NLX-5 BLUE POWER DIE

BXCB 45 x 45 mil

PRODUCT DATA SHEET

The Bridgelux NLX-5 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.

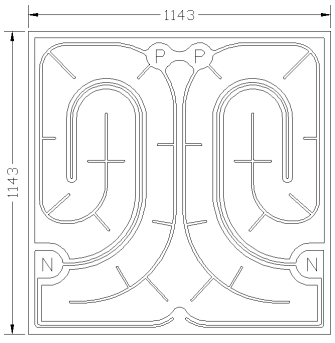
Features

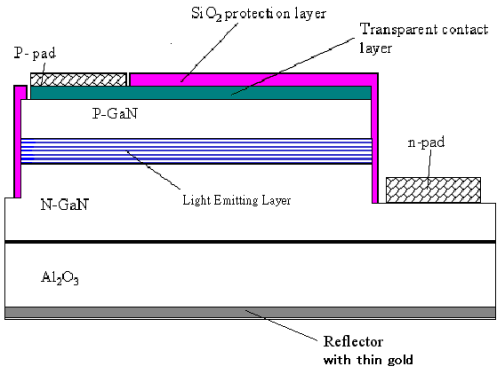
- High lumen output and efficiency
- Long operating life
- Increased current spreading traces for highly efficient and uniform illumination
- 100% Tested and sorted by wavelength, power and forward voltage
- Lambertian emission pattern
- Compatible with Solder paste, solder preform or silver epoxy die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

Applications

- General Illumination
- Street Lights
- Portable Lighting
- Architectural Lighting
- Directional Lighting
- Wide Area Lighting
- Display Backlighting
- Digital Camera Flash
- Automotive Lighting
- White LEDs

LED Chip Diagram





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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 3.4 V and the maximum forward voltage (V_f max) = 3.6 V.

Dominant Wavelength	Power Bin D1 (255 – 275 mW)	Power Bin D2 (275 – 295 mW)	Power Bin E1 (295 – 320 mW)
445 to 447.5nm	BXCB4545445-D1-z	BXCB4545445-D2-z	BXCB4545445-E1-z
447.5 to 450nm	BXCB4545447-D1-z	BXCB4545447-D2-z	BXCB4545447-E1-z
450 to 452.5nm	BXCB4545450-D1-z	BXCB4545450-D2-z	BXCB4545450-E1-z
452.5 to 455nm	BXCB4545452-D1-z	BXCB4545452-D2-z	BXCB4545452-E1-z
455 to 457.5nm	BXCB4545455-D1-z	BXCB4545455-D2-z	BXCB4545455-E1-z
457.5 to 460nm	BXCB4545457-D1-z	BXCB4545457-D2-z	BXCB4545457-E1-z
460 to 462.5nm	BXCB4545460-D1-z	BXCB4545460-D2-z	BXCB4545460-E1-z
462.5 to 465nm	BXCB4545462-D1-z	BXCB4545462-D2-z	BXCB4545462-E1-z

Product Nomenclature

BXCB 4545 XXX – YY – Z

Where:

- BXCB: Designates product family
- 4545: Designates die size (45 mil x 45 mil)
- XXX: Designates dominant wavelength bin
- YY: Designates radiometric power bin
- Z: Designates forward voltage bin

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BXCB 45 X 45 MIL

Mechanical Dimensions

Chip Size	1143 +30/-10 µm × 1143 +30/-10 µm (45 mil x 45 mil)
Chip Thickness	150 ± 10 µm (5.9 mil)
Au Pad Thickness	2.4 ± 0.2 µm
Au Pad Diameter	P Pad (2X): 100 µm N Pad (2X): 105 µm

Absolute Maximum Ratings

Parameter	Symbol	Maximum Rating	Condition
DC Forward Current	I_f	700 mA[1]	T_j = 125°C
Junction Temperature	T_j	150°C	
Reverse Voltage	V_r	-5 V	T_a = 25°C
Reverse Current	I_r	< 10 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 NLX-5 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 NLX-5 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 NLX-5 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 BXCB NLX-5 blue power die. Actual performance will vary slightly for different power and dominant wavelength bins.

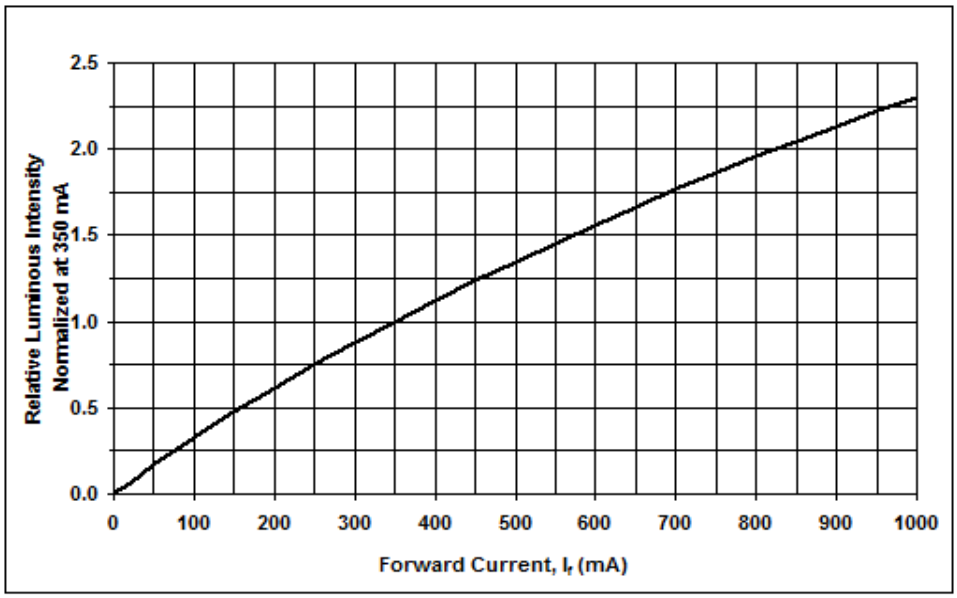

Figure 1: Relative Luminous Intensity vs. Forward Current (device tested on a probe station)

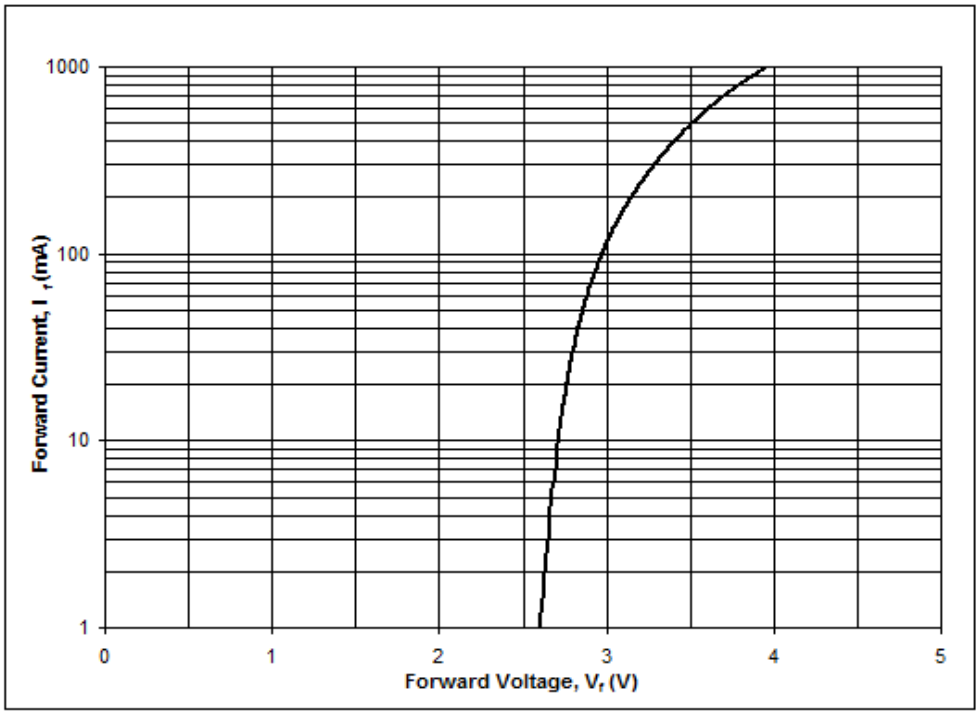

Figure 2: Forward Current vs. Forward Voltage (T_j = 25°C)

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Performance vs. Junction Temperature

The following curves represent typical performance of the BXCB NLX-5 blue power die. Actual performance will vary slightly for different power and dominant wavelength bins.

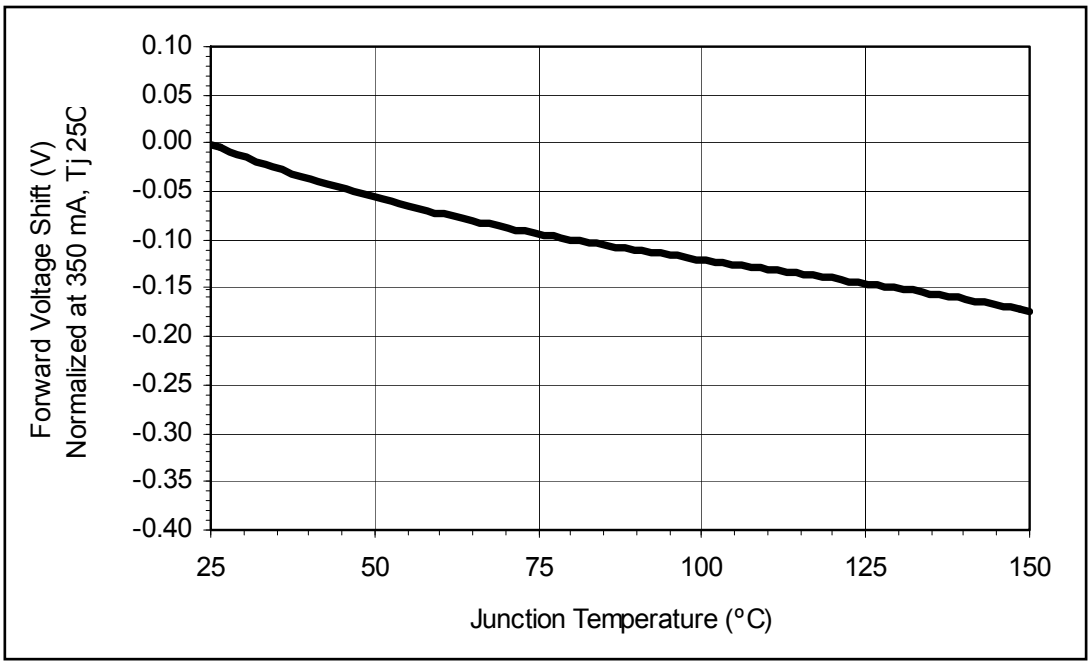

Figure 3: Forward Voltage vs. Junction Temperature

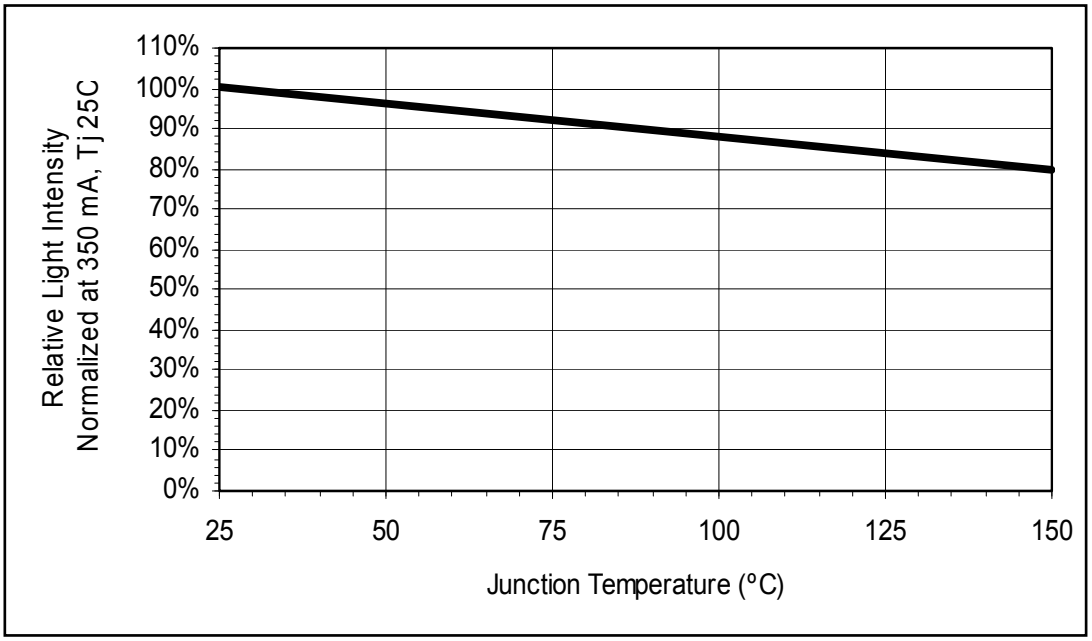

Figure 4: Relative Light Output vs. Junction Temperature

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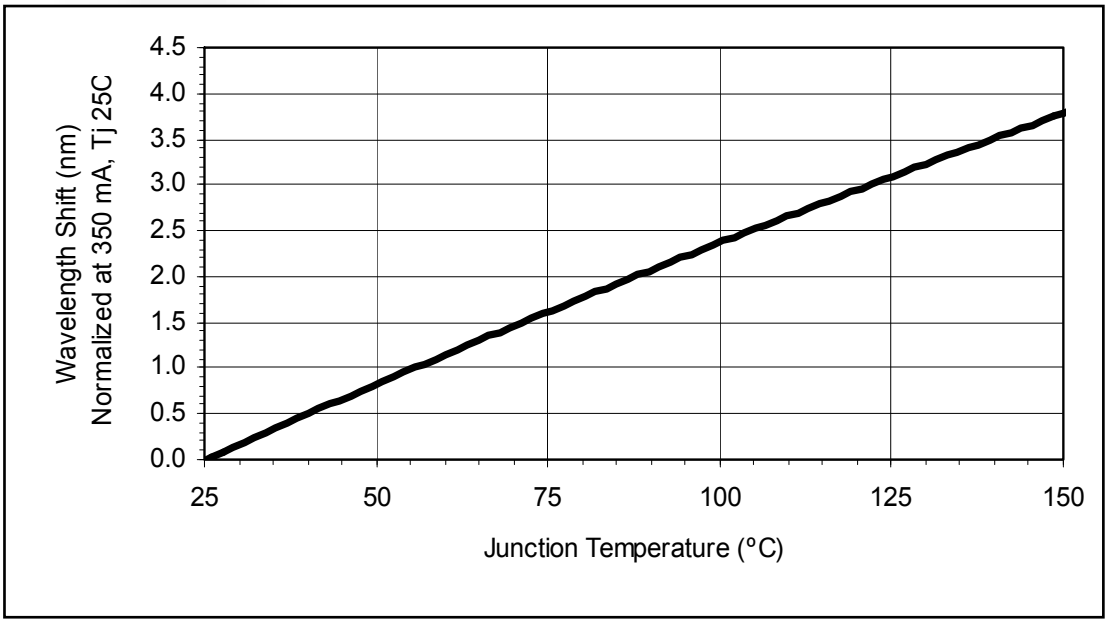

Figure 5: Wavelength Shift vs. Junction Temperature

Typical Radiation Pattern

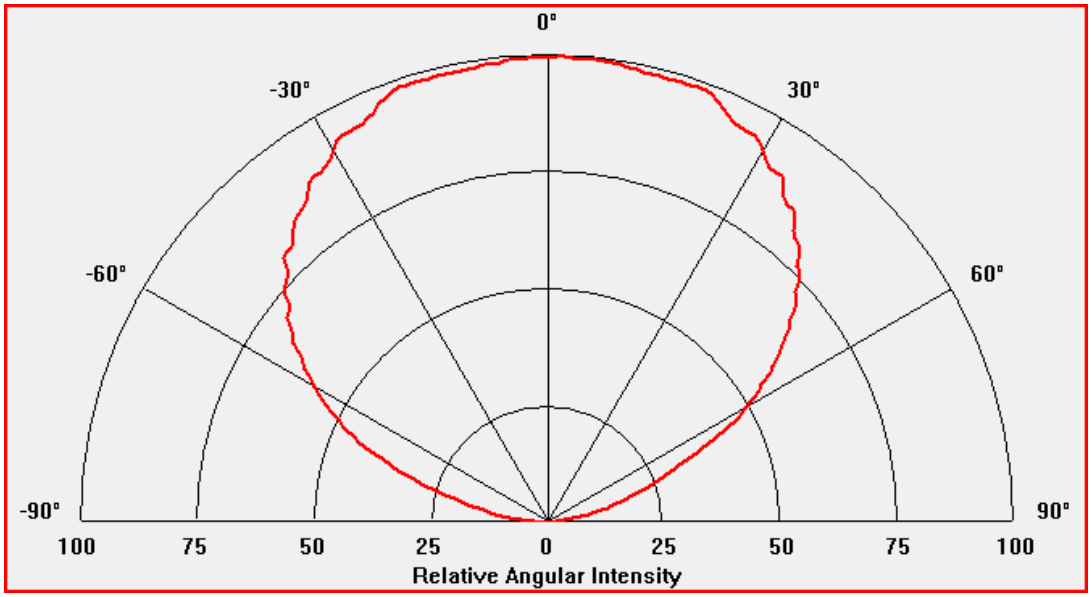

Figure 6: Typical Radiation Pattern (350 mA Operation)

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Current Derating Curves

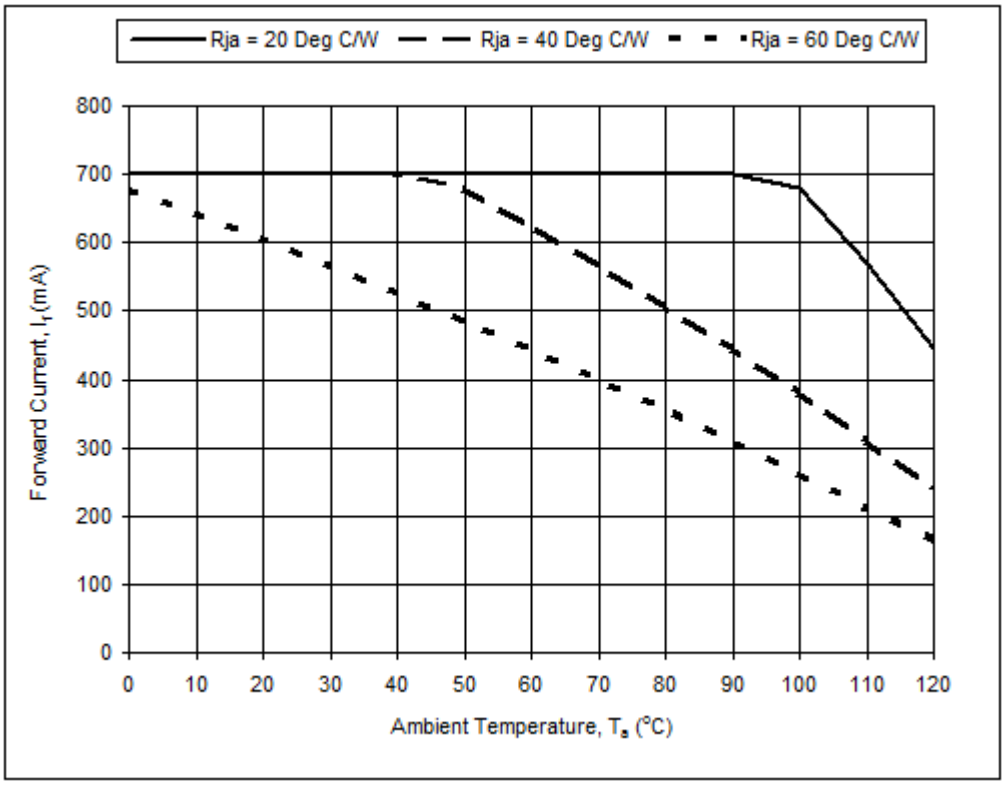

Figure 7: Current Derating Curve vs. Ambient Temperature (derating based on T_j max 150°C)

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About Bridgelux

Bridgelux is a U.S. lighting company and leading provider of high-power, cost-effective and energy-efficient light-emitting diode (LED) solutions. Focused on bringing innovation to light, Bridgelux's proprietary epitaxy technology, advanced chip designs and leading-edge LED packaging technology have enabled the company to develop advanced solid-state lighting (SSL) products that offer superior quality, are lower in cost and environmentally friendly—all without compromising performance. In addition to LED chips, the company delivers a range of SSL light sources that customers can easily integrate into a variety of lighting applications that will open up new markets in solid-state lighting. Founded in 2002, Bridgelux is headquartered in Sunnyvale, California. For more information about the company, please visit www.bridgelux.com

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