Cree® EZ1000™ LEDs
Data Sheet
C*xxx*EZ1000-S*xx*000

Cree's EZBright™ LEDs are the next generation of solid-state LED emitters that combine highly efficient InGaN materials with Cree's proprietary optical design and device submount technology to deliver superior value for high-intensity LEDs. The optical design maximizes light extraction efficiency and enables a Lambertian radiation pattern. Additionally, these LEDs are die-attachable with conductive epoxy, solder paste or solder preforms, as well as the flux eutectic method. These vertically structured, low forward voltage LED chips are approximately 100 microns in height. Cree's EZ™ chips are tested for conformity to optical and electrical specifications. These LEDs are useful in a broad range of applications such as general illumination, automotive lighting, and LCD backlighting.

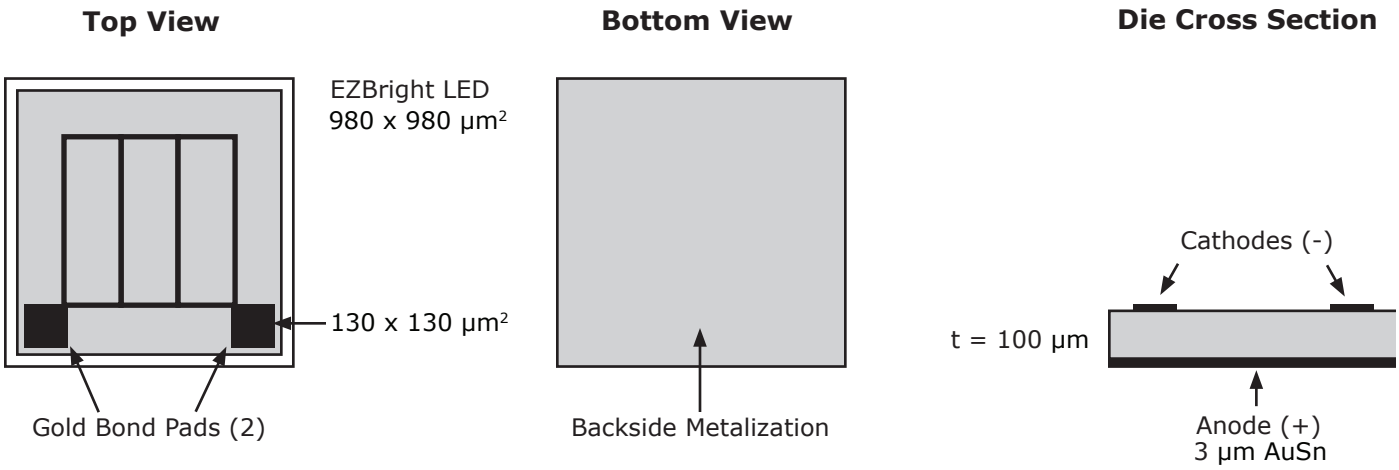
FEATURES

- EZBright LED Technology
  - 200 mW min. - 450, 460 & 470 nm
  - 300 mW min. - 450, 460 & 470 nm
  - 80 mW min. - 527 nm
  - 130 mW min. - 527 nm
- Lambertian Radiation
- Conductive Epoxy, Solder Paste or Preforms, or Flux Eutectic Attach
- Thin 100 µm Chip
- Low Forward Voltage

APPLICATIONS

- General Illumination
  - Aircraft
  - Decorative Lighting
  - Task Lighting
  - Outdoor Illumination
- White LEDs
- LCD Backlighting
- Projection Displays
- Automotive

C*xxx*EZ1000-S*xx*000 Chip Diagram



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Maximum Ratings at T_A = 25°C [Note 1]	CxxxEZ1000-Sxx000
DC Forward Current	1000 mA
Peak Forward Current (1/10 duty cycle @ 1 kHz)	1250 mA
LED Junction Temperature	145°C
Reverse Voltage	5 V
Operating Temperature Range	-40°C to +100°C
Storage Temperature Range	-40°C to +125°C

Typical Electrical/Optical Characteristics at T_A = 25°C, If = 350 mA [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.
C450EZ1000-Sxx000	2.9	3.3	3.8	2	20
C460EZ1000-Sxx000	2.9	3.3	3.8	2	21
C470EZ1000-Sxx000	2.9	3.3	3.8	2	22
C527EZ1000-Sxx000	3.1	3.5	4.0	2	35

Mechanical Specifications	CxxxEZ1000-Sxx000	
Description	**Dimensions**	**Tolerance**
P-N Junction Area (µm)	950 x 950	± 25
Chip Area (µm)	980 x 980	± 25
Chip Thickness (µm)	100	± 25
Top Au Bond Pad (µm) - Qty. 2	130 x 130	+25/-10
Au Bond Pad Thickness (µm)	3.0	± 1.0
Back Contact Metal Area (µm)	980 x 980	± 25
Back Contact Metal Thickness (µm)	3.0	± 1.0

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). See Cree EZBright Applications Note for assembly-process information.
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 values expected by the 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 were measured in an integrating sphere using Illuminance E.

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Standard Bins for C*xxx*EZ1000-S*xx*000

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*EZ1000-S*xx000*) orders may be filled with any or all bins (C*xxx*EZ1000-0*xxx*) contained in the kit. All radiant flux and dominant wavelength values shown and specified are at If = 350 mA. Radiant flux values are measured using Au-plated TO39 headers without an encapsulant.

Blue EZ1000

EZ-200

C450EZ1000-S20000

Radiant Flux	445 nm – 447.5 nm	447.5 nm – 450 nm	450 nm – 452.5 nm	452.5 nm – 455 nm
300 mW – 270 mW	C450EZ1000-0113	C450EZ1000-0114	C450EZ1000-0115	C450EZ1000-0116
270 mW – 240 mW	C450EZ1000-0109	C450EZ1000-0110	C450EZ1000-0111	C450EZ1000-0112
240 mW – 200 mW	C450EZ1000-0105	C450EZ1000-0106	C450EZ1000-0107	C450EZ1000-0108

Dominant Wavelength

C460EZ1000-S20000

Radiant Flux	455 nm – 457.5 nm	457.5 nm – 460 nm	460 nm – 462.5 nm	462.5 nm – 465 nm
300 mW – 270 mW	C460EZ1000-0113	C460EZ1000-0114	C460EZ1000-0115	C460EZ1000-0116
270 mW – 240 mW	C460EZ1000-0109	C460EZ1000-0110	C460EZ1000-0111	C460EZ1000-0112
240 mW – 200 mW	C460EZ1000-0105	C460EZ1000-0106	C460EZ1000-0107	C460EZ1000-0108

Dominant Wavelength

C470EZ1000-S20000

Radiant Flux	465 nm – 467.5 nm	467.5 nm – 470 nm	470 nm – 472.5 nm	472.5 nm – 475 nm
300 mW – 270 mW	C470EZ1000-0113	C470EZ1000-0114	C470EZ1000-0115	C470EZ1000-0116
270 mW – 240 mW	C470EZ1000-0109	C470EZ1000-0110	C470EZ1000-0111	C470EZ1000-0112
240 mW – 200 mW	C470EZ1000-0105	C470EZ1000-0106	C470EZ1000-0107	C470EZ1000-0108

Dominant Wavelength

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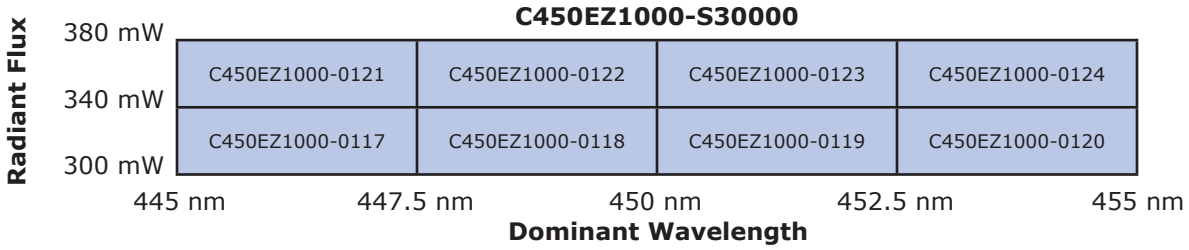
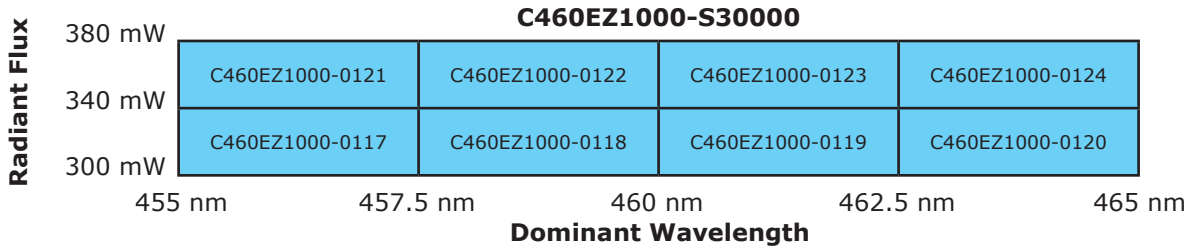
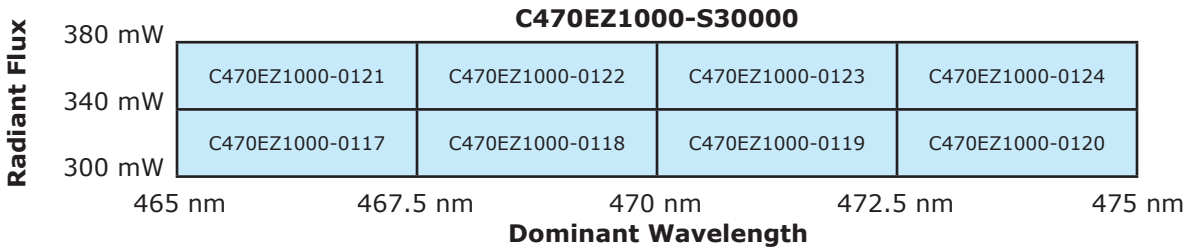
Standard Bins for C*xxx*EZ1000-S*xx*000 (continued)

EZ-300

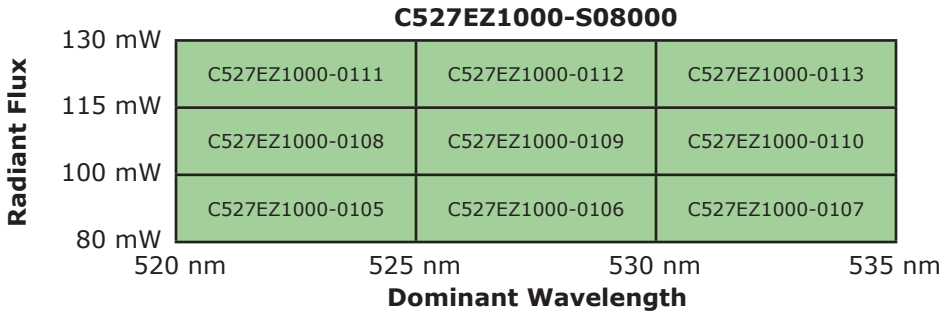




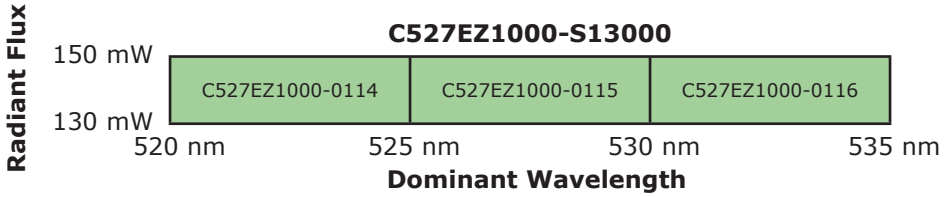


Green EZ1000

EZ-80



EZ-130



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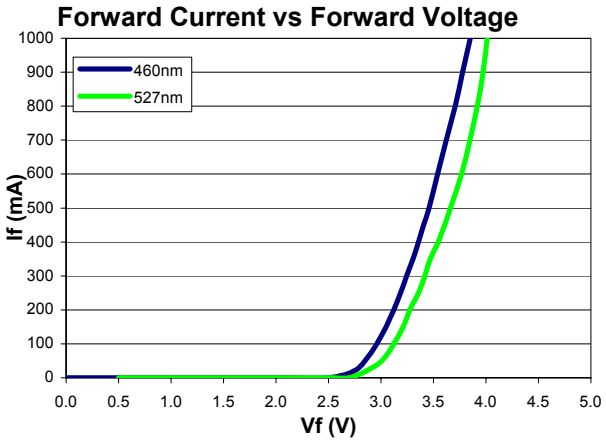
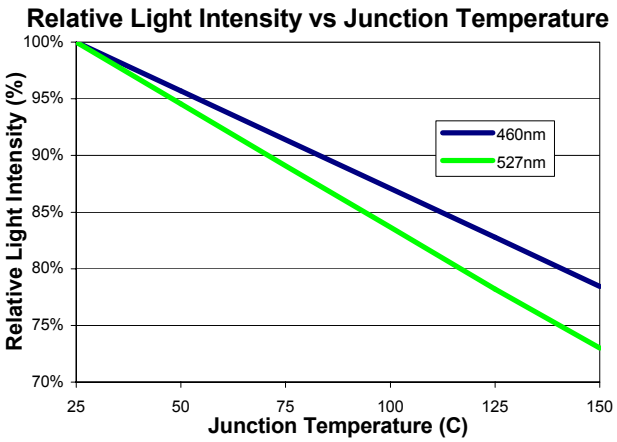
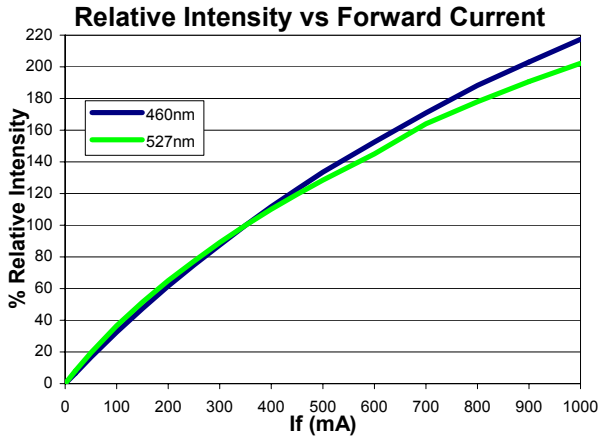
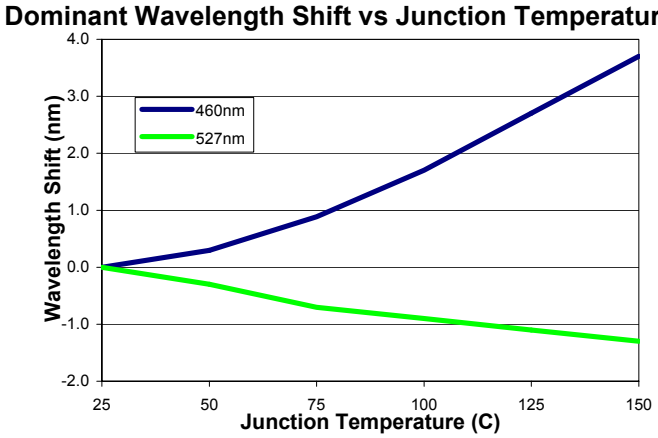
Characteristic Curves, T_A = 25°C

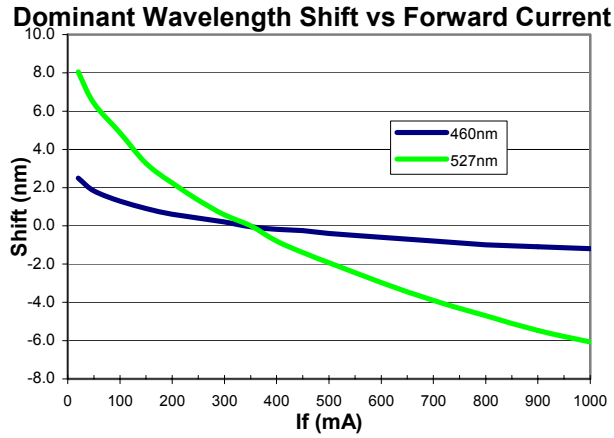
This is a representative measurement for the EZ1000 LED product. Actual curves will vary slightly for the various radiant flux and dominant wavelength bins.

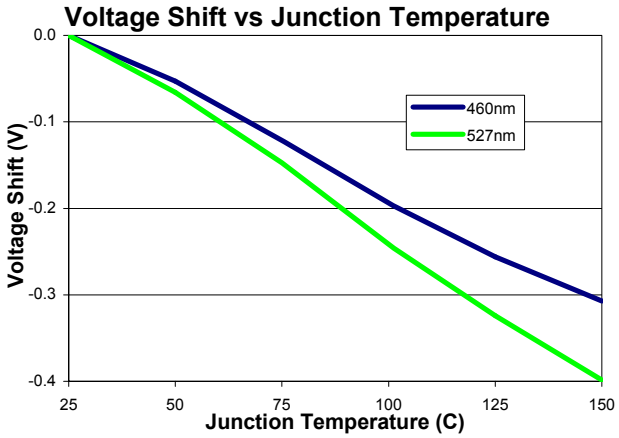












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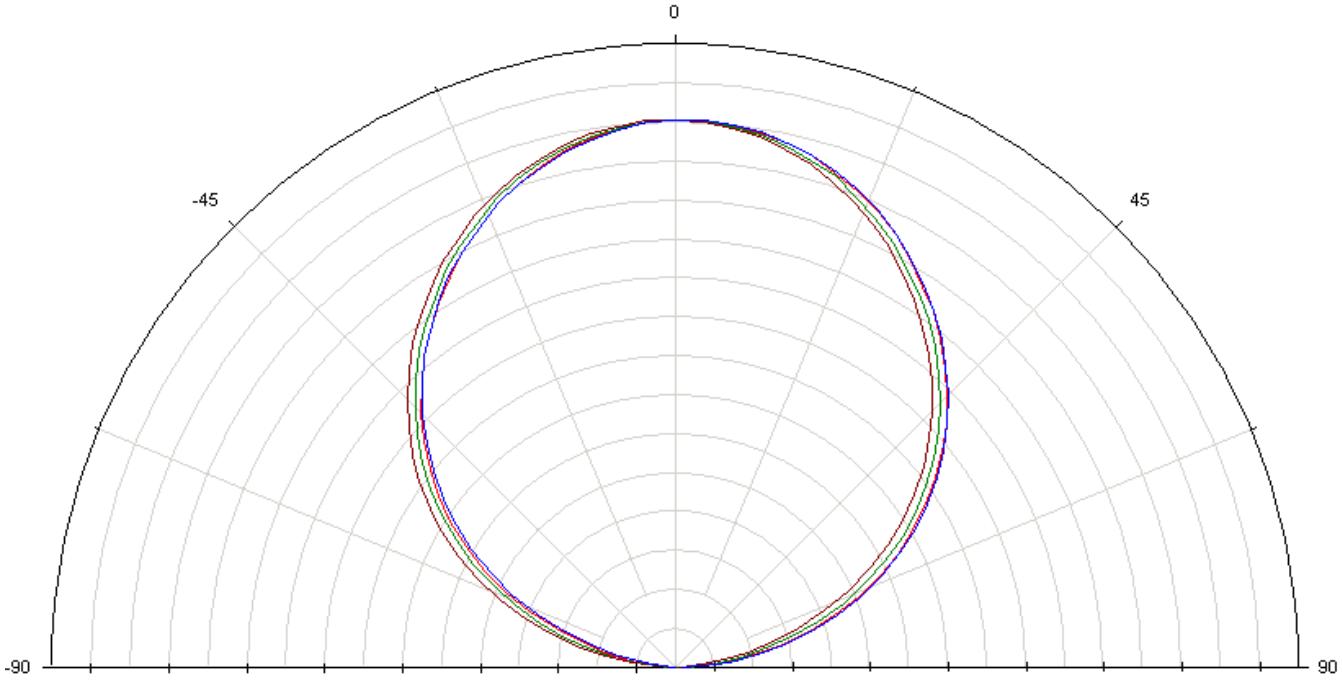
Radiation Pattern

This is a representative radiation pattern for the EZBright Power Chip LED product. Actual patterns will vary slightly for each chip.



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