

Cree® XLamp® MX-3 LEDs

Data Sheet

The Cree XLamp MX-3 LED provides the proven lighting-class performance and reliability of Cree XLamp LEDs in a flat-top PLCC package. The XLamp MX-3 LED continues Cree's history of innovation in LEDs for lighting applications with wide viewing angle, unlimited floor life, uniform light output without secondary optics and electrically neutral thermal path.



The XLamp MX-3 LED brings high performance and quality of light to a wide range of lighting applications, including linear lighting, LED light bulbs, fluorescent retrofits and retail-display lighting.

FEATURES

- Available in white (2,600 K to 8,300 K CCT)
- Maximum drive current: 400 mA
- Wide viewing angle: 120°
- Electrically neutral thermal path
- Qualification at max drive current
- RoHS-compliant
- Unlimited floor life at $\leq 30^{\circ}\text{C}/85\% \text{ RH}$

Table of Contents

Flux Characteristics ($T_j = 25^{\circ}\text{C}$).....	2
Characteristics	2
Relative Spectral Power Distribution	3
Relative Flux vs. Junction Temperature ($I_f = 350 \text{ mA}$).....	3
Electrical Characteristics ($T_j = 25^{\circ}\text{C}$)	4
Relative Flux vs. Current ($T_j = 25^{\circ}\text{C}$)	4
Thermal Design	5
Typical Spatial Distribution	5
Reflow Soldering Characteristics	6
Notes.....	7
Mechanical Dimensions ($T_A = 25^{\circ}\text{C}$)	8
Tape and Reel	9
Packaging.....	10
Bin and Order-Code Format	11
Performance Groups – Brightness	11
Performance Groups – V_f	11
Performance Groups – Chromaticity	12
Cree's Standard Chromaticity Regions Plotted on the 1931 CIE Curve	15
Standard Order Codes and Bins (MX-3 Cool White)	16
Standard Order Codes and Bins (MX-3 Warm White)	17



Preliminary

July 1, 2010

Flux Characteristics (T_j = 25°C)

The following table provides several base order codes for XLamp MX-3 LEDs. It is important to note that the base order codes listed here are a subset of the total available order codes for the product family. For more order codes, as well as a complete description of the order-code nomenclature, please consult the XLamp MX-3 LED Binning and Labeling document.

Color	CCT Range		Base Order Codes Min Luminous Flux (lm) @ 350 mA		Calculated Min Luminous Flux (lm) @ 300 mA*	Order Code
	Min.	Max.	Group	Flux (lm)	Flux (lm)	
Cool White	5,000 K	8,300 K	Q3	93.9	82	MX3AWT-A1-0000-000B51
			Q4	100	87	MX3AWT-A1-0000-000C51
Warm White	3,700 K	4,300 K	Q2	87.4	77	MX3AWT-A1-0000-000AE5
	2,600 K	3,700 K	P3	73.9	65	MX3AWT-A1-0000-0008E7

* Calculated values for reference purposes only.

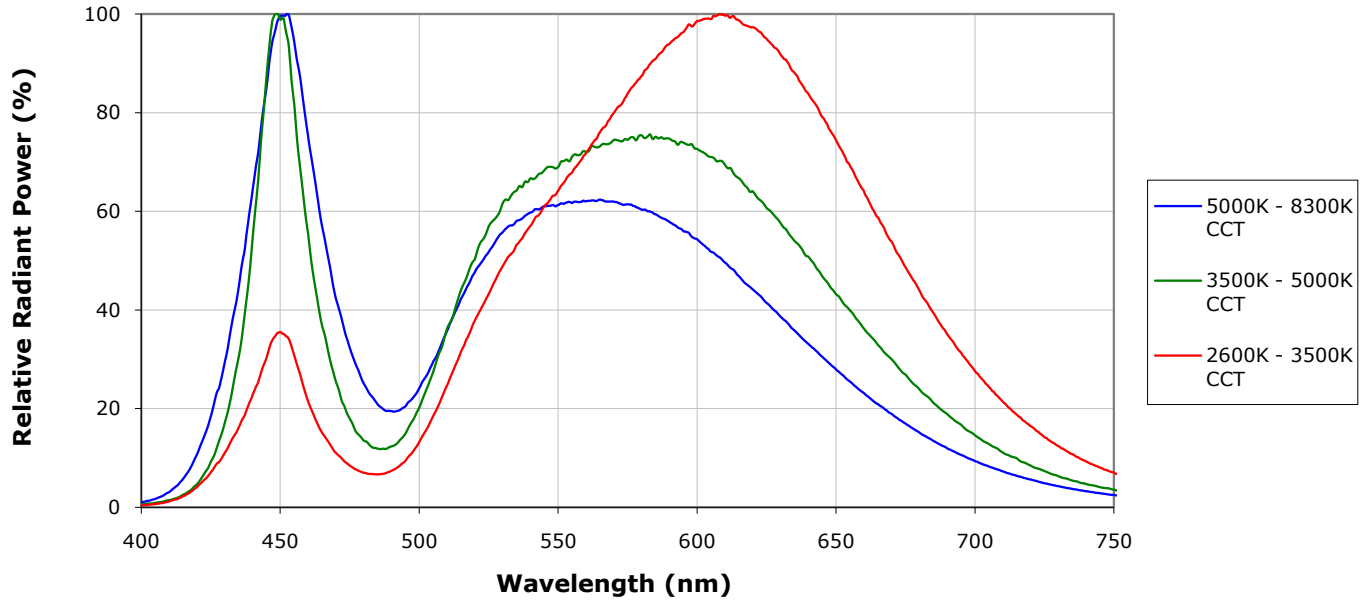
Notes:

- Cree maintains a tolerance of +/- 7% on flux measurements.
- Typical CRI for Cool White (4,300 K – 8,300 K CCT) is 75.
- Typical CRI for Warm White (2,600 K – 4,300 K CCT) is 80.

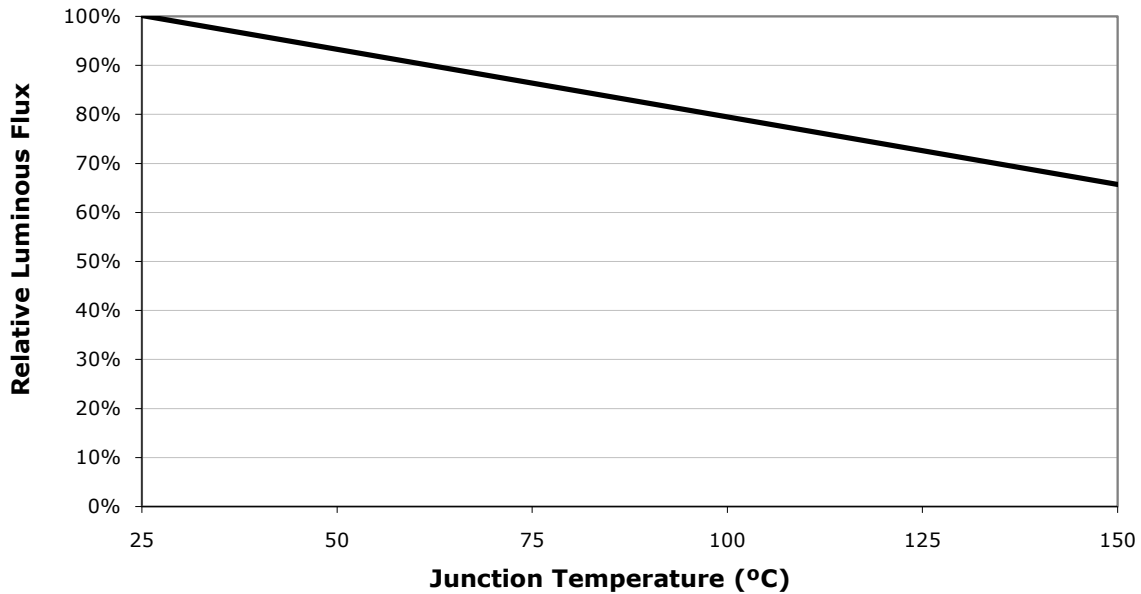
Characteristics

Characteristics	Unit	Minimum	Typical	Maximum
Thermal resistance, junction to solder point	°C/W		11	
Viewing angle (FWHM)	degrees		120	
ESD classification (HBM per Mil-Std-883D)			Class 2	
DC forward current	mA			400
Forward voltage (@ 350 mA)	V		3.7	4.0
LED junction temperature	°C			150

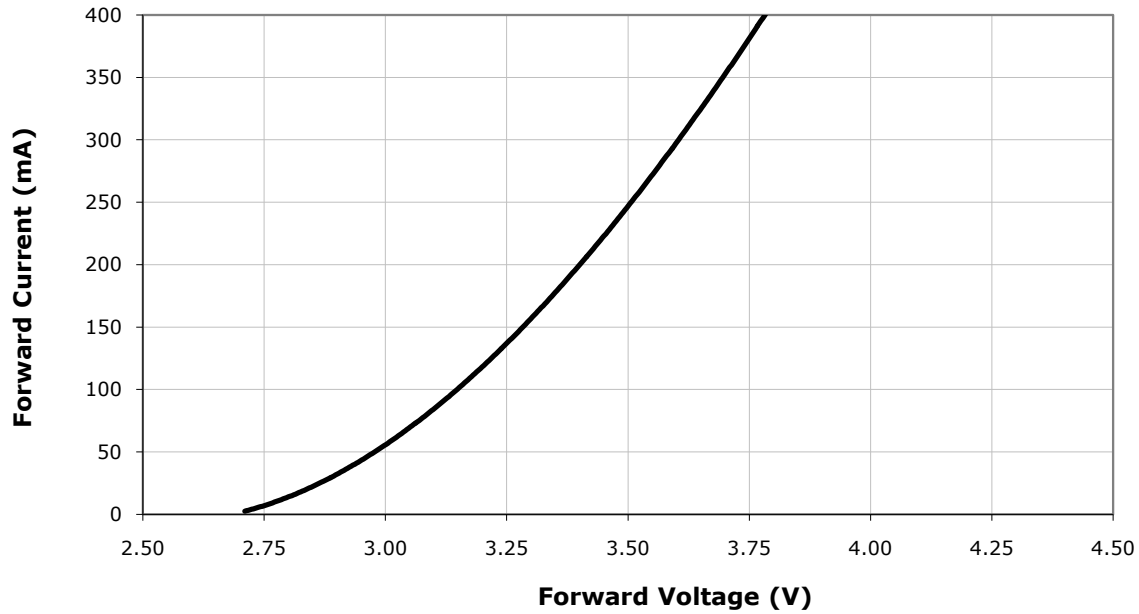
Relative Spectral Power Distribution



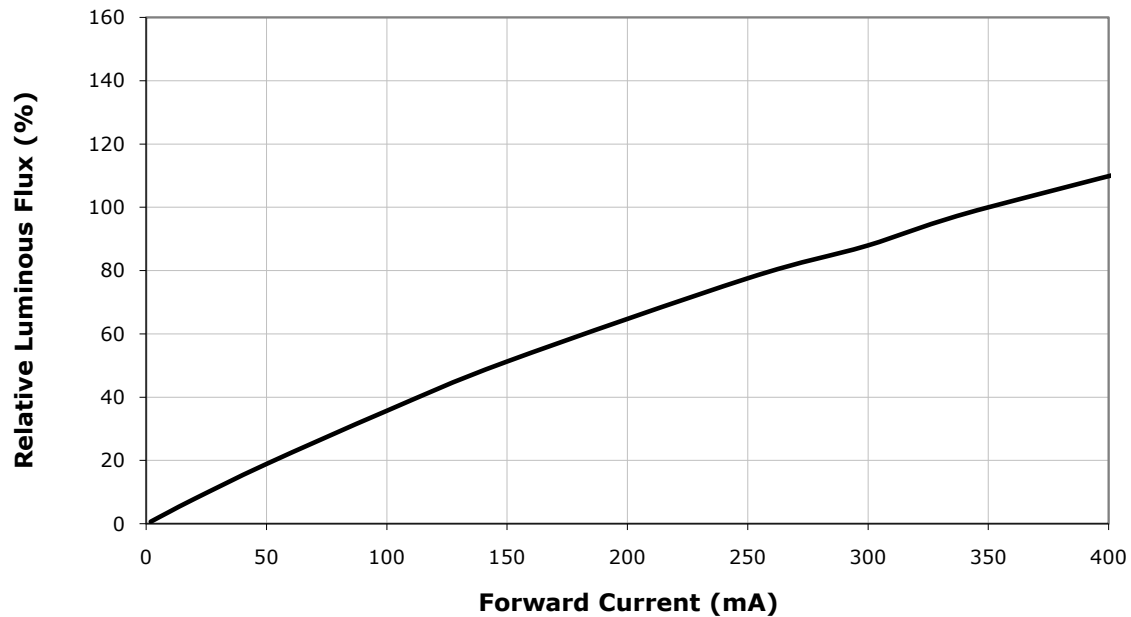
Relative Flux vs. Junction Temperature ($I_F = 350$ mA)



Electrical Characteristics ($T_j = 25^\circ\text{C}$)

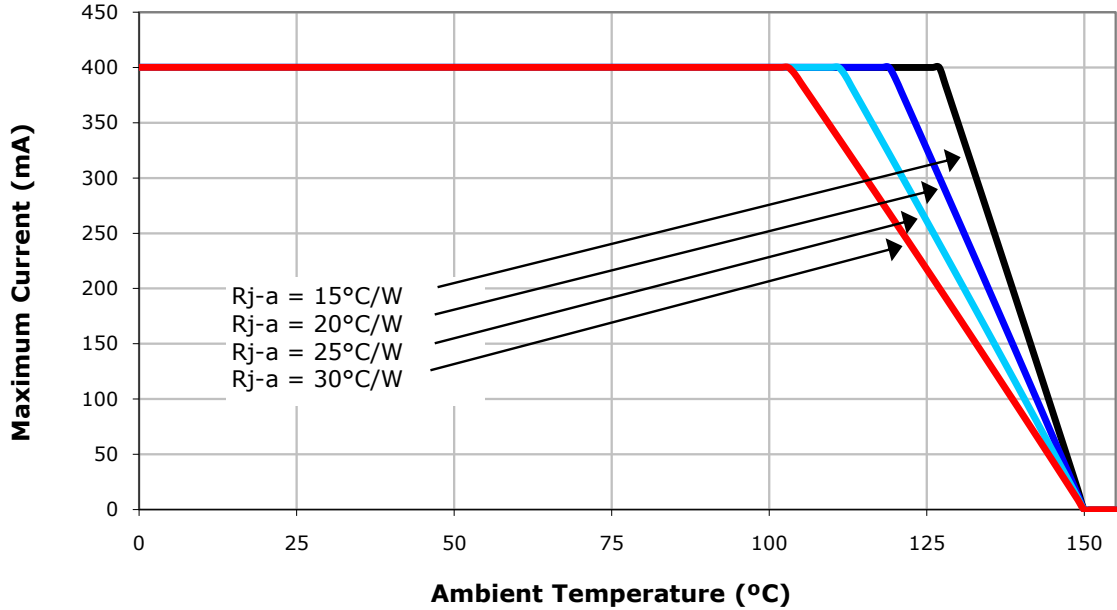


Relative Flux vs. Current ($T_j = 25^\circ\text{C}$)

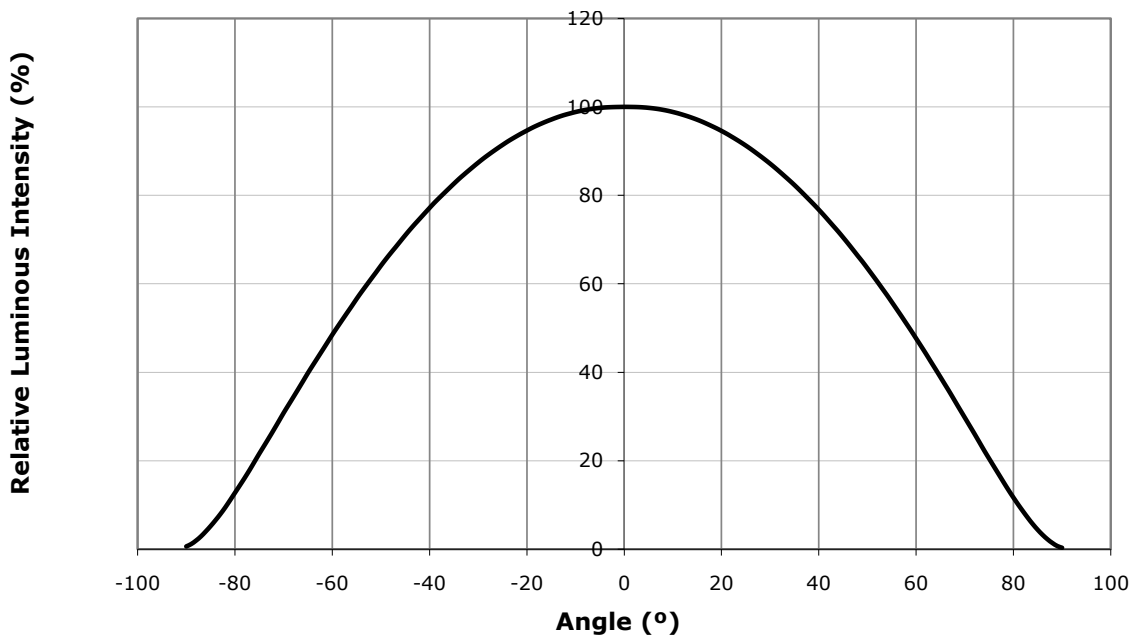


Thermal Design

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.



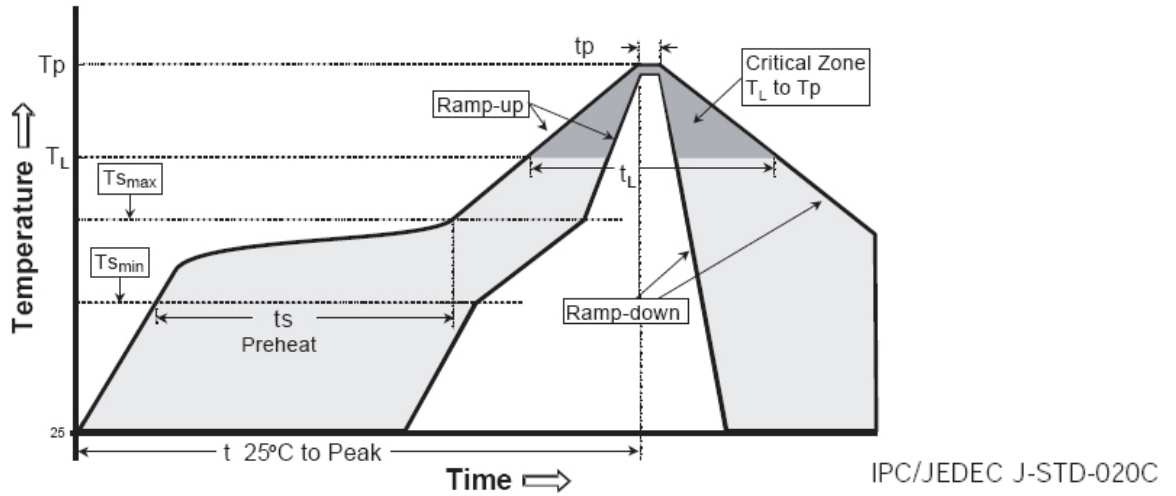
Typical Spatial Distribution



Reflow Soldering Characteristics

In testing, Cree has found XLamp MX-3 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 solder paste used.

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



Profile Feature	Lead-Based Solder	Lead-Free Solder
Average Ramp-Up Rate ($T_{s_{max}}$ to T_p)	3°C/second max.	3°C/second max.
Preheat: Temperature Min ($T_{s_{min}}$)	100°C	150°C
Preheat: Temperature Max ($T_{s_{max}}$)	150°C	200°C
Preheat: Time ($t_{s_{min}}$ to $t_{s_{max}}$)	60-120 seconds	60-180 seconds
Time Maintained Above: Temperature (T_l)	183°C	217°C
Time Maintained Above: Time (t_l)	60-150 seconds	60-150 seconds
Peak/Classification Temperature (T_p)	215°C	260°C
Time Within 5°C of Actual Peak Temperature (t_p)	10-30 seconds	20-40 seconds
Ramp-Down Rate	6°C/second max.	6°C/second max.
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.

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



Preliminary

July 1, 2010

Notes

Moisture Sensitivity

In testing, Cree has found XLamp MX-3 LEDs to have unlimited floor life in conditions $\leq 30^{\circ}\text{C}$ / 85% relative humidity (RH). Moisture testing included a 168 hour soak at 85°C / 85% RH followed by 3 reflow cycles, with visual and electrical inspections at each stage.

RoHS Compliance

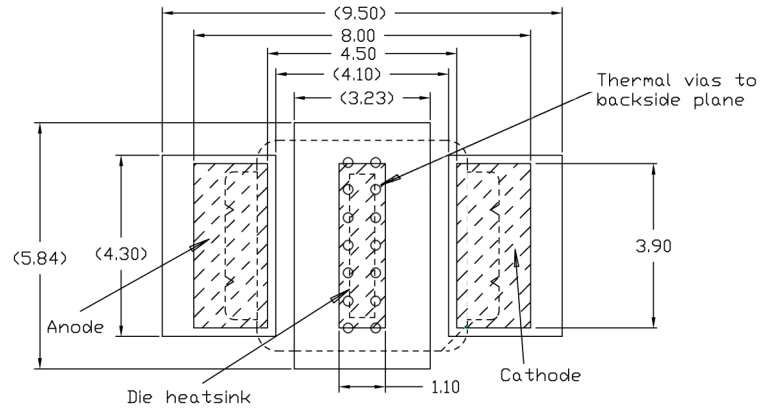
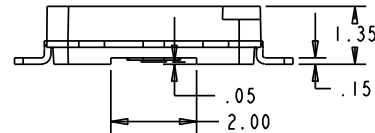
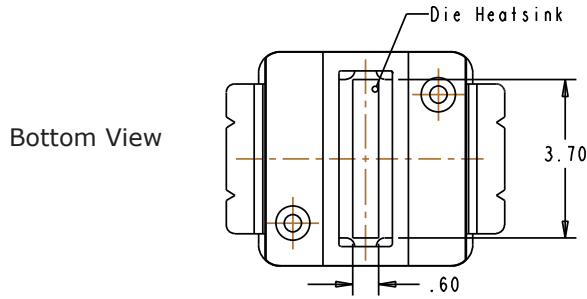
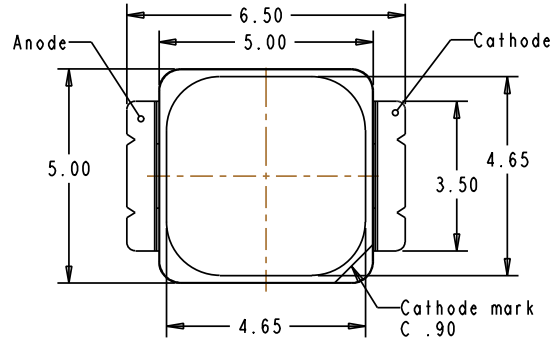
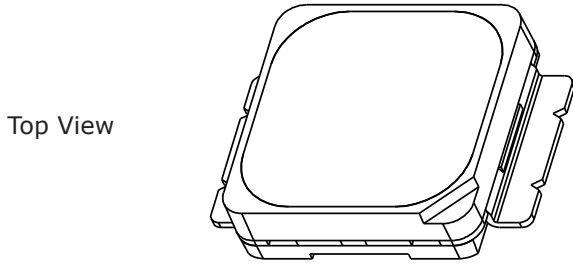
The levels of environmentally sensitive, persistent biologically toxic (PBT), persistent organic pollutants (POP), or otherwise restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as amended through April 21, 2006.

Vision Advisory Claim

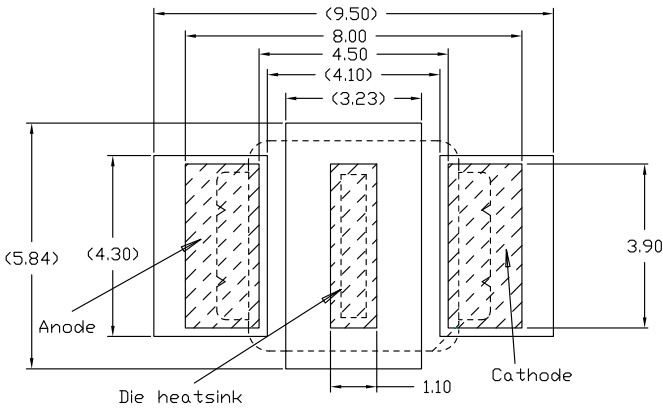
Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.

Mechanical Dimensions ($T_A = 25^\circ\text{C}$)

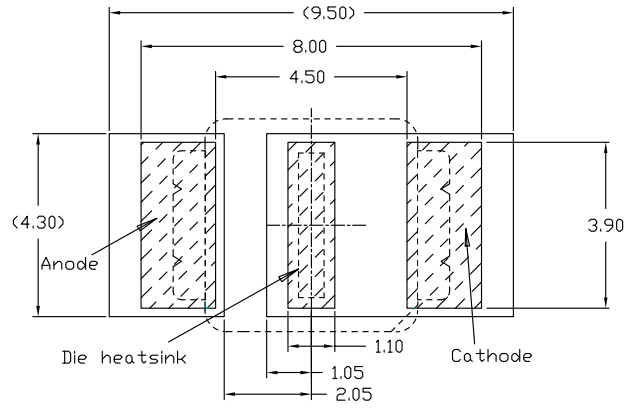
All measurements are $\pm .13$ mm unless otherwise indicated.



Recommended FR4 Solder Pad



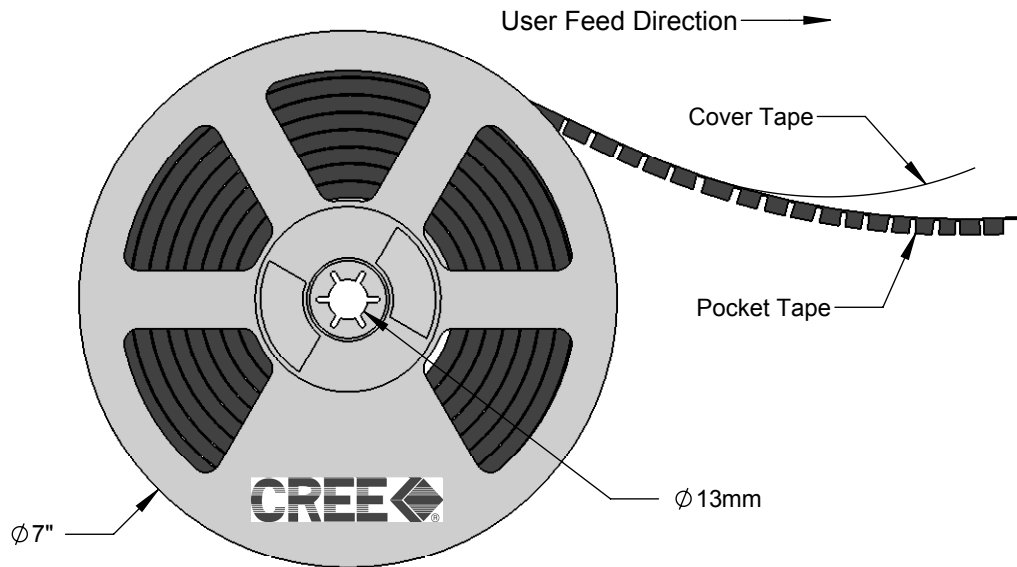
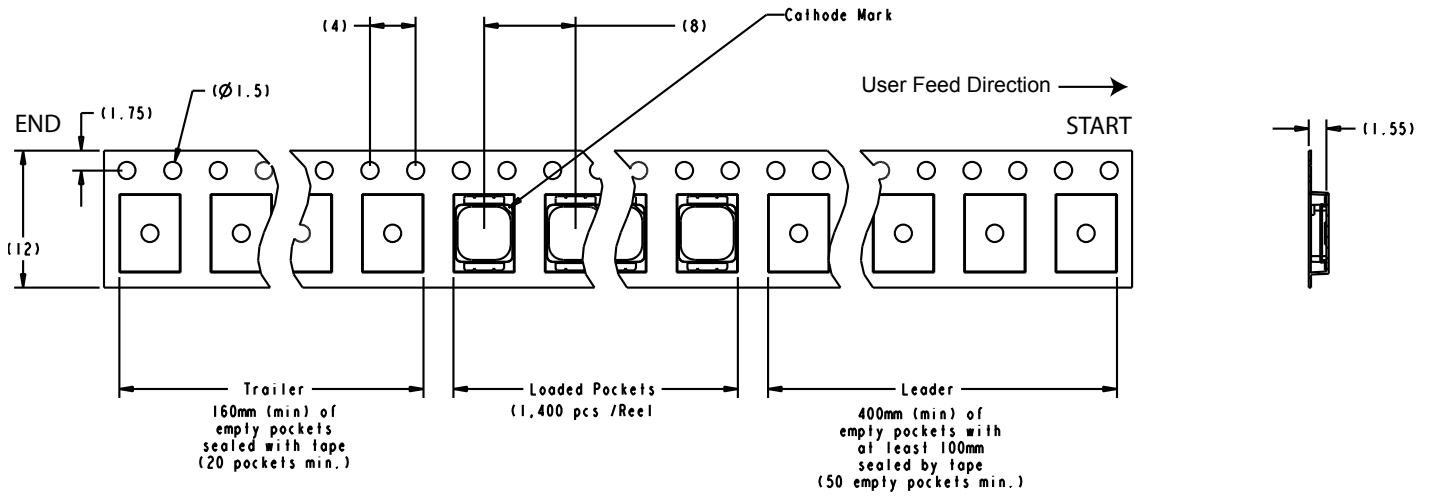
Recommended MCPCB Solder Pad



Alternative Solder Pad

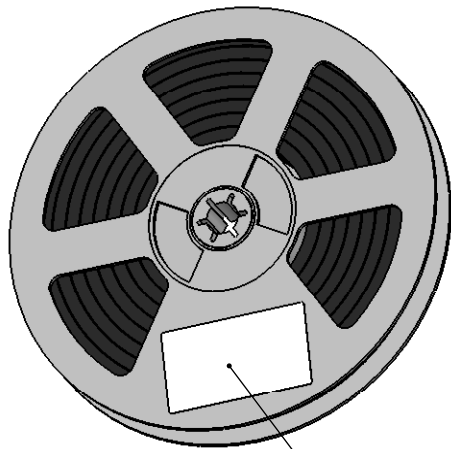
Tape and Reel

All dimensions in mm.

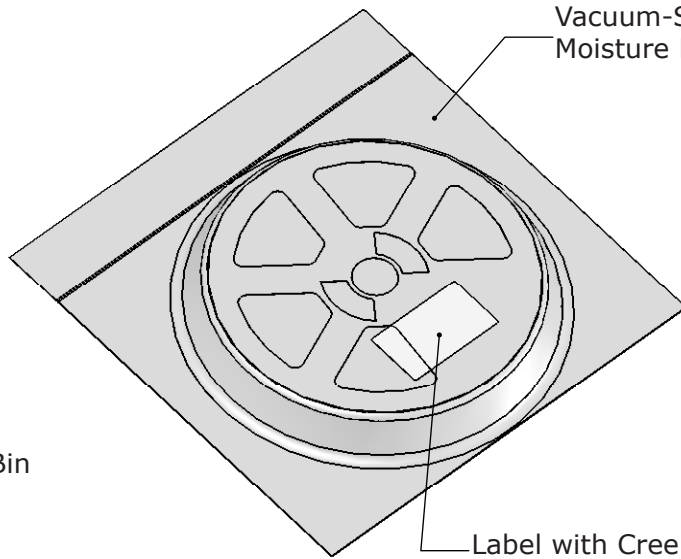


Packaging

All dimensions in mm.

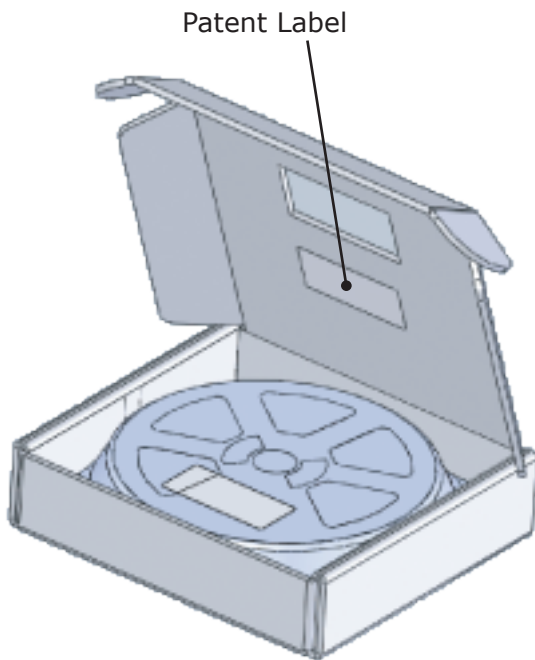


Label with Cree Bin Code, Qty, Lot #

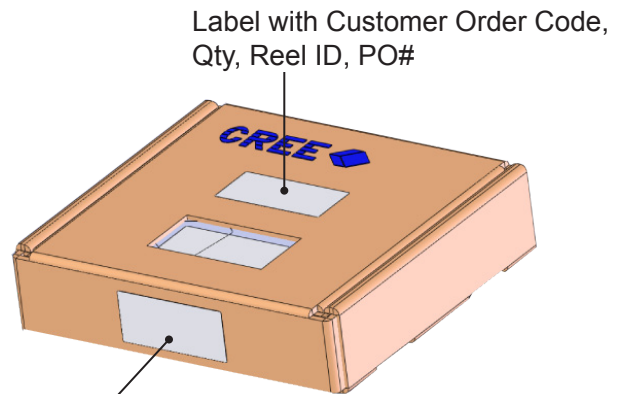


Vacuum-Sealed Moisture Barrier Bag

Label with Cree Bin Code, Qty, Lot #



Patent Label

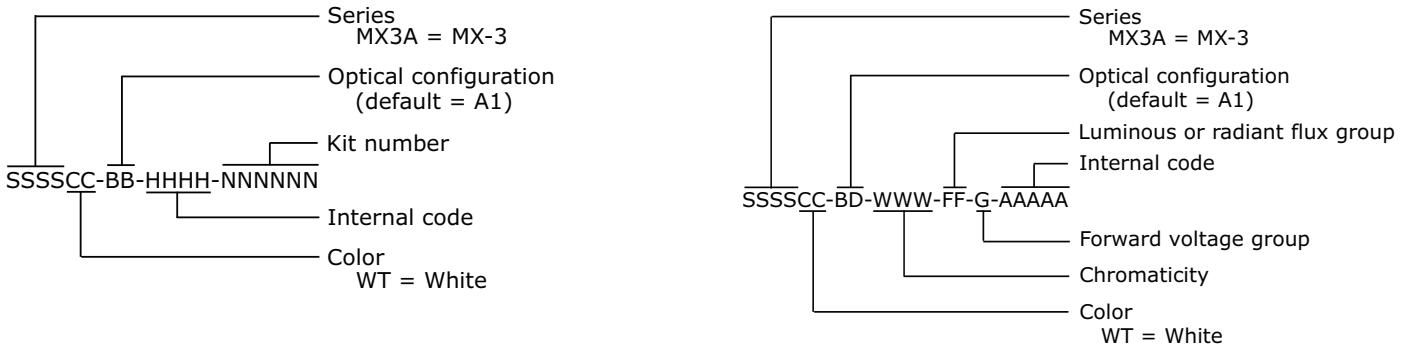


Label with Customer Order Code, Qty, Reel ID, PO#

Label with Cree Bin Code, Qty, Lot #

Bin and Order-Code Format

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



Performance Groups – Brightness

White XLamp MX-3 LEDs are tested for luminous flux and placed into one of the following luminous-flux groups:

Group Code	Min. Luminous Flux @ 350 mA (lm)	Max. Luminous Flux @ 350 mA (lm)
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

Performance Groups – V_F

Group Code	Min. V_F @ 350 mA (V)	Max. V_F @ 350 mA (V)
D	2.8	3.2
E	3.2	3.6
F	3.6	4.0
0	No V_F Binning	



Preliminary July 1, 2010

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

This is a preliminary, non-binding product specification provided for informational purposes only and is subject to change without notice. This product is unreleased and is provided "as is" without warranty. Copyright © 2010 Cree, Inc. All rights reserved. The information in this document is subject to change without notice. Cree, the Cree logo and XLamp are registered trademarks of Cree, Inc.

Cree, Inc.
4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300
www.cree.com/xlamp



Preliminary July 1, 2010

Performance Groups – Chromaticity (continued)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
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
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

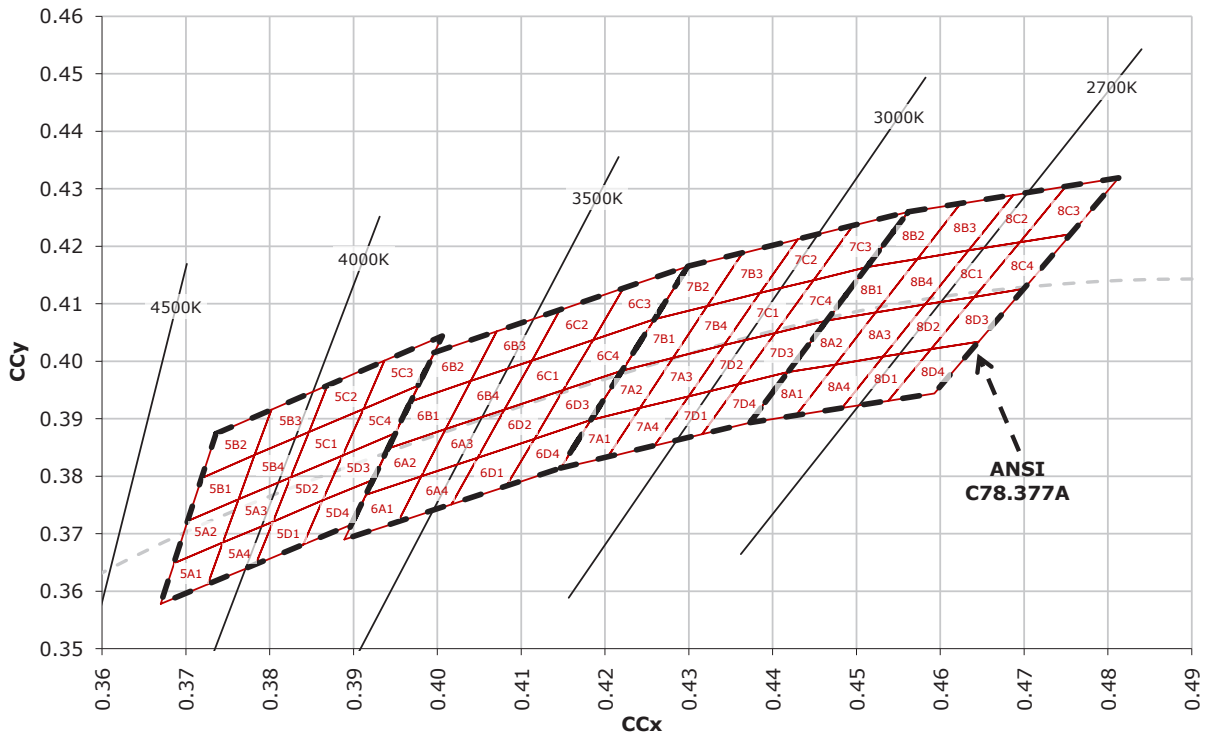
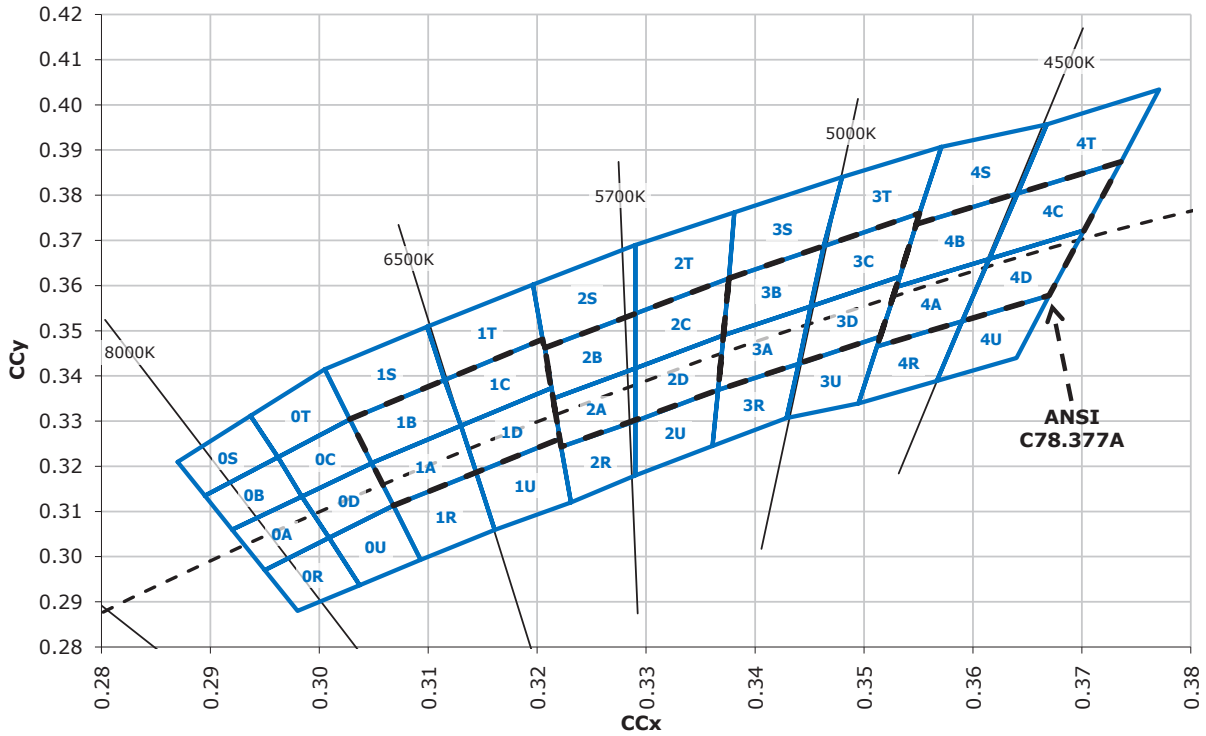


Preliminary July 1, 2010

Performance Groups – Chromaticity (continued)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
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
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

Cree's Standard Chromaticity Regions Plotted on the 1931 CIE Curve



This is a preliminary, non-binding product specification provided for informational purposes only and is subject to change without notice. This product is unreleased and is provided "as is" without warranty. Copyright © 2010 Cree, Inc. All rights reserved. The information in this document is subject to change without notice. Cree, the Cree logo and XLamp are registered trademarks of Cree, Inc.



Preliminary July 1, 2010

Standard Order Codes and Bins (MX-3 Cool White)

The following tables list standard kit numbers and performance bins. Kit numbers completely describe an order code's chromaticity regions and luminous flux range.

XLamp MX-3 LED Standard Order Codes - Cool White					
Min. Luminous Flux (lm) @ 350 mA*		Calculated Min. Luminous Flux (lm) @ 300 mA**	Chromaticity Regions	Kit Number	CCT
Group	Flux (lm)	Flux (lm)			
Cool White (4,300 K – 8,300 K)					
Q2	87.4	77	2C,2D,2U,2T,3A,3B,3C,3D,3R,3S,3T,3U,4A,4B,4R,4S	000ADZ	5000 K
			3A,3B,3C,3D,4A,4B,4C,4D	000AB1	4750 K
			3A,3B,3C,3D	000AE3	5000 K
			3C,3D,4A,4B	000AF4	4750 K
			4A,4B,4C,4D	000AE4	4500 K
Q3	93.9	82	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	000B51	6500 K
			1A,1B,1C,1D,1R,1S,1T,1U,2A,2B,2C,2D,2R,2S,2T,3A,3B,3S	000B53	6000 K
			1A,1B,1C,1D,2A,2B,2C,2D	000B50	6000 K
			2C,2D,2U,2T,3A,3B,3C,3D,3R,3S,3T,3U,4A,4B,4R,4S	000BDZ	5000 K
			3A,3B,3C,3D,4A,4B,4C,4D	000BB1	4750 K
			3A,3B,3C,3D	000BE3	5000 K
			3C,3D,4A,4B	000BF4	4750 K
			4A,4B,4C,4D	000BE4	4500 K
Q4	100	87	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	000C51	6500 K
			1A,1B,1C,1D,1R,1S,1T,1U,2A,2B,2C,2D,2R,2S,2T,3A,3B,3S	000C53	6000 K
			1A,1B,1C,1D,2A,2B,2C,2D	000C50	6000 K
			2C,2D,2U,2T,3A,3B,3C,3D,3R,3S,3T,3U,4A,4B,4R,4S	000CDZ	5000 K
			3A,3B,3C,3D	000CE3	5000 K
			3C,3D,4A,4B	000CF4	4750 K
			4A,4B,4C,4D	000CE4	4500 K
Q5	107	93.9	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	000D51	6500 K
			1A,1B,1C,1D,1R,1S,1T,1U,2A,2B,2C,2D,2R,2S,2T,3A,3B,3S	000D53	6000 K
			1A,1B,1C,1D,2A,2B,2C,2D	000D50	6000 K
			3A,3B,3C,3D	000DE3	5000 K

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp MX-3 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.

** Calculated values for reference purposes only.



Preliminary July 1, 2010

Standard Order Codes and Bins (MX-3 Warm White)

The following tables list standard kit numbers and performance bins. Kit numbers completely describe an order code's chromaticity regions and luminous flux range.

XLamp MX-3 LED Standard Order Codes - Warm White					
Min. Luminous Flux (lm) @ 350 mA*		Calculated Min. Luminous Flux (lm) @ 300 mA**	Chromaticity Regions	Kit Number	CCT
Group	Flux (lm)	Flux (lm)			
Warm White (2,600 K – 4,300 K)					
P3	73.9	65	6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4,7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4	0008F7	3200 K
			7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4,7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4	0008E7	3000 K
			7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4,8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4	0008F8	2900 K
			8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4,8C1,8C2,8C3,8C4,8D1,8D2,8D3,8D4	0008E8	2700 K
P4	80.6	70	4C,4D,5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4,5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4,6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4	0009B4	4000 K
			6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4,6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4	0009E6	3500 K
			6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4,7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4	0009F7	3200 K
			7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4,7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4	0009E7	3000 K
			7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4,8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4	0009F8	2900 K
Q2	87.4	76	8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4,8C1,8C2,8C3,8C4,8D1,8D2,8D3,8D4	0009E8	2700 K
			4C,4D,5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4,5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4,6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4	000AB4	4000 K
			5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4,5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4	000AE5	4000 K
			5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4,6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4	000AF6	3700 K
			6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4,6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4	000AE6	3500 K
			6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4,7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4	000AF7	3200 K
			7A1,7A2,7A3,7A4,7B1,7B2,7B3,7B4,7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4	000AF8	2900 K
			7C1,7C2,7C3,7C4,7D1,7D2,7D3,7D4,8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4	000AE8	2700 K
Q3	93.9	82	8A1,8A2,8A3,8A4,8B1,8B2,8B3,8B4,8C1,8C2,8C3,8C4,8D1,8D2,8D3,8D4	000AE7	3000 K
			5A1,5A2,5A3,5A4,5B1,5B2,5B3,5B4,5C1,5C2,5C3,5C4,5D1,5D2,5D3,5D4	000BE5	4000 K
			6A1,6A2,6A3,6A4,6B1,6B2,6B3,6B4,6C1,6C2,6C3,6C4,6D1,6D2,6D3,6D4	000BE6	3500 K

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp MX-3 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.

** Calculated values for reference purposes only.