TR3547™ LEDs
C*xxx*TR3547-S*xx*00
Data Sheet

Cree's TR3547 LEDs are the next generation of solid-state LED emitters that combine highly efficient InGaN materials with Cree's proprietary device technology and silicon-carbide substrates to deliver superior value for the TV-backlighting and general-illumination markets. The TR3547 LEDs are among the brightest in the top-view market while delivering a low forward voltage, resulting in a very bright and highly efficient solution. The design is optimally suited for industry-standard top-view packages.

FEATURES

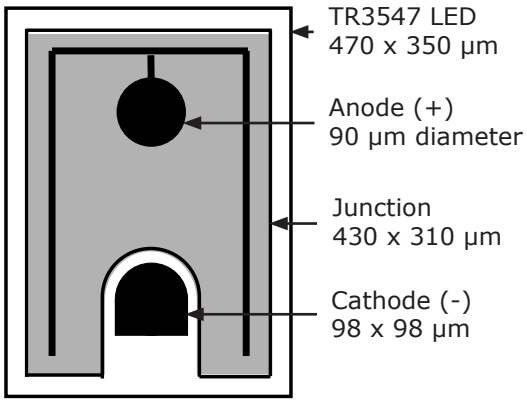
- Rectangular LED RF performance
  - 450 & 460 nm – 70 mW min
- Low forward voltage - 3.2 Vf typical at 50 mA
- Maximum DC forward current – 150 mA
- 1000-V ESD threshold rating
- InGaN junction on thermally conductive SiC substrate

APPLICATIONS

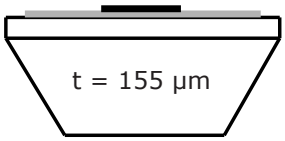
- Large LCD backlighting
  - Television
- General illumination
- Medium LCD backlighting
  - Portable PCs
  - Monitors
- LED video displays
- White LEDs

C*xxx*TR3547-S*xx*00 Chip Diagram

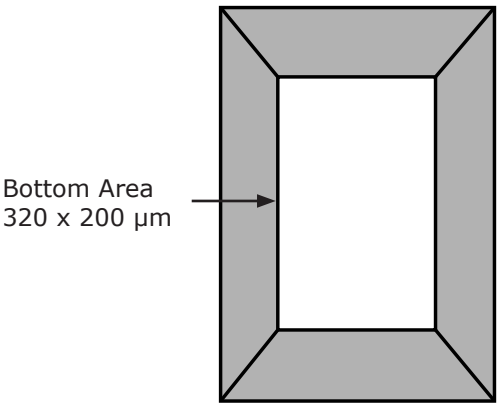
Top View



Die Cross Section



Bottom View



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Maximum Ratings at T_A = 25°C Notes 1&3	C*xxx*TR3547-S*xx*00
DC Forward Current	150 mA
Peak Forward Current (1/10 duty cycle @ 1 kHz)	200 mA
LED Junction Temperature	150°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 = 50 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.
C450TR3547-S*xx*00	2.9	3.2	3.5	2	20
C460TR3547-S*xx*00	2.9	3.2	3.5	2	21

Mechanical Specifications	C*xxx*TR3547-S*xx*00	
Description	**Dimension**	**Tolerance**
P-N Junction Area (µm)	310 x 430	±35
Chip Area (µm)	350 x 470	±35
Chip Thickness (µm)	155	±15
Au Bond Pad Diameter Anode (µm)	90	-5, +15
Au Bond Pad Thicknesses (µm)	1.0	±0.5
Au Bond Pad Area Cathode (µm)	98 x 98	-5, +15
Bottom Area (µm)	200 x 320	±35

Notes:

1. Maximum ratings are package-dependent. The above ratings were determined using a Cree SMT package (with silicone encapsulation) for characterization. Ratings for other packages may differ. 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) according to the HBM is measured by simulating ESD using a rapid avalanche energy test (RAET). The RAET procedures are designed to approximate the maximum ESD ratings shown.
3. All products conform to the listed minimum and maximum specifications for electrical and optical characteristics when assembled and operated at 50 mA within the maximum ratings shown above. Efficiency decreases at higher currents. Typical values given are within the range of average values expected by manufacturer in large quantities and are provided for information only. All measurements were made using lamps in T-1 3/4 packages (with Hysol OS4000 epoxy encapsulant and silicone die attach). Optical characteristics measured in an integrating sphere using Illuminance E.

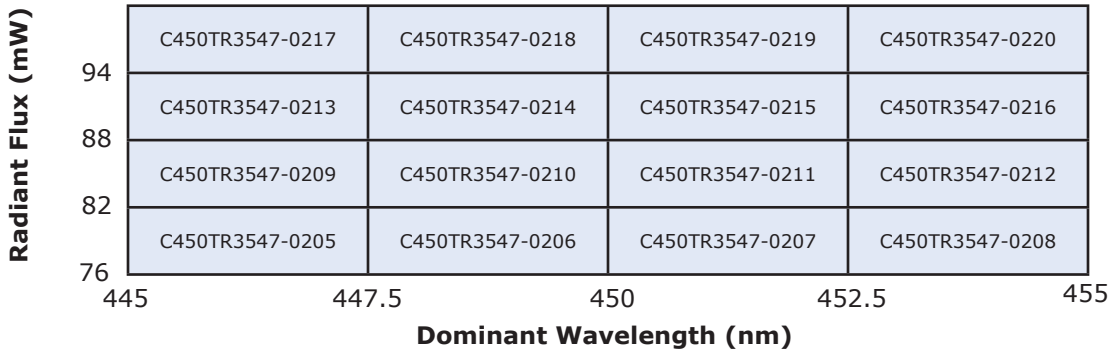
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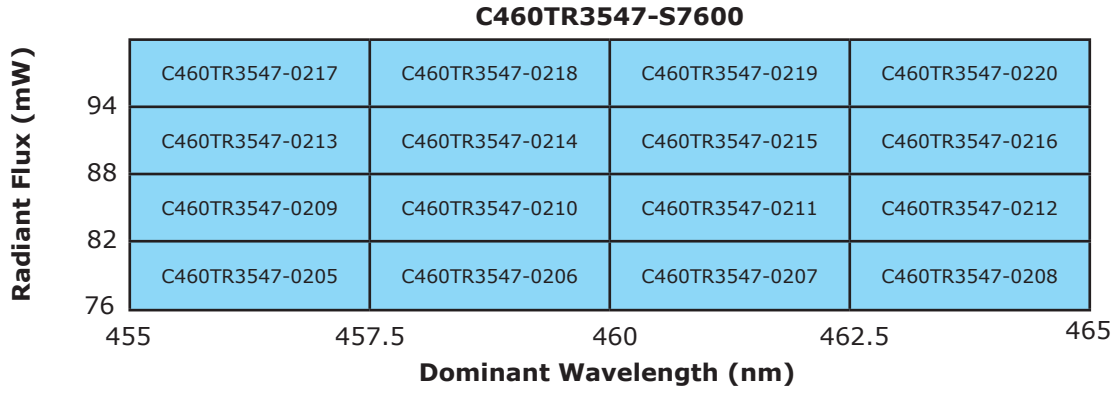
Standard Bins for C*xxx*TR3547-S*xx*00

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*TR3547-S*xxxx*) orders may be filled with any or all bins (C*xxx*TR3547-*xxxx*) contained in the kit. All radiant flux and dominant wavelength values shown and specified are at If = 50 mA.

C450TR3547-S7500



C460TR3547-S7600

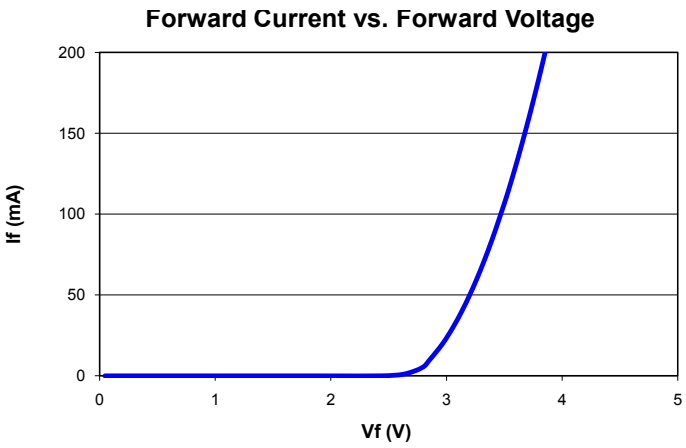


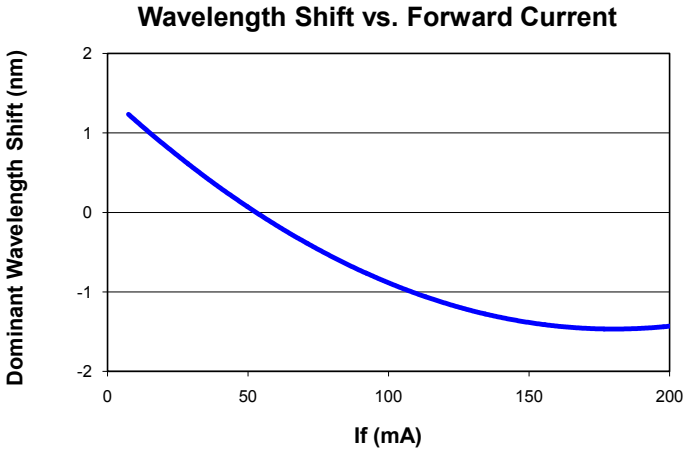
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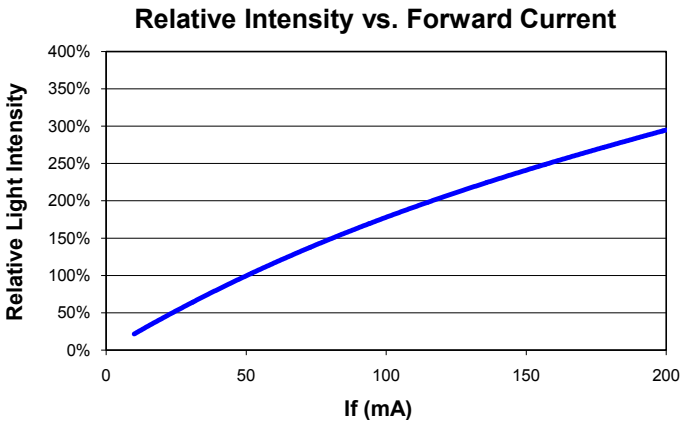
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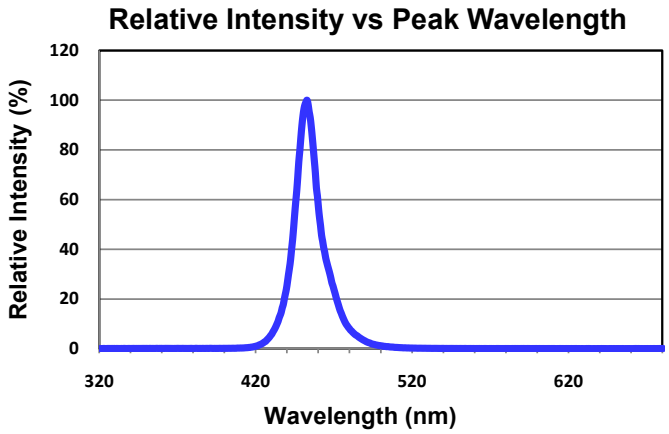
Characteristic Curves

These are representative measurements for the TR LED product. Actual curves will vary slightly for the various radiant flux and dominant wavelength bins.







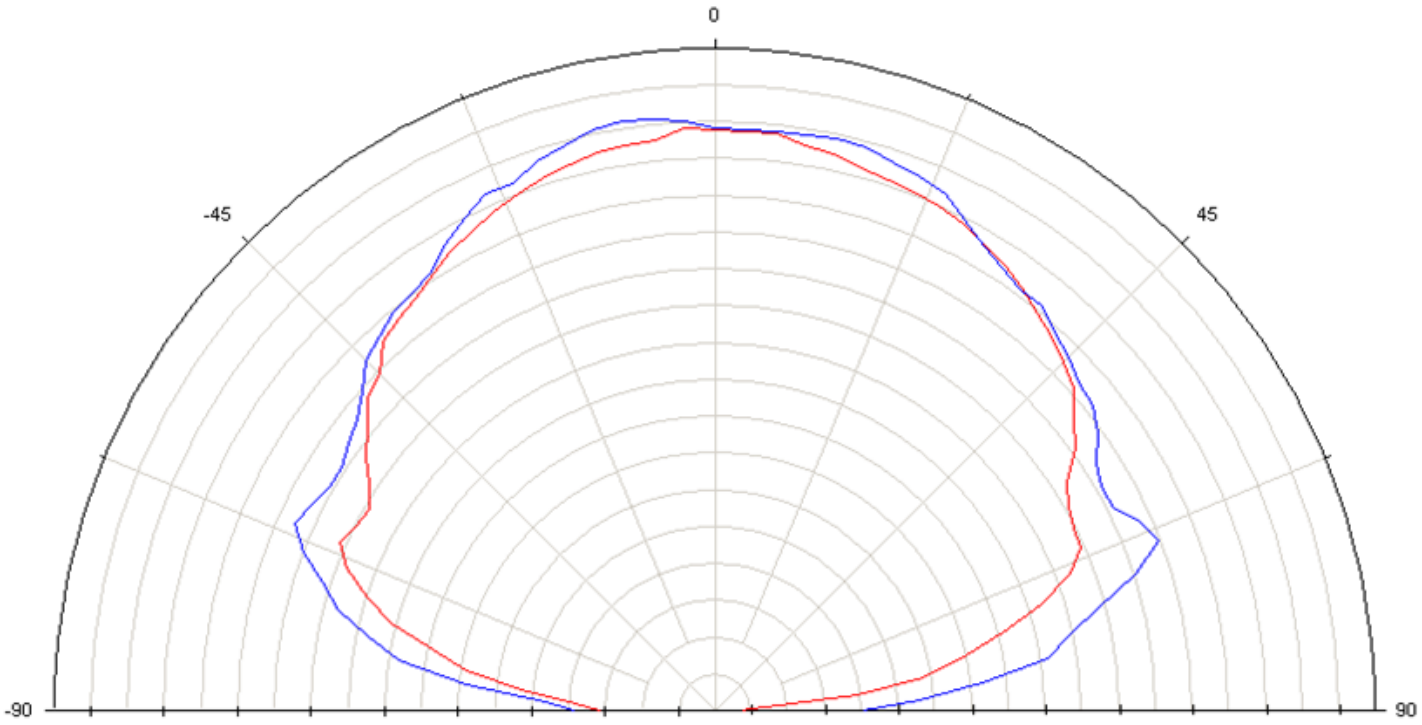


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Radiation Pattern

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



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