

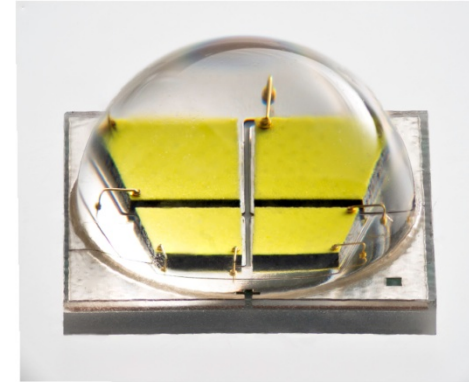
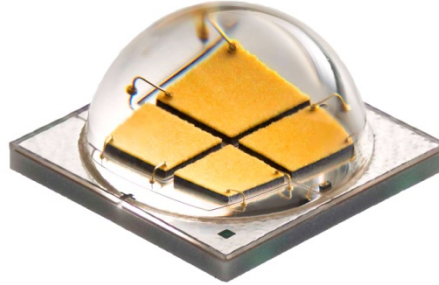
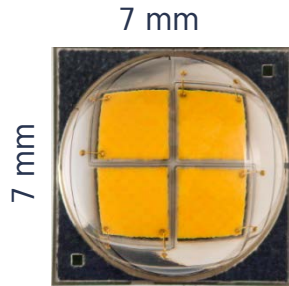


XLamp MK-R Customer Presentation

November 29, 2012



XLamp MK-R EasyWhite LEDs



Next generation of price-performance for directional arrays

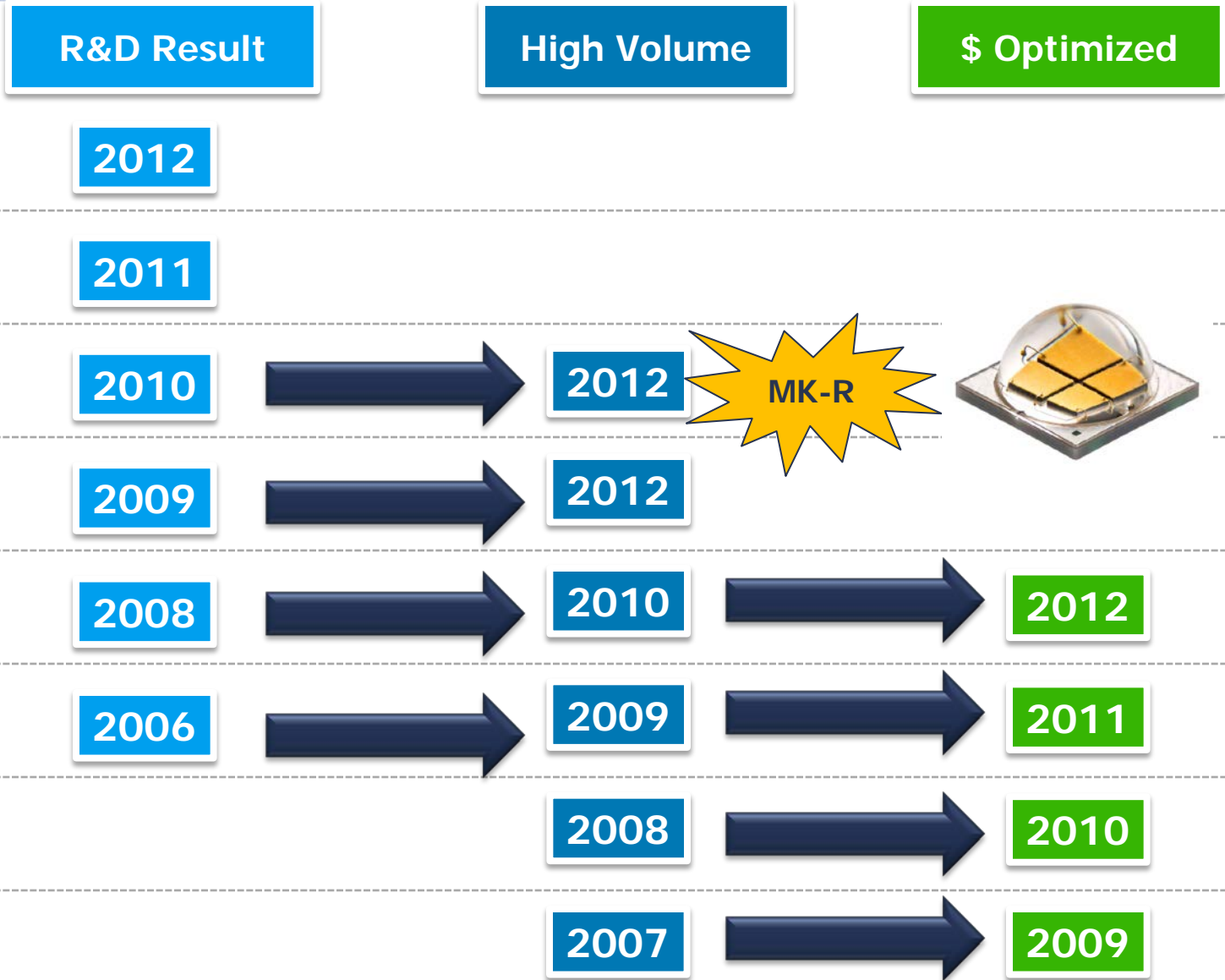
- 6.5 mm optical source: up to 1900 lm
- Up to 88% smaller source than COB arrays

Enables 100+ LPW high lumen directional systems

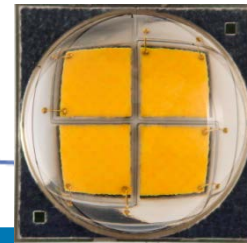
- Right combination of lm/\$, lm/W and optical control

Based on Cree's SC³ technology platform

Breaking Barriers for High Power White LEDs



XLamp MK-R Characteristics

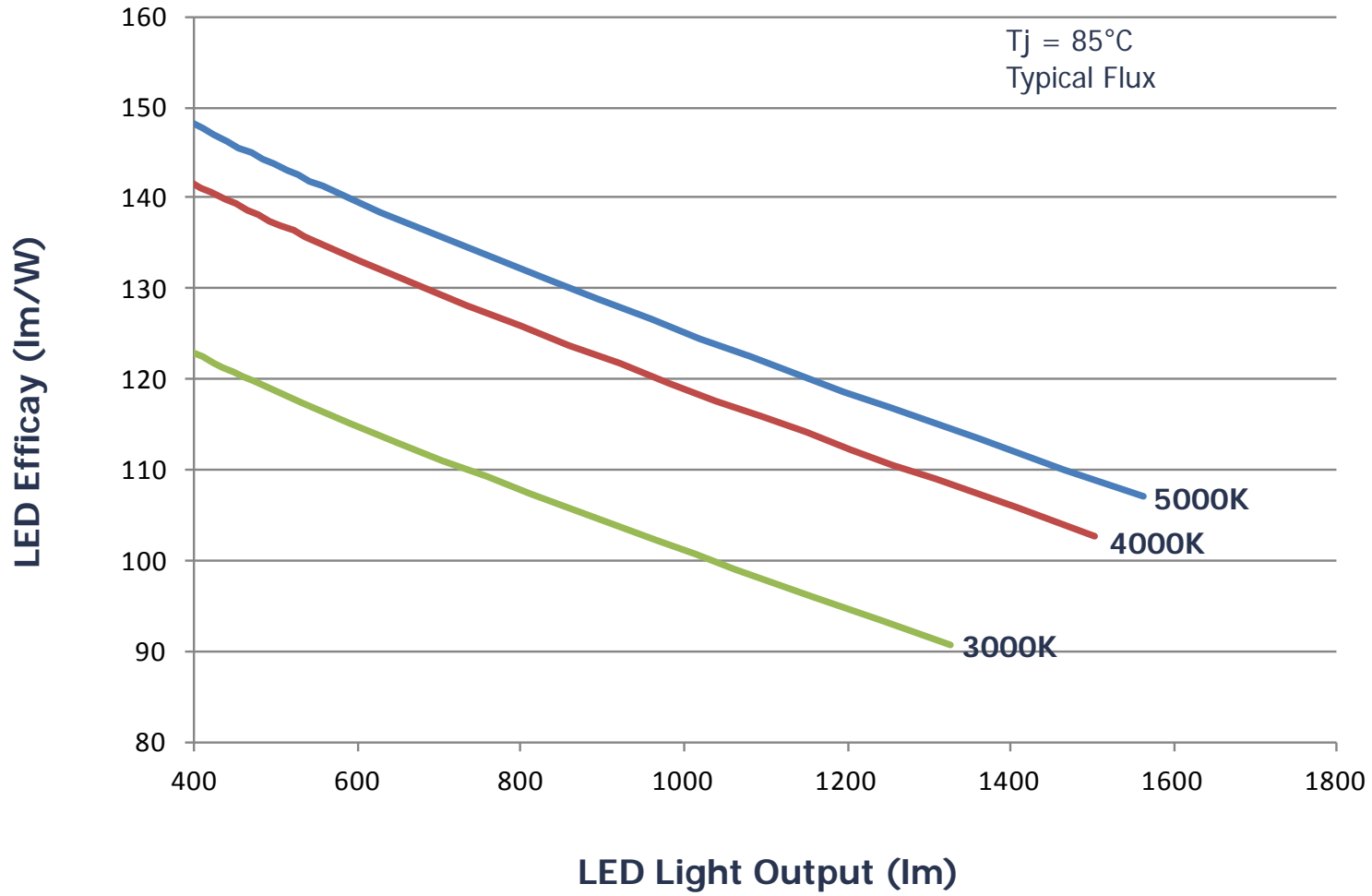
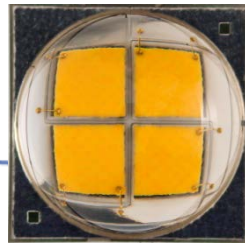


Product Characteristics

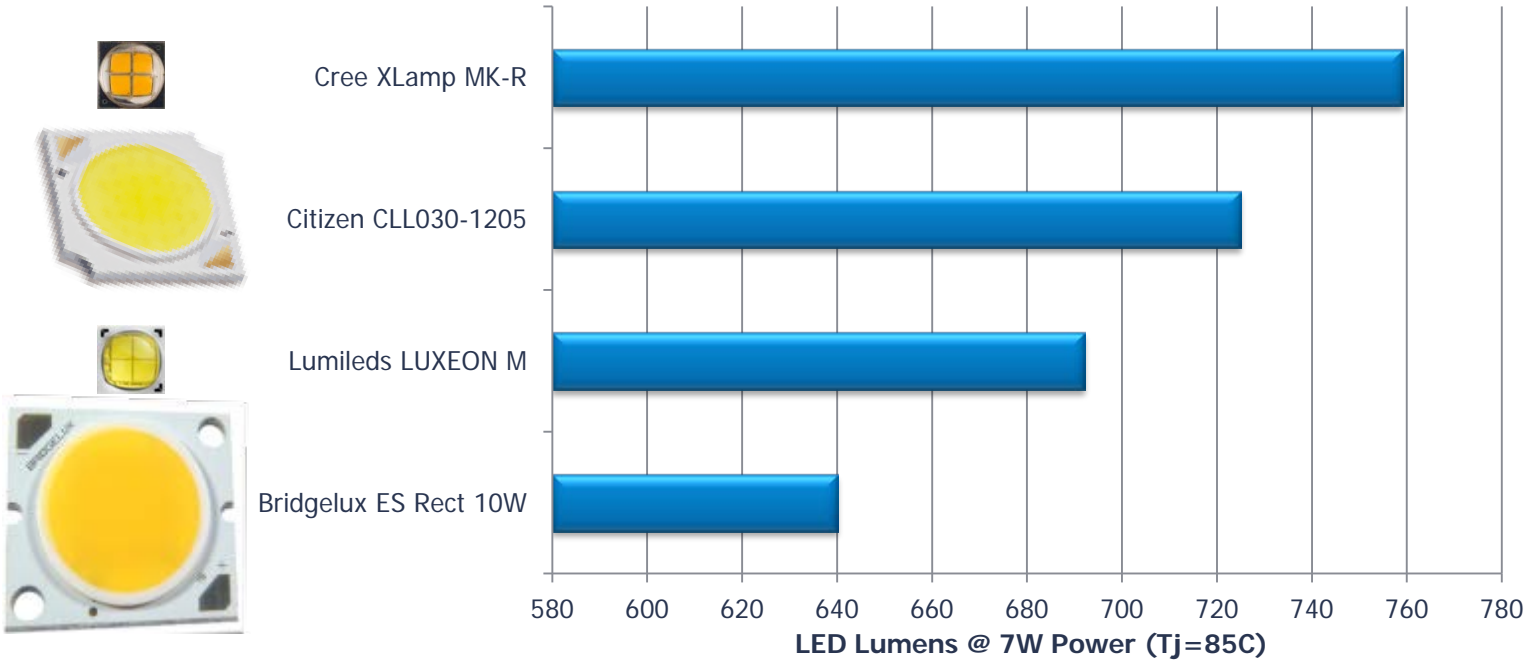
Flux output (5700K), 85°C, 700mA	Typical 1020 lumens (CRI > 70)	124 LPW
Flux output (4000K), 85°C, 700mA	Typical 980 lumens (CRI > 70)	119 LPW
Flux output (3000K), 85°C, 700mA	Typical 865 lumens (CRI > 80)	106 LPW
Vf (DC), 85°C, 700 mA	11.7V	
Viewing Angle (typical) / Aperture	120° / 6.5 mm source	
Thermal Resistance	1.7°C/W	
Color Temperatures	2700K-7000K: ANSI/4, 2-Step/4-Step EasyWhite	
Max Current	1250 mA	

CRI Options	>5000K	5000K	4000K	3500K	3000K	2700K
67 typ						
70 min						
80 min						
90 min						

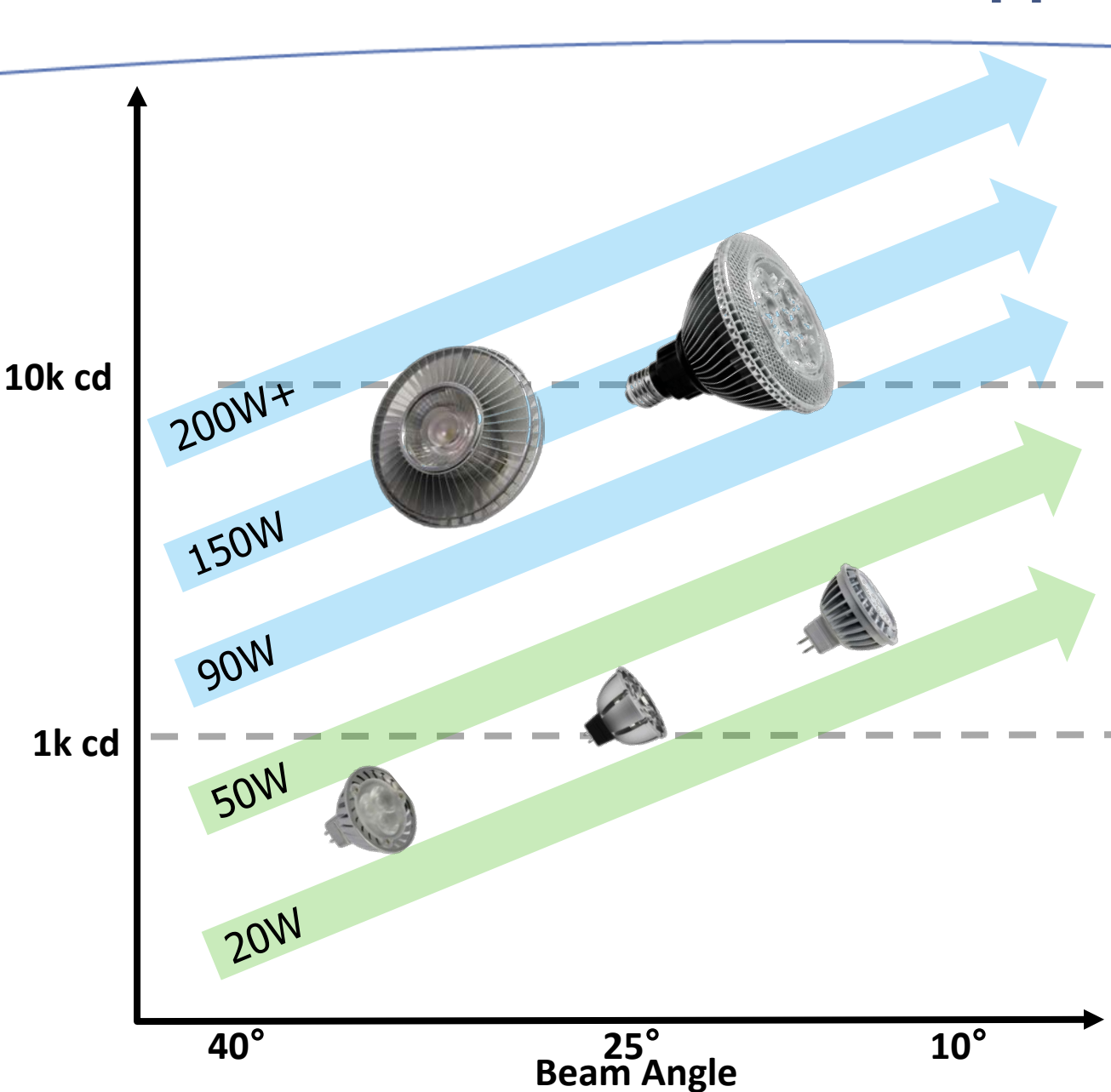
XLamp MK-R Flux Range



XLamp MK-R Competitor Comparison




LEDs For Indoor Directional Applications



Discrete	Array
	MT-G2 
 XP-G2 & XM-L2	MK-R & CXA1512 
	MK-R 
	XM-L EZW 

XLamp MK-R Indoor Directional Examples



Form Factor	ENERGY STAR Equiv.	CBCP	Lumens	Power	Efficacy
MR16 26°	35W	1,500 cd	535 lm	6W	87 LPW
PAR38 26°	90W	3,400 cd	1,215 lm	18W	68 LPW

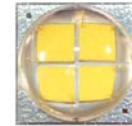
* Calculated results: $T_j=85^{\circ}\text{C}$, 89% Optical & 85% Elect. Efficiency

High efficacy LED for 35W-90W halogen replacement

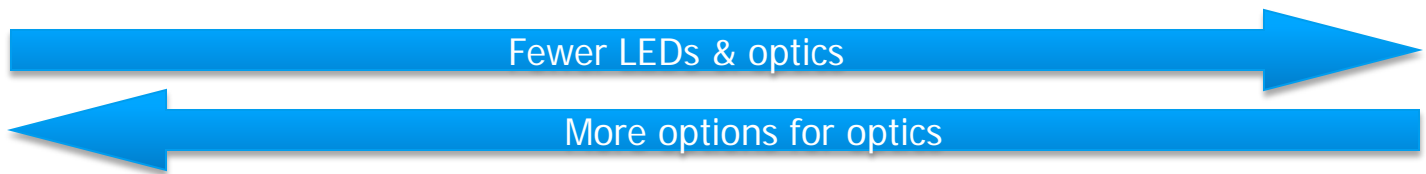
6mm optical source provides more punch than COB arrays

Single light source for traditional filament appearance

LEDs For Outdoor Lighting Applications



10k Lumen Examples	XLamp XP-G2	XLamp XM-L2	XLamp MK-R
80 LPW	36 LEDs (1000 mA)	18 LEDs (2000 mA)	9 LEDs (1000 mA)
90 LPW	50 LEDs (700 mA)	26 LEDs (1200 mA)	13 LEDs (700 mA)
100 LPW	80 LEDs (350 mA)	40 LEDs (700 mA)	20 LEDs (350 mA)



XLamp MK-R Order Codes (Outdoor White)

XLamp MK-R Preliminary Order Codes (@ 700 mA, 85°C)

XM-L2 Flux @ 85°C	Cool White	5000K	4000K	3500K	3000K	2700K
CRI:	OW (67 typ)	OW (67 typ)	OW (67 typ)			
J4						
J2	1040					
H4	970	970				
H2		900	900			
G4						
G2						
F4						
Bin Types Available:	ANSI/4	ANSI/4	ANSI/4			

Minimum luminous flux @ 700mA, 85°C (lm)

XLamp MK-R Order Codes (70 CRI Min)

XLamp MK-R Preliminary Order Codes (@ 700 mA, 85°C)

XM-L2 Flux @ 85°C	Cool White	5000K	4000K	3500K	3000K	2700K
CRI:	70 min	70 min	70 min	70 min	70 min	70 min
J4						
J2						
H4	970	970				
H2		900	900	900		
G4						
G2						
F4						
Bin Types Available:	ANSI/4	ANSI/4	ANSI/4	ANSI/4		

Minimum luminous flux @ 700mA, 85°C (lm)

XLamp MK-R Order Codes (80 CRI Min)

XLamp MK-R Preliminary Order Codes (@ 700 mA, 85°C)

XM-L2 Flux @ 85°C	Cool White	5000K	4000K	3500K	3000K	2700K
CRI:		80 min	80 min	80 min	80 min	80 min
J4						
J2						
H4						
H2		900	900	900		
G4		840	840	840	840	
G2					780	780
F4						730
Bin Types Available:		ANSI/4 2 step 4 step	ANSI/4 2 step 4 step	ANSI/4 2 step 4 step	ANSI/4 2 step 4 step	ANSI/4 2 step 4 step

Minimum luminous flux @ 700mA, 85°C (lm)

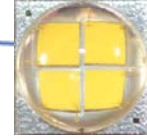
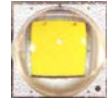
XLamp MK-R Order Codes (90 CRI White)

XLamp MK-R Preliminary Order Codes (@ 700 mA, 85°C)

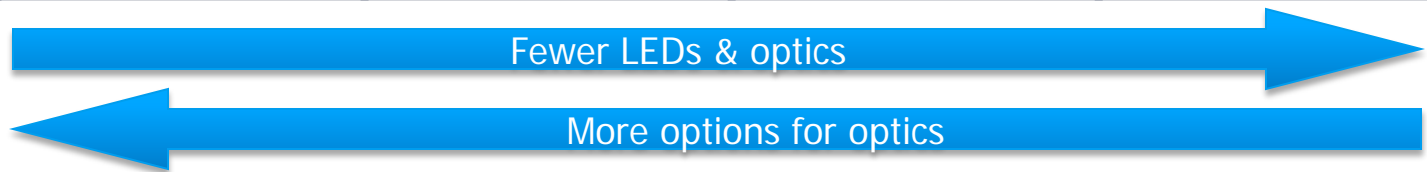
XM-L2 Flux @ 85°C	Cool White	5000K	4000K	3500K	3000K	2700K
CRI:					90 min	90 min
G4						
G2						
F4						
F2						
E4					635	
E2					590	590
D4						550
Bin Types Available:					ANSI/4 2 step 4 step	ANSI/4 2 step 4 step

Minimum luminous flux @ 700mA, 85°C (lm)

Cree vs LUXEON M In Large Arrays



10k Lumen Examples	XLamp XP-G2	XLamp XM-L2	LUXEON M	XLamp MK-R
80 LPW	36 LEDs (1000 mA)	18 LEDs (2000 mA)	12 LEDs (850 mA)	9 LEDs (1000 mA)
84 LPW	40 LEDs (870 mA)	21 LEDs (1700 mA)	14 LEDs (700 mA)	10 LEDs (900 mA)
90 LPW	50 LEDs (700 mA)	26 LEDs (1200 mA)	18 LEDs (500 mA)	13 LEDs (700 mA)
100 LPW	80 LEDs (350 mA)	40 LEDs (700 mA)	N/A	20 LEDs (350 mA)



- 100 LPW system not possible with LUXEON M!
- XLamp MK-R delivers higher performance & lower system cost