

CLY6H-FKC: PLCC6 3 in 1 SMD LED



PRODUCT DESCRIPTION

This SMD LED features an IPx6 water resistant rating in a PLCC6 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.

FEATURES

- Size (mm): 2.8 x 2.7 x 2.45
- Dominant Wavelength
 - Red (618 - 625nm)
 - Green (520 - 535nm)
 - Blue (460 - 475nm)
- Luminous Intensity (mcd)
 - Red (660 - 1013)
 - Green (1033 - 1600)
 - Blue (195 - 315)
- Water-Resistant (IPx6)*
- 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. The leads area of the LED is not IPx6 rated and it's required to insulate for moisture by customer in outdoor application.

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Items	Symbol	Absolute Maximum Rating			Unit
		R	G	B	
Forward Current ^{Note 1}	I_F	25	20	20	mA
Peak Forward Current ^{Note 2}	I_{FP}	80	80	80	mA
Reverse Voltage	V_R	5	5	5	V
Power Dissipation	P_D	60	68	68	mW
Operation Temperature	T_{opr}	-30 ~ +85			$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100			$^\circ\text{C}$
Junction Temperature	T_J	100	100	100	$^\circ\text{C}$
Electrostatic Discharge Classification(MIL-STD-883E)	ESD	1000V			

Note:

1. Single-color light
2. Pulse width ≤ 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	$I_F = 15\text{mA(R)}$ $I_F = 10\text{mA(G)}$ $I_F = 10\text{mA(B)}$	λ_{DOM}	618~625	520~535	460~475	nm
Spectral bandwidth at 50% I_{REL} max	$I_F = 15\text{mA(R)}$ $I_F = 10\text{mA(G)}$ $I_F = 10\text{mA(B)}$	$\Delta \lambda$	24	38	30	nm
Forward Voltage	$I_F = 15\text{mA(R)}$ $I_F = 10\text{mA(G)}$ $I_F = 10\text{mA(B)}$	$V_{F(\text{min})}$	1.7	2.4	2.4	V
		$V_{F(\text{max})}$	2.4	3.3	3.3	V
Luminous Intensity	$I_F = 15\text{mA(R)}$ $I_F = 10\text{mA(G)}$ $I_F = 10\text{mA(B)}$	$I_{V(\text{min})}$	660	1033	195	mcd
		$I_{V(\text{avg})}$	826	1294	250	mcd
Luminous Intensity(Reference)	$I_F = 20\text{mA(R/G/B)}$	$I_{V(\text{avg})}$	1050	2000	430	mcd
Reverse Current (max)	$V_R = 5\text{V}$	I_R	6	6	6	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)
p6	660	843	s4	1033	1312	a4	195	248
p7	725	927	s5	1085	1378	a5	205	260
p8	798	1013	s6	1140	1448	a6	215	273
			s7	1200	1524	a7	225	287
			vw	1260	1600	a8	236	300
						a9	248	315

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

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)
Rh	618	623	G7	520	525	B3	460	465
RB	619	624	g6b	523	528	B23	462.5	467.5
Rf	620	625	G8	525	530	B4	465	470
			Gu	528	533	B45	467.5	472.5
			G9	530	535	B5	470	475

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

ORDER CODE TABLE

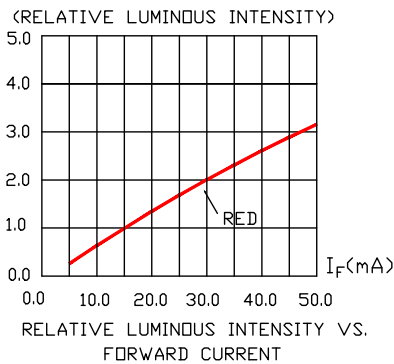
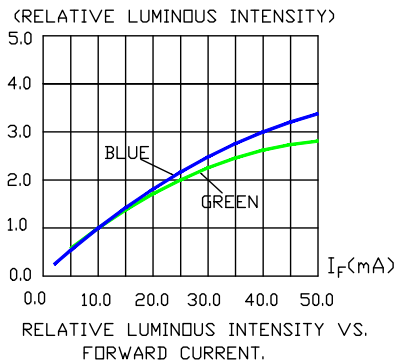
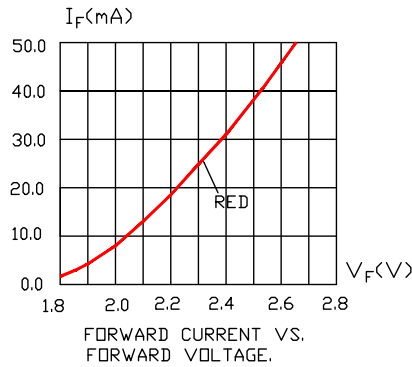
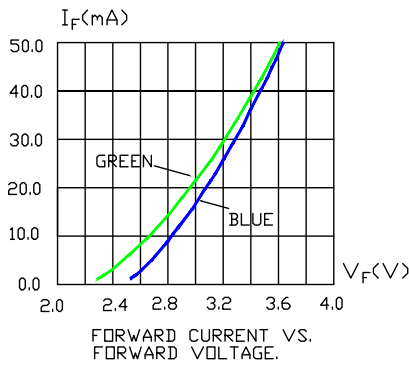
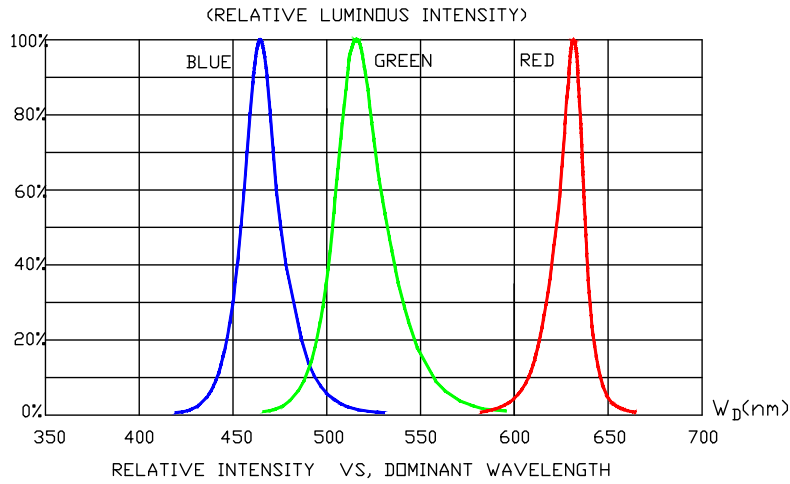
Kit Number	Color	Luminous Intensity (mcd)		Dominant Wavelength (nm)				Package
		Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)	
CLY6H-FKC-Cp6p8s4vwa4a9hf79353	Red	660	1013	Rh	618	Rf	625	Reel
	Green	1033	1600	G7	520	G9	535	Reel
	Blue	195	315	B3	460	B5	475	Reel
CLY6H-FKC-Cp61s41a41hS7C3C3	Red	Any 1 Intensity bin from p6(660) - p8(1013)		Any 1 hue bin from Rh(618)-Rf(625)				Reel
	Green	Any 1 Intensity bin from s4(1033) - vw(1600)		Any 1 hue bin from G7(520)-G9(535)				Reel
	Blue	Any 1 Intensity bin from a4(195) - a9(315)		Any 1 hue bin from B3(460)-B5(475)				Reel
CLY6H-FKC-Cp71s51a51hS7C3C3	Red	Any 1 intensity bin from p7(725) - p8 (1013)		Any 1 hue bin from Rh(618)-Rf(625)				Reel
	Green	Any 1 intensity bin from s5(1085) - vw (1600)		Any 1 hue bin from G7(520)-G9(535)				Reel
	Blue	Any 1 intensity bin from a5(205) - a9 (315)		Any 1 hue bin from B3(460)-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.

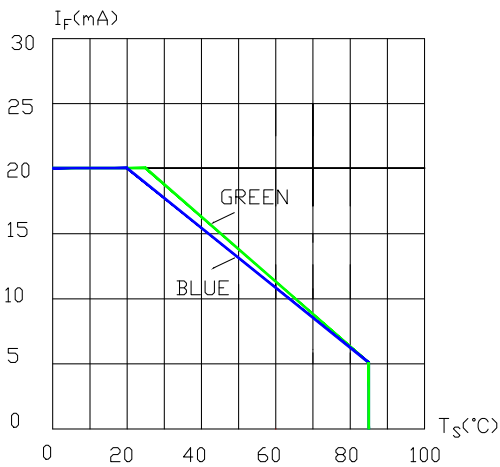
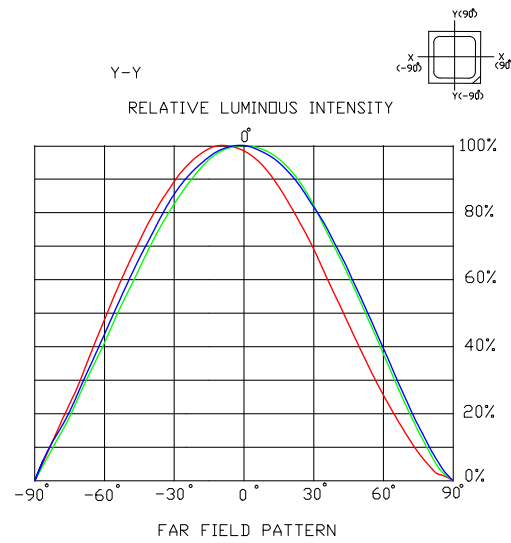
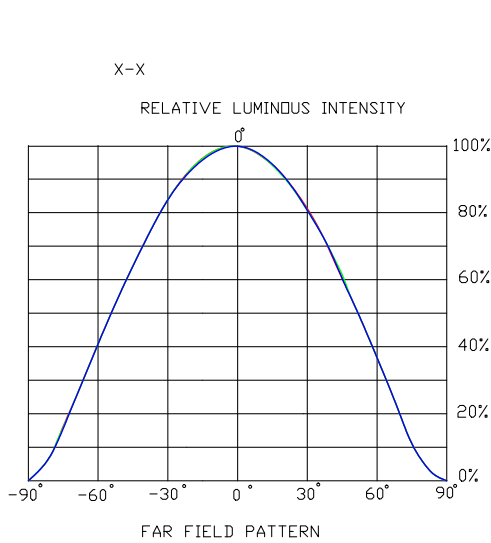
GRAPHS

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.

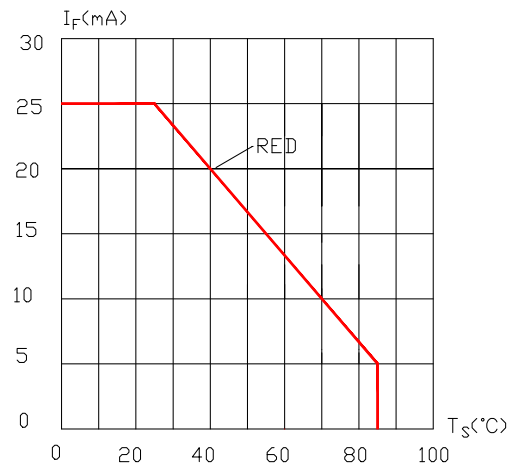


GRAPHS

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.



MAXIMUM FORWARD DC CURRENT VS, SOLDER POINT TEMPERATURE.

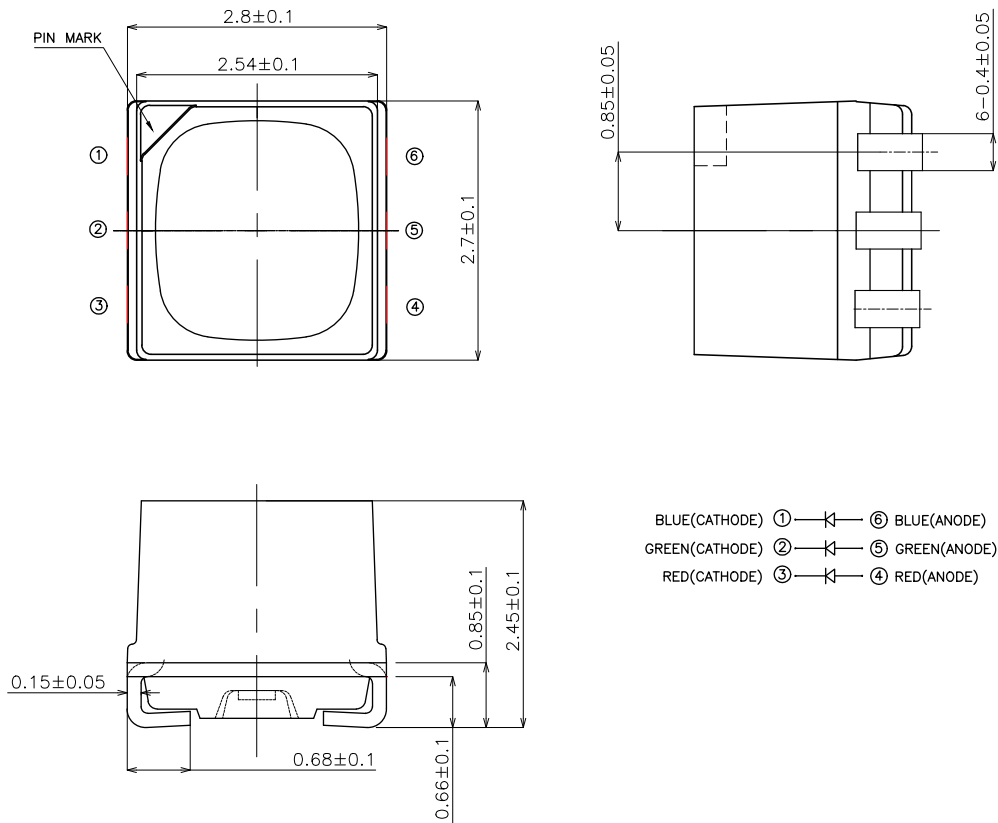


MAXIMUM FORWARD DC CURRENT VS, SOLDER POINT TEMPERATURE.

MECHANICAL DIMENSIONS

All dimensions are in mm.

Tolerance of measurement of the dimension is ± 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.

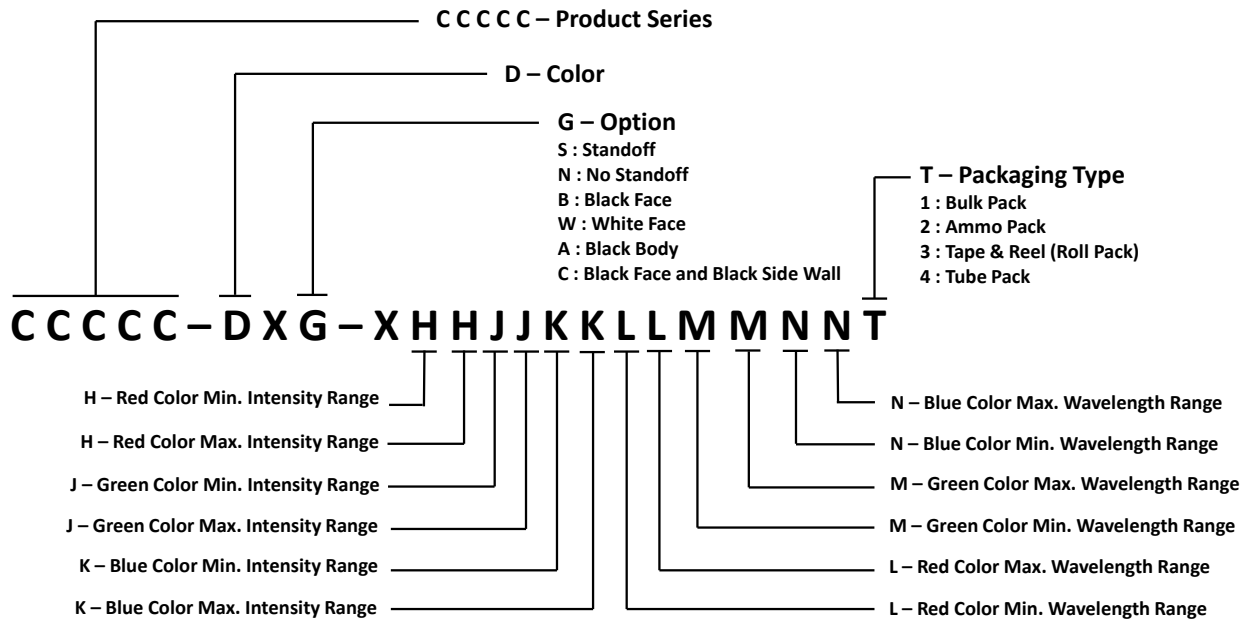
Vision Advisory

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

KIT NUMBER SYSTEM

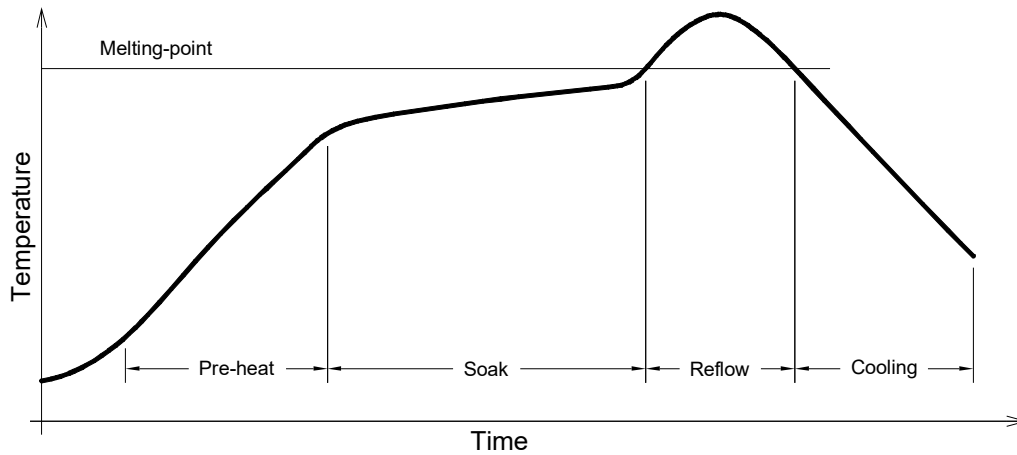
Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness.

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



REFLOW SOLDERING

- The CLY6H-FKC is rated as a MSL 5a product.
- The recommended floor life out of bag is 24hrs.
- The temperature profile is as below

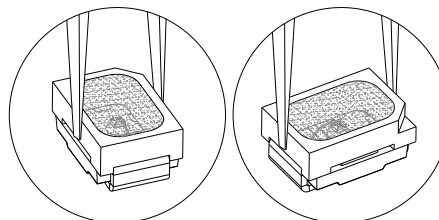


Use only with CLY6H-FKC

Solder
Average ramp-up rate = 4 °C/second max.
Soak temperature = 150°C-200°C
Soak time = 120 seconds max.
Duration above 217 °C = 60 seconds max.
Peak temperature = 250°C max
Time within 5 °C of peak temperature = 10 seconds max.
Ramp-down rate = 6 °C/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 7000 pcs per reel.

