

Cree® Screen Master® 5-mm Oval LED C566C-RFF/GFF/BFF/AFF C566C-RFE/GFE/BFE/AFE



PRODUCT DESCRIPTION

The oval LED is specifically designed for variable-message signs and passenger-information signs. The oval-shaped radiation pattern and high luminous intensity ensure that these devices are excellent for wide-field-of-view outdoor applications where a wide viewing angle and readability in sunlight are essential.

These lamps are tinted and diffused. The encapsulation resin contains anti-UV material in order to reduce the effects of long-term exposure to direct sunlight.

FEATURES

- Size (mm): 5
- Color and Typical Dominant Wavelength: Red (621nm) Green(527nm) Blue(470nm) Amber(591nm)
- Luminous Intensity (mcd)
 C566C-RFF/RFE:(1520-4180)
 C566C-GFF/GFE:(4180-12000)
 C566C-BFF/BFE:(1100-3000)
 C566C-AFF/AFE:(1520-4180)
- Viewing angle: 70 X 35 degree
- Lead Free
- RoHS Compliant

APPLICATIONS

- Electronic Signs & Signals (ESS)
- Full Color video screen
- Motorway Signs
- Variable Message Sign (VMS)
- Advertising signs
- Petrol Signs



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

Items	Symbol	Absolute Max	imum Rating	Unit
		Red and Amber	Blue and Green	
Forward Current	$I_{_{\rm F}}$	50 Note1	35	mA
Peak Forward Current Note2	$I_{_{FP}}$	200	100	mA
Reverse Voltage	V_R	5 5		V
Power Dissipation	$P_{_{D}}$	130	140	mW
Operation Temperature	T_{opr}	-40 ~	+95	°C
Storage Temperature	T_{stg}	-40 ~	+100	°C
Lead Soldering Temperature	T_{sol}	(3	Max. 260°C for 3 se mm from the base of the	
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
Famurand Valtage	Red/Amber	$V_{_{\rm F}}$	$I_F = 20 \text{ mA}$	V		2.1	2.6
Forward Voltage	Blue/Green	$V_{\scriptscriptstyle F}$	$I_F = 20 \text{ mA}$	V		3.4	4.0
	Red/Amber	I_R	$V_R = 5 V$	μΑ			100
Reverse Current	Blue/Green	I_R	$V_R = 5 V$	μΑ			100
	Red	$\lambda_{_{\mathrm{D}}}$	$I_F = 20 \text{ mA}$	nm	619	621	624
Dominant Wayalanath	Green	$\lambda_{_{\mathrm{D}}}$	$I_F = 20 \text{ mA}$	nm	520	527	535
Dominant Wavelength	Blue	$\lambda_{_{\mathrm{D}}}$	$I_F = 20 \text{ mA}$	nm	460	470	475
	Amber	$\lambda_{_{\mathrm{D}}}$	$I_F = 20 \text{ mA}$	nm	584	591	596
	Red	I_{v}	$I_F = 20 \text{ mA}$	mcd	1520	2200	
Luminous Intensity	Green	I_{V}	$I_F = 20 \text{ mA}$	mcd	4180	5200	
Luminous intensity	Blue	I_{v}	$I_F = 20 \text{ mA}$	mcd	1100	1500	
	Amber	I_{v}	$I_F = 20 \text{ mA}$	mcd	1520	2200	



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

Red

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

Amber

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

Green

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

Blue

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

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

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

Red

Bin Code	Min.(nm)	Max.(nm)
RB	619	624

Amber

Bin Code	Min. (nm)	Max. (nm)
A2	584	587
А3	587	590
A4	590	593
A5	593	596

Green

Bin Code	Min.(nm)	Max.(nm)
G7	520	525
G8	525	530
G9	530	535

Blue

Bin Code	Min.(nm)	Max.(nm)
В3	460	465
B4	465	470
B5	470	475

ullet Tolerance of measurement of dominant wavelength is $\pm 1~\text{nm}$



ORDER CODE TABLE*

Color	Kit Number	Luminous Int	ensity (mcd)		Dominant \	Wavelength		Baskana	Chan deff
Color	Coloi Kit Nullibei	Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)	Package	Standoff
Red	C566C-RFF-CU0W0BB1	1520	4180	RB	619	RB	624	Bulk	Yes
Red	C566C-RFF-CU0V0BB1	1520	3000	RB	619	RB	624	Bulk	Yes
Red	C566C-RFF-CV0W0BB1	2130	4180	RB	619	RB	624	Bulk	Yes
Red	C566C-RFE-CU0W0BB1	1520	4180	RB	619	RB	624	Bulk	No
Red	C566C-RFE-CU0V0BB1	1520	3000	RB	619	RB	624	Bulk	No
Red	C566C-RFE-CV0W0BB1	2130	4180	RB	619	RB	624	Bulk	No
Red	C566C-RFF-CU0W0BB2	1520	4180	RB	619	RB	624	Ammo	Yes
Red	C566C-RFF-CU0V0BB2	1520	3000	RB	619	RB	624	Ammo	Yes
Red	C566C-RFF-CV0W0BB2	2130	4180	RB	619	RB	624	Ammo	Yes
Red	C566C-RFE-CU0W0BB2	1520	4180	RB	619	RB	624	Ammo	No
Red	C566C-RFE-CU0V0BB2	1520	3000	RB	619	RB	624	Ammo	No
Red	C566C-RFE-CV0W0BB2	2130	4180	RB	619	RB	624	Ammo	No

Calan	ICI Novel or	Luminous Int	ensity (mcd)		Dominant \	Wavelength		Baratara a	Character (f
Color	Kit Number	Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)	Package	Standoff
Green	C566C-GFF-CX0Z0791	4180	12000	G7	520	G9	535	Bulk	Yes
Green	C566C-GFF-CX0Y0781	4180	8200	G7	520	G8	530	Bulk	Yes
Green	C566C-GFF-CX0Y0891	4180	8200	G8	525	G9	535	Bulk	Yes
Green	C566C-GFF-CY0Z0781	5860	12000	G7	520	G8	530	Bulk	Yes
Green	C566C-GFF-CY0Z0891	5860	12000	G8	525	G9	535	Bulk	Yes
Green	C566C-GFE-CX0Z0791	4180	12000	G7	520	G9	535	Bulk	No
Green	C566C-GFE-CX0Y0781	4180	8200	G7	520	G8	530	Bulk	No
Green	C566C-GFE-CX0Y0891	4180	8200	G8	525	G9	535	Bulk	No
Green	C566C-GFE-CY0Z0781	5860	12000	G7	520	G8	530	Bulk	No
Green	C566C-GFE-CY0Z0891	5860	12000	G8	525	G9	535	Bulk	No
Green	C566C-GFF-CX0Z0792	4180	12000	G7	520	G9	535	Ammo	Yes
Green	C566C-GFF-CX0Y0782	4180	8200	G7	520	G8	530	Ammo	Yes
Green	C566C-GFF-CX0Y0892	4180	8200	G8	525	G9	535	Ammo	Yes
Green	C566C-GFF-CY0Z0782	5860	12000	G7	520	G8	530	Ammo	Yes
Green	C566C-GFF-CY0Z0892	5860	12000	G8	525	G9	535	Ammo	Yes
Green	C566C-GFE-CX0Z0792	4180	12000	G7	520	G9	535	Ammo	No
Green	C566C-GFE-CX0Y0782	4180	8200	G7	520	G8	530	Ammo	No
Green	C566C-GFE-CX0Y0892	4180	8200	G8	525	G9	535	Ammo	No
Green	C566C-GFE-CY0Z0782	5860	12000	G7	520	G8	530	Ammo	No
Green	C566C-GFE-CY0Z0892	5860	12000	G8	525	G9	535	Ammo	No



ORDER CODE TABLE*

Color	Kit Number	Luminous Intensity (mcd)		Dominant Wavelength					a
		Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)	Package	Standoff
Blue	C566C-BFF-CT0V0351	1100	3000	В3	460	B5	475	Bulk	Yes
Blue	C566C-BFF-CT0U0341	1100	2130	В3	460	B4	470	Bulk	Yes
Blue	C566C-BFF-CT0U0451	1100	2130	B4	465	B5	475	Bulk	Yes
Blue	C566C-BFF-CU0V0341	1520	3000	В3	460	B4	470	Bulk	Yes
Blue	C566C-BFF-CU0V0451	1520	3000	B4	465	B5	475	Bulk	Yes
Blue	C566C-BFE-CT0V0351	1100	3000	В3	460	B5	475	Bulk	No
Blue	C566C-BFE-CT0U0341	1100	2130	В3	460	B4	470	Bulk	No
Blue	C566C-BFE-CT0U0451	1100	2130	B4	465	B5	475	Bulk	No
Blue	C566C-BFE-CU0V0341	1520	3000	В3	460	B4	470	Bulk	No
Blue	C566C-BFE-CU0V0451	1520	3000	B4	465	B5	475	Bulk	No
Blue	C566C-BFF-CT0V0352	1100	3000	В3	460	B5	475	Ammo	Yes
Blue	C566C-BFF-CT0U0342	1100	2130	В3	460	B4	470	Ammo	Yes
Blue	C566C-BFF-CT0U0452	1100	2130	B4	465	B5	475	Ammo	Yes
Blue	C566C-BFF-CU0V0342	1520	3000	В3	460	B4	470	Ammo	Yes
Blue	C566C-BFF-CU0V0452	1520	3000	B4	465	B5	475	Ammo	Yes
Blue	C566C-BFE-CT0V0352	1100	3000	В3	460	B5	475	Ammo	No
Blue	C566C-BFE-CT0U0342	1100	2130	В3	460	B4	470	Ammo	No
Blue	C566C-BFE-CT0U0452	1100	2130	B4	465	B5	475	Ammo	No
Blue	C566C-BFE-CU0V0342	1520	3000	В3	460	B4	470	Ammo	No
Blue	C566C-BFE-CU0V0452	1520	3000	B4	465	B5	475	Ammo	No



ORDER CODE TABLE*

Color	Kit Number	Luminous Intensity (mcd)		Dominant Wavelength				Dackage	Chandess
		Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)	Package	Standoff
Amber	C566C-AFF-CU0W0251	1520	4180	A2	584	A5	596	Bulk	Yes
Amber	C566C-AFF-CU0V0341	1520	3000	А3	587	A4	593	Bulk	Yes
Amber	C566C-AFF-CV0W0341	2130	4180	A3	587	A4	593	Bulk	Yes
Amber	C566C-AFE-CU0W0251	1520	4180	A2	584	A5	596	Bulk	No
Amber	C566C-AFE-CU0V0341	1520	3000	A3	587	A4	593	Bulk	No
Amber	C566C-AFE-CV0W0341	2130	4180	A3	587	A4	593	Bulk	No
Amber	C566C-AFF-CU0W0252	1520	4180	A2	584	A5	596	Ammo	Yes
Amber	C566C-AFF-CU0V0342	1520	3000	A3	587	A4	593	Ammo	Yes
Amber	C566C-AFF-CV0W0342	2130	4180	А3	587	A4	593	Ammo	Yes
Amber	C566C-AFE-CU0W0252	1520	4180	A2	584	A5	596	Ammo	No
Amber	C566C-AFE-CU0V0342	1520	3000	А3	587	A4	593	Ammo	No
Amber	C566C-AFE-CV0W0342	2130	4180	А3	587	A4	593	Ammo	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 reel. Single intensity-bin, 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

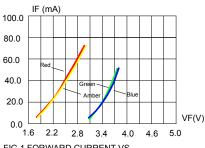
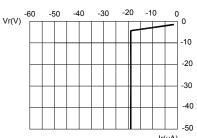
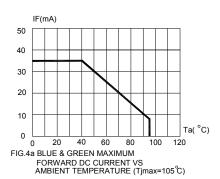


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.



Ir(uA) FIG.3a BLUE & GREEN REVERSE CURRENT VS. REVERSE VOLTAGE.



(RELATIVE LUMINOUS INTENSITY)

100%

60%

40%

20%

300

400

500

600

700

800

900

FIG.5 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

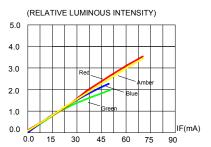
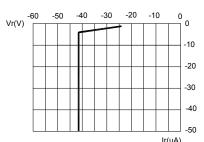


FIG.2 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



Ir(uA) FIG.3b RED & AMBER REVERSE CURRENT VS. REVERSE VOLTAGE.

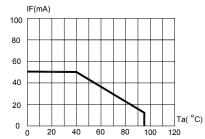


FIG.4b RED & AMBER MAXIMUM FORWARD DC CURRENT VS AMBIENT TEMPERATURE (Tjmax=105°C)

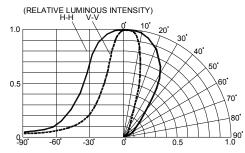


FIG.6 FAR FIELD PATTERN

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.



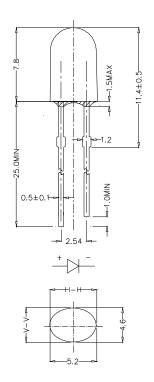
MECHANICAL DIMENSIONS

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

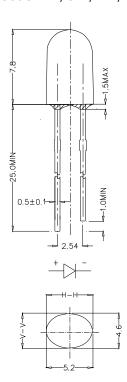
An epoxy meniscus may extend about 1.5 mm down the leads.

Burr around bottom of epoxy may be 0.5 mm max.

C566C-RFF/GFF/BFF/AFF:



C566C-RFE/GFE/BFE/AFE:



NOTES

Lead Frame Materials

Ag-plated and Lead-free Solder-plated iron.

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

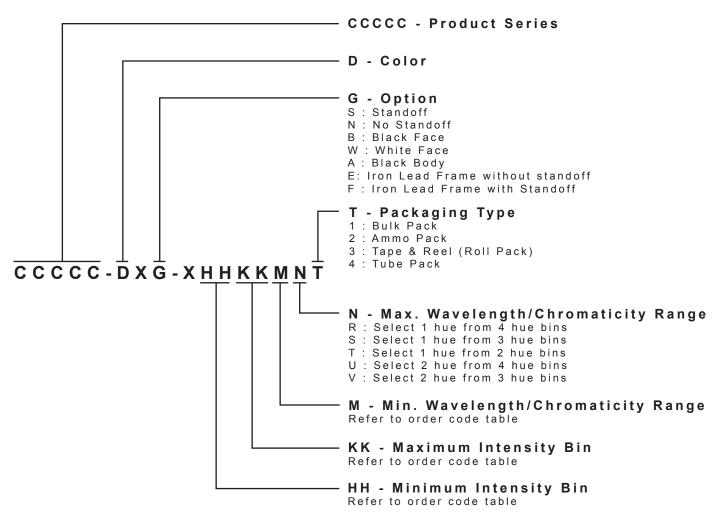
Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.



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:



 $^{^{\}star}$ Please contact our sales representative for ordering information.



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:

