

Cree® 5mm-Round LED

Model # LC513FWH1-60Q-A0-MT

Data Sheet

60-degree, 5-mm round LED lamp in white color with water-transparent lens and no stopper

Applications

- Flashlights
- LCD Backlights
- Illuminations

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$)

Items	Symbol	Absolute Maximum Rating	Unit
Forward Current	I_F	25	mA
Peak Forward Current ^{Note 1}	I_{FP}	100	mA
Reverse Voltage	V_R	5	V
Power Dissipation	P_D	100	mW
Operation Temperature	T_{opr}	-40 ~ +95	°C
Storage Temperature	T_{stg}	-40 ~ +100	°C
Lead Soldering Temperature	T_{sol}	Max 260° for 3 sec. max. (3 mm from the base of the epoxy bulb)	

Note: Pulse width ≤ 0.1 msec, duty $\leq 1/10$.

Typical Electrical & Optical Characteristics ($T_A = 25^\circ\text{C}$)

Characteristics	Symbol	Condition	Unit	Minimum	Typical	Maximum
Forward Voltage	V_F	$I_F = 20$ mA	V		3.2	4.0
Reverse Current	I_R	$V_R = 5$ V	μA			100
Luminous Intensity	I_V	$I_F = 20$ mA	mcd	2130	4000	
Chromaticity Coordinates	x	$I_F = 20$ mA			0.3100	
	y	$I_F = 20$ mA			0.3200	
50% Power Angle	$2\theta_{1/2H-H}$	$I_F = 20$ mA	deg		55	



For part availability and ordering information please call Toll Free: 800.984.5337

Website: www.marktechopto.com | Email: info@marktechopto.com

Subject to change without notice.

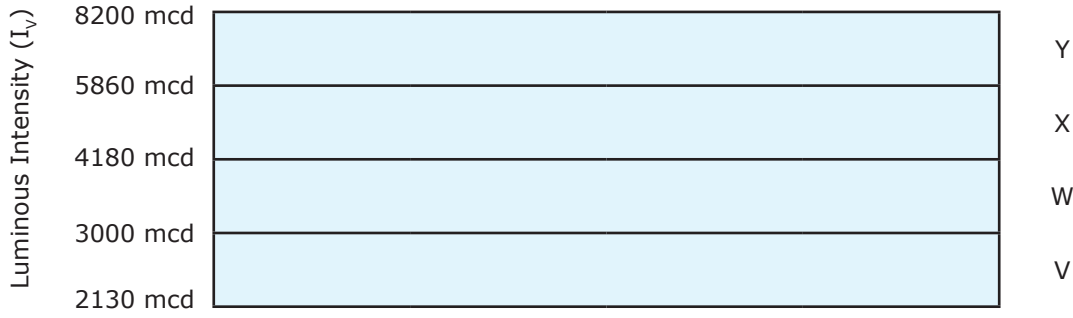
www.cree.com/ledlamps

Standard Bins for LC513FWH1-60Q-A0-MT ($I_f = 20\text{ mA}$)

Lamps are sorted to luminous intensity (I_v) and chromaticity coordinates (x,y) bins shown.

Orders for LC513FWH1-60Q-A0-MT may be filled with any or all bins contained as below.

All luminous intensity (I_v) and chromaticity coordinates (x,y) values shown and specified are at $I_f = 20\text{ mA}$.



Chromaticity Coordinates (x,y)

Rank		A01				A02				A03			
Chromaticity Coordinates	x	0.2150	0.2265	0.2388	0.2265	0.2265	0.2388	0.2510	0.2380	0.2265	0.2380	0.2510	0.2388
	y	0.1850	0.2085	0.2023	0.1785	0.1785	0.2023	0.1960	0.1720	0.2085	0.2320	0.2260	0.2023

Rank		A04				A11				A12			
Chromaticity Coordinates	x	0.2388	0.2510	0.2640	0.2510	0.2545	0.2633	0.2545	0.2450	0.2633	0.2720	0.2640	0.2545
	y	0.2023	0.2260	0.2200	0.1960	0.2480	0.2410	0.2245	0.2290	0.2410	0.2340	0.2200	0.2245

Rank		A13				A14				A21			
Chromaticity Coordinates	x	0.2545	0.2640	0.2720	0.2633	0.2633	0.2720	0.2800	0.2720	0.2640	0.2735	0.2808	0.2720
	y	0.2480	0.2670	0.2575	0.2410	0.2410	0.2575	0.2480	0.2340	0.2670	0.2860	0.2740	0.2575

Rank		A22				A23				A24			
Chromaticity Coordinates	x	0.2720	0.2808	0.2880	0.2800	0.2735	0.2830	0.2895	0.2808	0.2808	0.2895	0.2960	0.2880
	y	0.2575	0.2740	0.2620	0.2480	0.2860	0.3050	0.2905	0.2740	0.2740	0.2905	0.2760	0.2620

Rank		B11				B12				B13			
Chromaticity Coordinates	x	0.2830	0.2950	0.2998	0.2895	0.2895	0.2998	0.3045	0.2960	0.2950	0.3070	0.3100	0.2998
	y	0.3050	0.3210	0.3028	0.2905	0.2905	0.3028	0.2865	0.2760	0.3210	0.3370	0.3150	0.3028

Rank		B14				B21				B22			
Chromaticity Coordinates	x	0.2998	0.3100	0.3130	0.3045	0.3070	0.3185	0.3200	0.3100	0.3100	0.3200	0.3215	0.3130
	y	0.3028	0.3150	0.2970	0.2865	0.3370	0.3485	0.3270	0.3150	0.3150	0.3270	0.3075	0.2970

Rank		B23				B24				c1			
Chromaticity Coordinates	x	0.3185	0.3300	0.3300	0.3200	0.3200	0.3300	0.3300	0.3215	0.3300	0.3455	0.3443	0.3300
	y	0.3485	0.3600	0.3390	0.3270	0.3270	0.3390	0.3180	0.3075	0.3600	0.3725	0.3535	0.3390

Rank		c2				c3				c4			
Chromaticity Coordinates	x	0.3300	0.3443	0.3430	0.3300	0.3455	0.3610	0.3585	0.3443	0.3443	0.3585	0.3560	0.3430
	y	0.3390	0.3535	0.3345	0.3180	0.3725	0.3850	0.3680	0.3535	0.3535	0.3680	0.3510	0.3345

Forward Voltage (VF)

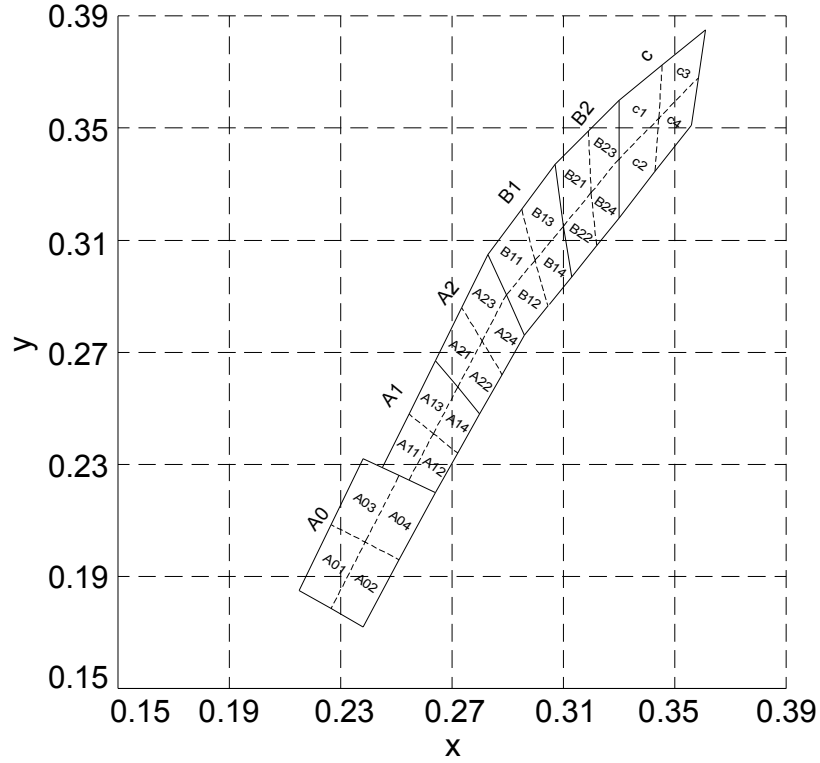
Rank	V7	V8	V9	V10	V11	V12
Voltage	2.8-3.0V	3.0-3.2V	3.2-3.4V	3.4-3.6V	3.6-3.8V	3.8-4.0V

*Majority VF bins are highlighted in Yellow

Important Notes:

1. All ranks will be included per delivery; rank ratio will be based on the dice distribution.
2. Pb content <1000 ppm.
3. Tolerance of measurement of luminous intensity is $\pm 15\%$.
4. Tolerance of measurement of the color coordinates is ± 0.01 .
5. Tolerance of measurement of V_f is ± 0.05 V.
6. Packaging methods are available for selection; please refer to the "Cree LED Lamp Packaging Standard" document.
7. Please refer to the "Cree LED Lamp Reliability Test Standards" document for reliability test conditions.
8. Please refer to the "Cree LED Lamp Soldering & Handling" document for information about how to use this LED product safely.

CIE Chromaticity Diagram



Graphs

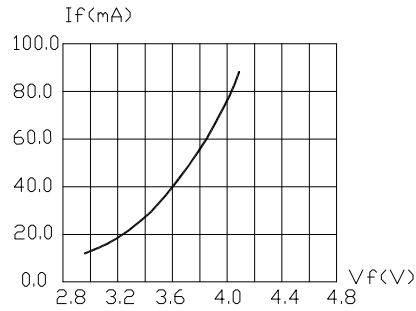


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE

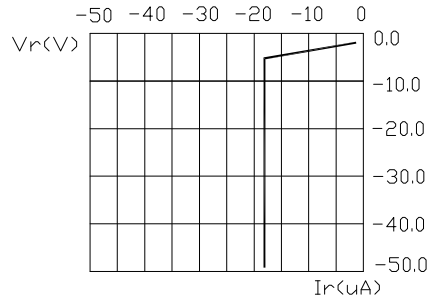


FIG.2 REVERSE CURRENT VS. REVERSE VOLTAGE

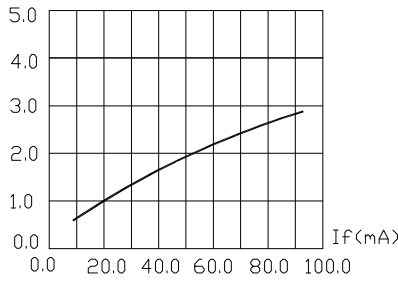


FIG.3 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

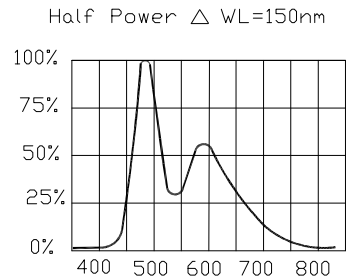


FIG.4 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

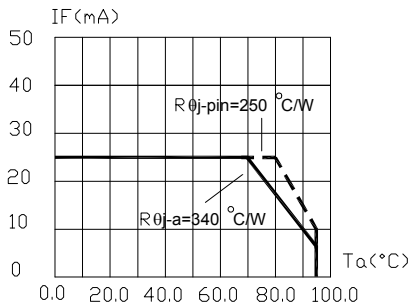


FIG.5 MAXIMUM FORWARD CURRENT VS. AMBIENT TEMPERATURE ($T_{jmax}=105^{\circ}C$)

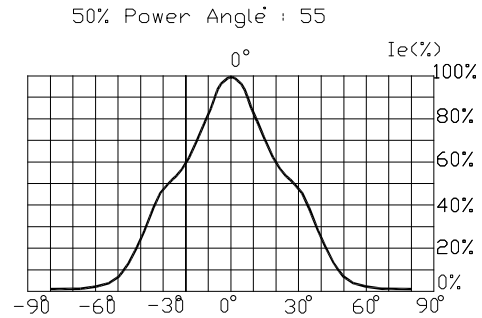


FIG.6 FAR FIELD PATTERN

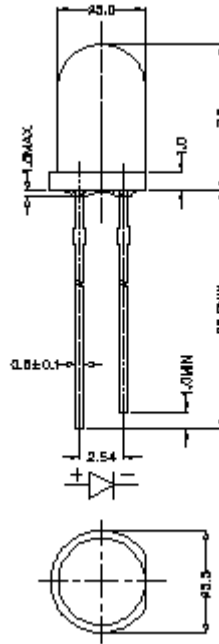
1. Cathode PAD Area (0.18 X 0.18inch²)
2. Height above nominal seating plane in inches(0.3inch)

Mechanical Dimensions

All dimensions are in mm. Tolerance is ± 0.25 mm unless otherwise noted.

An epoxy meniscus may extend about 1.5 mm down the leads.

Burr around bottom of epoxy may be 0.5 mm max.



Notes

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.