

Cree® Screen Master® 5-mm Oval LED C566D-RFF/GFF/BFF/AFF C566D-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)
 C566D-RFF/RFE:(2130-5860)
 C566D-GFF/GFE:(5860-12000)
 C566D-BFF/BFE:(1520-3000)
 C566D-AFF/AFE:(2130-5860)
- 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 Ma	kimum Rating	Unit
		Red and Amber	Blue and Green	
Forward Current	$I_{_{F}}$	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 so 3 mm from the base of t	
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_{F}	$I_F = 20 \text{ mA}$	V		3.4	4.0
Davis Comment	Red/Amber	I_R	$V_R = 5 V$	μΑ			100
Reverse Current	Blue/Green	I_R	$V_R = 5 V$	μΑ			100
	Red	$\lambda_{_{D}}$	$I_F = 20 \text{ mA}$	nm	619	621	624
Dominant Wayalanath	Green	$\lambda_{_{D}}$	$I_F = 20 \text{ mA}$	nm	520	527	535
Dominant Wavelength	Blue	$\lambda_{_{D}}$	$I_F = 20 \text{ mA}$	nm	460	470	475
	Amber	$\lambda_{_{D}}$	$I_F = 20 \text{ mA}$	nm	584	591	596
	Red	I_{v}	$I_F = 20 \text{ mA}$	mcd	2130	3000	
Luminous Intensity	Green	I_{V}	$I_F = 20 \text{ mA}$	mcd	5860	8200	
Luminous intensity	Blue	I_{v}	$I_F = 20 \text{ mA}$	mcd	1520	2000	
	Amber	I_{V}	$I_F = 20 \text{ mA}$	mcd	2130	3000	



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

Red

Bin Code	Sub- bin	Min. (mcd)	Max. (mcd)
	V1	2130	2347
VO	V2	2347	2564
VU	V3	2564	2781
	V4	2781	3000
	W1	3000	3295
WO	W2	3295	3590
VVO	W3	3590	3885
	W4	3885	4180
	X1	4180	4600
X0	X2	4600	5020
	Х3	5020	5440
	X4	5440	5860

Green

Bin Code	Sub- bin	Min. (mcd)	Max. (mcd)
	Y1	5860	6445
YO	Y2	6445	7030
10	Y3	7030	7615
	Y4	7615	8200
	Z1	8200	9150
Z0	Z2	9150	10100
20	Z3	10100	11050
	Z4	11050	12000

Amber

Bin Code	Sub- bin	Min. (mcd)	Max. (mcd)
	V1	2130	2347
V0	V2	2347	2564
VU	V3	2564	2781
	V4	2781	3000
	W1	3000	3295
W0	W2	3295	3590
VVO	W3	3590	3885
	W4	3885	4180
	X1	4180	4600
ΧO	X2	4600	5020
۸٥	Х3	5020	5440
	X4	5440	5860

Blue

Bin Code	Sub- bin	Min. (mcd)	Max. (mcd)
	U1	1520	1672
UO	U2	1672	1824
00	U3	1824	1976
	U4	1976	2130
	V1	2130	2347
VO	V2	2347	2564
VU	V3	2564	2781
	V4	2781	3000

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



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

Red

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

Green

Bin Code	Min.(nm)	Max.(nm)
G7	520	525
G23	522.5	527.5
G8	525	530
G45	527.5	532.5
G9	530	535

Amber

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

Blue

Bin Code	Min.(nm)	Max.(nm)
В3	460	465
B23	462.5	467.5
B4	465	470
B45	467.5	472.5
B5	470	475

• Tolerance of measurement of dominant wavelength is ±1 nm



		Luminous Int	ous Intensity (mcd) Dominant V			Vavelength			
Color	Kit Number	Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)	Package	Standoff
Red	C566D-RFF-CV0X0BB1	2130	5860	RB	619	RB	624	Bulk	Yes
Red	C566D-RFF-CV14QBB1	Any 4 consecu V1(2130) -		RB	619	RB	624	Bulk	Yes
Red	C566D-RFF-CV34QBB1	Any 4 consecu ⁻ V3(2564) -		RB	619	RB	624	Bulk	Yes
Red	C566D-RFE-CV0X0BB1	2130	5860	RB	619	RB	624	Bulk	No
Red	C566D-RFE-CV14QBB1	Any 4 consecut V1(2130) -		RB	619	RB	624	Bulk	No
Red	C566D-RFE-CV34QBB1	Any 4 consecut V3(2564) -	tive sub-bins: W4 (4180)	RB	619	RB	624	Bulk	No
Red	C566D-RFF-CV0X0BB2	2130	5860	RB	619	RB	624	Ammo	Yes
Red	C566D-RFF-CV14QBB2	Any 4 consecut V1(2130) -		RB	619	RB	624	Ammo	Yes
Red	C566D-RFF-CV34QBB2	Any 4 consecu V3(2564) -		RB	619	RB	624	Ammo	Yes
Red	C566D-RFE-CV0X0BB2	2130	5860	RB	619	RB	624	Ammo	No
Red	C566D-RFE-CV14QBB2	Any 4 consecu V1(2130) -		RB	619	RB	624	Ammo	No
Red	C566D-RFE-CV34QBB2	Any 4 consecu V3(2564) -		RB	619	RB	624	Ammo	No



		Luminous Int	ensity (mcd)		Dominant \	Wavelength			a
Color	Kit Number	Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)	Package	Standoff
Green	C566D-GFF-CY0Z0791	5860	12000	G7	520	G9	535	Bulk	Yes
Green	C566D-GFF-CY14Q7S1	Any 4 consecu Y1 (5860) -	tive sub-bins: Z2 (10100)	Any 1 colo	r bin from G7	(520nm) to (G8 (530nm)	Bulk	Yes
Green	C566D-GFF-CY14Q8S1	Any 4 consecu Y1 (5860) -	tive sub-bins: Z2 (10100)	Any 1 colo	r bin from G8	(525nm) to (G9 (535nm)	Bulk	Yes
Green	C566D-GFF-CY34Q7S1	Any 4 consecu Y3 (7030) -	tive sub-bins: Z4 (12000)	Any 1 colo	r bin from G7	(520nm) to (G8 (530nm)	Bulk	Yes
Green	C566D-GFF-CY34Q8S1	Any 4 consecu Y3 (7030) -	tive sub-bins: Z4 (12000)	Any 1 colo	r bin from G8	(525nm) to (G9 (535nm)	Bulk	Yes
Green	C566D-GFE-CY0Z0791	5860	12000	G7	520	G9	535	Bulk	No
Green	C566D-GFE-CY14Q7S1	Any 4 consecu Y1 (5860) -		Any 1 colo	r bin from G7	(520nm) to (G8 (530nm)	Bulk	No
Green	C566D-GFE-CY14Q8S1	Any 4 consecu Y1 (5860) -		Any 1 colo	r bin from G8	(525nm) to (G9 (535nm)	Bulk	No
Green	C566D-GFE-CY34Q7S1	Any 4 consecu Y3 (7030) -	tive sub-bins: Z4 (12000)	Any 1 colo	r bin from G7	(520nm) to (G8 (530nm)	Bulk	No
Green	C566D-GFE-CY34Q8S1	Any 4 consecu Y3 (7030) -	tive sub-bins: Z4 (12000)	Any 1 colo	r bin from G8	(525nm) to (G9 (535nm)	Bulk	No
Green	C566D-GFF-CY0Z0792	5860	12000	G7	520	G9	535	Ammo	Yes
Green	C566D-GFF-CY14Q7S2	Any 4 consecu Y1 (5860) -		Any 1 colo	r bin from G7	(520nm) to (G8 (530nm)	Ammo	Yes
Green	C566D-GFF-CY14Q8S2	Any 4 consecu Y1 (5860) -	tive sub-bins: Z2 (10100)	Any 1 colo	r bin from G8	(525nm) to (G9 (535nm)	Ammo	Yes
Green	C566D-GFF-CY34Q7S2	Any 4 consecu Y3 (7030) -	tive sub-bins: Z4 (12000)	Any 1 colo	r bin from G7	(520nm) to (G8 (530nm)	Ammo	No
Green	C566D-GFF-CY34Q8S2	Any 4 consecu Y3 (7030) -	tive sub-bins: Z4 (12000)	Any 1 colo	r bin from G8	(525nm) to (G9 (535nm)	Ammo	No
Green	C566D-GFE-CY0Z0792	5860	12000	G7	520	G9	535	Ammo	No
Green	C566D-GFE-CY14Q7S2	Any 4 consecu Y1 (5860) -	tive sub-bins: Z2 (10100)	Any 1 colo	r bin from G7	(520nm) to 0	G8 (530nm)	Ammo	No
Green	C566D-GFE-CY14Q8S2	Any 4 consecu Y1 (5860) -	tive sub-bins: Z2 (10100)	Any 1 colo	r bin from G8	(525nm) to (G9 (535nm)	Ammo	No
Green	C566D-GFE-CY34Q7S2	Any 4 consecu Y3 (7030) -	tive sub-bins: Z4 (12000)	Any 1 colo	r bin from G7	(520nm) to (G8 (530nm)	Ammo	No
Green	C566D-GFE-CY34Q8S2	Any 4 consecu Y3 (7030) -	tive sub-bins: Z4 (12000)	Any 1 colo	r bin from G8	(525nm) to (G9 (535nm)	Ammo	No



Color	Kit Number	Luminous Intensity (mcd)		Dominant Wavelength					Stand-
		Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)	Package	off
Blue	C566D-BFF-CU0W0351	1520	4180	В3	460	B5	475	Bulk	Yes
Blue	C566D-BFF-CU14Q3S1	Any 4 consecu U1(1520) -	itive sub-bins: V2 (2564)	Any 1 colo	r bin from B3	(460nm) to B ²	1 (470nm)	Bulk	Yes
Blue	C566D-BFF-CU14Q4S1	Any 4 consecu U1(1520) -	itive sub-bins: V2 (2564)	Any 1 colo	r bin from B4	(465nm) to B5	5 (475nm)	Bulk	Yes
Blue	C566D-BFF-CU34Q3S1	Any 4 consecutive sub-bins: U3(1824) - V4 (3000)		Any 1 color bin from B3 (460nm) to B4 (470nm)				Bulk	Yes
Blue	C566D-BFF-CU34Q4S1	Any 4 consecu U3(1824) -	itive sub-bins: V4 (3000)	Any 1 colo	r bin from B4	(465nm) to B5	5 (475nm)	Bulk	Yes
Blue	C566D-BFE-CU0W0351	1520	4180	В3	460	B5	475	Bulk	No
Blue	C566D-BFE-CU14Q3S1	Any 4 consecu U1(1520) -		Any 1 colo	r bin from B3	(460nm) to B4	4 (470nm)	Bulk	No
Blue	C566D-BFE-CU14Q4S1	Any 4 consecu U1(1520) -		Any 1 colo	r bin from B4	(465nm) to B5	5 (475nm)	Bulk	No
Blue	C566D-BFE-CU34Q3S1	Any 4 consecu U3(1824) -	itive sub-bins: V4 (3000)	Any 1 colo	r bin from B3	(460nm) to B4	4 (470nm)	Bulk	No
Blue	C566D-BFE-CU34Q4S1	Any 4 consecu U3(1824) -		Any 1 colo	r bin from B4	(465nm) to B5	5 (475nm)	Bulk	No
Blue	C566D-BFF-CU0W0352	1520	4180	В3	460	B5	475	Ammo	Yes
Blue	C566D-BFF-CU14Q3S2	Any 4 consecu U1(1520) -		Any 1 colo	r bin from B3	(460nm) to B4	4 (470nm)	Ammo	Yes
Blue	C566D-BFF-CU14Q4S2	Any 4 consecu U1(1520) -		Any 1 colo	r bin from B4	(465nm) to B5	5 (475nm)	Ammo	Yes
Blue	C566D-BFF-CU34Q3S2	ny 4 consecut U3(1824) -	tive sub-bins: V4 (3000)	Any 1 colo	r bin from B3	(460nm) to B4	4 (470nm)	Ammo	Yes
Blue	C566D-BFF-CU34Q4S2	Any 4 consecu U3(1824) -	itive sub-bins: V4 (3000)	Any 1 colo	r bin from B4	(465nm) to B5	5 (475nm)	Ammo	Yes
Blue	C566D-BFE-CU0W0352	1520	4180	В3	460	B5	475	Ammo	No
Blue	C566D-BFE-CU14Q3S2	Any 4 consecu U1(1520) -		Any 1 colo	r bin from B3	(460nm) to B4	4 (470nm)	Ammo	No
Blue	C566D-BFE-CU14Q4S2	Any 4 consecu U1(1520) -	utive sub-bins: V2 (2564)	Any 1 colo	r bin from B4	(465nm) to B5	5 (475nm)	Ammo	No
Blue	C566D-BFE-CU34Q3S2	Any 4 consecu U3(1824) -	utive sub-bins: V4 (3000)	Any 1 colo	r bin from B3	(460nm) to B ²	1 (470nm)	Ammo	No
Blue	C566D-BFE-CU34Q4S2	Any 4 consecu U3(1824) -		Any 1 colo	r bin from B4	(465nm) to B5	5 (475nm)	Ammo	No



Color	Kit Number	Luminous Intensity (mcd)		Dominant Wavelength				Da alsa a a	Charada ff
		Min.	Max.	Color Bin	Min. (nm)	Color Bin	Max. (nm)	Package	Standoff
Amber	C566D-AFF-CV0X0251	2130	5860	A2	584	A5	596	Bulk	Yes
Amber	C566D-AFF-CV14Q341	Any 4 consecutive sub-bins: V1(2130) - W2 (3590)		А3	587	A4	593	Bulk	Yes
Amber	C566D-AFF-CV34Q341	Any 4 consecutive sub-bins: V3(2564) - W4 (4180)		А3	587	A4	593	Bulk	Yes
Amber	C566D-AFE-CV0X0251	2130	5860	A2	584	A5	596	Bulk	No
Amber	C566D-AFE-CV14Q341	Any 4 consecutive sub-bins: V1(2130) - W2 (3590)		А3	587	A4	593	Bulk	No
Amber	C566D-AFE-CV34Q341	Any 4 consecu V3(2564) -		А3	587	A4	593	Bulk	No
Amber	C566D-AFF-CV0X0252	2130	5860	A2	584	A5	596	Ammo	Yes
Amber	C566D-AFF-CV14Q342	Any 4 consecutive sub-bins: V1(2130) - W2 (3590)		А3	587	A4	593	Ammo	Yes
Amber	C566D-AFF-CV34Q342	Any 4 consecutive sub-bins: V3(2564) - W4(4180)		А3	587	A4	593	Ammo	Yes
Amber	C566D-AFE-CV0X0252	2130	5860	A2	584	A5	596	Ammo	No
Amber	C566D-AFE-CV14Q342	Any 4 consecutive sub-bins: V1(2130) - W2 (3590)		А3	587	A4	593	Ammo	No
Amber	C566D-AFE-CV34Q342	Any 4 consecutive sub-bins: V3(2564) - W4(4180)		A3	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

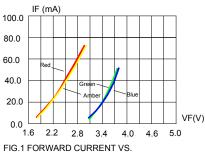
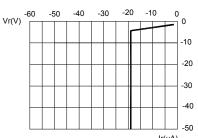
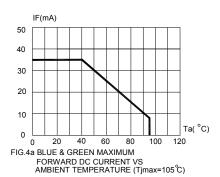


FIG.1 FORWARD CURRENT VS FORWARD VOLTAGE.



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



(RELATIVE LUMINOUS INTENSITY)

100%

60%

40%

20%

0%

300

400

500

600

700

800

900

FIG.5 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

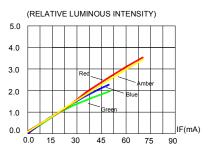
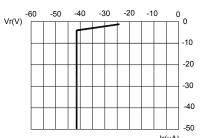


FIG.2 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



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

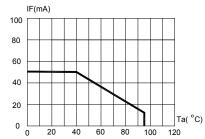


FIG.4b RED & AMBER MAXIMUM FORWARD DC CURRENT VS AMBIENT TEMPERATURE (Tjmax=105°C)

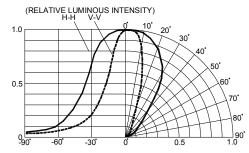


FIG.6 FAR FIELD PATTERN

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.



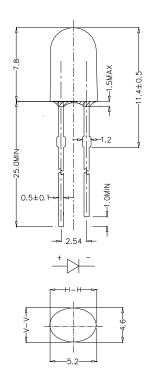
MECHANICAL DIMENSIONS

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

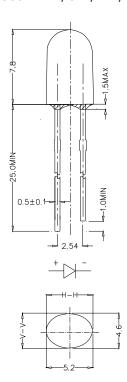
An epoxy meniscus may extend about 1.5 mm down the leads.

Burr around bottom of epoxy may be 0.5 mm max.

C566D-RFF/GFF/BFF/AFF:



C566D-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

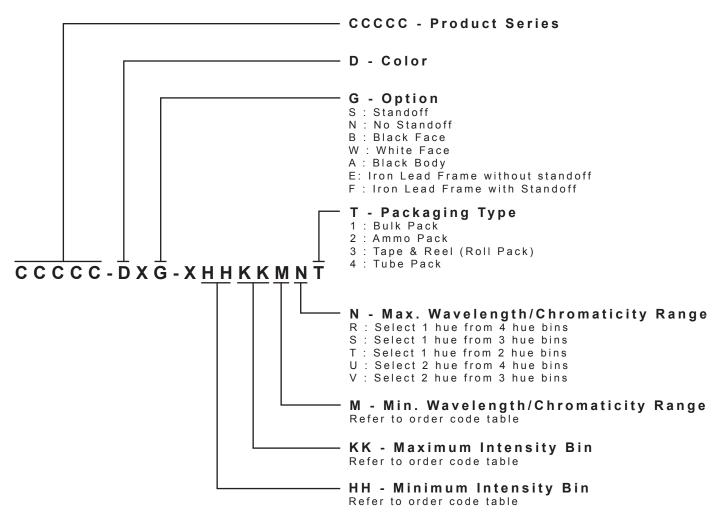
Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.



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:

