

**FLUX CHARACTERISTICS, EASYWHITE® ORDER CODES AND BINS - 72 V ( $I_f = 1200 \text{ mA}$ ,  $T_j = 85 \text{ °C}$ ) - CONTINUED**

Nominal CCT	CRI*		Minimum Luminous Flux			2-Step		3-Step		5-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C**	Group	Order Code	Group	Order Code	Group	Order Code
5000 K	70	---	CD	12,000	13,237					50E	CXB3590-0000-000R0BCD50E
			DB	13,000	14,340				CXB3590-0000-000R0BDB50E		
			DD	14,000	15,443				CXB3590-0000-000R0BDD50E		
	80	---	CB	11,000	12,134			50G	CXB3590-0000-000R0HCB50G	50E	CXB3590-0000-000R0HCB50E
			CD	12,000	13,237				CXB3590-0000-000R0HCD50G		CXB3590-0000-000R0HCD50E
			DB	13,000	14,340				CXB3590-0000-000R0HDB50G		
	90	92	BD	10,000	11,031			50G	CXB3590-0000-000R0UBD50G		
			CB	11,000	12,134				CXB3590-0000-000R0UCB50G		
			CD	12,000	13,237				CXB3590-0000-000R0UCD50G		
4000 K	70	---	CD	12,000	13,237					40E	CXB3590-0000-000R0BCD40E
			DB	13,000	14,340				CXB3590-0000-000R0BDB40E		
			DD	14,000	15,443				CXB3590-0000-000R0BDD40E		
	80	---	CB	11,000	12,134	40H	CXB3590-0000-000R0HCB40H	40G	CXB3590-0000-000R0HCB40G		
			CD	12,000	13,237		CXB3590-0000-000R0HCD40H		CXB3590-0000-000R0HCD40G		
			DB	13,000	14,340		CXB3590-0000-000R0HDB40H		CXB3590-0000-000R0HDB40G		
	90	92	BB	9,500	10,479	40H	CXB3590-0000-000R0UBB40H	40G	CXB3590-0000-000R0UBB40G		
			BD	10,000	11,031		CXB3590-0000-000R0UBD40H		CXB3590-0000-000R0UBD40G		
			CB	11,000	12,134		CXB3590-0000-000R0UCB40H		CXB3590-0000-000R0UCB40G		

**Notes**

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section ( ).
- Cree XLamp CXB3590 LED order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- \* For 80 CRI minimum LEDs, CRI R9 minimum is 0 with a ±2 tolerance. For 90 CRI minimum LEDs, CRI R9 typical is 60.
- \*\* Flux values @ 25 °C are calculated and for reference only.

**FLUX CHARACTERISTICS, EASYWHITE® ORDER CODES AND BINS - 72 V (I<sub>F</sub> = 1200 mA, T<sub>J</sub> = 85 °C) - CONTINUED**

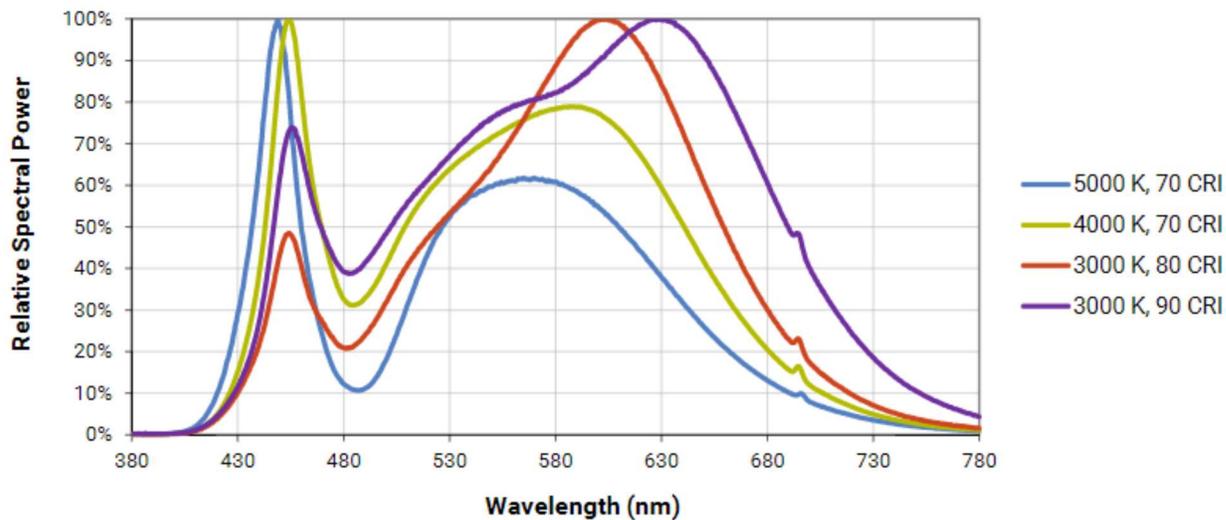
Nominal CCT	CRI*		Minimum Luminous Flux			2-Step		3-Step		5-Step	
	Min	Typ	Group	Flux (lm) @ 85 °C	Flux (lm) @ 25 °C**	Group	Order Code	Group	Order Code	Group	Order Code
3500 K	80	---	CB	11,000	12,134	35H	CXB3590-0000-000R0HCB35H	35G	CXB3590-0000-000R0HCB35G		
			CD	12,000	13,237		CXB3590-0000-000R0HCD35H		CXB3590-0000-000R0HCD35G		
	90	92	BB	9,500	10,479	35H	CXB3590-0000-000R0UBB35H	35G	CXB3590-0000-000R0UBB35G		
			BD	10,000	11,031		CXB3590-0000-000R0UBD35H		CXB3590-0000-000R0UBD35G		
			CB	11,000	12,134		CXB3590-0000-000R0UCB35H		CXB3590-0000-000R0UCB35G		
3000 K	80	---	BD	10,000	11,031	30H	CXB3590-0000-000R0HBD30H	30G	CXB3590-0000-000R0HBD30G		
			CB	11,000	12,134		CXB3590-0000-000R0HCB30H		CXB3590-0000-000R0HCB30G		
			CD	12,000	13,237		CXB3590-0000-000R0HCD30H		CXB3590-0000-000R0HCD30G		
	90	92	BB	9,500	10,479	30H	CXB3590-0000-000R0UBB30H	30G	CXB3590-0000-000R0UBB30G		
			BD	10,000	11,031		CXB3590-0000-000R0UBD30H		CXB3590-0000-000R0UBD30G		
2700 K	80	---	BD	10,000	11,031	27H	CXB3590-0000-000R0HBD27H	27G	CXB3590-0000-000R0HBD27G		
			CB	11,000	12,134		CXB3590-0000-000R0HCB27H		CXB3590-0000-000R0HCB27G		
	90	92	AD	9,000	9,928	27H	CXB3590-0000-000R0UAD27H	27G	CXB3590-0000-000R0UAD27G		
			BB	9,500	10,479		CXB3590-0000-000R0UBB27H		CXB3590-0000-000R0UBB27G		
			BD	10,000	11,031		CXB3590-0000-000R0UBD27H		CXB3590-0000-000R0UBD27G		

**Notes**

- Cree maintains a tolerance of ±7% on flux and power measurements, ±0.005 on chromaticity (CCx, CCy) measurements and a tolerance of ±2 on CRI measurements. See the Measurements section ( ).
- Cree XLamp CXB3590 LED order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity bin restrictions specified by the order code.
- \* For 80 CRI minimum LEDs, CRI R9 minimum is 0 with a ±2 tolerance. For 90 CRI minimum LEDs, CRI R9 typical is 60.
- \*\* Flux values @ 25 °C are calculated and for reference only.

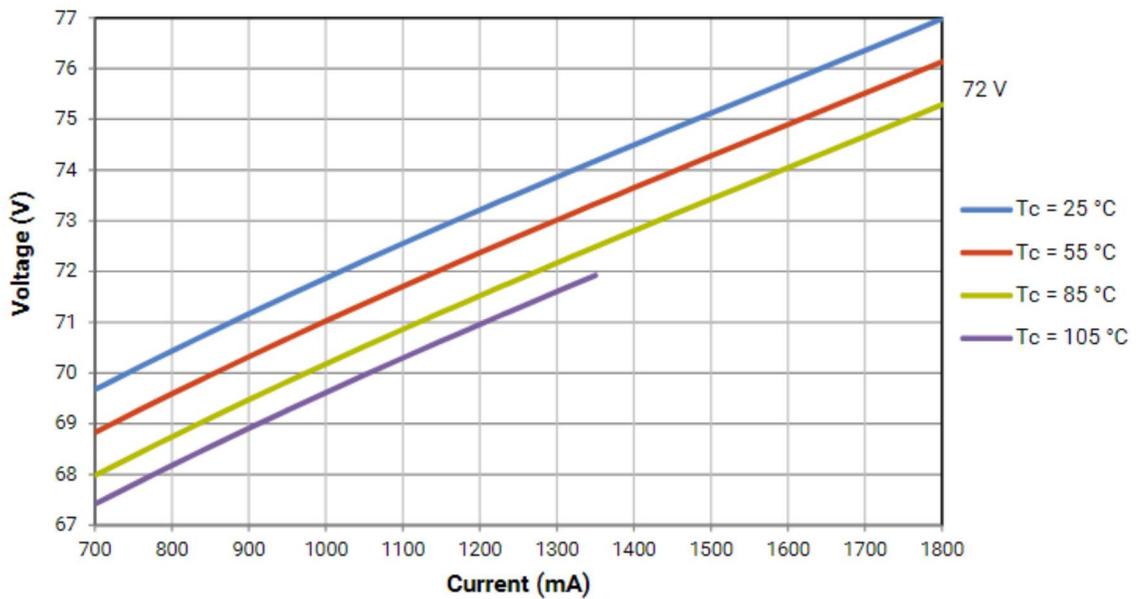
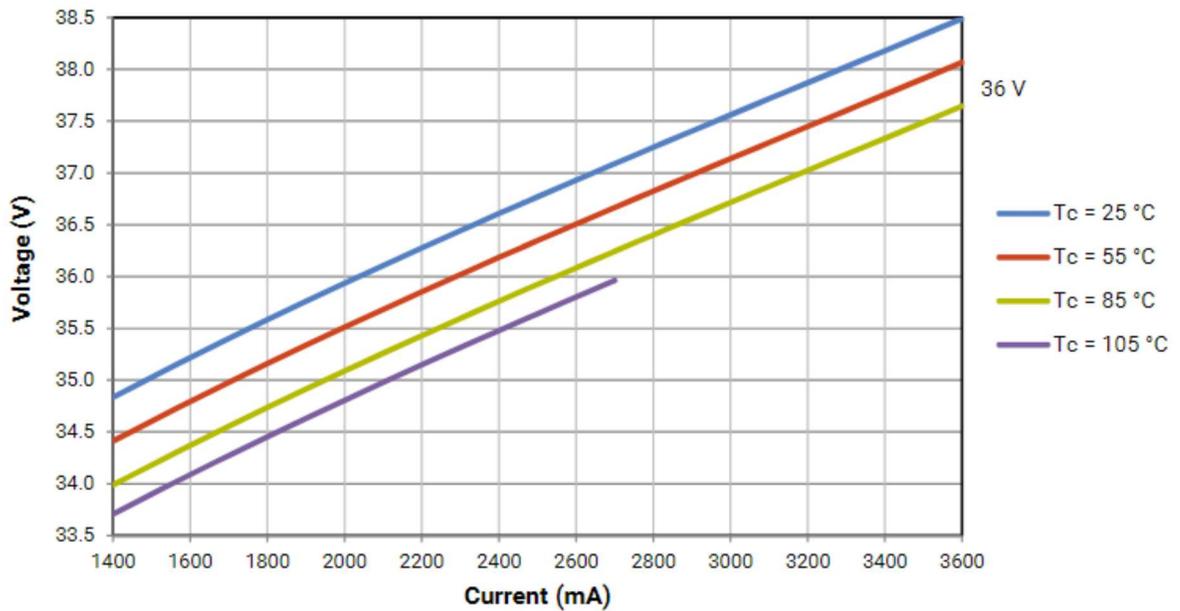
**RELATIVE SPECTRAL POWER DISTRIBUTION**

The following graph is the result of a series of pulsed measurements at 2400 mA for the 36-V CXB3590 and 1200 mA for the 72-V CXB3590 and  $T_j = 85\text{ }^\circ\text{C}$ .



**ELECTRICAL CHARACTERISTICS**

The following graph is the result of a series of steady-state measurements.

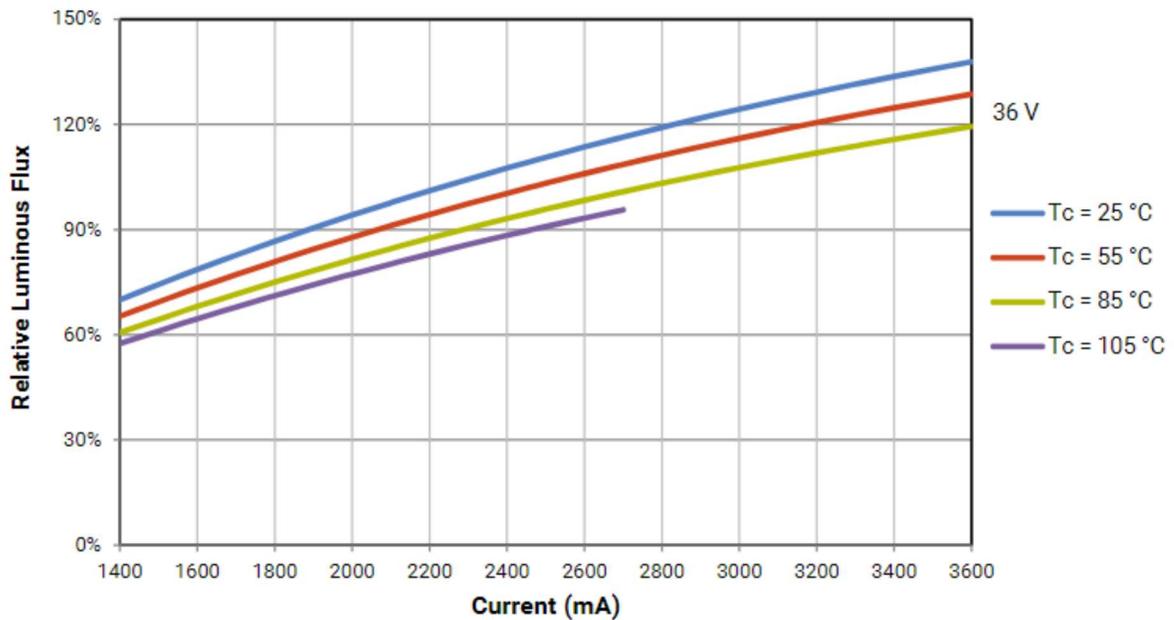


**RELATIVE LUMINOUS FLUX**

The relative luminous flux values provided below are the ratio of:

- Measurements of CXB3590 at steady-state operation at the given conditions, divided by
- Flux measured during binning, which is a pulsed measurement at 2400 mA at  $T_j = 85\text{ }^\circ\text{C}$  for the 36-V CXB3590.

Using the 36-V CXB3590 LED as an example, at steady-state operation of  $T_c = 25\text{ }^\circ\text{C}$ ,  $I_f = 2800\text{ mA}$ , the relative luminous flux ratio is 120% in the chart below. A CXB3590 LED that measures 11,000 lm during binning will deliver 13,200 lm ( $11,000 \times 1.2$ ) at steady-state operation of  $T_c = 25\text{ }^\circ\text{C}$ ,  $I_f = 2800\text{ mA}$ .

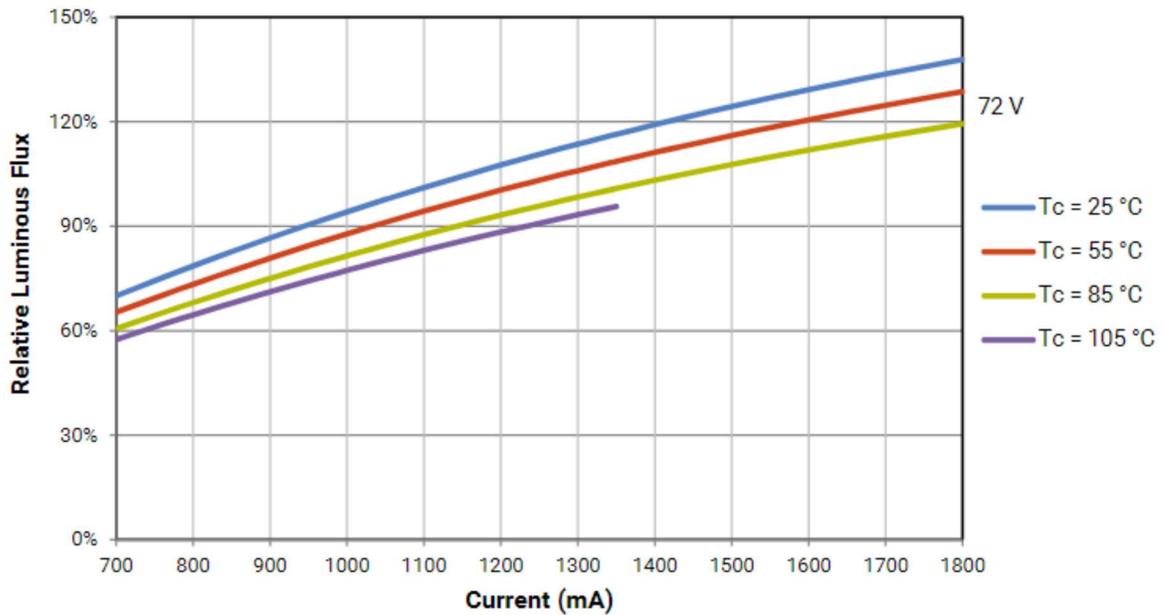


**RELATIVE LUMINOUS FLUX - CONTINUED**

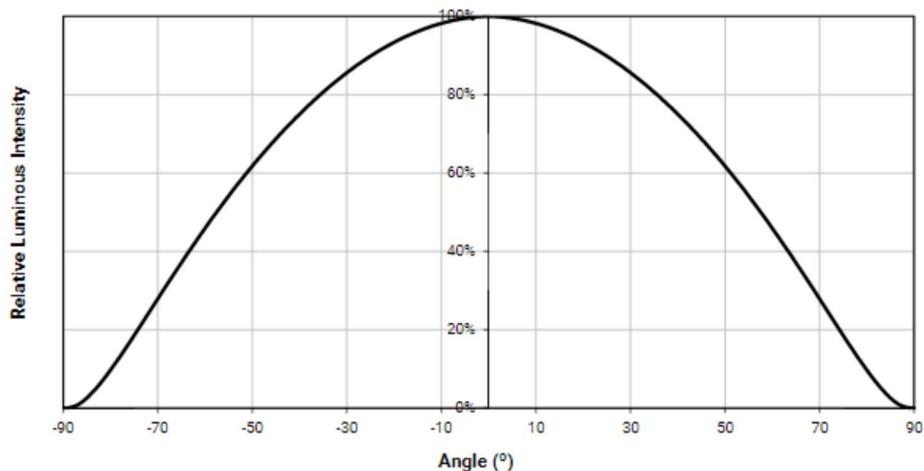
The relative luminous flux values provided below are the ratio of:

- Measurements of CXB3590 at steady-state operation at the given conditions, divided by
- Flux measured during binning, which is a pulsed measurement at 1200 mA at  $T_J = 85^\circ\text{C}$  for the 72-V CXB3590.

Using the 72-V CXB3590 LED as an example, at steady-state operation of  $T_c = 25^\circ\text{C}$ ,  $I_f = 1400\text{ mA}$ , the relative luminous flux ratio is 120% in the chart below. A CXB3590 LED that measures 11,000 lm during binning will deliver 13,200 lm ( $11,000 \times 1.2$ ) at steady-state operation of  $T_c = 25^\circ\text{C}$ ,  $I_f = 1400\text{ mA}$ .



**TYPICAL SPATIAL DISTRIBUTION**



**PERFORMANCE GROUPS - BRIGHTNESS (36 V, I<sub>F</sub> = 2400 mA; 72 V, I<sub>F</sub> = 1200 mA, T<sub>J</sub> = 85 °C)**

XLamp CXB3590 LEDs are tested for luminous flux and placed into one of the following bins.

Group Code	Minimum Luminous Flux	Maximum Luminous Flux
AD	9,000	9,500
BB	9,500	10,000
BD	10,000	11,000
CB	11,000	12,000
CD	12,000	13,000
DB	13,000	14,000
DD	14,000	15,000
EB	15,000	16,000

**PERFORMANCE GROUPS - CHROMATICITY ( $T_J = 85\text{ }^\circ\text{C}$ )**

XLamp CXB3590 LEDs are tested for chromaticity and placed into one of the regions defined by the following bounding coordinates.

EasyWhite Color Temperatures – 2-Step			
Code	CCT	x	y
40H	4000 K	0.3777	0.3739
		0.3797	0.3816
		0.3861	0.3855
		0.3838	0.3777
35H	3500 K	0.4022	0.3858
		0.4053	0.3942
		0.4125	0.3977
		0.4091	0.3891
30H	3000 K	0.4287	0.3975
		0.4328	0.4064
		0.4390	0.4086
		0.4347	0.3996
27H	2700 K	0.4524	0.4048
		0.4574	0.4140
		0.4633	0.4154
		0.4581	0.4062

EasyWhite Color Temperatures – 3-Step Ellipse						
Bin Code	CCT	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
		x	y	a	b	
65G	6500 K	0.3123	0.3282	0.00666	0.00330	61.0
57G	5700 K	0.3287	0.3417	0.00738	0.00360	72.0
50G	5000 K	0.3447	0.3553	0.00840	0.00312	65.0
40G	4000 K	0.3818	0.3797	0.00939	0.00402	53.7
35G	3500 K	0.4073	0.3917	0.00927	0.00414	54.0
30G	3000 K	0.4338	0.4030	0.00834	0.00408	53.2
27G	2700 K	0.4577	0.4099	0.00834	0.00420	48.5

EasyWhite Color Temperatures – 5-Step Ellipse						
Bin Code	CCT	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
		x	y	a	b	
65E	6500 K	0.3123	0.3282	0.01110	0.00550	61.0
57E	5700 K	0.3287	0.3417	0.01230	0.00600	72.0
50E	5000 K	0.3447	0.3553	0.01400	0.00520	65.0
40E	4000 K	0.3818	0.3797	0.01565	0.00670	53.7

**CREE EASYWHITE® BINS PLOTTED ON THE 1931 CIE CURVE**

