BRIDGELLUX BLUE POWER DIE

BXCD 50 mil x 50 mil

PRODUCT DATA SHEET DS-C11

The Bridgelux family of blue power die enables high performance and cost effective solutions to serve solid state lighting market. This next generation chip technology delivers improved efficiency and performance to enable increased light output for a variety of lighting, signaling and display applications.

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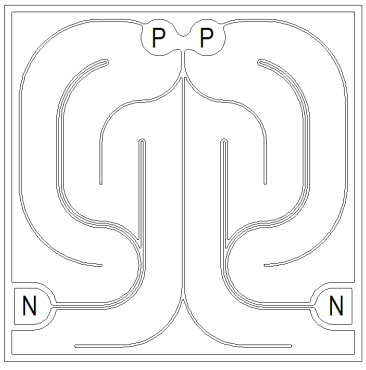
Features

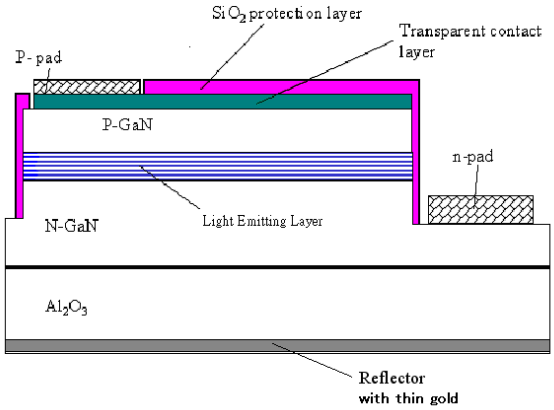
- High lumen output and efficiency
- Long operating life
- 100% Tested and sorted by wavelength, power and forward voltage
- Lambertian emission pattern
- Compatible with Solder paste, solder preform or silver epoxy die attach
- Delivered on medium tack blue tape (20cm±10mm ×20 cm±10mm)

Applications

- General Illumination
- Portable Lighting
- Architectural Lighting
- Directional Lighting
- Display Backlighting
- Digital Camera Flash
- Automotive Lighting
- White LEDs

LED Chip Diagram





(Note: drawing is not to scale)

BRIDGELUX
The Magic of Light™

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Mechanical Dimensions

Chip Size	$1270^{+30/-10}$ µm × $1270^{+30/-10}$ µm (50 mil x 50 mil)
Chip Thickness	150 ± 10 µm (5.9 mil)
Au Pad Thickness	4.4 ± 0.3 µm
Au Pad Diameter	P Pad: 130 µm N Pad: 130 µm

Absolute Maximum Ratings

Parameter	Symbol	Maximum Rating	Condition
DC Forward Current	I_f	700 mA[1]	T_j = 140°C
Junction Temperature	T_j	150°C	
Reverse Voltage	V_r	-5 V	T_a = 25°C
Reverse Current	I_r	< 2 µA	V_r = -5 V
Assembly Process Temperature	325°C for < 5 seconds		
Storage Conditions (chip on tape)[6]	0°C to +40°C ambient, RH < 65%		

Notes:

1. Maximum drive current depends on junction temperature, die attach methods/materials, and lifetime requirements of the application.
2. Bridgelux LED chips are Class 1 ESD sensitive.
3. The typical spectra half-width of the BXCD5050 blue power die is < 25 nm.
4. Please consult the Bridgelux technical support team for information on how to optimize the light output of our chips in your package.
5. Brightness values are measured in an integrating sphere using gold plated TO39 headers without encapsulation.
6. Tapes should be stored in a vertical orientation, not horizontally stacked. Stacking of tapes can place excessive pressure on the bond pads of the LED, resulting in reduced wire bonding strength.

Environmental Compliance

Bridgelux is committed to providing environmentally friendly products to the solid state lighting market. Bridgelux BXCD5050 blue power die are compliant to the European Union directives on the restriction of hazardous substances in electronic equipment, namely the RoHS directive. Bridgelux will not intentionally add the following restricted materials to BXCD5050 die products: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

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Part Numbering and Bin Definitions

Bridgelux LED chips are sorted into the brightness and dominant wavelength bins shown below at I_f = 350 mA. Each blue tape contains die from only one brightness bin and one wavelength bin.

Each blue tape contains chips with 0.2 V forward voltage bins: 3.0 - 3.2 V, 3.2 - 3.4 V and 3.4 - 3.6 V. The typical forward voltage is 3.2 V and the maximum forward voltage (V_f max) = 3.6 V.

Dominant Wavelength	Power Bin D2 (275 – 295 mW)	Power Bin E1 (295 – 320 mW)	Power Bin E2 (320 – 340 mW)
445 to 447.5nm	BXCD5050445-D2-z	BXCD5050445-E1-z	BXCD5050445-E2-z
447.5 to 450nm	BXCD5050447-D2-z	BXCD5050447-E1-z	BXCD5050447-E2-z
450 to 452.5nm	BXCD5050450-D2-z	BXCD5050450-E1-z	BXCD5050450-E2-z
452.5 to 455nm	BXCD5050452-D2-z	BXCD5050452-E1-z	BXCD5050452-E2-z
455 to 457.5nm	BXCD5050455-D2-z	BXCD5050455-E1-z	BXCD5050455-E2-z
457.5 to 460nm	BXCD5050457-D2-z	BXCD5050457-E1-z	BXCD5050457-E2-z
460 to 462.5nm	BXCD5050460-D2-z	BXCD5050460-E1-z	BXCD5050460-E2-z
462.5 to 465nm	BXCD5050462-D2-z	BXCD5050462-E1-z	BXCD5050462-E2-z

Product Nomenclature

B X C D 5 0 5 0 X X X – Y – Z

Where:

BXCD: Designates product family

5050: Designates die size (50 mil x 50 mil)

XXX: Designates dominant wavelength bin

Y: Designates radiometric power bin

Z: Designates forward voltage bin

Performance vs. Current

The following curves represent typical performance of the BXCD5050 blue power die. Actual performance will vary slightly for different power and dominant wavelength bins.

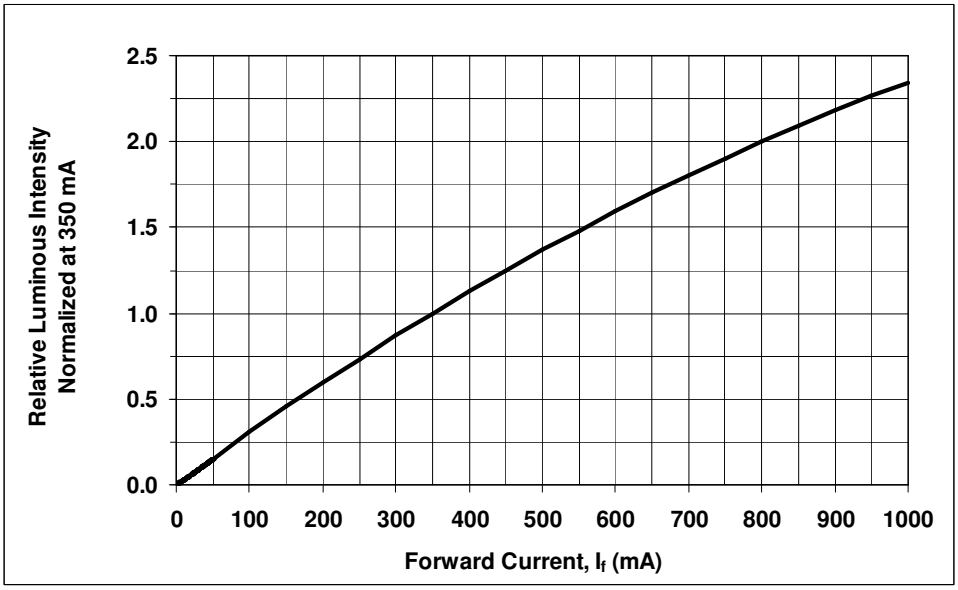

Figure 1: Relative Luminous Intensity vs. Forward Current (device tested on a probe station)

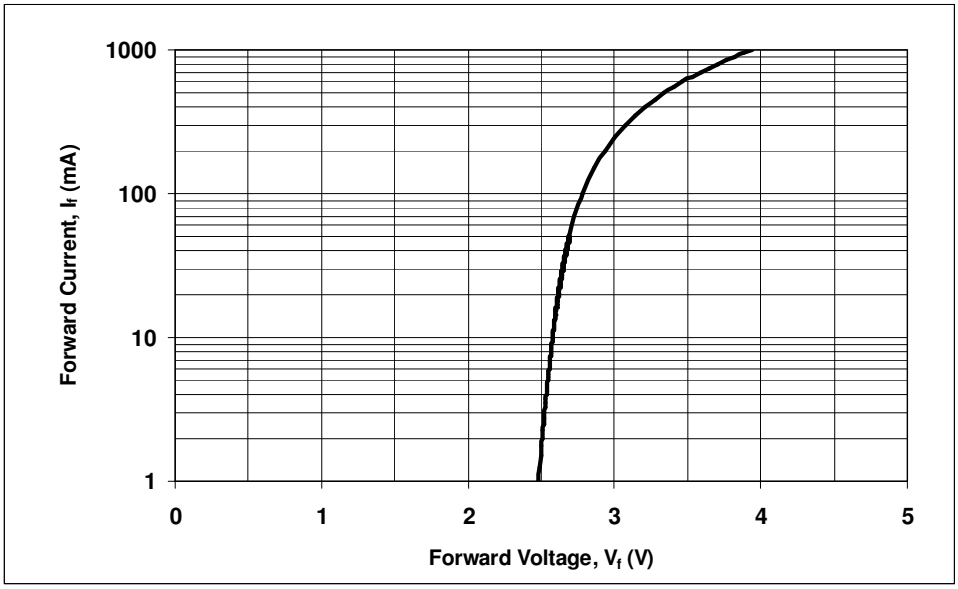

Figure 2: Forward Current vs. Forward Voltage (T_j = 25°C)

Performance vs. Junction Temperature

The following curves represent typical performance of the BXCD5050 blue power die. Actual performance will vary slightly for different power and dominant wavelength bins.

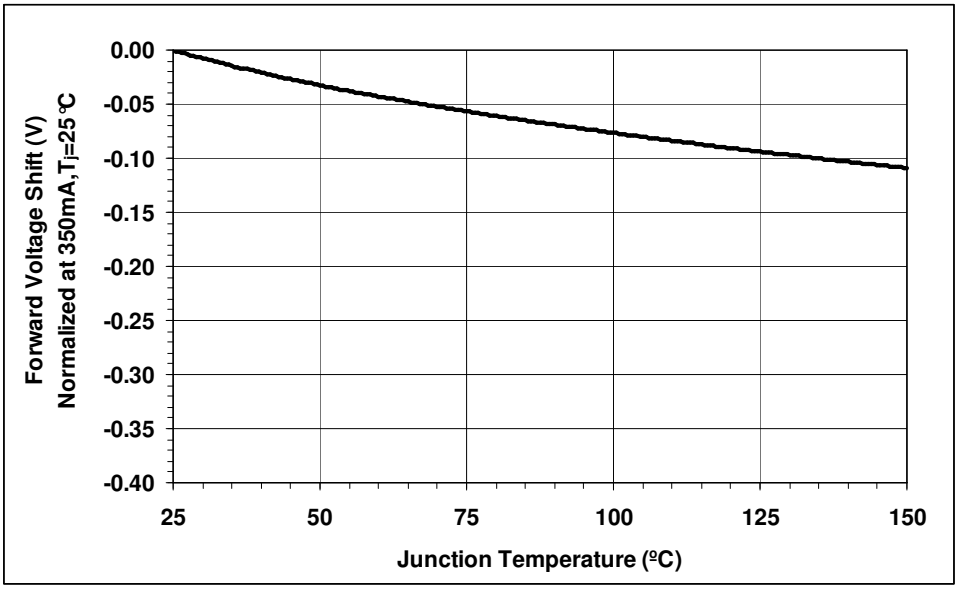

Figure 3: Forward Voltage vs. Junction Temperature

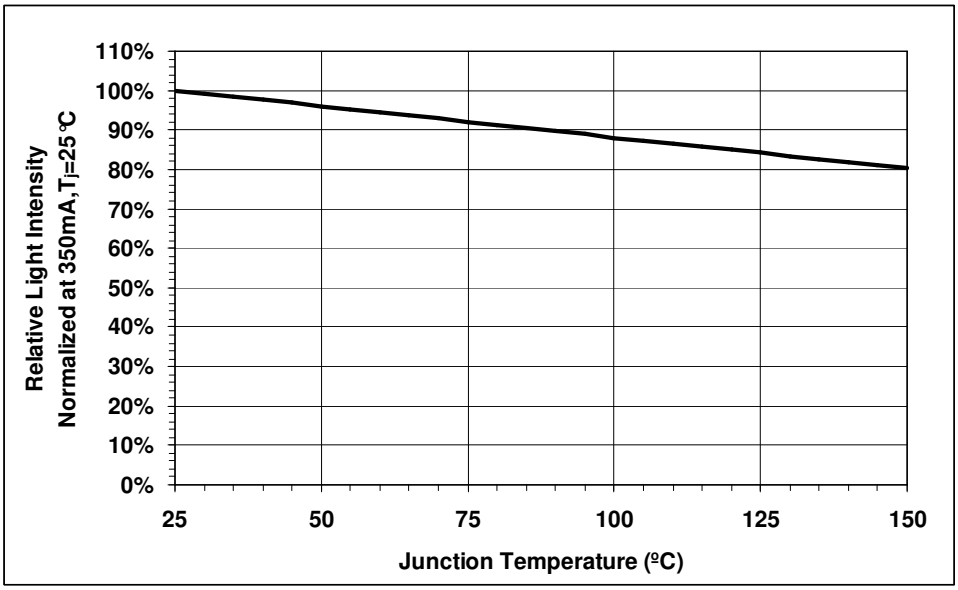

Figure 4: Relative Light Output vs. Junction Temperature

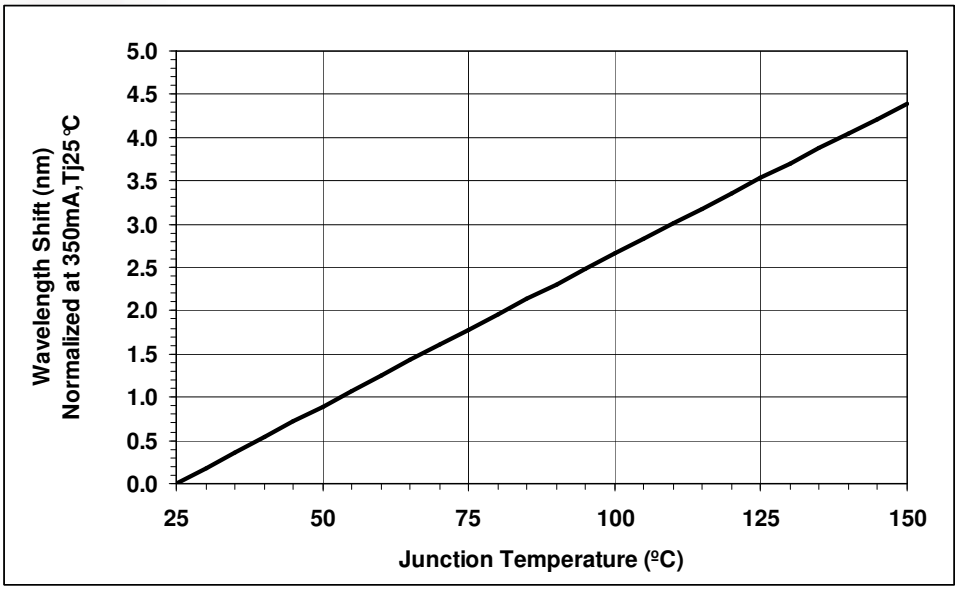

Figure 5: Wavelength Shift vs. Junction Temperature

Typical Radiation Pattern

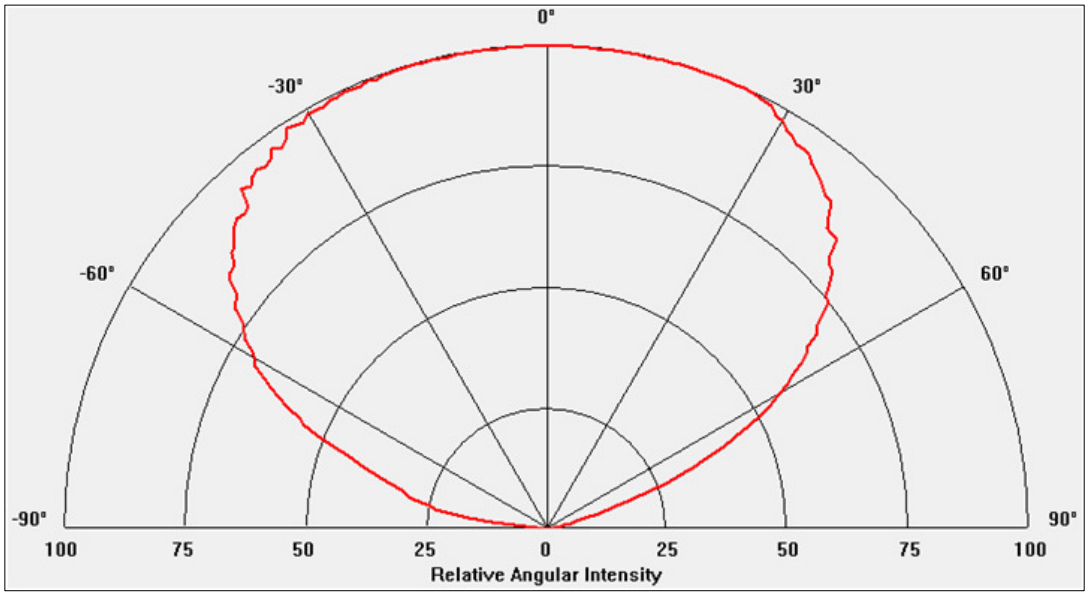

Figure 6: Typical Radiation Pattern (350 mA Operation)

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Current Derating Curves

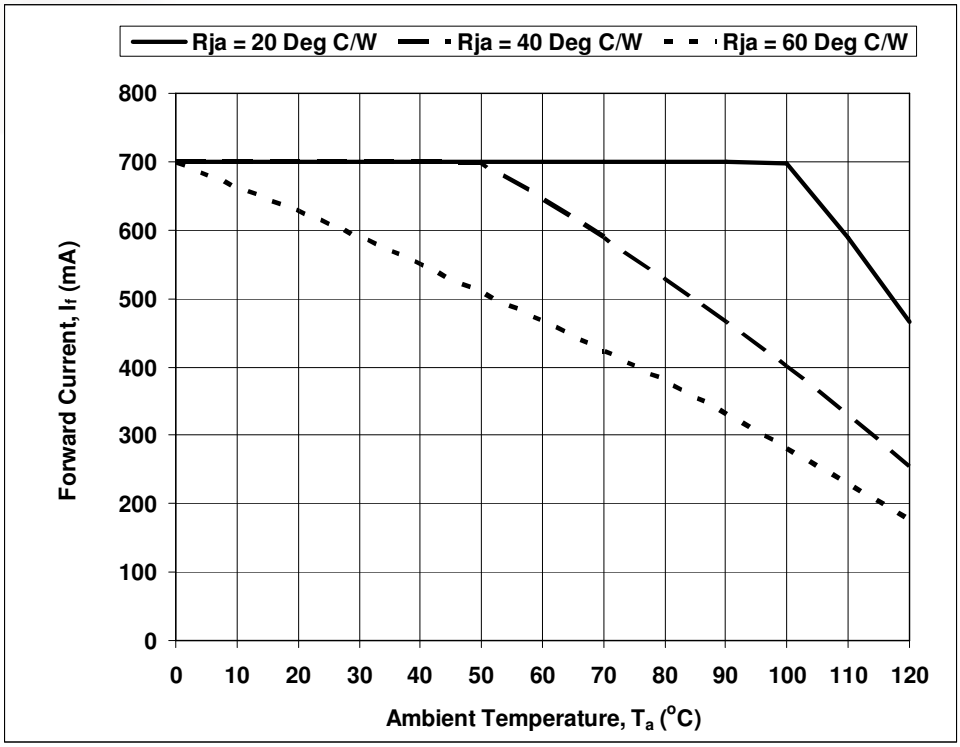

Figure 7: Current Derating Curve vs. Ambient Temperature (derating based on T_j max 150°C)

ABOUT BRIDGELUX

Bridgelux is a leading developer and manufacturer of technologies and solutions transforming the $40 billion global lighting industry into a $100 billion market opportunity. Based in Livermore, California, Bridgelux is a pioneer in solid-state lighting (SSL), expanding the market for light-emitting diode (LED) technologies by driving down the cost of LED lighting systems. Bridgelux's patented light source technology replaces traditional technologies (such as incandescent, halogen, fluorescent and high intensity discharge lighting) with integrated, solid-state lighting solutions that enable lamp and luminaire manufacturers to provide high performance and energy-efficient white light for the rapidly growing interior and exterior lighting markets, including street lights, commercial lighting and consumer applications. With more than 500 patent applications filed or granted worldwide, Bridgelux is the only vertically integrated LED manufacturer and developer of solid-state light sources that designs its solutions specifically for the lighting industry.

For more information about the company, please visit www.bridgelux.com