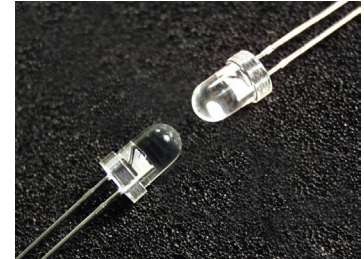


# Cree® 5-mm Blue and Green Round LED C503B-BAS/BAN/GAS/GAN (15 degrees) C503B-BCS/BCN/GCS/GCN (30 degrees) Data Sheet

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



- FEATURES
- Size (mm): 5
- Color and Typical Dominant Wavelength (nm):
  - » Blue (470)
  - » Green (527)
- Luminous Intensity (mcd)
  - » C503B-BAS/BAN (5860-32900)
  - » C503B-BCS/BCN (2130-12000)
  - » C503B-GAS/GAN (16800-90500)
  - » C503B-GCS/GCN (5860-32900)
- Viewing Angle:
  - » C503B-BAS/BAN/GAS/GAN: 15 degrees
  - » C503B-BCS/BCN/GCS/GCN: 30 degrees
- Lead-Free
- RoHS-Compliant

## APPLICATIONS

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

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

Items	Symbol	Absolute Maximum Rating	Unit
		Blue/Green	
Forward Current	$I_F$	25	mA
Peak Forward Current <sup>Note1</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:

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

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

Characteristics	Color	Symbol	Condition	Unit	Minimum	Typical	Maximum
Forward Voltage	Blue/Green	$V_F$	$I_F = 20$ mA	V		3.2	4.0
Reverse Current	Blue/Green	$I_R$	$V_R = 5$ V	$\mu\text{A}$			100
Dominant Wave-length	Blue	$\lambda_D$	$I_F = 20$ mA	nm	465	470	480
	Green	$\lambda_D$	$I_F = 20$ mA	nm	520	527	535
Luminous Intensity	Blue	C503B-BAS/BAN (15 degree)	$I_V$	$I_F = 20$ mA	mcd	5860	11000
		C503B-BCS/BCN (30 degree)	$I_V$	$I_F = 20$ mA	mcd	2130	4100
	Green	C503B-GAS/GAN (15 degree)	$I_V$	$I_F = 20$ mA	mcd	16800	34000
		C503B-GCS/GCN (30 degree)	$I_V$	$I_F = 20$ mA	mcd	5860	12500
50% Power Angle	C503B-BAS/BAN/GAS/GAN		$2\theta_{1/2}$	$I_F = 20$ mA	deg		15
	C503B-BCS/BCN/GCS/GCN		$2\theta_{1/2}$	$I_F = 20$ mA	deg		30

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

### Blue

#### C503B-BAS/BAN (15 degree)

Bin Code	Min.(mcd)	Max.(mcd)
Y0	5860	8200
Z0	8200	12000
A0	12000	16800
B0	16800	23500
C0	23500	32900

#### C503B-BCS/BCN (30 degree)

Bin Code	Min.(mcd)	Max.(mcd)
V0	2130	3000
W0	3000	4180
X0	4180	5860
Y0	5860	8200
Z0	8200	12000

### Green

#### C503B-GAS/GAN (15 degree)

Bin Code	Min.(mcd)	Max.(mcd)
B0	16800	23500
C0	23500	32900
D0	32900	46100
E0	46100	64600
F0	64600	90500

#### C503B-GCS/GCN (30 degree)

Bin Code	Min.(mcd)	Max.(mcd)
Y0	5860	8200
Z0	8200	12000
A0	12000	16800
B0	16800	23500
C0	23500	32900

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

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

### Blue

Bin Code	Min.(nm)	Max.(nm)
B4	465	470
B5	470	475
B6	475	480

### Green

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

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

# Graphs

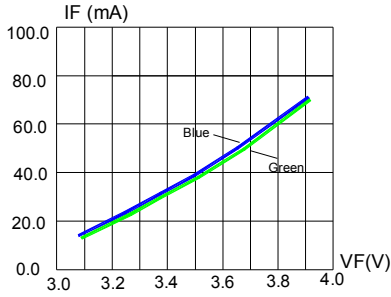


FIG.1 FORWARD CURRENT VS. FORWARD VOLTAGE.

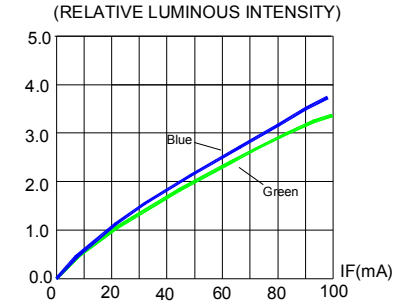


FIG.2 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

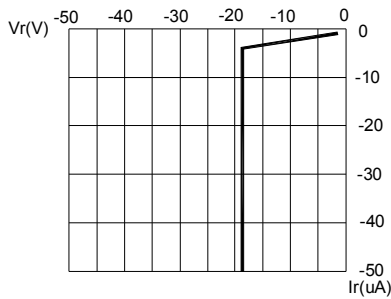


FIG.3 BLUE&GREEN REVERSE CURRENT VS. REVERSE VOLTAGE.

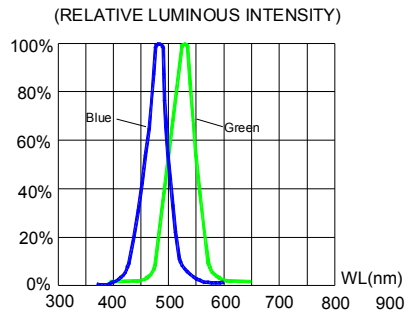


FIG.4 RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH.

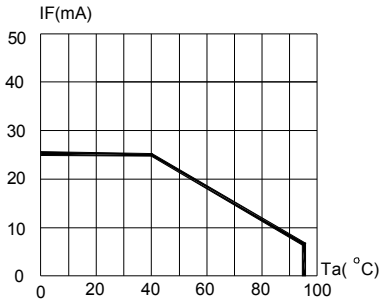


FIG.5 BLUE & GREEN MAXIMUM FORWARD DC CURRENT VS AMBIENT TEMPERATURE ( $T_{jmax}=105^{\circ}C$ )

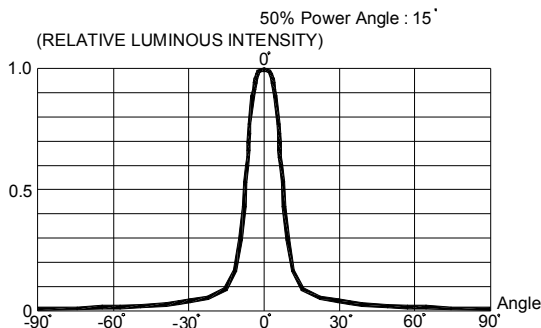


FIG.6 FAR FIELD PATTERN

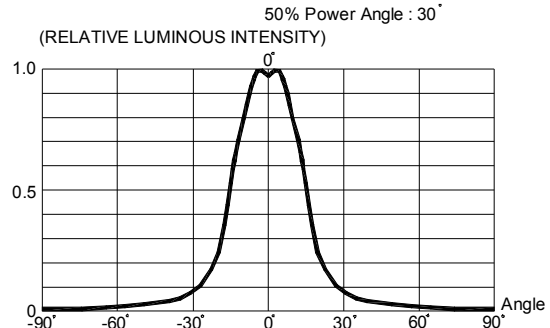


FIG.7 FAR FIELD PATTERN

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.

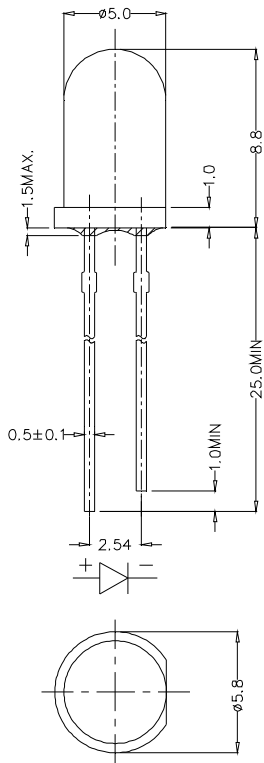
## Mechanical Dimensions

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

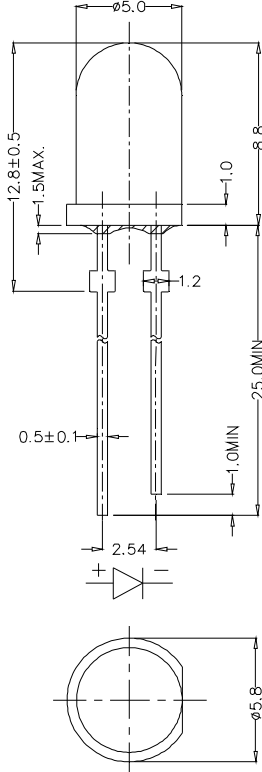
An epoxy meniscus may extend about 1.5 mm down the leads.

Burr around bottom of epoxy may be 0.5 mm max.

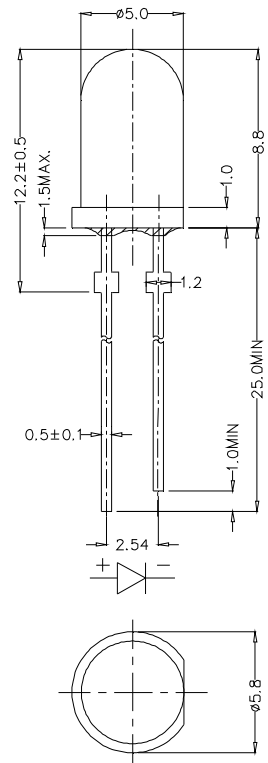
C503B-BAN/GAN/BCN/GCN:



C503B-BAS/GAS:



C503B-BCS/GCS:

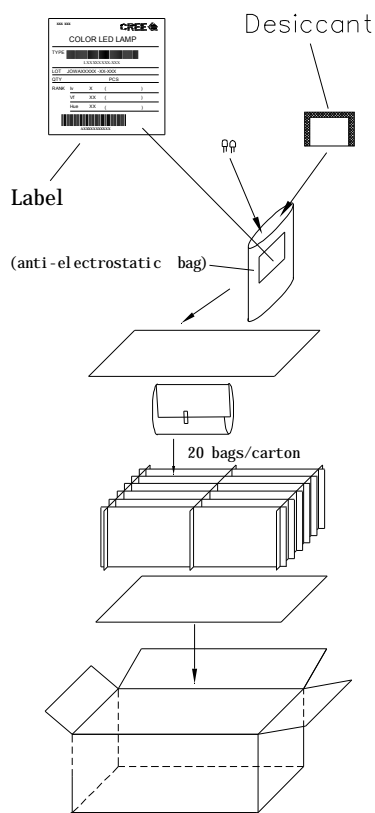


## Package

### 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 or Ammo Pack types of packaging.
- Max 500 pcs per bulk and Max 2500 pcs per ammo.

### Bulk Pack Packaging Type:



### Ammo Pack Packaging Type:

