

Cree[®] 5-mm Red and Amber Round LED C503T-RAS/RAN C503T-RCS/RCN/ACS

PRODUCT DESCRIPTION

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 offering superior high-temperature and highmoisture-resistance performance in outdoor signal and sign applications.

FEATURES

- Size (mm): 5
- Color and Typical Dominant Wavelength: Red (628nm) Amber(591nm)
- Luminous Intensity (mcd) C503T-RAS/RAN: (4180 - 16800) C503T-RCS/RCN: (2130 - 8200) C503T-ACS: (2130 - 8200)
- Viewing angle: C503T-RAS/RAN: 15 degree C503T-RCS/RCN/ACS: 30 degree
- Lead Free
- RoHS Compliant



CLD-CT938.001

APPLICATIONS

- Electronic Signs & Signals (ESS)
- Motorway Signs
- Variable Message Sign (VMS)
- Advertising signs
- Petrol Signs
- Amusement

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

Items	ns Symbol		Unit			
		Red/Amber				
Forward Current	I _F	50 Note1	mA			
Peak Forward Current Note2	\mathbf{I}_{FP}	200	mA			
Reverse Voltage	V _R	5	V			
Power Dissipation	P _D	130	mW			
Operation Temperature	T _{opr}	-40 ~ +95	°C			
Storage Temperature	T _{stg}	-40 ~ +100	°C			
Lead Soldering Temperature	T _{sol}	Max. 260°C for 3 sec. max. (3 mm from the base of the epoxy bulb)				
Electrostatic Discharge Classification (MIL-STD-883E)	ESD	Class 2				

Note:

- 1. For long term performance the drive currents between 10mA and 30mA are recommended. Please contact CREE sales representative for more information on recommended drive conditions.
- 2. Pulse width ≤ 0.1 msec, duty $\leq 1/10$.

TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS (T_A = 25^{\circ}C)

Characteristics	Color		Symbol	Condition	Unit	Minimum	Typical	Maximum
Forward Voltage		Red/Amber	V _F	$I_F = 20 \text{ mA}$	V		2.3	2.6
Reverse Current		Red/Amber	I _R	$V_{R} = 5 V$	μA			100
Dominant Wayalanath	Red		λ_{D}	$I_F = 20 \text{ mA}$	nm	620	628	635
Dominant Wavelength		Amber	$\lambda_{\rm D}$	$I_{F} = 20 \text{ mA}$	nm	584	591	596
	Ded	C503T-RAS/RAN (15 degree)	I_v	$I_{F} = 20 \text{ mA}$	mcd	4180	6500	
Luminous Intensity	Red	C503T-RCS/RCN (30 degree)	Iv	$I_{F} = 20 \text{ mA}$	mcd	2130	3300	
	Amber	Amber C503T-ACS (30 degree)		$I_{F} = 20 \text{ mA}$	mcd	2130	3300	
50% Power Angle	C503T-RAS/RAN		201⁄2	$I_{F} = 20 \text{ mA}$	deg		15	
	C503T-RCS/RCN/ACS		201⁄2	$I_{F} = 20 \text{ mA}$	deg		30	



INTENSITY BIN LIMIT (I_F = 20 mA)

Red

C503T-RAS/RAN (15 degree)

Bin Code	Min. (mcd)	Max. (mcd)
X0	4180	5860
YO	5860	8200
Z0	8200	12000
A0	12000	16800

A	m	be	r	

C503T-ACS (30 degree)

Bin Code	Min. (mcd)	Max. (mcd)
V0	2130	3000
WO	3000	4180
X0	4180	5860

C503T-RCS/RCN (30 degree)

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

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

COLOR BIN LIMIT $(I_F = 20 \text{ mA})$

Red			
Bin Code	Min. (nm)	Max. (nm)	
RC	620	635	

Amber		
Bin Code	Min. (nm)	Max. (nm)
A2	584	587
A3	587	590
A4	590	593
A5	593	596

 \bullet Tolerance of measurement of dominant wavelength is $\pm 1 \mbox{ nm}$



ORDER CODE TABLE*

Red (15 degree)

Color Kit Number	Viewing	Luminous Intensity (mcd)		Dominant Wavelength				ĺ		
	Color	Kit Number	Angle	Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)	Package
Red	C503T-RAS-CX0A0CC1	15	4180	16800	RC	620	RC	635	Bulk	Yes
Red	C503T-RAN-CX0A0CC1	15	4180	16800	RC	620	RC	635	Bulk	No
Red	C503T-RAS-CX0A0CC2	15	4180	16800	RC	620	RC	635	Ammo	Yes
Red	C503T-RAN-CX0A0CC2	15	4180	16800	RC	620	RC	635	Ammo	No

Red (30 degree)

	Viewing		Viewing Luminous Intensity (mcd)		Dominant Wavelength					
Color	Kit Number	Angle	Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)	Package	Standoff
Red	C503T-RCS-CV0Y0CC1	30	2130	8200	RC	620	RC	635	Bulk	Yes
Red	C503T-RCN-CV0Y0CC1	30	2130	8200	RC	620	RC	635	Bulk	No
Red	C503T-RCS-CV0Y0CC2	30	2130	8200	RC	620	RC	635	Ammo	Yes
Red	C503T-RCN-CV0Y0CC2	30	2130	8200	RC	620	RC	635	Ammo	No

Amber (30 degree)

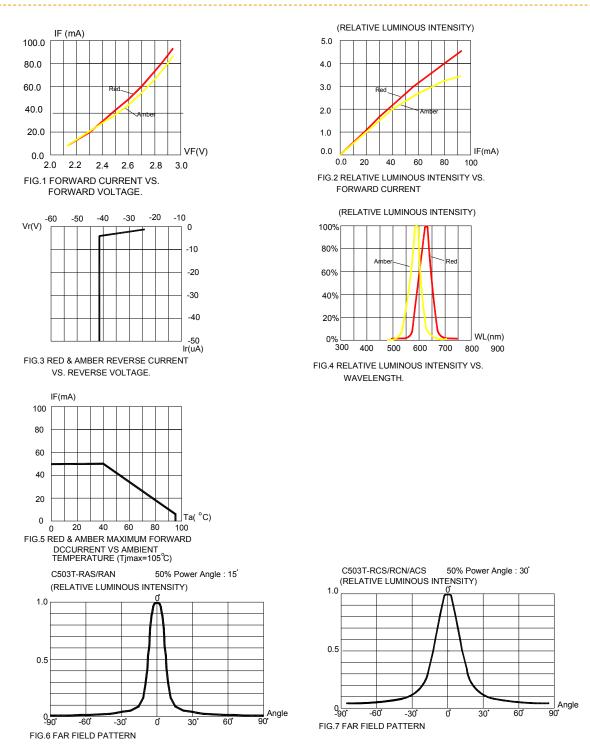
			Luminous Intensity (mcd		Dominant Wavelength					
Color	Kit Number	Viewing Angle	Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)	Package	Standoff
Amber	C503T-ACS-CV0X0251	30	2130	5860	A2	584	A5	596	Bulk	Yes
Amber	C503T-ACS-CV0X0351	30	2130	5860	A3	587	A5	596	Bulk	Yes
Amber	C503T-ACS-CV0X0252	30	2130	5860	A2	584	A5	596	Ammo	Yes
Amber	C503T-ACS-CV0X0352	30	2130	5860	A3	587	A5	596	Ammo	Yes

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



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.

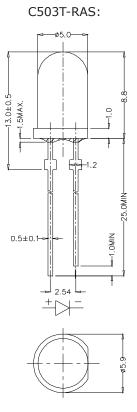


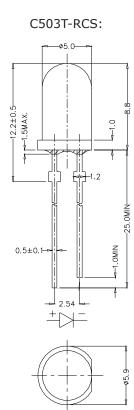
MECHANICAL DIMENSIONS

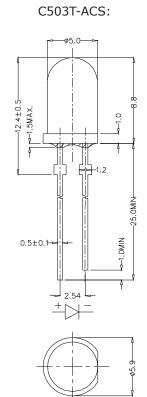
All dimensions are in mm. Tolerance is ± 0.25 mm unless otherwise noted.

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

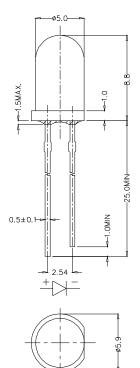
Burr around bottom of epoxy may be 0.5 mm max.











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

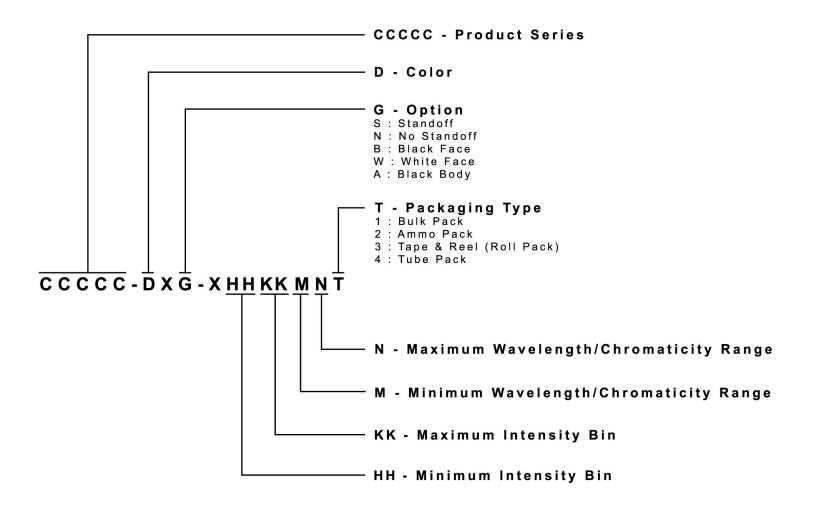
Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.



KIT NUMBER SYSTEM

All dimensions in mm.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:





PACKAGING

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 bulk and Max 2500 pcs per ammo.

Bulk Pack Packaging Type:

Ammo Pack Packaging Type:

