

BRIDGELUX BLUE POWER DIE

BXCB 24 mil x 24 mil

PRODUCT DATA SHEET DS-C5

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.

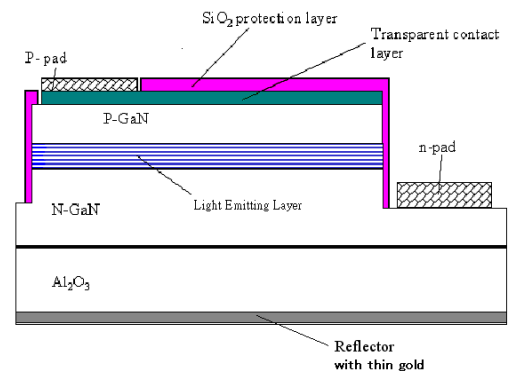
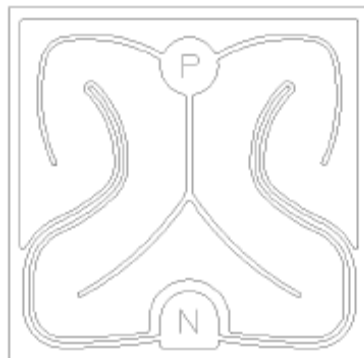
Features

- 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 x 20 cm±10mm)

Applications

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

LED CHIP DIAGRAM



BRIDGELUX BLUE POWER DIE

BXCB 24 mil x 24 mil

Mechanical Dimensions

Chip size	610 (+30/ - 10) μm x 610 (+30/ -10) μm
Wafer thickness	150 \pm 10 μm (5.9 mil)
Pad Thickness	2.4 \pm 0.2 μm
Pad diameter	P: 100 μm / N: 100 μm

Absolute Maximum Ratings

Parameter	Symbol	Maximum Rating	Condition
Forward DC Current	I_f	200 ⁽¹⁾	$T_j=125^\circ\text{C}$
Junction Temperature	T_j	150 $^\circ\text{C}$	
Reverse Voltage	V_r	- 5V	$T_a=25^\circ\text{C}$
Reverse Current	I_r	<10 μA	$V_r = -5\text{V}$
Assembly Process Temperature		325 $^\circ\text{C}$ for <5 sec	
Storage Conditions (chip on tape)		0 $^\circ\text{C}$ to +40 $^\circ\text{C}$, 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 BXCB2424 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 BXCB2424 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 BXCB2424 die products: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

BRIDGELUX BLUE POWER DIE

BXCB 24 mil x 24 mil

Part Numbering and Bin Definitions

Bridgelux LED chips are sorted into the brightness and dominant wavelength bins shown below at $I_f = 120$ 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 forward voltage is 3.3 V and the maximum forward voltage ($V_f \text{ max}$) = 3.6 V.

Dominant Wavelength	Power Bin B2 (65 - 80 mW)	Power Bin C1 (80-95 mW)	Power Bin C2 (95 -110 mW)
445 to 447 nm	BXCB2424445-5-z	BXCB2424445-6-z	BXCB2424445-7-z
447 to 450 nm	BXCB2424447-5-z	BXCB2424447-6-z	BXCB2424447-7-z
450 to 455nm	BXCB2424450-5-z	BXCB2424450-6-z	BXCB2424450-7-z
452.5 to 455nm	BXCB2424452-5-z	BXCB2424452-6-z	BXCB2424452-7-z
455 to 457.5nm	BXCB2424455-5-z	BXCB2424455-6-z	BXCB2424455-7-z
457 to 460nm	BXCB2424457-5-z	BXCB2424457-6-z	BXCB2424457-7-z
460 to 462.5nm	BXCB2424460-5-z	BXCB2424460-6-z	BXCB2424460-7-z
462.5 to 465nm	BXCB2424462-5-z	BXCB2424462-6-z	BXCB2424462-7-z

Product Nomenclature

B X C B 2424 X X X - Y - Z

Where:

- BXCB: Designates product family
- 2424: Designates die size (50 mil x 50 mil)
- XXX: Designates dominant wavelength bin
- Y: Designates radiometric power bin
- Z: Designates forward voltage bin

BRIDGELUX BLUE POWER DIE

BXCB 24 mil x 24 mil

Performance vs. Current

The following curves represent typical performance of the BXCB2424 blue power die. Actual performance will vary slightly for different power and dominant wavelength bins.

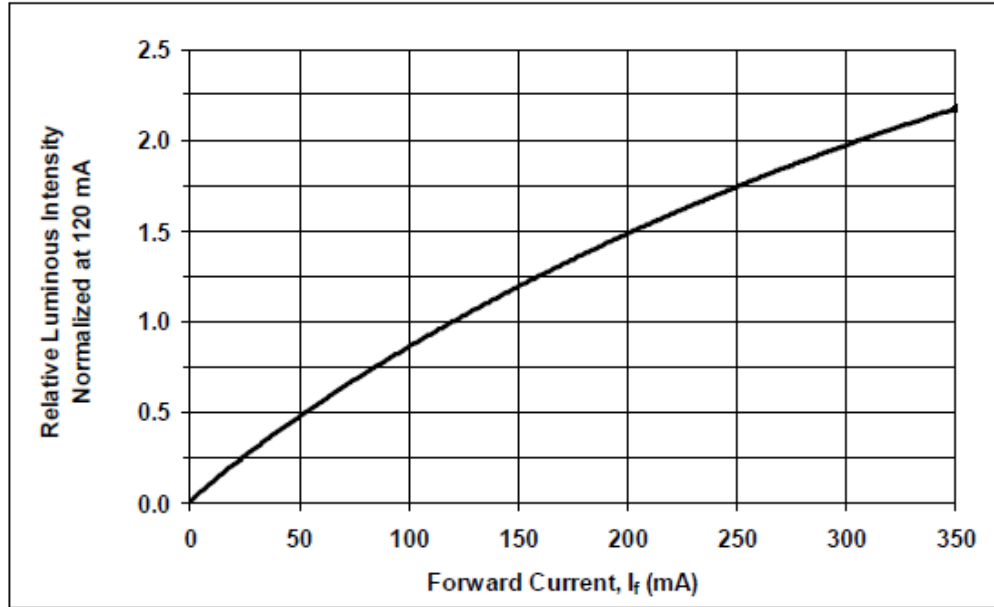


Figure 1: Relative Luminous Intensity vs. Forward Current (device tested on a probe station)

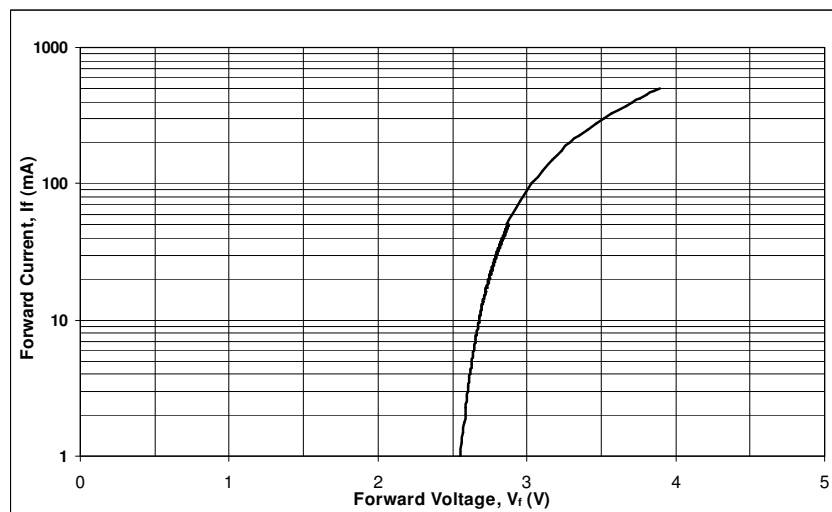


Figure 2: Forward Current vs. Forward Voltage ($T_j = 25^\circ\text{C}$)

BRIDGELUX BLUE POWER DIE

BXCB 24 mil x 24 mil

Performance vs. Junction Temperature

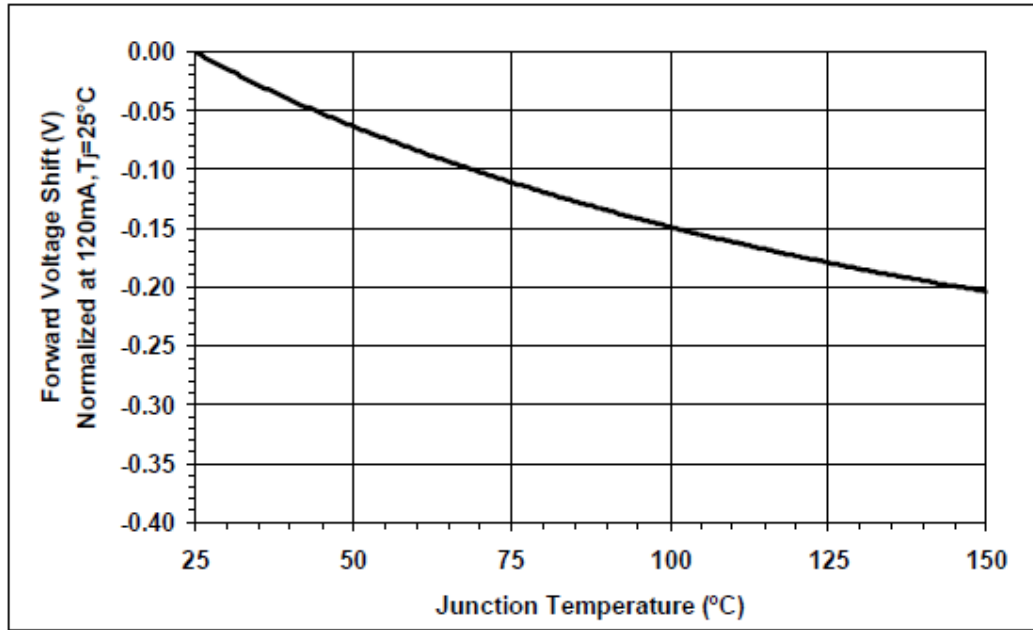


Figure 3: Forward Voltage versus Junction Temperature

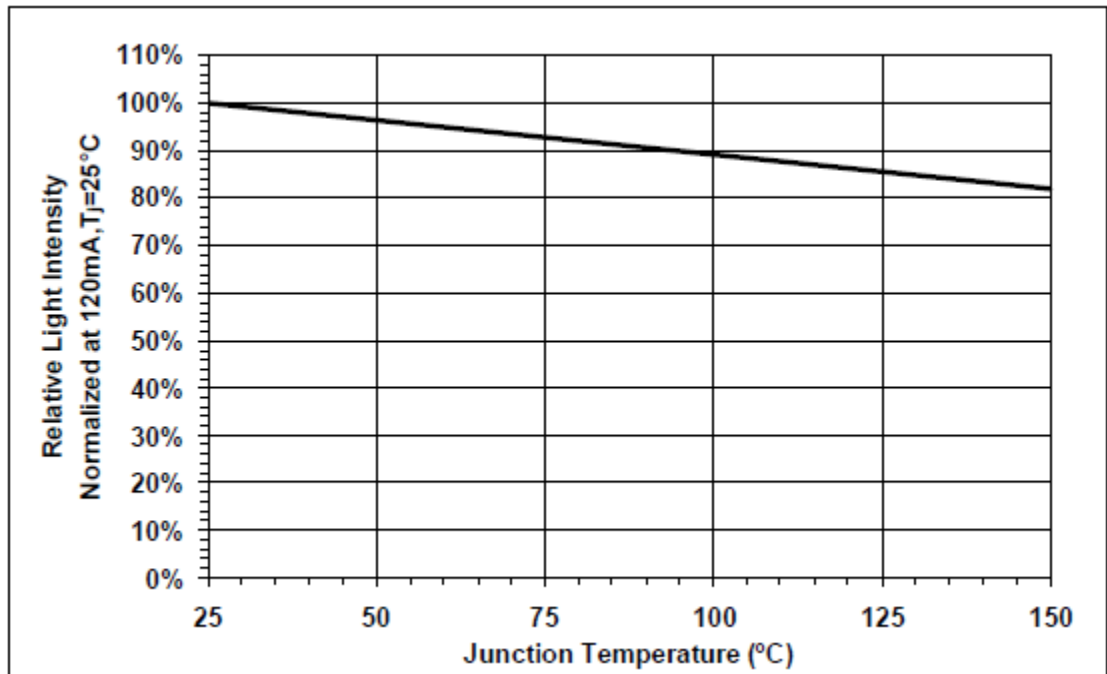


Figure 4: Relative Light Output versus Junction Temperature

BRIDGELUX BLUE POWER DIE

BXCB 24 mil x 24 mil

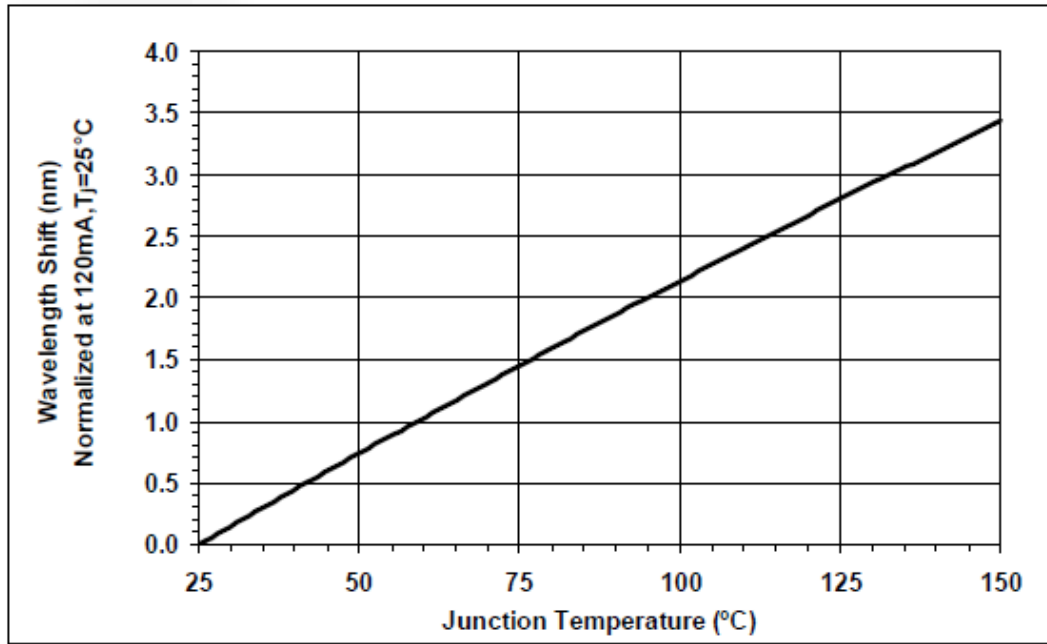


Figure 5: Wavelength Shift versus Junction Temperature

Typical Radiation Pattern

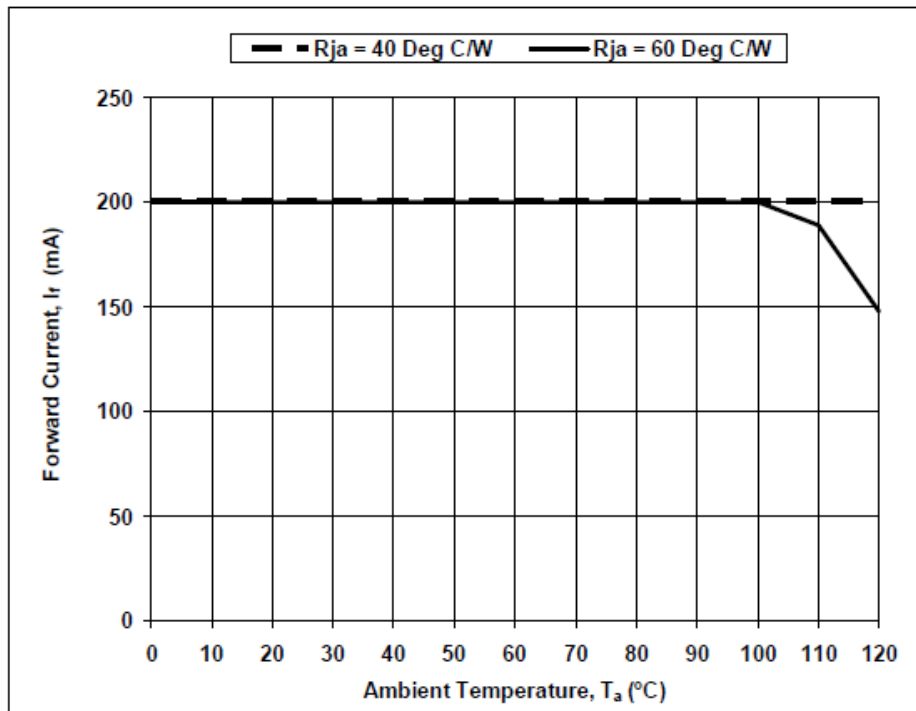


Figure 6: Current Derating Curves vs. Ambient Temperature (derating based on T_j 150°C max)

BRIDGELUX BLUE POWER DIE

BXCB 24 mil x 24 mil

Typical Radiation Pattern

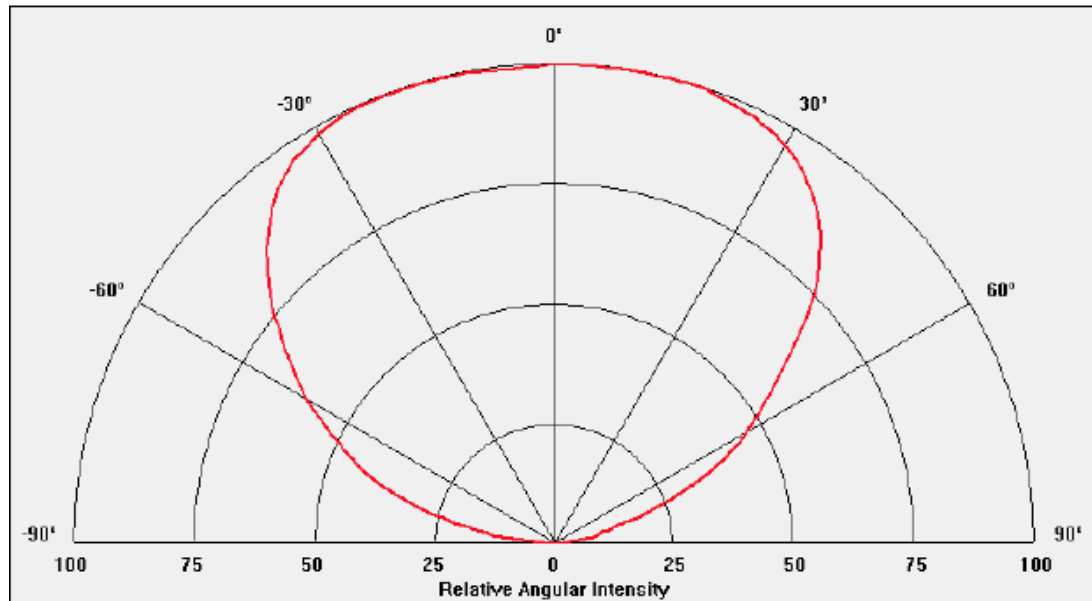


Figure 7: Typical Radiation Pattern (120 mA Operation)

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, solidstate 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

© 2011 Bridgelux, Inc. All rights reserved. Product specifications are subject to change without notice.