BRIDGELUX BLUE POWER DIE

BXCD 11 mil x 33 mil

PRODUCT DATA SHEET DS-C43

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.

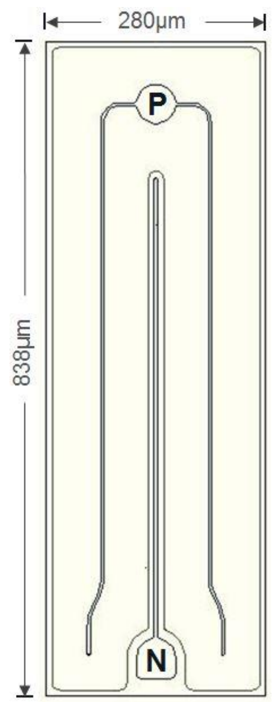
Features

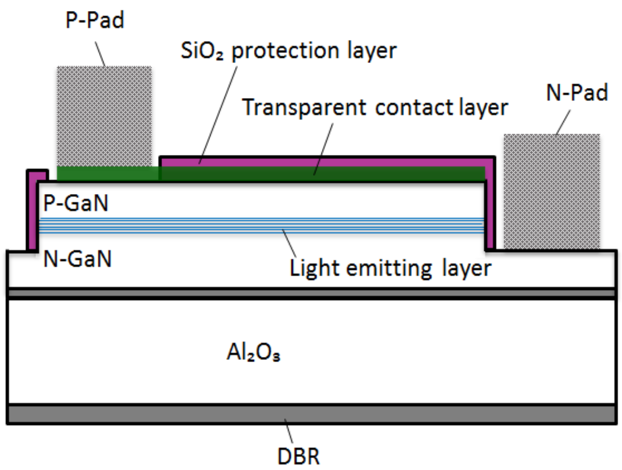
- High lumen output and efficiency
- Long operating life
- 100% Tested and sorted by wavelength, power and forward voltage
- Lambertian emission pattern
- Compatible with Solder paste, solder preform or silver epoxy die attach
- Delivered on medium tack blue tape (20cm±10mm ×20 cm±10mm)

Applications

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

LED Chip Diagram





46430 Fremont Boulevard, Fremont, CA 94538 • Tel: (925) 583-8400 • Fax: (925) 583-8401 • www.bridgelux.com

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Product Nomenclature

B X C D 1133 X X X – Y – Z

Where:

BXCD: Designates product family

1133: Designates die size (11 mil x 33 mil)

XXX: Designates dominant wavelength bin

Y: Designates radiometric power bin

Z: Designates forward voltage bin

Part Numbering and Bin Definitions

Bridgelux LED chips are sorted into the brightness and dominant wavelength bins shown below at I_f = 150 mA. Each blue tape contains die from only one brightness bin and one wavelength bin.

The forward voltage bins are 3.0-3.1 V (A1), 3.1-3.2 V (A2), 3.2-3.3 V (B1), 3.3-3.4 V (B2), 3.4-3.5 V (C1), and 3.5-3.6 V (C2). The maximum forward voltage (V_f max) = 3.6 V.

Dominant Wavelength	Power Bin D5 (240 – 250 mW)	Power Bin D6 (250 – 260 mW)
450 to 452.5nm	BXCD1133450-D5-z	BXCD1133450-D6-z
452.5 to 455nm	BXCD1133452-D5-z	BXCD1133452-D6-z
455 to 457.5nm	BXCD1133455-D5-z	BXCD1133455-D6-z
457.5 to 460nm	BXCD1133457-D5-z	BXCD1133457-D6-z

Dominant Wavelength	Power Bin D7 (260 – 270 mW)	Power Bin D8 (270 – 285 mW)
450 to 452.5nm	BXCD1133450-D7-z	BXCD1133450-D8-z
452.5 to 455nm	BXCD1133452-D7-z	BXCD1133452-D8-z
455 to 457.5nm	BXCD1133455-D7-z	BXCD1133455-D8-z
457.5 to 460nm	BXCD1133457-D7-z	BXCD1133457-D8-z

Note: z = “A1” for Vf bin of 3.0-3.1 V; “A2” for Vf bin of 3.1-3.2 V; “B1” for Vf bin of 3.2-3.3 V; “B2” for Vf bin of 3.3-3.4 V; “C1” for Vf bin of 3.4-3.5 V z = “C2” for Vf bin of 3.5-3.6 V.

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Mechanical Dimensions

Chip size	280(±35) µm ×838(±35) µm
Wafer thickness	180± 10 µm
Pad Thickness	2.0±0.5 µm
Au Pad Diameter	P: 50±2 µm / N: 50±2 µm

Absolute Maximum Ratings

Parameter	Symbol	Maximum Rating	Condition
Forward DC Current	I_f	200 mA[1]	T_a=25°C
Forward Voltage	V_f	3.6 V	I_f = 150 mA
Reverse voltage	V_r	-5V	T_a=25°C
Reverse Current	I_r	2.0 µA	V_r = -5 V
Junction Temperature	T_j	125ºC	
Assembly Process Temp.		325°C for <5 seconds	
Storage Conditions (chip on tape)		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 BXCD1133 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 silver 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 BXCD1133 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 BXCD1133 die products: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

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Performance vs. Current

The following curves represent typical performance of the BXCD1133 blue power die. Actual performance will vary slightly for different power, dominant wavelength and Vf bins.

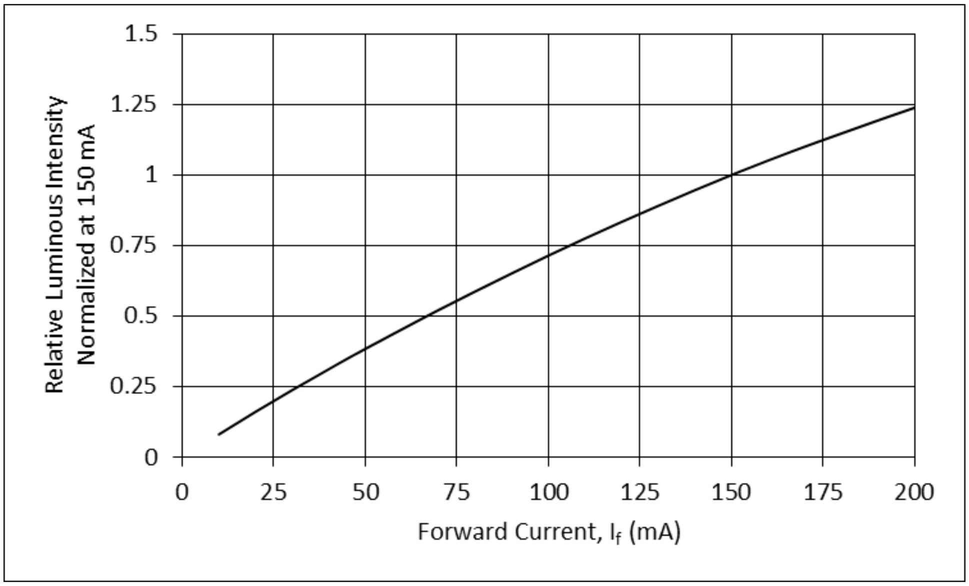

Figure 1: Relative Luminous Intensity vs. Forward Current (T_j = 25°C)

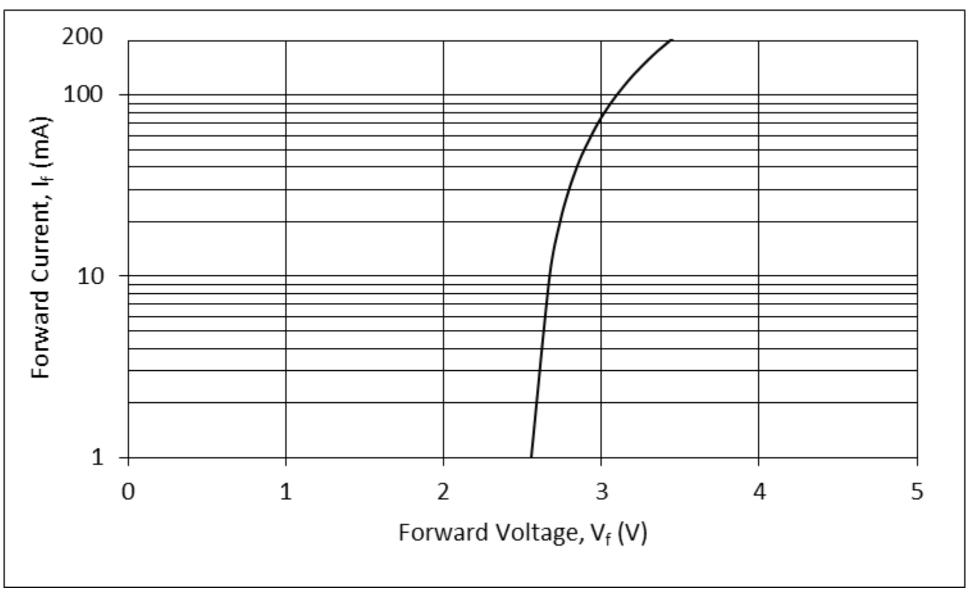

Figure 2: Forward Current vs. Forward Voltage (T_j = 25°C)

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Performance vs. Junction Temperature

The following curves represent typical performance of the BXCD1133 blue power die. Actual performance will vary slightly for different power, dominant wavelength and Vf bins.

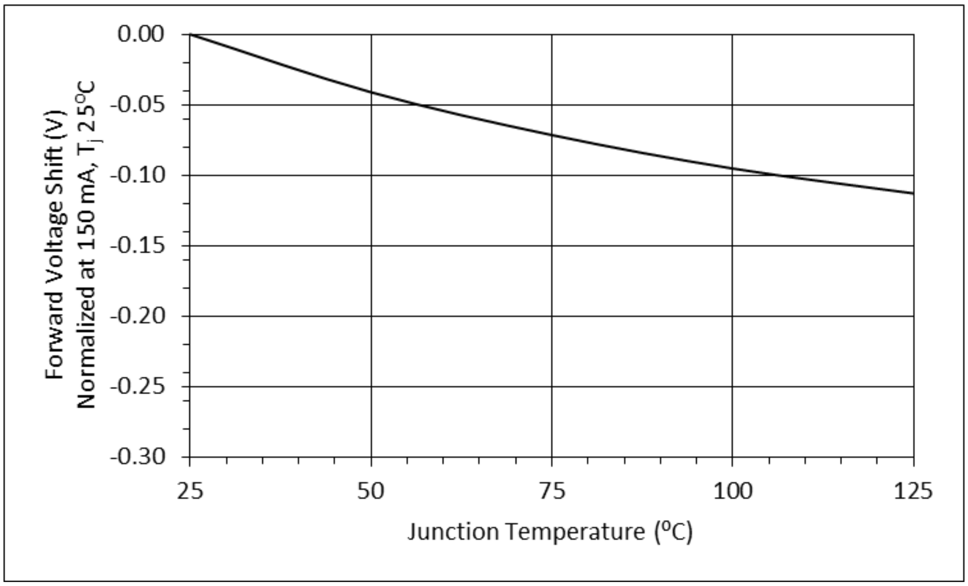

Figure 3: Forward Voltage Shift vs. Junction Temperature

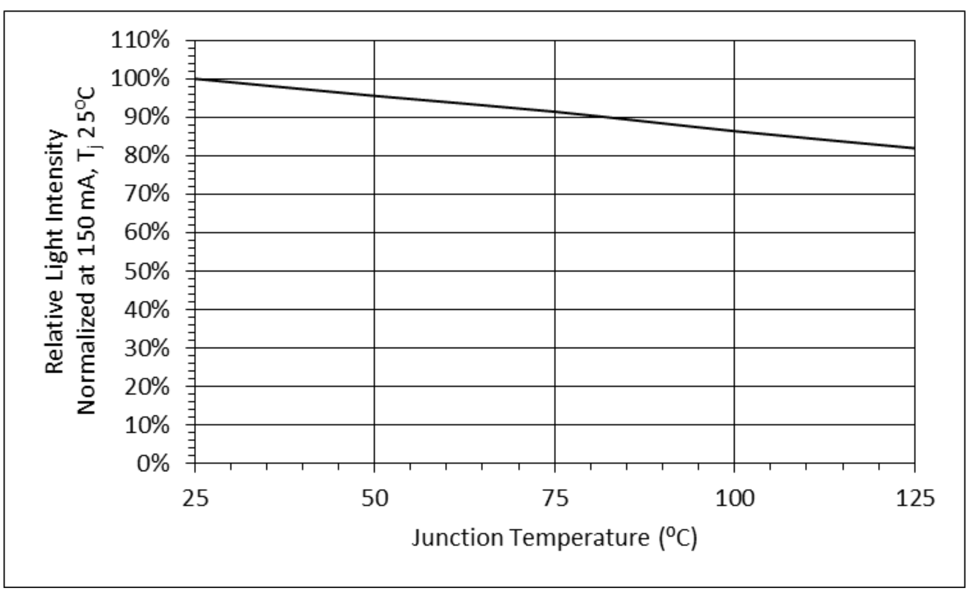

Figure 4: Relative Light Intensity vs. Junction Temperature

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Wavelength Shift

The following curves represent typical performance of the BXCD1133 blue power die. Actual performance will vary slightly for different power, dominant wavelength and Vf bins.

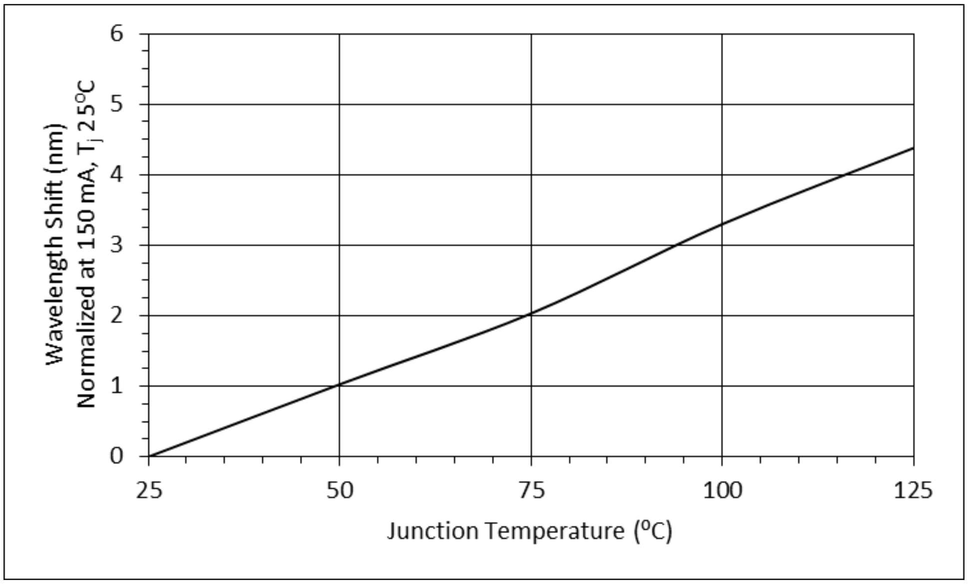

Figure 5: Wavelength Shift vs. Junction Temperature

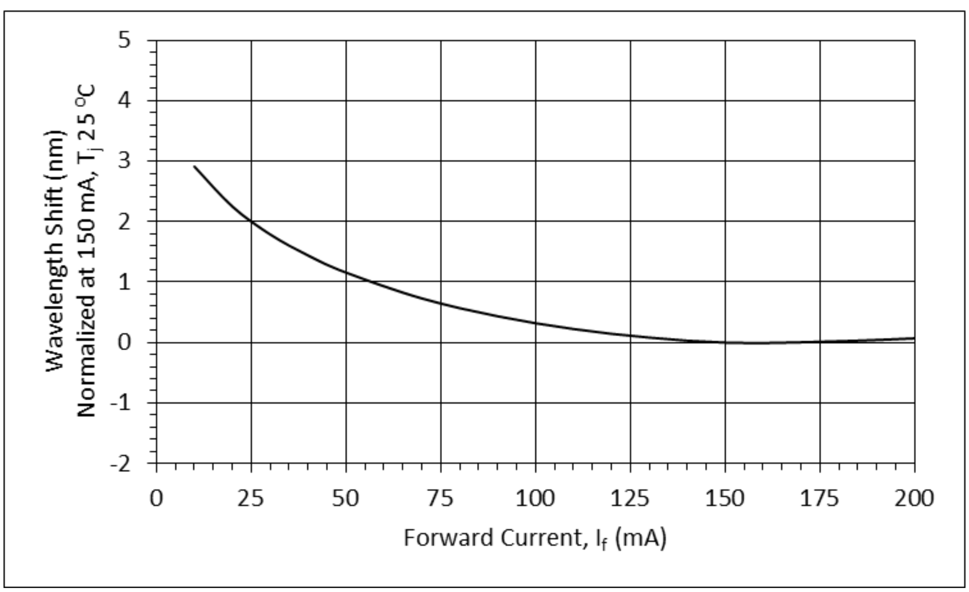

Figure 6: Wavelength Shift vs. Forward Current

Typical Radiation Pattern

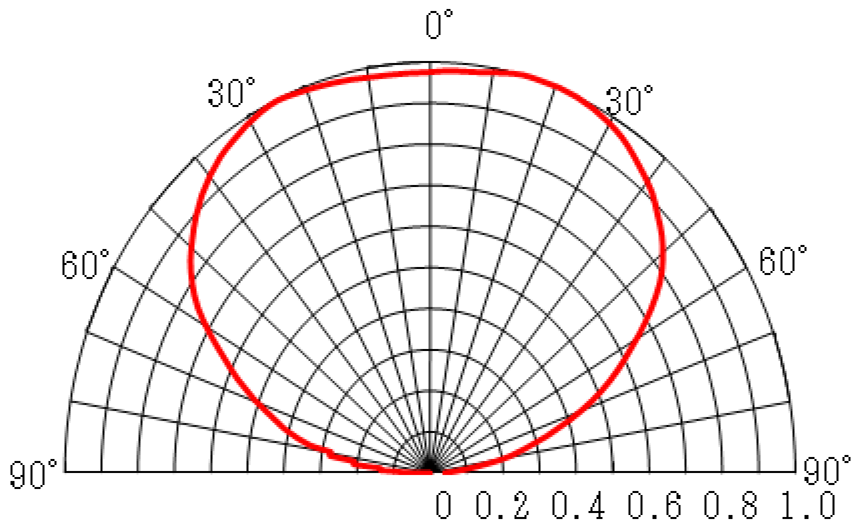

Figure 7: Typical Radiation Pattern (150 mA Operation)

Current De-rating Curves

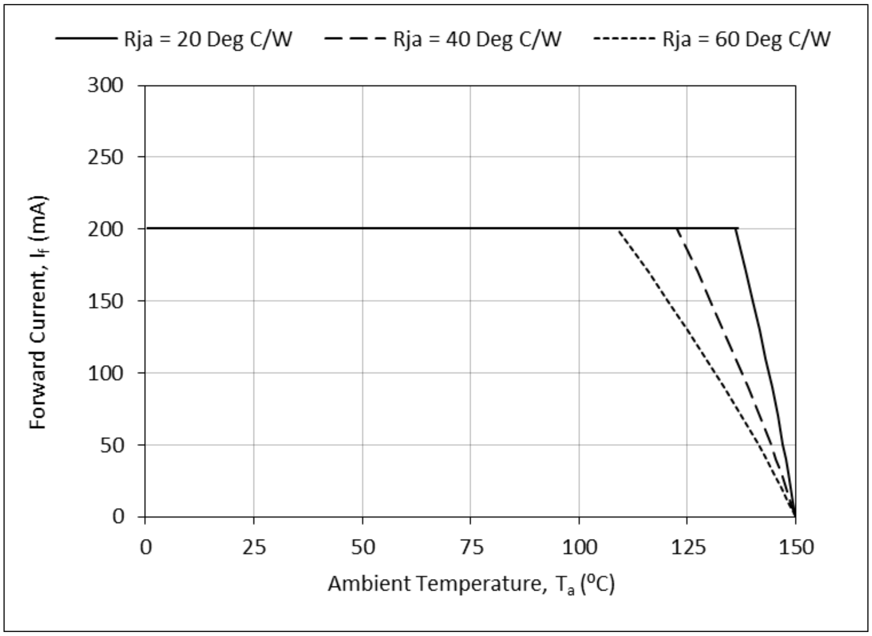

Figure 8: Current Derating Curve vs. Ambient Temperature (derating based on T_j max 125°C)

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At Bridgelux, we help companies, industries and people experience the power and possibility of light. Since 2002, we've designed LED solutions that are high performing, energy efficient, cost effective and easy to integrate. Our focus is on light's impact on human behavior, delivering products that create better environments, experiences and returns—both experiential and financial. And our patented technology drives new platforms for commercial and industrial luminaires.

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