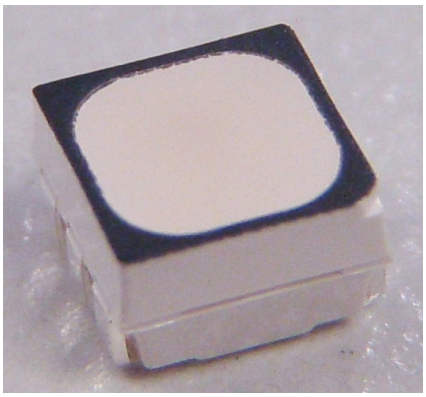
CLX6F-BKB: PLCC6 3 IN 1 SMD LED



PRODUCT DESCRIPTION

These SMD LEDs are packaged in an industry standard PLCC6 package. These high reliability and high brightness LEDs are designed to work in a wide range of environmental condition and are ideally suited for use in illumination applications.

Its wide viewing angle makes these LEDs ideally suited for channel letter, or general backlighting and illumination applications. The flat top emitting surface makes it easy for these LEDs to mate with light pipes.

FEATURES

- Size (mm): 3.5 x 3.4 x 2.8
- Dominant Wavelength:
  Blue (465 - 475nm)
- Luminous Intensity (mcd)
  CLX6F-BKB:(1120 - 2240)
- Water-Resistant (IPX8)*
- Moisture Sensitivity Level: 5a
- Lead-Free
- RoHS Compliant
- Matte Surface

APPLICATIONS

- Architecture Lighting
- Channel Letter
- Backlight

*:This part is tested under the condition of assembling it on a PCB with isolating the electrical path by silicone. The leads area of the LED is not IPx8 rated and it's required to insulate for moisture by customer in outdoor application.

Cree LED / 4001 E. Hwy. 54, Suite 2000 / Durham, NC 27709 USA / +1.919.313.5330 / www.cree-led.com

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Items	Symbol	Absolute Maximum Rating	Unit
Forward Current Note 1	I_F	3 x 35	mA
Peak Forward Current Note 2	I_{FP}	3 x 100	mA
Reverse Voltage	V_R	5	V
Power Dissipation	P_D	3 x 133	mW
Operation Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +100	°C
Junction Temperature	T_J	110	°C
Junction/Ambient 1 chip on	R_{THJA}	450	°C/W
Junction/Solder Point 1 chip on	R_{THJS}	200	°C/W
Electrostatic Discharge Classification (MIL-STD-883E)	ESD	1000V	

Note:

1. Single-color light
2. Pulse width ≤0.1 msec, duty ≤1/10.

TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS (T_A = 25°C)

Characteristics	Condition	Symbol	Values	Unit
Dominant Wavelength	I_F = 3 x 20mA	λ_{DOM}	465~475	nm
Spectral bandwidth at 50% I_{REL} max	I_F = 3 x 20mA	$\Delta\lambda$	28	nm
Forward Voltage	I_F = 3 x 20mA	$V_{F(avg)}$	2.9	V
		$V_{F(max)}$	3.8	V
Luminous Intensity	I_F = 3 x 20mA	$I_{V(min)}$	1120	mcd
		$I_{V(avg)}$	1450	mcd
Luminous Flux(Reference)	I_F = 3 x 20mA	$\Phi_{V(avg)}$	4.2	lm
Reverse Current (max)	V_R = 5 V	I_R	10	μA

* Continuous reverse voltage can cause LED damage.

INTENSITY BIN LIMIT

Blue(3 x 20 mA) - CLX6F-BKB		
Bin Code	**Min.(mcd)**	**Max.(mcd)**
P	1120	1400
vw	1260	1600
Q	1400	1800
xy	1600	2020
R	1800	2240

* Tolerance of measurement of luminous intensity is ±10%

COLOR BIN LIMIT

Blue (3 x 20 mA) - CLX6F-BKB		
Bin Code	**Min.(nm)**	**Max.(nm)**
B4	465	470
B45	467.5	477.5
B5	470	475

* Tolerance of measurement of dominant wavelength is ±1 nm

ORDER CODE TABLE

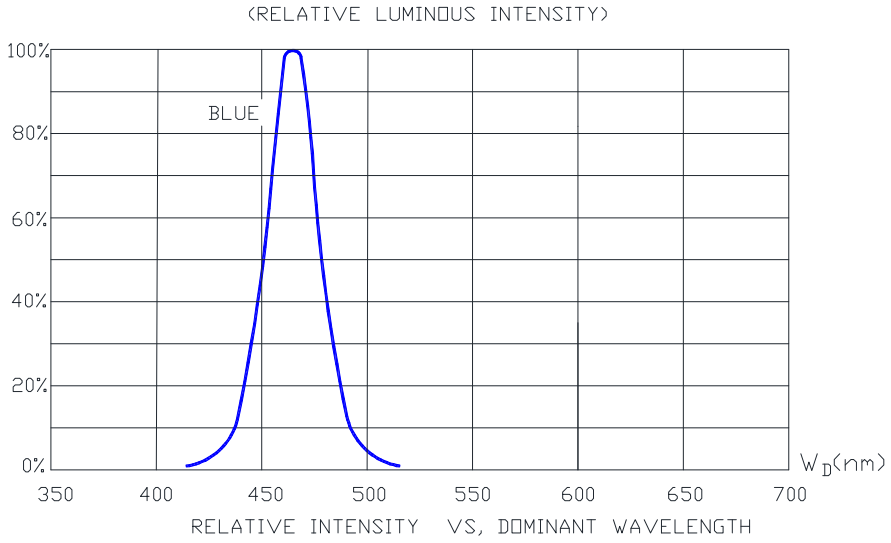
Color	Kit Number	Luminous Intensity (mcd)		Dominant Wavelength (nm)				Package
		Min.	Max.	Color Bin	Min.(nm)	Color Bin	Max.(nm)	
Blue	CLX6F-BKB-CPR453	1120	2240	B4	465	B5	475	Reel
Blue	CLX6F-BKB-CP14S3	Any 1 Intensity bin from P(1120) - R(2240)		Any 1 hue bin from B4(465) - B5(475)				Reel

Notes:

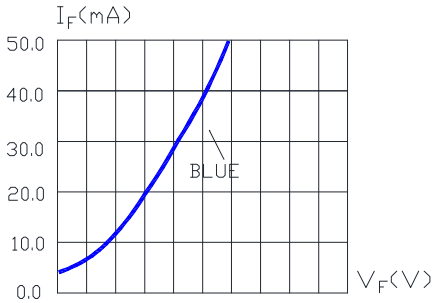
- The above kit numbers represent order codes that include multiple intensity-bin and color-bin codes. Only one intensity-bin code and one color-bin code will be shipped on each bulk. Single intensity-bin code and single color-bin codes will not be orderable.
- Please refer to the HB LED Lamp Reliability 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

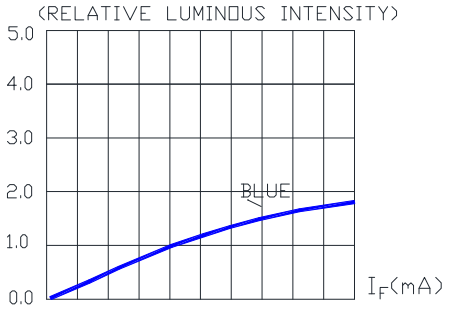
The data below are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.



RELATIVE INTENSITY VS, DOMINANT WAVELENGTH



FORWARD CURRENT VS. FORWARD VOLTAGE.



RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

GRAPHS

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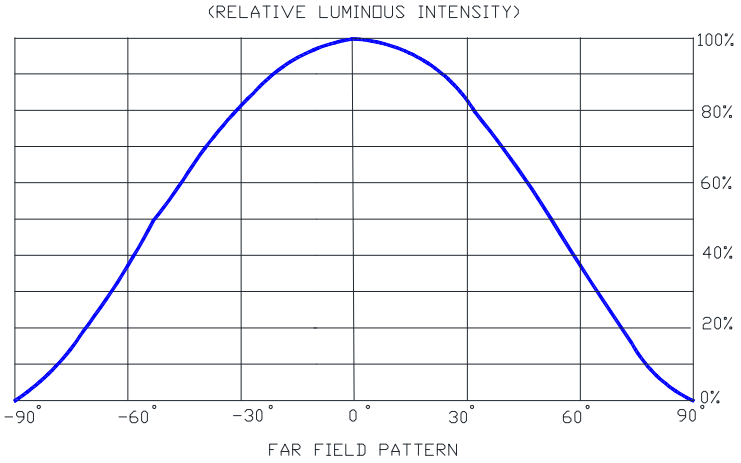
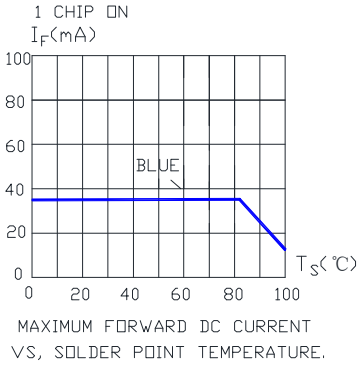
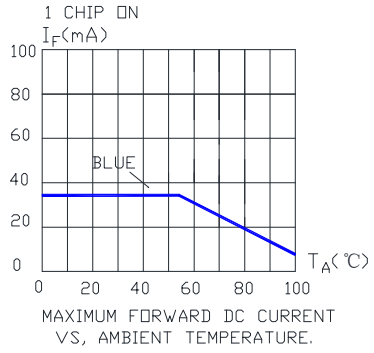
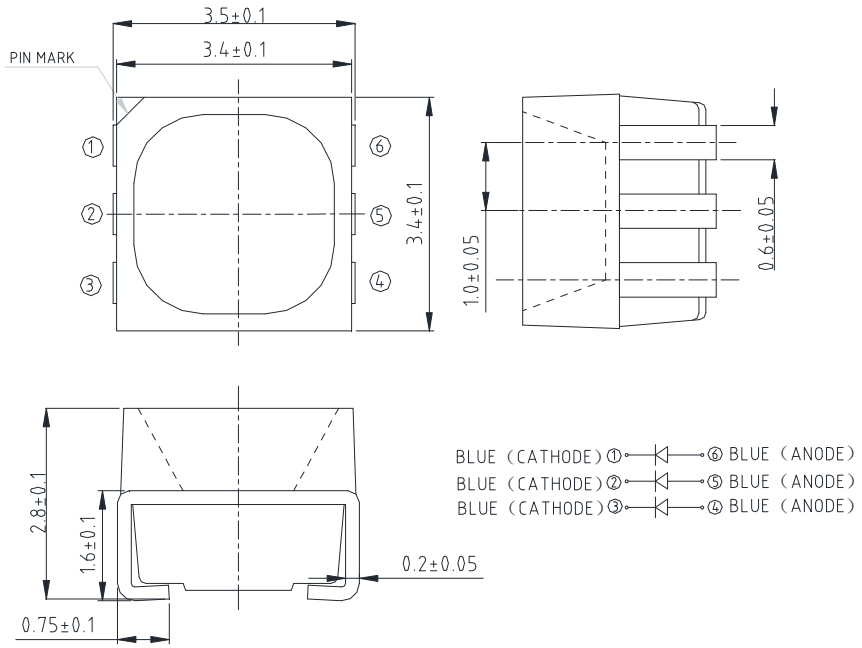






MECHANICAL DIMENSIONS

All dimensions are in mm.



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.

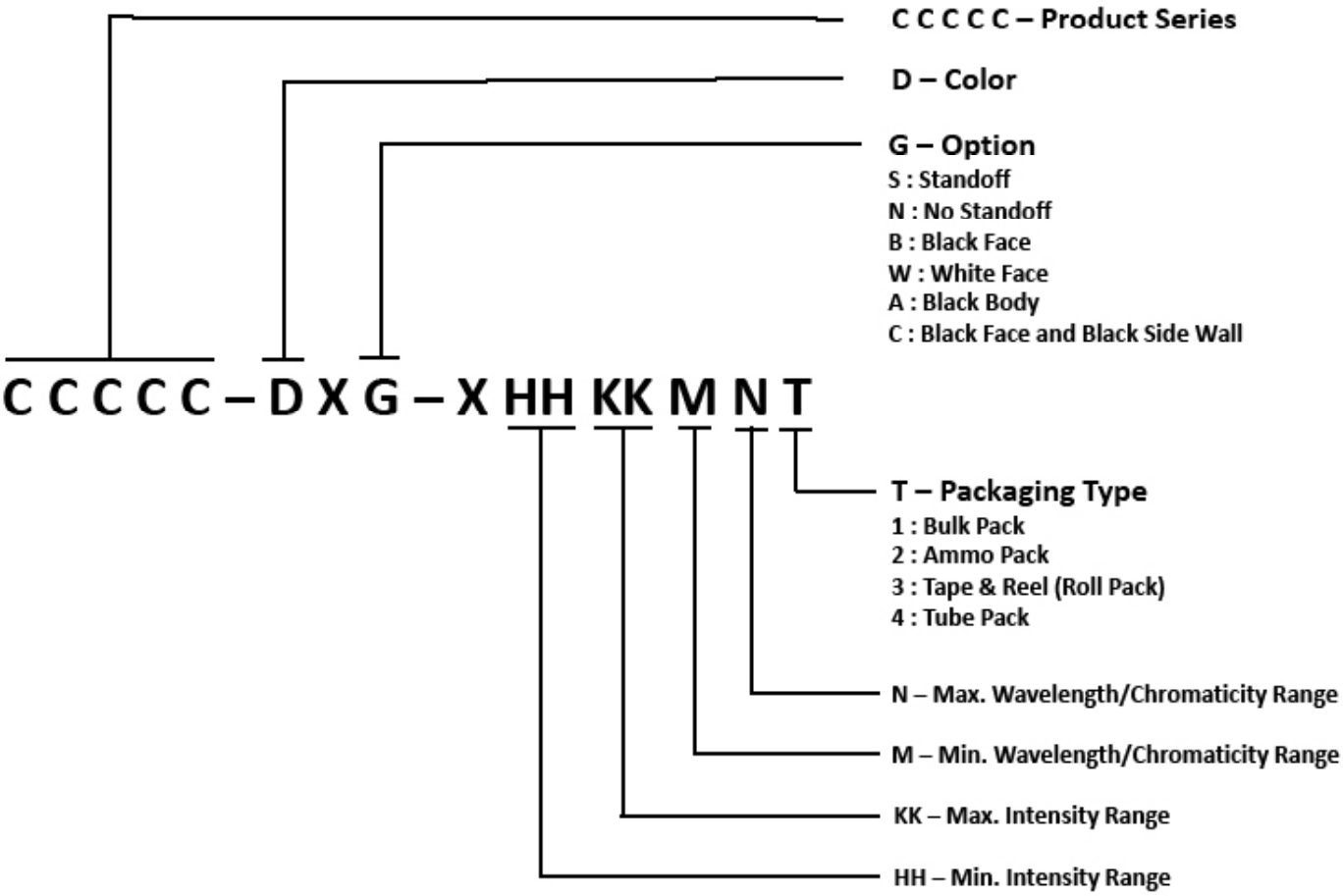
Vision Advisory

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

KIT NUMBER SYSTEM

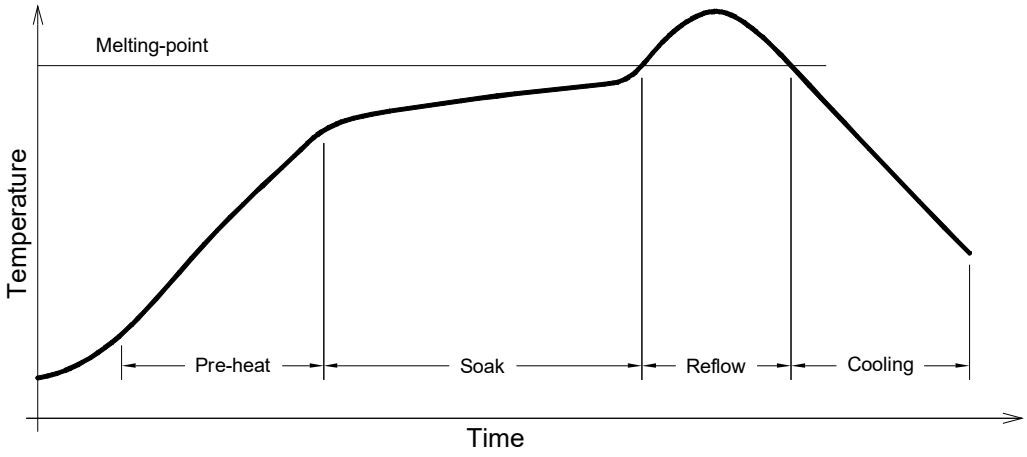
Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness. Sorted LEDs are packaged for shipping in various convenient options.

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



REFLOW SOLDERING

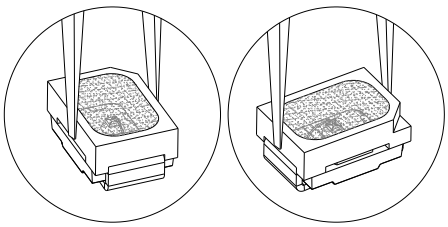
- The CLX6F-BKB is rated as a MSL 5a product.
- The recommended floor life out of bag is 24hrs.
- The temperature profile is as below.



Use only with CLX6F-BKB

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

- 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:
- Please refer to the HB LED Lamp Soldering & Handling document for information about how to use this LED product safely.



PACKAGING

- 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 reel pack is applied in SMD LED.
- Max 2800 pcs per reel.