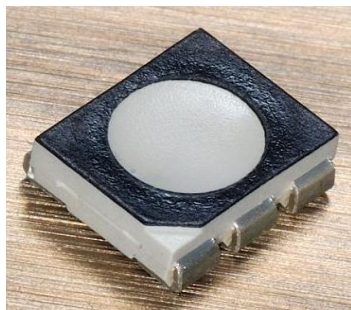


## CLP6C-FKB: PLCC6 3 in 1 SMD LED



### PRODUCT DESCRIPTION

Cree LED PLCC full-color LEDs offer high-intensity light output and a wide viewing angle in an industry-standard package. Designed to work in a wide array of environmental conditions, Cree LED PLCC full-color LEDs are suited for indoor video screen, decorative lighting and amusement applications.

### FEATURES

- Size (mm): 6.0 x 5.0
- Dominant Wavelength
  - Red (619 - 624nm)
  - Green (520 - 540nm)
  - Blue (460- 480nm)
- Luminous Intensity (mcd)
  - Red (560 -1120)
  - Green (1120 - 2240)
  - Blue (280 - 560)
- 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
		R	G	B	
Forward Current <sup>Note 1</sup>	$I_F$	50	50	50	mA
Peak Forward Current <sup>Note 2</sup>	$I_{FP}$	200	100	100	mA
Reverse Voltage	$V_R$	5	5	5	V
Power Dissipation	$P_D$	130	200	200	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	110	$^\circ\text{C}$
Junction/ambient 1 chip on	$R_{THJA}$	450	400	450	$^\circ\text{C/W}$
Junction/ambient 3 chip on	$R_{THJA}$	650	580	680	$^\circ\text{C/W}$
Junction/solder point 1 chip on	$R_{THJS}$	300	280	300	$^\circ\text{C/W}$
Junction/solder point 3 chip on	$R_{THJS}$	450	430	480	$^\circ\text{C/W}$
Electrostatic Discharge Classification(MIL-STD-883E)	ESD	1000V			

## 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	Condition	Symbol	Values			Unit
			R	G	B	
Dominant Wavelength	$I_F = 20\text{mA}$	$\lambda_{DOM}$	619~624	520~540	460~480	nm
Spectral bandwidth at 50% $I_{REL}$ max	$I_F = 20\text{mA}$	$\Delta\lambda$	24	38	28	nm
Forward Voltage	$I_F = 20\text{mA}$	$V_{F(avg)}$	2.0	3.2	3.2	V
		$V_{F(max)}$	2.6	4.0	4.0	V
Luminous Intensity	$I_F = 20\text{mA}$	$I_{V(min)}$	560	1120	280	mcd
		$I_{V(avg)}$	700	1600	400	mcd
Reverse Current (max)	$V_R = 5\text{V}$	$I_R$	10	10	10	$\mu\text{A}$

\* Continuous reverse voltage can cause LED damage.

## INTENSITY BIN LIMIT

Red (20 mA)			Green (20 mA)			Blue (20 mA)		
Bin Code	Min.(mcd)	Max.(mcd)	Bin Code	Min.(mcd)	Max.(mcd)	Bin Code	Min.(mcd)	Max.(mcd)
K	560	710	P	1120	1400	G	280	355
M	710	900	Q	1400	1800	H	355	450
N	900	1120	R	1800	2240	J	450	560

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

## COLOR BIN LIMIT

Red (20 mA)			Green (20 mA)			Blue (20 mA)		
Bin Code	Min.(nm)	Max.(nm)	Bin Code	Min.(nm)	Max.(nm)	Bin Code	Min.(nm)	Max.(nm)
RB	619	624	G7	520	525	B3	460	465
			G8	525	530	B4	465	470
			G9	530	535	B5	470	475
			Ga	535	540	B6	475	480

\* Tolerance of measurement of dominant wavelength is  $\pm 1$  nm.

## ORDER CODE TABLE

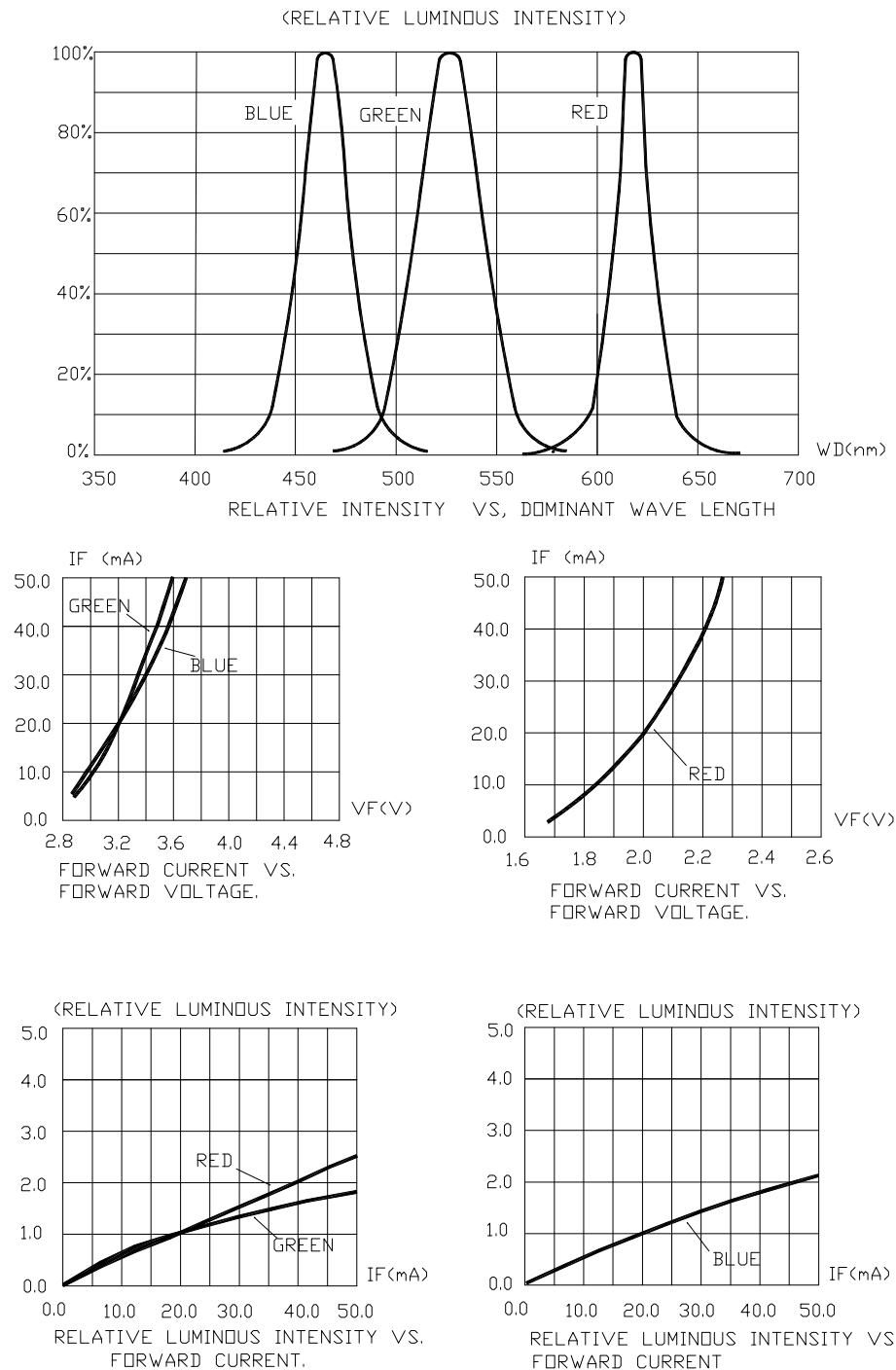
Kit Number	Color	Luminous Intensity (mcd)		Dominant Wavelength (nm)				Package
		Min.	Max.	Color Bin	Min.(nm)	Color Bin	Max. (nm)	
CLP6C-FKB-CKNPRGJBB7a363	Red	560	1120	RB	619	RB	624	Reel
	Green	1120	2240	G7	520	Ga	540	Reel
	Blue	280	560	B3	460	B6	480	Reel
CLP6C-FKB-CK1P1G1BB7R3R3	Red	Any 1 Intensity bin from K(560) - N(1120)		RB	619	RB	624	Reel
	Green	Any 1 Intensity bin from P(1120) - R(2240)		Any 1 hue bin from G7(520)-Ga(540)				Reel
	Blue	Any 1 Intensity bin from G(280) - J(560)		Any 1 hue bin from B3(460)-B6(480)				Reel
CLP6C-FKB-CM1Q1H1BB7R3R3	Red	Any 1 Intensity bin from M(560) - N(1120)		RB	619	RB	624	Reel
	Green	Any 1 Intensity bin from Q(1260) - R(2240)		Any 1 hue bin from G7(520)-Ga(540)				Reel
	Blue	Any 1 Intensity bin from H(252) - J(560)		Any 1 hue bin from B3(460)-B6(480)				Reel

## Notes:

- 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.
- Please refer to the [HB LED Lamp Reliability Test Standards](#) document for reliability test conditions.
- Please refer to the [HB LED Lamp Soldering & Handling](#) document for information about how to use this LED product safely.

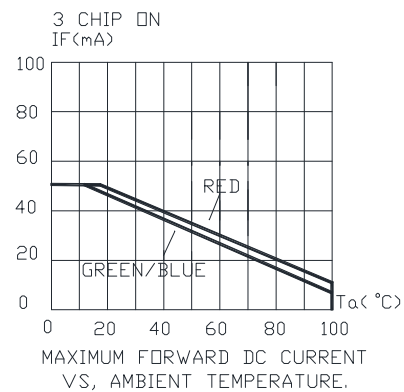
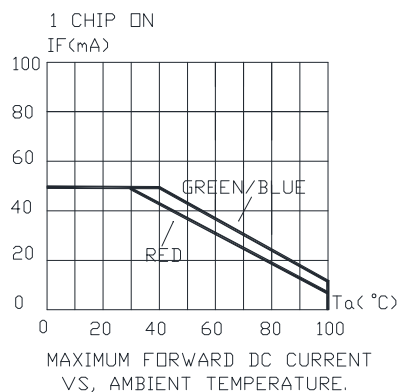
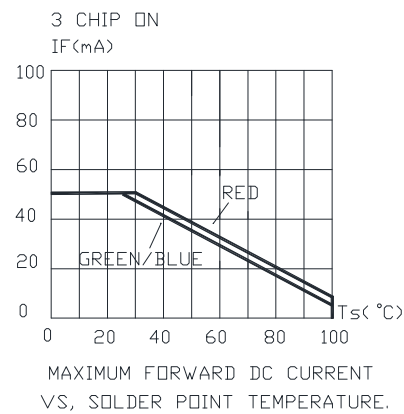
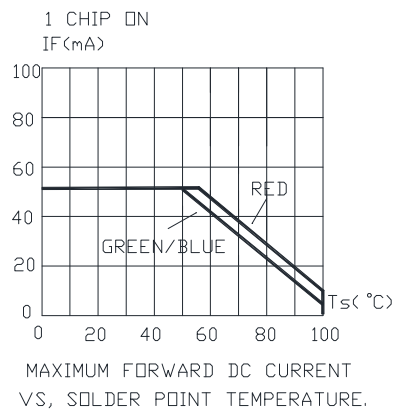
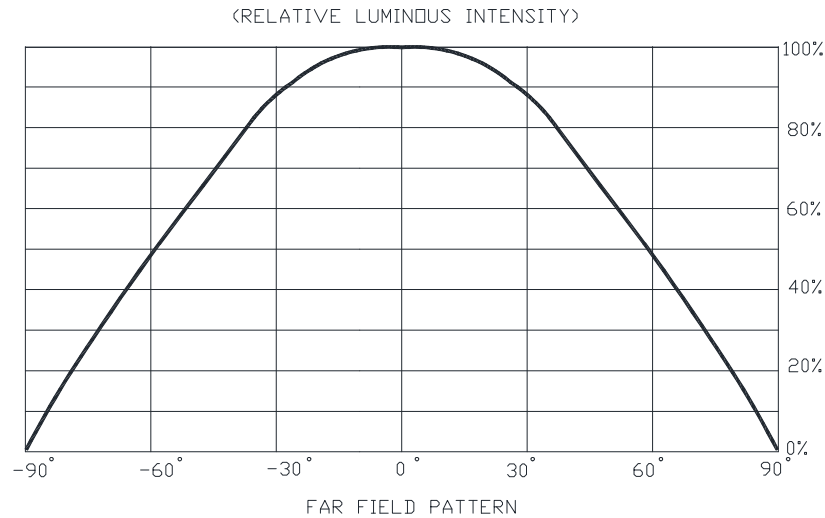
## GRAPHS

The data below 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.



## GRAPHS

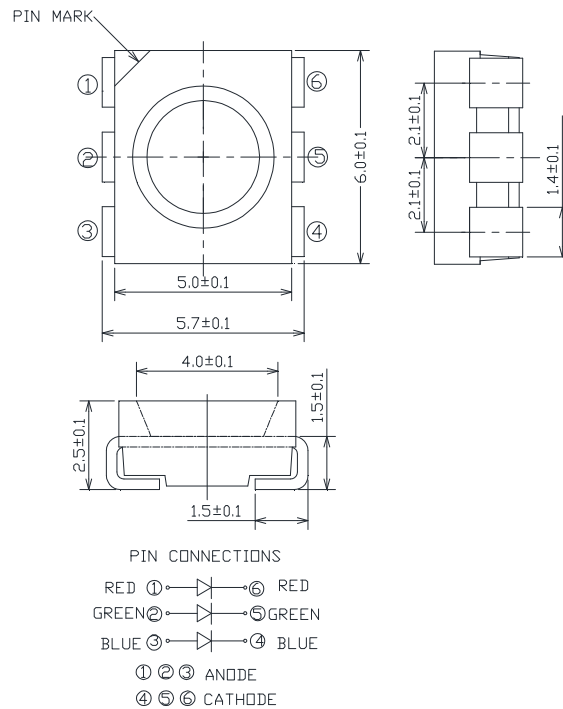
The data below are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.



## MECHANICAL DIMENSIONS

All dimensions are in mm.

Tolerance of measurement of the dimension is  $\pm 0.1$ .



## NOTES

### RoHS Compliance

The levels of RoHS 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 2011/65/EC (RoHS2), as implemented January 2, 2013. RoHS Declarations for this product can be obtained from your Cree LED representative or from the [Product Ecology](#) section of the Cree LED website.

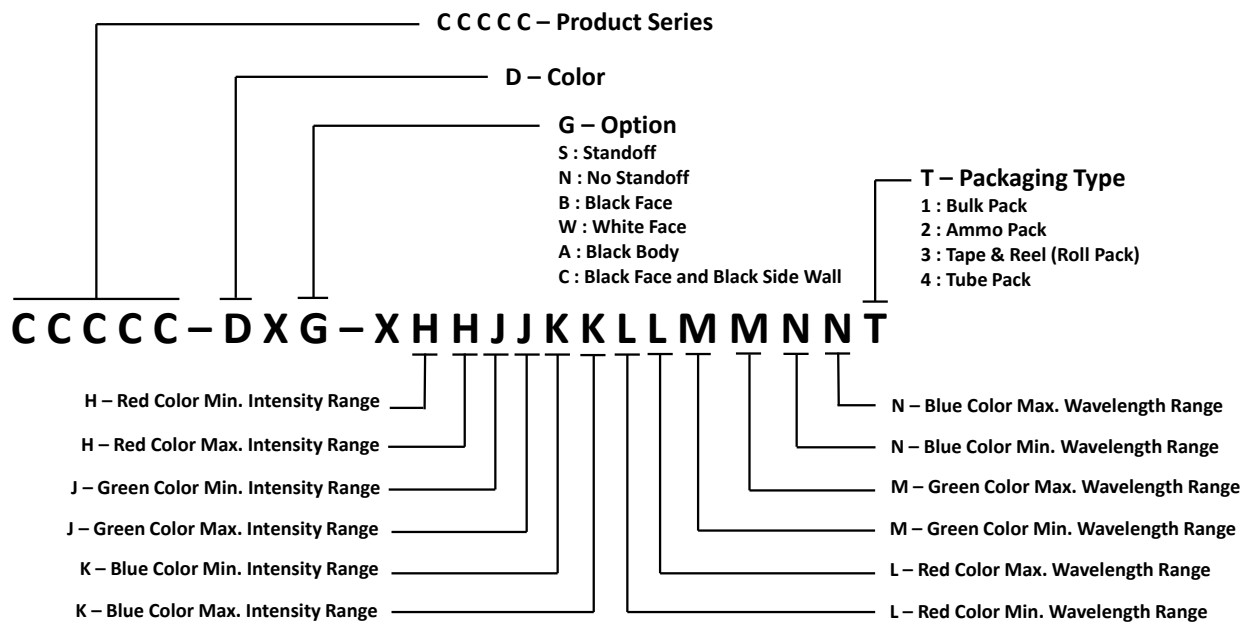
### Vision Advisory

**WARNING:** Do not look at an exposed lamp in operation. Eye injury can result.

## 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.

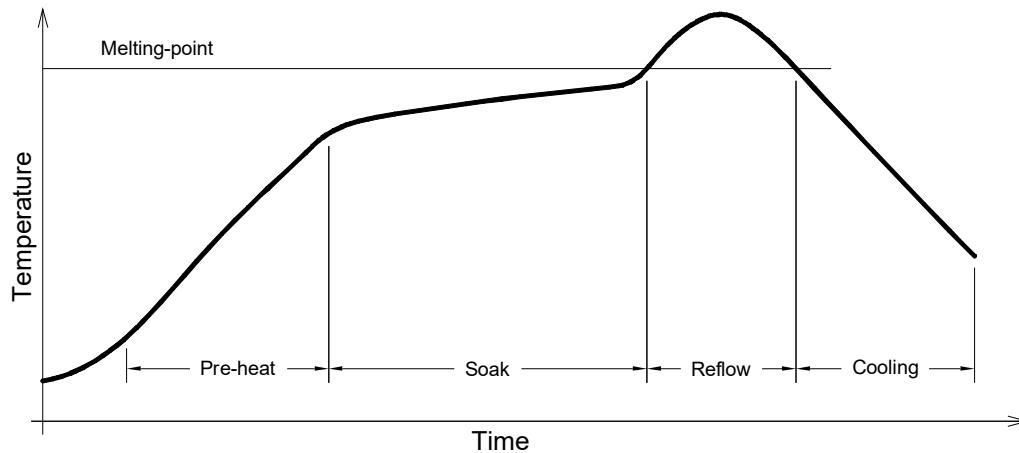
Cree LEDs are sold by order codes in combinations of bins called kits. Order codes are configured in the following manner:





## REFLOW SOLDERING

- The CLP6C-FKB is rated as a MSL 5a product.
- The recommended floor life out of bag is 24hrs.
- The temperature profile is as below.

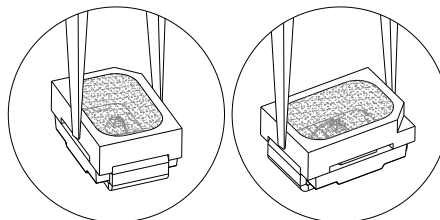


Use only with CLP6C-FKB

Solder
Average ramp-up rate = 4°C/s max
Preheat temperature = 150°C ~200°C
Preheat time = 120s max
Ramp-down rate = 6°C/s max
Peak temperature = 250°C max
Time within 5°C of actual Peak Temperature = 10s max
Duration above 217°C is 60s max

## NOTES

- The packaging sizes of these SMD products are very small and the resin is still soft after solidification. Users are required to handle with care. Never touch the resin surface of SMD products.
- To avoid damaging the product's surface and interior device, it is recommended to choose a special nozzle to pick up the SMD products during the process of SMT production. If handling is necessary, take special care when picking up these products. The following method is necessary:



## 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.

