

# Cree® 3-mm Round LED

## C374T-WNS/WNN

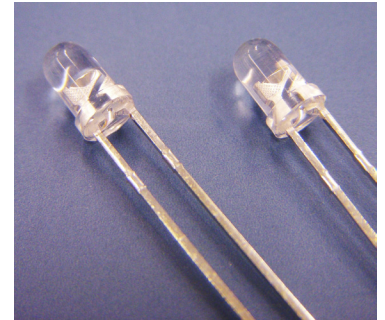
## C374T-WPS/WPN

## C374T-WQS/WQN

### Data Sheet

Round LEDs offer superior light output for excellent readability in sunlight and dependable performance. They provide extremely stable light output over long periods of time.

These lamps are made with an advanced optical-grade epoxy that offers superior high-temperature and high-moisture-resistance performance in lighting and illumination applications.



#### FEATURES

- Size (mm): 3
- Color Temperatures (K):
  - » Cool White (4600 to 15000) / Typical (9000)
- Luminous Intensity (mcd)
  - » C374T-WNS/WNN (3000-12000)
  - » C374T-WPS/WPN (2130-8200)
  - » C374T-WQS/WQN (1100-4180)
- Viewing Angle:
  - » C374T-WNS/WNN: 25 degrees
  - » C374T-WPS/WPN: 35 degrees
  - » C374T-WQS/WQN: 65 degrees
- Lead-Free
- RoHS-Compliant

#### APPLICATIONS

- Advertising Signs
- Indicators
- LCD Backlight
- Illuminations



## Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ )

Items	Symbol	Absolute Maximum Rating	Unit
		Cool White	
Forward Current	$I_F$	25	mA
Peak Forward Current <sup>Note</sup>	$I_{FP}$	100	mA
Reverse Voltage	$V_R$	5	V
Power Dissipation	$P_D$	100	mW
Operation Temperature	$T_{opr}$	-40 ~ +95	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 ~ +100	$^\circ\text{C}$
Lead Soldering Temperature	$T_{sol}$	Max. 260 $^\circ\text{C}$ for 3 sec. max. (3 mm from the base of the epoxy bulb)	

**Note:** Pulse width  $\leq 0.1$  msec, duty  $\leq 1/10$ .

## Typical Electrical & Optical Characteristics ( $T_A = 25^\circ\text{C}$ )

Characteristics		Symbol	Condition	Unit	Minimum	Typical	Maximum
Forward Voltage	Cool White	$V_F$	$I_F = 20$ mA	V		3.4	4.0
Forward Voltage	Cool White	$V_F$	$I_F = 1.0$ $\mu\text{A}$	V	1.7		2.5
Reverse Current	Cool White	$I_R$	$V_R = 5$ V	$\mu\text{A}$			100
Luminous Intensity	WNS/WNN	$I_V$	$I_F = 20$ mA	mcd	3000	4700	
	WPS/WPN	$I_V$	$I_F = 20$ mA	mcd	2130	3800	
	WQS/WQN	$I_V$	$I_F = 20$ mA	mcd	1100	1800	
Chromaticity Coordinates	Cool White	x	$I_F = 20$ mA			0.3100	
		y	$I_F = 20$ mA			0.3200	
50% Power Angle	WNS/WNN	$2\theta_{1/2H-H}$	$I_F = 20$ mA	deg		25	
	WPS/WPN	$2\theta_{1/2H-H}$	$I_F = 20$ mA	deg		35	
	WQS/WQN	$2\theta_{1/2H-H}$	$I_F = 20$ mA	deg		65	



## Intensity Bin Limit ( $I_F = 20 \text{ mA}$ )

### C374T-WNS/WNN

Bin Code	Min. (mcd)	Max. (mcd)
W0	3000	4180
X0	4180	5860
Y0	5860	8200
Z0	8200	12000

### C374T-WPS/WPN

Bin Code	Min. (mcd)	Max. (mcd)
V0	2130	3000
W0	3000	4180
X0	4180	5860
Y0	5860	8200

### C374T-WQS/WQN

Bin Code	Min. (mcd)	Max. (mcd)
T0	1100	1520
U0	1520	2130
V0	2130	3000
W0	3000	4180

Tolerance of measurement of luminous intensity is  $\pm 15\%$ .

## VF Bin Limit ( $I_F = 20 \text{ mA}$ )

### Cool White

Bin Code	Min. (V)	Max. (V)
27	2.8	3.0
28	3.0	3.2
29	3.2	3.4
2a	3.4	3.6
2b	3.6	3.8
2c	3.8	4.0

Tolerance of measurement of VF is  $\pm 0.05\text{V}$ .



## Color Bin Limit ( $I_F = 20 \text{ mA}$ )

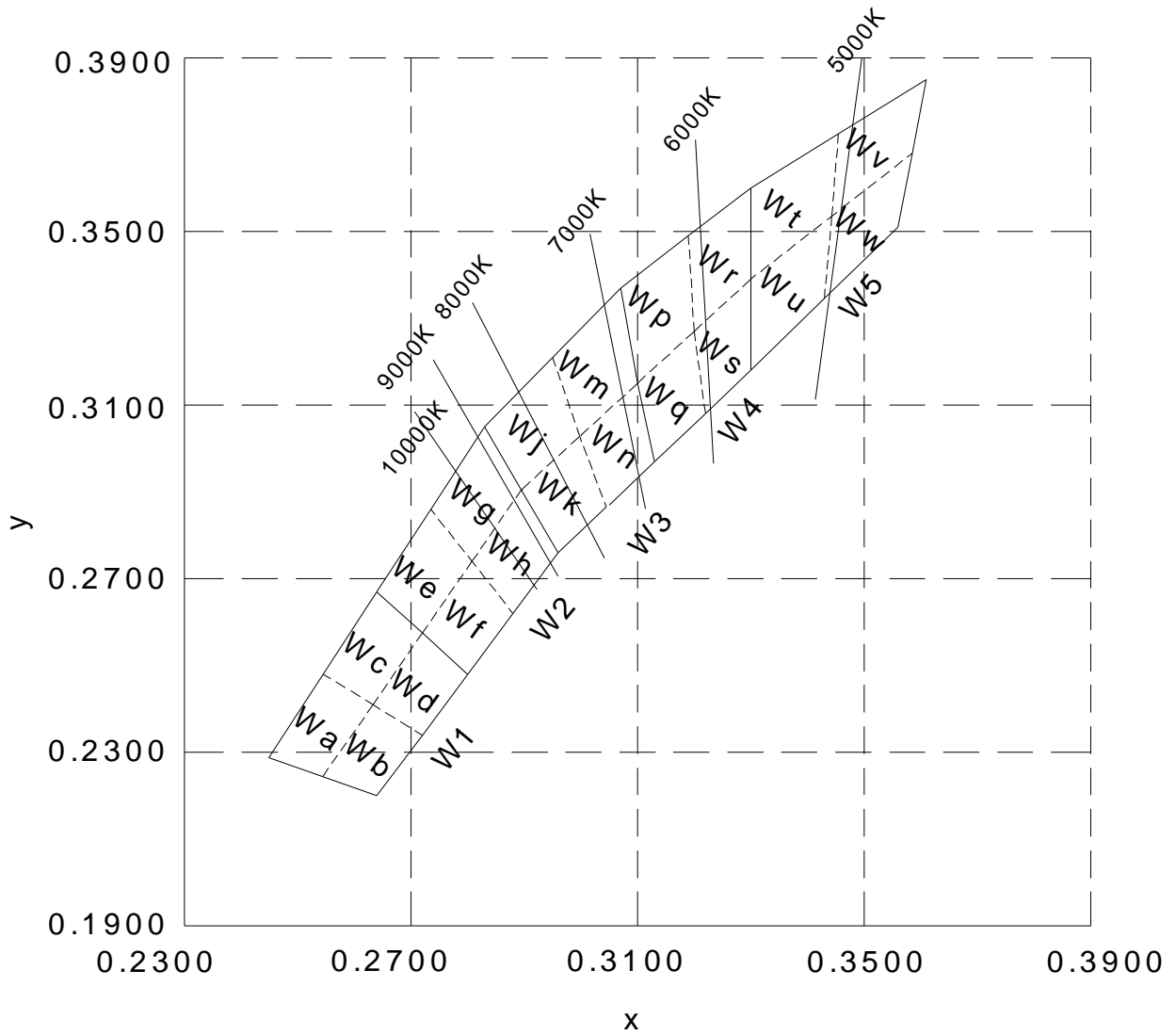
Bin Code	Sub-bin	x	y
W1	Wa	0.2545	0.2480
		0.2633	0.2410
		0.2545	0.2245
		0.2450	0.2290
	Wb	0.2633	0.2410
		0.2720	0.2340
		0.2640	0.2200
		0.2545	0.2245
	Wc	0.2545	0.2480
		0.2640	0.2670
		0.2720	0.2575
		0.2633	0.2410
	Wd	0.2633	0.2410
		0.2720	0.2575
		0.2800	0.2480
		0.2720	0.2340
W2	We	0.2640	0.2670
		0.2735	0.2860
		0.2808	0.2740
		0.2720	0.2575
	Wf	0.2720	0.2575
		0.2808	0.2740
		0.2880	0.2620
		0.2800	0.2480
	Wg	0.2735	0.2860
		0.2830	0.3050
		0.2895	0.2905
		0.2808	0.2740
	Wh	0.2808	0.2740
		0.2895	0.2905
		0.2960	0.2760
		0.2880	0.2620

Bin Code	Sub-bin	x	y
W3	Wj	0.2830	0.3050
		0.2950	0.3210
		0.2998	0.3028
		0.2895	0.2905
	Wk	0.2895	0.2905
		0.2998	0.3028
		0.3045	0.2865
		0.2960	0.2760
	Wm	0.2950	0.3210
		0.3070	0.3370
		0.3100	0.3150
		0.2998	0.3028
	Wn	0.2998	0.3028
		0.3100	0.3150
		0.3130	0.2970
		0.3045	0.2865
W4	Wp	0.3070	0.3370
		0.3185	0.3485
		0.3200	0.3270
		0.3100	0.3150
	Wq	0.3100	0.3150
		0.3200	0.3270
		0.3215	0.3075
		0.3130	0.2970
	Wr	0.3185	0.3485
		0.3300	0.3600
		0.3300	0.3390
		0.3200	0.3270
	Ws	0.3200	0.3270
		0.3300	0.3390
		0.3300	0.3180
		0.3215	0.3075

Bin Code	Sub-bin	x	y
W5	Wt	0.3300	0.3600
		0.3455	0.3725
		0.3443	0.3535
		0.3300	0.3390
	Wu	0.3300	0.3390
		0.3443	0.3535
		0.3430	0.3345
		0.3300	0.3180
	Wv	0.3455	0.3725
		0.3610	0.3850
		0.3585	0.3680
		0.3443	0.3535
	Ww	0.3443	0.3535
		0.3585	0.3680
		0.3560	0.3510
		0.3430	0.3345

Tolerance of measurement of the color coordinates is  $\pm 0.01$ .

# CIE Chromaticity Diagram





## Order Code Table\*

### 25 degrees

Color	Kit Number	Viewing Angle	Luminous Intensity (mcd)		Color Bin Code	Standoff
			Min.	Max.		
Cool White	C374T-WNS-CW0Z0151	25	3000	12000	W1,W2,W3,W4,W5	Yes
Cool White	C374T-WNS-CW0Z0131	25	3000	12000	W1,W2,W3	Yes
Cool White	C374T-WNN-CW0Z0151	25	3000	12000	W1,W2,W3,W4,W5	No
Cool White	C374T-WNN-CW0Z0131	25	3000	12000	W1,W2,W3	No

### 35 degrees

Color	Kit Number	Viewing Angle	Luminous Intensity (mcd)		Color Bin Code	Standoff
			Min.	Max.		
Cool White	C374T-WPS-CV0Y0151	35	2130	8200	W1,W2,W3,W4,W5	Yes
Cool White	C374T-WPS-CV0Y0131	35	2130	8200	W1,W2,W3	Yes
Cool White	C374T-WPS-CW0Y0131	35	3000	8200	W1,W2,W3	Yes
Cool White	C374T-WPN-CV0Y0151	35	2130	8200	W1,W2,W3,W4,W5	No
Cool White	C374T-WPN-CV0Y0131	35	2130	8200	W1,W2,W3	No
Cool White	C374T-WPN-CW0Y0131	35	3000	8200	W1,W2,W3	No

### 65 degrees

Color	Kit Number	Viewing Angle	Luminous Intensity (mcd)		Color Bin Code	Standoff
			Min.	Max.		
Cool White	C374T-WQS-CT0W0151	65	1100	4180	W1,W2,W3,W4,W5	Yes
Cool White	C374T-WQS-CT0W0131	65	1100	4180	W1,W2,W3	Yes
Cool White	C374T-WQS-CU0W0131	65	1520	4180	W1,W2,W3	Yes
Cool White	C374T-WQN-CT0W0151	65	1100	4180	W1,W2,W3,W4,W5	No
Cool White	C374T-WQN-CT0W0131	65	1100	4180	W1,W2,W3	No
Cool White	C374T-WQN-CU0W0131	65	1520	4180	W1,W2,W3	No

#### Notes:

1. 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.
2. Please refer to the "Cree LED Lamp Reliability Test Standards" document for reliability test conditions.
3. Please refer to the "Cree LED Lamp Soldering & Handling" document for information about how to use this LED product safely.

# Graphs

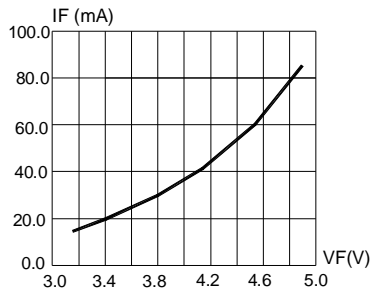


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

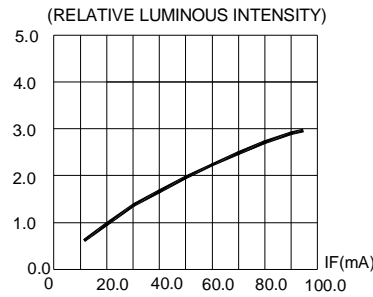


FIG.2 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

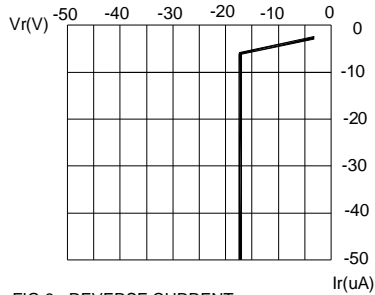


FIG.3 REVERSE CURRENT VS. REVERSE VOLTAGE.

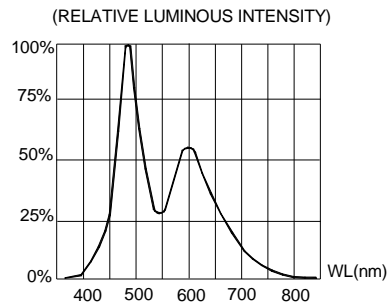


FIG.4 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

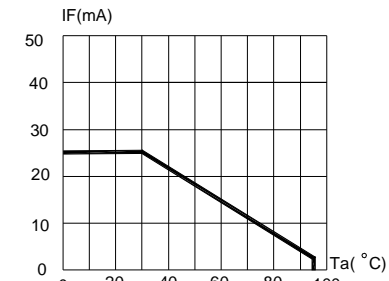


FIG.5 MAXIMUM FORWARD DC CURRENT VS AMBIENT TEMPERATURE ( $T_{jmax}=105^{\circ}C$ )

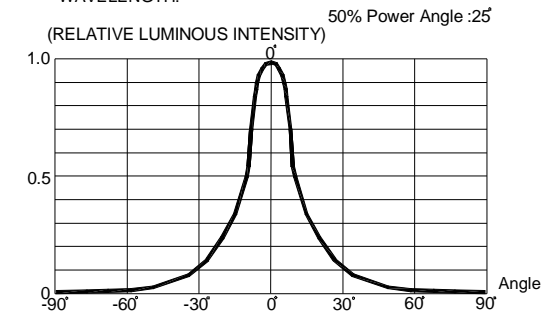


FIG.6 FAR FIELD PATTERN

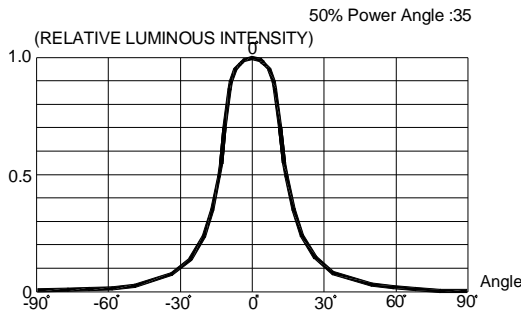


FIG.7 FAR FIELD PATTERN

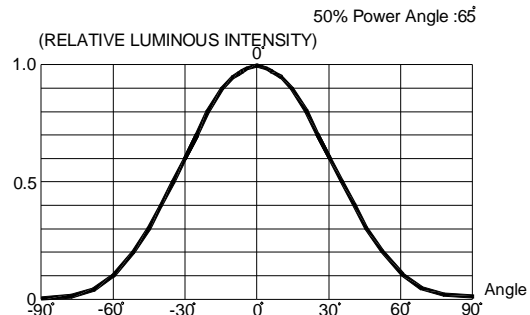


FIG.8 FAR FIELD PATTERN

The above data 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.

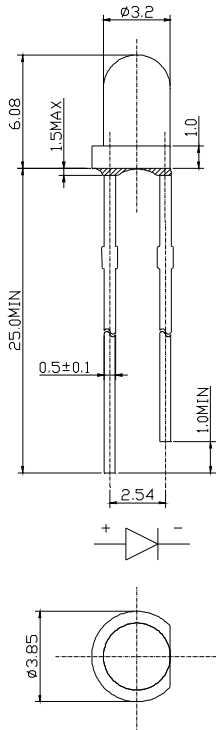
## Mechanical Dimensions

All dimensions are in mm. Tolerance is  $\pm 0.25$  mm unless otherwise noted.

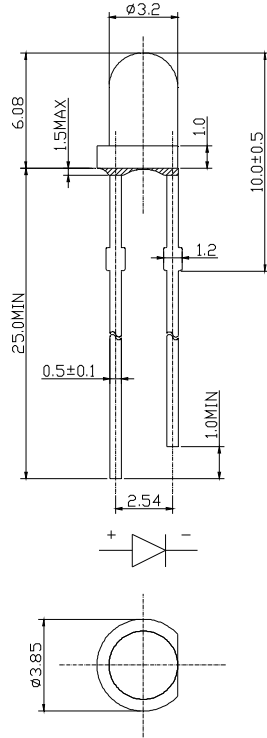
An epoxy meniscus may extend about 1.5 mm down the leads.

Burr around bottom of epoxy may be 0.5 mm max.

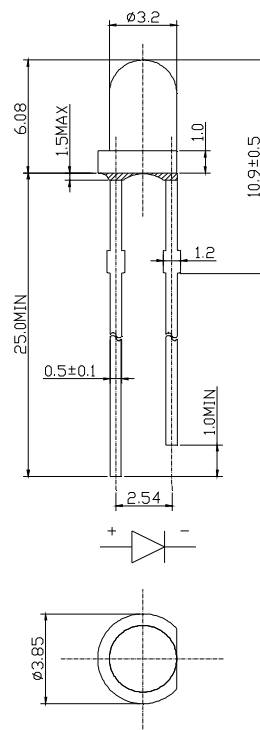
C374T-WNN&WPN&WQN:



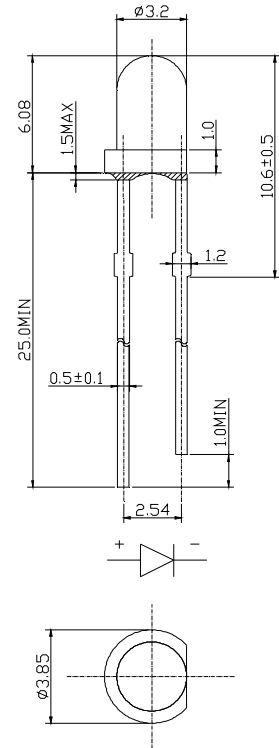
C374T-WQS:



C374T-WNS:



C374T-WPS:



## Notes

### RoHS Compliance

The levels of environmentally sensitive, persistent biologically toxic (PBT), persistent organic pollutants (POP), or otherwise 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 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as amended through April 21, 2006.

### Vision Advisory Claim

Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.

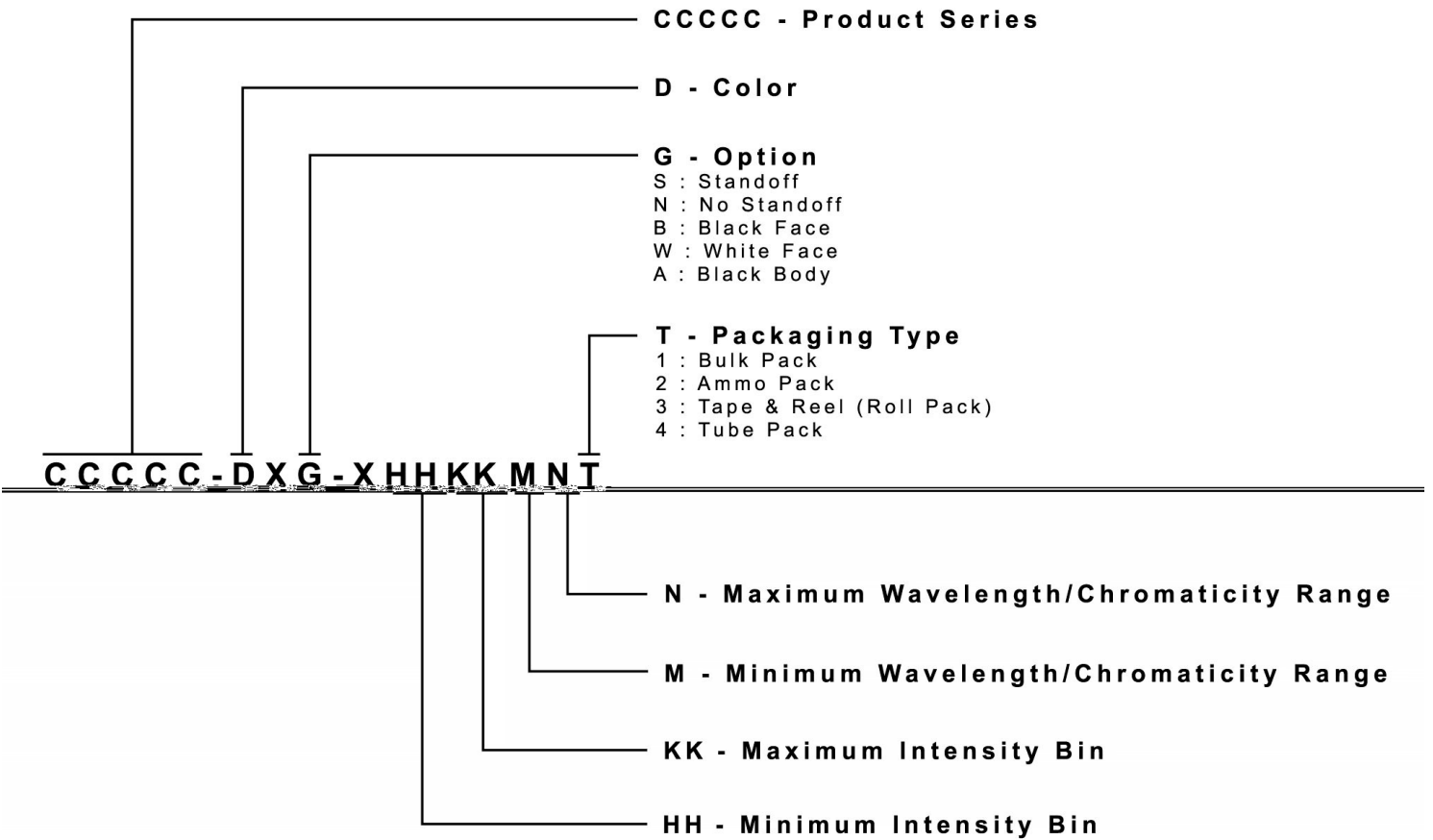




## Kit Number System

Cree LED lamps are tested and sorted into performance bins. A bin is specified by ranges of color, forward voltage, and brightness. Sorted LEDs are packaged for shipping in various convenient options. Please refer to the "Cree LED Lamp Packaging Standard" document for more information about shipping and packaging options.

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



## Package

### Features:

- 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 shock during transportation.
- The boxes are not water-resistant, and they must be kept away from water and moisture.
- The Bulk Pack types of packaging.
- Max 500 pcs per bag.

