CREE OPTOELECTRONICS

G·SiC® Technology
SuperBlue™ LED
C430-CB290-E1000

Features

- High Performance – 1150µW
- Superior SiC Substrate Technology
- 465nm Dominant Wavelength
- Excellent Chip to Chip Consistency
- High Reliability

Applications

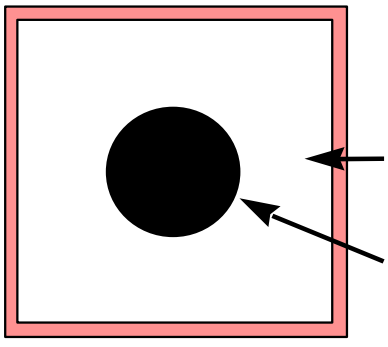
- Full Color Displays & Moving Message Signs
- Solid State Incandescent Replacement Bulbs
- High Ambient Panel Indicators
- Color Printers & Scanners
- Medical & Analytical Instruments

Description

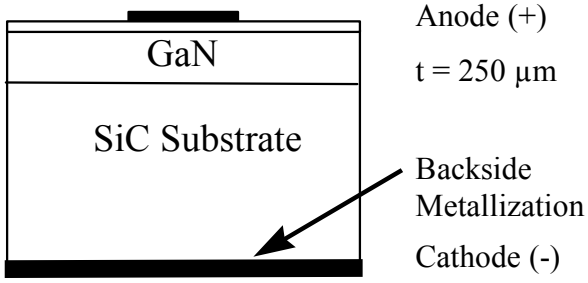
Cree's SuperBlue™ combine highly efficient GaN with Cree's proprietary SiC® substrate to deliver the ultimate price/performance for high intensity blue LEDs. The C430-CB290-E1000 is designed for use in high ambient light conditions with a typical output of 1150 µW and a 465nm dominant wavelength (at 20 mA).

C430-CB290-E1000 Chip Diagram

Topside View



Die Cross Section



CPR3L Rev. H

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Maximum Ratings at T_A = 25°C Notes 1&3	**C430-CB290-E1000**
DC Forward Current	30 mA
Peak Forward Current (1/10 duty cycle @ 1kHz)	70 mA
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-883C) Note 2	Class 2

Electrical/Optical Characteristics at T_A = 25°C Note 3

If = 20 mA		**C430-CB290-E1000**		
Symbol (units)	**Description**	**Min.**	**Typ.**	**Max.**
V_f (V)	Forward Voltage	—	4.0	4.3
P (µW)	Radiant Flux	850	1150	—
I (µA)	Reverse Current (Vr = 5V)	—	—	10
I_v (mcd)	Chip Luminous Intensity	—	6.0	—
λ_p (nm)	Peak Wavelength	426	428	430
λ_d (nm)	Dominant Wavelength	462	465	466
$\lambda\Delta$ (nm)	Halfwidth	—	65	—
τ (ns)	Optical Rise Time	—	30	—

Mechanical Specifications Note 4	**C430-CB290-E1000**	
Description	**Dimension**	**Tolerance**
P-N Junction Area (µm)	240 x 240	± 25
Bottom Area (µm)	275 x 275	± 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)	19.8	-5, +10

Notes:

1) 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. Please refer to figures 5 and 9 for specific derating curves. 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).

2) 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.

3) 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; please refer to Fig 3 and 7 for specific efficiency curves. 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, Luminance A.

4) All Products conform to the listed mechanical specifications within the tolerances shown.