

Introduction

Purpose

- Provide an Overview of Cree's XLamp Color Portfolio

Objective

- Introduce XLamp XP, MC-E and XR Color Portfolios
- Provide details on:
 - Performance
 - Target applications
 - Features
 - Characteristics
 - Order codes and bins.

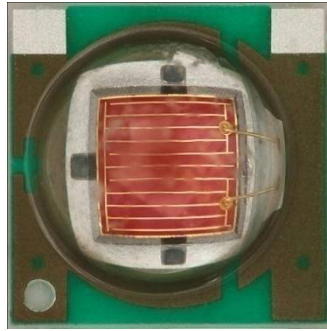
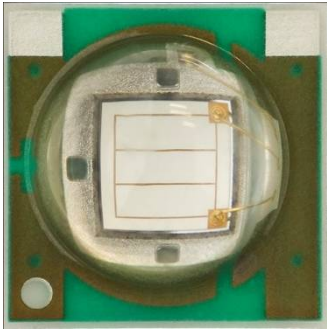
Content

- 7 slides

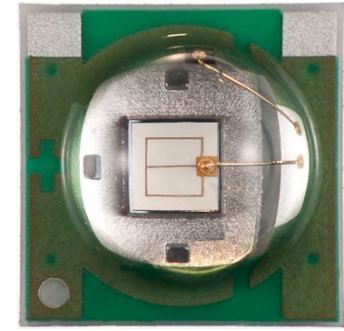
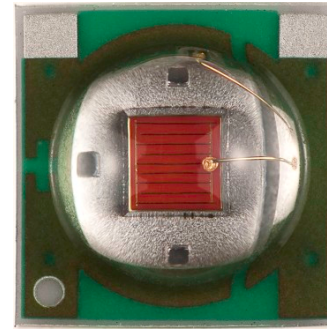
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XLamp XP Color



XP-E



XP-C

- **Breakthrough color flux output**
 - XP-E: 500 mW min (Royal), 107 lm min (Green), 62 lm min (Red) @ 350 mA
- **Design flexibility with one footprint**
 - Reduce system cost by using fewer LEDs & fewer optics
 - Easily create different price / performance levels
- **Superior optical control – put light where it is needed**
 - Small optical source size works well with reflector & TIR solutions

XLamp XP Color Target Applications

Architectural lighting

- Color changing fixtures
- Wall-washers



General illumination

- RGB based
- Remote phosphor based



Emergency vehicle lighting (EVL)



Transportation

XLamp XP-E Color Characteristics & Features

	Royal Blue	Blue	Green	Amber	Red-Orange	Red
DWL (nm)	450-465	465-485	520-535	585-595	610-620	620-630
Viewing Angle	130°	130°	130°	130°	130°	130°
Thermal Resistance (°C/W)	9	9	9	15	15	15
Max Current (mA)	1000	1000	1000	500	700	700
Typical Vf @ 350 mA (V)	3.2	3.2	3.4	2.2	2.2	2.2

Features

- Electrically neutral thermal path
- High maximum LED junction temperature: 150°C
- **Unlimited floor life at $\leq 30^{\circ}\text{C}$ / 85% RH**
- Reflow solderable JEDEC J-STD-020C compatible
- RoHS and REACH-compliant
- UL-recognized component (E326295)



XLamp XP-C Color Characteristics & Features

	Royal Blue	Blue	Green	Amber	Red-Orange	Red
DWL (nm)	450-465	465-485	520-535	585-595	610-620	620-630
Viewing Angle	125°	125°	125°	125°	125°	125°
Thermal Resistance (°C/W)	12	12	20	15	10	10
Max Current (mA)	500	500	500	350	350	350
Typical Vf @ 350 mA (V)	3.4	3.4	3.5	2.2	2.2	2.2

Features

- Electrically neutral thermal path
- High maximum LED junction temperature: 150°C
- **Unlimited floor life at $\leq 30^{\circ}\text{C}$ / 85% RH**
- Reflow solderable JEDEC J-STD-020C compatible
- RoHS and REACH-compliant
- UL-recognized component (E326295)



XLamp XP Color

Standard Order Codes



Min. Flux Bin	Royal Blue	Min. Flux Bin	Blue	Green	Amber	Red-Orange	Red
	450-465		465-485	520-535	585-595	610-620	620-630
		Q5		107			
		Q4		100			
		Q3		93.9			
		Q2		87.4		87.4	
		P4		80.6		80.6	
		P3		73.9		73.9	73.9
		P2		67.2		67.2	67.2
		N4		62.0	62.0	62.0	62.0
		N3		56.8	56.8	56.8	56.8
		N2			51.7	51.7	51.7
		M3			45.7	45.7	45.7
		M2	39.8		39.8		39.8
		K3	35.2		35.2		35.2
		K2	30.6				
		J0	23.5				
		H0	18.1				
16	500						
15	425						
14	350						
13	300						
12	250						

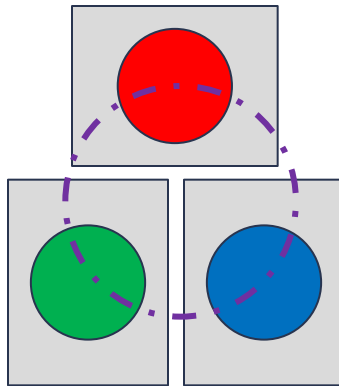
Minimum radiant flux @ 350 mA (mW)

XP-E
XP-E & XP-C
XP-C

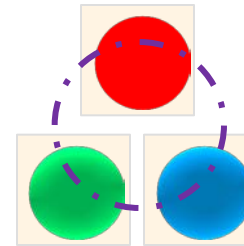
Minimum luminous flux @ 350 mA (lm)

Smaller XP Package Gets LED Die Closer

XLamp XR

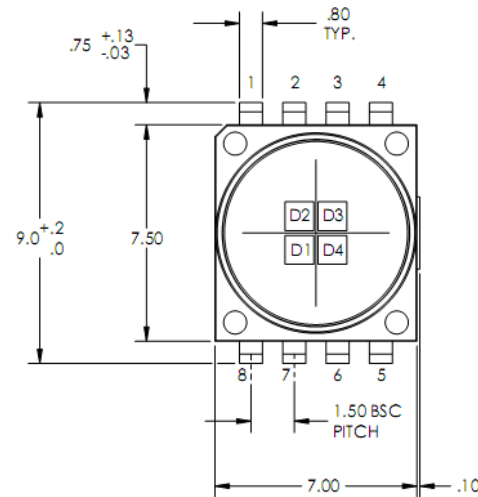
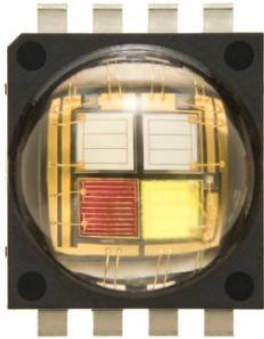


XLamp XP



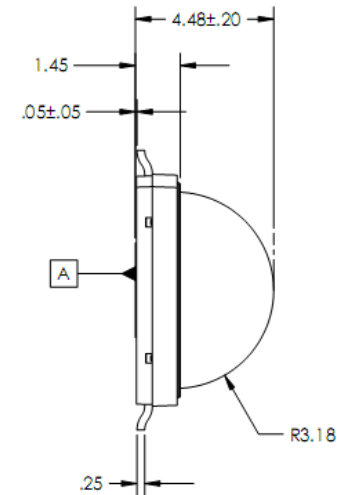
- Better color mixing
- More uniform color output
- Can reduce overall system size

XLamp MC-E Color (RGBW)



Top View

D1: Red
D2: Green
D3: Blue
D4: White



- **Unique RGBW LED combination**
- **High lumen output from a single device**
 - Up to 500 lm total when driven @ 700mA per die
- **Reduces space between color LED die to almost nothing**
 - Small, multi-color optical source for efficient color mixing
 - Reduces number of optics
- **Lower system component count can reduce total system complexity & cost**

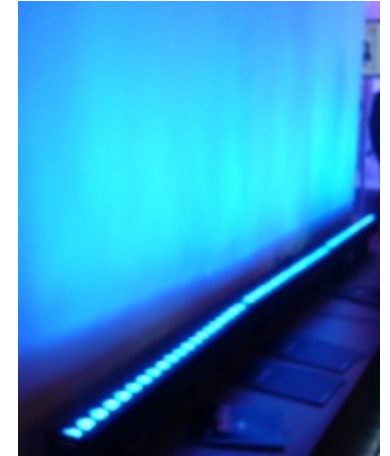
XLamp MC-E Color Target Applications

General

- High lumen output
- Small light source
- Color changing ability

Specialty

- Stage and studio lighting
- Architectural lighting
- Retail display lighting
- Medical lighting



XLamp MC-E Color Characteristics & Features

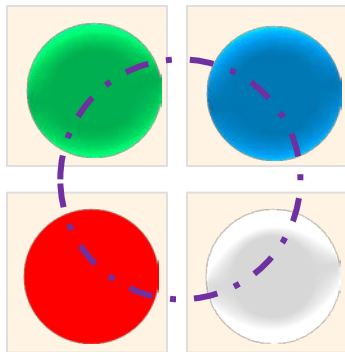
Configuration	A1				B1			
Color	Blue	Green	Red	White	Blue	Green	Red	White
DWL (nm) / CCT	450-465	520-535	620-630	6500K	450-465	520-535	620-630	4000K
Min. Luminous Flux @ 350 mA (lm)	8.2	67.2	30.6	95	8.2	67.2	30.6	80
Typical Vf @ 350 mA (V)	3.2	3.4	2.2	3.2	3.2	3.4	2.2	3.2
Max Current (mA)	700	700	700	700	700	700	700	700
Viewing Angle	115°				115°			
Thermal Resistance (°C/W)	3				3			

Features

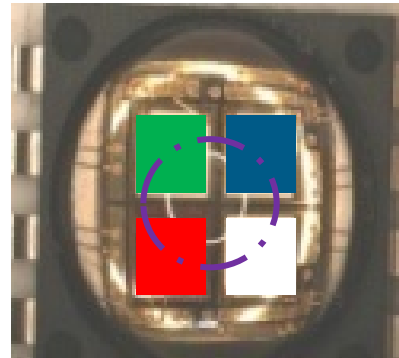
- Electrically neutral thermal path
- High maximum LED junction temperature: 150°C
- Reflow solderable JEDEC J-STD-020C compatible
- RoHS-compliant

XLamp MC-E Color Gets Die Closer Together

Discrete Color LEDs



XLamp MC-E



- Small, multi-color optical source for efficient color mixing
 - 94 % smaller than XR-E
- Better placement tolerance between LED die
- Single point source of light better emulates the look of traditional light sources (less “pixels”)

XLamp XR-C Color Characteristics & Features

	Royal Blue	Blue	Green	Amber	Red-Orange	Red
DWL (nm)	450-465	465-475	520-535	585-595	610-620	620-630
Viewing Angle	100°	100°	100°	90°	90°	90°
Thermal Resistance (°C/W)	12	12	12	15	15	15
Max Current (mA)	500	500	500	350	700	700
Typical Vf @ 350 mA (V)	3.5	3.5	3.7	2.2	2.2	2.2

Features

- Electrically neutral thermal path
- High maximum LED junction temperature: 150°C
- Reflow solderable JEDEC J-STD-020C compatible
- RoHS-compliant

XLamp XR-E Color Characteristics & Features

	Royal Blue	Blue	Green
DWL (nm)	450-465	465-485	520-535
Viewing Angle	100°	100°	100°
Thermal Resistance (°C/W)	8	8	8
Max Current (mA)	1000	1000	700
Typical Vf @ 350 mA (V)	3.3	3.3	3.3

Features

- Electrically neutral thermal path
- High maximum LED junction temperature: 150°C
- Reflow solderable JEDEC J-STD-020C compatible
- RoHS-compliant

XLamp XR-C/XR-E Color

Standard Order Codes



Min. Flux Bin	Royal Blue
	450-465
15	425
14	350
13	300
12	250

Minimum radiant flux @ 350 mA (mW)

Min. Flux Bin	Blue	Green	Amber	Red-Orange	Red
	465-485	520-535	585-595	610-620	620-630
P		67.2			
N		51.7			
M		39.8	39.8	39.8	39.8
K	30.6		30.6	30.6	30.6
J	23.5		23.5		23.5
H	18.1				
G	13.9				

Minimum luminous flux @ 350 mA (lm)

XR-E
XR-C



XLamp Color Portfolio – Summary

- The Cree XLamp Color Portfolio includes color versions of the XP-E, XP-C, MC-E, XR-C & XR-C
- The XLamp Color Portfolio offers industry leading flux across the visible light spectrum
- The XLamp Color Portfolio includes the characteristics and features you have come to expect from the Cree XLamp Family of LEDs
- The XLamp Color Portfolio is particularly well suited for color applications that require high luminous flux such as architectural lighting, wall washing, color changing applications and general lighting RGB applications
- XLamp MC-E with its unique design featuring 4 different colored die in a single package is very well suited for specialty applications such as stage and studio lighting, medical lighting, and medical lighting



PORTABLE



RESIDENTIAL



OFFICE



RETAIL



ARCHITECTURAL



OUTDOOR

LED lighting: Energy efficient & planet friendly.

Cree. Leading the LED lighting revolution.

Join Cree's LED lighting revolution. We invite you to see how our high-performance, high-efficiency LEDs are lighting up the world.

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