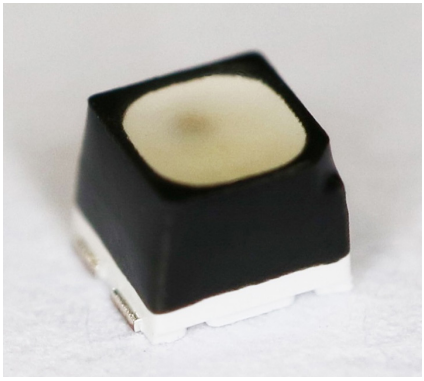
CLMXB-FKC: PLCC4 3 in 1 SMD LED



PRODUCT DESCRIPTION

This SMD LED features an IPx8 water resistant rating in a PLCC package. These high performance tricolor SMT LEDs are designed to work in a wide range of applications. A wide viewing angle and high brightness make these LEDs suitable for outdoor and full color video signage applications.

The encapsulation resin contains UV inhibitors to minimize the effects of long-term exposure to direct sunlight, resulting in stable light output over the life of the LED. This PLCC package has an increased package height to ease in the manufacturing process.

FEATURES

- Size (mm): 2.19 x 1.85 x 1.55
- Dominant Wavelength
  Red (619 - 624nm)
  Green (520 - 535nm)
  Blue (465 - 477.5nm)
- Luminous Intensity (mcd)
  Red (355 - 710)
  Green (900 - 1800)
  Blue (180 - 355)
- Water-Resistant (IPx8)*
- Moisture Sensitivity Level: 5a
- Lead-Free
- RoHS Compliant

APPLICATIONS

- Outdoor Full-Color Video Screen
- Decorative Lighting
- Amusement

*:This part is tested under the condition of assembling it on a PCB with isolating the electrical path by silicone.

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
		R	G	B	
Forward Current Note 1	I_F	50	35	35	mA
Peak Forward Current Note 2	I_{FP}	250	100	100	mA
Reverse Voltage	V_R	5	5	5	V
Power Dissipation	P_D	130	112	112	mW
Operation Temperature	T_{opr}	-40 ~ +85			°C
Storage Temperature	T_{stg}	-40 ~ +100			°C
Junction Temperature	T_J	110	110	110	°C
Junction/ambient	R_{THJA}	350	350	320	°C/W
Junction/solder point	R_{THJ}	200	180	160	°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
			R	G	B	
Dominant Wavelength	I_F = 15mA(R) I_F = 10mA(G) I_F = 10mA(B)	λ_{DOM}	619~624	520~535	465~477.5	nm
Spectral bandwidth at 50% I_{REL} max	I_F = 15mA(R) I_F = 10mA(G) I_F = 10mA(B)	$\Delta\lambda$	24	38	28	nm
Forward Voltage	I_F = 15mA(R) I_F = 10mA(G) I_F = 10mA(B)	$V_{F(avg)}$	2.0	2.7	2.7	V
		$V_{F(max)}$	2.6	3.2	3.2	V
Luminous Intensity	I_F = 15mA(R) I_F = 10mA(G) I_F = 10mA(B)	$I_{V(min)}$	355	900	180	mcd
		$I_{V(avg)}$	515	1200	240	mcd
Reverse Current (max)	V_R = 5 V	I_R	10	10	10	μA

* Continuous reverse voltage can cause LED damage.

INTENSITY BIN LIMIT

Red (15 mA)			Green (10 mA)			Blue (10 mA)		
Bin Code	Min.(mcd)	Max.(mcd)	Bin Code	Min.(mcd)	Max.(mcd)	Bin Code	Min.(mcd)	Max.(mcd)
H	355	450	N	900	1120	E	180	224
hj	403	505	st	1010	1260	bc	202	252
J	450	560	P	1120	1400	F	224	280
km	505	635	vw	1260	1600	de	252	318
K	560	710	Q	1400	1800	G	280	355

* Tolerance of measurement of luminous intensity is ±10%.

COLOR BIN LIMIT

Red (15 mA)			Green (10 mA)			Blue (10 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	B4	465	470
			G23	522.5	527.5	B45	467.5	472.5
			G8	525	530	B5	470	475
			G45	527.5	532.5	B67	472.5	477.5
			G9	530	535			

* Tolerance of measurement of dominant wavelength is ±1 nm.

ORDER CODE TABLE

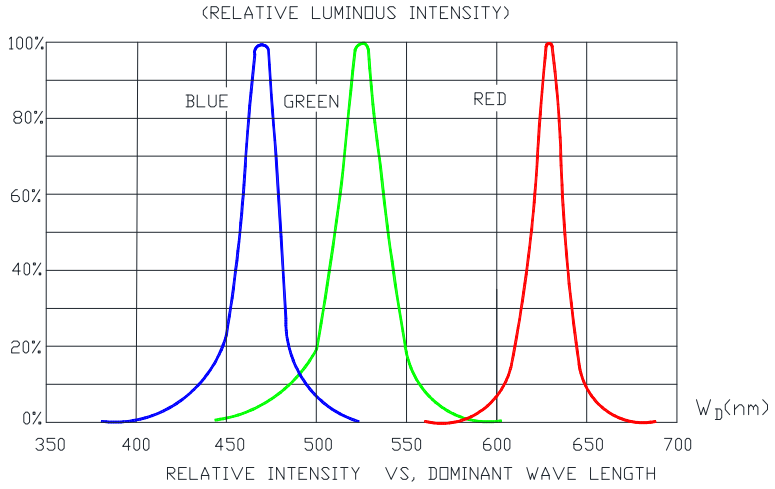
Kit Number	Color	Luminous Intensity (mcd)		Dominant Wavelength (nm)				Package
		Min.	Max.	Color Bin	Min.(nm)	Color Bin	Max. (nm)	
CLMXB-FKC-CHKNQEGBB794673	Red	355	710	RB	619	RB	624	Reel
	Green	900	1800	G7	520	G9	535	Reel
	Blue	180	355	B4	465	B67	477.5	Reel
CLMXB-FKC-CH1N1E1BB7C4R3	Red	Any 1 Intensity bin from H(355) - K(710)		RB	619	RB	624	Reel
	Green	Any 1 Intensity bin from N(900) - Q(1800)		Any 1 hue bin from G7(520)-G9(535)				Reel
	Blue	Any 1 Intensity bin from E(180) - G(355)		Any 1 hue bin from B4(465)-B67(477.5)				Reel

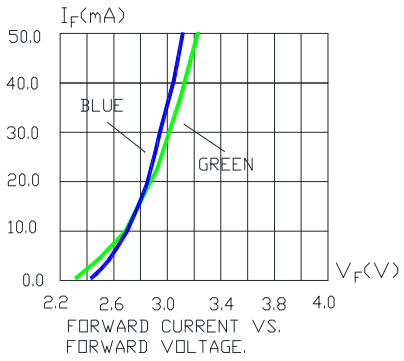
Notes:

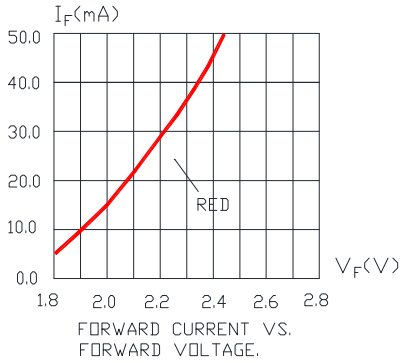
- The above kit numbers represent order codes that include multiple intensity-bin and color-bin codes. Only one intensity-bin code and one color-bin code will be shipped on each bulk. Single intensity-bin code and single color-bin codes will not be orderable.
- Please refer to the HB LED Lamp Reliability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

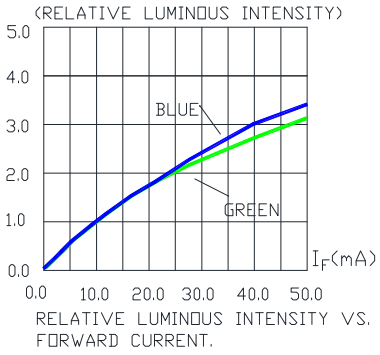
GRAPHS

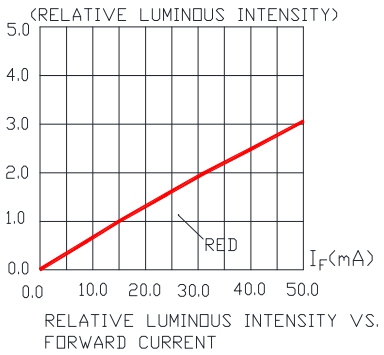
The data below are collected from statistical figures that do not necessarily correspond to the actual parameters of each single LED. Hence, these data will be changed without further notice.











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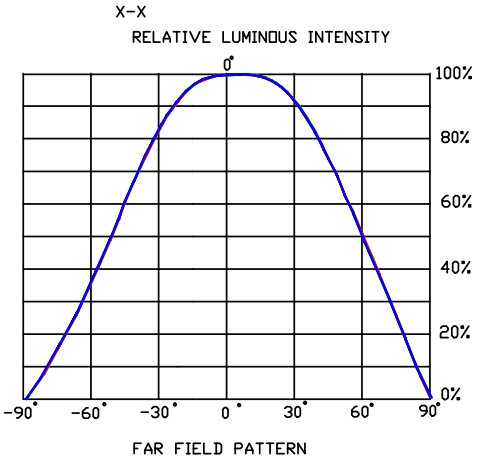
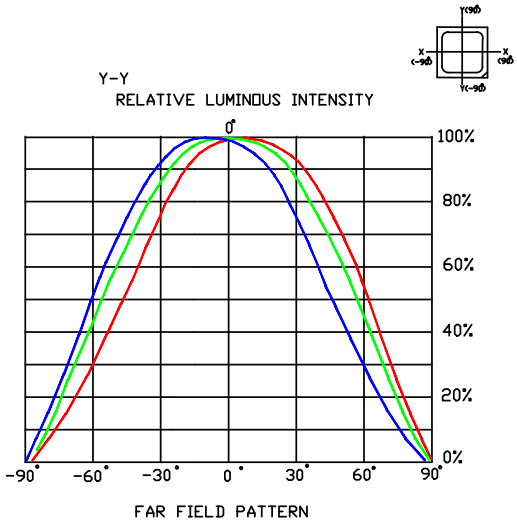
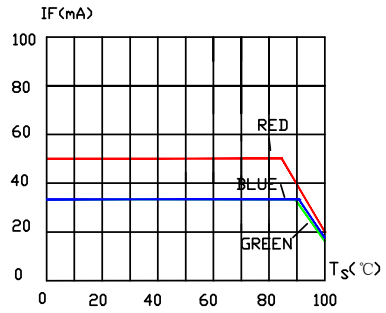


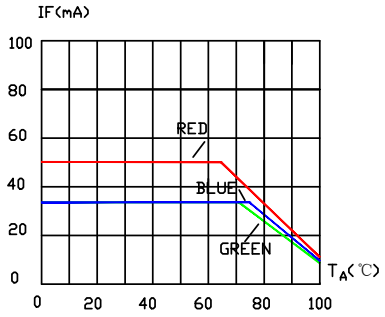
FAR FIELD PATTERN



FAR FIELD PATTERN



MAXIMUM FORWARD DC CURRENT
VS, SOLDER POINT TEMPERATURE.

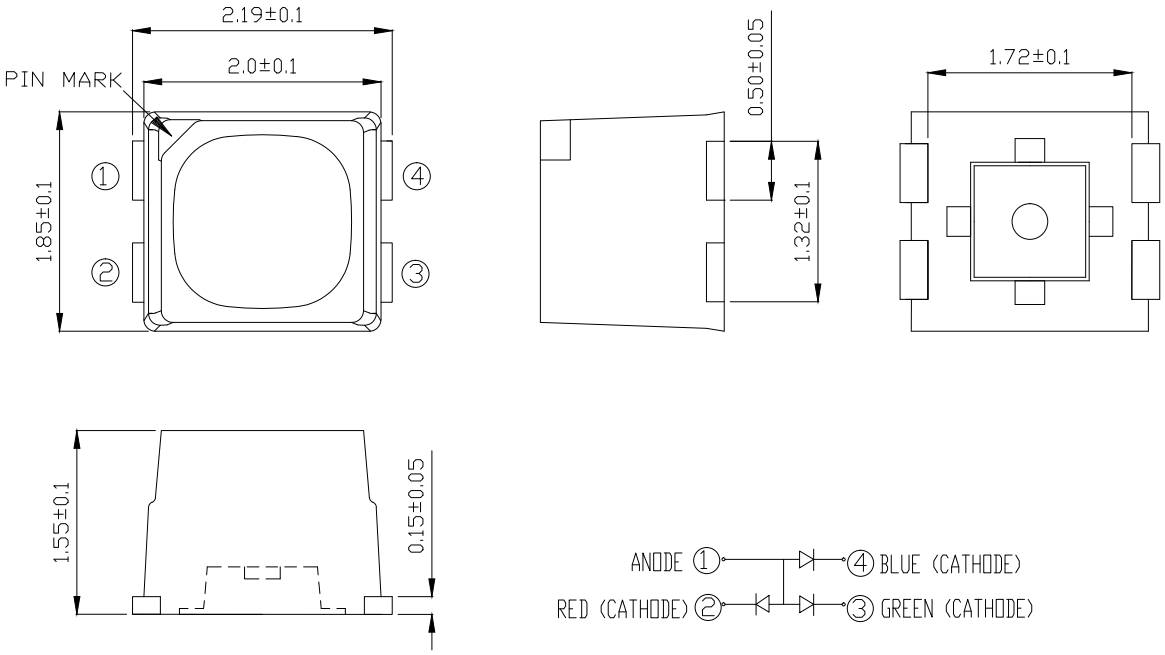


MAXIMUM FORWARD DC CURRENT
VS, AMBIENT TEMPERATURE.

MECHANICAL DIMENSIONS

All dimensions are in mm.

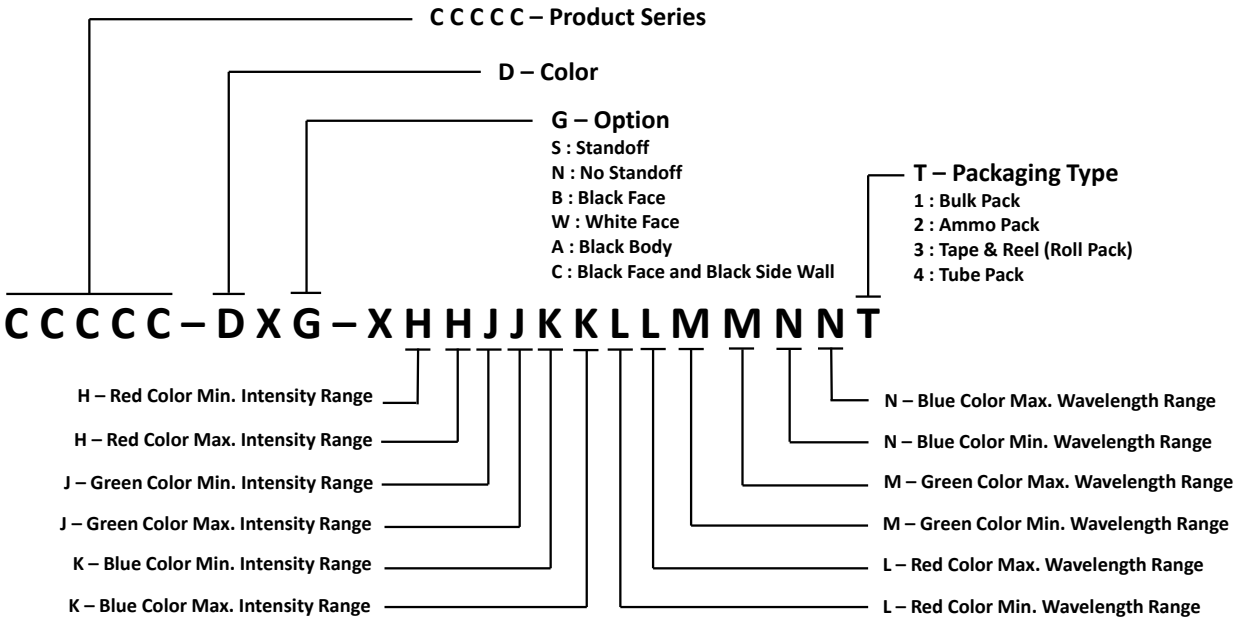
Tolerance of measurement of the dimension is ±0.1.



KIT NUMBER SYSTEM

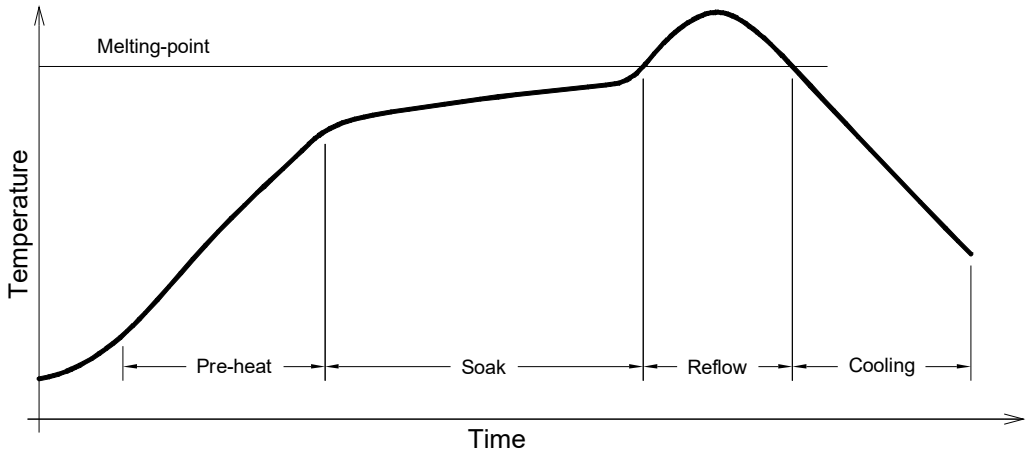
Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness.

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



REFLOW SOLDERING

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

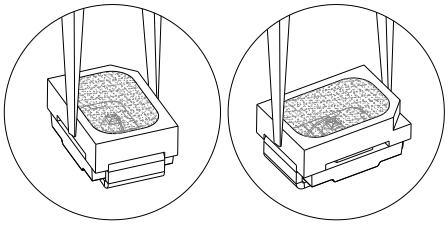


Use only with CLMXB-FKC

Solder
Average ramp-up rate = 4 ºC/second max.
Soak temperature = 150-200ºC
Soak time = 120 seconds max.
Duration above 217 ºC = 60 seconds max.
Peak temperature = 250ºC max
Time within 5 ºC of peak temperature = 10 seconds max.
Ramp-down rate = 6 ºC/second 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 9500 pcs per reel.