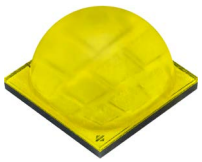
PRELIMINARY

XLamp® XF-L LEDs



PRODUCT DESCRIPTION

The XLamp® XF-L Torch LED is fully optimized for a wide range of mainstream portable lighting applications.

FEATURES

- Available in ANSI white bins at 5000 K to 6500 K CCT
- Binned at 25 °C
- Available in 70 and 80 (XFL05K only) CRI minimum options
- Unlimited floor life at ≤ 30 °C/85% RH
- Reflow solderable - JEDEC J-STD-020C compatible
- Electrically neutral thermal path
- RoHS and REACH compliant

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

PRELIMINARY

CHARACTERISTICS

Characteristics	Unit	Minimum	Typical	Maximum
Viewing angle (FWHM) - XFL05K	degrees		140	
Viewing angle (FWHM) - XFL08K	degrees		150	
Viewing angle (FWHM) - XFL10K	degrees		150	
Temperature coefficient of voltage - XFL05K	mV/°C		-2.6	
Temperature coefficient of voltage - XFL08K	mV/°C		-2.8	
Temperature coefficient of voltage - XFL10K	mV/°C		-2.9	
Reverse voltage	V			5
Forward voltage (@ 1750 mA, 25 °C) - XFL05K	V		5.77	6.1
Forward voltage (@ 3150 mA, 25 °C) - XFL08K	V		5.79	6.1
Forward voltage (@ 4200 mA, 25 °C) - XFL10K	V		5.68	6.1
LED junction temperature	°C		25	150

PRELIMINARY

FLUX CHARACTERISTICS (T_J = 25 °C)

The following table provides order codes for XLamp XF-L LEDs.

XFL05K

CCT	CRI	Minimum Luminous Flux (lm) @ 1750 mA	Typical Luminous Flux (lm) @ 1750 mA	Order Code
6500 K	70	1500	1750	XFL05K-00-0000-0B0B0A0E1
5700 K	70	1525	1775	XFL05K-00-0000-0B0B0A0E2
5000 K	70	1550	1800	XFL05K-00-0000-0B0B0A0E3
	80	1400	1650	XFL05K-00-0000-0B0H0A0E3

XFL08K

CCT	CRI	Minimum Luminous Flux (lm) @ 3150 mA	Typical Luminous Flux (lm) @ 3150 mA	Order Code
		Flux	Flux	
6500 K	70	2700	3150	XFL08K-00-0000-0B0B0A0E1
5700 K	70	2750	3200	XFL08K-00-0000-0B0B0A0E2
5000 K	70	2800	3250	XFL08K-00-0000-0B0B0A0E3

XFL10K

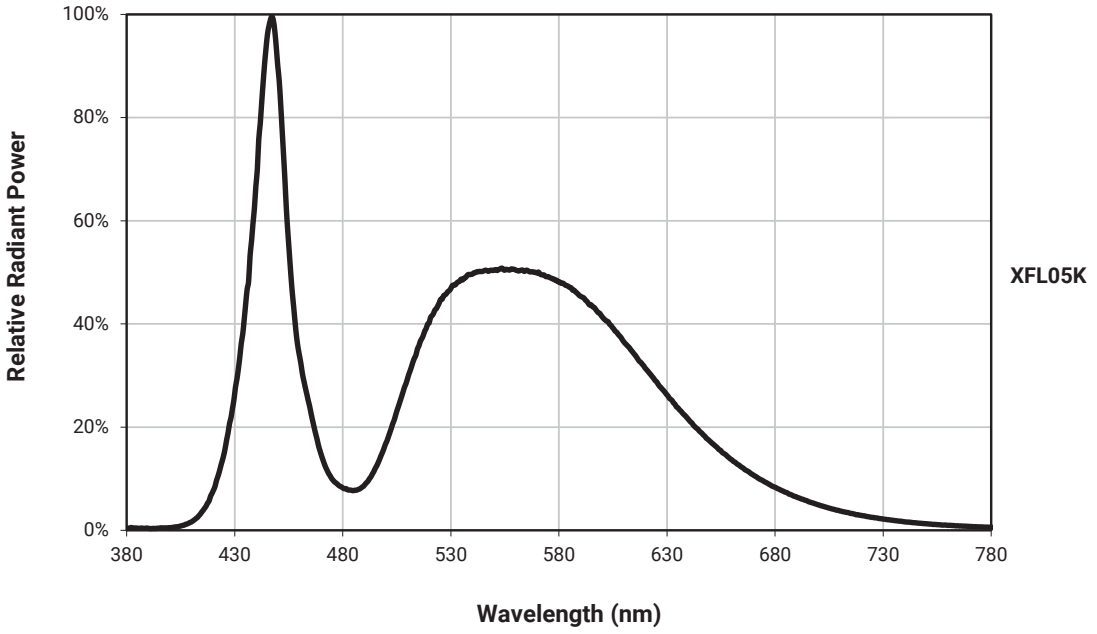
CCT	CRI	Minimum Luminous Flux (lm) @ 4200 mA	Typical Luminous Flux (lm) @ 4200 mA	Order Code
		Flux	Flux	
6500 K	70	3500	4100	XFL10K-00-0000-0B0B0A0E1
5700 K	70	3600	4200	XFL10K-00-0000-0B0B0A0E2
5000 K	70	3700	4300	XFL10K-00-0000-0B0B0A0E3

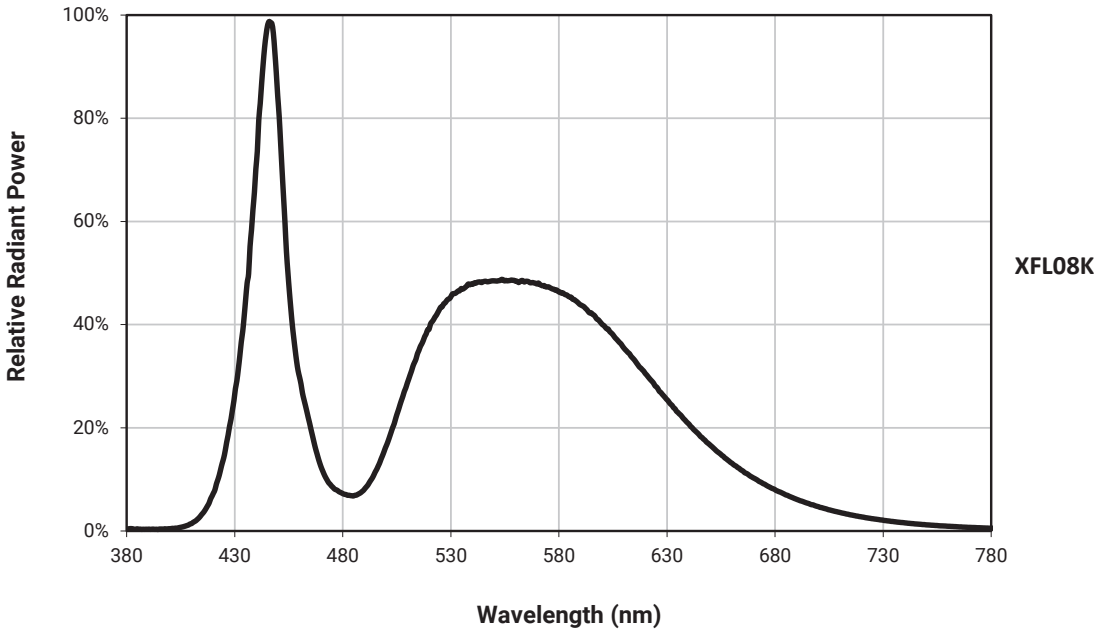
Notes

- Cree LED maintains a tolerance of ±7% on flux and power measurements, ±0.015 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section (page 14).

PRELIMINARY

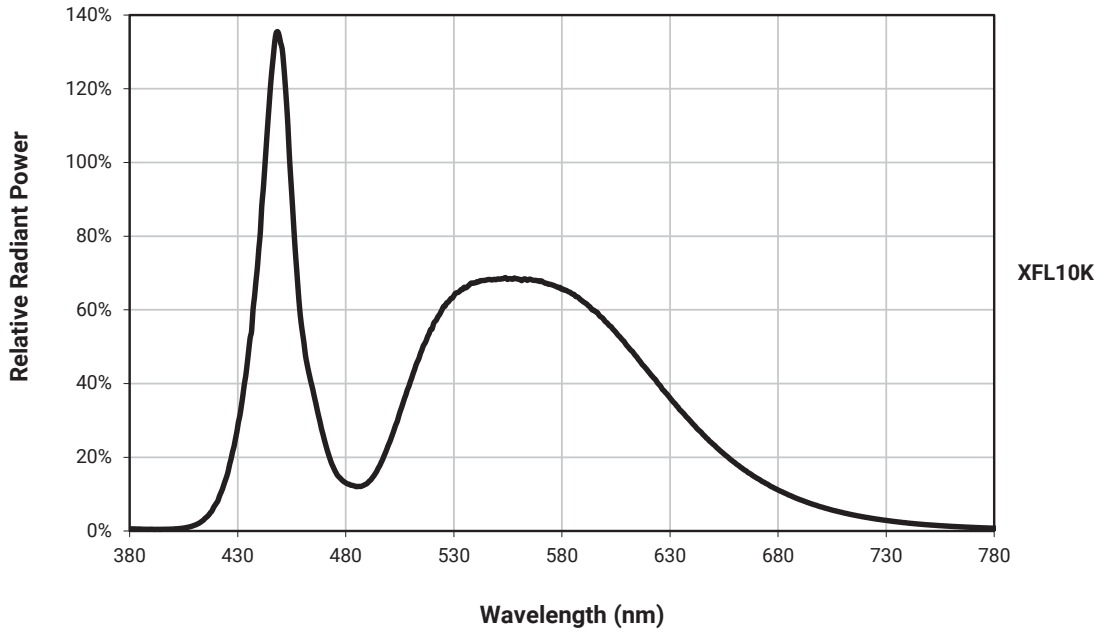
RELATIVE SPECTRAL POWER DISTRIBUTION - COOL WHITE





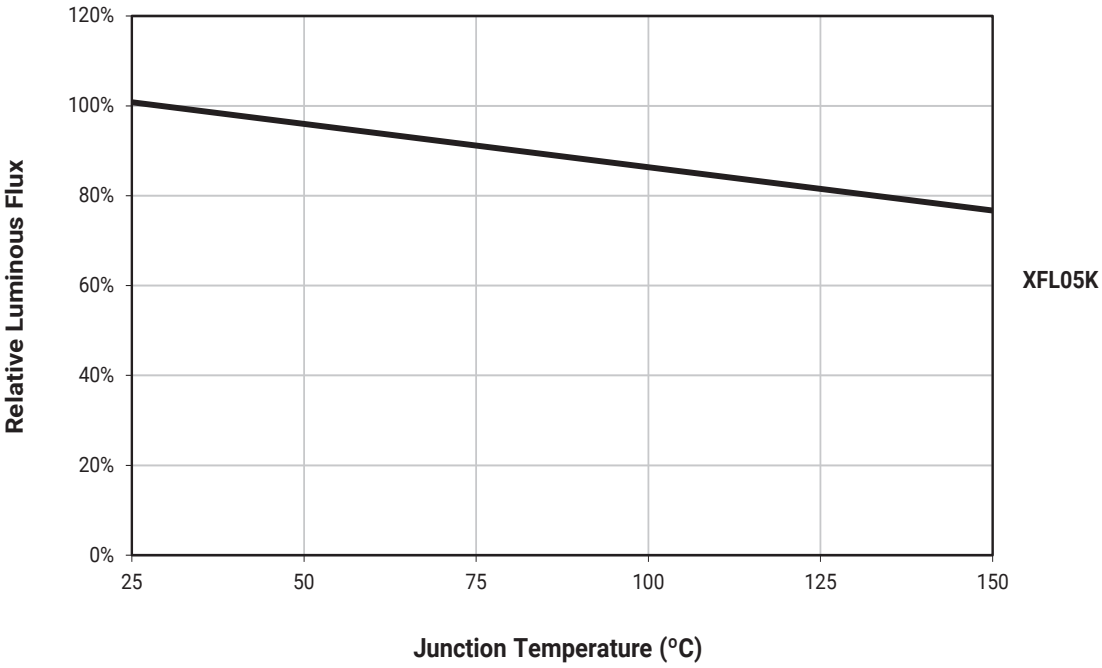
PRELIMINARY

RELATIVE SPECTRAL POWER DISTRIBUTION - COOL WHITE - CONTINUED



RELATIVE FLUX VS. JUNCTION TEMPERATURE

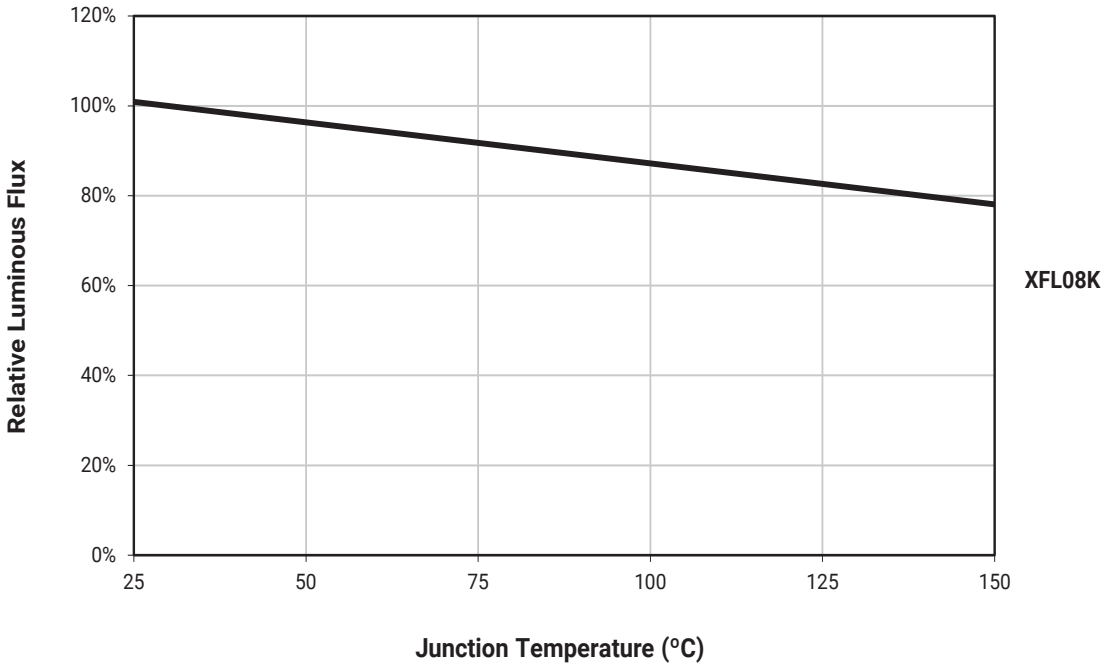
XFL05K: I_F = 1750 mA



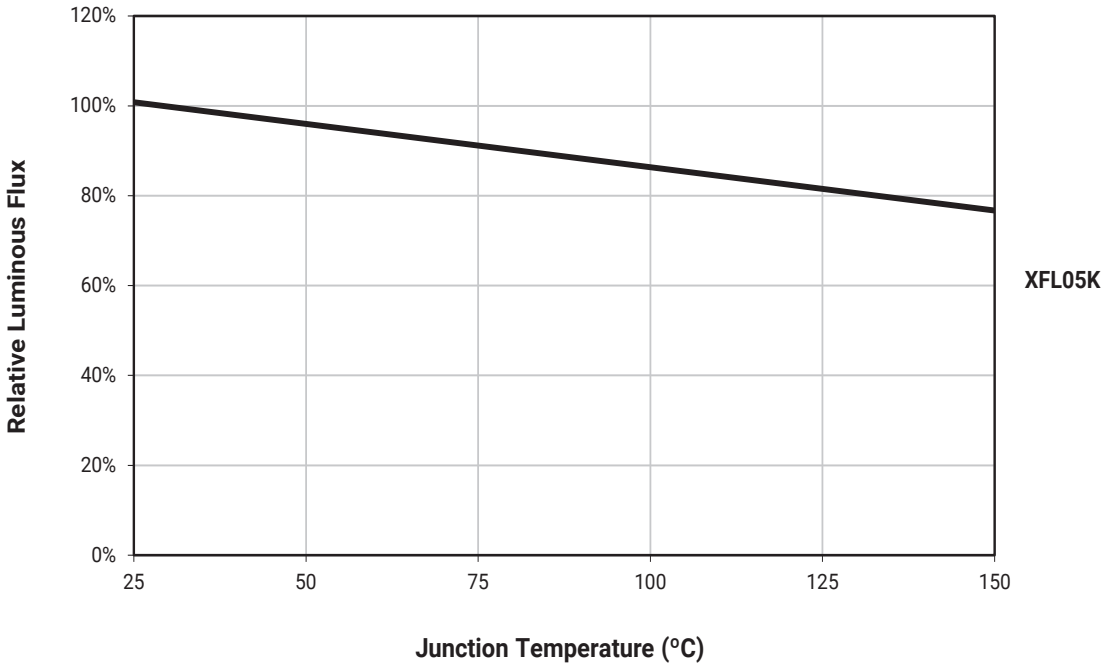
PRELIMINARY

RELATIVE FLUX VS. JUNCTION TEMPERATURE - CONTINUED

XFL08K: I_F = 3150 mA



XFL10K: I_F = 4200 mA



PRELIMINARY

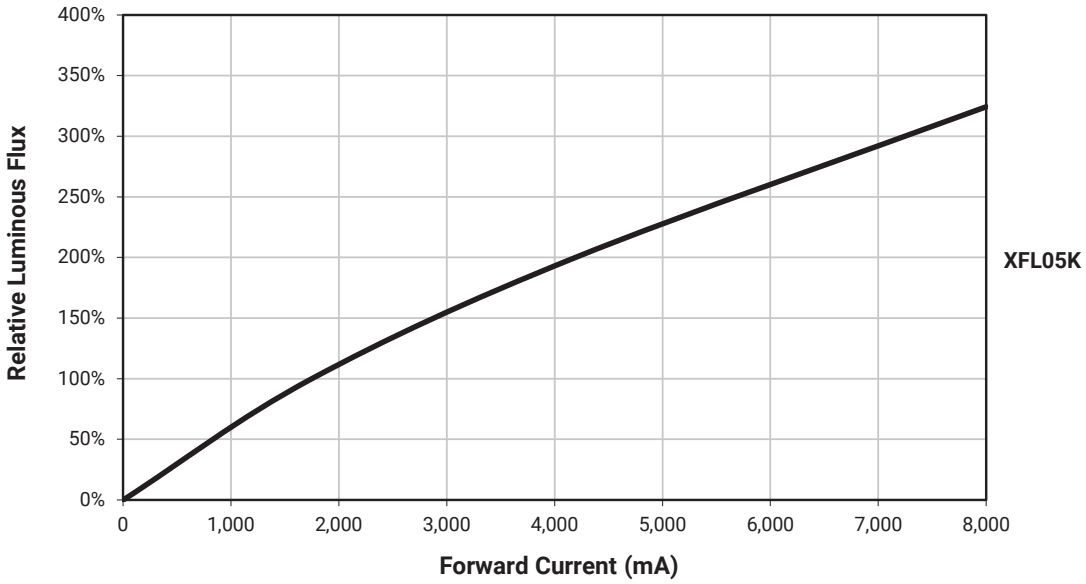
TURBO/BOOST MODE

This mode is defined as an over-drive mode limited to 30 seconds run time and is not meant to be used as a steady-state operating performance number.

Proper heat sinking is paramount and Tsp values must be measured at the solder point, directly connected to the thermal pad of the LED device.

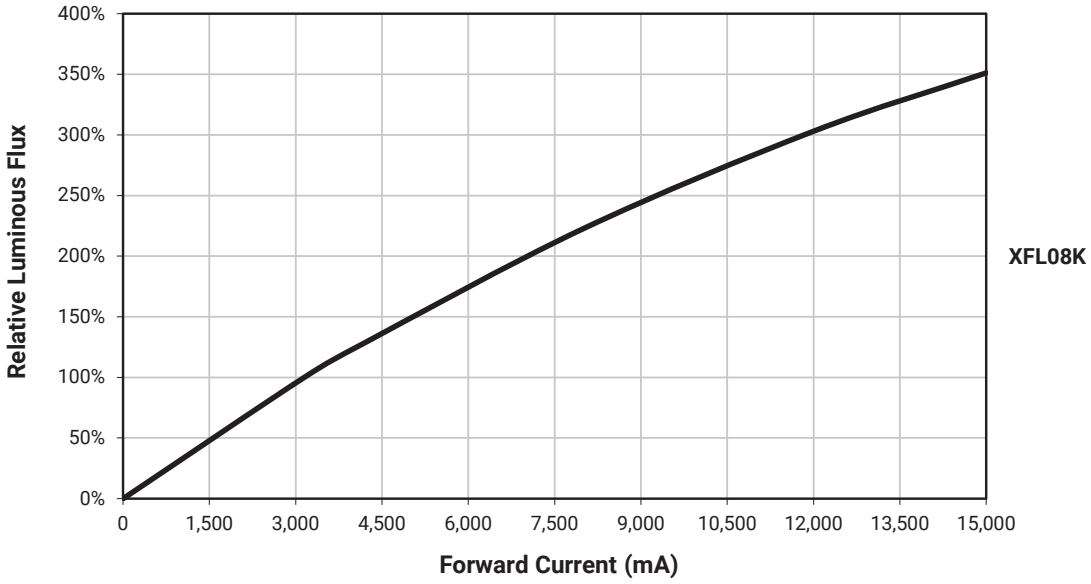
Product	Turbo Mode Current (A) @ 25 °C	Turbo Mode Luminous Flux (lm)
XFL05K	8.75	6,953
XFL08K	15.75	12,038
XFL10K	21	14,994

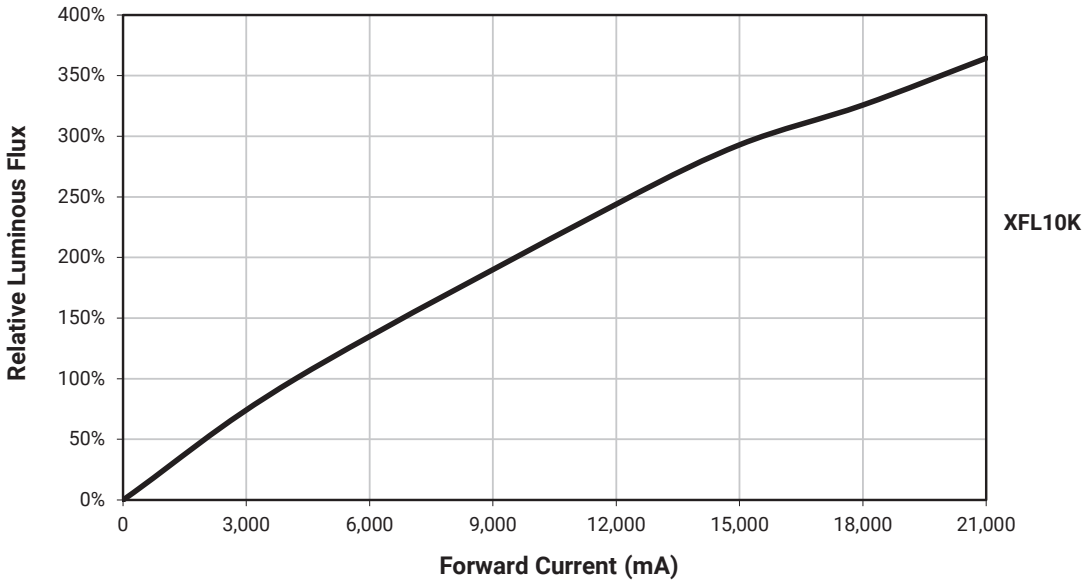
RELATIVE FLUX VS. CURRENT (T_J = 25 °C)



PRELIMINARY

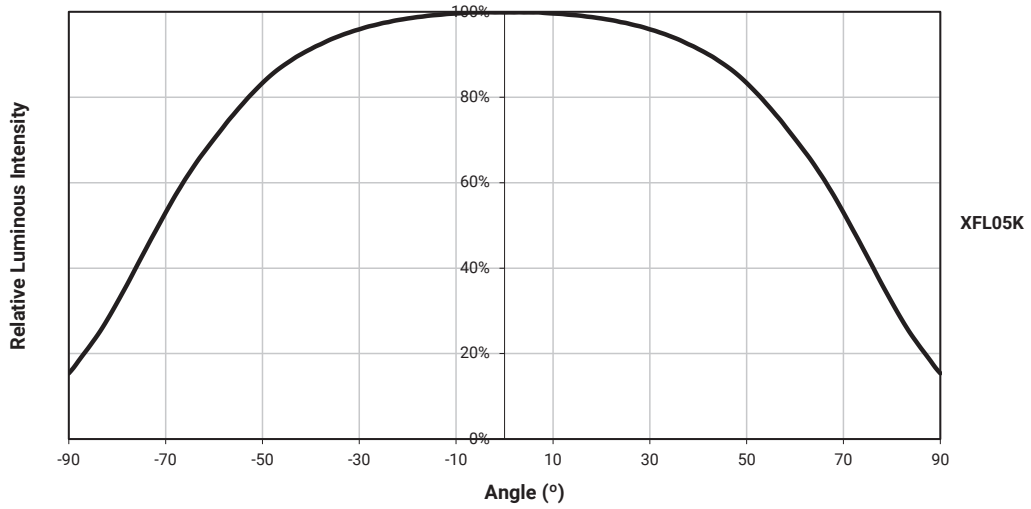
RELATIVE FLUX VS. CURRENT (T_J = 25 °C) - CONTINUED

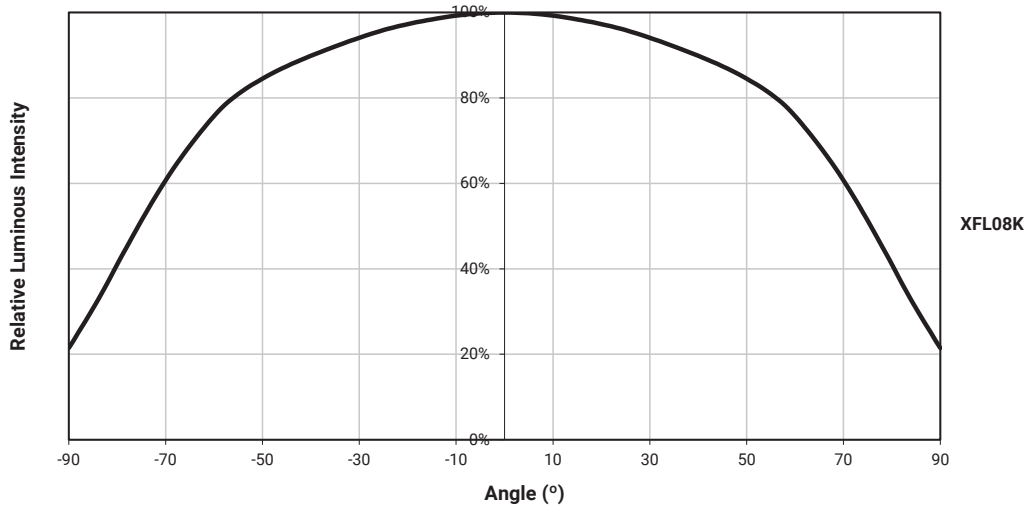




PRELIMINARY

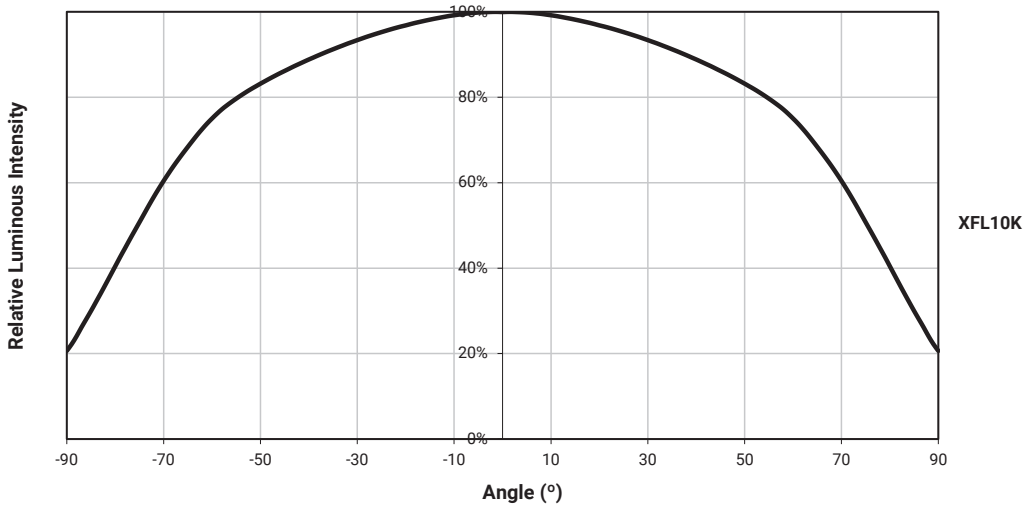
TYPICAL SPATIAL DISTRIBUTION





PRELIMINARY

TYPICAL SPATIAL DISTRIBUTION - CONTINUED

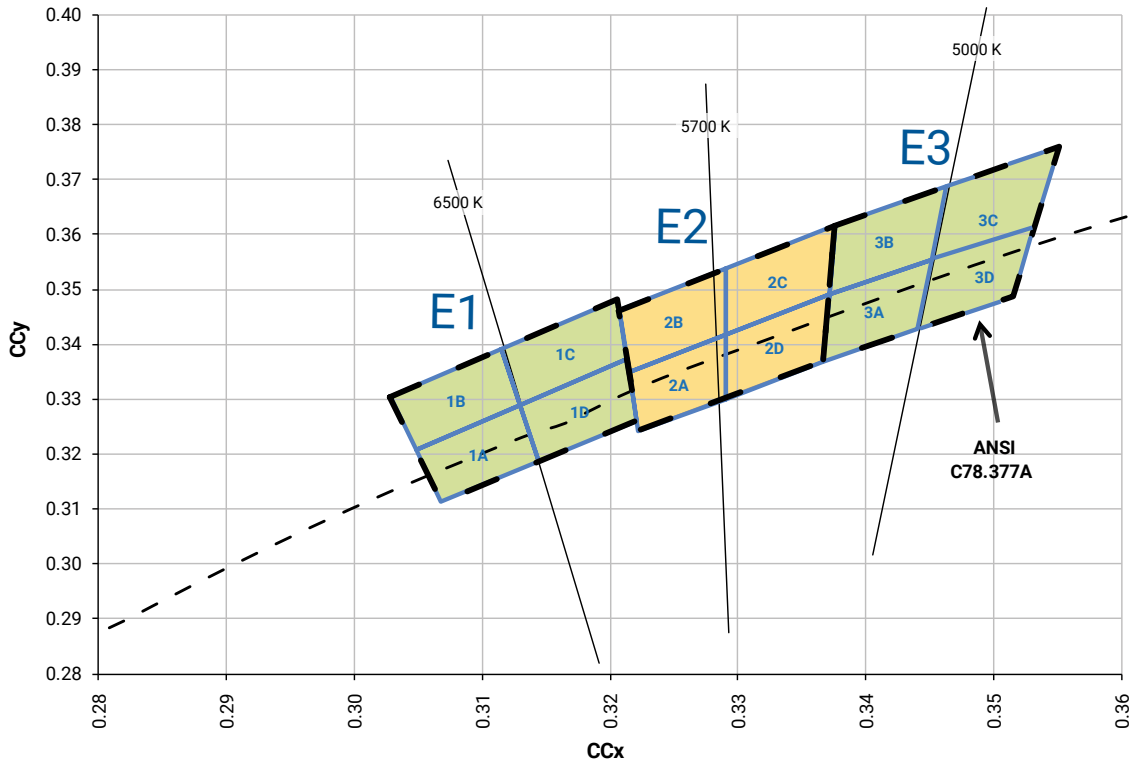


PRELIMINARY

PERFORMANCE GROUPS - CHROMATICITY (T_J = 25 °C)

Region	x	y	Region	x	y	Region	x	y	Region	x	y
1A	0.3048	0.3207	1B	0.3028	0.3304	1C	0.3115	0.3391	1D	0.3130	0.3290
	0.3130	0.3290		0.3115	0.3391		0.3205	0.3481		0.3213	0.3373
	0.3144	0.3186		0.3130	0.3290		0.3213	0.3373		0.3221	0.3261
	0.3068	0.3113		0.3048	0.3207		0.3130	0.3290		0.3144	0.3186
2A	0.3215	0.3350	2B	0.3207	0.3462	2C	0.3290	0.3538	2D	0.3290	0.3417
	0.3290	0.3417		0.3290	0.3538		0.3376	0.3616		0.3371	0.3490
	0.3290	0.3300		0.3290	0.3417		0.3371	0.3490		0.3366	0.3369
	0.3222	0.3243		0.3215	0.3350		0.3290	0.3417		0.3290	0.3300
3A	0.3371	0.3490	3B	0.3376	0.3616	3C	0.3463	0.3687	3D	0.3451	0.3554
	0.3451	0.3554		0.3463	0.3687		0.3551	0.3760		0.3533	0.3620
	0.3440	0.3427		0.3451	0.3554		0.3533	0.3620		0.3515	0.3487
	0.3366	0.3369		0.3371	0.3490		0.3451	0.3554		0.3440	0.3427

ANSI COOL AND NEUTRAL WHITE KITS PLOTTED ON ANSI STANDARD CHROMATICITY REGIONS



PRELIMINARY

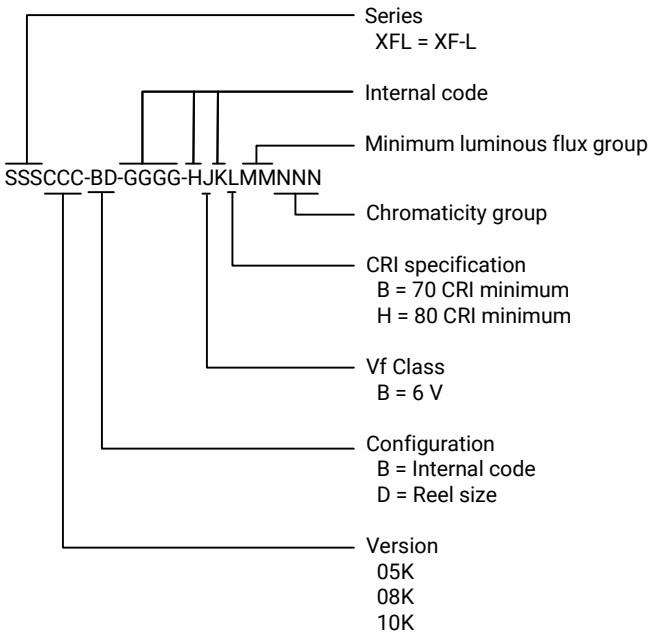
STANDARD CHROMATICITY KITS

Color	CCT	Kit	Chromaticity Bins
Cool White	6500 K	E1	1A, 1B, 1C, 1D
	5700 K	E2	2A, 2B, 2C, 2D
Neutral White	5000 K	E3	3A, 3B, 3C, 3D

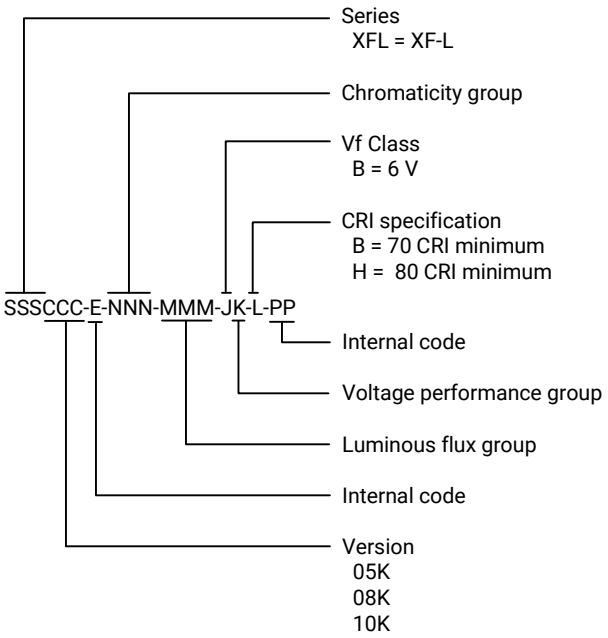
BIN AND ORDER CODE FORMATS

Bin codes and order codes are configured as follows.

Order Code



Bin Code

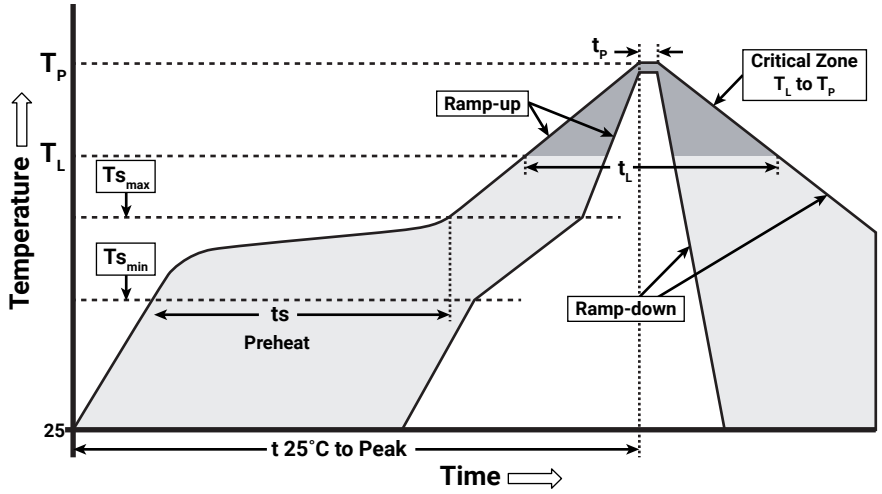


PRELIMINARY

REFLOW SOLDERING CHARACTERISTICS

In testing, Cree LED has found XLamp XF-L LEDs to be compatible with JEDEC J-STD-020C, using the parameters listed below. As a general guideline, Cree LED recommends that users follow the recommended soldering profile provided by the manufacturer of the solder paste used, and therefore it is the lamp or luminaire manufacturer's responsibility to determine applicable soldering requirements.

Note that this general guideline may not apply to all PCB designs and configurations of reflow soldering equipment.



IPC/JEDEC J-STD-020C

Profile Feature	Lead-Free Solder
Average Ramp-Up Rate (Ts_{max} to Tp)	1.2 °C/second
Preheat: Temperature Min (Ts_{min})	120 °C
Preheat: Temperature Max (Ts_{max})	170 °C
Preheat: Time (ts_{min} to ts_{max})	65-150 seconds
Time Maintained Above: Temperature (T_L)	217 °C
Time Maintained Above: Time (t_L)	45-90 seconds
Peak/Classification Temperature (Tp)	235 - 245 °C
Time Within 5 °C of Actual Peak Temperature (tp)	20-40 seconds
Ramp-Down Rate	1 - 6 °C/second
Time 25 °C to Peak Temperature	4 minutes max.

Note: All temperatures refer to topside of the package, measured on the package body surface.

PRELIMINARY

NOTES

Measurements

The luminous flux, radiant power, chromaticity, forward voltage and CRI measurements in this document are binning specifications only and solely represent product measurements as of the date of shipment. These measurements will change over time based on a number of factors that are not within Cree LED's control and are not intended or provided as operational specifications for the products. Calculated values are provided for informational purposes only and are not intended or provided as specifications.

Moisture Sensitivity

Cree LED recommends keeping XLamp LEDs in the provided, resealable moisture-barrier packaging (MBP) until immediately prior to soldering. Unopened MBPs that contain XLamp LEDs do not need special storage for moisture sensitivity.

Once the MBP is opened, XLamp XF-L LEDs may be stored as MSL 1 per JEDEC J-STD-033, meaning they have unlimited floor life in conditions of ≤ 30 ºC/85% relative humidity (RH). Regardless of the storage condition, Cree LED recommends sealing any unsoldered LEDs in the original MBP.

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.

REACH Compliance

REACH substances of very high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact a Cree LED representative to insure you get the most up-to-date REACH SVHC Declaration. REACH banned substance information (REACH Article 67) is also available upon request.

Vision Advisory

WARNING: Do not look at an exposed lamp in operation. Eye injury can result. For more information about LEDs and eye safety, please refer to the LED Eye Safety application note.

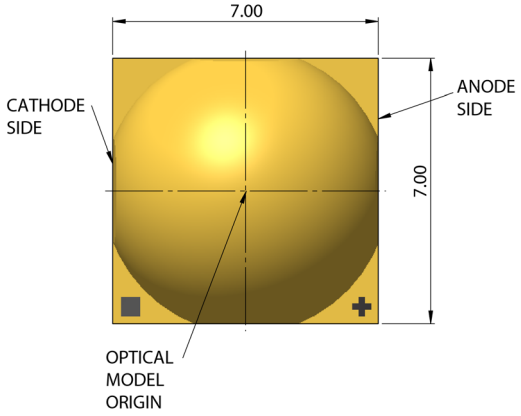
PRELIMINARY

MECHANICAL DIMENSIONS

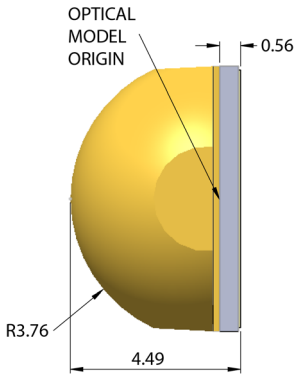
Thermal vias, if present, are not shown on these drawings.

All measurements are ±.13 mm unless otherwise indicated.

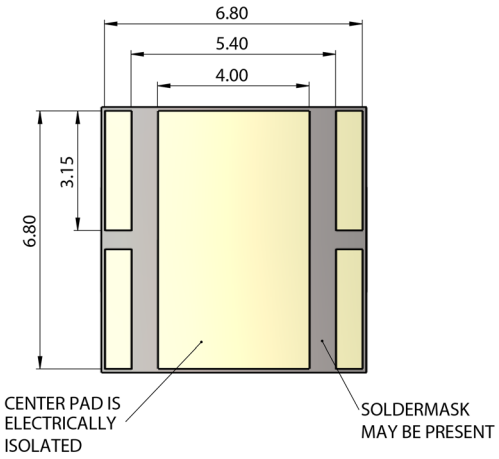
XFL05K



Top View

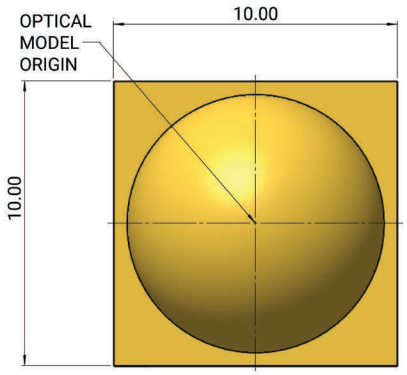


Side View

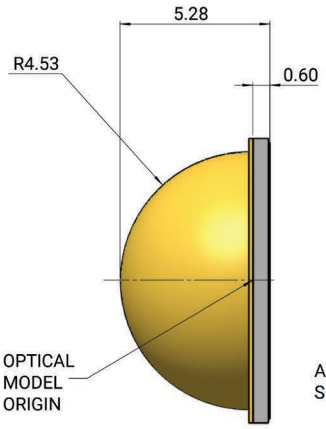


Bottom View

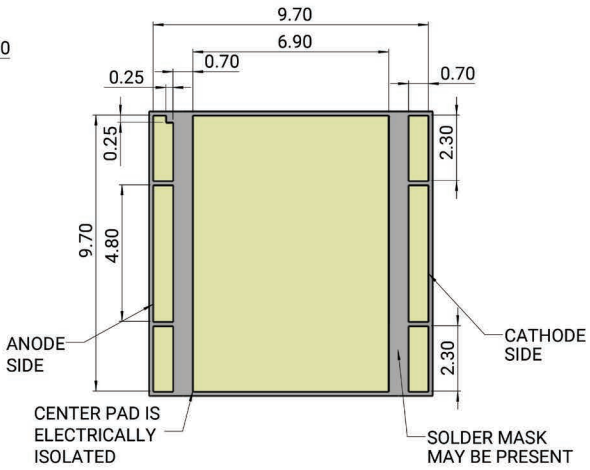
XFL08K and XFL10K



Top View



Side View

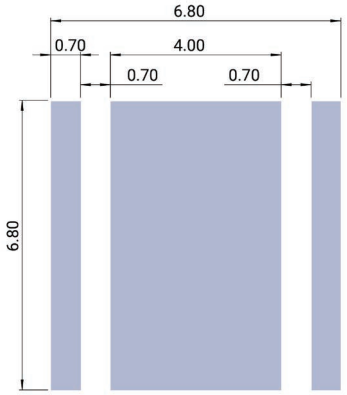


Bottom View

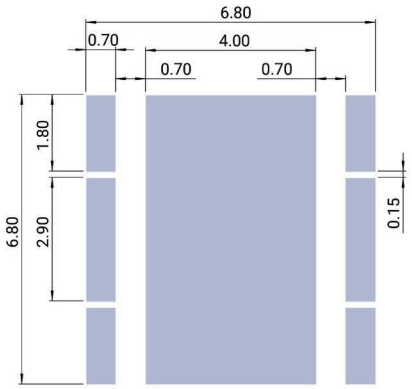
PRELIMINARY

MECHANICAL DIMENSIONS - CONTINUED

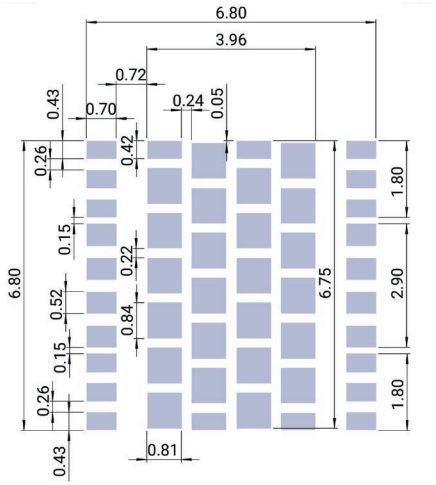
XFL05K



Recommended PCB Footprint

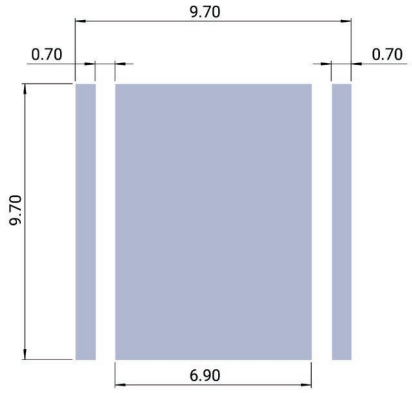


Recommended Solder Mask Opening

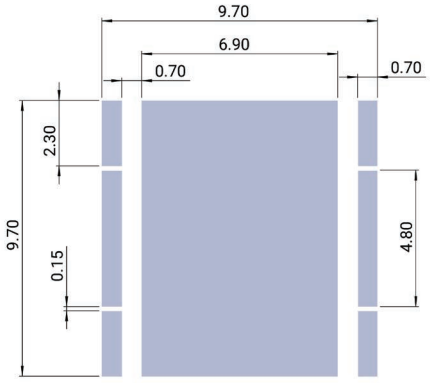


Recommended Stencil Opening

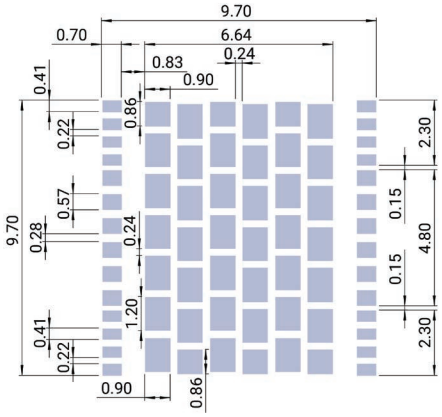
XFL08K and XFL10K



Recommended PCB Footprint



Recommended Solder Mask Opening



Recommended Stencil Opening

PRELIMINARY

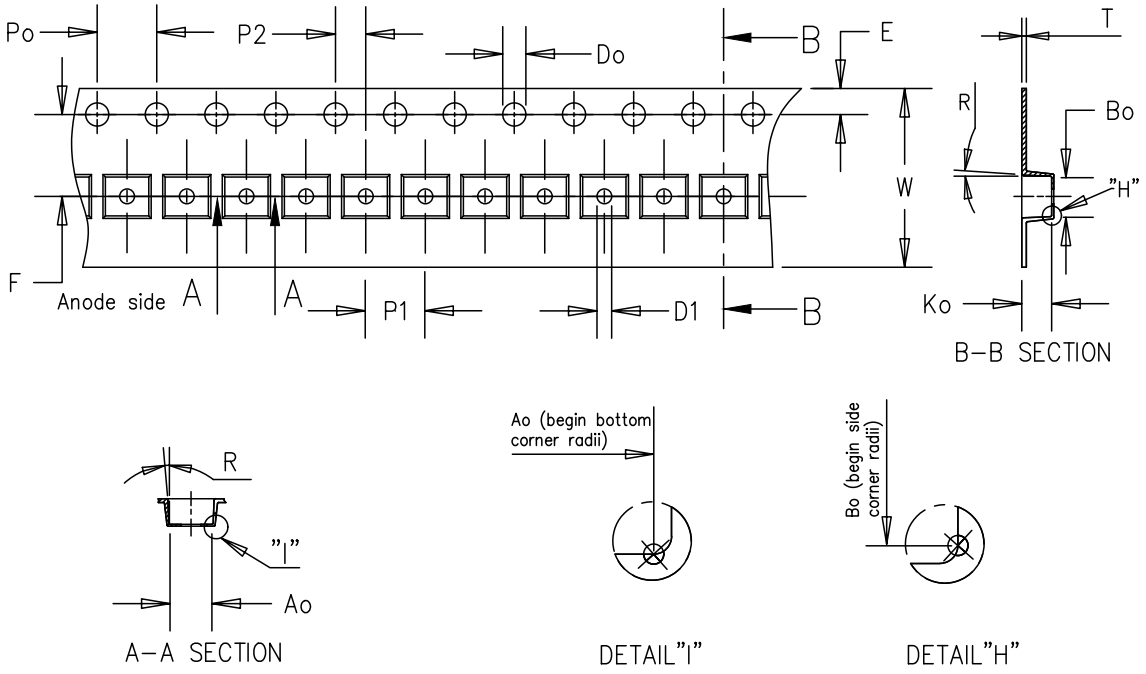
TAPE AND REEL

All Cree LED carrier tapes conform to EIA-481D, Automated Component Handling Systems Standard.

All dimensions in mm.

All measurements are ±.13 mm unless otherwise indicated.

XFL05K

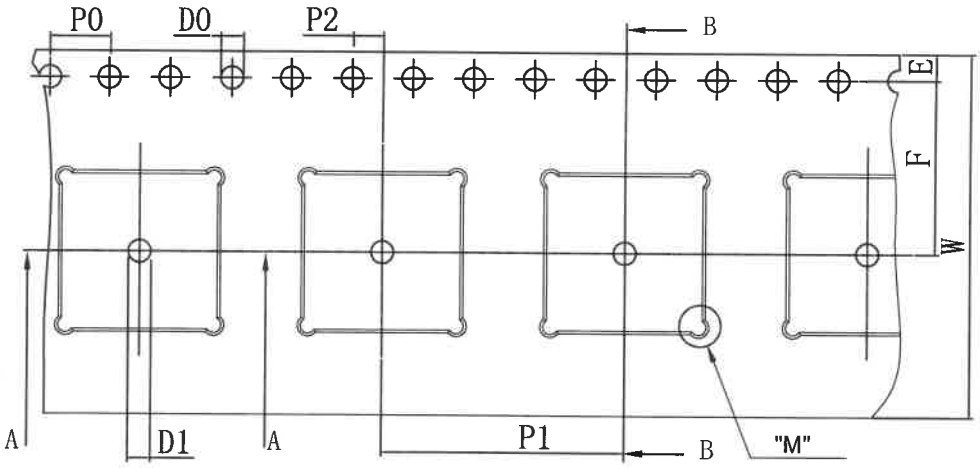


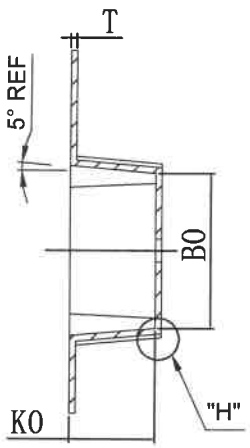
Item	Ao	Bo	Ko	Po	P1	P2	T	E	F	Do	D1	W	R
Dim.	7.40	7.40	4.60	4.00	12.00	2.00	0.36	1.75	7.50	1.50	1.50	16.00	5°

PRELIMINARY

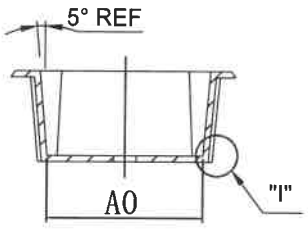
TAPE AND REEL - CONTINUED

XFL08K and XFL10K

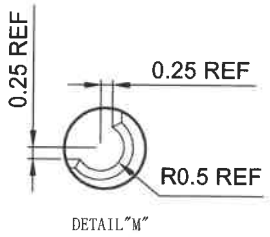




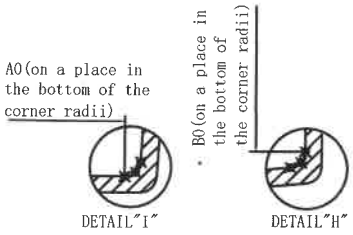
B–B SECTION



A–A SECTION



DETAIL"M"



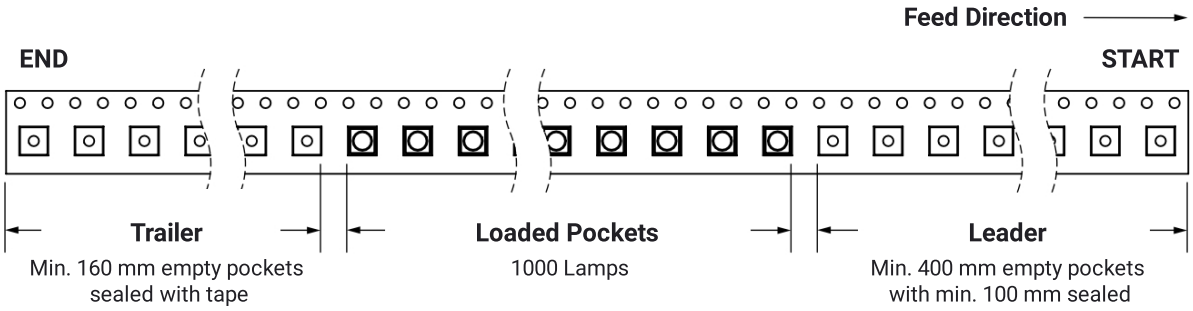
DETAIL"I" DETAIL"H"

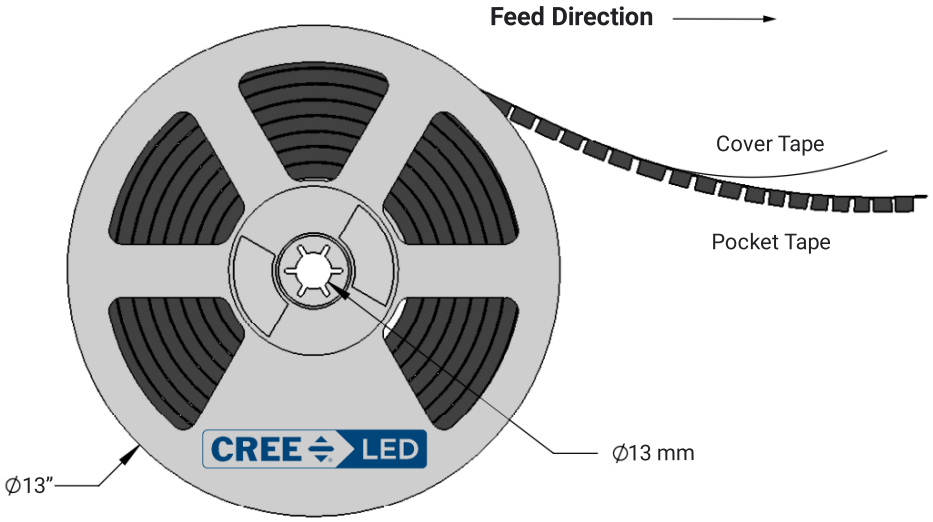
Item	A0	B0	K0	P0	P1	P2	T	E	F	D0	D1	W
Dim.	10.28	10.28	5.63	4.00	16.00	2.00	0.40	1.75	11.50	1.55	1.5 MIN	24.00

PRELIMINARY

TAPE AND REEL - CONTINUED

XFL05K

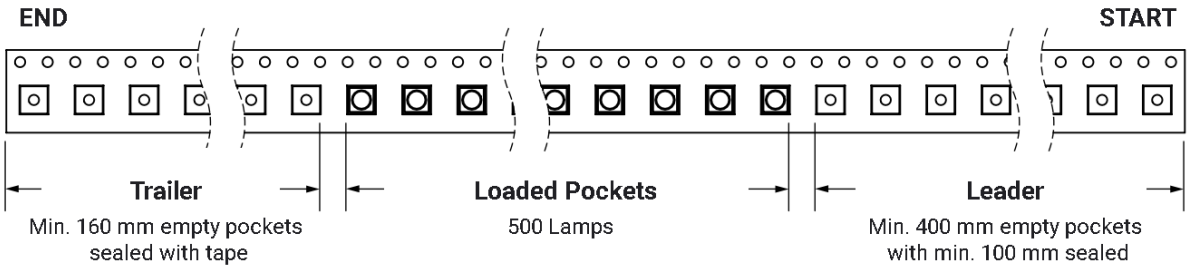


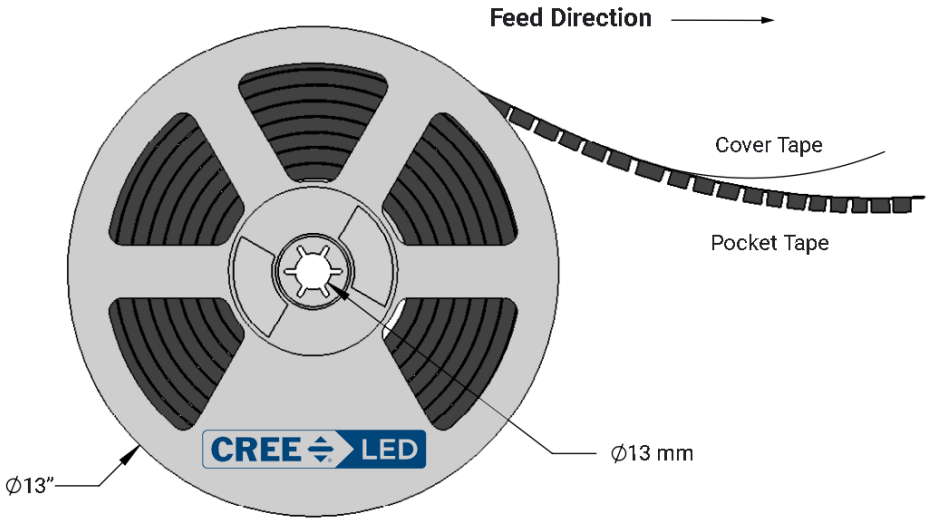


PRELIMINARY

TAPE AND REEL - CONTINUED

XFL08K and XFL10K

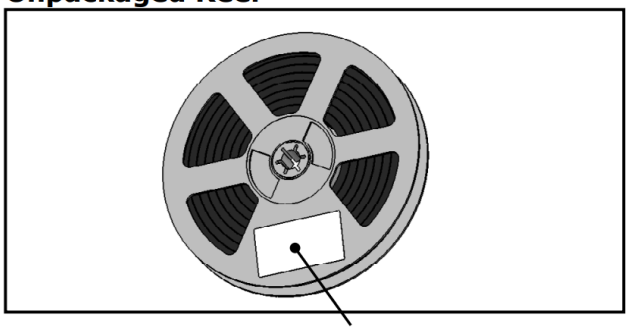




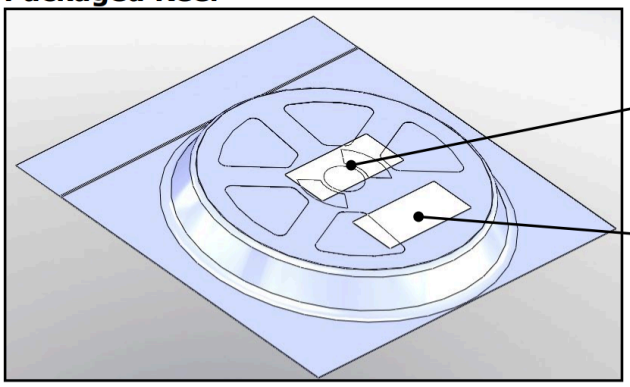
PRELIMINARY

PACKAGING

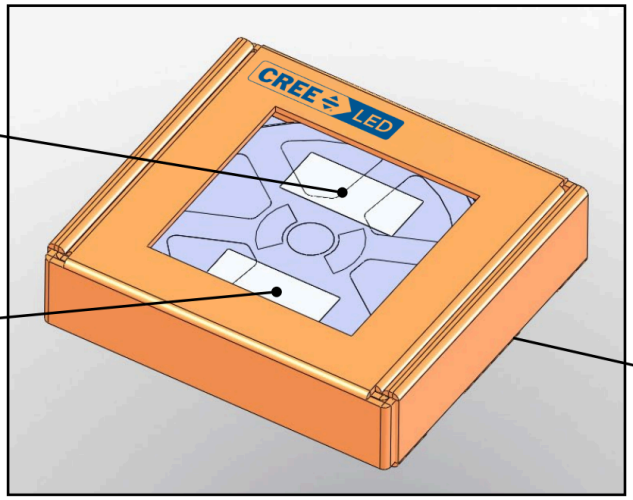
Unpackaged Reel



Packaged Reel



Boxed Reel



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