

Features

- MegaBright™ Performance
 - 11.0mW (460nm) Deep Blue
 - 10.0mW (470nm) Blue
 - 8.0mW (505nm) Traffic Green
 - 7.0mW (527nm) Green
- Single Wire Bond Structure
- Class II ESD Rating

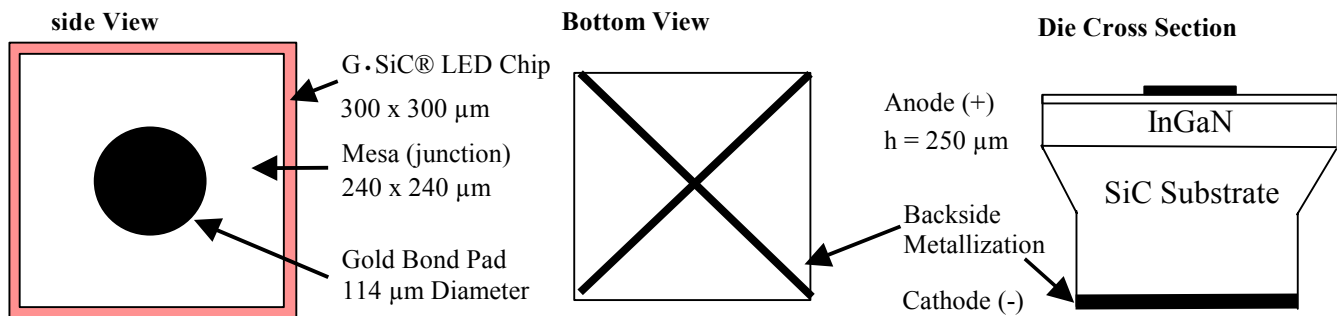
Applications

- Outdoor LED Video Displays
- Automotive Dashboard Lighting
- White LEDs
- Backlighting
- Traffic Signals

Description

Cree's MB™ series of MegaBright™ LEDs combine highly efficient InGaN materials with Cree's proprietary SiC[®] substrate to deliver superior price/performance for high intensity blue and green LEDs. These LED chips have a geometrically enhanced vertical chip structure to maximize light extraction efficiency, and require only a single wire bond connection. Sorted Die Kits provide die sheets conveniently sorted into wavelength and radiant flux bins. Cree's MB series chips are individually tested for conformity to optical and electrical specifications and the ability to withstand 1000V ESD. These LEDs are useful in a broad range of applications such as outdoor full motion LED video signs, automotive lighting and white LEDs, yet can also be used in high volume applications such as LCD backlighting. Cree's MB series chips are compatible with most radial and SMT LED assembly processes.

CXXX-MB290-S0100 Chip Diagram



G•SiC[®] Technology
MegaBright™ LEDs
CXXX-MB290-S0100

Maximum Ratings at $T_A = 25^\circ\text{C}$ ^{Notes 1&3}	CXXX-MB290-S0100
DC Forward Current	30mA
Peak Forward Current (1/10 duty cycle @ 1kHz)	100mA
LED Junction Temperature	125°C
Reverse Voltage	5 V
Operating Temperature Range	-20°C to +80°C
Storage Temperature Range	-30°C to +100°C
Electrostatic Discharge Threshold (HBM) ^{Note 2}	1000 V
Electrostatic Discharge Classification (MIL-STD-883E) ^{Note 2}	Class 2

Typical Electrical/Optical Characteristics at $T_A = 25^\circ\text{C}$, $I_f = 20\text{mA}$ ^{Note 3}

Part Number	Forward Voltage (V_f , V)		Reverse Current [$I(V_r=5V)$, μA]	Peak Wavelength (λ_p , nm)	Full Width Half Max (λ_D , nm)	Optical Rise Time (τ , ns)
	Typ	Max	Max	Typ	Typ	Typ
C460MB290-S0100	3.5	3.8	10	458	26	30
C470 MB290-S0100	3.5	3.8	10	468	26	30
C505 MB290-S0100	3.8	4.0	10	502	30	30
C527 MB290-S0100	3.8	4.0	10	518	35	30

Mechanical Specifications ^{Note 4}

CXXX-MB290-S0100

Description	Dimension	Tolerance
P-N Junction Area (μm)	240 x 240	± 25
Top Area (μm)	300 x 300	± 25
Bottom Area (μm)	200 x 200	± 25
Chip Thickness (μm)	250	± 25
Au Bond Pad Diameter (μm)	114	± 20
Au Bond Pad Thickness (μm)	1.2	± 0.5
Back Contact Metal Width (μm)	15	-5, +10

Notes:

- Maximum ratings are package dependent. The above ratings were determined using a T-1 3/4 package with Hysol OS4000 epoxy for characterization. Seller makes no representations regarding ratings for packages other than the T-1 3/4 package used by Seller. The forward currents (DC and Peak) are not limited by the G •SiC die but by the effect of the LED junction temperature on the package. The junction temperature limit of 125°C is a limit of the T-1 3/4 package; junction temperature should be characterized in a specific package to determine limitations. Assembly processing temperature must not exceed 350°C (< 15 minutes).
- Product resistance to electrostatic discharge (ESD) is measured by simulating ESD using a rapid avalanche energy test (RAET). The RAET procedures are designed to approximate the maximum ESD ratings shown. Seller gives no other assurances regarding the ability of Products to withstand ESD.
- All Products conform to the listed minimum and maximum specifications for electrical and optical characteristics, when assembled and operated at 20 mA within the maximum ratings shown above. Efficiency decreases at higher currents. Typical values given are the average values expected by Seller in large quantities and are provided for information only. Seller gives no assurances Products shipped will exhibit such typical ratings. All measurements were made using lamps in T-1 3/4 packages with Hysol OS4000 epoxy. Optical characteristics were measured in a Photoresearch Spectrascan Integrating Sphere. Illuminance E.
- All Products conform to the listed mechanical specifications within the tolerances shown.
- Caution: To obtain optimum output efficiency, the maximum height of die attach epoxy on the side of the chip should not exceed 80 μm .**

Standard Bins for MB290:

All LED chips are sorted onto die sheets according to the bins shown below.

20.0mW	460MB290-0105	460MB290-0106
13.0mW	460MB290-0103	460MB290-0104
11.0mW	460MB290-0101	460MB290-0102
8.0mW		
	455nm	460nm
		465nm

C460MB290-S0100

Sorted Die Kits may contain any or all bins shown to the left.

16.0mW	470MB290-0107	470MB290-0108	470MB290-0109
12.0mW	470MB290-0104	470MB290-0105	470MB290-0106
10.0mW	470MB290-0101	470MB290-0102	
7.5mW			
	465nm	470nm	472nm
			475nm

C470MB290-S0100

10.0mW	505MB290-0105	505MB290-0106
8.0mW	505MB290-0103	505MB290-0104
7.0mW	505MB290-0101	505MB290-0102
6.0mW		
	500nm	505nm
		510nm

C505MB290-S0100

8.0mW	527MB290-0107	527MB290-0108	527MB290-0109
7.0mW	527MB290-0104	527MB290-0105	527MB290-0106
6.0mW	527MB290-0101	527MB290-0102	527MB290-0103
5.0mW			
	520nm	525nm	530nm
			535nm

C527MB290-S0100

G-SiC[®] Technology MegaBright[™] LEDs CXXX-MB290-S0100

Characteristic Curves

