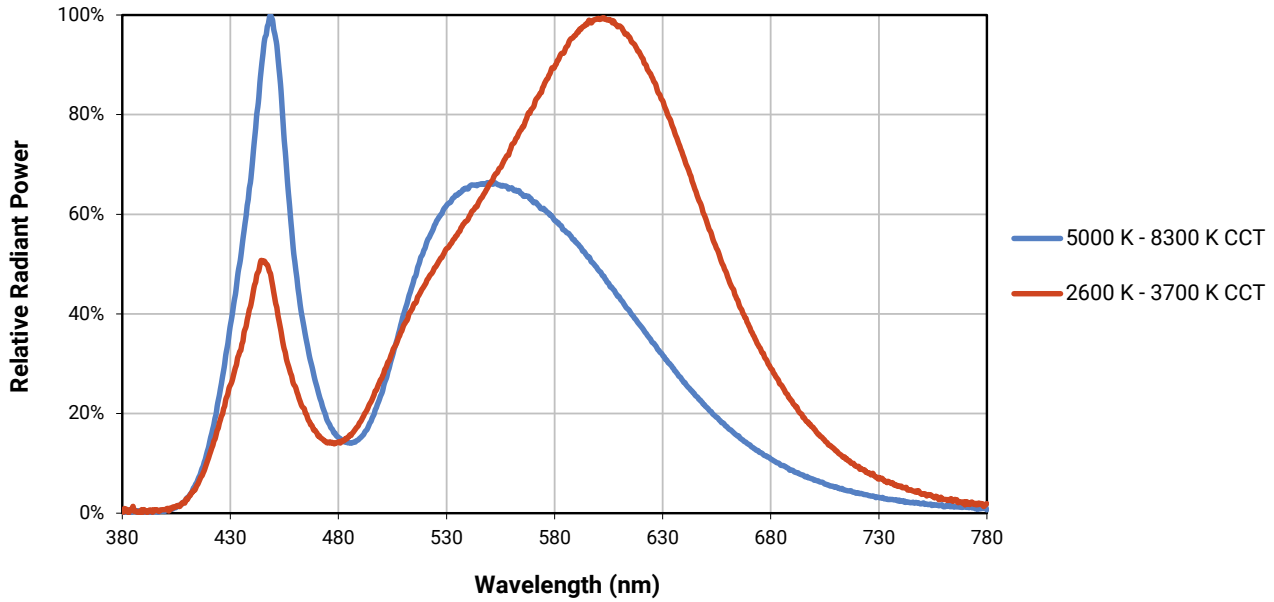
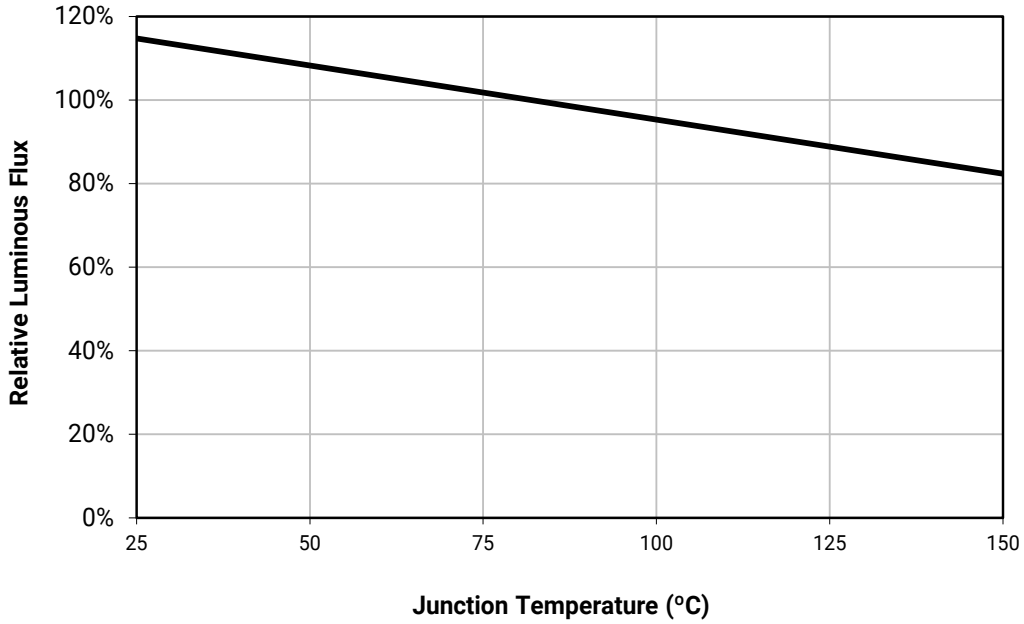
RELATIVE SPECTRAL POWER DISTRIBUTION (22 mA, T_J = 85 °C)



RELATIVE FLUX VS. JUNCTION TEMPERATURE (22 mA)



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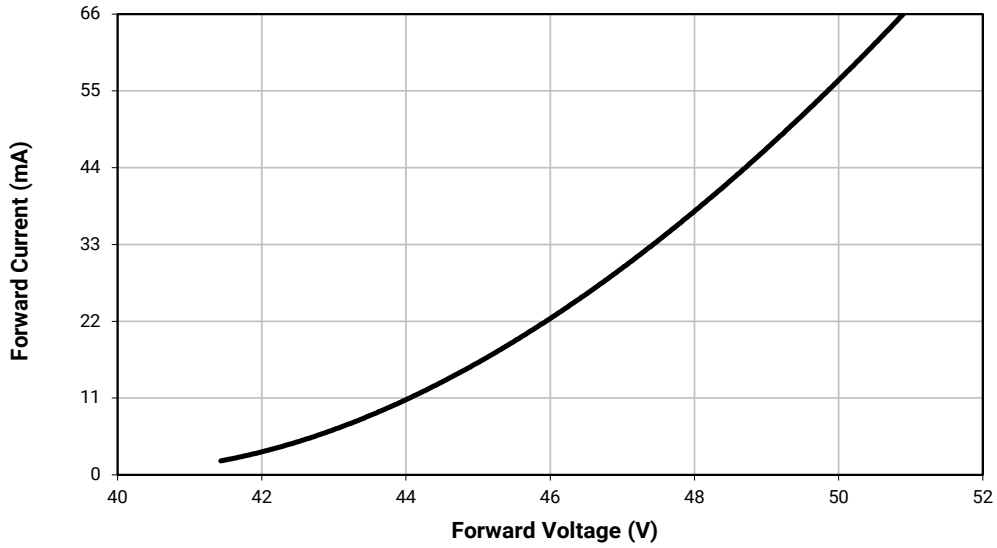
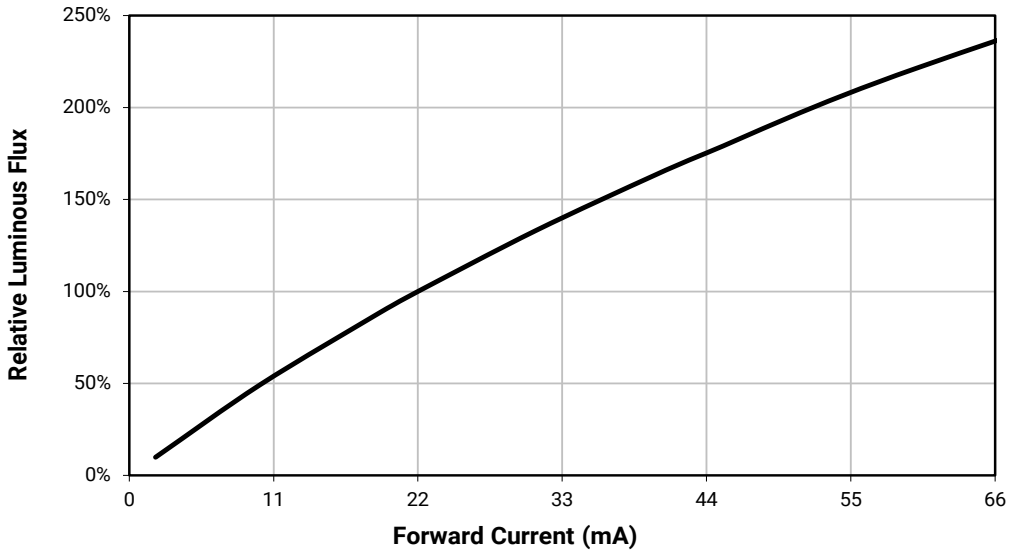
ELECTRICAL CHARACTERISTICS (T_J = 85 °C)



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



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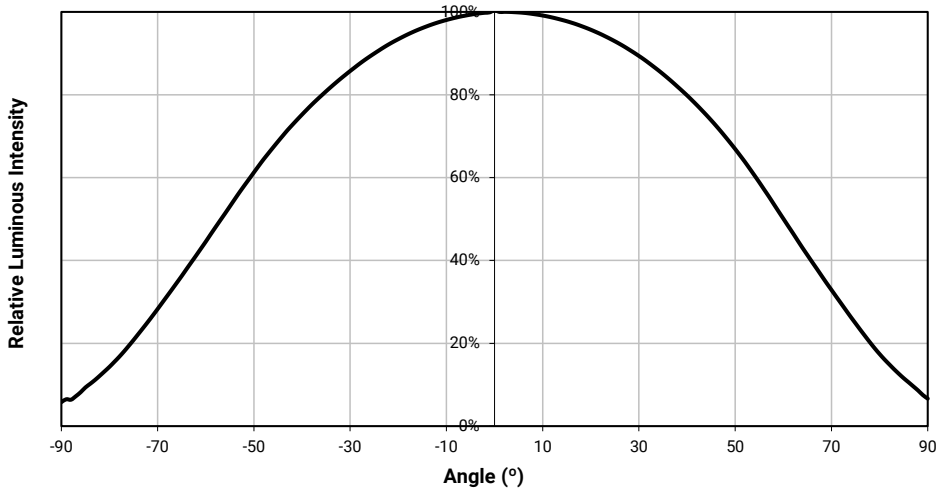
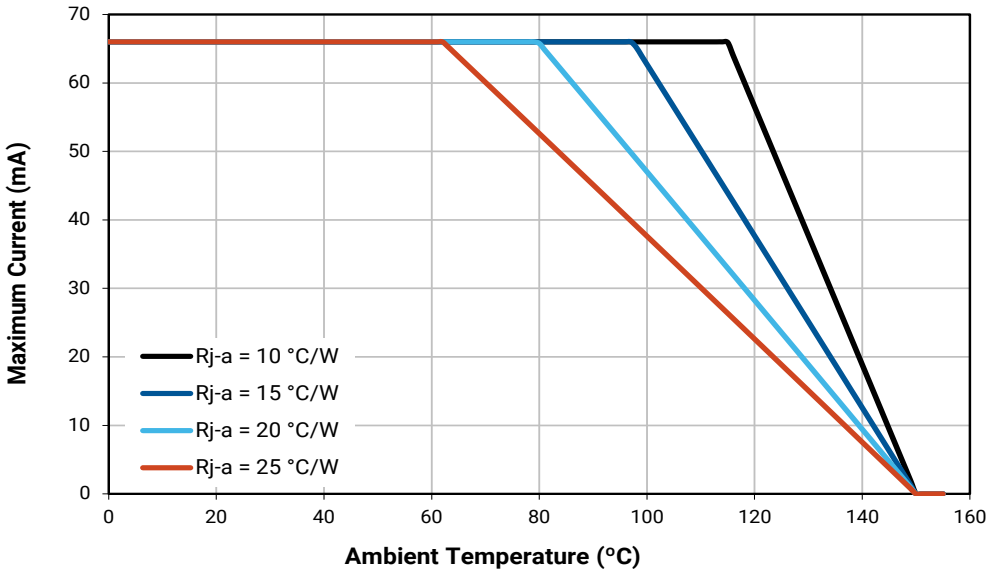
TYPICAL SPATIAL DISTRIBUTION



THERMAL DESIGN



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

XLamp XT-E High-Voltage White LEDs are tested for luminous flux and placed into one of the following luminous-flux groups.

Group Code	Minimum Luminous Flux	Maximum Luminous Flux
P2	67.2	73.9
P3	73.9	80.6
P4	80.6	87.4
Q2	87.4	93.9
Q3	93.9	100
Q4	100	107
Q5	107	114
R2	114	122
R3	122	130
R4	130	139
R5	139	148
S2	148	156

PERFORMANCE GROUPS – FORWARD VOLTAGE (T_J = 85 °C)

XLamp XT-E High-Voltage White LEDs are tested for forward voltage at 22 mA and placed into one the following voltage bins.

Group Code	Minimum Forward Voltage (V)	Maximum Forward Voltage (V)
0	No Vf Bin	
1	40.0	42.5
2	42.5	45.0
3	45.0	47.5
4	47.5	50.0
5	50.0	52.5
6	52.5	55.0

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PERFORMANCE GROUPS – CHROMATICITY

Region	x	y	Region	x	y	Region	x	y	Region	x	y
0A	0.2950	0.2970	0B	0.2920	0.3060	0C	0.2984	0.3133	0D	0.2984	0.3133
	0.2920	0.3060		0.2895	0.3135		0.2962	0.3220		0.3048	0.3207
	0.2984	0.3133		0.2962	0.3220		0.3028	0.3304		0.3068	0.3113
	0.3009	0.3042		0.2984	0.3133		0.3048	0.3207		0.3009	0.3042
0R	0.2980	0.2880	0S	0.2895	0.3135	0T	0.2962	0.3220	0U	0.3037	0.2937
	0.2950	0.2970		0.2870	0.3210		0.2937	0.3312		0.3009	0.3042
	0.3009	0.3042		0.2937	0.3312		0.3005	0.3415		0.3068	0.3113
	0.3037	0.2937		0.2962	0.3220		0.3028	0.3304		0.3093	0.2993
1A	0.3048	0.3207	1B	0.3028	0.3304	1C	0.3115	0.3391	1D	0.3130	0.3290
	0.3130	0.3290		0.3115	0.3391		0.3205	0.3481		0.3213	0.3373
	0.3144	0.3186		0.3130	0.3290		0.3213	0.3373		0.3221	0.3261
	0.3068	0.3113		0.3048	0.3207		0.3130	0.3290		0.3144	0.3186
1R	0.3068	0.3113	1S	0.3005	0.3415	1T	0.3099	0.3509	1U	0.3144	0.3186
	0.3144	0.3186		0.3099	0.3509		0.3196	0.3602		0.3221	0.3261
	0.3161	0.3059		0.3115	0.3391		0.3205	0.3481		0.3231	0.3120
	0.3093	0.2993		0.3028	0.3304		0.3115	0.3391		0.3161	0.3059
2A	0.3215	0.3350	2B	0.3207	0.3462	2C	0.3290	0.3538	2D	0.3290	0.3417
	0.3290	0.3417		0.3290	0.3538		0.3376	0.3616		0.3371	0.3490
	0.3290	0.3300		0.3290	0.3417		0.3371	0.3490		0.3366	0.3369
	0.3222	0.3243		0.3215	0.3350		0.3290	0.3417		0.3290	0.3300
2R	0.3222	0.3243	2S	0.3196	0.3602	2T	0.3290	0.3690	2U	0.3290	0.3300
	0.3290	0.3300		0.3290	0.3690		0.3381	0.3762		0.3366	0.3369
	0.3290	0.3180		0.3290	0.3538		0.3376	0.3616		0.3361	0.3245
	0.3231	0.3120		0.3207	0.3462		0.3290	0.3538		0.3290	0.3180
3A	0.3371	0.3490	3B	0.3376	0.3616	3C	0.3463	0.3687	3D	0.3451	0.3554
	0.3451	0.3554		0.3463	0.3687		0.3551	0.3760		0.3533	0.3620
	0.3440	0.3427		0.3451	0.3554		0.3533	0.3620		0.3515	0.3487
	0.3366	0.3369		0.3371	0.3490		0.3451	0.3554		0.3440	0.3427
3R	0.3366	0.3369	3S	0.3381	0.3762	3T	0.3480	0.3840	3U	0.3440	0.3428
	0.3440	0.3428		0.3480	0.3840		0.3571	0.3907		0.3515	0.3487
	0.3429	0.3307		0.3463	0.3687		0.3551	0.3760		0.3495	0.3339
	0.3361	0.3245		0.3376	0.3616		0.3463	0.3687		0.3429	0.3307
4A	0.3530	0.3597	4B	0.3548	0.3736	4C	0.3641	0.3804	4D	0.3615	0.3659
	0.3615	0.3659		0.3641	0.3804		0.3736	0.3874		0.3702	0.3722
	0.3590	0.3521		0.3615	0.3659		0.3702	0.3722		0.3670	0.3578
	0.3512	0.3465		0.3530	0.3597		0.3615	0.3659		0.3590	0.3521
4R	0.3512	0.3465	4S	0.3571	0.3907	4T	0.3668	0.3957	4U	0.3590	0.3521
	0.3590	0.3521		0.3668	0.3957		0.3771	0.4034		0.3670	0.3578
	0.3567	0.3389		0.3641	0.3804		0.3736	0.3874		0.3640	0.3440
	0.3495	0.3339		0.3548	0.3736		0.3641	0.3804		0.3567	0.3389

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PERFORMANCE GROUPS – CHROMATICITY (CONTINUED)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
5A	0.3702	0.3722	5B	0.3736	0.3874	5C	0.3870	0.3958	5D	0.3825	0.3798
	0.3825	0.3798		0.3870	0.3958		0.4006	0.4044		0.3951	0.3876
	0.3783	0.3646		0.3825	0.3798		0.3951	0.3876		0.3898	0.3716
	0.3670	0.3578		0.3702	0.3722		0.3825	0.3798		0.3783	0.3646
5A1	0.3670	0.3578	5A2	0.3686	0.3649	5A3	0.3744	0.3685	5A4	0.3726	0.3612
	0.3686	0.3649		0.3702	0.3722		0.3763	0.3760		0.3744	0.3685
	0.3744	0.3685		0.3763	0.3760		0.3825	0.3798		0.3804	0.3721
	0.3726	0.3612		0.3744	0.3685		0.3804	0.3721		0.3783	0.3646
5B1	0.3702	0.3722	5B2	0.3719	0.3797	5B3	0.3782	0.3837	5B4	0.3763	0.3760
	0.3719	0.3797		0.3736	0.3874		0.3802	0.3916		0.3782	0.3837
	0.3782	0.3837		0.3802	0.3916		0.3869	0.3958		0.3847	0.3877
	0.3763	0.3760		0.3782	0.3837		0.3847	0.3877		0.3825	0.3798
5C1	0.3825	0.3798	5C2	0.3847	0.3877	5C3	0.3912	0.3917	5C4	0.3887	0.3836
	0.3847	0.3877		0.3869	0.3958		0.3937	0.4001		0.3912	0.3917
	0.3912	0.3917		0.3937	0.4001		0.4006	0.4044		0.3978	0.3958
	0.3887	0.3836		0.3912	0.3917		0.3978	0.3958		0.3950	0.3875
5D1	0.3783	0.3646	5D2	0.3804	0.3721	5D3	0.3863	0.3758	5D4	0.3840	0.3681
	0.3804	0.3721		0.3825	0.3798		0.3887	0.3836		0.3863	0.3758
	0.3863	0.3758		0.3887	0.3836		0.3950	0.3875		0.3924	0.3794
	0.3840	0.3681		0.3863	0.3758		0.3924	0.3794		0.3898	0.3716
5R	0.3670	0.3578	5S	0.3771	0.4034	5T	0.3916	0.4127	5U	0.3783	0.3646
	0.3783	0.3646		0.3916	0.4127		0.4064	0.4221		0.3898	0.3716
	0.3743	0.3502		0.3869	0.3958		0.4006	0.4044		0.3848	0.3565
	0.3640	0.3440		0.3736	0.3874		0.3869	0.3958		0.3743	0.3502
6A	0.3941	0.3848	6B	0.3996	0.4015	6C	0.4146	0.4089	6D	0.4080	0.3916
	0.4080	0.3916		0.4146	0.4089		0.4299	0.4165		0.4221	0.3985
	0.4017	0.3752		0.4080	0.3916		0.4221	0.3985		0.4147	0.3814
	0.3889	0.369		0.3941	0.3848		0.4080	0.3916		0.4017	0.3752
6A1	0.3889	0.3690	6A2	0.3915	0.3768	6A3	0.3981	0.3800	6A4	0.4080	0.3916
	0.3915	0.3768		0.3941	0.3848		0.4010	0.3882		0.3981	0.3800
	0.3981	0.3800		0.4010	0.3882		0.4080	0.3916		0.4048	0.3832
	0.3953	0.3720		0.3981	0.3800		0.4048	0.3832		0.4017	0.3751
6B1	0.3941	0.3848	6B2	0.3968	0.3930	6B3	0.4040	0.3966	6B4	0.4010	0.3882
	0.3968	0.3930		0.3996	0.4015		0.4071	0.4052		0.4040	0.3966
	0.4040	0.3966		0.4071	0.4052		0.4146	0.4089		0.4113	0.4001
	0.4010	0.3882		0.4040	0.3966		0.4113	0.4001		0.4080	0.3916
6C1	0.4080	0.3916	6C2	0.4113	0.4001	6C3	0.4186	0.4037	6C4	0.4150	0.3950
	0.4113	0.4001		0.4146	0.4089		0.4222	0.4127		0.4186	0.4037
	0.4186	0.4037		0.4222	0.4127		0.4299	0.4165		0.4259	0.4073
	0.4150	0.3950		0.4186	0.4037		0.4259	0.4073		0.4221	0.3984

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PERFORMANCE GROUPS – CHROMATICITY (CONTINUED)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
6D1	0.4017	0.3751	6D2	0.4048	0.3832	6D3	0.4116	0.3865	6D4	0.4082	0.3782
	0.4048	0.3832		0.4080	0.3916		0.4150	0.3950		0.4116	0.3865
	0.4116	0.3865		0.4150	0.3950		0.4221	0.3984		0.4183	0.3898
	0.4082	0.3782		0.4116	0.3865		0.4183	0.3898		0.4147	0.3814
6R	0.3889	0.3690	6S	0.4054	0.4191	6T	0.4217	0.4273	6U	0.4017	0.3751
	0.4017	0.3751		0.4217	0.4273		0.4382	0.4356		0.4147	0.3814
	0.3957	0.3596		0.4146	0.4089		0.4299	0.4165		0.4077	0.3652
	0.3840	0.3540		0.3996	0.4015		0.4146	0.4089		0.3957	0.3596
7A	0.4221	0.3985	7B	0.4299	0.4165	7C	0.4430	0.4212	7D	0.4342	0.4028
	0.4342	0.4028		0.4430	0.4212		0.4562	0.426		0.4465	0.4071
	0.4260	0.3853		0.4342	0.4028		0.4465	0.4071		0.4373	0.3893
	0.4147	0.3814		0.4221	0.3985		0.4342	0.4028		0.4260	0.3853
7A1	0.4147	0.3814	7A2	0.4183	0.3898	7A3	0.4242	0.3919	7A4	0.4203	0.3833
	0.4183	0.3898		0.4221	0.3984		0.4281	0.4006		0.4242	0.3919
	0.4242	0.3919		0.4281	0.4006		0.4342	0.4028		0.4300	0.3939
	0.4203	0.3833		0.4242	0.3919		0.4300	0.3939		0.4259	0.3853
7B1	0.4221	0.3984	7B2	0.4259	0.4073	7B3	0.4322	0.4096	7B4	0.4281	0.4006
	0.4259	0.4073		0.4299	0.4165		0.4364	0.4188		0.4322	0.4096
	0.4322	0.4096		0.4364	0.4188		0.4430	0.4212		0.4385	0.4119
	0.4281	0.4006		0.4322	0.4096		0.4385	0.4119		0.4342	0.4028
7C1	0.4342	0.4028	7C2	0.4385	0.4119	7C3	0.4449	0.4141	7C4	0.4403	0.4049
	0.4385	0.4119		0.4430	0.4212		0.4496	0.4236		0.4449	0.4141
	0.4449	0.4141		0.4496	0.4236		0.4562	0.4260		0.4513	0.4164
	0.4403	0.4049		0.4449	0.4141		0.4513	0.4164		0.4465	0.4071
7D1	0.4259	0.3853	7D2	0.4300	0.3939	7D3	0.4359	0.3960	7D4	0.4316	0.3873
	0.4300	0.3939		0.4342	0.4028		0.4403	0.4049		0.4359	0.3960
	0.4359	0.3960		0.4403	0.4049		0.4465	0.4071		0.4418	0.3981
	0.4316	0.3873		0.4359	0.3960		0.4418	0.3981		0.4373	0.3893
8A	0.4465	0.4071	8B	0.4562	0.4260	8C	0.4687	0.4289	8D	0.4582	0.4099
	0.4582	0.4099		0.4687	0.4289		0.4813	0.4319		0.4700	0.4126
	0.4483	0.3918		0.4582	0.4099		0.4700	0.4126		0.4593	0.3944
	0.4373	0.3893		0.4465	0.4071		0.4582	0.4099		0.4483	0.3918
8A1	0.4373	0.3893	8A2	0.4418	0.3981	8A3	0.4475	0.3994	8A4	0.4428	0.3906
	0.4418	0.3981		0.4465	0.4071		0.4523	0.4085		0.4475	0.3994
	0.4475	0.3994		0.4523	0.4085		0.4582	0.4099		0.4532	0.4008
	0.4428	0.3906		0.4475	0.3994		0.4532	0.4008		0.4483	0.3919
8B1	0.4465	0.4071	8B2	0.4513	0.4164	8B3	0.4573	0.4178	8B4	0.4523	0.4085
	0.4513	0.4164		0.4562	0.4260		0.4624	0.4274		0.4573	0.4178
	0.4573	0.4178		0.4624	0.4274		0.4687	0.4289		0.4634	0.4193
	0.4523	0.4085		0.4573	0.4178		0.4634	0.4193		0.4582	0.4099

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PERFORMANCE GROUPS – CHROMATICITY (CONTINUED)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
8C1	0.4582	0.4158	8C2	0.4634	0.4193	8C3	0.4695	0.4207	8C4	0.4641	0.4112
	0.4634	0.4252		0.4687	0.4289		0.4750	0.4304		0.4695	0.4207
	0.4695	0.4250		0.4750	0.4304		0.4813	0.4319		0.4756	0.4221
	0.4641	0.4156		0.4695	0.4207		0.4756	0.4221		0.4700	0.4126
8D1	0.4483	0.3919	8D2	0.4532	0.4008	8D3	0.4589	0.4021	8D4	0.4538	0.3931
	0.4532	0.4008		0.4582	0.4099		0.4641	0.4112		0.4589	0.4021
	0.4589	0.4021		0.4641	0.4112		0.4700	0.4126		0.4646	0.4034
	0.4538	0.3931		0.4589	0.4021		0.4646	0.4034		0.4593	0.3944

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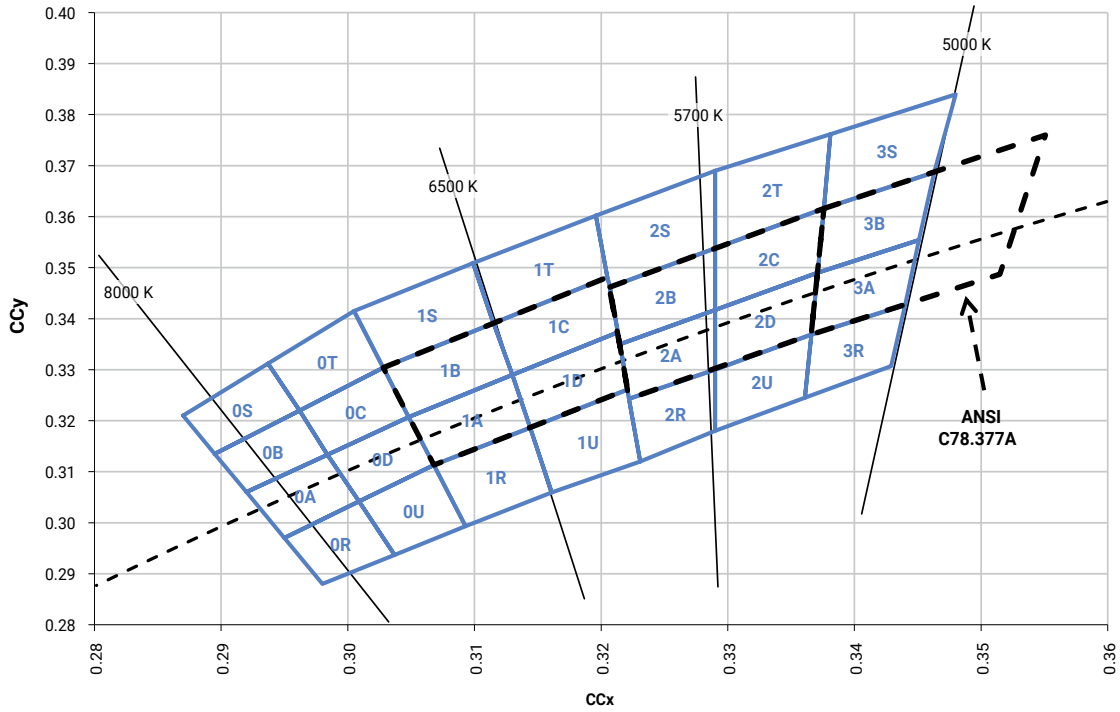
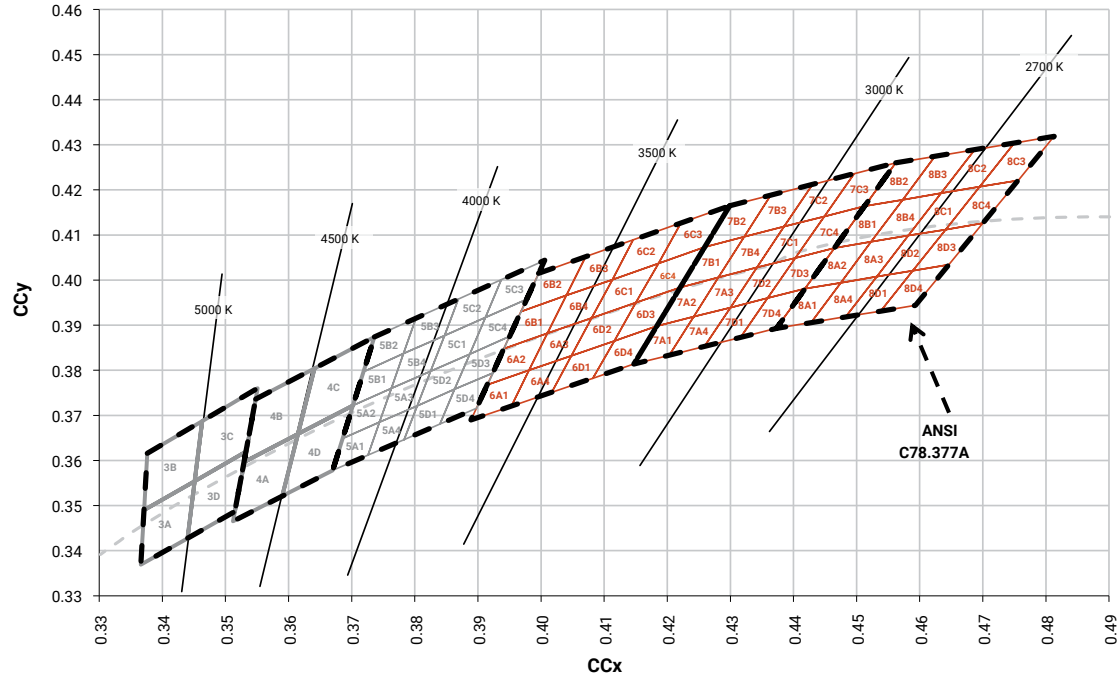
CREE'S STANDARD WHITE CHROMATICITY REGIONS PLOTTED ON THE CIE 1931 CURVE

ANSI Cool White



ANSI Neutral White and ANSI Warm White



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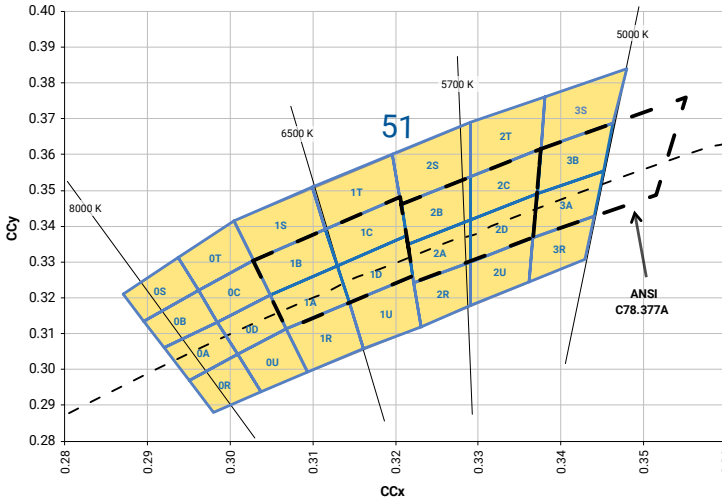
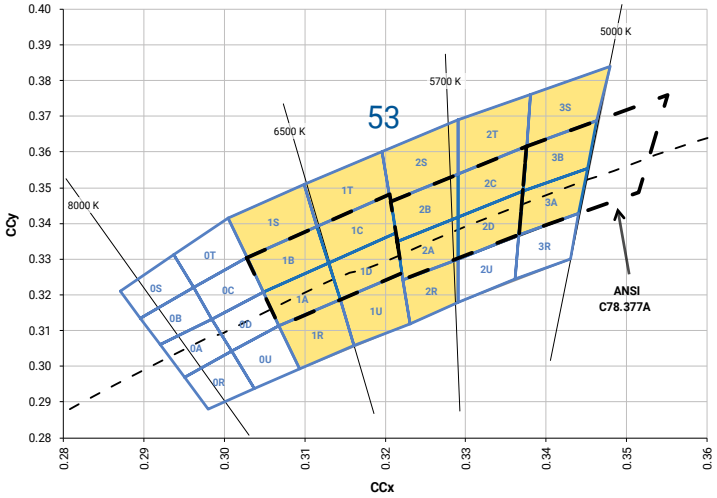
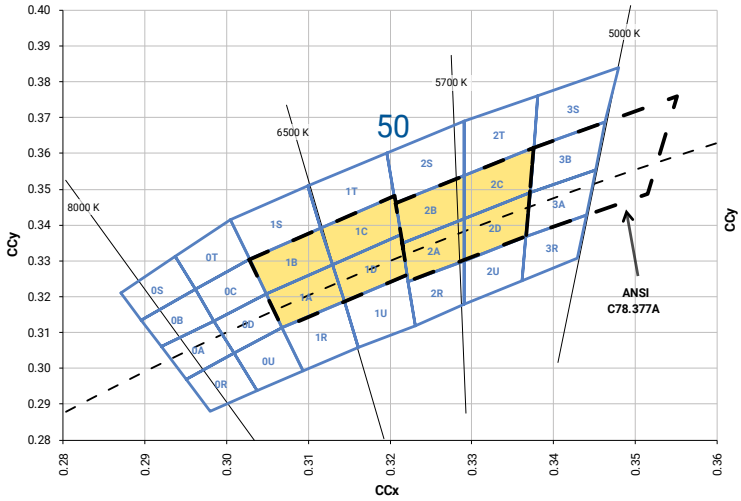
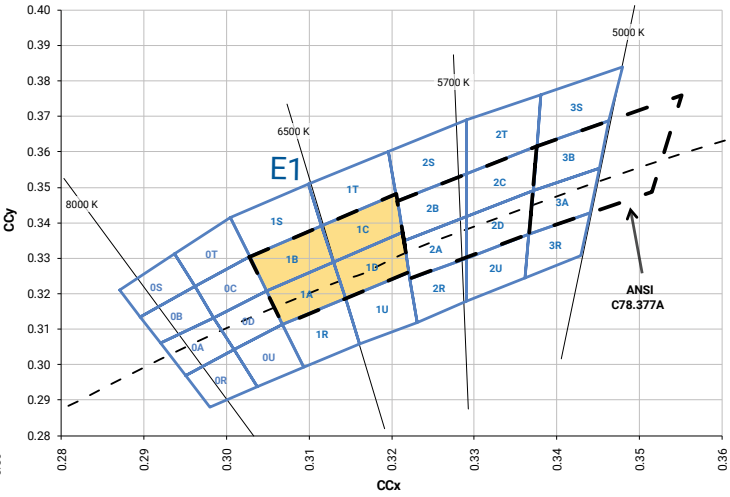
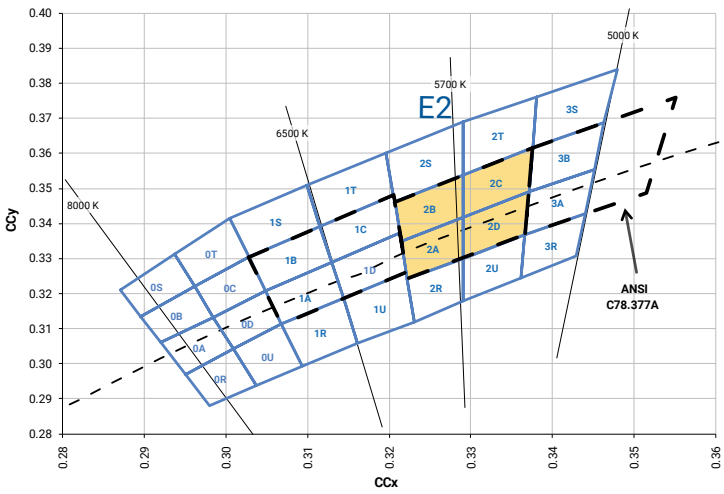
CREE'S STANDARD COOL WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS











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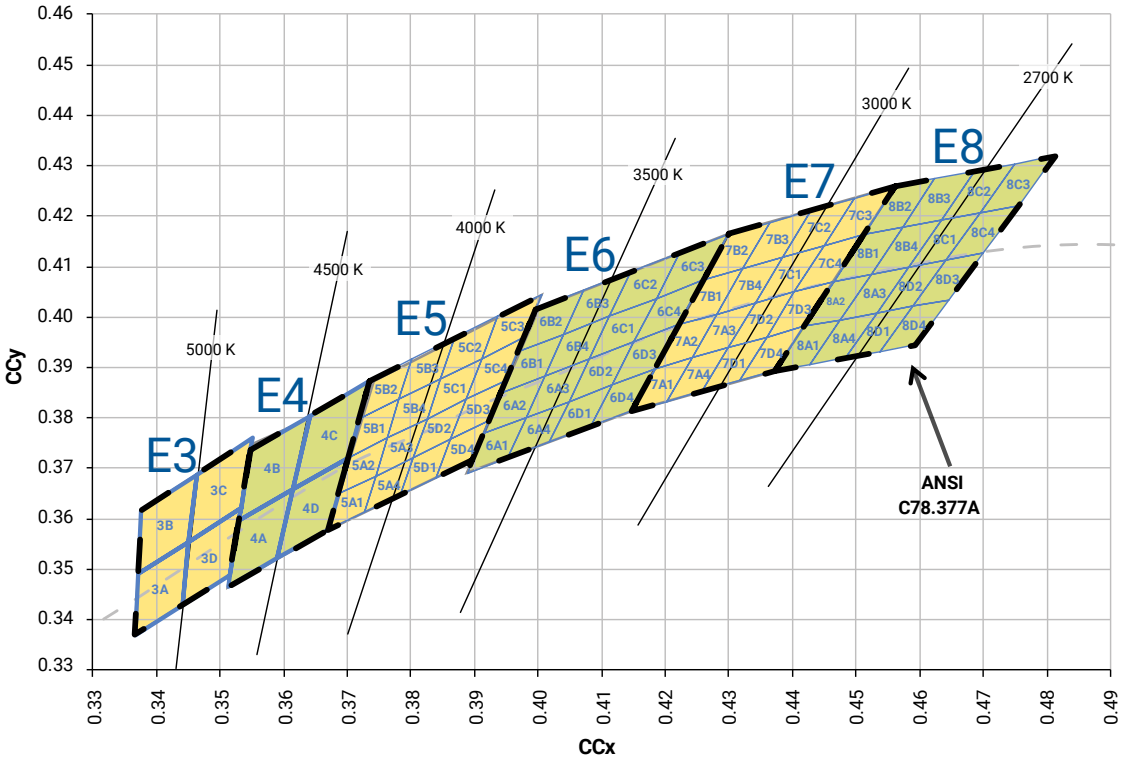
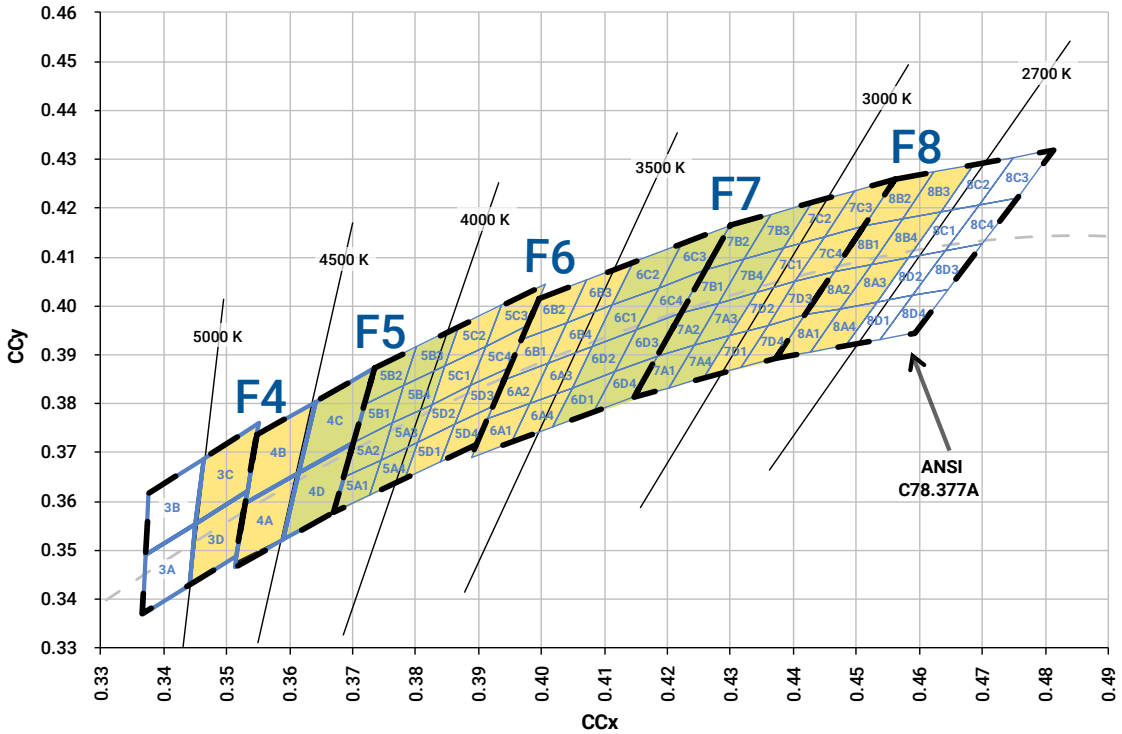
CREE'S STANDARD WARM AND NEUTRAL WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS





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CREE'S STANDARD CHROMATICITY KITS

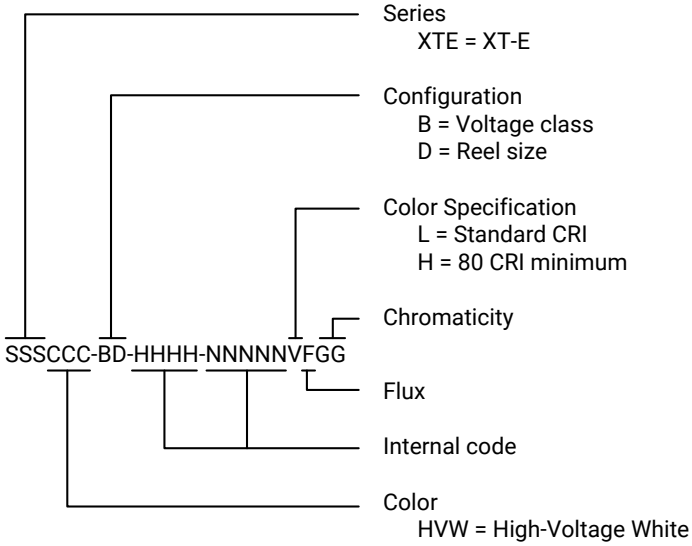
The following table provides the chromaticity bins associated with chromaticity kits for XT-E HVW LEDs.

Color	CCT	Kit	Chromaticity Bins
Cool White	6200 K	51	0A, 0B, 0C, 0D, 0R, 0S, 0T, 0U, 1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 2U, 3A, 3B, 3R, 3S
	6000 K	53	1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 3A, 3B, 3S
	6200 K	50	1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D
	6500 K	E1	1A, 1B, 1C, 1D
	5700 K	E2	2A, 2B, 2C, 2D
Neutral White	5000 K	E3	3A, 3B, 3C, 3D
	4750 K	F4	3C, 3D, 4A, 4B
	4500 K	E4	4A, 4B, 4C, 4D
	4250 K	F5	4C, 4D, 5A1, 5A2, 5A3, 5A4, 5B1, 5B2, 5B3, 5B4
	4000 K	E5	5A1, 5A2, 5A3, 5A4, 5B1, 5B2, 5B3, 5B4, 5C1, 5C2, 5C3, 5C4, 5D1, 5D2, 5D3, 5D4
Warm White	3750 K	F6	5C1, 5C2, 5C3, 5C4, 5D1, 5D2, 5D3, 5D4, 6A1, 6A2, 6A3, 6A4, 6B1, 6B2, 6B3, 6B4
	3500 K	E6	6A1, 6A2, 6A3, 6A4, 6B1, 6B2, 6B3, 6B4, 6C1, 6C2, 6C3, 6C4, 6D1, 6D2, 6D3, 6D4
	3250 K	F7	6C1, 6C2, 6C3, 6C4, 6D1, 6D2, 6D3, 6D4, 7A1, 7A2, 7A3, 7A4, 7B1, 7B2, 7B3, 7B4
	3000 K	E7	7A1, 7A2, 7A3, 7A4, 7B1, 7B2, 7B3, 7B4, 7C1, 7C2, 7C3, 7C4, 7D1, 7D2, 7D3, 7D4
	2850 K	F8	7C1, 7C2, 7C3, 7C4, 7D1, 7D2, 7D3, 7D4, 8A1, 8A2, 8A3, 8A4, 8B1, 8B2, 8B3, 8B4
	2700 K	E8	8A1, 8A2, 8A3, 8A4, 8B1, 8B2, 8B3, 8B4, 8C1, 8C2, 8C3, 8C4, 8D1, 8D2, 8D3, 8D4

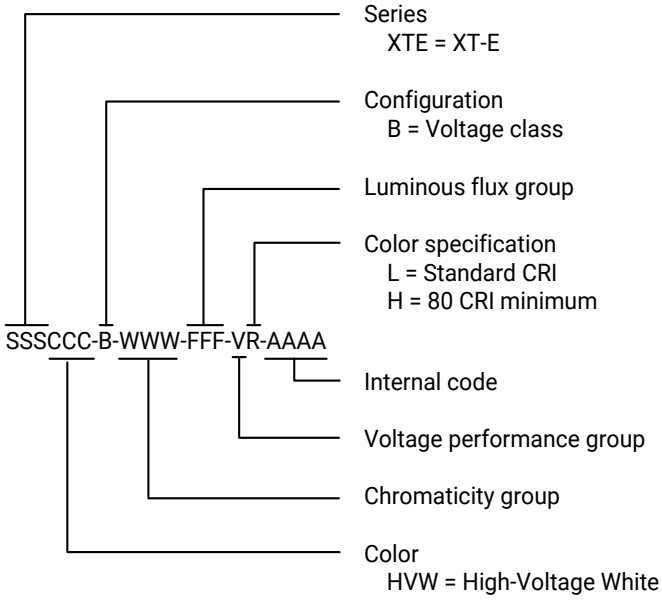
BIN AND ORDER CODE FORMATS

Bin codes and order codes for XT-E High-Voltage White LEDs are configured as follows:

Order Code



Bin Code



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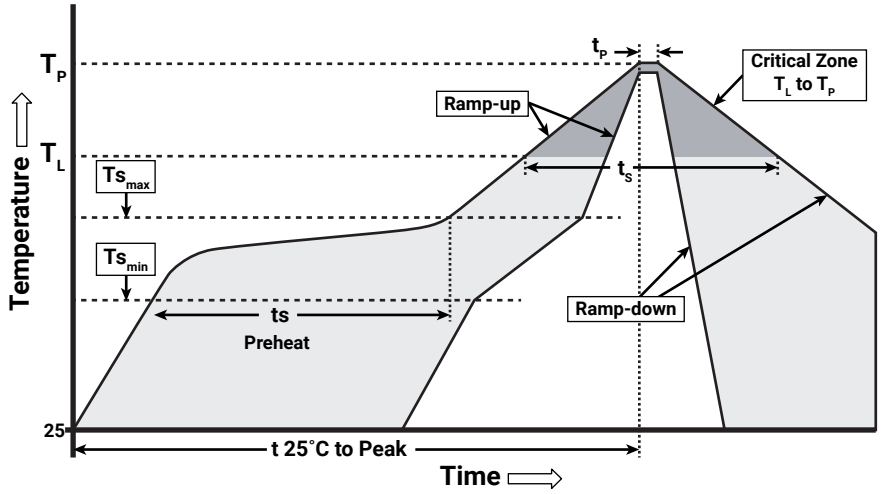
REFLOW SOLDERING CHARACTERISTICS

In testing, Cree has found XLamp XT-E HVW 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 Tp)	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 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 XT-E HVW LEDs may be stored as MSL 1 per JEDEC J-STD-033, meaning they have unlimited floor life in conditions of ≤ 30 °C/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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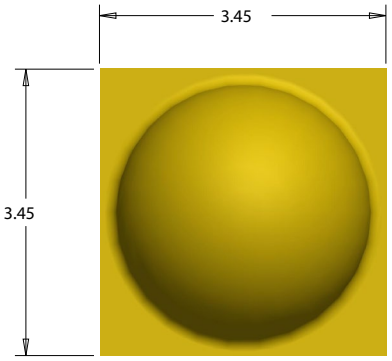
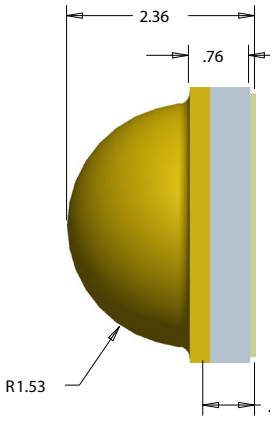
MECHANICAL DIMENSIONS

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

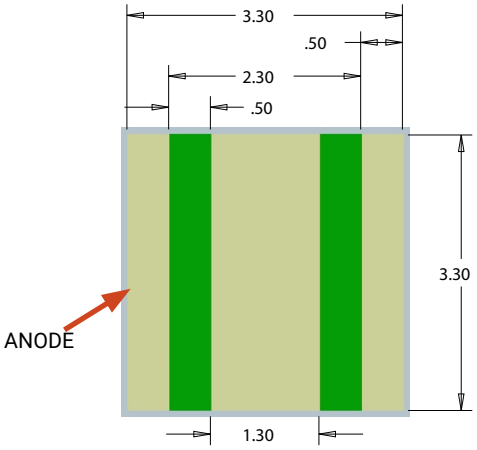
All measurements are ±.13 mm unless otherwise indicated.



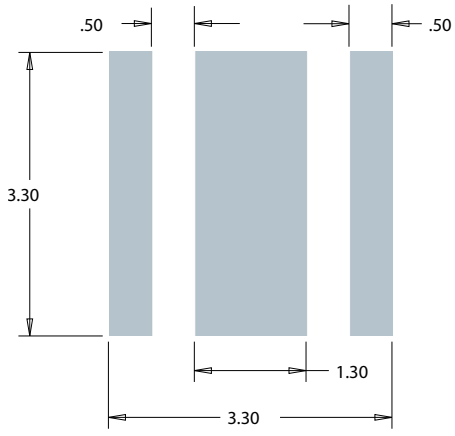
Top View



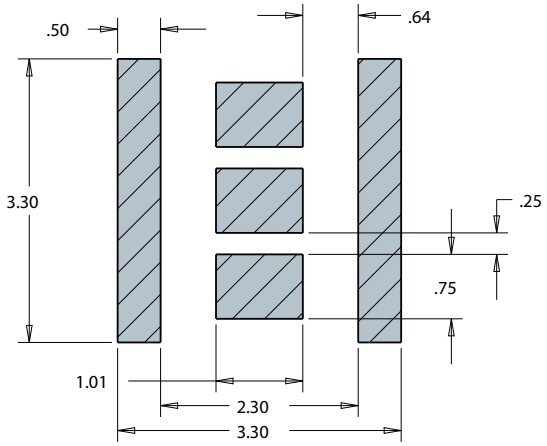
Side View



Bottom View



Recommended PCB Solder Pad



Recommended Stencil Pattern (Shaded Area Is Open)

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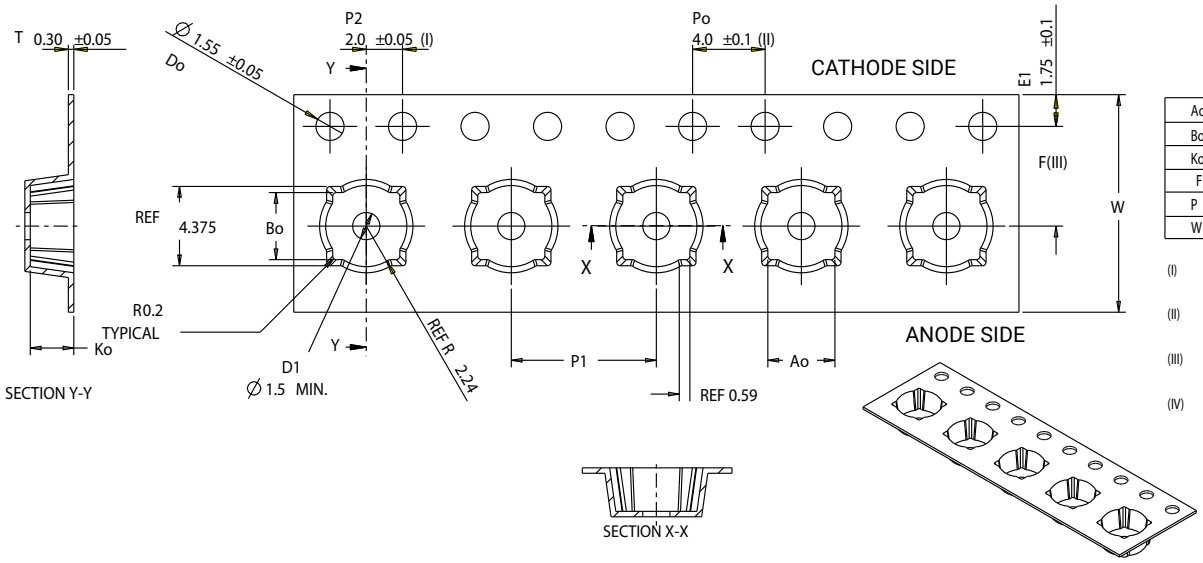
TAPE AND REEL

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

All dimensions in mm.



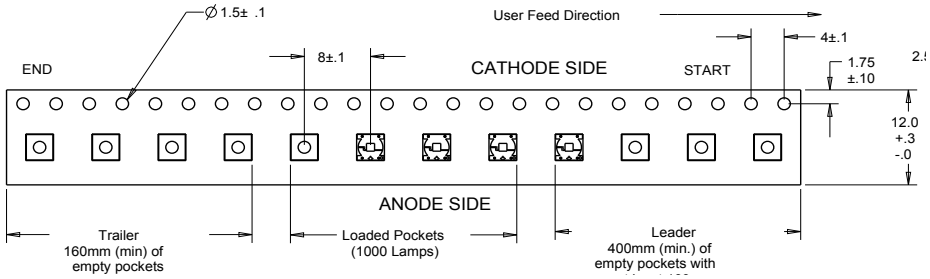
Ao	3.70	+/- 0.1
Bo	3.70	+/- 0.1
Ko	2.40	+0.0/-0.1
F	5.50	+/- 0.05
P 1	8.00	+/- 0.1
W	12.00	+0.3/-0.1

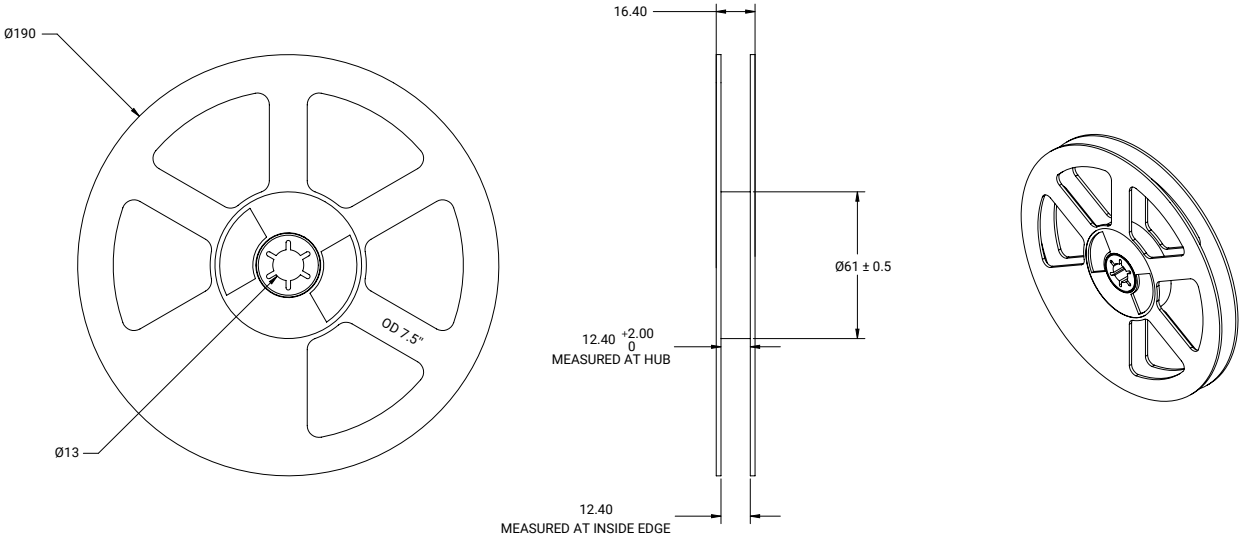
(I) Measured from centerline of sprocket hole to centerline of pocket.

(II) Cumulative tolerance of 10 sprocket holes is ± 0.20.

(III) Measured from centerline of sprocket hole to centerline of pocket.

(IV) Other material available.





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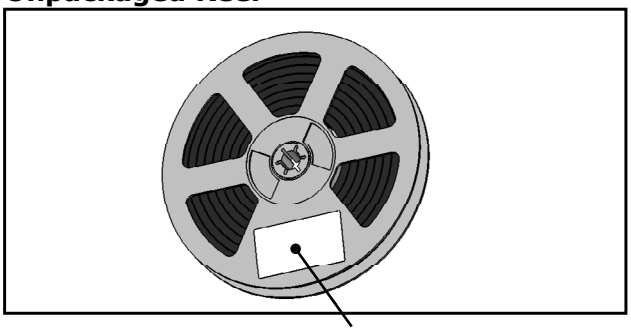
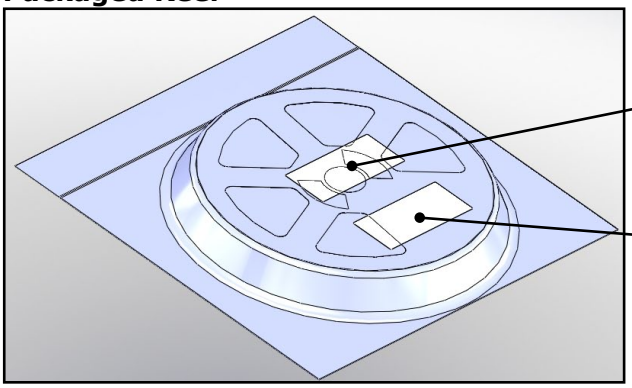
PACKAGING

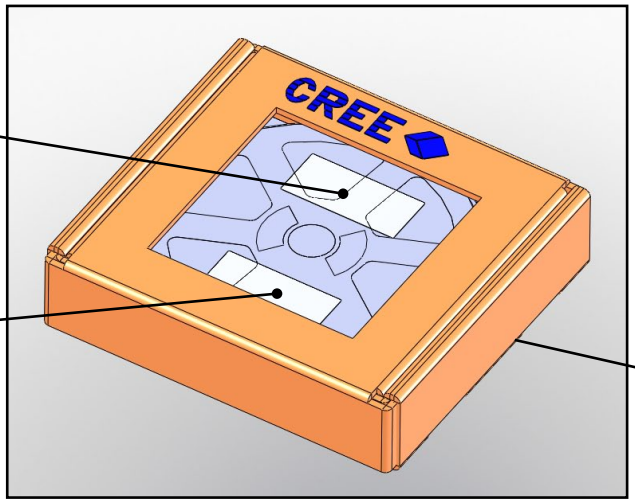
Unpackaged Reel



Packaged Reel



Boxed Reel



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Mouser Electronics

Authorized Distributor

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Cree, Inc.:

XTEHVW-Q0-0000-00000H7E8 XTEHVW-Q0-0000-00000H7F8 XTEHVW-Q0-0000-00000H8E6 XTEHVW-Q0-0000-00000H8E7 XTEHVW-Q0-0000-00000H8E8 XTEHVW-Q0-0000-00000H8F6 XTEHVW-Q0-0000-00000H8F7 XTEHVW-Q0-0000-00000H8F8 XTEHVW-Q0-0000-00000H9E5 XTEHVW-Q0-0000-00000H9E6 XTEHVW-Q0-0000-00000H9E7 XTEHVW-Q0-0000-00000H9E8 XTEHVW-Q0-0000-00000H9F5 XTEHVW-Q0-0000-00000H9F6 XTEHVW-Q0-0000-00000H9F7 XTEHVW-Q0-0000-00000H9F8 XTEHVW-Q0-0000-00000HAE5 XTEHVW-Q0-0000-00000HAE6 XTEHVW-Q0-0000-00000HAE7 XTEHVW-Q0-0000-00000HAF5 XTEHVW-Q0-0000-00000HAF6 XTEHVW-Q0-0000-00000HAF7 XTEHVW-Q0-0000-00000L7E8 XTEHVW-Q0-0000-00000L7F8 XTEHVW-Q0-0000-00000L8E6 XTEHVW-Q0-0000-00000L8E7 XTEHVW-Q0-0000-00000L8E8 XTEHVW-Q0-0000-00000L8F6 XTEHVW-Q0-0000-00000L8F7 XTEHVW-Q0-0000-00000L8F8 XTEHVW-Q0-0000-00000L9E5 XTEHVW-Q0-0000-00000L9E6 XTEHVW-Q0-0000-00000L9E7 XTEHVW-Q0-0000-00000L9E8 XTEHVW-Q0-0000-00000L9F5 XTEHVW-Q0-0000-00000L9F6 XTEHVW-Q0-0000-00000L9F7 XTEHVW-Q0-0000-00000L9F8 XTEHVW-Q0-0000-00000LAE5 XTEHVW-Q0-0000-00000LAE6 XTEHVW-Q0-0000-00000LAE7 XTEHVW-Q0-0000-00000LAF5 XTEHVW-Q0-0000-00000LAF6 XTEHVW-Q0-0000-00000LAF7 XTEHVW-Q0-0000-00000LBE3 XTEHVW-Q0-0000-00000LBE4 XTEHVW-Q0-0000-00000LBE5 XTEHVW-Q0-0000-00000LBF4 XTEHVW-Q0-0000-00000LBF5 XTEHVW-Q0-0000-00000LC50 XTEHVW-Q0-0000-00000LC51 XTEHVW-Q0-0000-00000LC53 XTEHVW-Q0-0000-00000LCE3 XTEHVW-Q0-0000-00000LCE4 XTEHVW-Q0-0000-00000LCF4 XTEHVW-Q0-0000-00000LD50 XTEHVW-Q0-0000-00000LD51 XTEHVW-Q0-0000-00000LD53 XTEHVW-Q0-0000-00000LDE3 XTEHVW-Q0-0000-00000LDE4 XTEHVW-Q0-0000-00000LDF4 XTEHVW-Q0-0000-00000LE50 XTEHVW-Q0-0000-00000LE51 XTEHVW-Q0-0000-00000LE53 XTEHVW-Q2-0000-00000H7E8 XTEHVW-Q2-0000-00000H7F8 XTEHVW-Q2-0000-00000H8E6 XTEHVW-Q2-0000-00000H8E7 XTEHVW-Q2-0000-00000H8E8 XTEHVW-Q2-0000-00000H8F6 XTEHVW-Q2-0000-00000H8F7 XTEHVW-Q2-0000-00000H8F8 XTEHVW-Q2-0000-00000H9E5 XTEHVW-Q2-0000-00000H9E6 XTEHVW-Q2-0000-00000H9E7 XTEHVW-Q2-0000-00000H9E8 XTEHVW-Q2-0000-00000H9F5 XTEHVW-Q2-0000-00000H9F6 XTEHVW-Q2-0000-00000H9F7 XTEHVW-Q2-0000-00000H9F8 XTEHVW-Q2-0000-00000HAE5 XTEHVW-Q2-0000-00000HAE6 XTEHVW-Q2-0000-00000HAE7 XTEHVW-Q2-0000-00000HAF5 XTEHVW-Q2-0000-00000HAF6 XTEHVW-Q2-0000-00000HAF7 XTEHVW-Q2-0000-00000L7E8 XTEHVW-Q2-0000-00000L7F8 XTEHVW-Q2-0000-00000L8E6 XTEHVW-Q2-0000-00000L8E7 XTEHVW-Q2-0000-00000L8E8 XTEHVW-Q2-0000-00000L8F6 XTEHVW-Q2-0000-00000L8F7 XTEHVW-Q2-0000-00000L8F8 XTEHVW-Q2-0000-00000L9E5 XTEHVW-Q2-0000-00000L9E6 XTEHVW-Q2-0000-00000L9E7 XTEHVW-Q2-0000-00000L9E8 XTEHVW-Q2-0000-00000L9F5 XTEHVW-Q2-0000-00000L9F6