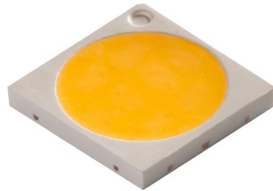


**PRELIMINARY**

**Cree® J Series™ 5050 LEDs**



**PRODUCT DESCRIPTION**

J Series LEDs extend Cree’s industry-leading portfolio of lighting-class LEDs to a broader set of applications. The J Series 5050 LEDs deliver high-power light output, high efficacy and excellent value in a reliable EMC package. The J Series 5050 LEDs are optimized for medium-density lighting applications where high efficacy and long lifetime are critical, such as street lights, outdoor area and indoor directional lights.

**FEATURES**

- Industry-compatible size : 5.0 x 5.0 x 0.7 mm
- 9-V, 12-V, 24-V, and 36-V configurations
- 6500 K - 2700 K ANSI CCTs available
- 70, 80 & 90 CRI available for all CCTs
- 5-step chromaticity bins aligned to Cree EasyWhite® bins
- RoHS and REACH compliant

**PRODUCT SUMMARY**

Product	Power Class	Test Temperature	Test Current	Typical Forward Voltage	4000 K, 70 CRI		3000 K, 80 CRI		Maximum Current
					Typical Flux	Typical Efficacy	Typical Flux	Typical Efficacy	
JQ5050 9 V	4 W	25 °C	400 mA	9.3 V	565 lm	152 LPW	515 lm	139 LPW	480 mA
JR5050 12 V	5 W	25 °C	400 mA	13 V	765 lm	147 LPW	665 lm	128 LPW	480 mA
JR5050 24 V	5 W	25 °C	200 mA	26 V	765 lm	147 LPW	665 lm	128 LPW	240 mA
JR5050 36 V	5 W	25 °C	150 mA	37.5 V	880 lm	156 LPW	770 lm	137 LPW	200 mA

J Series™ Products are sold exclusively by Cree Venture LED Company Limited (“Cree Venture”), regardless of geography. Any orders for J Series Products that are submitted to Cree, Inc. or any of its other subsidiaries will be directed to Cree Venture for acknowledgement and order fulfillment.

# PRELIMINARY

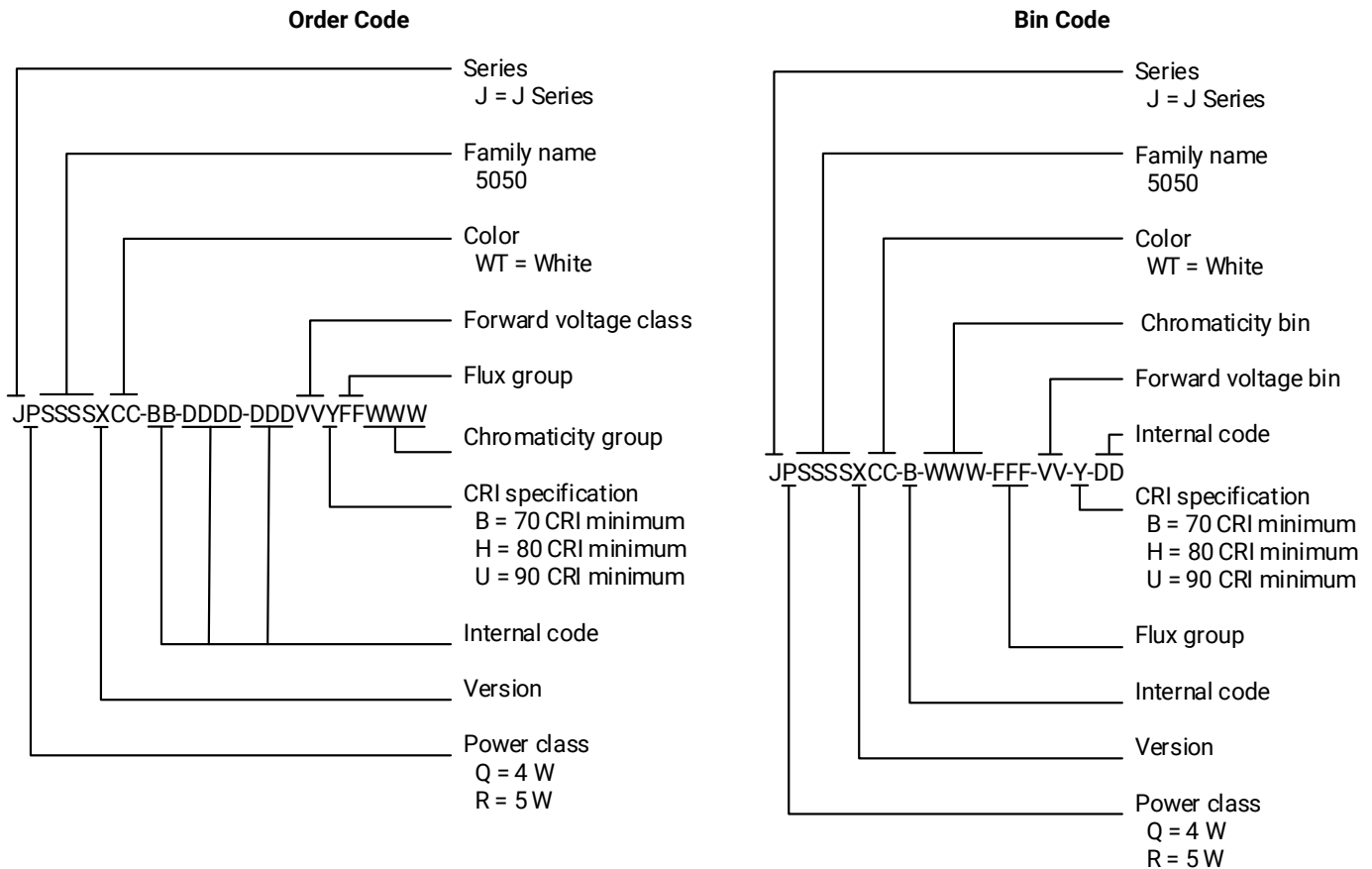
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# PRELIMINARY

## ORDER CODE & BIN CODE FORMATS

Order codes and bin codes for J Series 5050 LEDs are configured in the following manner:



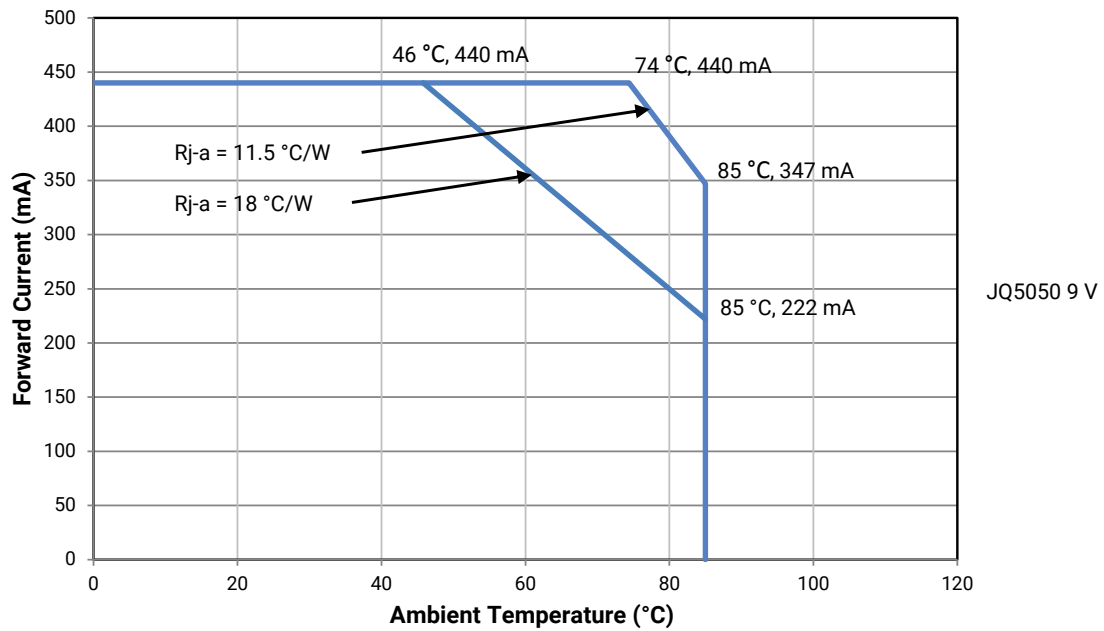
# PRELIMINARY

## CHARACTERISTICS - JQ5050 9 V

Characteristics	Unit	Minimum	Typical	Maximum
Thermal resistance, junction to solder point	°C/W		3	
Viewing angle (FWHM)	degrees		120	
Temperature coefficient of voltage	mV/°C		-2.5	
ESD withstand voltage (HBM per Mil-Std-883D)	V	2000		
DC forward current	mA			480
Reverse voltage	V			5
Forward voltage (@ 400 mA, 25 °C)	V		9.3	11
LED junction temperature	°C			115
Operating temperature	°C	-40		105

## OPERATING LIMITS - JQ5050 9 V

The maximum forward current is determined by the thermal resistance between the LED junction and ambient.



## PRELIMINARY

### FLUX CHARACTERISTICS, ORDER CODES AND BINS - JQ5050 9 V ( $I_F = 400 \text{ mA}$ , $T_a = 25 \text{ °C}$ )

The following table provides order codes for J Series 5050 LEDs. For a complete description of the order code nomenclature, please see the Order Code and Bin Code Formats section (page 3). For definitions of the chromaticity kits, please see the Performance Groups - Chromaticity section (page 24).

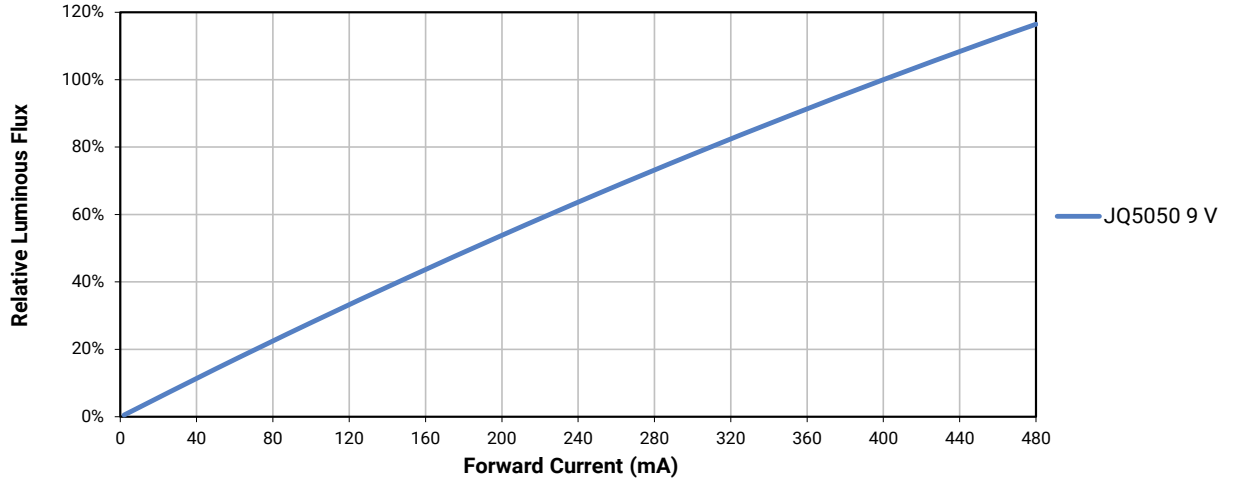
Nominal CCT	Minimum CRI	Flux Group	Minimum Flux (lm) @ 25 °C	Typical Flux (lm) @ 25 °C	Typical Flux (lm) @ 85 °C*	Order Code
6500 K	70	B4	500	565	486	JQ5050AWT-00-0000-000C0BB465E
	80	B3	460	535	460	JQ5050AWT-00-0000-000C0HB365E
	90	B2	400	460	396	JQ5050AWT-00-0000-000C0UB265E
5700 K	70	B4	500	565	486	JQ5050AWT-00-0000-000C0BB457E
	80	B3	460	535	460	JQ5050AWT-00-0000-000C0HB357E
	90	B2	400	460	396	JQ5050AWT-00-0000-000C0UB257E
5000 K	70	B4	500	565	486	JQ5050AWT-00-0000-000C0BB450E
	80	B3	460	535	460	JQ5050AWT-00-0000-000C0HB350E
	90	B2	400	460	396	JQ5050AWT-00-0000-000C0UB250E
4500 K	70	B4	500	565	486	JQ5050AWT-00-0000-000C0BB445E
	80	B3	460	535	460	JQ5050AWT-00-0000-000C0HB345E
	90	B2	400	460	396	JQ5050AWT-00-0000-000C0UB245E
4000 K	70	B4	500	565	486	JQ5050AWT-00-0000-000C0BB440E
	80	B3	460	535	460	JQ5050AWT-00-0000-000C0HB340E
	90	B2	400	460	396	JQ5050AWT-00-0000-000C0UB240E
3500 K	70	B3	480	555	478	JQ5050AWT-00-0000-000C0BB335E
	80	B3	460	525	452	JQ5050AWT-00-0000-000C0HB335E
	90	A4	400	445	383	JQ5050AWT-00-0000-000C0UA435E
3000 K	70	B3	480	540	464	JQ5050AWT-00-0000-000C0BB330E
	80	B3	450	515	443	JQ5050AWT-00-0000-000C0HB330E
	90	A4	380	430	370	JQ5050AWT-00-0000-000C0UA430E
2700 K	70	B3	450	515	443	JQ5050AWT-00-0000-000C0BB327E
	80	B2	440	485	417	JQ5050AWT-00-0000-000C0HB227E
	90	A4	370	412	354	JQ5050AWT-00-0000-000C0UA427E

**Notes:**

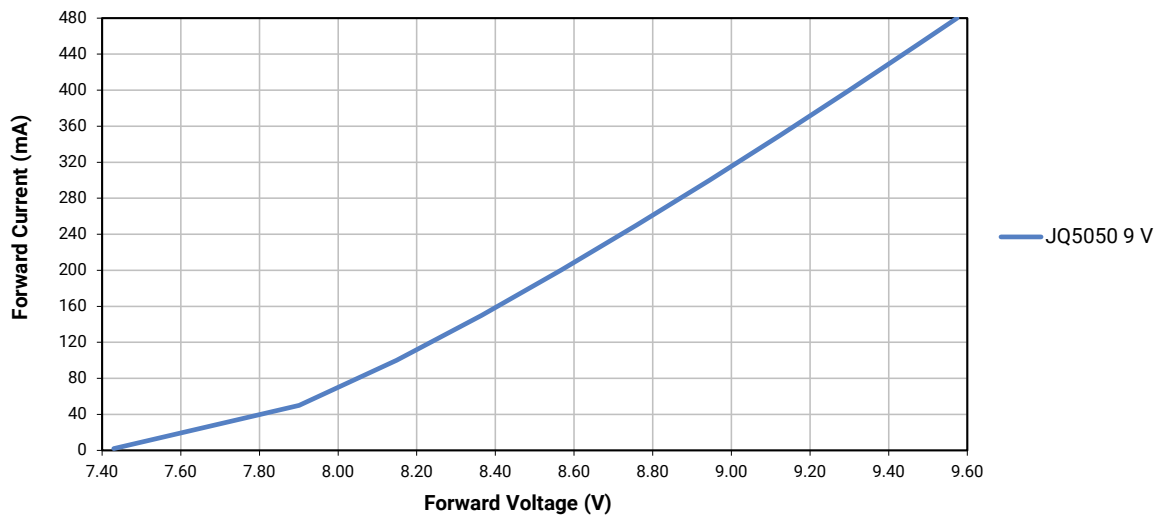
- Cree Venture maintains a tolerance of  $\pm 7\%$  on flux and power measurements,  $\pm 0.005$  on chromaticity (CCx, CCy) measurements and  $\pm 2$  on CRI measurements. See the Measurements section (page 33).
- Cree Venture J Series 5050 LED order codes specify only a minimum flux bin and not a maximum. Cree Venture 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 restrictions specified by the order code.
- \* Flux values @ 85 °C are calculated and for reference only.

**PRELIMINARY**

**RELATIVE LUMINOUS FLUX VS. CURRENT - JQ5050 9 V**

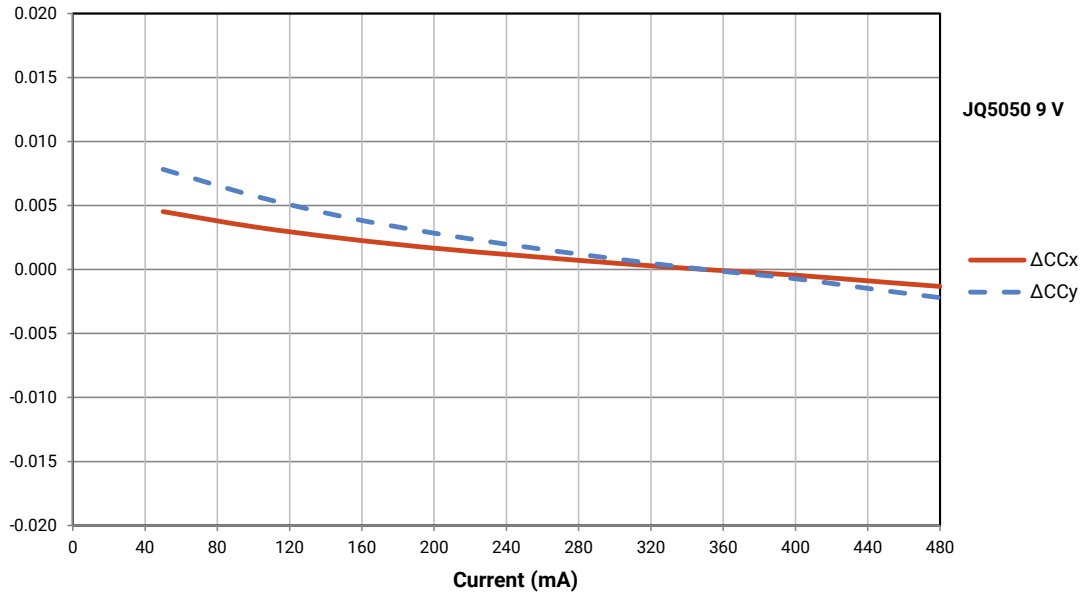


**ELECTRICAL CHARACTERISTICS - JQ5050 9 V**

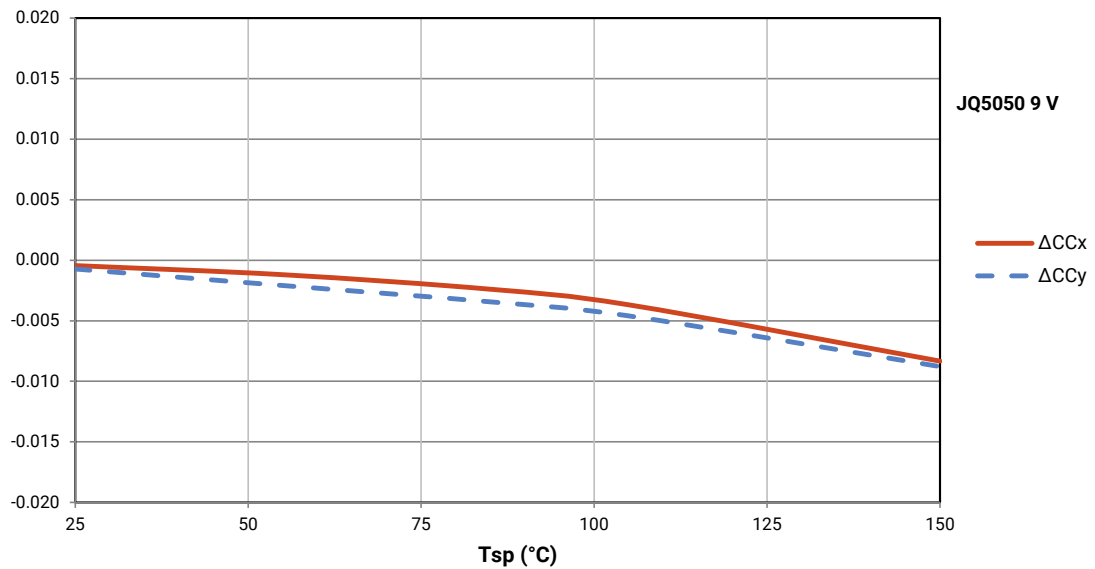


**PRELIMINARY**

**RELATIVE CHROMATICITY VS. CURRENT - JQ5050 9 V**



**RELATIVE CHROMATICITY VS. TEMPERATURE - JQ5050 9 V**



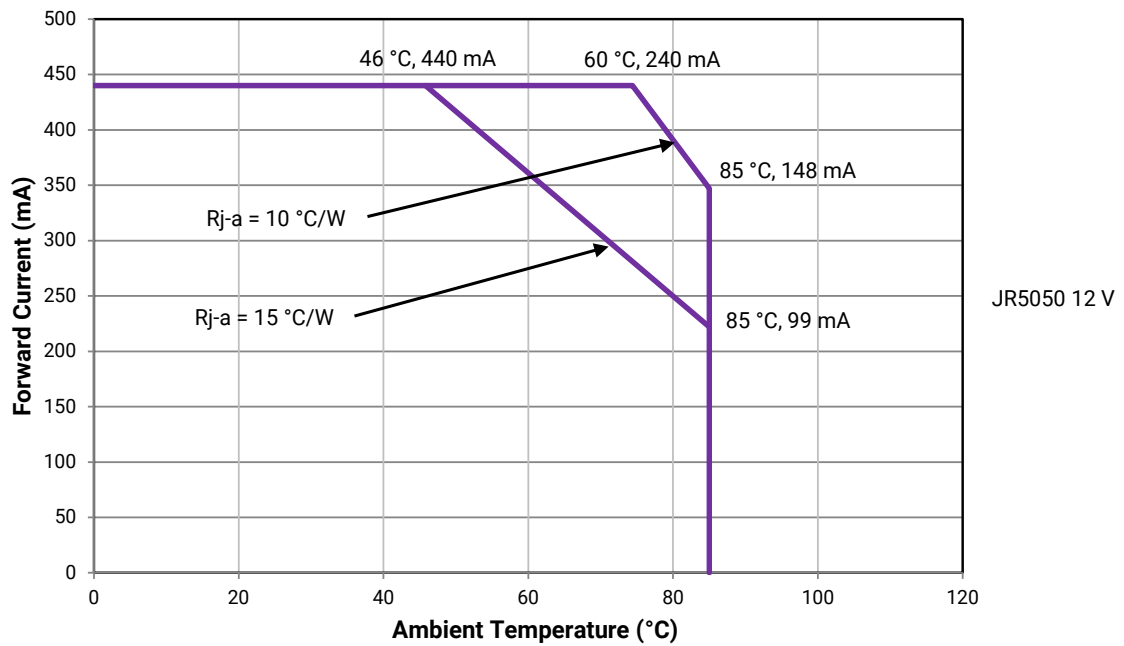
# PRELIMINARY

## CHARACTERISTICS - JR5050 12 V

Characteristics	Unit	Minimum	Typical	Maximum
Thermal resistance, junction to solder point	°C/W		3	
Viewing angle (FWHM)	degrees		120	
Temperature coefficient of voltage	mV/°C		-5	
ESD withstand voltage (HBM per Mil-Std-883D)	V	2000		
DC forward current	mA			480
Reverse voltage	V			5
Forward voltage (@ 400 mA, 25 °C)	V		13	14.5
LED junction temperature	°C			115
Operating temperature	°C	-40		105

## OPERATING LIMITS - JR5050 12 V

The maximum forward current is determined by the thermal resistance between the LED junction and ambient.





## PRELIMINARY

### FLUX CHARACTERISTICS, ORDER CODES AND BINS - JR5050 12 V ( $I_F = 400 \text{ mA}$ , $T_a = 25 \text{ }^\circ\text{C}$ )

The following table provides order codes for J Series 5050 LEDs. For a complete description of the order code nomenclature, please see the Order Code and Bin Code Formats section (page 3). For definitions of the chromaticity kits, please see the Performance Groups - Chromaticity section (page 24).

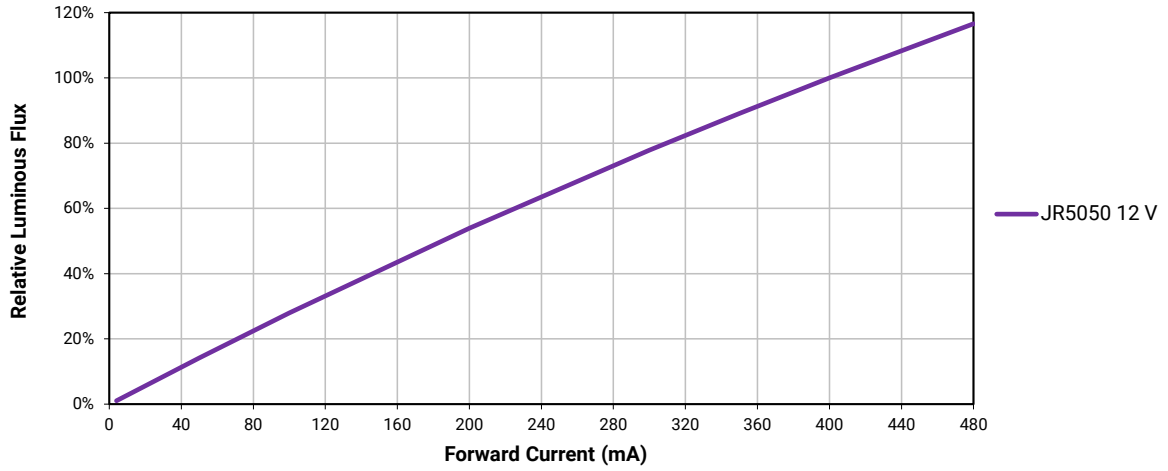
Nominal CCT	Minimum CRI	Flux Group	Minimum Flux (lm) @ 25 °C	Typical Flux (lm) @ 25 °C	Typical Flux (lm) @ 85 °C*	Order Code
6500 K	70	C4	690	765	659	JR5050AWT-00-0000-000D0BC465E
	80	C4	660	720	619	JR5050AWT-00-0000-000D0HC465E
	90	B4	520	615	525	JR5050AWT-00-0000-000D0UB465E
5700 K	70	C4	690	765	659	JR5050AWT-00-0000-000D0BC457E
	80	C4	660	720	619	JR5050AWT-00-0000-000D0HC457E
	90	B4	520	615	525	JR5050AWT-00-0000-000D0UB457E
5000 K	70	C4	690	765	659	JR5050AWT-00-0000-000D0BC450E
	80	C4	660	720	619	JR5050AWT-00-0000-000D0HC450E
	90	B4	520	615	525	JR5050AWT-00-0000-000D0UB450E
4500 K	70	C4	690	765	659	JR5050AWT-00-0000-000D0BC445E
	80	C4	660	720	619	JR5050AWT-00-0000-000D0HC445E
	90	B4	520	615	525	JR5050AWT-00-0000-000D0UB445E
4000 K	70	C4	690	765	659	JR5050AWT-00-0000-000D0BC440E
	80	C4	660	720	619	JR5050AWT-00-0000-000D0HC440E
	90	B4	520	615	525	JR5050AWT-00-0000-000D0UB440E
3500 K	70	C4	670	730	628	JR5050AWT-00-0000-000D0BC435E
	80	C3	640	690	593	JR5050AWT-00-0000-000D0HC335E
	90	B4	520	585	499	JR5050AWT-00-0000-000D0UB435E
3000 K	70	C4	650	710	619	JR5050AWT-00-0000-000D0BC430E
	80	C3	600	665	572	JR5050AWT-00-0000-000D0HC330E
	90	B3	480	565	486	JR5050AWT-00-0000-000D0UB330E
2700 K	70	C3	600	685	586	JR5050AWT-00-0000-000D0BC327E
	80	C2	560	645	555	JR5050AWT-00-0000-000D0HC227E
	90	B3	480	545	469	JR5050AWT-00-0000-000D0UB327E

**Notes:**

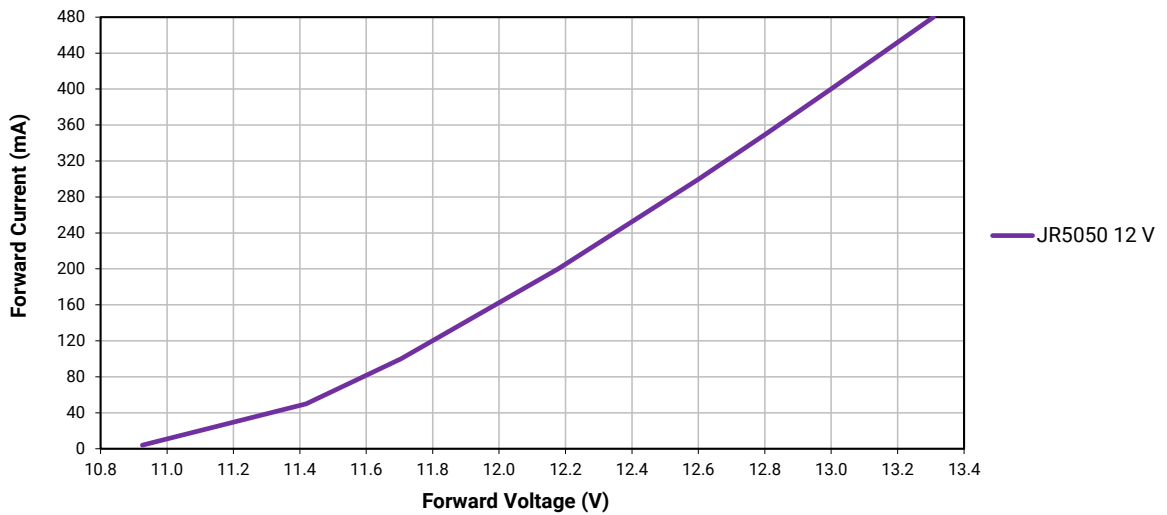
- Cree Venture maintains a tolerance of  $\pm 7\%$  on flux and power measurements,  $\pm 0.005$  on chromaticity (CCx, CCy) measurements and  $\pm 2$  on CRI measurements. See the Measurements section (page 33).
- Cree Venture J Series 5050 LED order codes specify only a minimum flux bin and not a maximum. Cree Venture 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 restrictions specified by the order code.
- \* Flux values @ 85 °C are calculated and for reference only.

**PRELIMINARY**

**RELATIVE LUMINOUS FLUX VS. CURRENT - JR5050 12 V**

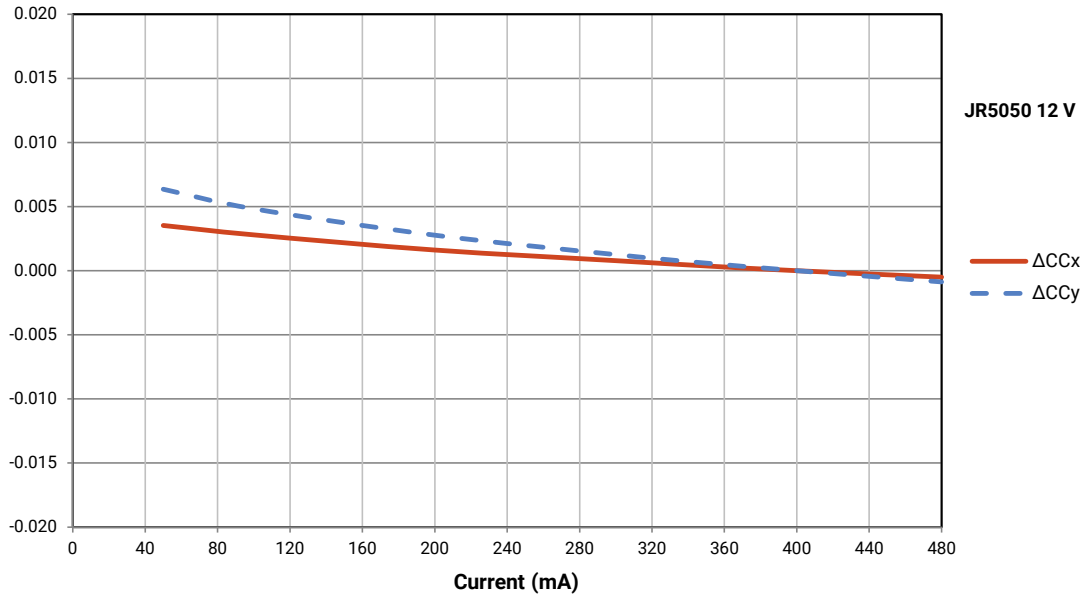


**ELECTRICAL CHARACTERISTICS - JR5050 12 V**

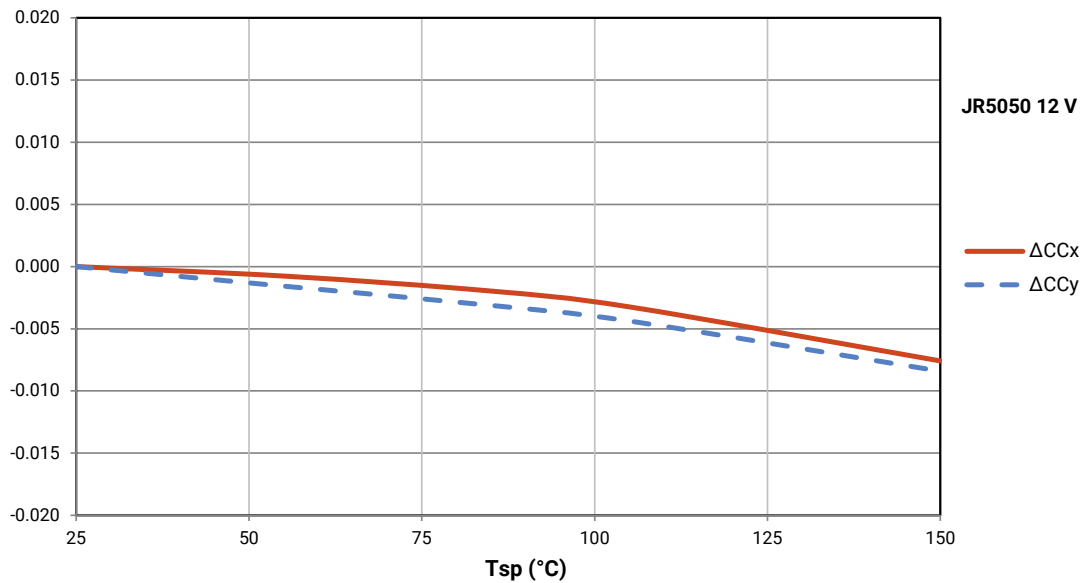


**PRELIMINARY**

**RELATIVE CHROMATICITY VS. CURRENT - JR5050 12 V**



**RELATIVE CHROMATICITY VS. TEMPERATURE - JR5050 12 V**



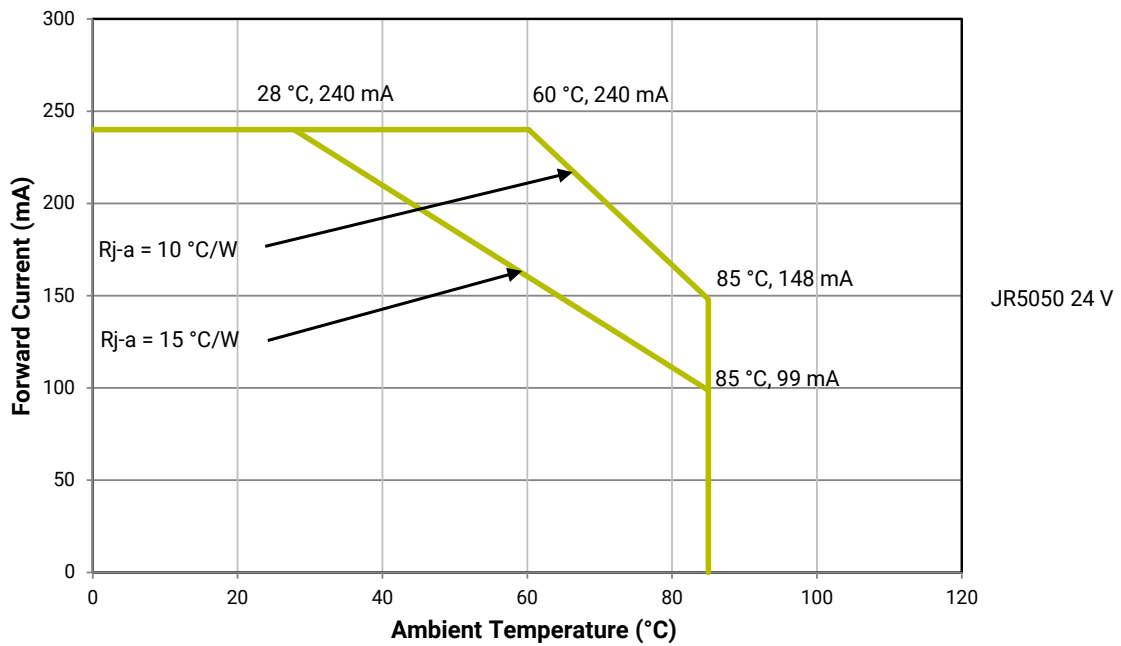
## PRELIMINARY

### CHARACTERISTICS - JR5050 24 V

Characteristics	Unit	Minimum	Typical	Maximum
Thermal resistance, junction to solder point	°C/W		3	
Viewing angle (FWHM)	degrees		120	
Temperature coefficient of voltage	mV/°C		-5	
ESD withstand voltage (HBM per Mil-Std-883D)	V	2000		
DC forward current	mA			240
Reverse voltage	V			5
Forward voltage (@ 200 mA, 25 °C)	V		26	29
LED junction temperature	°C			115
Operating temperature	°C	-40		105

### OPERATING LIMITS - JR5050 24 V

The maximum forward current is determined by the thermal resistance between the LED junction and ambient.



## PRELIMINARY

### FLUX CHARACTERISTICS, ORDER CODES AND BINS - JR5050 24 V ( $I_F = 200 \text{ mA}$ , $T_a = 25 \text{ }^\circ\text{C}$ )

The following table provides order codes for J Series 5050 LEDs. For a complete description of the order code nomenclature, please see the Order Code and Bin Code Formats section (page 3). For definitions of the chromaticity kits, please see the Performance Groups - Chromaticity section (page 24).

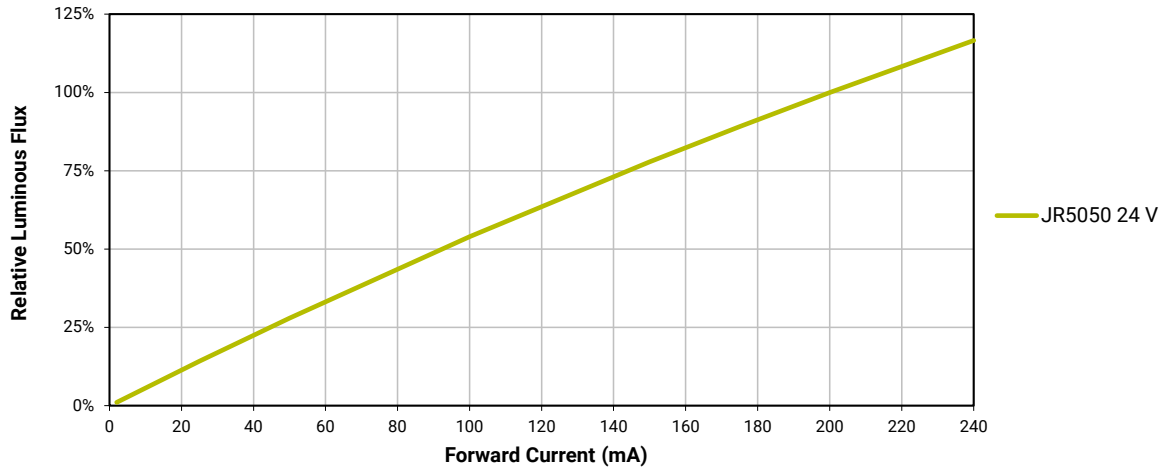
Nominal CCT	Minimum CRI	Flux Group	Typical Flux (lm) @ 25 °C	Minimum Flux (lm) @ 25 °C	Typical Flux (lm) @ 85 °C*	Order Code
6500 K	70	D2	690	765	649	JR5050AWT-00-0000-000H0BD265E
	80	C4	660	720	619	JR5050AWT-00-0000-000H0HC465E
	90	B4	520	615	525	JR5050AWT-00-0000-000H0UB465E
5700 K	70	D2	690	765	649	JR5050AWT-00-0000-000H0BD257E
	80	C4	660	720	619	JR5050AWT-00-0000-000H0HC457E
	90	B4	520	615	525	JR5050AWT-00-0000-000H0UB457E
5000 K	70	D2	690	765	649	JR5050AWT-00-0000-000H0BD250E
	80	C4	660	720	619	JR5050AWT-00-0000-000H0HC450E
	90	B4	520	615	525	JR5050AWT-00-0000-000H0UB450E
4500 K	70	D2	690	765	649	JR5050AWT-00-0000-000H0BD245E
	80	C4	660	720	619	JR5050AWT-00-0000-000H0HC445E
	90	B4	520	615	525	JR5050AWT-00-0000-000H0UB445E
4000 K	70	D2	690	765	649	JR5050AWT-00-0000-000H0BD240E
	80	C4	660	720	619	JR5050AWT-00-0000-000H0HC440E
	90	B4	520	615	525	JR5050AWT-00-0000-000H0UB440E
3500 K	70	C4	670	730	628	JR5050AWT-00-0000-000H0BC435E
	80	C3	640	690	593	JR5050AWT-00-0000-000H0HC335E
	90	B4	520	585	499	JR5050AWT-00-0000-000H0UB435E
3000 K	70	C4	650	710	619	JR5050AWT-00-0000-000H0BC430E
	80	C3	600	665	572	JR5050AWT-00-0000-000H0HC330E
	90	B3	480	565	486	JR5050AWT-00-0000-000H0UB330E
2700 K	70	C3	600	685	586	JR5050AWT-00-0000-000H0BC327E
	80	C2	560	645	555	JR5050AWT-00-0000-000H0HC227E
	90	B3	480	545	469	JR5050AWT-00-0000-000H0UB327E

**Notes:**

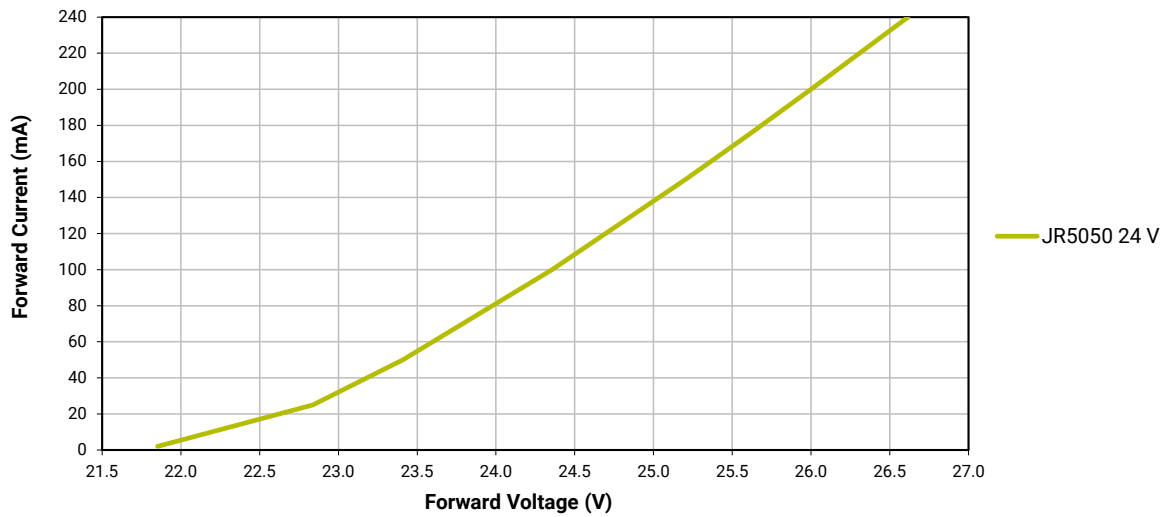
- Cree Venture maintains a tolerance of  $\pm 7\%$  on flux and power measurements,  $\pm 0.005$  on chromaticity (CCx, CCy) measurements and  $\pm 2$  on CRI measurements. See the Measurements section (page 33).
- Cree Venture J Series 5050 LED order codes specify only a minimum flux bin and not a maximum. Cree Venture 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 restrictions specified by the order code.
- \* Flux values @ 85 °C are calculated and for reference only.

**PRELIMINARY**

**RELATIVE LUMINOUS FLUX VS. CURRENT - JR5050 24 V**

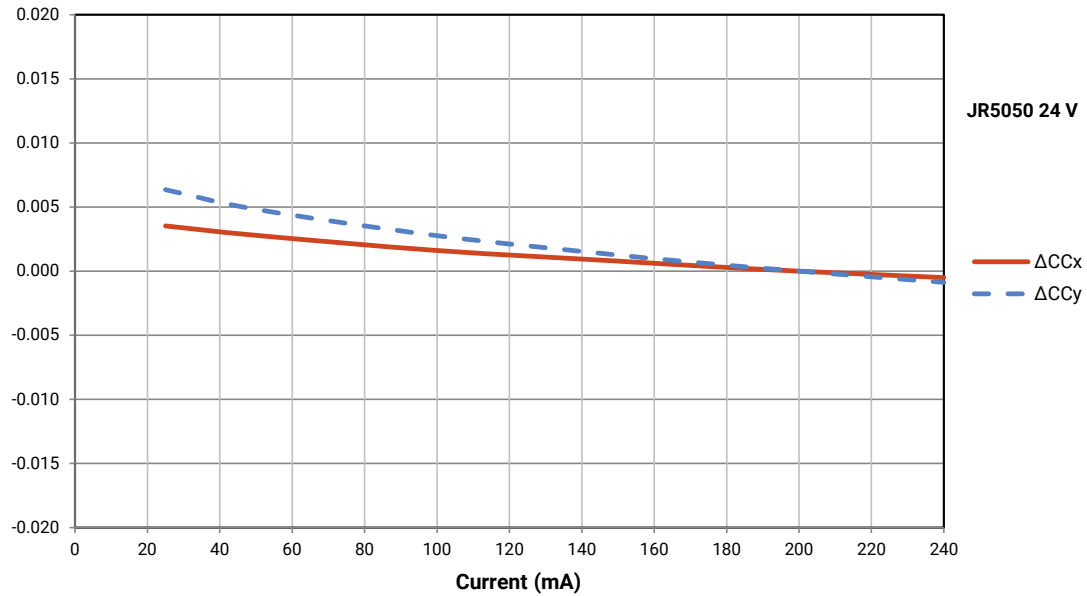


**ELECTRICAL CHARACTERISTICS - JR5050 24 V**

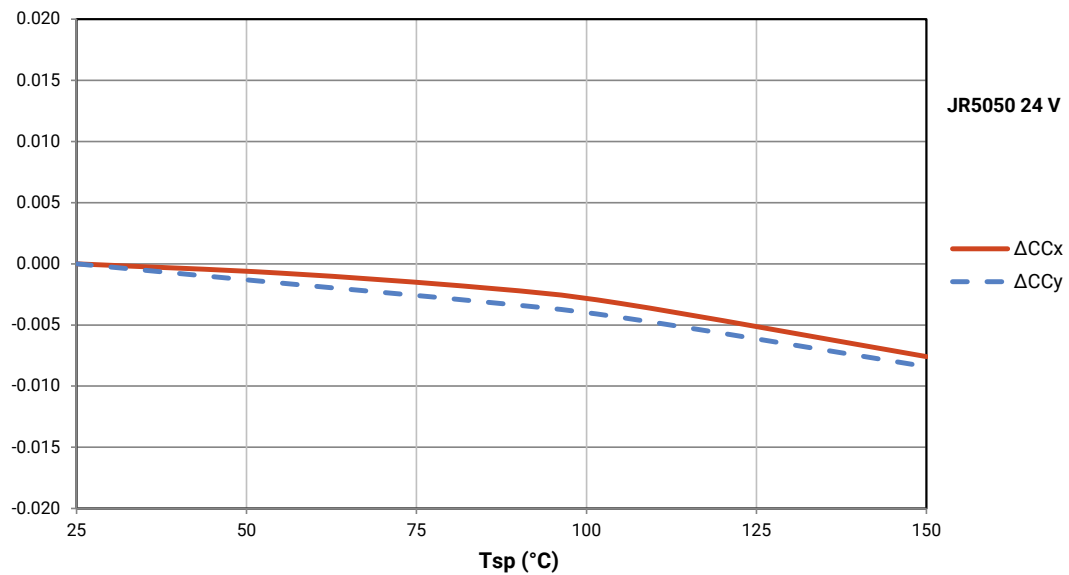


**PRELIMINARY**

**RELATIVE CHROMATICITY VS. CURRENT - JR5050 24 V**



**RELATIVE CHROMATICITY VS. TEMPERATURE - JR5050 24 V**



## PRELIMINARY

### CHARACTERISTICS - JR5050 36 V

Characteristics	Unit	Minimum	Typical	Maximum
Thermal resistance, junction to solder point	°C/W		3.5	
Viewing angle (FWHM)	degrees		120	
Temperature coefficient of voltage	mV/°C		-10	
ESD withstand voltage (HBM per Mil-Std-883D)	V	2000		
DC forward current	mA			200
Reverse voltage	V			5
Forward voltage (@ 150 mA, 25 °C)	V		37.5	40
LED junction temperature	°C			125
Operating temperature	°C	-40		105

### OPERATING LIMITS - JR5050 36 V

The maximum forward current is determined by the thermal resistance between the LED junction and ambient.



## PRELIMINARY

### FLUX CHARACTERISTICS, ORDER CODES AND BINS - JR5050 36 V ( $I_F = 150 \text{ mA}$ , $T_a = 25 \text{ }^\circ\text{C}$ )

The following table provides order codes for J Series 5050 LEDs. For a complete description of the order code nomenclature, please see the Order Code and Bin Code Formats section (page 3). For definitions of the chromaticity kits, please see the Performance Groups - Chromaticity section (page 24).

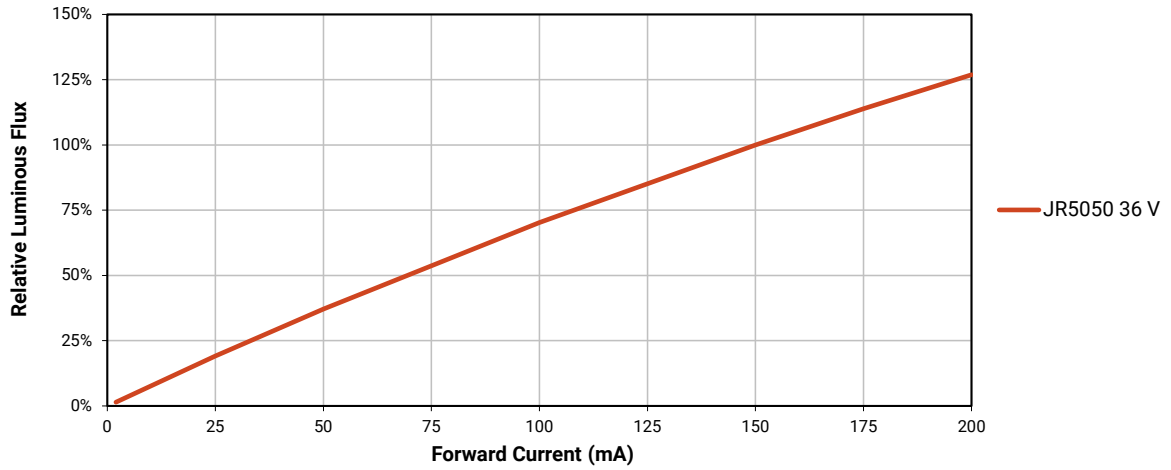
Nominal CCT	Minimum CRI	Flux Group	Typical Flux (lm) @ 25 °C	Minimum Flux (lm) @ 25 °C	Typical Flux (lm) @ 85 °C*	Order Code
6500 K	70	D3	780	880	760	JR5050AWT-00-0000-000N0BD365E
	80	D3	770	840	725	JR5050AWT-00-0000-000N0HD365E
	90	C4	650	755	649	JR5050AWT-00-0000-000N0UC465E
5700 K	70	D3	780	880	760	JR5050AWT-00-0000-000N0BD357E
	80	D3	770	840	725	JR5050AWT-00-0000-000N0HD357E
	90	C4	650	755	649	JR5050AWT-00-0000-000N0UC457E
5000 K	70	D3	780	880	760	JR5050AWT-00-0000-000N0BD350E
	80	D3	770	840	725	JR5050AWT-00-0000-000N0HD350E
	90	C4	650	755	649	JR5050AWT-00-0000-000N0UC450E
4500 K	70	D3	780	880	760	JR5050AWT-00-0000-000N0BD345E
	80	D3	770	840	725	JR5050AWT-00-0000-000N0HD345E
	90	C4	650	755	649	JR5050AWT-00-0000-000N0UC445E
4000 K	70	D3	780	880	760	JR5050AWT-00-0000-000N0BD340E
	80	D3	770	840	725	JR5050AWT-00-0000-000N0HD340E
	90	C4	650	755	649	JR5050AWT-00-0000-000N0UC440E
3500 K	70	D2	740	835	718	JR5050AWT-00-0000-000N0BD235E
	80	D2	720	795	684	JR5050AWT-00-0000-000N0HD235E
	90	C3	625	710	611	JR5050AWT-00-0000-000N0UC335E
3000 K	70	D2	730	815	700	JR5050AWT-00-0000-000N0BD230E
	80	D2	700	770	662	JR5050AWT-00-0000-000N0HD230E
	90	C3	610	690	593	JR5050AWT-00-0000-000N0UC330E
2700 K	70	D2	705	780	670	JR5050AWT-00-0000-000N0BD227E
	80	C4	670	740	636	JR5050AWT-00-0000-000N0HC427E
	90	C2	600	665	572	JR5050AWT-00-0000-000N0UC227E

**Notes:**

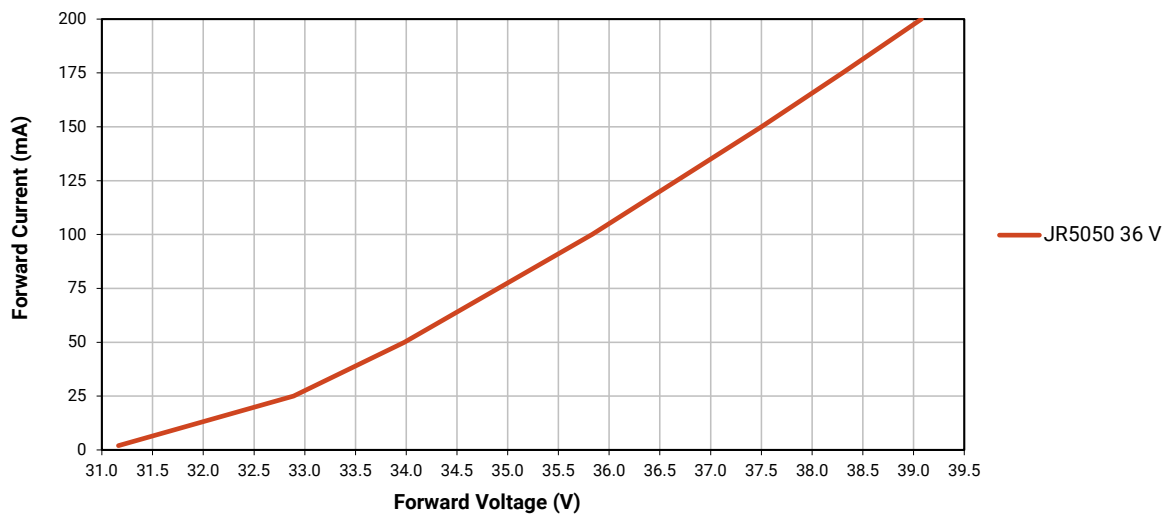
- Cree Venture maintains a tolerance of  $\pm 7\%$  on flux and power measurements,  $\pm 0.005$  on chromaticity (CCx, CCy) measurements and  $\pm 2$  on CRI measurements. See the Measurements section (page 33).
- Cree Venture J Series 5050 LED order codes specify only a minimum flux bin and not a maximum. Cree Venture 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 restrictions specified by the order code.
- \* Flux values @ 85 °C are calculated and for reference only.

**PRELIMINARY**

**RELATIVE LUMINOUS FLUX VS. CURRENT - JR5050 36 V**

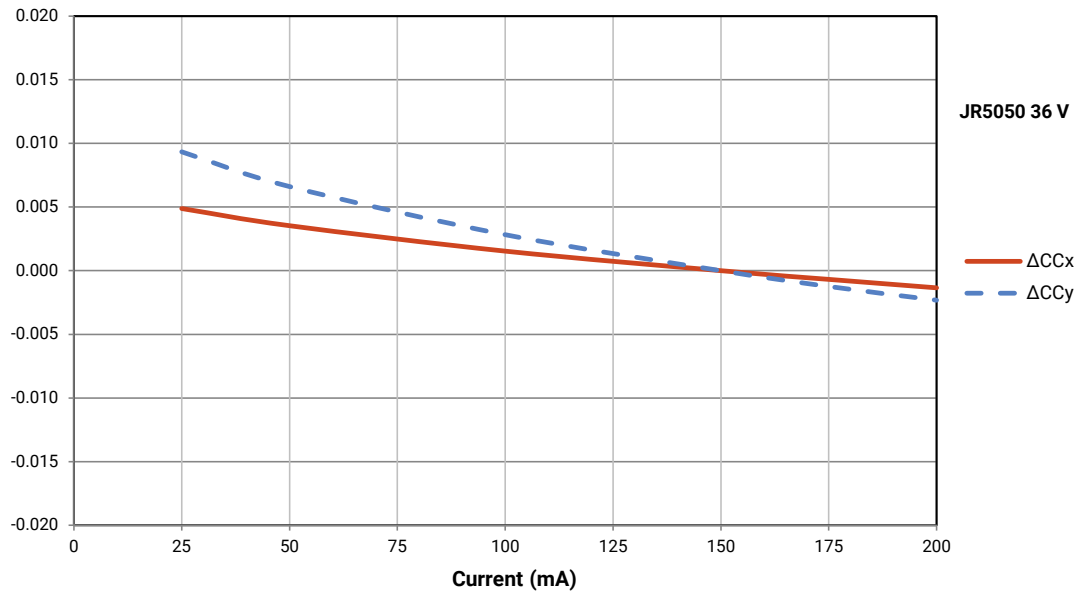


**ELECTRICAL CHARACTERISTICS - JR5050 36 V**

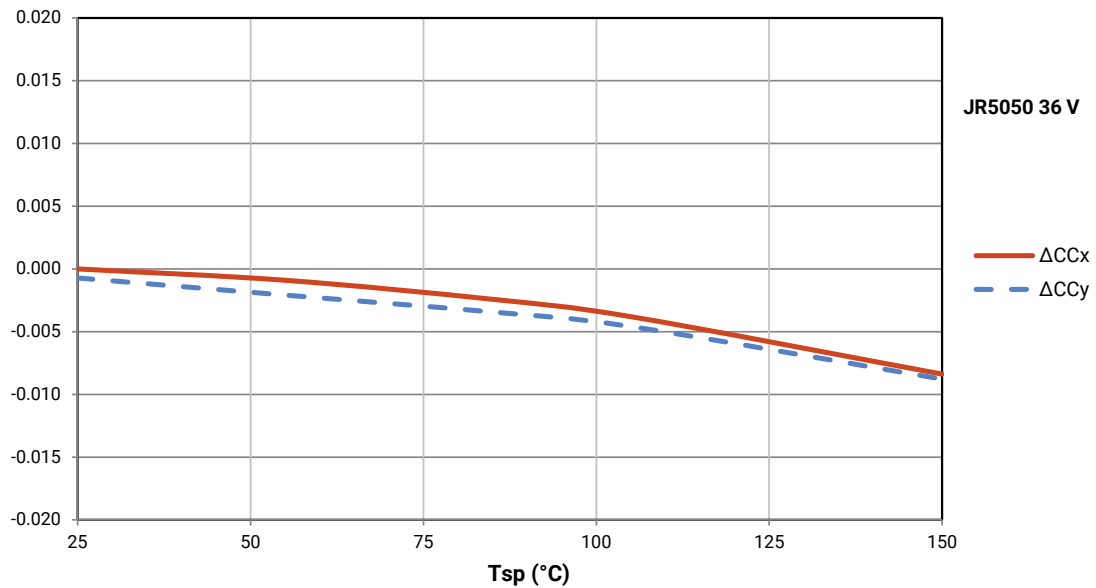


**PRELIMINARY**

**RELATIVE CHROMATICITY VS. CURRENT - JR5050 36 V**

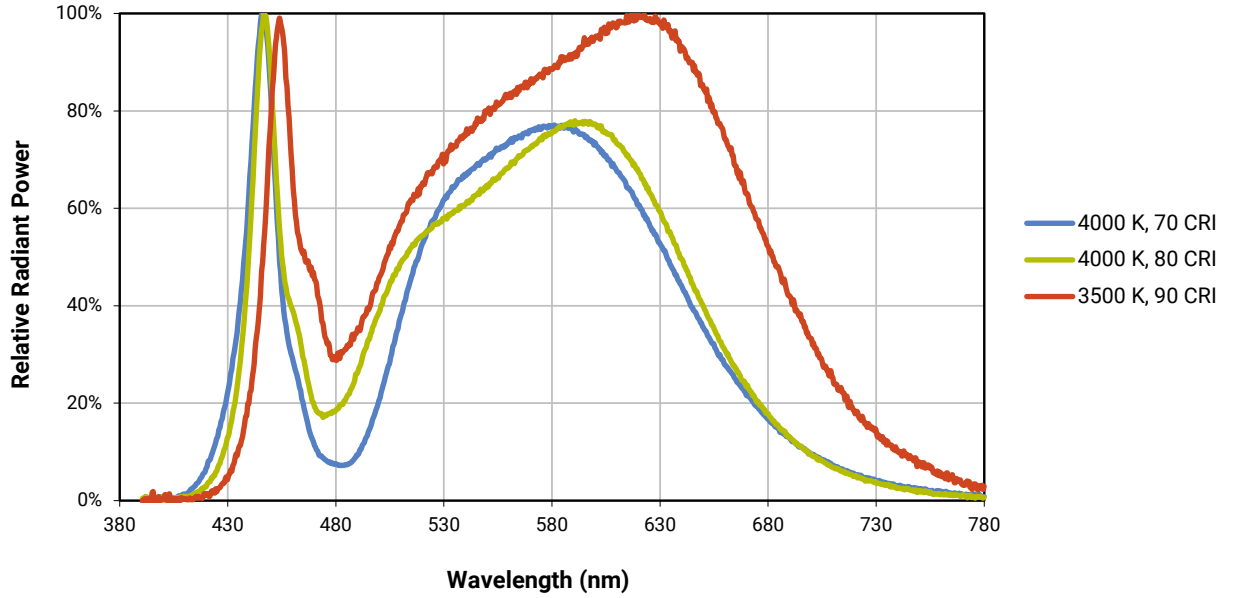


**RELATIVE CHROMATICITY VS. TEMPERATURE - JR5050 36 V**

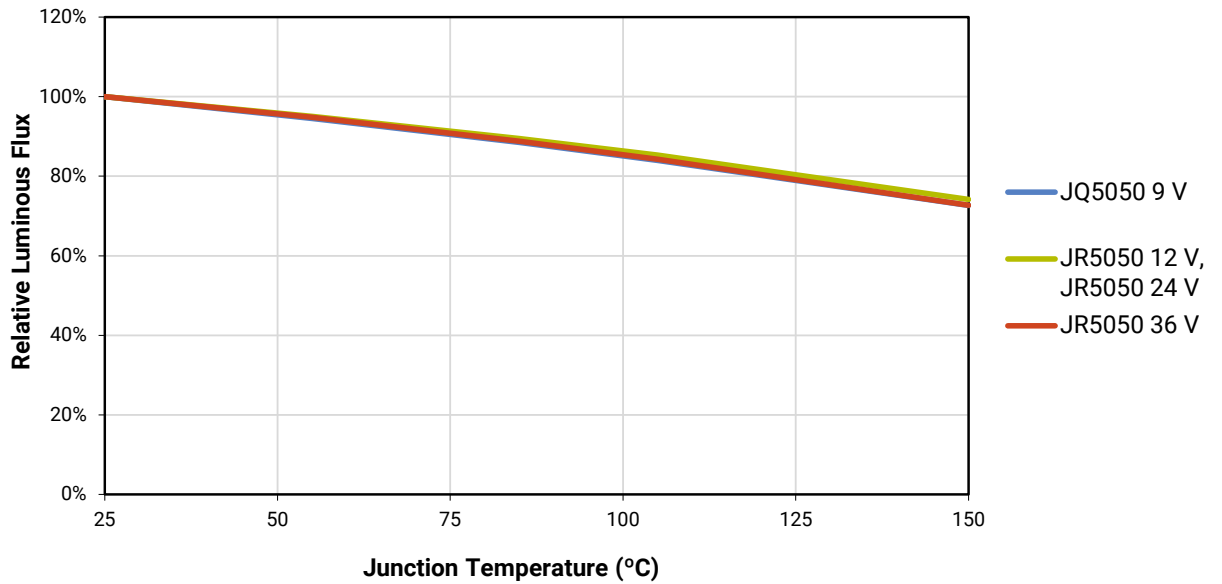


**PRELIMINARY**

**RELATIVE SPECTRAL POWER DISTRIBUTION**



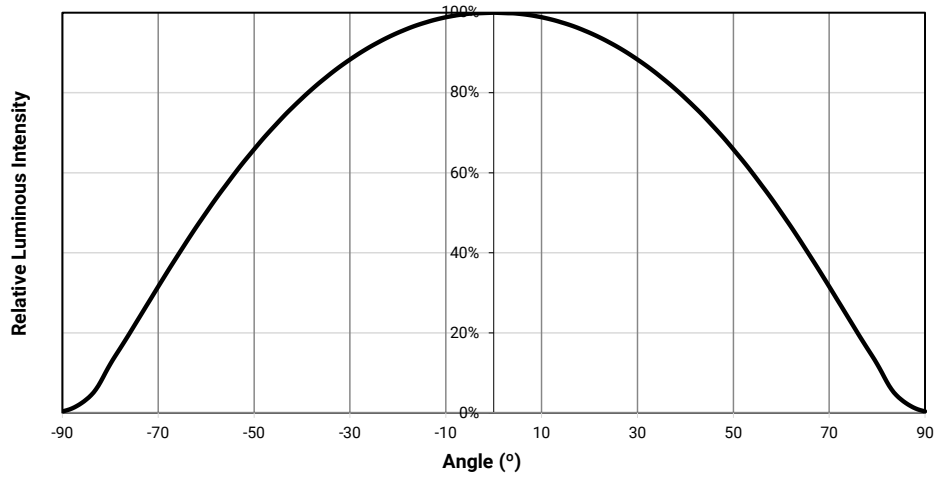
**RELATIVE LUMINOUS FLUX VS. JUNCTION TEMPERATURE**



# PRELIMINARY

## TYPICAL SPATIAL DISTRIBUTION

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## PRELIMINARY

### PERFORMANCE GROUPS - LUMINOUS FLUX ( $T_j = 25\text{ }^\circ\text{C}$ )

J Series JQ5050 9 V LEDs are tested for luminous flux at 400 mA and placed into one of the following luminous-flux groups.

Group Code	Minimum Luminous Flux (lm)	Maximum Luminous Flux (lm)
A4	350	400
B2	400	450
B3	450	500
B4	500	550

J Series JR5050 12 V LEDs are tested for luminous flux at 400 mA and placed into one of the following luminous-flux groups.

Group Code	Minimum Luminous Flux (lm)	Maximum Luminous Flux (lm)
B3	450	500
B4	500	550
C2	550	600
C3	600	650
C4	650	700

J Series JR5050 24 V LEDs are tested for luminous flux at 200 mA and placed into one of the following luminous-flux groups.

Group Code	Minimum Luminous Flux (lm)	Maximum Luminous Flux (lm)
B3	450	500
B4	500	550
C2	550	600
C3	600	650
C4	650	700
D2	700	750

J Series JR5050 36 V LEDs are tested for luminous flux at 150 mA and placed into one of the following luminous-flux groups.

Group Code	Minimum Luminous Flux (lm)	Maximum Luminous Flux (lm)
C2	550	600
C3	600	650
C4	650	700
D2	700	750
D3	750	800

## PRELIMINARY

### PERFORMANCE GROUPS - FORWARD VOLTAGE ( $T_a = 25\text{ }^\circ\text{C}$ )

J Series 5050 LEDs are tested for forward voltage and placed into one of the following voltage bins.

The following voltage bins are indicated in the Forward Voltage Bin field in the bin code for JQ5050 9 V LEDs.

Voltage Bin	Minimum Forward Voltage (V)	Maximum Forward Voltage (V)
CU	8.5	9.0
CV	9.0	9.5
CW	9.5	10.0
CY	10.0	10.5

The following voltage bins are indicated in the Forward Voltage Bin field in the bin code for JR5050 12 V LEDs.

Voltage Bin	Minimum Forward Voltage (V)	Maximum Forward Voltage (V)
DE	11.2	11.8
DF	11.8	12.4
DG	12.4	13.0
DH	13.0	13.6

The following voltage bins are indicated in the Forward Voltage Bin field in the bin code for JR5050 24 V LEDs.

Voltage Bin	Minimum Forward Voltage (V)	Maximum Forward Voltage (V)
HD	23.5	24.5
HE	24.5	25.5
HF	25.5	26.5
HG	26.5	27.5

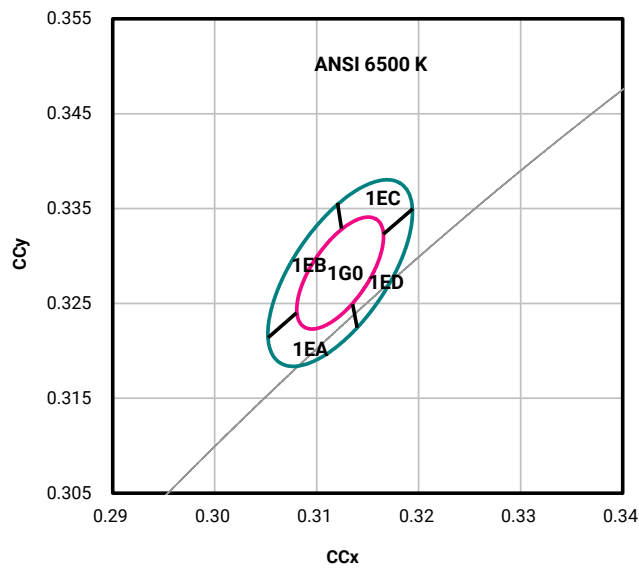
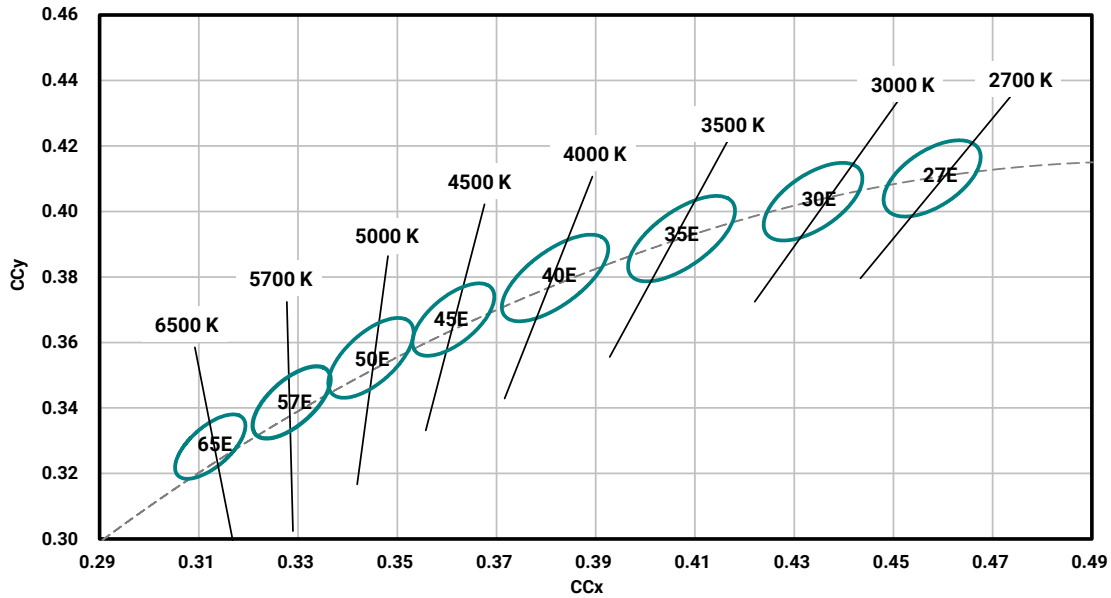
The following voltage bins are indicated in the Forward Voltage Bin field in the bin code for JR5050 36 V LEDs.

Voltage Bin	Minimum Forward Voltage (V)	Maximum Forward Voltage (V)
NF	36.0	37.0
NG	37.0	38.0
NH	38.0	39.0
NJ	39.0	40.0

# PRELIMINARY

## PERFORMANCE GROUPS - CHROMATICITY

J Series 5050 LEDs are tested for chromaticity and placed into one of the regions defined by the following bounding coordinates.

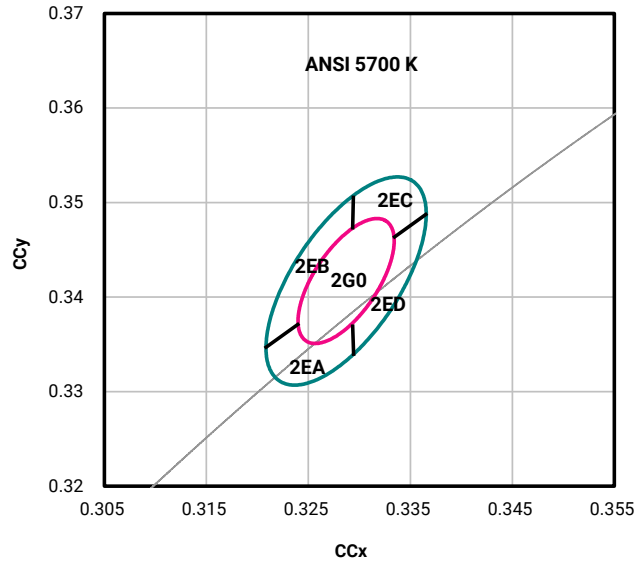


CCT	MacAdam Ellipse	Chromaticity Group	Included Bins	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
				x	y	a	b	
6500 K	3-step	65G	1G0	0.3123	0.3282	0.00669	0.00285	58.57
	5-step	65E	1G0, 1EA, 1EB, 1EC, 1ED	0.3123	0.3282	0.01115	0.00475	58.57



**PRELIMINARY**

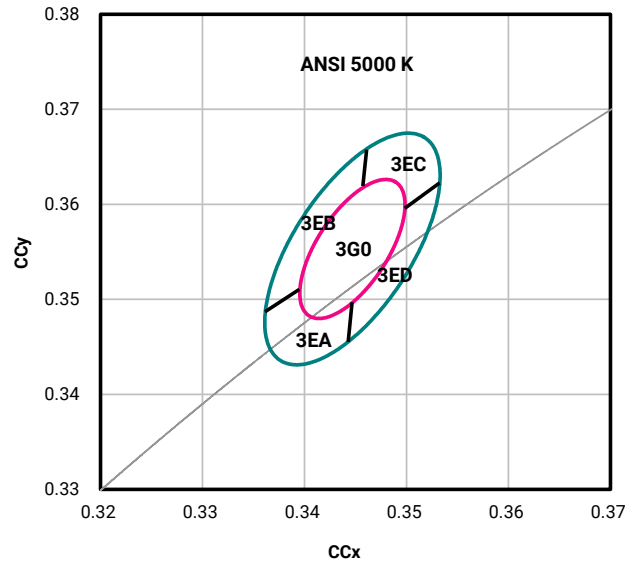
**PERFORMANCE GROUPS - CHROMATICITY - CONTINUED**



CCT	MacAdam Ellipse	Chromaticity Group	Included Bins	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
				x	y	a	b	
5700 K	3-step	57G	2G0	0.3287	0.3417	0.00746	0.00320	59.09
	5-step	57E	2G0, 2EA, 2EB, 2EC, 2ED	0.3287	0.3417	0.01243	0.00533	59.09

**PRELIMINARY**

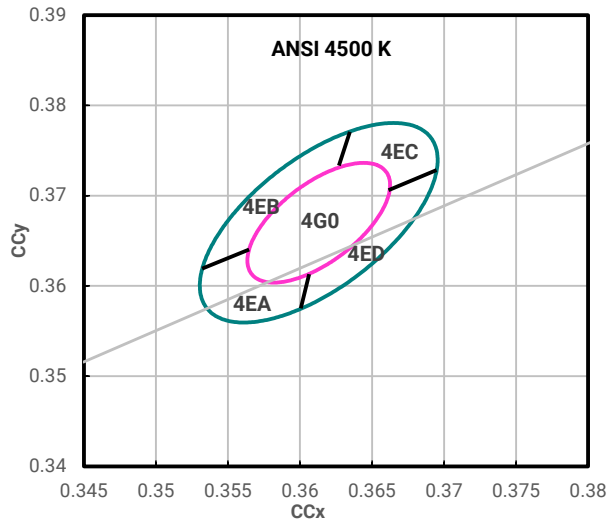
**PERFORMANCE GROUPS - CHROMATICITY - CONTINUED**



CCT	MacAdam Ellipse	Chromaticity Group	Included Bins	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
				x	y	a	b	
5000 K	3-step	50G	3G0	0.3447	0.3553	0.00822	0.00354	59.62
	5-step	50E	3G0, 3EA, 3EB, 3EC, 3ED	0.3447	0.3553	0.01370	0.00590	59.62

**PRELIMINARY**

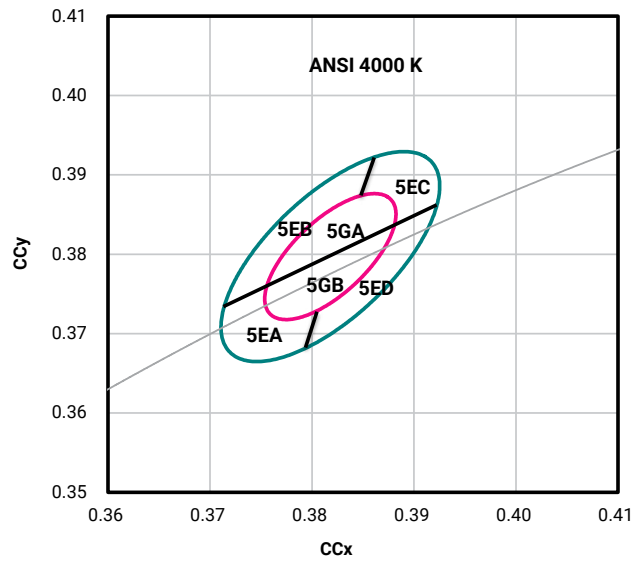
**PERFORMANCE GROUPS - CHROMATICITY - CONTINUED**



CCT	MacAdam Ellipse	Chromaticity Group	Included Bins	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
				x	y	a	b	
4500 K	3-step	45G	4G0	0.3613	0.3670	0.00756	0.00338	57.58
	5-step	45E	4G0, 4EA, 4EB, 4EC, 4ED	0.3613	0.3670	0.01260	0.00563	57.58

**PRELIMINARY**

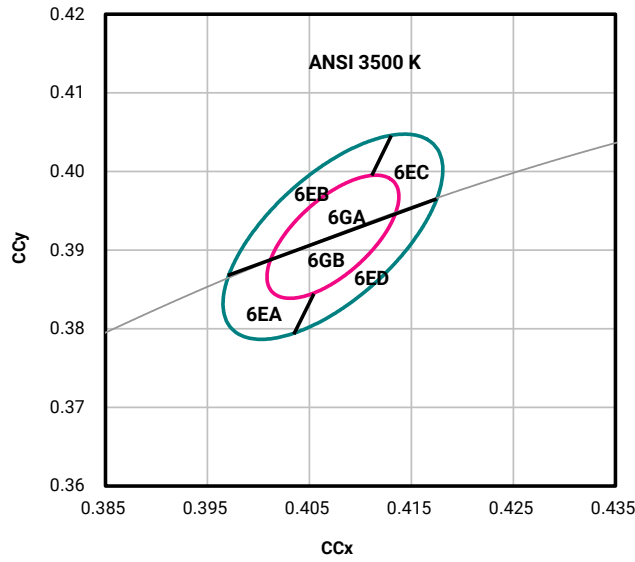
**PERFORMANCE GROUPS - CHROMATICITY - CONTINUED**



CCT	MacAdam Ellipse	Chromaticity Group	Included Bins	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
				x	y	a	b	
4000 K	3-step	40G	5GA, 5GB	0.3818	0.3797	0.00939	0.00402	53.72
	5-step	40E	5GA, 5GB, 5EA, 5EB, 5EC, 5ED	0.3818	0.3797	0.01565	0.00402	53.72

**PRELIMINARY**

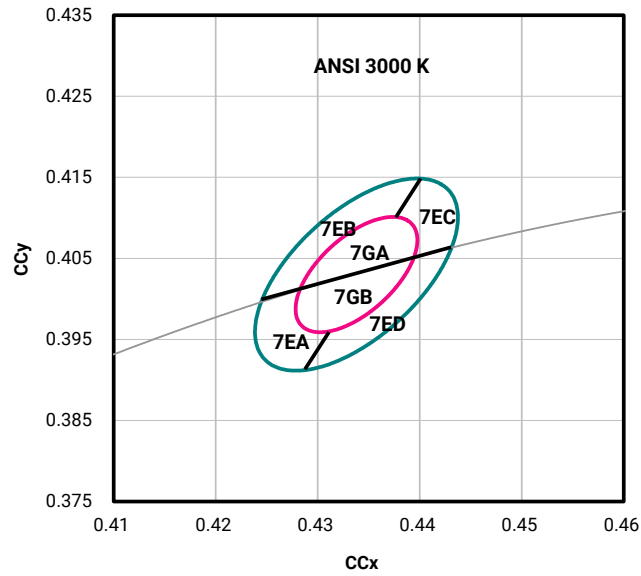
**PERFORMANCE GROUPS - CHROMATICITY - CONTINUED**



CCT	MacAdam Ellipse	Chromaticity Group	Included Bins	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
				x	y	a	b	
3500 K	3-step	35G	6GA, 6GB	0.4073	0.3917	0.00927	0.00414	53.22
	5-step	35E	6GA, 6GB, 6EA, 6EB, 6EC, 6ED	0.4073	0.3917	0.01545	0.00690	53.22

**PRELIMINARY**

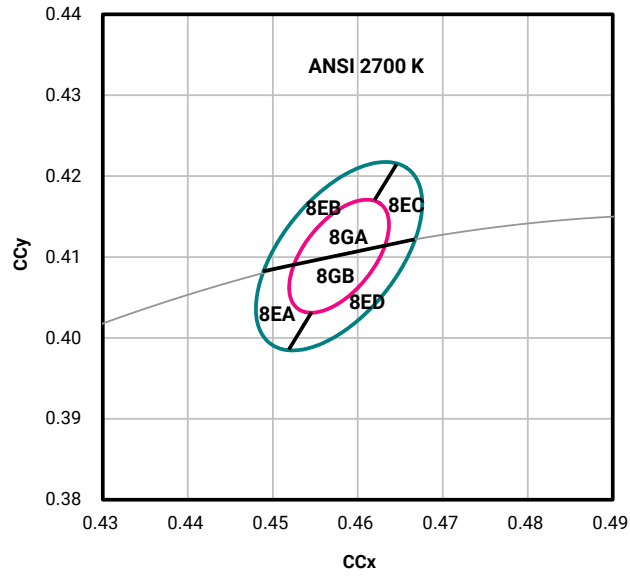
**PERFORMANCE GROUPS - CHROMATICITY - CONTINUED**



CCT	MacAdam Ellipse	Chromaticity Group	Included Bins	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
				x	y	a	b	
3000 K	3-step	30G	7GA, 7GB	0.4338	0.4030	0.00834	0.00408	53.22
	5-step	30E	7GA, 7GB, 7EA, 7EB, 7EC, 7ED	0.4338	0.4030	0.01390	0.00680	53.22

**PRELIMINARY**

**PERFORMANCE GROUPS - CHROMATICITY - CONTINUED**



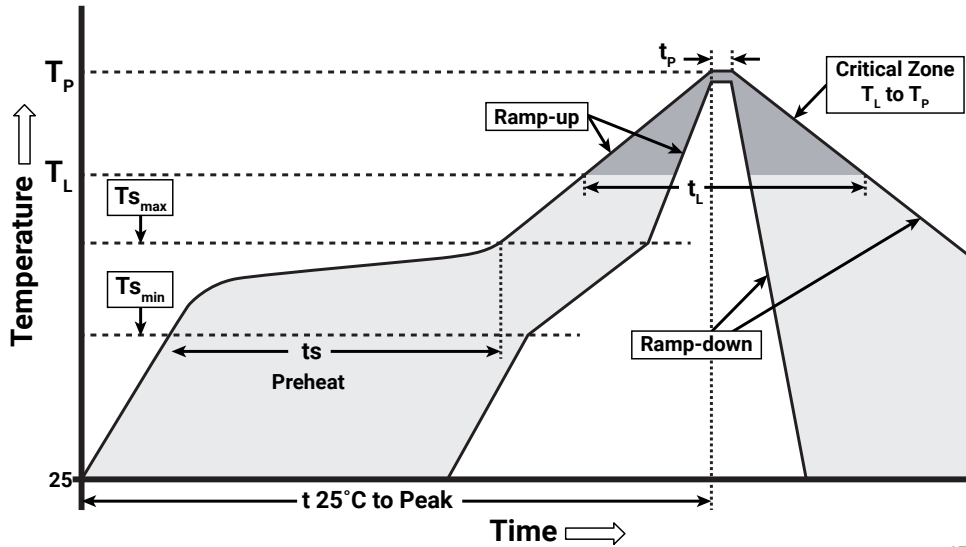
CCT	MacAdam Ellipse	Chromaticity Group	Included Bins	Center Point		Major Axis	Minor Axis	Rotation Angle (°)
				x	y	a	b	
2700 K	3-step	27G	8GA, 8GB	0.4578	0.4101	0.00810	0.00420	53.70
	5-step	27E	8GA, 8GB, 8EA, 8EB, 8EC, 8ED	0.4578	0.4101	0.01350	0.00700	53.70

# PRELIMINARY

## REFLOW SOLDERING CHARACTERISTICS

In testing, Cree has found J Series 5050 LEDs to be compatible with JEDEC J-STD-020C, using the parameters listed below. As a general guideline, Cree recommends that users follow the recommended soldering profile provided by the manufacturer of the solder paste used.

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
Temperature Min. ( $T_{s_{min}}$ )	150 °C
Temperature Max. ( $T_{s_{max}}$ )	200 °C
Time ( $t_s$ ) from $T_{s_{min}}$ to $T_{s_{max}}$	60-120 seconds
Ramp-Up Rate ( $T_L$ to $T_P$ )	3 °C/second
Liquidus Temperature ( $T_L$ )	217 °C
Time ( $t_l$ ) Maintained Above $T_L$	60-150 seconds
Peak Package Body Temperature ( $T_p$ )	260 °C max.
Time ( $t_p$ ) Within 5 °C of the Specified Classification Temperature ( $T_c$ )	30 seconds max.
Ramp-Down Rate ( $T_p$ to $T_L$ )	6 °C/second max.
Time 25 °C to Peak Temperature	8 minutes max.

Note: All temperatures refer to the 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 Venture’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.

### Lumen Maintenance

Cree uses standardized IES LM-80-08 and TM-21-11 methods for collecting long-term data and extrapolating LED lumen maintenance. For information on the specific LM-80 data sets available for this LED, refer to the public [LM-80 results document](#).

Please read the [Thermal Management application note](#) for details on how thermal design, ambient temperature, and drive current affect the LED junction temperature.

### Moisture Sensitivity

Cree recommends keeping J Series 5050 LEDs in the provided, resealable moisture-barrier packaging (MBP) until immediately prior to soldering. Unopened MBP that contains J Series 5050 LEDs does not need special storage for moisture sensitivity.

Once the MBP is opened, J Series 5050 LEDs should be handled and stored as MSL 3a per JEDEC J-STD-033, meaning they have limited exposure time before damage to the LED may occur during the soldering operation. The table on the right specifies the maximum exposure time in days depending on temperature and humidity conditions. LEDs with exposure time longer than the specified maximums must be baked according to the baking conditions listed below.

Moisture Sensitivity Level	Temp.	Maximum Percent Relative Humidity				
		50%	60%	70%	80%	90%
Level 3	35 °C	8	5	1	0.5	0.5
Level 3	30 °C	11	7	1	1	1
Level 3	25 °C	14	10	2	1	1
Level 3	20 °C	20	13	2	1	1

### Baking Conditions

It is not necessary to bake all J Series 5050 LEDs. Only the LEDs that meet all of the following criteria must be baked:

1. LEDs that have been removed from the original MBP.
2. LEDs that have been exposed to a humid environment longer than listed in the Moisture Sensitivity section above.
3. LEDs that have not been soldered.

LEDs should be baked at 60 °C for 24 hours. LEDs may be baked in the original reels. Remove LEDs from the MBP before baking. Do not bake parts at temperatures higher than 60 °C. This baking operation resets the exposure time as defined in the Moisture Sensitivity section above.

## PRELIMINARY

### NOTES - CONTINUED

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#### **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 representative or from the [Product Ecology](#) section of the Cree 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 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.

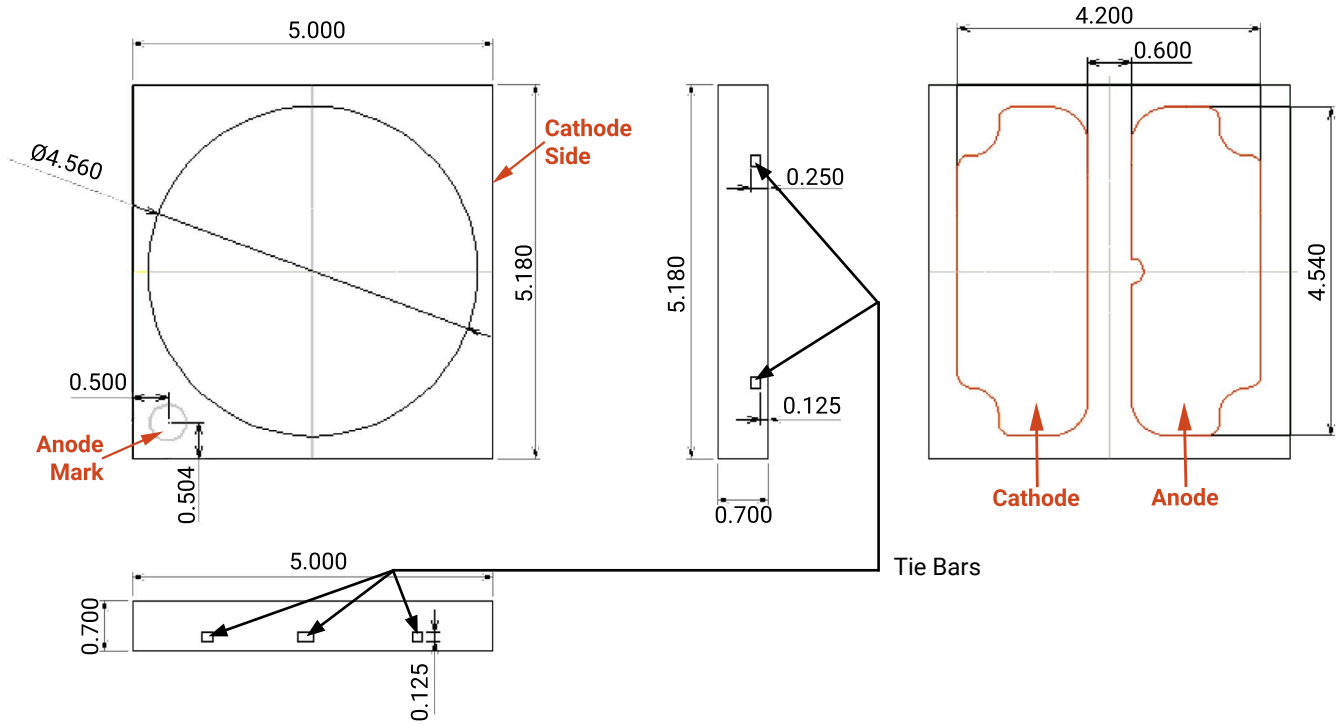
#### **Vision Advisory**

**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](#).

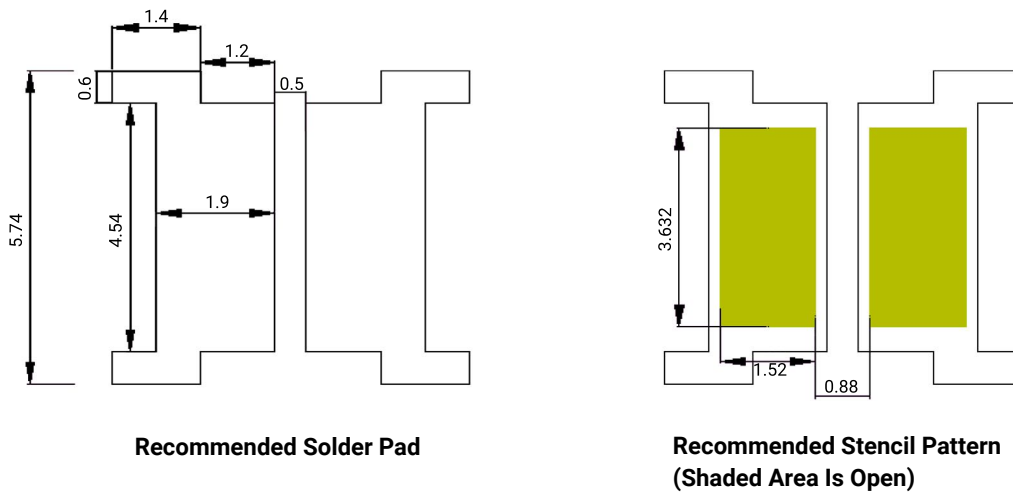
**PRELIMINARY**

**MECHANICAL DIMENSIONS**

Thermal vias, if present, are not shown on these drawings.  
All measurements are ±0.2 mm unless otherwise indicated.



All measurements are ±0.1 mm unless otherwise indicated.

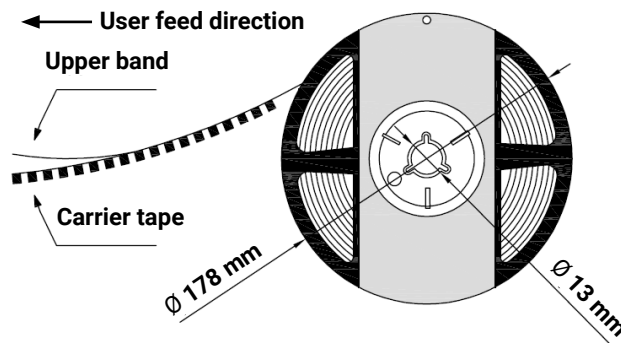
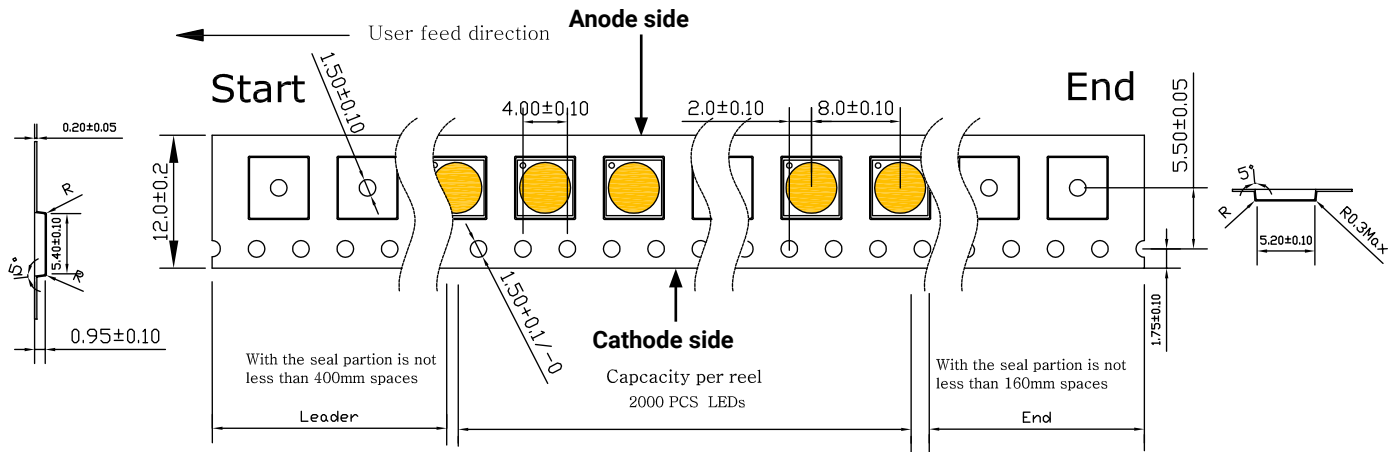


**PRELIMINARY**

**TAPE AND REEL**

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

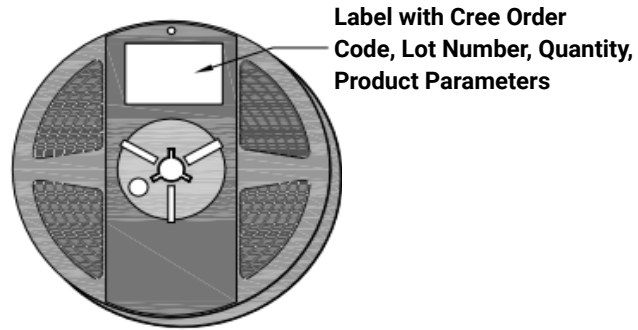
All dimensions in mm.



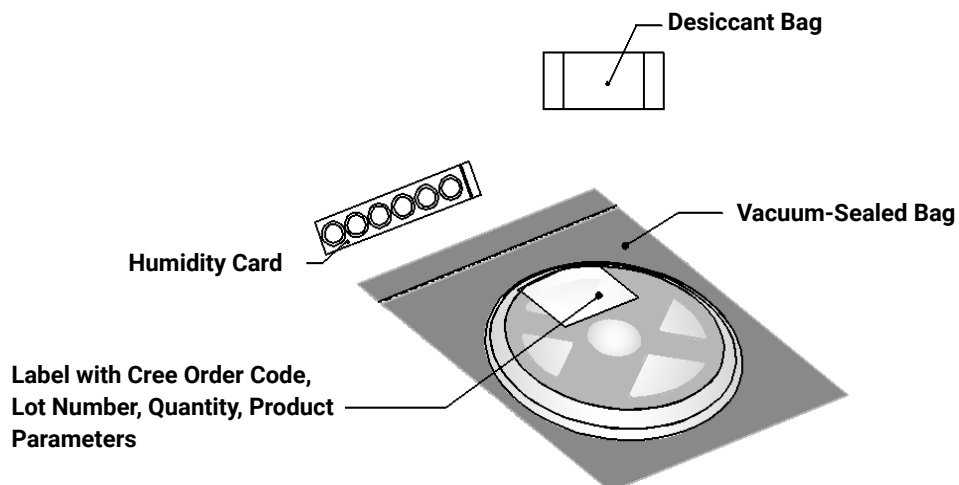
# PRELIMINARY

## PACKAGING

### Unpackaged Reel



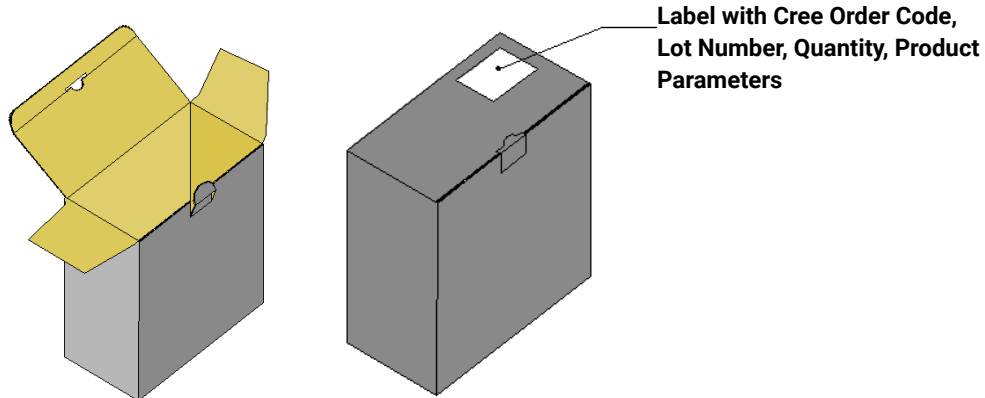
### Packaged Reel



# PRELIMINARY

## PACKAGING - CONTINUED

### Inner Box



### Outer Box

