PRELIMINARY

XLamp® ML-C LEDs



PRODUCT DESCRIPTION

The XLamp® ML-C LED brings lighting-class reliability and performance to 1/3-watt LEDs. The XLamp ML-C LED expands Cree LED's lighting-class leadership to LED bulbs and linear and distributed lighting applications. With XLamp LED lighting-class reliability, a wide viewing angle, uniform light output, and industry-leading chromaticity binning in a 3.5-mm X 3.5-mm package, the XLamp ML-C LED continues Cree LED's history of segment-focused product innovation in LEDs for lighting applications.

The XLamp ML-C LED brings high performance and a smooth look to a wide range of lighting applications, including linear lighting, fluorescent retrofits and retail-display lighting.

FEATURES

- Available in white (2600 K to 8300 K CCT), 80-CRI minimum
- Available in both parallel and series
- ANSI-compatible sub-bins
- Maximum drive current: 350 mA for parallel, 175 mA for series
- 120° viewing angle, uniform chromaticity profile
- Electrically neutral thermal path
- RoHS and REACH compliant
- UL® recognized component (E349212)

Cree LED / 4001 E. Hwy. 54, Suite 2000 / Durham, NC 27713 USA / +1.919.313.5330 / www.cree-led.com

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

TABLE OF CONTENTS

Characteristics 3
Flux Characteristics - ML-C Parallel 4
Flux Characteristics - ML-C Series 7
Relative Spectral Power Distribution 10
Relative Luminous Flux vs. Junction Temperature 10
Electrical Characteristics - ML-C Parallel 11
Electrical Characteristics - ML-C Series 11
Relative Luminous Flux vs. Current - ML-C Parallel 12
Relative Luminous Flux vs. Current - ML-C Series 12
Typical Spatial Distribution 13
Thermal Design - ML-C Parallel 13
Thermal Design - ML-C Series 14
Performance Groups – Luminous Flux 15
Performance Groups – Chromaticity 15
Standard Cool White Kits Plotted on ANSI Standard Chromaticity Regions 19
Warm and Neutral White Kits Plotted on ANSI Standard Chromaticity Regions 21
Standard Chromaticity Kits 23
Bin and Order Code Formats 24
Reflow Soldering Characteristics 25
Notes 26
Mechanical Dimensions 28
Tape and Reel 29
Packaging 30

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

CHARACTERISTICS (T_J = 25 °C)

Characteristics	Unit	Minimum	Typical	Maximum
Thermal resistance, junction to solder point	°C/W		13	
Viewing angle (FWHM)	degrees		120	
Temperature coefficient of voltage - parallel	mV/°C		-3.4	
Temperature coefficient of voltage - series	mV/°C		-6.8	
ESD classification (HBM per Mil-Std-883D) - parallel, series			Class 3B	
DC forward current - parallel	mA			350
DC forward current - series	mA			175
Reverse voltage	V			1
Forward voltage (@ 100 mA) - parallel	V		3.2	3.4
Forward voltage (@ 50 mA) - series	V		6.4	7.0
LED junction temperature	°C			150

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

FLUX CHARACTERISTICS - ML-C PARALLEL (T_J = 25 °C)

The following table provides order codes for XLamp ML-C LEDs. For a complete description of the order-code nomenclature, please consult the Bin and Order Code Formats section (page 24).

Chromaticity		Minimum Luminous Flux (lm) @ 100 mA		Calculated Minimum Luminous Flux (lm) @ 300 mA*	Order Codes		
Kit	CCT	Code	Flux (lm)		75 CRI Typical	80 CRI Typical	80 CRI Minimum
DT	7000 K	K3	35.2	72.6	MLCAWT-A1-0000-0001DT		
		K2	30.6	63.1	MLCAWT-A1-0000-0000DT		
		J3	26.8	55.2	MLCAWT-A1-0000-000XDT		
E0	7000 K	K3	35.2	72.6	MLCAWT-A1-0000-0001E0		
		K2	30.6	63.1	MLCAWT-A1-0000-0000E0		
		J3	26.8	55.2	MLCAWT-A1-0000-000XE0		
51	6500 K	K3	35.2	72.6	MLCAWT-A1-0000-000151		
		K2	30.6	63.1	MLCAWT-A1-0000-000051		
		J3	26.8	55.2	MLCAWT-A1-0000-000X51		
E1	6500 K	K3	35.2	72.6	MLCAWT-A1-0000-0001E1		
		K2	30.6	63.1	MLCAWT-A1-0000-0000E1		MLCAWT-H1-0000-0000E1
		J3	26.8	55.2	MLCAWT-A1-0000-000XE1		MLCAWT-H1-0000-000XE1
50	6200 K	K3	35.2	72.6	MLCAWT-A1-0000-000150		
		K2	30.6	63.1	MLCAWT-A1-0000-000050		
		J3	26.8	55.2	MLCAWT-A1-0000-000X50		
DV	6000 K	K3	35.2	72.6	MLCAWT-A1-0000-0001DV		
		K2	30.6	63.1	MLCAWT-A1-0000-0000DV		
		J3	26.8	55.2	MLCAWT-A1-0000-000XDV		
E2	5750 K	K3	35.2	72.6	MLCAWT-A1-0000-0001E2		
		K2	30.6	63.1	MLCAWT-A1-0000-0000E2		
		J3	26.8	55.2	MLCAWT-A1-0000-000XE2		
DY	5500 K	K3	35.2	72.6	MLCAWT-A1-0000-0001DY		
		K2	30.6	63.1	MLCAWT-A1-0000-0000DY		
		J3	26.8	55.2	MLCAWT-A1-0000-000XDY		
DZ	5000 K	K3	35.2	72.6	MLCAWT-A1-0000-0001DZ		
		K2	30.6	63.1	MLCAWT-A1-0000-0000DZ		
		J3	26.8	55.2	MLCAWT-A1-0000-000XDZ		

Notes:

- Cree LED 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 26).
- XLamp ML-C LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- Typical CRI for Cool White (4300 K – 8300 K CCT) is 75.
- Typical CRI for Warm White (2600 K – 4300 K CCT) is 80.
- Minimum CRI for 80-CRI White is 80.

* Calculated flux values are for reference only.

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

FLUX CHARACTERISTICS - ML-C PARALLEL (T_J = 25 °C) - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 100 mA		Calculated Minimum Luminous Flux (lm) @ 300 mA*	Order Codes		
Kit	CCT	Code	Flux (lm)		75 CRI Typical	80 CRI Typical	80 CRI Minimum
E3	5000 K	K3	35.2	72.6	MLCAWT-A1-0000-0001E3		
		K2	30.6	63.1	MLCAWT-A1-0000-0000E3		MLCAWT-H1-0000-0000E3
		J3	26.8	55.2	MLCAWT-A1-0000-000XE3		MLCAWT-H1-0000-000XE3
F4	4750 K	K3	35.2	72.6	MLCAWT-A1-0000-0001F4		
		K2	30.6	63.1	MLCAWT-A1-0000-0000F4		
		J3	26.8	55.2	MLCAWT-A1-0000-000XF4		
E4	4500 K	K3	35.2	72.6	MLCAWT-A1-0000-0001E4		
		K2	30.6	63.1	MLCAWT-A1-0000-0000E4		
		J3	26.8	55.2	MLCAWT-A1-0000-000XE4		
F5	4250 K	K2	30.6	63.1		MLCAWT-A1-0000-0000F5	
		J3	26.8	55.2		MLCAWT-A1-0000-000XF5	
E5	4000 K	K2	30.6	63.1		MLCAWT-A1-0000-0000E5	MLCAWT-H1-0000-0000E5
		J3	26.8	55.2		MLCAWT-A1-0000-000XE5	MLCAWT-H1-0000-000XE5
		J2	23.5	48.4			MLCAWT-H1-0000-000WE5
		H0	18.1	37.3			
Z5	4000 K	K2	30.6	63.1		MLCAWT-A1-0000-0000Z5	MLCAWT-H1-0000-0000Z5
		J3	26.8	55.2		MLCAWT-A1-0000-000XZ5	MLCAWT-H1-0000-000XZ5
		J2	23.5	48.4			MLCAWT-H1-0000-000WZ5
		H0	18.1	37.3			
F6	3750 K	K2	30.6	63.1		MLCAWT-A1-0000-0000F6	MLCAWT-H1-0000-0000F6
		J3	26.8	55.2		MLCAWT-A1-0000-000XF6	MLCAWT-H1-0000-000XF6
		J2	23.5	48.4			MLCAWT-H1-0000-000WF6
		H0	18.1	37.3			MLCAWT-H1-0000-000VF6
E6	3500 K	K2	30.6	63.1		MLCAWT-A1-0000-0000E6	MLCAWT-H1-0000-0000E6
		J3	26.8	55.2		MLCAWT-A1-0000-000XE6	MLCAWT-H1-0000-000XE6
		J2	23.5	48.4			MLCAWT-H1-0000-000WE6
		H0	18.1	37.3			MLCAWT-H1-0000-000VE6

Notes:

- Cree LED 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 26).
- XLamp ML-C LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- Typical CRI for Cool White (4300 K – 8300 K CCT) is 75.
- Typical CRI for Warm White (2600 K – 4300 K CCT) is 80.
- Minimum CRI for 80-CRI White is 80.

* Calculated flux values are for reference only.

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

FLUX CHARACTERISTICS - ML-C PARALLEL (T_J = 25 °C) - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 100 mA		Calculated Minimum Luminous Flux (lm) @ 300 mA*	Order Codes		
Kit	CCT	Code	Flux (lm)		75 CRI Typical	80 CRI Typical	80 CRI Minimum
Z6	3500 K	K2	30.6	63.1		MLCAWT-A1-0000-0000Z6	MLCAWT-H1-0000-0000Z6
		J3	26.8	55.2		MLCAWT-A1-0000-000XZ6	MLCAWT-H1-0000-000XZ6
		J2	23.5	48.4			MLCAWT-H1-0000-000WZ6
		H0	18.1	37.3			MLCAWT-H1-0000-000VZ6
F7	3250 K	K2	30.6	63.1		MLCAWT-A1-0000-0000F7	MLCAWT-H1-0000-0000F7
		J3	26.8	55.2		MLCAWT-A1-0000-000XF7	MLCAWT-H1-0000-000XF7
		J2	23.5	48.4		MLCAWT-A1-0000-000WF7	MLCAWT-H1-0000-000WF7
		H0	18.1	37.3			MLCAWT-H1-0000-000VF7
E7	3000 K	K2	30.6	63.1		MLCAWT-A1-0000-0000E7	MLCAWT-H1-0000-0000E7
		J3	26.8	55.2		MLCAWT-A1-0000-000XE7	MLCAWT-H1-0000-000XE7
		J2	23.5	48.4		MLCAWT-A1-0000-000WE7	MLCAWT-H1-0000-000WE7
		H0	18.1	37.3			MLCAWT-H1-0000-000VE7
Z7	3000 K	K2	30.6	63.1		MLCAWT-A1-0000-0000Z7	MLCAWT-H1-0000-0000Z7
		J3	26.8	55.2		MLCAWT-A1-0000-000XZ7	MLCAWT-H1-0000-000XZ7
		J2	23.5	48.4		MLCAWT-A1-0000-000WZ7	MLCAWT-H1-0000-000WZ7
		H0	18.1	37.3			MLCAWT-H1-0000-000VZ7
F8	2850 K	J3	26.8	55.2		MLCAWT-A1-0000-000XF8	MLCAWT-H1-0000-000XF8
		J2	23.5	48.4		MLCAWT-A1-0000-000WF8	MLCAWT-H1-0000-000WF8
		H0	18.1	37.3			MLCAWT-H1-0000-000VF8
E8	2700 K	J3	26.8	55.2		MLCAWT-A1-0000-000XE8	MLCAWT-H1-0000-000XE8
		J2	23.5	48.4		MLCAWT-A1-0000-000WE8	MLCAWT-H1-0000-000WE8
		H0	18.1	37.3			MLCAWT-H1-0000-000VE8
Z8	2700 K	J3	26.8	55.2		MLCAWT-A1-0000-000XZ8	MLCAWT-H1-0000-000XZ8
		J2	23.5	48.4		MLCAWT-A1-0000-000WZ8	MLCAWT-H1-0000-000WZ8
		H0	18.1	37.3			MLCAWT-H1-0000-000VZ8

Notes:

- Cree LED 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 26).
- XLamp ML-C LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- Typical CRI for Cool White (4300 K – 8300 K CCT) is 75.
- Typical CRI for Warm White (2600 K – 4300 K CCT) is 80.
- Minimum CRI for 80-CRI White is 80.

* Calculated flux values are for reference only.

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

FLUX CHARACTERISTICS - ML-C SERIES (T_J = 25 °C)

The following table provides order codes for XLamp ML-C LEDs. For a complete description of the order-code nomenclature, please consult the Bin and Order Code Formats section (page 24).

Chromaticity		Minimum Luminous Flux (lm) @ 50 mA		Calculated Minimum Luminous Flux (lm) @ 150 mA*	Order Codes		
Kit	CCT	Code	Flux (lm)		75 CRI Typical	80 CRI Typical	80 CRI Minimum
DT	7000 K	K3	35.2	72.6	MLCSWT-A1-0000-0001DT		
		K2	30.6	63.1	MLCSWT-A1-0000-0000DT		
		J3	26.8	55.2	MLCSWT-A1-0000-000XDT		
E0	7000 K	K3	35.2	72.6	MLCSWT-A1-0000-0001E0		
		K2	30.6	63.1	MLCSWT-A1-0000-0000E0		
		J3	26.8	55.2	MLCSWT-A1-0000-000XE0		
51	6500 K	K3	35.2	72.6	MLCSWT-A1-0000-000151		
		K2	30.6	63.1	MLCSWT-A1-0000-000051		
		J3	26.8	55.2	MLCSWT-A1-0000-000X51		
E1	6500 K	K3	35.2	72.6	MLCSWT-A1-0000-0001E1		
		K2	30.6	63.1	MLCSWT-A1-0000-0000E1		MLCSWT-H1-0000-0000E1
		J3	26.8	55.2	MLCSWT-A1-0000-000XE1		MLCSWT-H1-0000-000XE1
50	6200 K	K3	35.2	72.6	MLCSWT-A1-0000-000150		
		K2	30.6	63.1	MLCSWT-A1-0000-000050		
		J3	26.8	55.2	MLCSWT-A1-0000-000X50		
DV	6000 K	K3	35.2	72.6	MLCSWT-A1-0000-0001DV		
		K2	30.6	63.1	MLCSWT-A1-0000-0000DV		
		J3	26.8	55.2	MLCSWT-A1-0000-000XDV		
E2	5750 K	K3	35.2	72.6	MLCSWT-A1-0000-0001E2		
		K2	30.6	63.1	MLCSWT-A1-0000-0000E2		
		J3	26.8	55.2	MLCSWT-A1-0000-000XE2		
DY	5500 K	K3	35.2	72.6	MLCSWT-A1-0000-0001DY		
		K2	30.6	63.1	MLCSWT-A1-0000-0000DY		
		J3	26.8	55.2	MLCSWT-A1-0000-000XDY		
DZ	5000 K	K3	35.2	72.6	MLCSWT-A1-0000-0001DZ		
		K2	30.6	63.1	MLCSWT-A1-0000-0000DZ		
		J3	26.8	55.2	MLCSWT-A1-0000-000XDZ		

Notes:

- Cree LED 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 26).
- XLamp ML-C LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- Typical CRI for Cool White (4300 K – 8300 K CCT) is 75.
- Typical CRI for Warm White (2600 K – 4300 K CCT) is 80.
- Minimum CRI for 80-CRI White is 80.

* Calculated flux values are for reference only.

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

FLUX CHARACTERISTICS - ML-C SERIES (T_J = 25 °C) - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 50 mA		Calculated Minimum Luminous Flux (lm) @ 150 mA*	Order Codes		
Kit	CCT	Code	Flux (lm)		75 CRI Typical	80 CRI Typical	80 CRI Minimum
E3	5000 K	K3	35.2	72.6	MLCSWT-A1-0000-0001E3		
		K2	30.6	63.1	MLCSWT-A1-0000-0000E3		MLCSWT-H1-0000-0000E3
		J3	26.8	55.2	MLCSWT-A1-0000-000XE3		MLCSWT-H1-0000-000XE3
F4	4750 K	K3	35.2	72.6	MLCSWT-A1-0000-0001F4		
		K2	30.6	63.1	MLCSWT-A1-0000-0000F4		
		J3	26.8	55.2	MLCSWT-A1-0000-000XF4		
E4	4500 K	K3	35.2	72.6	MLCSWT-A1-0000-0001E4		
		K2	30.6	63.1	MLCSWT-A1-0000-0000E4		
		J3	26.8	55.2	MLCSWT-A1-0000-000XE4		
F5	4250 K	K2	30.6	63.1		MLCSWT-A1-0000-0000F5	
		J3	26.8	55.2		MLCSWT-A1-0000-000XF5	
E5	4000 K	K2	30.6	63.1		MLCSWT-A1-0000-0000E5	MLCSWT-H1-0000-0000E5
		J3	26.8	55.2		MLCSWT-A1-0000-000XE5	MLCSWT-H1-0000-000XE5
		J2	23.5	48.4			MLCSWT-H1-0000-000WE5
		H0	18.1	37.3			
Z5	4000 K	K2	30.6	63.1		MLCSWT-A1-0000-0000Z5	MLCSWT-H1-0000-0000Z5
		J3	26.8	55.2		MLCSWT-A1-0000-000XZ5	MLCSWT-H1-0000-000XZ5
		J2	23.5	48.4			MLCSWT-H1-0000-000WZ5
		H0	18.1	37.3			
F6	3750 K	K2	30.6	63.1		MLCSWT-A1-0000-0000F6	MLCSWT-H1-0000-0000F6
		J3	26.8	55.2		MLCSWT-A1-0000-000XF6	MLCSWT-H1-0000-000XF6
		J2	23.5	48.4			MLCSWT-H1-0000-000WF6
		H0	18.1	37.3			MLCSWT-H1-0000-000VF6
E6	3500 K	K2	30.6	63.1		MLCSWT-A1-0000-0000E6	MLCSWT-H1-0000-0000E6
		J3	26.8	55.2		MLCSWT-A1-0000-000XE6	MLCSWT-H1-0000-000XE6
		J2	23.5	48.4			MLCSWT-H1-0000-000WE6
		H0	18.1	37.3			MLCSWT-H1-0000-000VE6
Z6	3500 K	K2	30.6	63.1		MLCSWT-A1-0000-0000Z6	MLCSWT-H1-0000-0000Z6
		J3	26.8	55.2		MLCSWT-A1-0000-000XZ6	MLCSWT-H1-0000-000XZ6
		J2	23.5	48.4			MLCSWT-H1-0000-000WZ6
		H0	18.1	37.3			MLCSWT-H1-0000-000VZ6

Notes:

- Cree LED 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 26).
- XLamp ML-C LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- Typical CRI for Cool White (4300 K – 8300 K CCT) is 75.
- Typical CRI for Warm White (2600 K – 4300 K CCT) is 80.
- Minimum CRI for 80-CRI White is 80.

* Calculated flux values are for reference only.

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

FLUX CHARACTERISTICS - ML-C SERIES (T_J = 25 °C) - CONTINUED

Chromaticity		Minimum Luminous Flux (lm) @ 50 mA		Calculated Minimum Luminous Flux (lm) @ 150 mA*	Order Codes		
Kit	CCT	Code	Flux (lm)		75 CRI Typical	80 CRI Typical	80 CRI Minimum
F7	3250 K	K2	30.6	63.1		MLCSWT-A1-0000-0000F7	MLCSWT-H1-0000-0000F7
		J3	26.8	55.2		MLCSWT-A1-0000-000XF7	MLCSWT-H1-0000-000XF7
		J2	23.5	48.4		MLCSWT-A1-0000-000WF7	MLCSWT-H1-0000-000WF7
		H0	18.1	37.3			MLCSWT-H1-0000-000VF7
E7	3000 K	K2	30.6	63.1		MLCSWT-A1-0000-0000E7	MLCSWT-H1-0000-0000E7
		J3	26.8	55.2		MLCSWT-A1-0000-000XE7	MLCSWT-H1-0000-000XE7
		J2	23.5	48.4		MLCSWT-A1-0000-000WE7	MLCSWT-H1-0000-000WE7
		H0	18.1	37.3			MLCSWT-H1-0000-000VE7
Z7	3000 K	K2	30.6	63.1		MLCSWT-A1-0000-0000Z7	MLCSWT-H1-0000-0000Z7
		J3	26.8	55.2		MLCSWT-A1-0000-000XZ7	MLCSWT-H1-0000-000XZ7
		J2	23.5	48.4		MLCSWT-A1-0000-000WZ7	MLCSWT-H1-0000-000WZ7
		H0	18.1	37.3			MLCSWT-H1-0000-000VZ7
F8	2850 K	J3	26.8	55.2		MLCSWT-A1-0000-000XF8	MLCSWT-H1-0000-000XF8
		J2	23.5	48.4		MLCSWT-A1-0000-000WF8	MLCSWT-H1-0000-000WF8
		H0	18.1	37.3			MLCSWT-H1-0000-000VF8
E8	2700 K	J3	26.8	55.2		MLCSWT-A1-0000-000XE8	MLCSWT-H1-0000-000XE8
		J2	23.5	48.4		MLCSWT-A1-0000-000WE8	MLCSWT-H1-0000-000WE8
		H0	18.1	37.3			MLCSWT-H1-0000-000VE8
Z8	2700 K	J3	26.8	55.2		MLCSWT-A1-0000-000XZ8	MLCSWT-H1-0000-000XZ8
		J2	23.5	48.4		MLCSWT-A1-0000-000WZ8	MLCSWT-H1-0000-000WZ8
		H0	18.1	37.3			MLCSWT-H1-0000-000VZ8

Notes:

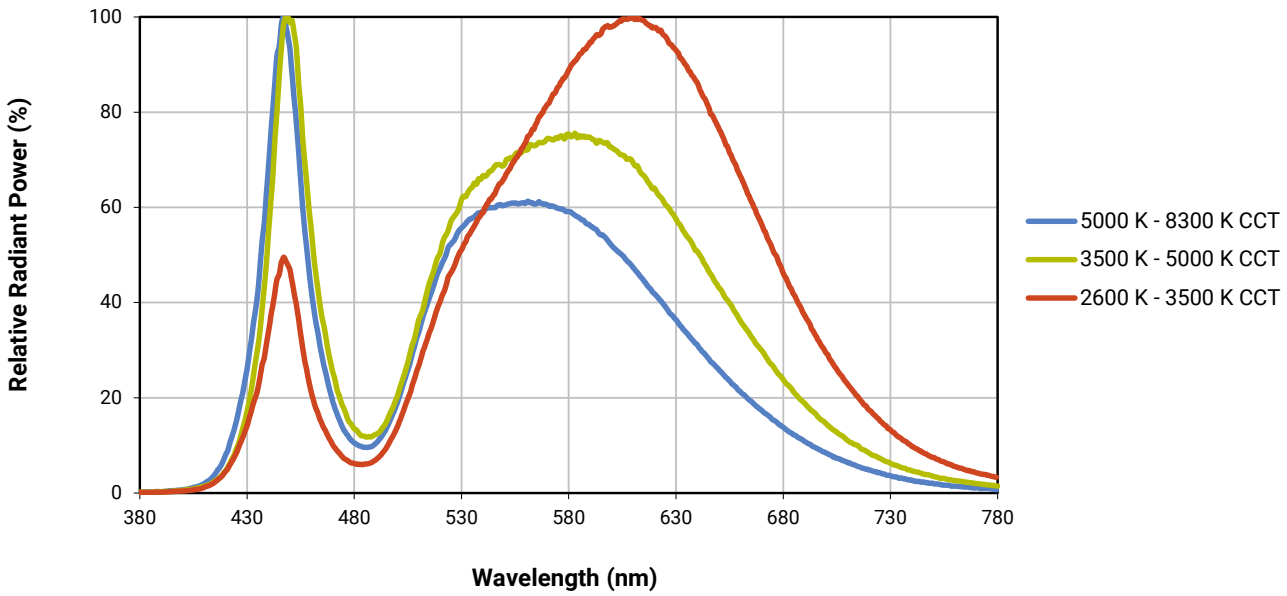
- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and ±2 on CRI measurements. See the Measurements section (page 26).
- XLamp ML-C LED order codes specify only a minimum flux bin and not a maximum. Cree LED may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- Typical CRI for Cool White (4300 K – 8300 K CCT) is 75.
- Typical CRI for Warm White (2600 K – 4300 K CCT) is 80.
- Minimum CRI for 80-CRI White is 80.

* Calculated flux values are for reference only.

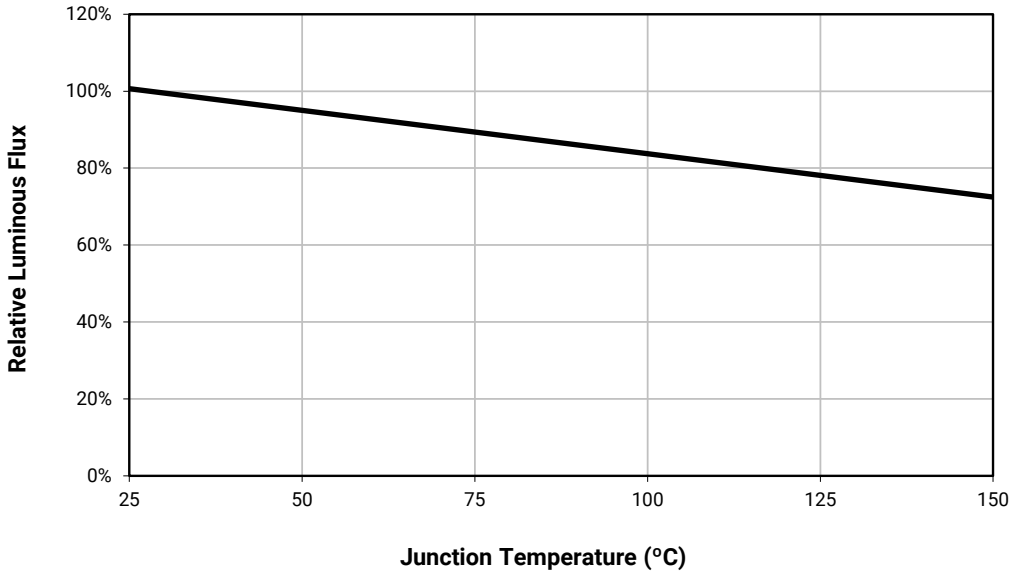
© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

RELATIVE SPECTRAL POWER DISTRIBUTION



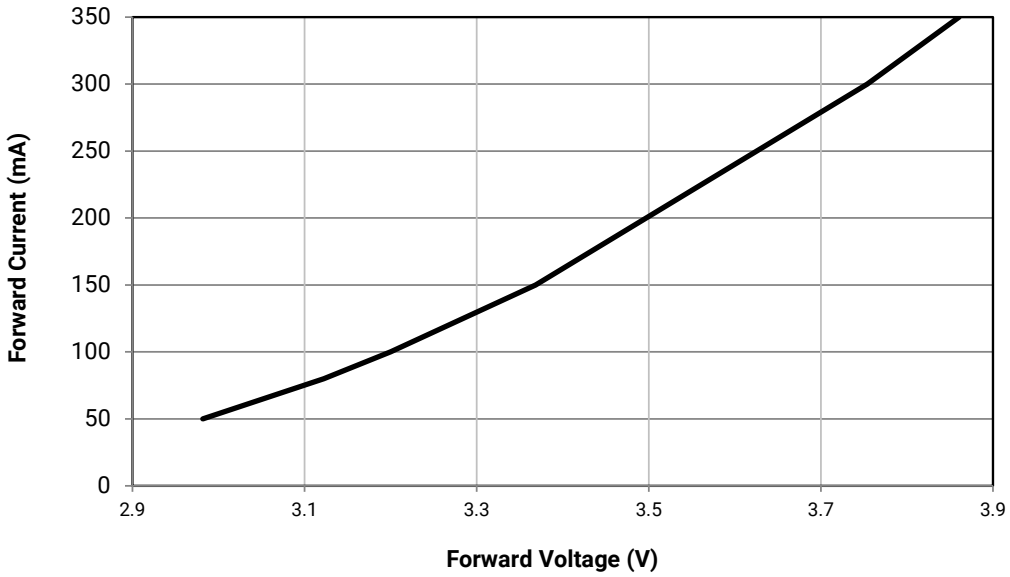
RELATIVE LUMINOUS FLUX VS. JUNCTION TEMPERATURE - ML-C PARALLEL: I_F = 100 mA, ML-C SERIES: I_F = 50 mA



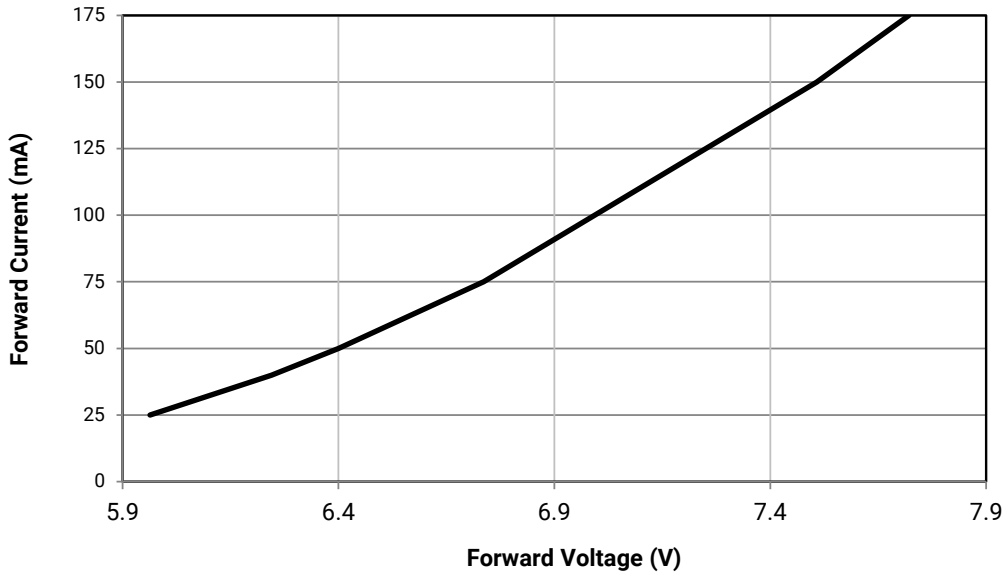
© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

ELECTRICAL CHARACTERISTICS - ML-C PARALLEL (T_J = 25 °C)



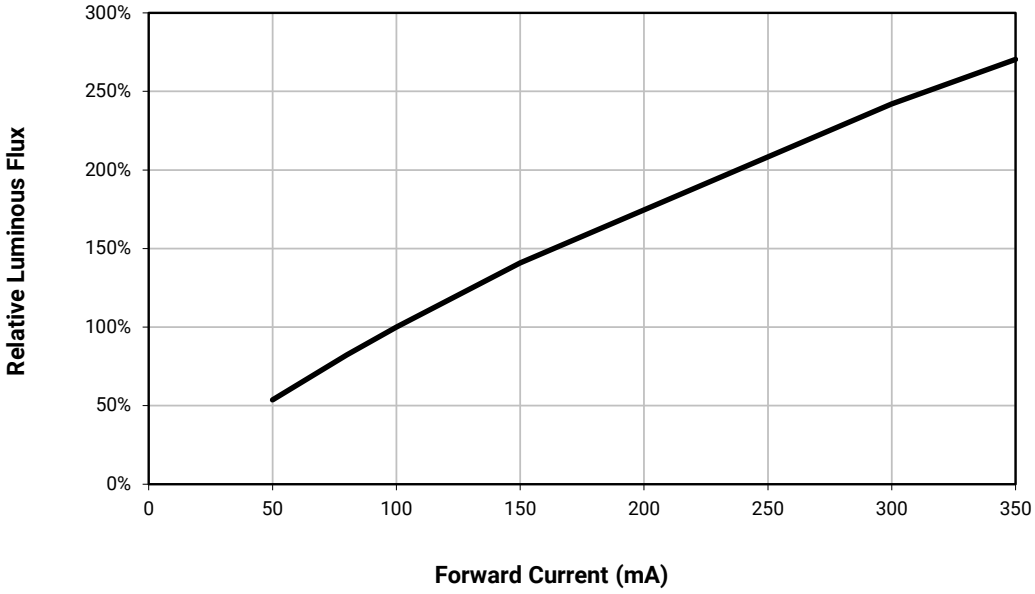
ELECTRICAL CHARACTERISTICS - ML-C SERIES (T_J = 25 °C)



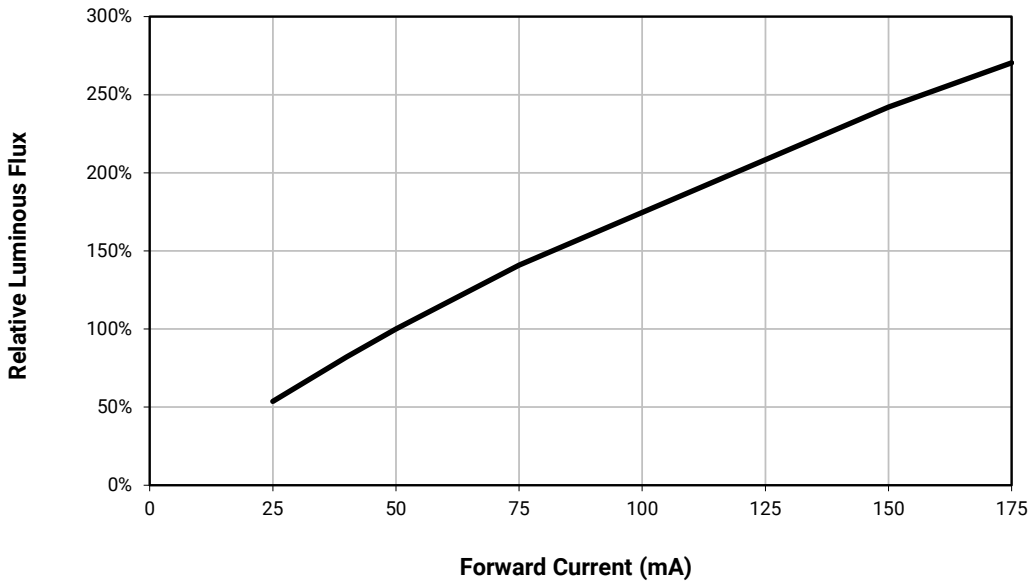
© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

RELATIVE LUMINOUS FLUX VS. CURRENT - ML-C PARALLEL (T_J = 25 °C)



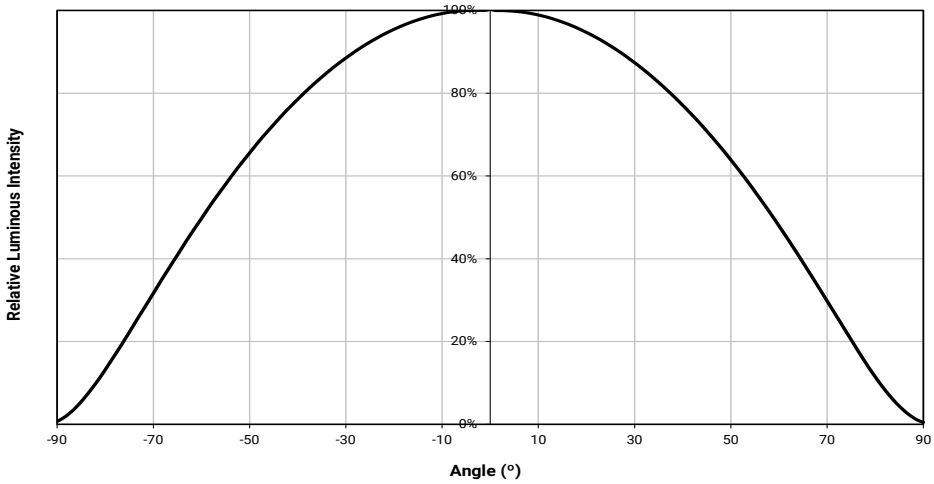
RELATIVE LUMINOUS FLUX VS. CURRENT - ML-C SERIES (T_J = 25 °C)



© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

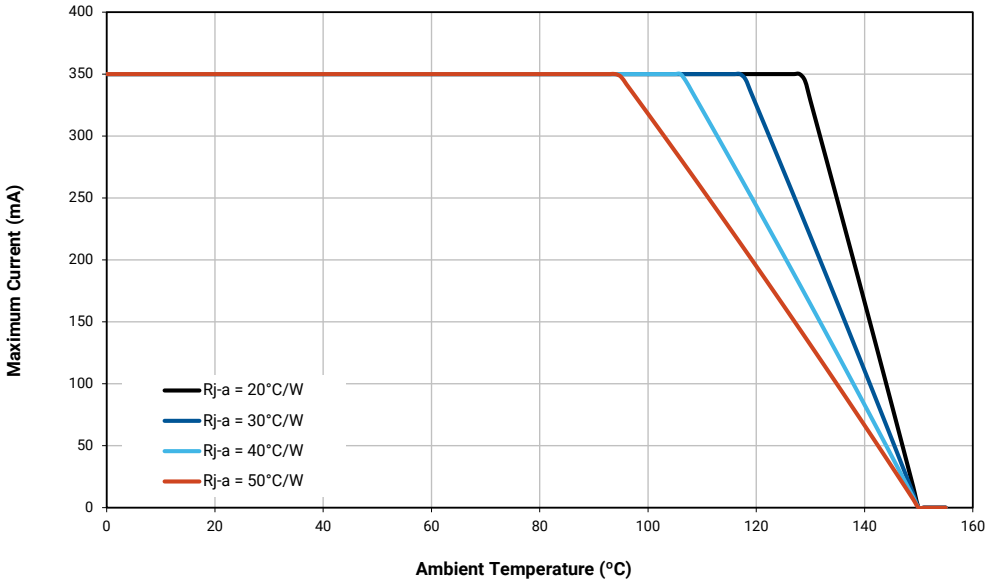
PRELIMINARY

TYPICAL SPATIAL DISTRIBUTION



THERMAL DESIGN - ML-C PARALLEL

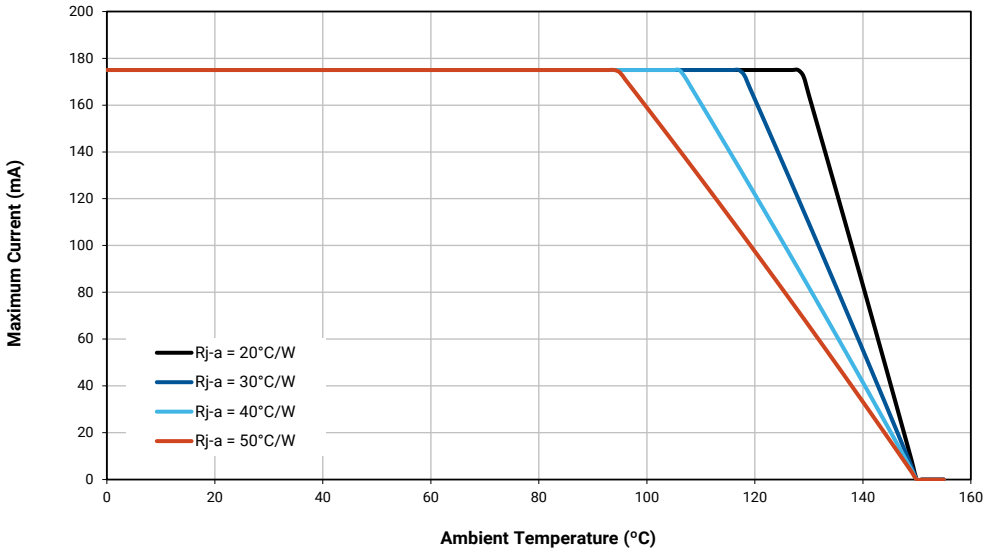
The maximum forward current is determined by the thermal resistance between the LED junction and ambient. It is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the solder point to ambient in order to optimize lamp life and optical characteristics.



© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

THERMAL DESIGN - ML-C SERIES



© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

PERFORMANCE GROUPS – LUMINOUS FLUX

White XLamp ML-C LEDs are tested for luminous flux and placed into one of the following luminous-flux groups:

Group Code	Minimum Luminous Flux (lm)	Maximum Luminous Flux (lm)
H0*	18.1	23.5
H2	18.1	20.6
H3	20.6	23.5
J0*	23.5	30.6
J2	23.5	26.8
J3	26.8	30.6
K2	30.6	35.2
K3	35.2	39.8
M2	39.8	45.7

Notes:

- Flux codes H0 and J0 are further subdivided into H2, H3 and J2, J3, respectively. Orders for the H0 flux code may be filled with H2 or H3 sub-codes and orders for the J0 flux code may be filled with J2 or J3 sub-codes.

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

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

PERFORMANCE GROUPS – CHROMATICITY (CONTINUED)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
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
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
6A1	0.3889	0.3690	6A2	0.3915	0.3768	6A3	0.3981	0.3800	6A4	0.3953	0.3720
	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

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

PERFORMANCE GROUPS – CHROMATICITY (CONTINUED)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
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
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
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
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
8C1	0.4582	0.4099	8C2	0.4634	0.4193	8C3	0.4695	0.4207	8C4	0.4641	0.4112
	0.4634	0.4193		0.4687	0.4289		0.4750	0.4304		0.4695	0.4207
	0.4695	0.4207		0.4750	0.4304		0.4813	0.4319		0.4756	0.4221
	0.4641	0.4112		0.4695	0.4207		0.4756	0.4221		0.4700	0.4126

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

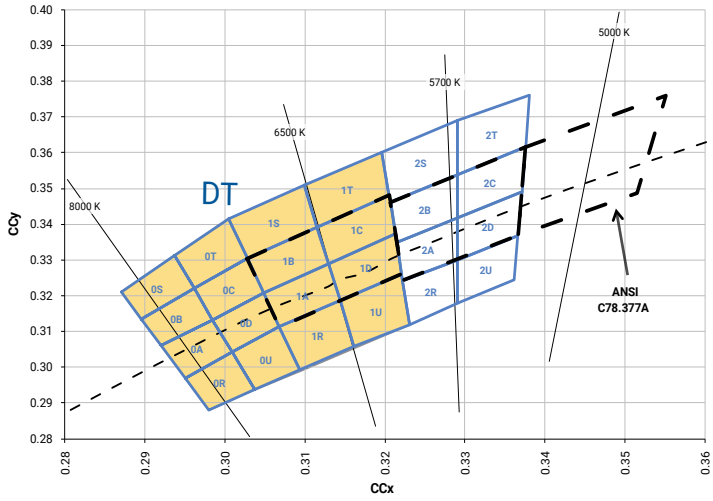
PERFORMANCE GROUPS – CHROMATICITY (CONTINUED)

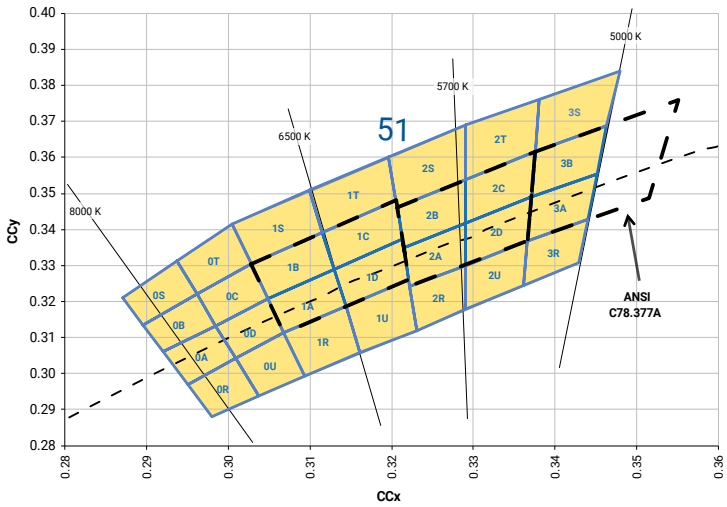
Region	x	y	Region	x	y	Region	x	y	Region	x	y
8D1	0.4483	0.3919	8D2	0.4532	0.4008	8D3	0.4589	0.4021	8D4	0.4538	0.3931
	0.4532	0.4008		0.4582	0.4099		0.4641	0.4112		0.4589	0.4021
	0.4589	0.4021		0.4641	0.4112		0.4700	0.4126		0.4646	0.4034
	0.4538	0.3931		0.4589	0.4021		0.4646	0.4034		0.4593	0.3944

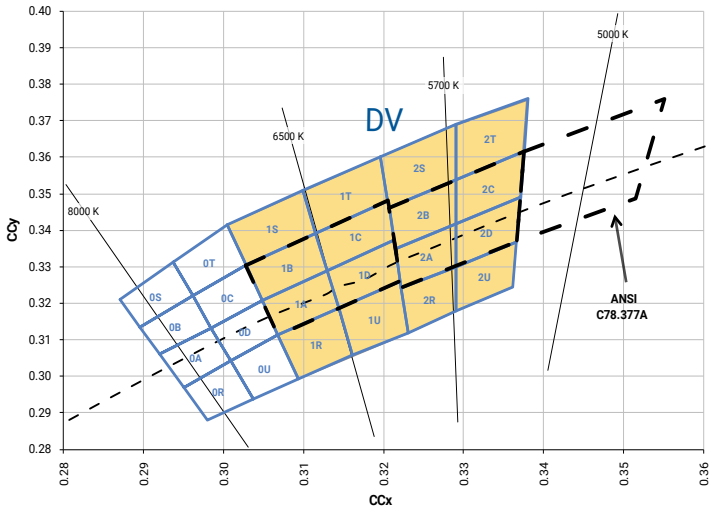
© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

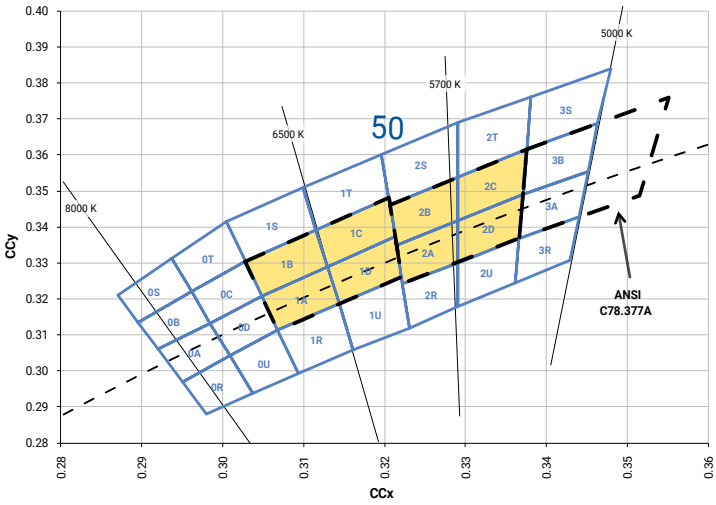
PRELIMINARY

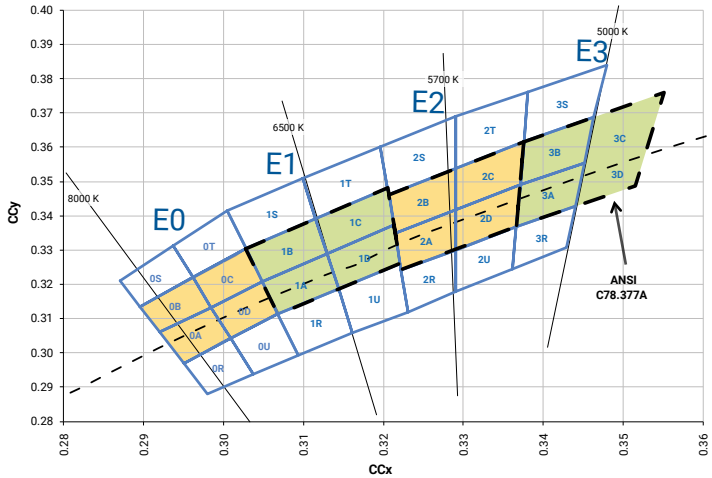
STANDARD COOL WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS

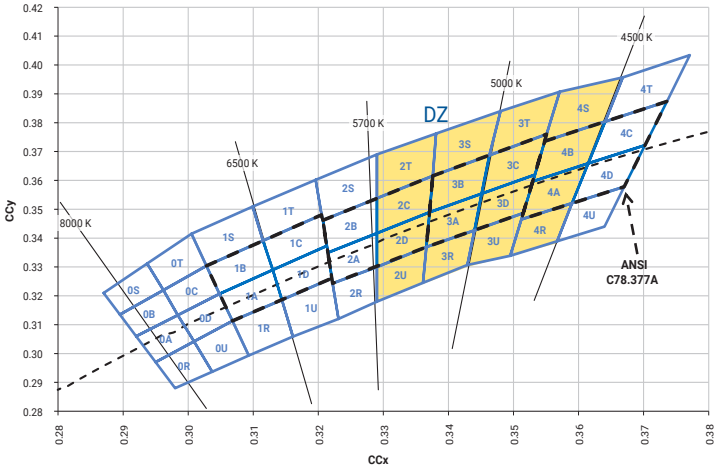








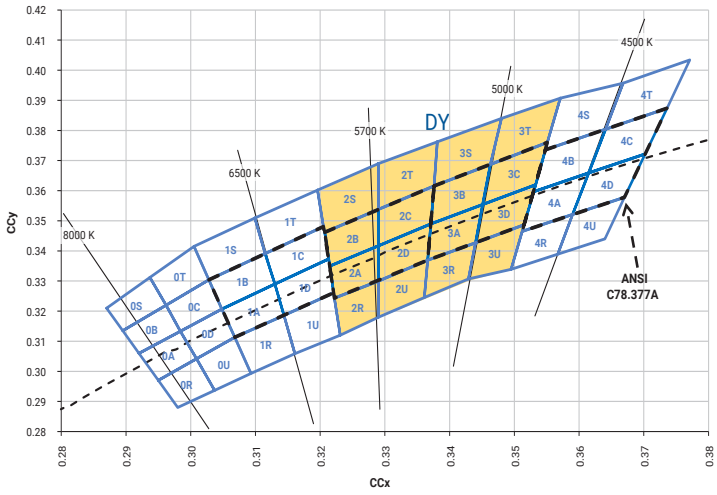




© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

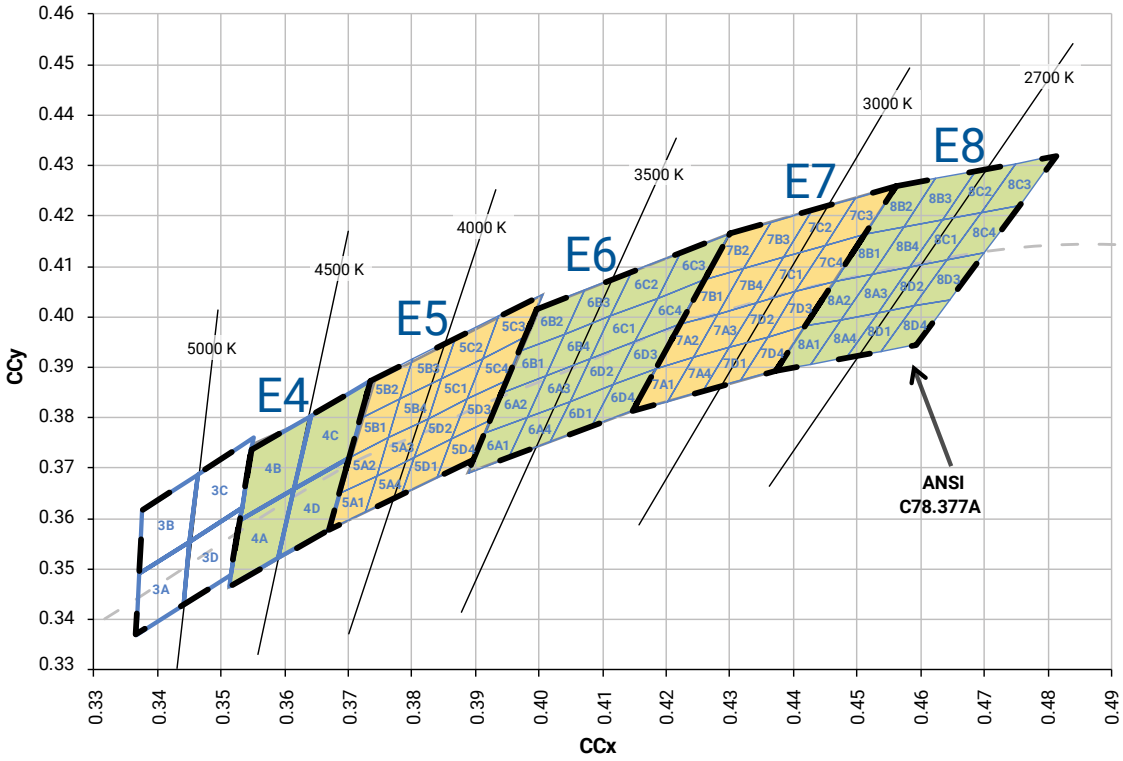
STANDARD COOL WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS - CONTINUED

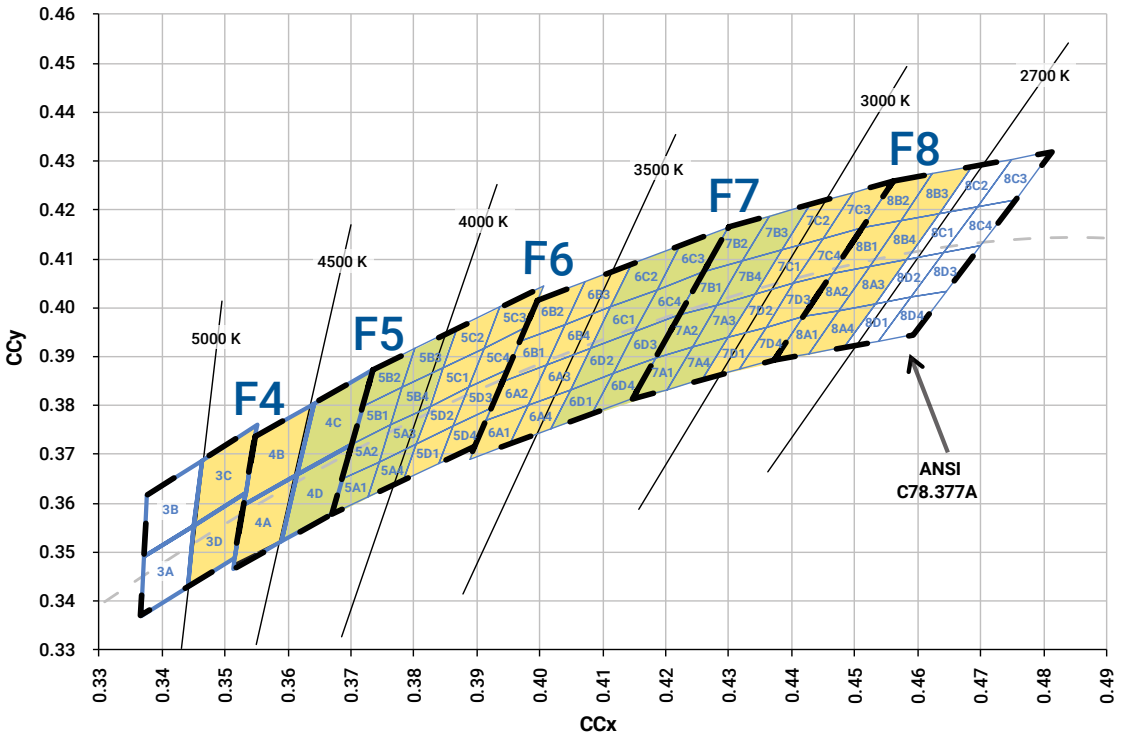


© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

WARM AND NEUTRAL WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS

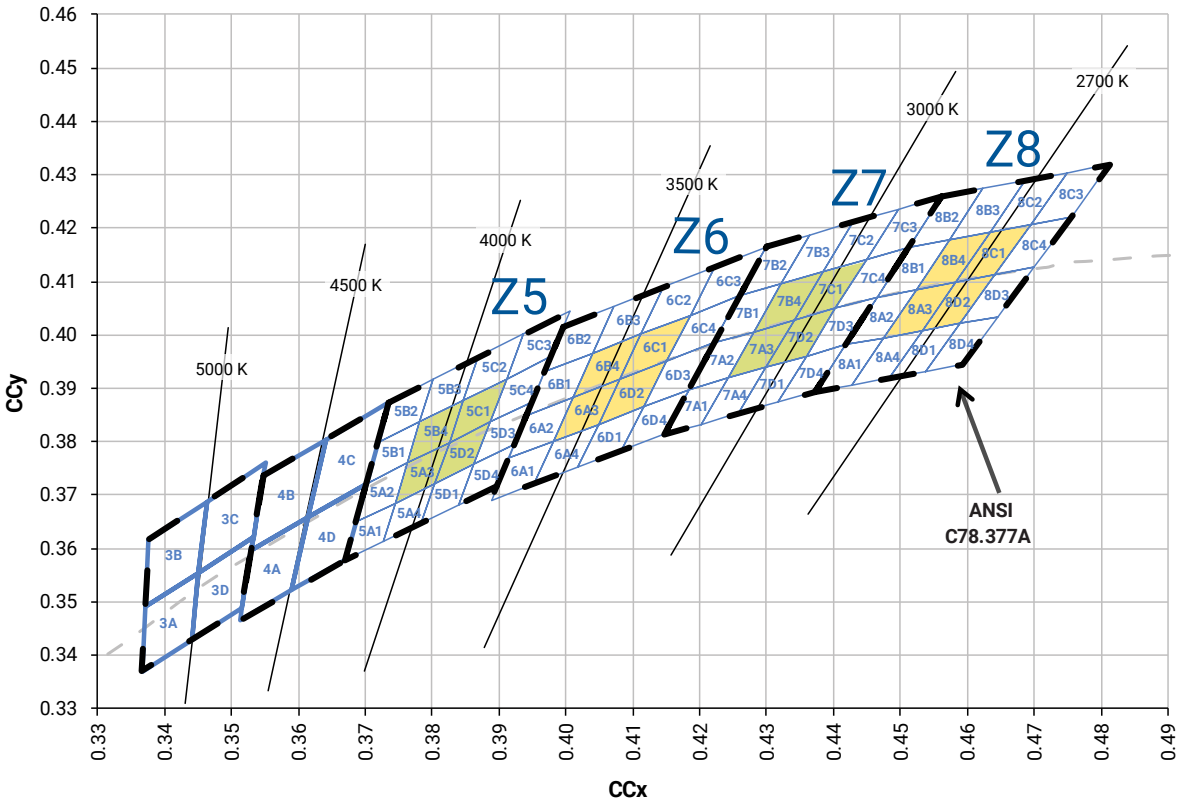




© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

STANDARD WARM AND NEUTRAL WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS - CONTINUED



© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

STANDARD CHROMATICITY KITS

The following table provides the chromaticity bins associated with chromaticity kits for the ML-C LEDs.

Color	CCT	Kit	Chromaticity Bins
Cool White	7000 K	DT	0A, 0B, 0C,0D, 0R, 0S, 0T, 0U, 1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U
	7000 K	E0	0A, 0B, 0C, 0D
	6500 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
	6500 K	E1	1A, 1B, 1C, 1D
	6200 K	50	1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D
	6000 K	DV	1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 2U
	5700 K	E2	2A, 2B, 2C, 2D
	5500 K	DY	2A, 2B, 2C, 2D, 2R, 2S, 2T, 2U, 3A, 3B, 3C, 3D, 3R, 3S, 3T, 3U
	5000 K	DZ	2C, 2D, 2T, 2U, 3A, 3B, 3C, 3D, 3R, 3S, 3T, 3U, 4A, 4B, 4R, 4S
	5000 K	E3	3A, 3B, 3C, 3D
	4750 K	F4	3C, 3D, 4A, 4B
	4500 K	E4	4A, 4B, 4C, 4D
Warm White	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
	4000 K	Z5	5A3, 5B4, 5C1, 5D2
	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
	3500 K	Z6	6A3, 6B4, 6C1, 6D2
	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
	3000 K	Z7	7A3, 7B4, 7C1, 7D2
	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
	2700 K	Z8	8A3, 8B4, 8C1, 8D2

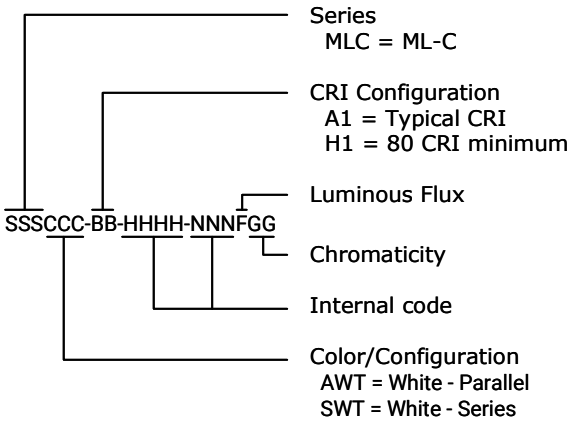
© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

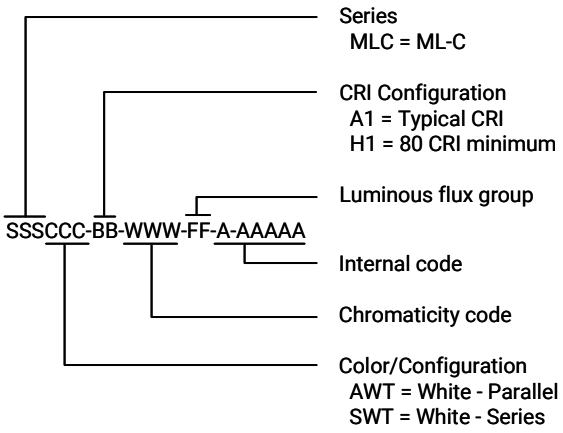
BIN AND ORDER CODE FORMATS

Bin codes and order codes are configured in the following manner:

Order Code



Bin Code



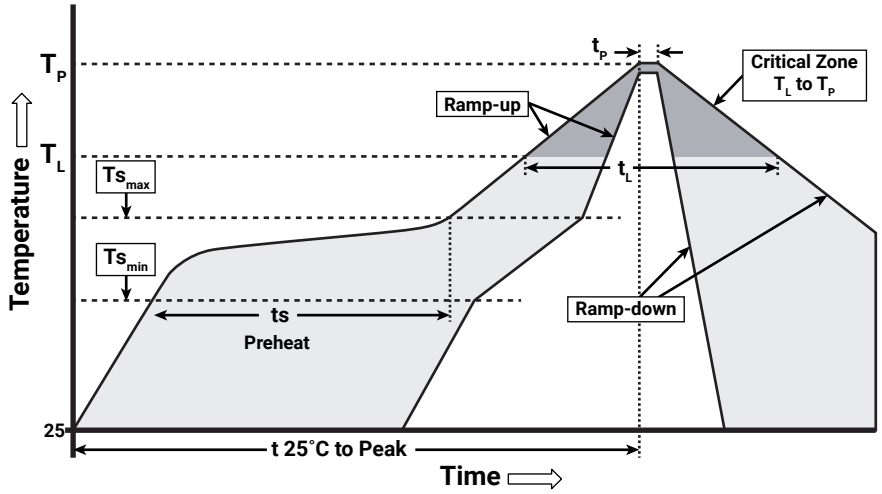
© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

REFLOW SOLDERING CHARACTERISTICS

In testing, Cree LED has found XLamp ML-C LEDs to be compatible with JEDEC J-STD-020C, using the parameters listed below. As a general guideline, Cree LED 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.

Note: While the high reflow temperatures (above) have been approved, Cree LED's best practice guideline for reflow is to use as low a temperature as possible during the reflow soldering process for these LEDs.

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

NOTES

Measurements

The luminous flux, radiant power, chromaticity, forward voltage and CRI measurements in this document are binning specifications only and solely represent product measurements as of the date of shipment. These measurements will change over time based on a number of factors that are not within Cree LED's control and are not intended or provided as operational specifications for the products. Calculated values are provided for informational purposes only and are not intended or provided as specifications.

Pre-Release Qualification Testing

Please read the LED Reliability Overview for details of the qualification process Cree LED applies to ensure long-term reliability for XLamp LEDs and details of Cree LED's pre-release qualification testing for XLamp LEDs.

Lumen Maintenance

Cree LED now uses standardized IES LM-80-08 and TM-21-11 methods for collecting long-term data and extrapolating LED lumen maintenance. For information on the specific LM-80 data sets available for this LED, refer to the public LM-80 results document.

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

Moisture Sensitivity

Cree LED recommends keeping XLamp ML-C 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 ML-C LEDs should be handled and stored as MSL 2a per JEDEC J-STD-033, meaning they have limited exposure time before damage to the LED may occur during the soldering operation. The table on the right specifies the maximum exposure time in days depending on temperature and humidity conditions. LEDs with exposure time longer than the specified maximums must be baked according to the baking conditions listed below.

Temp.	Maximum Percent Relative Humidity						
	30%	40%	50%	60%	70%	80%	90%
35 ºC	-	-	-	17	1	.5	.5
30 ºC	-	-	-	28	1	1	1
25 ºC	-	-	-	-	2	1	1
20 ºC	-	-	-	-	2	1	1

Baking Conditions

It is not necessary to bake all XLamp ML-C LEDs. Only the LEDs that meet all of the following criteria must be baked:

1. LEDs that have been removed from the original MBP.
2. LEDs that have been exposed to a humid environment longer than listed in the Moisture Sensitivity section above.
3. LEDs that have not been soldered.

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

NOTES - CONTINUED

LEDs should be baked at 70 °C for 24 hours. LEDs may be baked on the original reels. Remove LEDs from the MBP before baking. Do not bake parts at temperatures higher than 70 °C. This baking operation resets the exposure time as defined in the Moisture Sensitivity section above.

Storage Conditions

XLamp ML-C LEDs that have been removed from the original MBP but not soldered should be stored in one of the following ways:

- Store the parts in a rigid metal container with a tight-fitting lid. Verify that the storage temperature is <30 °C, and place fresh desiccant and an RH indicator in the container to verify that the RH is no greater than 60%.
- Store the parts in a dry, nitrogen-purged cabinet or container that actively maintains the temperature at <30° and the RH at no greater than 60%.
- For short-term store only: LEDs can be resealed in the original MBP soon after opening. Fresh desiccant may be needed. Use the included humidity indicator card to verify <60% RH.

If an environment of <60% RH is not available for storage, XLamp ML-C LEDs should be baked (described above) before reflow soldering.

RoHS Compliance

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS2), as implemented January 2, 2013. RoHS Declarations for this product can be obtained from your Cree LED representative or from the Product Ecology section of the Cree LED website.

REACH Compliance

REACH substances of very high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact a Cree LED representative to insure you get the most up-to-date REACH SVHC Declaration. REACH banned substance information (REACH Article 67) is also available upon request.

UL® Recognized Component

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

Vision Advisory

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

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

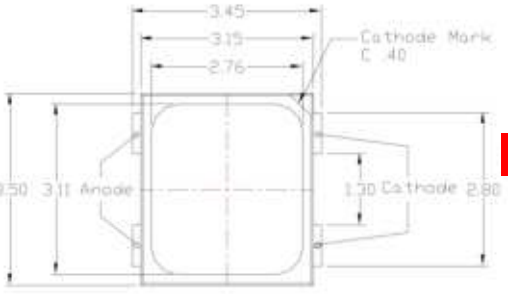
PRELIMINARY

MECHANICAL DIMENSIONS (T_A = 25 °C)

All measurements are ±.13 mm unless otherwise indicated.

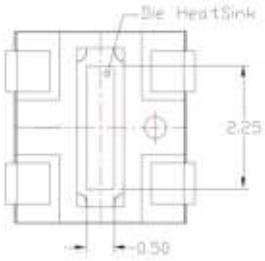
Top View

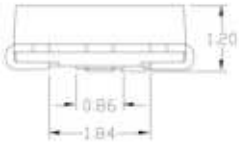




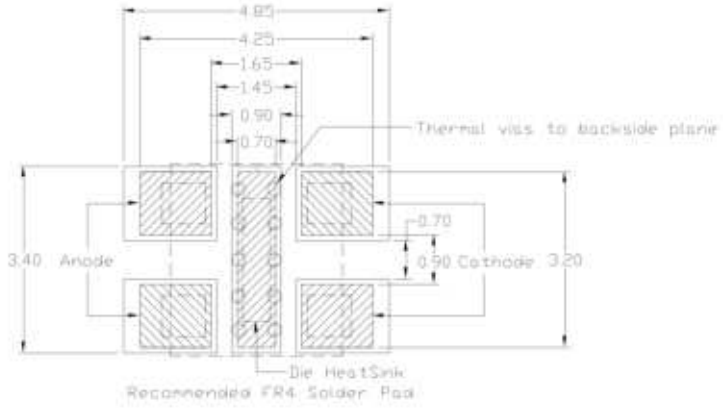
Top View

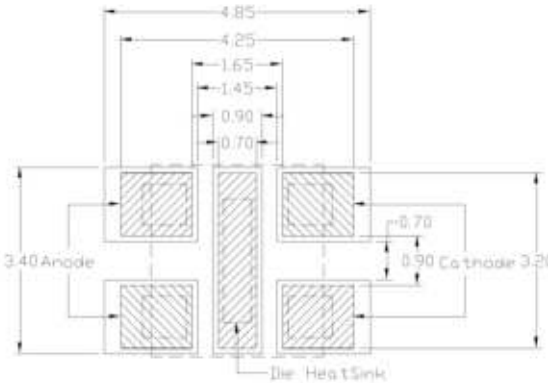
Bottom View



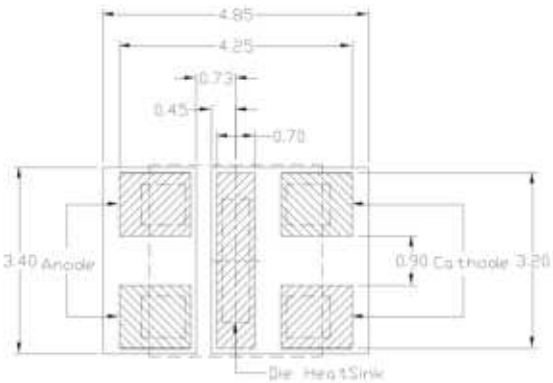


Side View





Recommended MCPCB Solder Pad



Alternative Solder Pad

© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

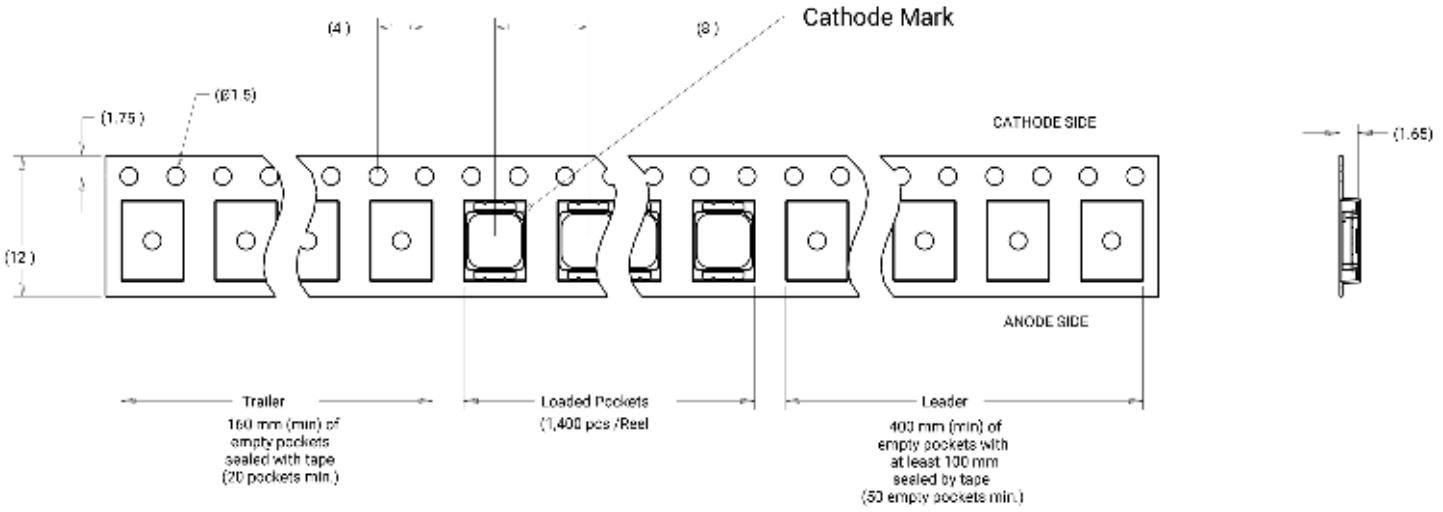
PRELIMINARY

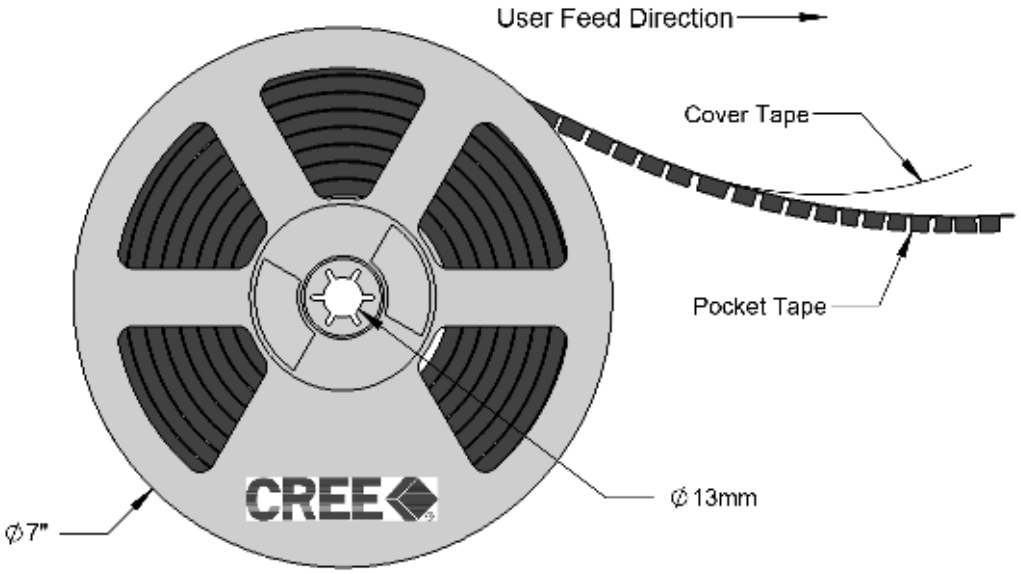
TAPE AND REEL

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

Except as noted, all dimensions in mm.

All measurements are ±.25 mm unless otherwise indicated.

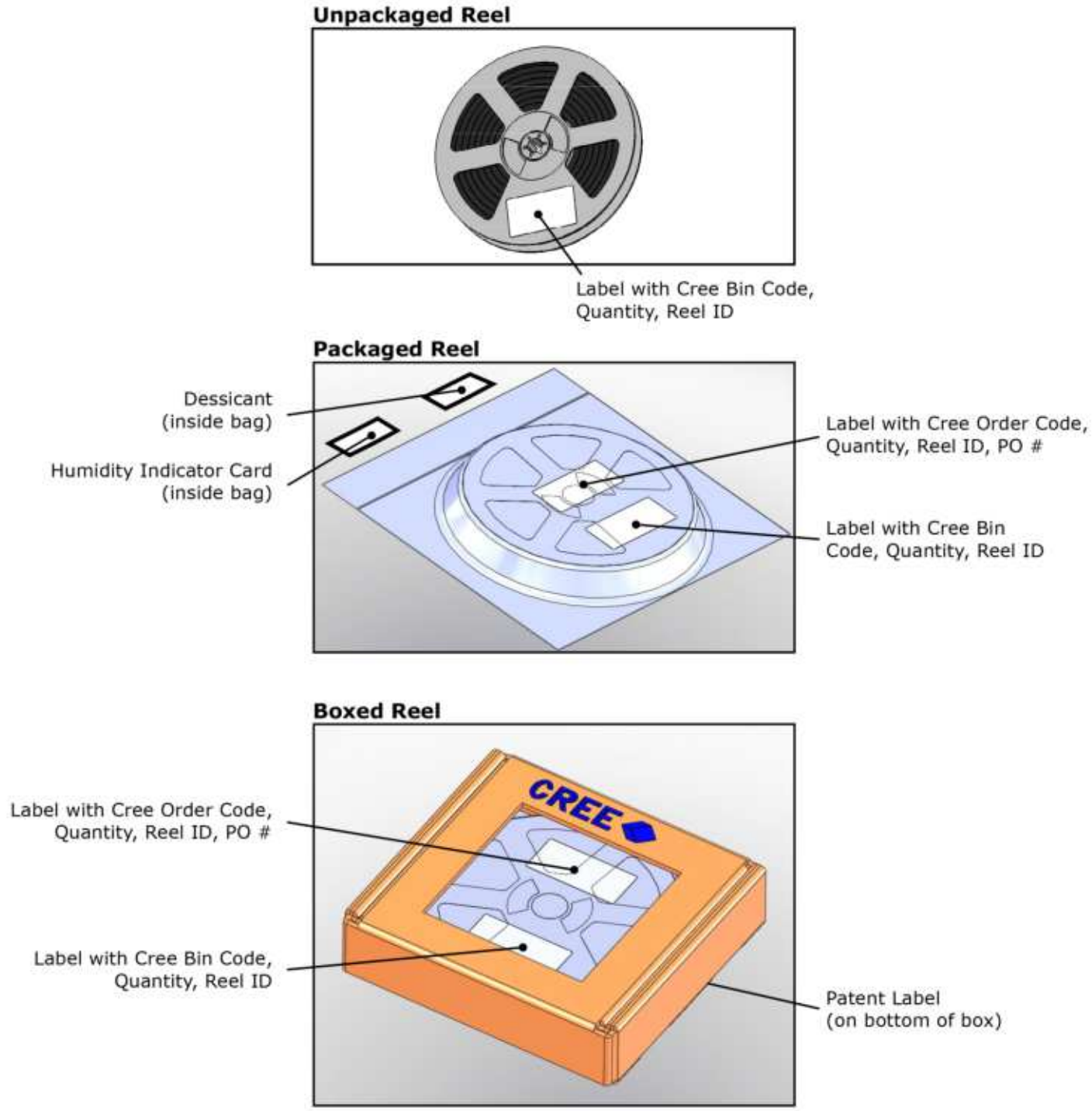




© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.

PRELIMINARY

PACKAGING



© 2011-2025 Cree LED. The information in this document is subject to change without notice. Cree®, the Cree logo, the Cree LED logo and XLamp® are registered trademarks of Cree LED. UL® and the UL logo are registered trademarks of UL LLC.