RazerThin® Gen III LEDs
CxxxRT320-Sxxxx

Cree's RazerThin LEDs are a new 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 blue and green LEDs. These vertically structured LED chips are approximately 95 microns in height and require a low forward voltage. Cree's RazerThin series chips have the ability to withstand 1000 V ESD.

FEATURES

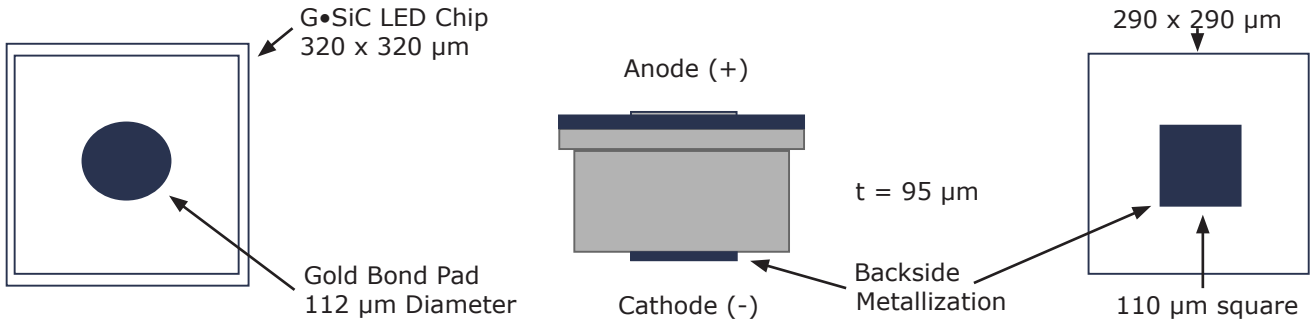
- Thin 95 µm Chip
- Reduced Forward Voltage
  - 3.1 V Typical at 20 mA
- RazerThin LED Performance
  - 460 nm - 14 mW min.
  - 470 nm - 12 mW min.
  - 527 nm - 6 mW min.
- Single Wire Bond Structure
- Class 2 ESD Rating

APPLICATIONS

- LCD Backlighting Units
  - Mobile Appliances
  - Digital Still Cameras
  - Monitors
- Cellular Phone LCD Backlighting
- Digital Camera Flash For Mobile Appliances
- Automotive Dashboard Lighting
- LED Video Displays
- Audio Product Display Lighting

CxxxRT320-Sxxxx Chip Diagram

Top View | **Die Cross Section** | **Bottom View**



Maximum Ratings at T_A = 25°C Notes 1&3	CxxxRT320-Sxxxx
DC Forward Current	50 mA
Peak Forward Current (1/10 duty cycle @ 1kHz)	100 mA
LED Junction Temperature	125°C
Reverse Voltage	5 V
Operating Temperature Range	-40°C to +100°C
Storage Temperature Range	-40°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°C, If = 20 mA Note 3

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.
C460RT320-Sxxxx	2.7	3.1	3.7	1	24
C470RT320-Sxxxx	2.7	3.1	3.7	1	25
C527RT320-Sxxxx	2.7	3.2	3.7	1	40

Mechanical Specifications	CxxxRT320-Sxxxx	
Description	**Dimension**	**Tolerance**
P-N Junction Area (µm)	270 x 270	± 35
Top Area (µm)	320 x 320	± 35
Bottom Area (µm)	290 x 290	± 35
Chip Thickness (µm)	95	± 15
Au Bond Pad Diameter (µm)	112	± 20
Au Bond Pad Thickness (µm)	1.0	± 0.5
Back Contact Metal Width (µm)	110	± 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. 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 325°C (< 5 seconds).
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. 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). Dominant wavelength measurements taken using Illuminance E.
4. Specifications are subject to change without notice.

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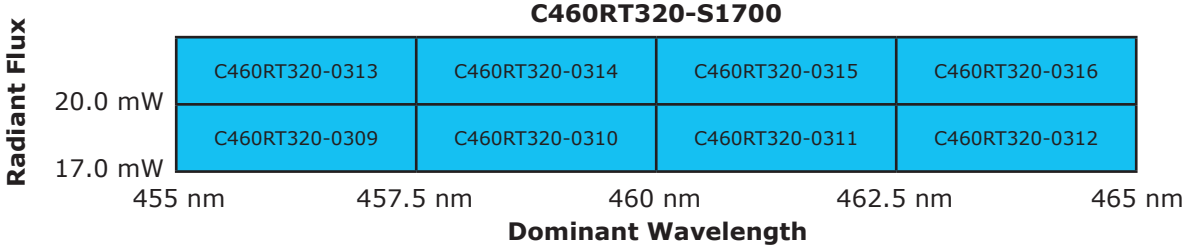
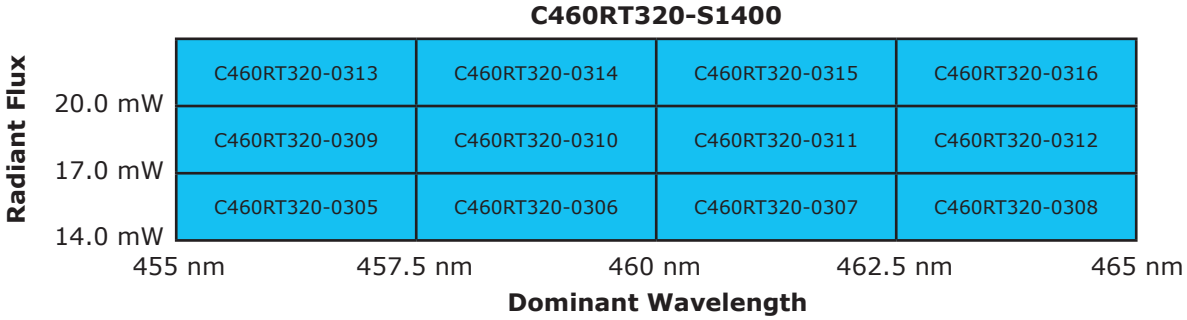
Standard Bins for C*xxx*RT320-S*xx*000

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*RT320-S*xx*000) orders may be filled with any or all bins (C*xxx*RT320-x*xxx*) contained in the kit. All radiant flux and all dominant wavelength values shown and specified are at If = 20 mA.

C460RT320-S1700



C460RT320-S1400



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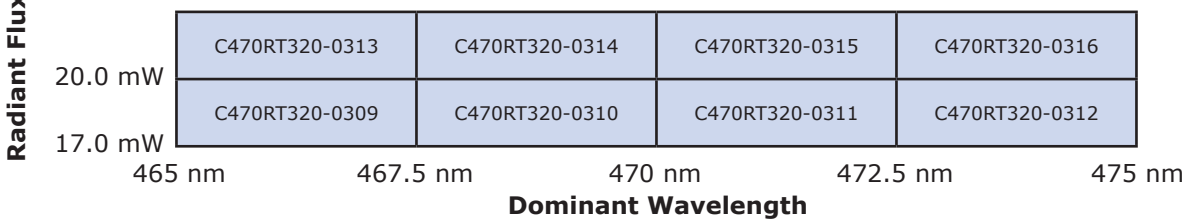
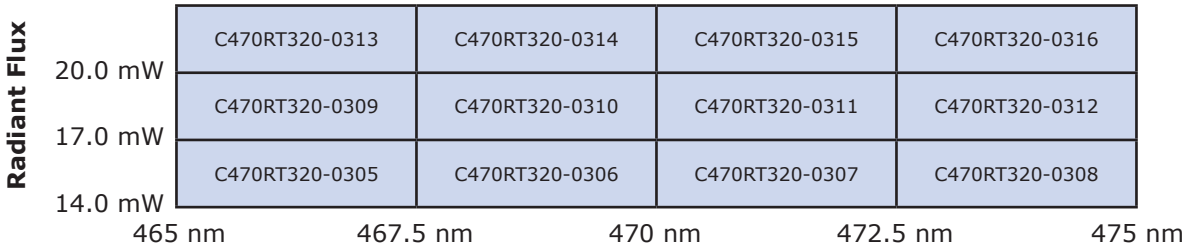
Standard Bins for C*xxx*RT320-S*xx*000 (continued)

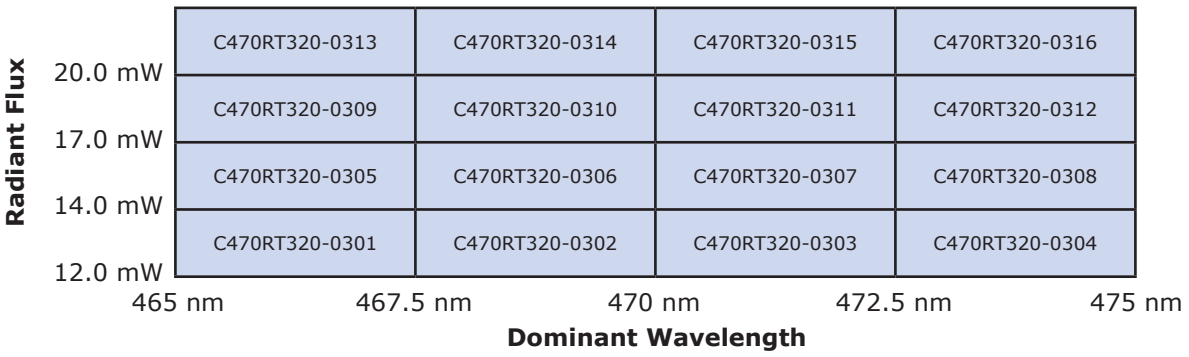
C470RT320-S1700



C470RT320-S1400



C470RT320-S1200



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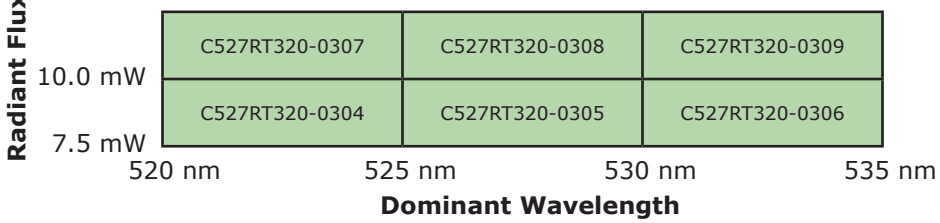
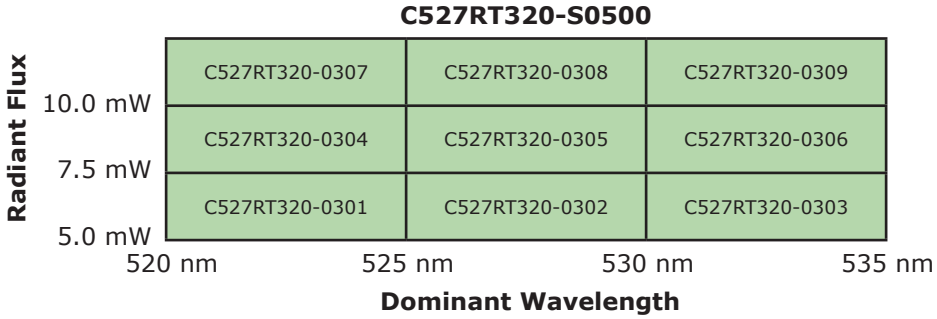
Standard Bins for C*xxx*RT320-S*xx*000 (continued)

C527RT320-S07500



C527RT320-S0500



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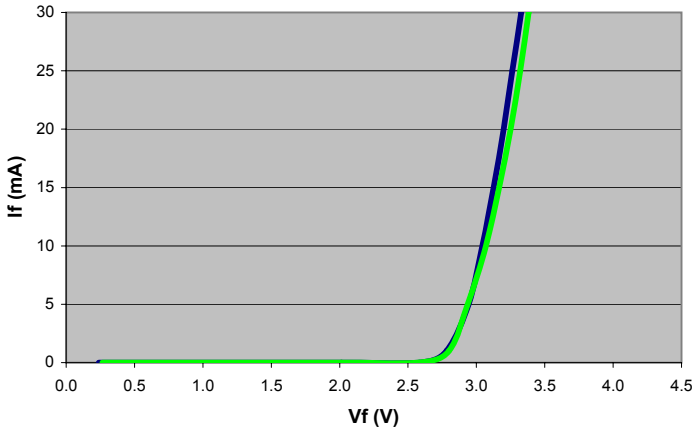
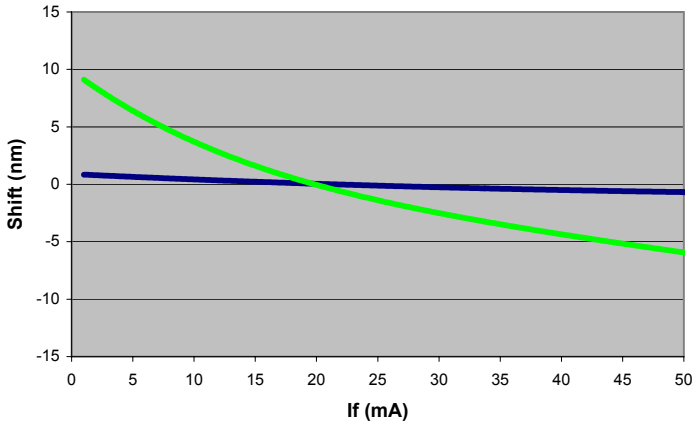
Characteristic Curves

These are representative measurements for the RazerThin products. Actual curves will vary slightly for the various radiant flux and dominant wavelength bins.

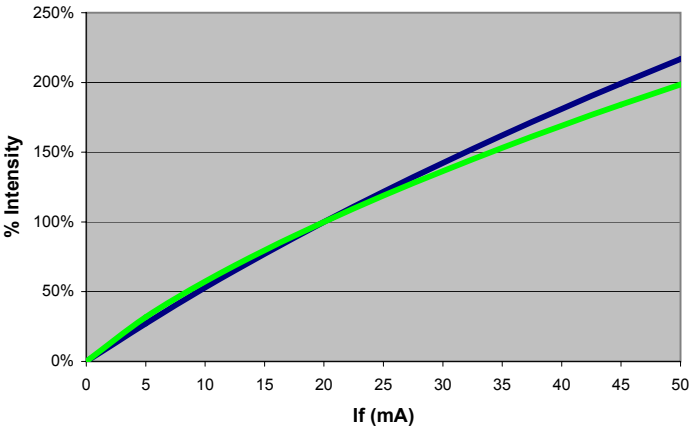
Forward Current vs. Forward Voltage



Wavelength Shift vs. Forward Current



Relative Intensity vs. Forward Current



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