

Cree® 5mm Round LED C535A-WJN 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 (770-3000)
- Viewing angle: 110 degree
- Lead-Free
- RoHS Compliant

APPLICATIONS

- Garden Light
- 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	$I_{_{FP}}$	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 $(T_A = 25^{\circ}C)$

Characteristics	Symbol	Condition	Unit	Minimum	Typical	Maximum
Forward Voltage	$V_{\scriptscriptstyle F}$	$I_F = 20 \text{ mA}$	V		3.2	4.0
Reverse Current	I_R	$V_R = 5 V$	μΑ			100
Luminous Intensity	I_{V}	$I_F = 20 \text{ mA}$	mcd	770	1400	
Chromaticity	X	$I_F = 20 \text{ mA}$			0.2895	
Coordinates	У	$I_F = 20 \text{ mA}$			0.2905	
50% Power Angle	2θ1⁄2	$I_F = 20 \text{ mA}$	deg		110	



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

Cool White

Bin Code	Min.(mcd)	Max.(mcd)
S0	770	1100
T0	1100	1520
U0	1520	2130
V0	2130	3000

• Tolerance of measurement of luminous intensity is ±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	х	у
	JIII	0.2545	0.2480
		0.2633	0.2410
	Wa	0.2545	0.2245
		Wa	0.2290
		0.2633	0.2410
		0.2720	0.2340
	Wb	0.2640	0.2200
14/4		0.2545	0.2245
W1		0.2545	0.2480
	VA/ -	0.2640	0.2670
	VVC	0.2720	0.2575
		0.2633	0.2410
		0.2633	0.2410
) A/ -l	0.2720	0.2575
	vvu	0.2800	0.2480
		0.2720	0.2340
	We	0.2640	0.2670
		0.2735	0.2860
		0.2808	0.2740
		0.2720 0	0.2575
		0.2720	0.2575
	\//F	0.2808	0.2740
	VVI	0.2880	0.2620
W2		0.2800	0.2480
VVZ		0.2735	0.2860
	Wg	0.2830	0.3050
	vvg	0.2895	0.2905
		0.2808	0.2740
		0.2808	0.2740
	Wh	0.2895	0.2905
	VVII	0.2960	0.2760
		0.2880	0.2620

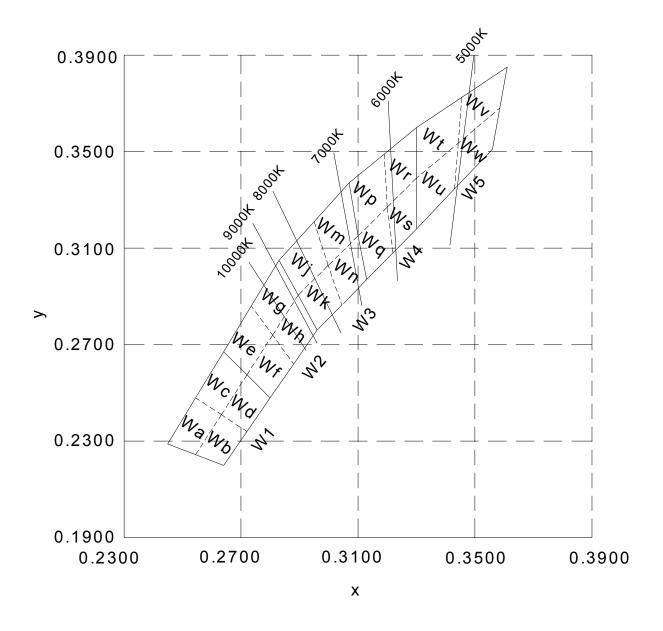
Bin Code	Sub- bin	х	у
		0.2830	0.3050
	\A/#	0.2950	0.3210
	Wj	0.2998	0.3028
		0.2895	0.2905
		0.2895	0.2905
	Wk	0.2998	0.3028
	VVK	0.3045	0.2865
W3		0.2960	0.2760
VVJ		0.2950	0.3210
	Wm	0.3070	0.3370
	VVIII	0.3100	0.3150
		0.2998	0.3028
		0.2998	0.3028
	Wn	0.3100	0.3150
	VVII	0.3130	0.2970
		0.3045	0.2865
	Wp	0.3070	0.3370
		0.3185	0.3485
		0.3200	0.3270
		0.3100	0.3150
		0.3100	0.3150
	Wq	0.3200	0.3270
	wyq	0.3215	0.3075
W4		0.3130	0.2970
***		0.3185	0.3485
	Wr	0.3300	0.3600
	VVI	0.3300	0.3390
		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	0.3455 0.3725 0.3443 0.3535 0.3300 0.3390 0.3300 0.3390 0.3443 0.3535 0.3430 0.3345 0.3300 0.3180 0.3455 0.3725 0.3610 0.3850 0.3585 0.3680	0.3535
		0.3300	0.3390
		0.3300	0.3390
	Wu	0.3443	0.3535
	vvu	0.3430	0.3345
W5		0.3300	0.3180
VVS		0.3455	0.3725
	Wv	0.3610	0.3850
	VVV	0.3585	0.3680
		0.3443	0.3535
		0.3443	0.3535
	Ww	0.3585	0.3680
	VVVV	0.3560	0.3510
		0.3430	0.3345

 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		Min.	Max.	Color Bin Code
Cool White	C535A-WJN-CS0V0151	110	770	3000	W1,W2,W3,W4,W5
Cool White	C535A-WJN-CS0V0231	110	770	3000	W2,W3
Cool White	C535A-WJN-CT0V0231	110	1100	3000	W2,W3
Cool White	C535A-WJN-CU0V0231	110	1520	3000	W2,W3

Notes:

- 1. The above kit numbers represent order codes that include multiple intensity-bin and color-bin codes. Only one intensity-bin code and one color-bin code will be shipped on each bulk. 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.



Graphs

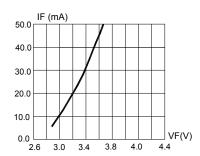


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

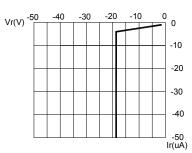
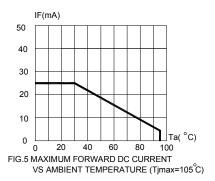


FIG.3 REVERSE CURRENT VS. REVERSE VOLTAGE.



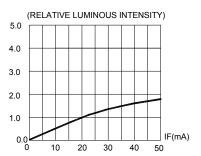


FIG.2 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

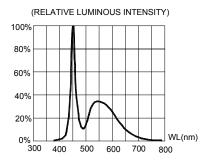


FIG.4 RELATIVE LUMINOUS INTENSITY VS.

WAVELENGTH. 50% Power Angle : 105 (RELATIVE LUMINOUS INTENSITY)

1.0

0.5

0.5

0.60 -30' 0 30' 60' 90' FIG.6 FAR FIELD PATTERN

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.

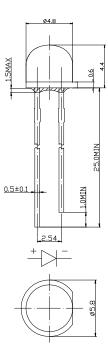


Mechanical Dimensions

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

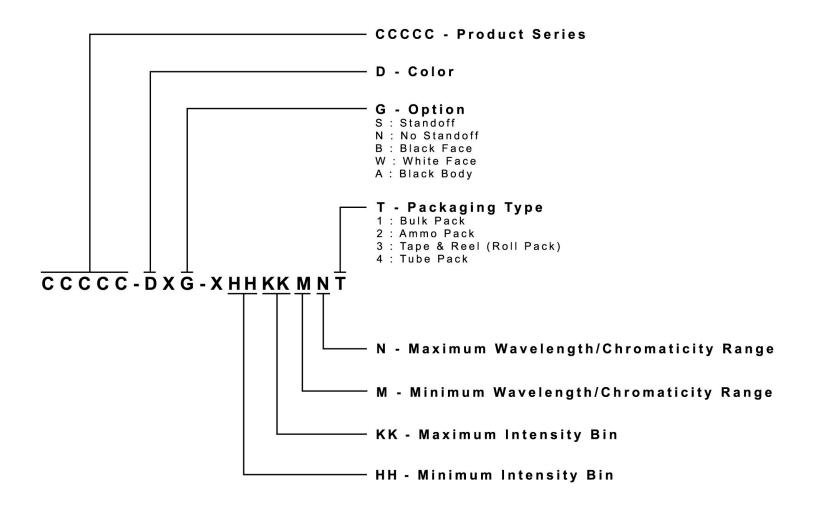
Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.



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.

