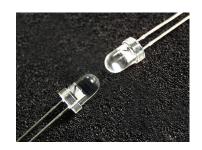


Cree® 5mm Round LED C503B-WAN Data Sheet

Round LEDs offer superior light output for excellent readability in sunlight and dependable performance. It provides extremely stable light output over long periods of time.

These lamps are made with an advanced optical grade epoxy offering superior high temperature and high moisture resistance performance in lighting and illumination applications.



FEATURES

- Size (mm): 5
- Color Temperatures (K): Cool White :Min. (4600) / Typical (9000)
- Luminous Intensity (mcd)
 Cool White (14400-32900)
- Viewing angle: 15 degree
- Lead-Free
- RoHS Compliant

APPLICATIONS

- Torch
- Light Strip
- Channel Letter
- Retail Display Lighting



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

Items	Symbol	Absolute Maximum Rating	Unit	
Forward Current	$I_{_{\rm F}}$	25	mA	
Peak Forward Current Note	$I_{\sf FP}$	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° C 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 ($T_A = 25$ °C)

Characteristics	Symbol	Condition	Unit	Minimum	Typical	Maximum
Forward Voltage	$V_{_{\rm F}}$	$I_F = 20 \text{ mA}$	V		3.2	4.0
Reverse Current	I_R	$V_R = 5 V$	μA			100
Luminous Intensity	I_{V}	$I_F = 20 \text{ mA}$	mcd	14400	18000	
Chromaticity	Х	$I_F = 20 \text{ mA}$			0.2895	
Coordinates	У	$I_F = 20 \text{ mA}$			0.2905	
50% Power Angle	2θ1/2	$I_F = 20 \text{ mA}$	deg		15	



Intensity Bin Limit ($I_F = 20 \text{ mA}$)

Cool White

Bin Code	Min.(mcd)	Max.(mcd)	
Ab	14400	16800	
Ва	16800	20150	
Bb	20150	23500	
Ca	23500	28200	
Cb	28200	32900	

ullet Tolerance of measurement of luminous intensity is $\pm 15\%$

VF Bin Limit ($I_F = 20 \text{ mA}$)

Cool White

Bin Code	Min.(V)	Max.(V)
27	2.8	3.0
28	3.0	3.2
29	3.2	3.4
2a	3.4	3.6
2b	3.6	3.8
2c	3.8	4.0

 \bullet Tolerance of measurement of VF is ± 0.05 V.

Color Bin Limit ($I_F = 20 \text{ mA}$)

Bin Code	Sub- bin	x	У
		0.2545	0.2480
	NA/-	0.2633	0.2410
	Wa	0.2545	0.2245
		0.2450	0.2480
		0.2633	0.2410
	\A/l=	0.2720	0.2340
	Wb	0.2640	0.2200
W1		0.2545	0.2245
VV I		0.2545	0.2480
)A/-	0.2640	0.2670
	Wc	0.2720	0.2575
		0.2633	0.2410
		0.2633	0.2410
	Wd	0.2720	0.2575
		0.2800	0.2480
		0.2720	0.2340
	We	0.2640	0.2670
		0.2735	0.2860
		0.2808	0.2740
		0.2720	0.2575
		0.2720	0.2575
	Wf	0.2808	0.2740
	VVI	0.2880	0.2620
W2		0.2800	0.2480
VV Z		0.2735	0.2860
		0.2830	0.3050
	Wg	0.2895	0.2905
		0.2808	0.2740
		0.2808	0.2740
	Wh	0.2895	0.2905
	Wh	0.2960	0.2760
		0.2880	0.2620

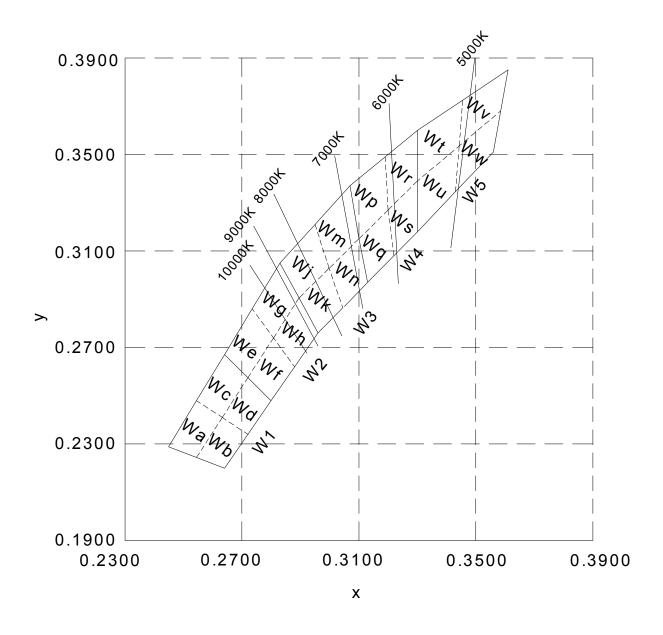
Bin Code	Sub- bin	x	у	
	\A/:	0.2830	0.3050	
		0.2950	0.3210	
	Wj	0.2998	0.3028	
		0.2895	0.2905	
		0.2895	0.2905	
	Wk	0.2998	0.3028	
	VVK	0.3045	0.2865	
W3		0.2960	0.2760	
VVS		0.2950	0.3210	
	Wm	0.3070	0.3370	
	VVIII	0.3100 0.31		
		0.2998	0.3028	
		0.2998	0.3028	
	Wn	0.3100	0.3150	
	VVII	0.3130	0.2970	
		0.3045	0.2865	
	Wp	0.3070	0.3370	
		0.3185	0.3485	
	VVΡ	0.3200 0.32°	0.3270	
		0.3100	0.3150	
	0.32 Wg	0.3100	0.3150	
		0.3200	0.3270	
		0.3215	0.3075	
W4		0.3130	0.2970	
VV -1	Wr	0.3185	0.3485	
		0.3300	0.3600	
	VVI	0.3300	0.3028 0.2905 0.2905 0.3028 0.2865 0.2760 0.3210 0.3370 0.3150 0.3028 0.3028 0.3150 0.2970 0.2865 0.3370 0.3485 0.3270 0.3150 0.3150 0.3270 0.3075 0.2970 0.3485	
		0.3200	0.3270	
		0.3200	0.3270	
	Ws	0.3300	0.3390	
	VVS	0.3300	0.3180	
		0.3215	0.3075	

Bin Code	Sub- bin	x	У
	146	0.3300	0.3600
		0.3455	0.3725
	Wt	0.3443	0.3535
		0.3300 0.33 0.3443 0.35 0.3430 0.33	0.3390
	0.3443 Wu	0.3300	0.3390
		0.3443	0.3535
		0.3430	0.3345
W5		0.3180	
VVJ	Wv	0.3455	0.3725
		0.3610	0.3850
		0.3585	0.3680
		0.3443	0.3535
		0.3443	0.3535
	Ww	0.3585	0.3680
	VV VV	0.3560	0.3510
		0.3430	0.3345

ullet Tolerance of measurement of the color coordinates is ± 0.01 .



CIE Chromaticity Diagram





Order Code Table*

Color	Kit Number	Viewing Angle	Luminous Intensity (mcd)		
Color	Kit Number	Viewing Angle	Min.	Max.	Color Bin Code
Cool White	C503B-WAN-CAbBb151	15	14400	23500	W1,W2,W3,W4,W5
Cool White	C503B-WAN-CAbBb231	15	14400	23500	W2,W3
Cool White	C503B-WAN-CBaBb231	15	16800	23500	W2,W3
Cool White	C503B-WAN-CCaCb151	15	23500	32900	W1,W2,W3,W4,W5
Cool White	C503B-WAN-CCaCb231	15	23500	32900	W2,W3

Notes:

- 1. The above Kit numbers represent order codes which include multiple intensity-bin and color-bin codes. Only one intensity-bin code and one color-bin code will be shipped on each reel. Single intensity-bin code and single color-bin codes will not be orderable.
- 2. Please refer to the "Cree LED Lamp Reliability Test Standards" document for reliability test conditions.
- 3. Please refer to the "Cree LED Lamp Soldering & Handling" document for information about how to use this LED product safely.

www.cree.com/ledlamps



Graphs

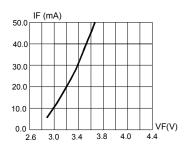


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

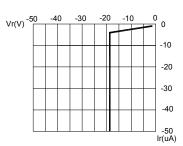
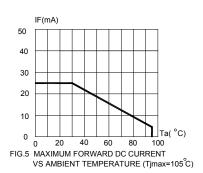


FIG.3 REVERSE CURRENT VS. REVERSE VOLTAGE.



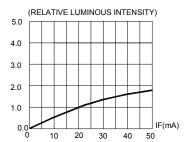


FIG.2 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

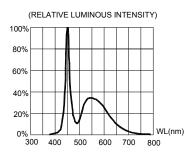
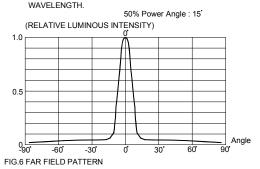


FIG.4 RELATIVE LUMINOUS INTENSITY VS.



The above data are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.

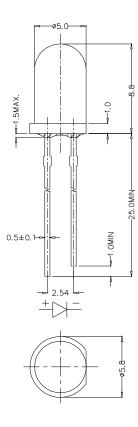


Mechanical Dimensions

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

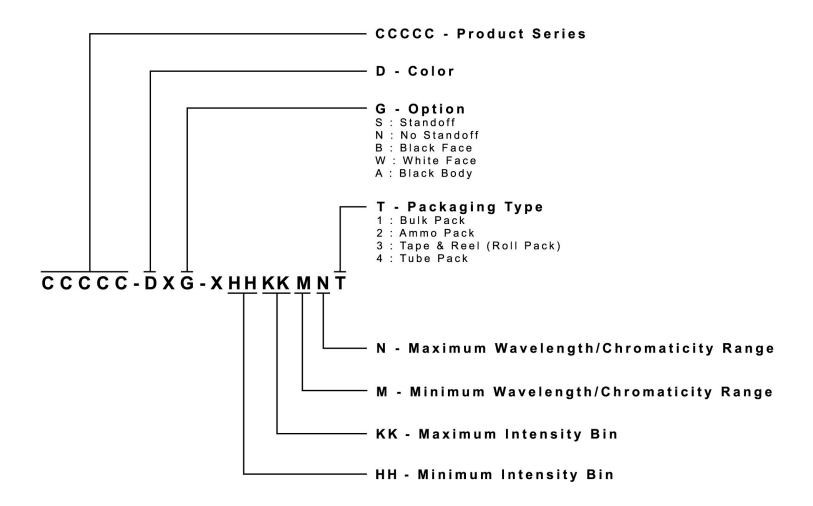
Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.



Kit Number System

Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness. Sorted LEDs are packaged for shipping in various convenient options. Please refer to the "Cree LED Lamp Packaging Standard" document for more information about shipping and packaging options.

Cree LEDs are sold by order codes in combinations of bins called kits. Order codes are configured in the following manner:



www.cree.com/ledlamps



Package

Features:

- The LEDs are packed in cardboard boxes after packaging in normal or anti-electrostatic bags.
- Cardboard boxes will be used to protect the LEDs from mechanical shock during transportation.
- The boxes are not water resistant, and they must be kept away from water and moisture.
- The Bulk Pack types of packaging.
- Max 500 pcs per bag.

