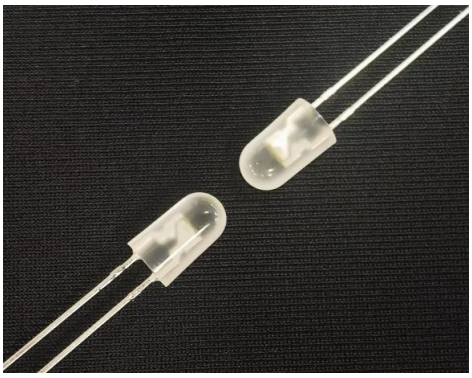
C566E-WFF WFE 5-mm Oval White LEDs



PRODUCT DESCRIPTION

These oval LEDs are specifically designed for digital billboards and passenger-information signs. The oval-shaped radiation pattern and high luminous intensity ensure that these devices are excellent for bright sunlight or low power consumption outdoor applications.

These lamps are made with an advanced optical-grade epoxy that offers superior high-temperature and high-moisture-resistance performance in outdoor signal and sign applications.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 Temperatures:
  Typical (9000K)
- Luminous Intensity (mcd):
  C566E-WFF/WFE: (4180-8200)
- Viewing angles:
  65°X35°
- Lead - Free
- RoHS Compliant

APPLICATIONS

- Electronic Signs & Signals (ESS)
- Digital Billboards
- Motorway Signs
- Variable Message Sign (VMS)
- Advertising Signs
- Petrol Signs

Cree LED / 4001 E. Hwy. 54, Suite 2000 / Durham, NC 27709 USA / +1.919.313.5330 / www.cree-led.com

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Items	Symbol	Absolute Maximum Rating	Unit
Forward Current	I_F	30	mA
Peak Forward Current Note 1	I_{FP}	100	mA
Reverse Voltage	V_R	5	V
Power Dissipation	P_D	120	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 LED sales representative for more information on recommended drive conditions.
2. Pulse width ≤0.1 msec, duty ≤1/10.

TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS (T_A = 25°C)

Characteristics	Symbol	Condition	Unit	Minimum	Typical	Maximum
Forward Voltage	V_F	I_F = 20 mA	V		2.8	3.6
Reverse Current	I_R	V_R = 5 V	μA			100
Luminous Intensity	I_V	I_F = 20 mA	mcd	4180	6800	8200
Chromaticity Coordinates	x	I_F = 20 mA			0.290	
	y	I_F = 20 mA			0.270	

* Continuous reverse voltage can cause LED damage.

INTENSITY BIN LIMIT

White (20 mA) - C566E-WFF/WFE		
Bin Code	**Min.(mcd)**	**Max.(mcd)**
X0	4180	5860
Y0	5860	8200

* Tolerance of measurement of luminous intensity is ±15%

VOLTAGE BIN LIMIT

White (20 mA) - C566E-WFF/WFE		
Bin Code	**Min. (V)**	**Max. (V)**
26	2.6	2.8
27	2.8	3.0
28	3.0	3.2
29	3.2	3.4
2a	3.4	3.6

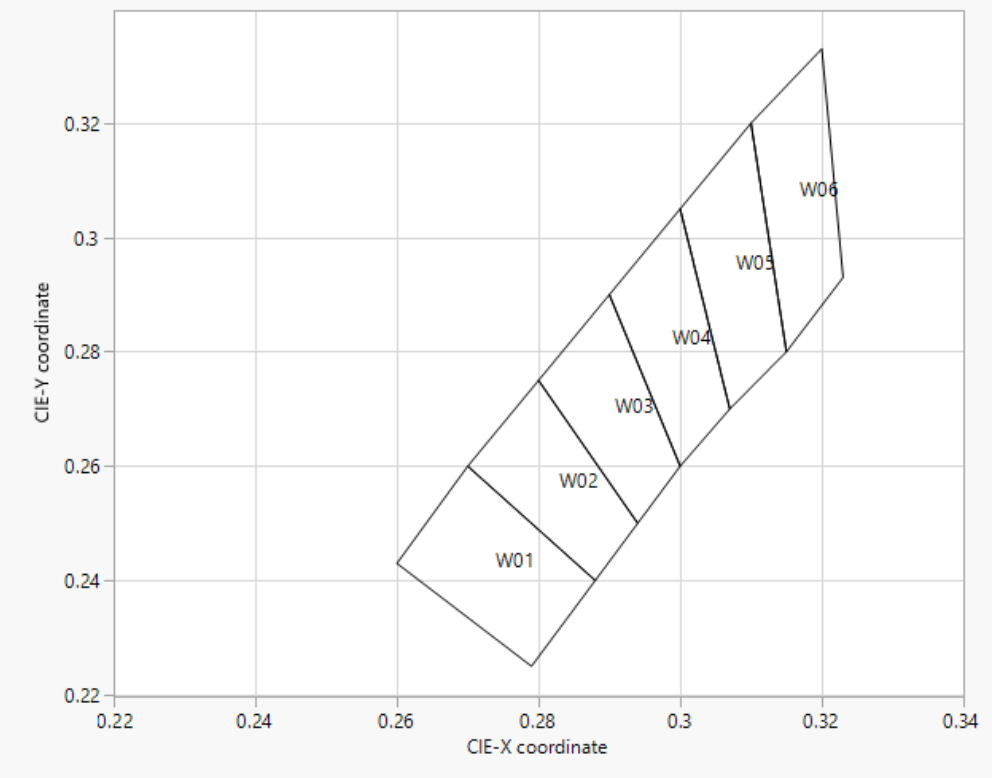
* Tolerance of measurement of voltage is ±0.05V

COLOR BIN LIMIT

Bin Code	x	y
W01	0.260	0.243
	0.270	0.260
	0.288	0.240
	0.279	0.225
W02	0.270	0.260
	0.280	0.275
	0.294	0.250
	0.288	0.240
W03	0.280	0.275
	0.290	0.290
	0.300	0.260
	0.294	0.250
W04	0.290	0.290
	0.300	0.305
	0.307	0.270
	0.300	0.260
W05	0.300	0.305
	0.310	0.320
	0.315	0.280
	0.307	0.270
W06	0.310	0.320
	0.320	0.333
	0.323	0.293
	0.315	0.280

- Tolerance of measurement of the color coordinates is ±0.01

CIE CHROMATICITY DIAGRAM



ORDER CODE TABLE

Kit Number	Luminous Intensity (mcd)		Color Bin Code	Package
	Min.	Max.		
C566E-WFE-CX0Y0W01W061	X0	Y0	W01, W02, W03, W04, W05, W06	Bulk
C566E-WFE-CX0Y0W03W041	X0	Y0	W03, W04	Bulk
C566E-WFE-CX0Y0W01W062	X0	Y0	W01, W02, W03, W04, W05, W06	Ammo
C566E-WFE-CX0Y0W03W042	X0	Y0	W03, W04	Ammo

Kit Number	Luminous Intensity (mcd)		Color Bin Code	Package
	Min.	Max.		
C566E-WFF-CX0Y0W01W061	X0	Y0	W01, W02, W03, W04, W05, W06	Bulk
C566E-WFF-CX0Y0W03W041	X0	Y0	W03, W04	Bulk
C566E-WFF-CX0Y0W01W062	X0	Y0	W01, W02, W03, W04, W05, W06	Ammo
C566E-WFF-CX0Y0W03W042	X0	Y0	W03, W04	Ammo

Notes:

- 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.
- Please refer to the HB LED Lamp Reliability Test Standards document for reliability test conditions.
- Please refer to the HB LED Lamp Soldering & Handling document for information about how to use this LED product safely.

GRAPHS

The data below 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.

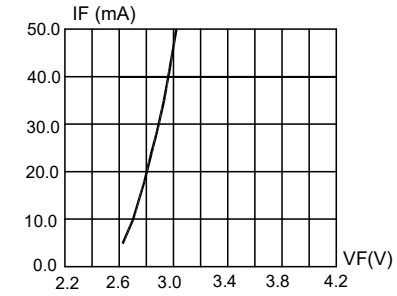


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

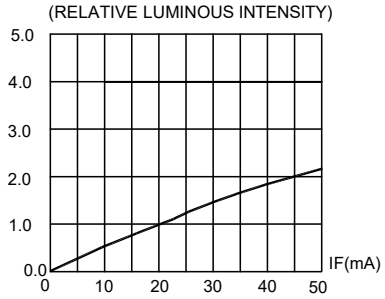


FIG.2 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

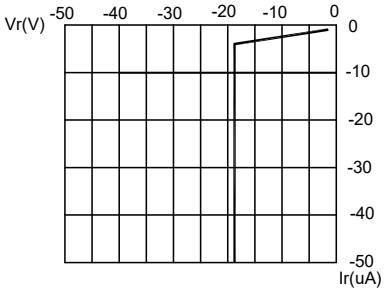


FIG.3 REVERSE CURRENT VS. REVERSE VOLTAGE.

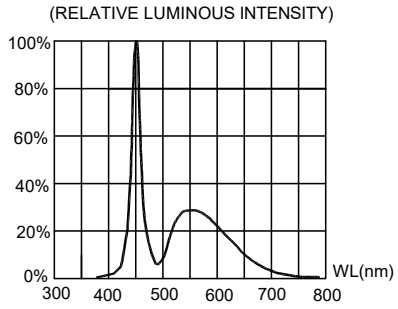


FIG.4 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

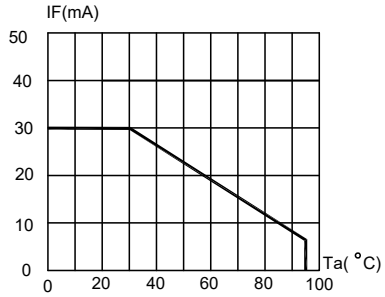


FIG.5 MAXIMUM FORWARD DC CURRENT VS AMBIENT TEMPERATURE (Tjmax=105 °C)

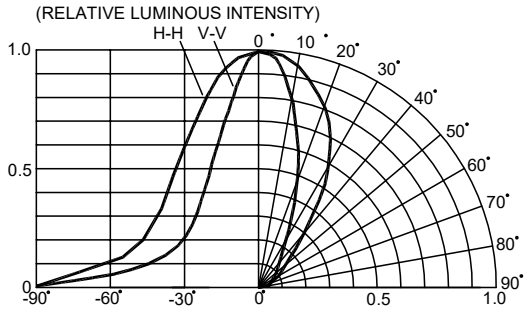


FIG.6 FAR FIELD PATTERN

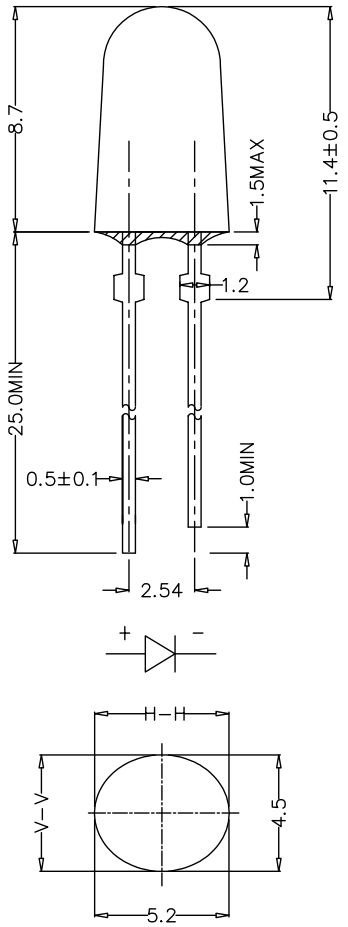
MECHANICAL DIMENSIONS

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

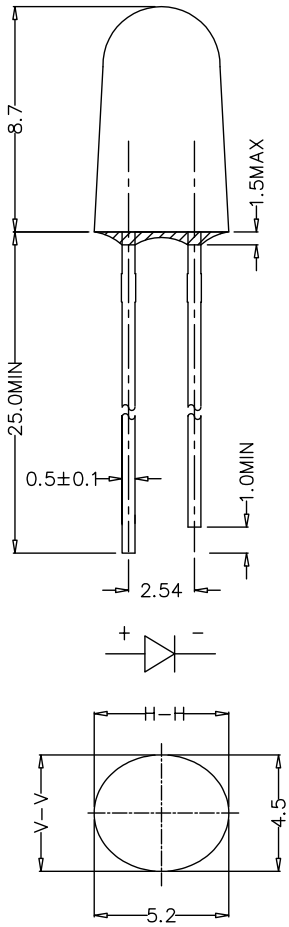
An epoxy meniscus may extend about 1.5 mm down the leads.

Burr around bottom of epoxy may be 0.5 mm max.

C566E-WFF:



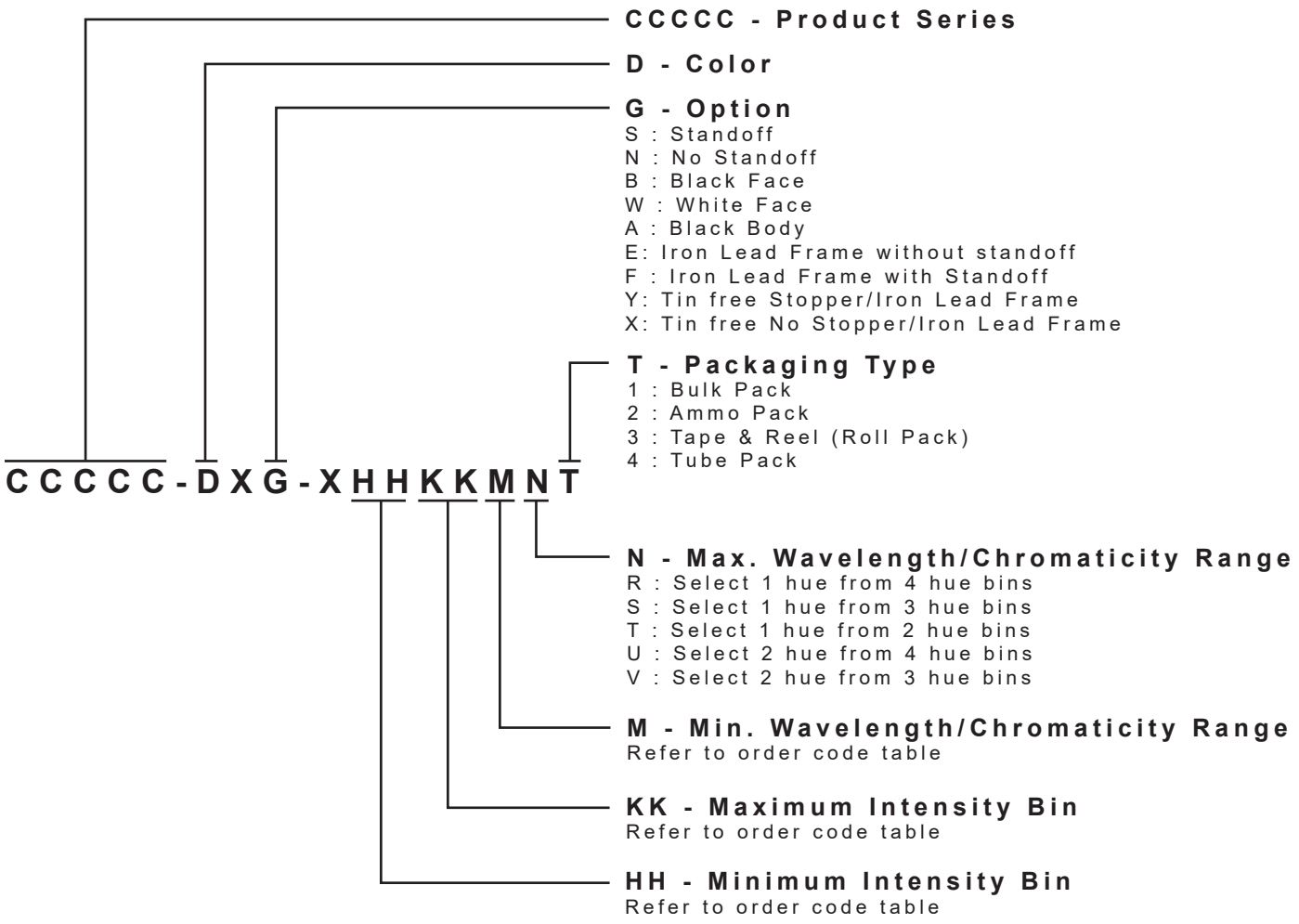
C566E-WFE:



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.

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



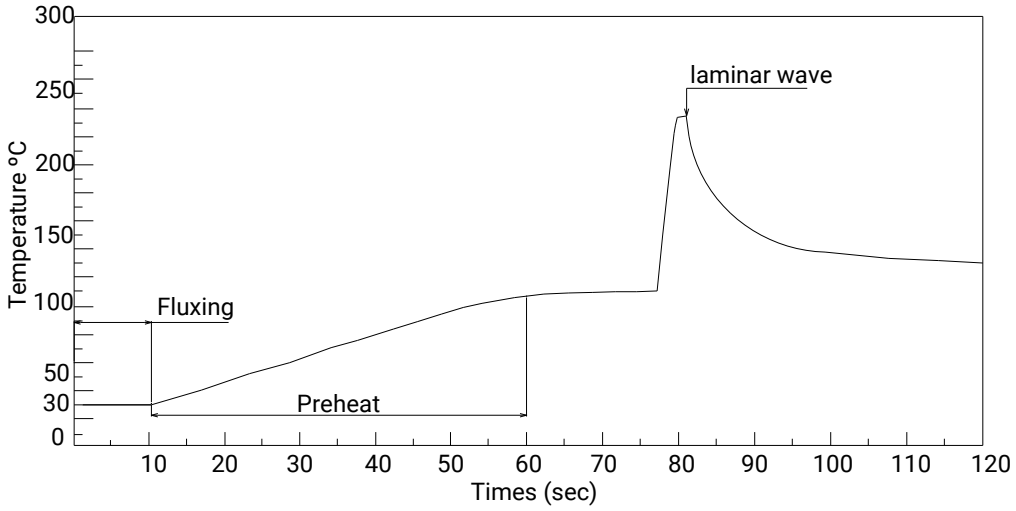
* Please contact our sales representative for ordering information.

SOLDERING GUIDELINES

The LED soldering specification is shown below(suitable for both leaded solder & lead-free solder):

Manual Soldering		Solder Dipping	
Soldering iron	35 W max	Preheat	110 °C max
Temperature	300 °C max	Preheat time	60 seconds max
		Solder-bath temperature	260 °C Max
Soldering time	3 seconds max	Dipping time	5 seconds max
Position	Not less than 3 mm from the base of the package.	Position	Not less than 3 mm from the base of the package.

- Manual soldering onto the PCB is not recommended because soldering time is uncontrollable.
- The recommended wave soldering is as below:

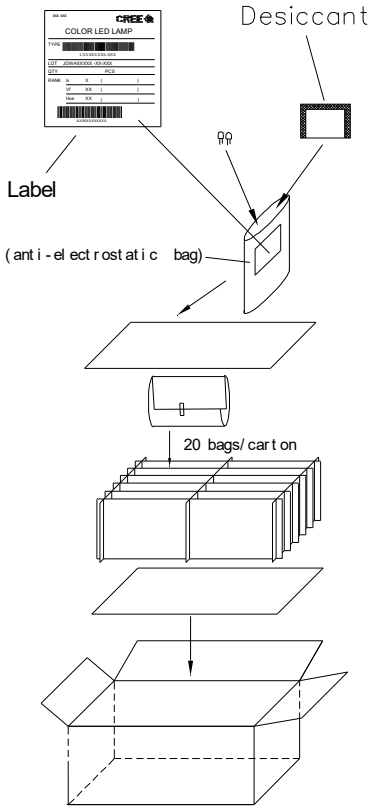


- Do not apply any stress to the LED package, particularly when heated.
- Only bottom preheat is suggested & should not preheat on top in order to reduce thermal stress experienced by the LEDs.
- The LEDs must not be re used once they have been extracted from PCB.
- After soldering the LEDs, the package should be protected from mechanical shock or vibration until the LEDs have reached 40 °C or below.
- Precautions must be taken as mechanical stress on the LEDs may be caused by PCB warpage or from the clinching and cutting of the LED leads.
- When it is necessary to clam the LEDs during soldering, it is important to ensure no mechanical stress is exerted on the LEDs.
- Cut the LED lead at normal room temperature. Lead cutting at high temperature may cause failure of the LEDs.
- Please refer to the HB LED Lamp Soldering & Handling document for information about how to use this LED product safely.

PACKAGING

- 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.
- Max 500 pcs per bulk and Max 3000 pcs per ammo.

Bulk Pack Packaging Type:



Ammo Pack Packaging Type: