

Cree® PLCC6 White SMD LED

CLP6B-WKW

Data Sheet

Cree PLCC white LEDs offer high-intensity light output and a wide viewing angle in an industry-standard package. The flat-top package eases mating with light pipes for customized lighting solutions. Designed to work in a wide array of environmental conditions, Cree PLCC white LEDs are suited for lighting applications such as linear, channel-letter and backlighting.



FEATURES

- Size (mm): 6.0 x 5.0
- Color temperatures (K):
Cool white (4600 to 15000) / typical (6800)
- Luminous intensity (mcd):
Cool white (7100 - 18000)
- Viewing angle: 120 degrees
- Lead-free
- RoHS-compliant

APPLICATIONS

- Light Strip
- Channel Letter
- Backlight



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

Items	Symbol	Absolute Maximum Rating	Unit
Forward Current	I_F	3 x 50	mA
Peak Forward Current ^{Note 1}	I_{FP}	3 x 100	mA
Reverse Voltage	V_R	5	V
Power Dissipation	P_D	3 x 220	mW
Operation Temperature	T_{opr}	-40 ~ +100	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100	$^\circ\text{C}$
Junction Temperature	T_J	110	$^\circ\text{C}$
Junction/Ambient	R_{THJA}	3 x 300	$^\circ\text{C/W}$
Junction/Solder Point	R_{THJS}	3 x 160	$^\circ\text{C/W}$

Note:

1. 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	$I_F = 50$ mA	V		3.8	4.4
Reverse Current	I_R	$V_R = 5$ V	μA			10
Luminous Flux	Φ_V	$I_F = 3 \times 50$ mA	lm		28000	
Luminous Intensity	I_V	$I_F = 3 \times 50$ mA	mcd	7100	11000	
Chromaticity Coordinates	x	$I_F = 3 \times 50$ mA			0.3100	
	y	$I_F = 3 \times 50$ mA			0.3200	
50% Power Angle	$2\theta_{1/2}$	$I_F = 3 \times 50$ mA	deg		120	



Intensity Bin Limit ($I_F = 50 \text{ mA}$)

Cool White

Bin Code	Min.(mcd)	Max.(mcd)
B0	7100	9000
C0	9000	11200
D0	11200	14000
E0	14000	18000

Tolerance of measurement of luminous Intensity is $\pm 10\%$.

VF Bin Limit ($I_F = 50 \text{ mA}$)

Cool White

Bin Code	Min.(V)	Max.(V)
29	3.2	3.4
2a	3.4	3.6
2b	3.6	3.8
2c	3.8	4.0
2d	4.0	4.2
2e	4.2	4.4

Tolerance of measurement of VF is $\pm 0.05\text{V}$.

Color Bin Limit ($I_F = 50 \text{ mA}$)

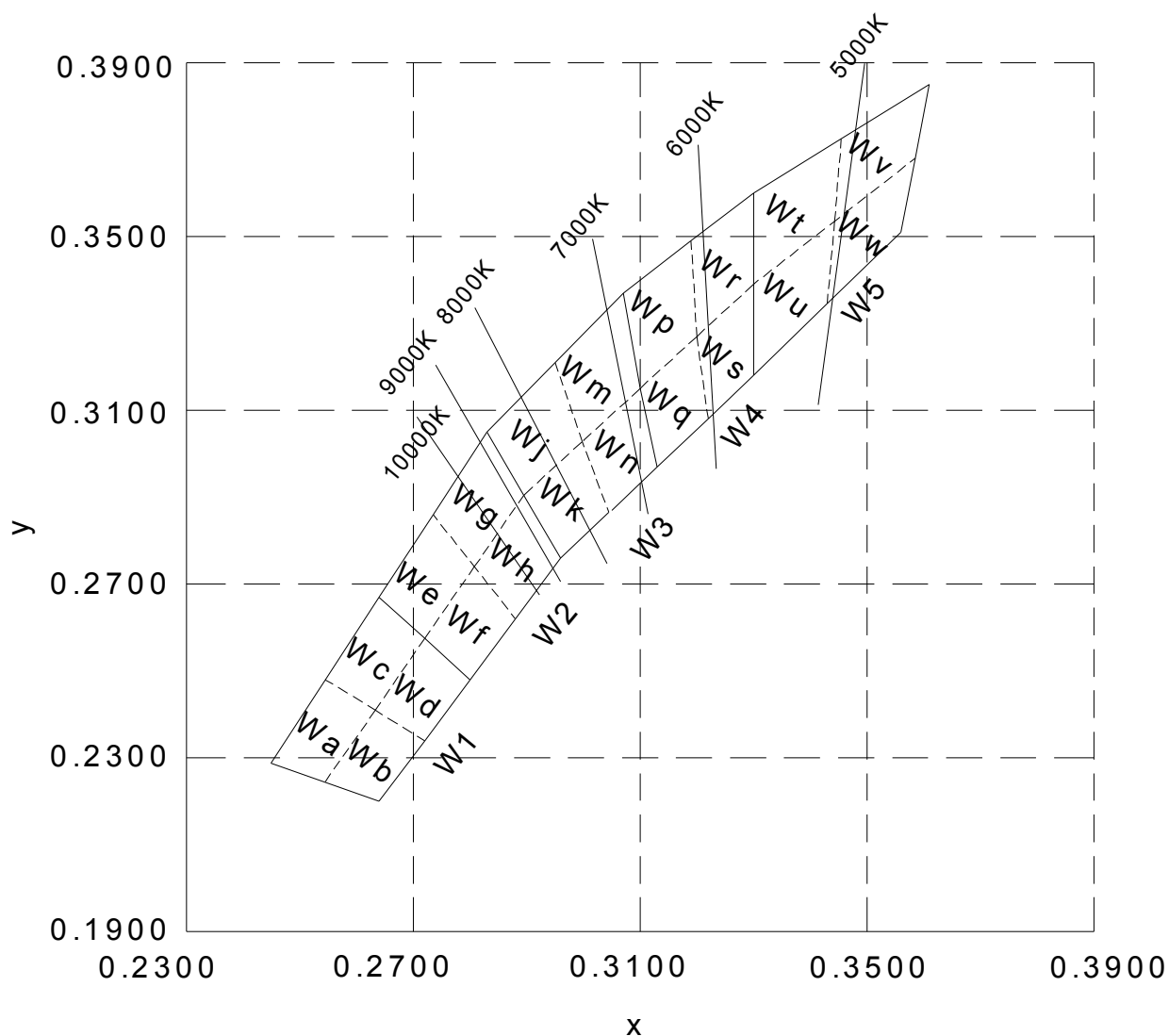
Bin Code	Sub-bin	x	y
W1	Wa	0.2545	0.2480
		0.2633	0.2410
		0.2545	0.2245
		0.2450	0.2290
	Wb	0.2633	0.2410
		0.2720	0.2340
		0.2640	0.2200
		0.2545	0.2245
	Wc	0.2545	0.2480
		0.2640	0.2670
		0.2720	0.2575
		0.2633	0.2410
	Wd	0.2633	0.2410
		0.2720	0.2575
		0.2800	0.2480
		0.2720	0.2340
W2	We	0.2640	0.2670
		0.2735	0.2860
		0.2808	0.2740
		0.2720	0.2575
	Wf	0.2720	0.2575
		0.2808	0.2740
		0.2880	0.2620
		0.2800	0.2480
	Wg	0.2735	0.2860
		0.2830	0.3050
		0.2895	0.2905
		0.2808	0.2740
	Wh	0.2808	0.2740
		0.2895	0.2905
		0.2960	0.2760
		0.2880	0.2620

Bin Code	Sub-bin	x	y
W3	Wj	0.2830	0.3050
		0.2950	0.3210
		0.2998	0.3028
		0.2895	0.2905
	Wk	0.2895	0.2905
		0.2998	0.3028
		0.3045	0.2865
		0.2960	0.2760
	Wm	0.2950	0.3210
		0.3070	0.3370
		0.3100	0.3150
		0.2998	0.3028
	Wn	0.2998	0.3028
		0.3100	0.3150
		0.3130	0.2970
		0.3045	0.2865
W4	Wp	0.3070	0.3370
		0.3185	0.3485
		0.3200	0.3270
		0.3100	0.3150
	Wq	0.3100	0.3150
		0.3200	0.3270
		0.3215	0.3075
		0.3130	0.2970
	Wr	0.3185	0.3485
		0.3300	0.3600
		0.3300	0.3390
		0.3200	0.3270
	Ws	0.3200	0.3270
		0.3300	0.3390
		0.3300	0.3180
		0.3215	0.3075

Bin Code	Sub-bin	x	y
W5	Wt	0.3300	0.3600
		0.3455	0.3725
		0.3443	0.3535
		0.3300	0.3390
	Wu	0.3300	0.3390
		0.3443	0.3535
		0.3430	0.3345
		0.3300	0.3180
	Wv	0.3455	0.3725
		0.3610	0.3850
		0.3585	0.3680
		0.3443	0.3535
	Ww	0.3443	0.3535
		0.3585	0.3680
		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 Bin Code
			Min.	Max.	
Cool white	CLP6B-WKW-CB0E0153	120	7100	18000	W1,W2,W3,W4,W5
Cool white	CLP6B-WKW-CC0E0233	120	9000	18000	W2,W3
Cool white	CLP6B-WKW-CC0E0453	120	9000	18000	W4,W5
Cool white	CLP6B-WKW-CD0E0233	120	11200	18000	W2,W3
Cool white	CLP6B-WKW-CD0E0453	120	11200	18000	W4,W5

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 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.

Graphs

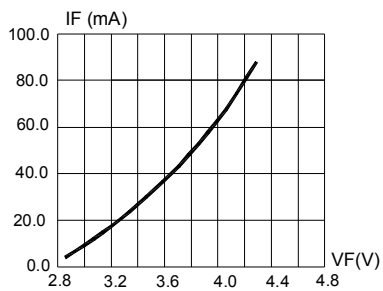


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

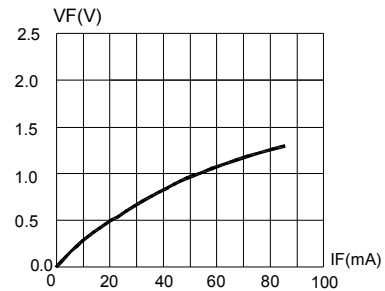


FIG.2 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

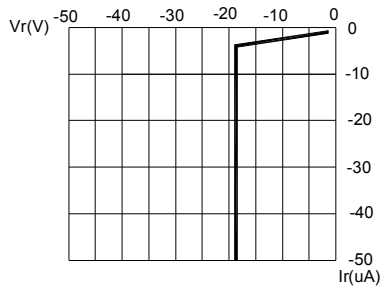


FIG.3 REVERSE CURRENT VS. REVERSE VOLTAGE.

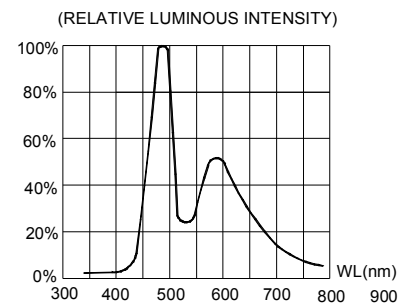


FIG.4 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

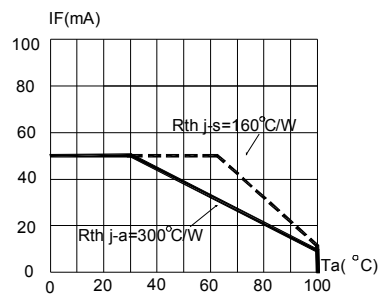


FIG.5 MAXIMUM FORWARD DC CURRENT VS AMBIENT TEMPERATURE ($T_{jmax}=110^{\circ}\text{C}$)

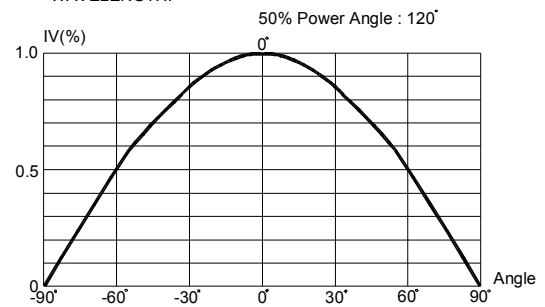
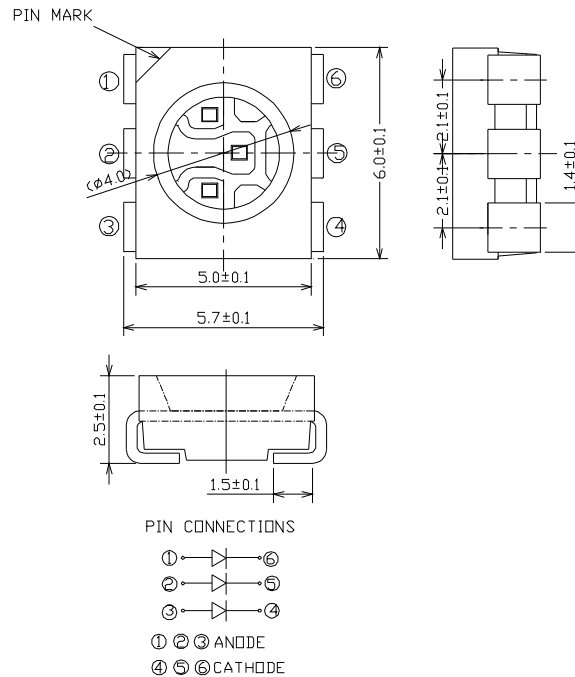


FIG.6 FAR FIELD PATTERN

Mechanical Dimensions

All dimensions are in mm.



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

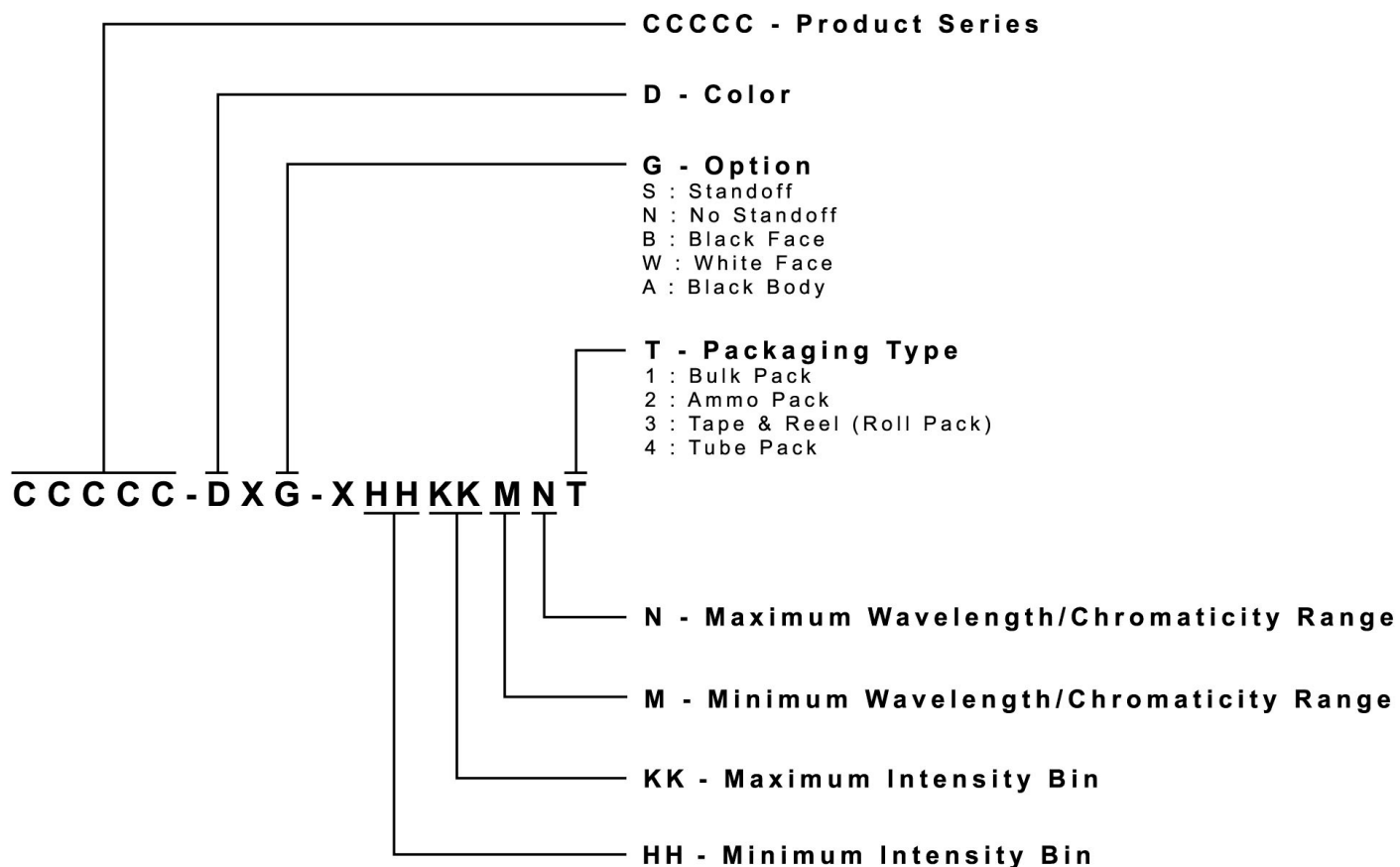
Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.



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:



Packaging

- The boxes are not water-resistant, and they must be kept away from water and moisture.
- 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 shocks during transportation.
- The reel pack is applied in SMD LED.
- Max 900 pcs per reel.

