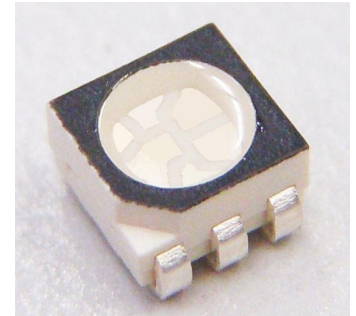


# Cree® PLCC6 3-in-1 SMD LED

## CLM6S-BKB&GKB

### Data Sheet

These SMD LEDs are packaged in an industry-standard PLCC6 package. These high-performance tri-color SMT LEDs are designed to work in a wide range of applications. A wide viewing angle and high brightness make these LEDs suitable for indoor signage applications.



#### FEATURES

- Size (mm): 3.5 x 3.3
- Dominant Wavelength (nm):
  - » Blue (470)
  - » Green (527)
- Luminous Intensity (mcd)
  - » CLM6S-BKB (355-900)
  - » CLM6S-GKB (1120-2800)
- Viewing Angle: 120 degrees
- Lead-Free
- RoHS-Compliant

#### APPLICATIONS

- Full-Color Video Screen
- Decorative lighting
- Amusement



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

Items	Symbol	Absolute Maximum Rating		Unit
		CLM6S-BKB	CLM6S-GKB	
Forward Current <sup>Note 1</sup>	$I_F$	3 x 40	3 x 40	mA
Peak Forward Current <sup>Note 2</sup>	$I_{FP}$	3 x 100	3 x 100	mA
Reverse Voltage	$V_R$	5	5	V
Power Dissipation	$P_D$	3 x 160	3 x 160	mW
Operation Temperature	$T_{opr}$	-40 ~ +100		$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 ~ +100		$^\circ\text{C}$
Junction Temperature	$T_J$	110	110	$^\circ\text{C}$
Junction/ambient 1 chip on	$R_{THJA}$	450	400	$^\circ\text{C}/\text{W}$
Junction/ambient 3 chips on	$R_{THJA}$	680	580	$^\circ\text{C}/\text{W}$
Junction/solder point 1 chip on	$R_{THJS}$	300	280	$^\circ\text{C}/\text{W}$
Junction/solder point 3 chips on	$R_{THJS}$	480	430	$^\circ\text{C}/\text{W}$

### Note:

1. Single-color light.
2. Pulse width  $\leq 0.1$  msec, duty  $\leq 1/10$ .

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

Characteristics	Color	Symbol	Condition	Unit	Minimum	Typical	Maximum
Forward Voltage	CLM6S-BKB&GKB	$V_F$	$I_F = 20$ mA	V		3.4	4.0
Reverse Current	CLM6S-BKB&GKB	$I_R$	$V_R = 5$ V	$\mu\text{A}$			10
Dominant Wavelength	CLM6S-BKB	$\lambda_D$	$I_F = 3 \times 20$ mA	nm	460	470	480
	CLM6S-GKB	$\lambda_D$	$I_F = 3 \times 20$ mA	nm	520	527	540
Luminous Intensity	CLM6S-BKB	$I_V$	$I_F = 3 \times 20$ mA	mcd	355	600	
	CLM6S-GKB	$I_V$	$I_F = 3 \times 20$ mA	mcd	1120	1600	
Viewing Angle at 50%	CLM6S-BKB&GKB	$2\theta_{1/2}$	$I_F = 3 \times 20$ mA	deg		120	



## Intensity Bin Limit ( $I_f = 3 \times 20 \text{ mA}$ )

### Blue(CLM6S-BKB)

Bin Code	Min. (mcd)	Max. (mcd)
Tb	355	450
Ua	450	560
Ub	560	710
Va	710	900

### Green(CLM6S-GKB)

Bin Code	Min. (mcd)	Max. (mcd)
Wa	1120	1400
Wb	1400	1800
Xa	1800	2240
Xb	2240	2800

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

## Color Bin Limit ( $I_f = 3 \times 20 \text{ mA}$ )

### Blue (CLM6S-BKB)

Bin Code	Min.(nm)	Max.(nm)
B3	460	465
B4	465	470
B5	470	475
B6	475	480

### Green (CLM6S-GKB)

Bin Code	Min.(nm)	Max.(nm)
G7	520	525
G8	525	530
G9	530	535
Ga	535	540

Tolerance of measurement of dominant wavelength is  $\pm 1 \text{ nm}$ .



## Order Code Table\*

### Blue

Color	Kit Number	Viewing Angle	Luminous Intensity (mcd)		Dominant Wavelength			
			Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)
Blue	CLM6S-BKB-CTbVa363	120	355	900	B3	460	B6	480

### Green

Color	Kit Number	Viewing Angle	Luminous Intensity (mcd)		Dominant Wavelength			
			Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)
Green	CLM6S-GKB-CWaXb7a3	120	1120	2800	G7	520	Ga	540

### 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 codes 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

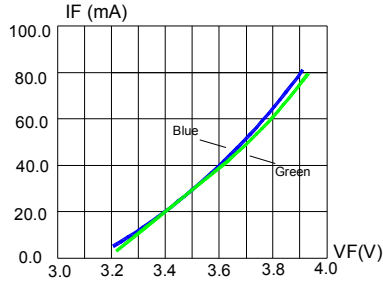


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

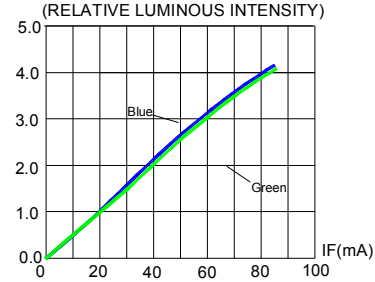


FIG.2 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

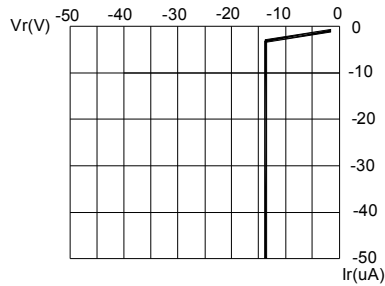


FIG.3 BLUE & GREEN REVERSE CURRENT VS. REVERSE VOLTAGE.

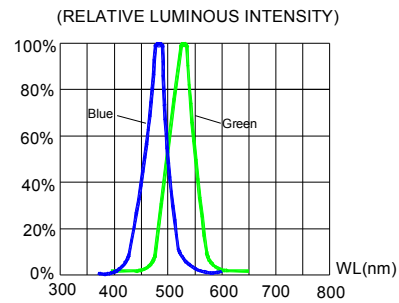


FIG.4 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

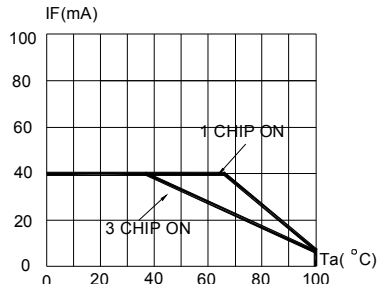


FIG.5 BLUE & GREEN BLUE & GREEN MAXIMUM FORWARD DC CURRENT VS AMBIENT TEMPERATURE

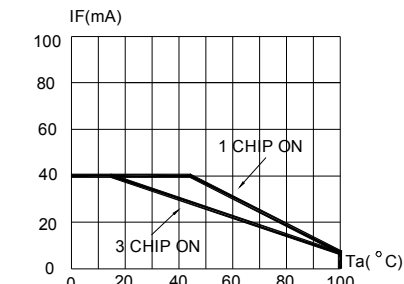


FIG.6 BLUE & GREEN MAXIMUM FORWARD DC CURRENT VS AMBIENT TEMPERATURE

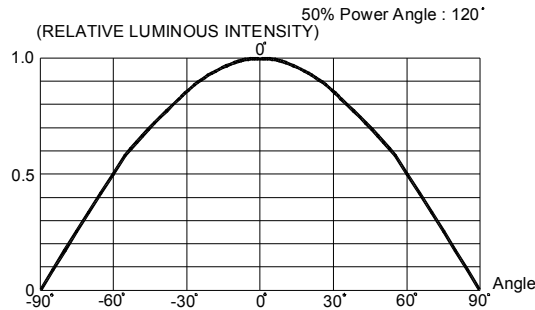
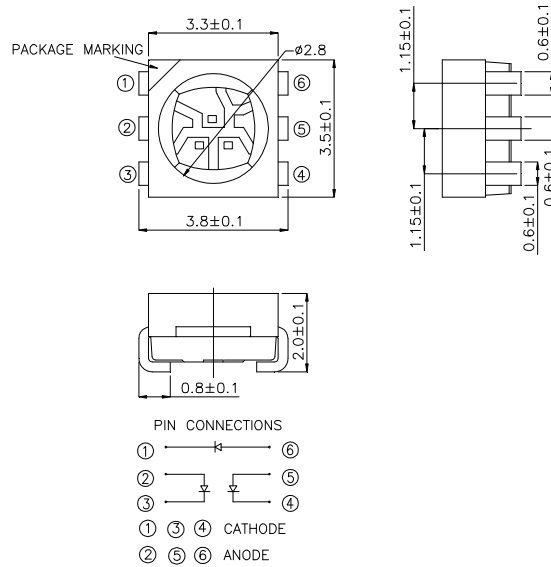


FIG.7 FAR FIELD PATTERN

The above data are collected from statistical figures which 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.



## 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

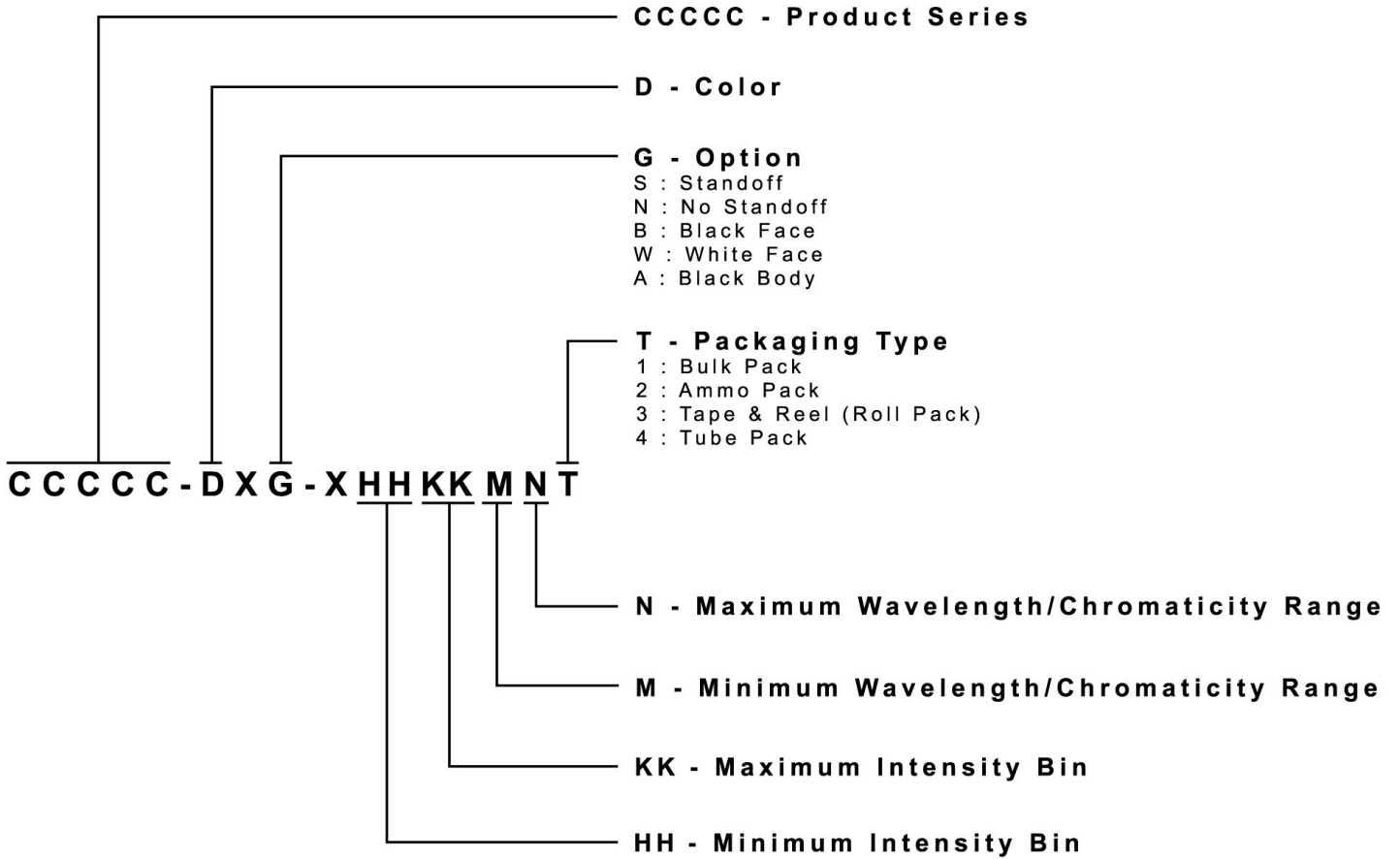
Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.



## 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:



## Package

- 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 1000 pcs per reel.

