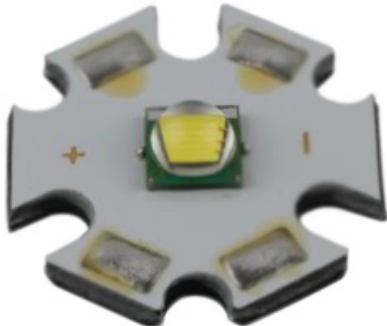


**RoHS
Compliant**



Description:

The XM-L LED is the industry's highest performance, single-die white lighting-class LED. The XM-L LED is 20% more efficient than the XP-G LED at the same current, and can deliver 1,000 lumens with 100 lumens per watt efficacy. The XM-L LED offers Cree's industry-leading features: wide viewing angle, symmetrical package, unlimited floor life and electrically neutral thermal path.

XM-L LEDs can enable LED light into new applications that require tens of thousands of lumens, such as high bay and high output area lighting. The XM-L is also the ideal choice for lighting applications where high light output and maximum efficacy are required, such as LED light bulbs, outdoor lighting, portable lighting, indoor lighting and solar-powered lighting.

Features:

Max. drive current	: 3,000mA
Low thermal resistance	: 2.5°C/W
Max. junction temperature	: 150°C
Viewing angle	: 125°

- Available in cool white, 80-CRI min. neutral white and 80-CRI, 85-CRI and 90-CRI warm white
- ANSI-compatible chromaticity bins
- Unlimited floor life at ≤30°C/85% RH
- Reflow solderable - JEDEC J-STD-020C
- Electrically neutral thermal path

Characteristics:

Characteristics	Unit	Minimum	Typical	Maximum
Thermal resistance, junction to solder point	°C/W		2.5	
Viewing angle (FWHM)	Degrees		125	
Temperature coefficient of voltage	mV/°C		-2.1	
ESD withstand voltage (HBM per Mil-Std-883D)	V			8,000
DC forward current	mA			3,000
Reverse voltage	V			5
Forward voltage (@ 700mA)	V		2.9	3.5
Forward voltage (@ 1,500mA)	V		3.1	
Forward voltage (@ 3,000mA)	V		3.35	
LED junction temperature	°C			150

Flux Characteristics (T_J = 25 °C)

Colour	CCT Range		Min. Luminous Flux @ 700mA		Calculated Minimum Luminous Flux (lm)*			Part Number
	Min.	Max.	Group	Flux (lm)	1,000mA	1,500mA	2,000mA	
Cool White	5,000K	8,300K	T6	280	388	551	692	XMLAWT-00-0000-0000T6051-STAR

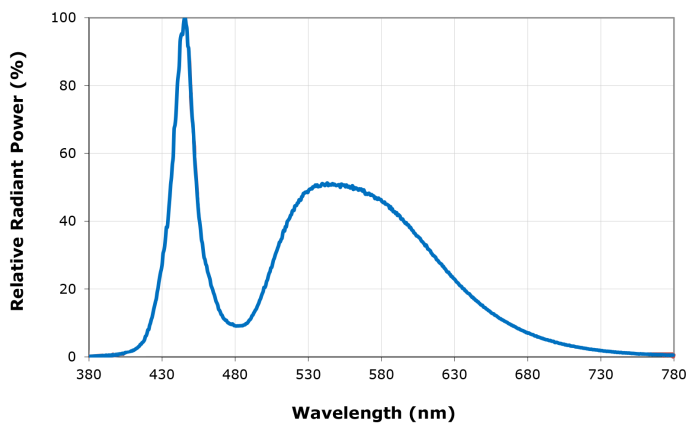
Note:

Maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CC_x, CC_y) measurements and ±2 on CRI measurements.

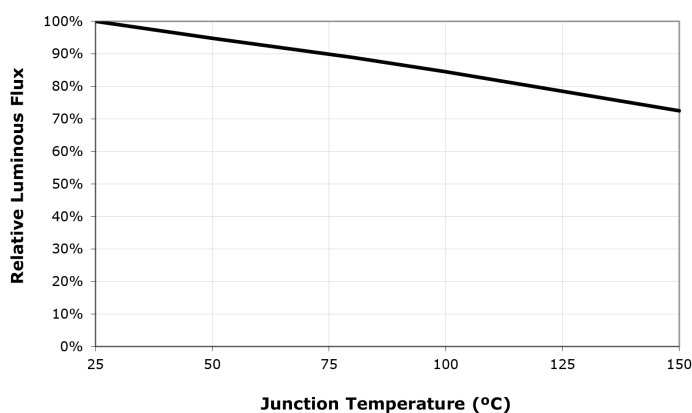
Typical CRI for Cool White (5000 K – 8300 K CCT) is 65

*Calculated flux values are for reference only.

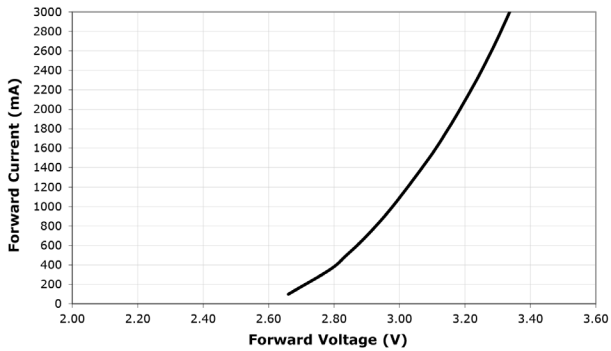
Relative Spectral Power Distribution:



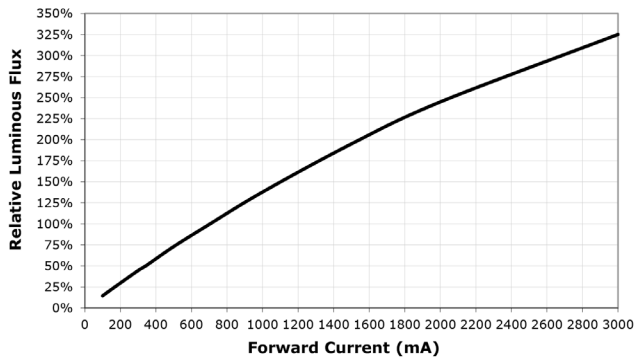
Relative Flux vs. Junction Temperature (IF = 700mA):



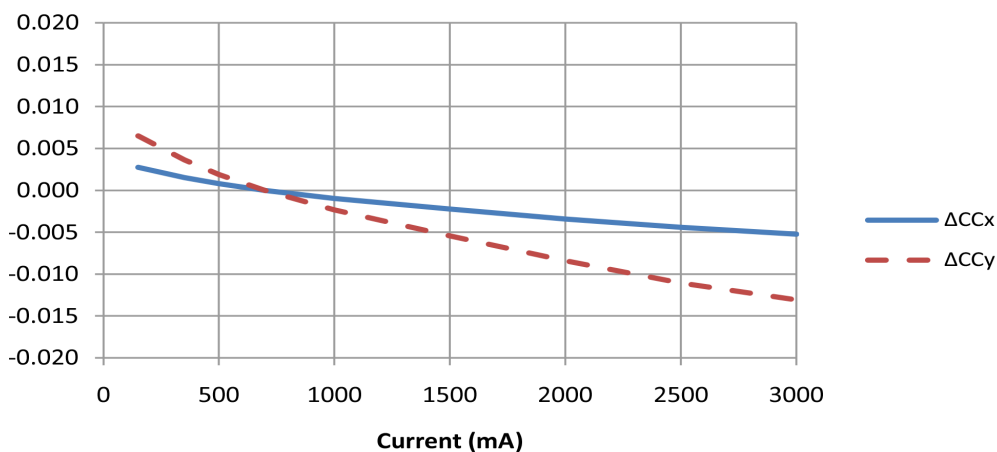
Electrical Characteristics ($T_J = 25^\circ\text{C}$)



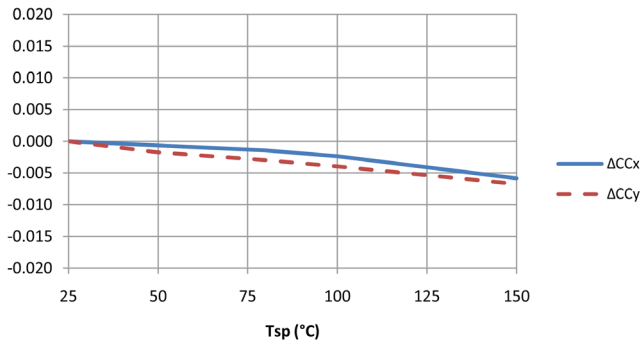
Relative Flux vs. Current ($T_J = 25^\circ\text{C}$)



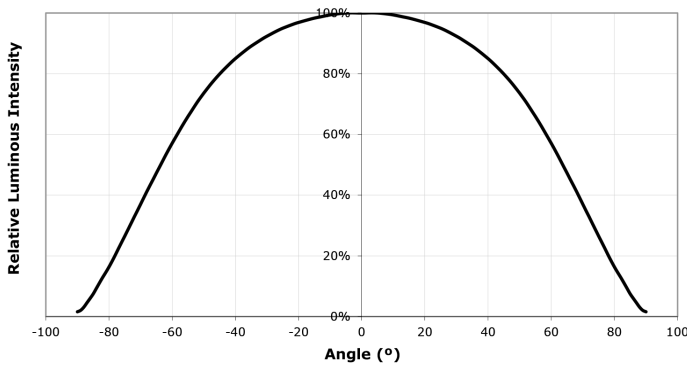
Relative Chromaticity vs. Current (Cool White)



Relative Chromaticity vs. Temperature (Cool White)



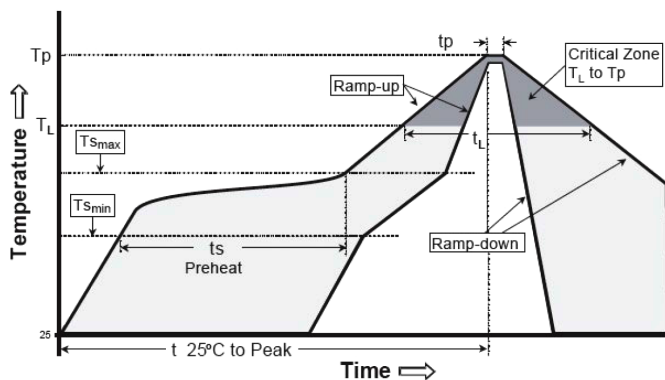
Typical Spatial Distribution



Reflow Soldering Characteristics:

In testing, it has found XM-L 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.



XM-L Starboard LED



Profile Feature	Lead-Based Solder	Lead-Free Solder
Average Ramp-Up Rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat: Temperature Min (T _{smin})	100°C	150°C
Preheat: Temperature Max (T _{smax})	150°C	200°C
Preheat: Time (t _{smin} to t _{smax})	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 the topside of the package, measured on the package body surface.

Part Number Table

Description	Part Number
Star Led Module, Cool White, 280LM	XMLAWT-00-0000-0000T6051-STAR

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