XBright® Power Chip LED
C*xxx*XB900-S*x*000-A

Cree's XB™ power chip series of LEDs are the next generation of solid-state LED emitters that combine highly efficient InGaN materials with Cree's proprietary G•SiC® substrate to deliver superior price/performance for high-intensity LEDs. These LED chips have a geometrically enhanced Epi-down design to maximize light extraction efficiency and require only a single wire bond connection. These LEDs are useful in a broad range of applications such as outdoor full-motion LED video signs, automotive lighting and white LEDs. Cree's XB power chips are compatible with optical power packages that employ proper thermal management.

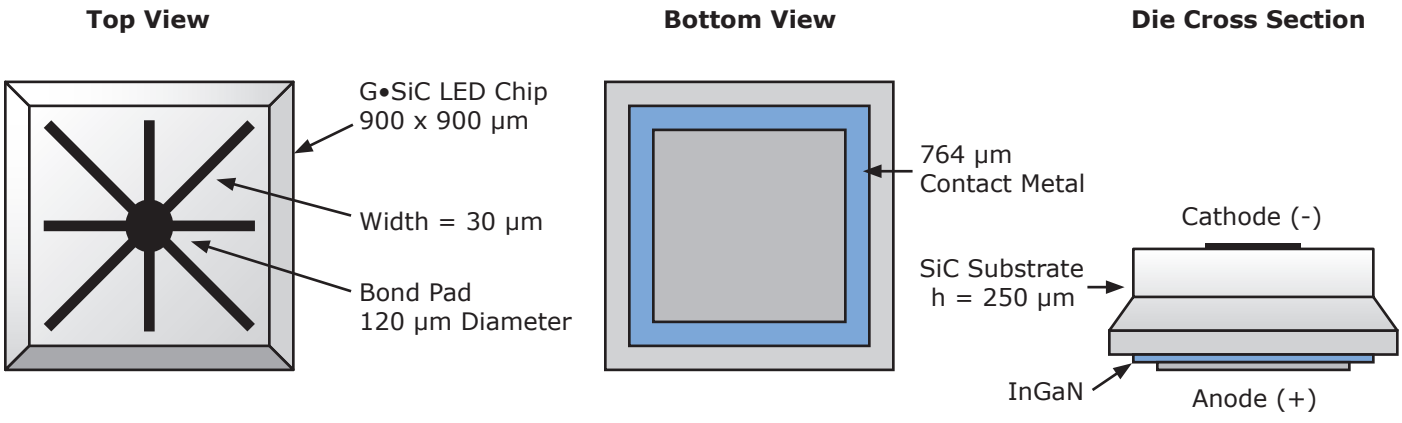
FEATURES

- XBright LED Technology
- Larger "Power Chip" Design
- High Performance
  - 90 mW min. (460 & 470 nm) Blue
  - 60 mW min. (505 nm) Traffic Green
  - 40 mW min. (527 nm) Green
- Single Wire Bond Structure
- AuSn Backside Metalization

APPLICATIONS

- General Illumination
  - Automobile
  - Aircraft
  - Decorative Lighting
  - Task Lighting
  - Outdoor Illumination
- White LEDs
- Backlighting
- Traffic Signals

C*xxx*XB900-S*x*000-A Chip Diagram



Maximum Ratings at T_A = 25°C [Note 1]	CxxxXB900-Sx000-A
DC Forward Current	500 mA [Note 2]
Peak Forward Current (1/10 duty cycle @ 1kHz)	700 mA
LED Junction Temperature	125°C
Reverse Voltage	5 V
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-40°C to +100°C

Typical Electrical/Optical Characteristics at T_A = 25°C, If = 350mA [Note 2]

Part Number	Forward Voltage (V_f, V)			Reverse Current [I(Vr=5V), µA]	Full Width Half Max (λ_D, nm)
	Min.	Typ.	Max.	Max.	Typ.
C460XB900-S9000-A	3.0	3.4	3.9	10	21
C470XB900-S9000-A	3.0	3.4	3.9	10	22
C505XB900-S6000-A	3.0	3.4	3.9	10	30
C527XB900-S4000-A	3.0	3.4	3.9	10	35

Mechanical Specifications	CxxxXB900-Sx000-A	
Description	Dimension	Tolerance
P-N Junction Area (µm)	848 x 848	± 25
Top Area (µm)	725 x 725	± 25
Bottom Area (µm)	900 x 900	± 50
Chip Thickness (µm)	250	± 25
Top Au Bond Pad Diameter (µm)	120	± 10
Au Bond Pad Thickness (µm)	1.2	± 0.5
Back Contact Metal Area (µm)	764 x 764	± 25
Back Contact Metal Thickness (µm)	1.7	± 0.3

Notes:

1. Maximum ratings are package dependent. The above ratings were determined using a Au-plated TO39 header without an encapsulant for characterization. Ratings for other packages may differ. The junction temperature should be characterized in a specific package to determine limitations. Assembly processing temperature must not exceed 325°C (< 5 seconds).
2. All products conform to the listed minimum and maximum specifications for electrical and optical characteristics when assembled and operated at 350 mA within the maximum ratings shown above. Efficiency decreases at higher currents. Typical values given are within the range of average expected by manufacturer in large quantities and are provided for information only. All measurements were made using a Au-plated TO39 header without an encapsulant. Optical characteristics measured in an integrating sphere using Illuminance E.
3. Back contact metal is 80%/20% Au/Sn by weight, with target eutectic melting temperature of approximately 282°C.
4. Caution: To avoid leakage currents and achieve maximum output efficiency, die attach material must not contact the side of the chip.
5. XB900 chips are shipped with the junction side up, requiring die transfer prior to die attach.
6. Specifications are subject to change without notice.

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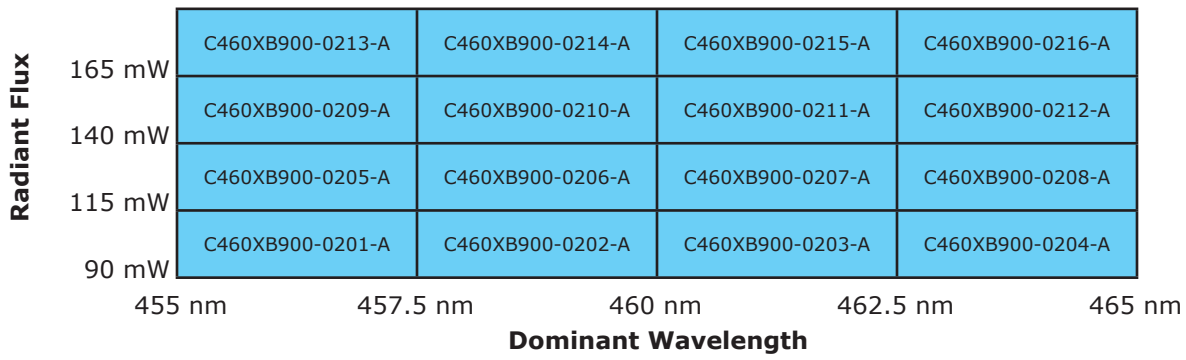
Standard Bins for C*xxx*XB900-S*x*000-A

LED chips are sorted to the **radiant flux** and **dominant wavelength** bins shown. A sorted die sheet contains die from only one bin. Sorted die kit (C*xxx*XB900-S*x*000-A) orders may be filled with any or all bins (C*xxx*XB290-02*xx*-A) contained in the kit. All radiant flux and all dominant wavelength values shown and specified are at If = 350 mA. Radiant flux values are measured using Au-plated TO39 headers without an encapsulant.

C460XB900-S9000-A



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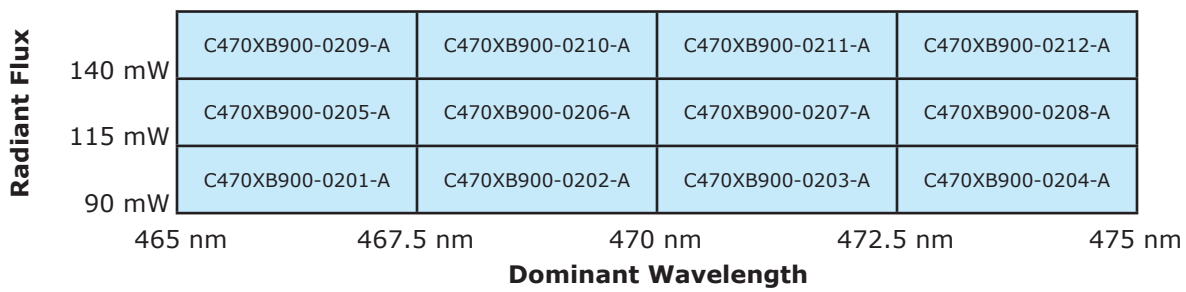

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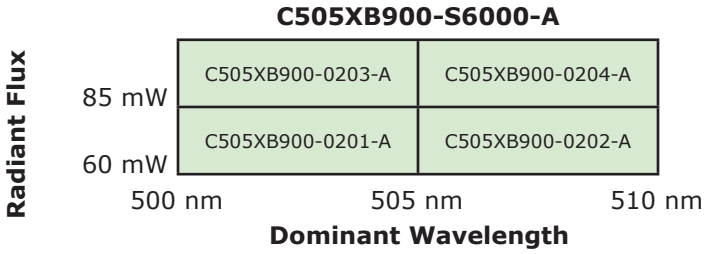

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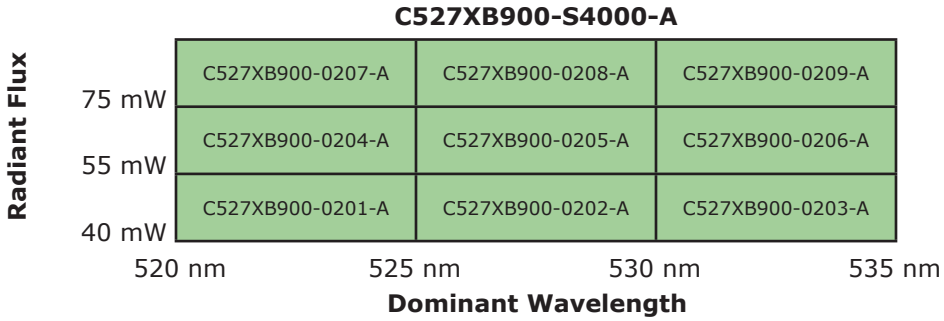

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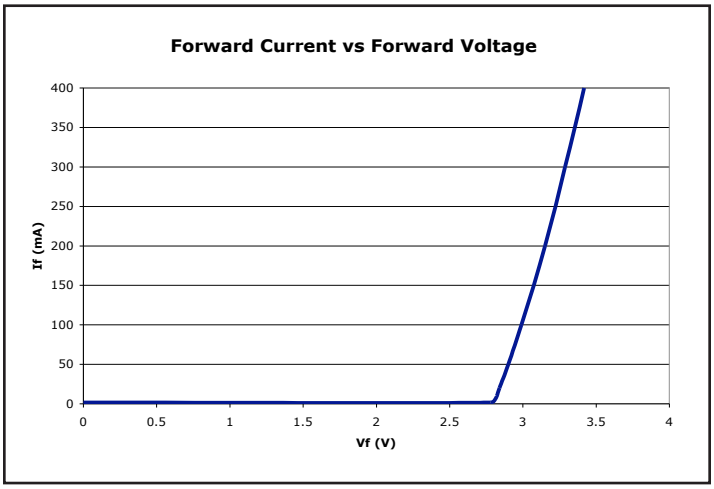
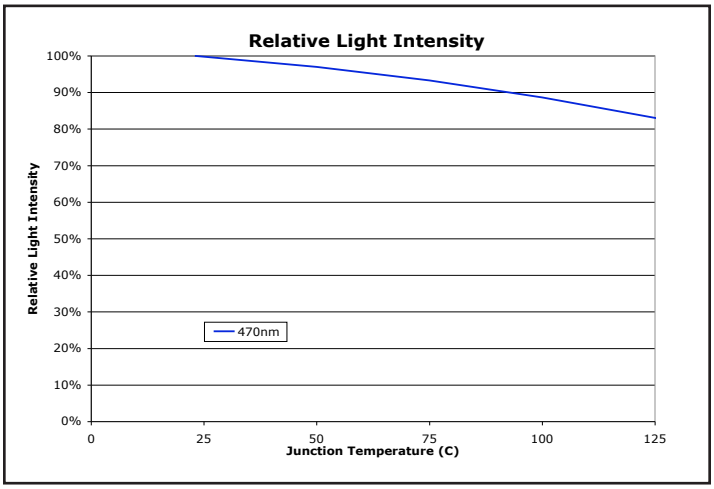
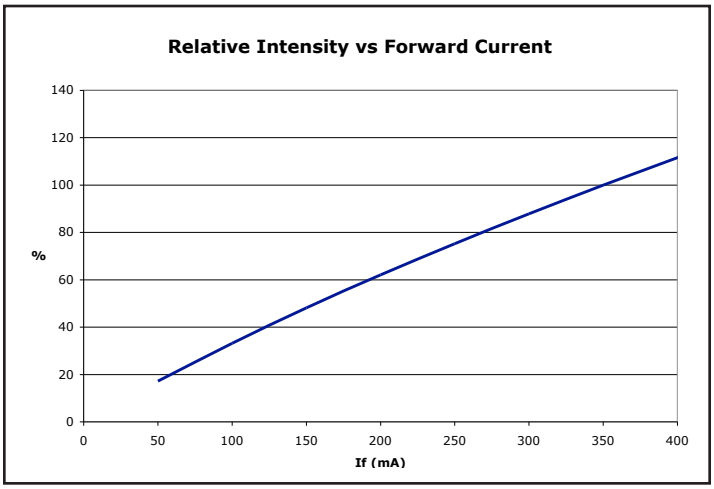
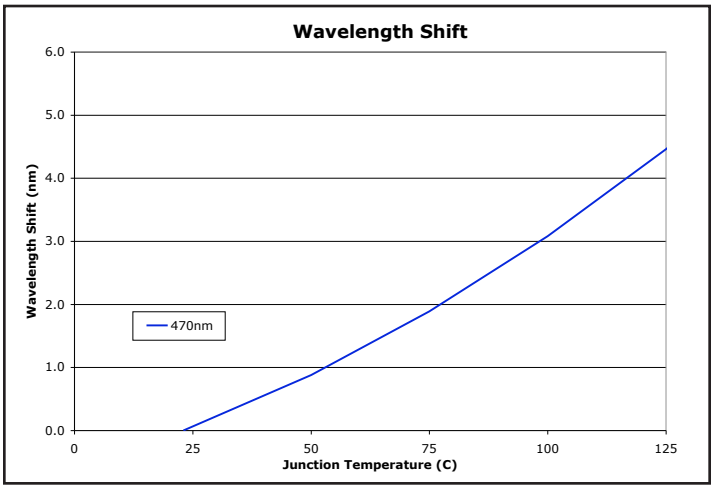
Characteristic Curves, T_A = 25˚C

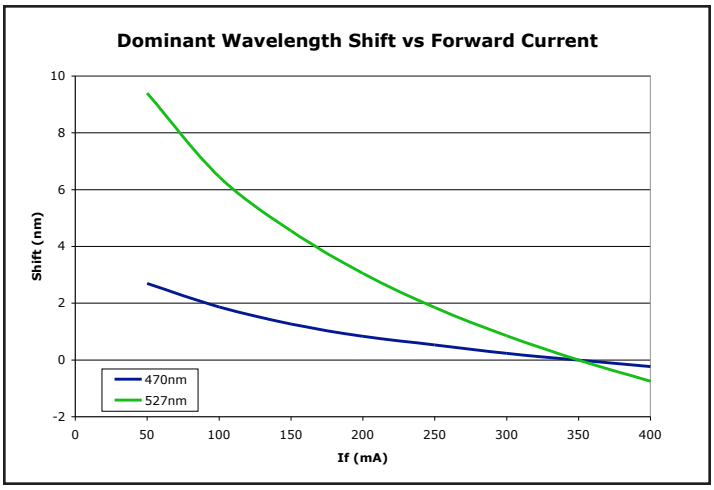
Typical Junction Temp. Curves, If = 350 mA

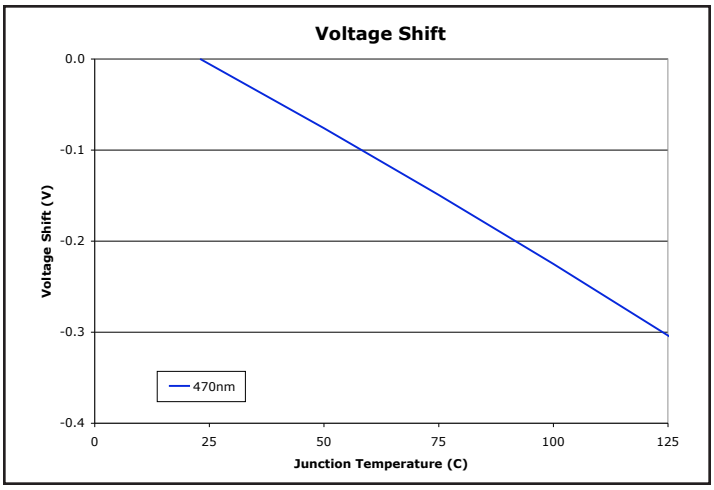












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