PRODUCT DATASHEET

I-core™ (IC) LED
SL-V-B45AK2
High Power BLUE LED

BLUE LED

Introduction

The advantages of the patented and proprietary I-core MvpLED™ design, especially in Thermal management and Optical efficacy, are realized in light quality, lifetime, color consistency, reliability and overall efficiency of the luminaire. The I-core™ (IC) LED delivers significant improvements in brightness as its sleek robust design maximizes light extraction. The advantages of the IC™ LED are further realised in improved reliability which is delivered through the optimization of stress management at high current operation. Featuring new electrodes convenient for wire bonding, the IC™ LED is available in Blue, Green and UV

Among pure metals at room temperature, copper has the second highest electrical and thermal conductivity after silver. Furthermore, due to the high thermal conductivity of the copper alloy layer, the heat generated in our device is effectively conducted. This is a major advantage for any lamp or luminaire manufacturer. No matter how good a thermal design is, if the contact material to the junction is a poor conductor then the cooling effects of the heat-sink are significantly reduced.

Using a proprietary surface texturing technique, SemiLEDs LEDs maximize light extraction and efficiency. Coupled with a minimal use of Sapphire and a 90% efficient Reflective Layer, SemiLEDs chips exhibit an almost perfect Lambertian radiation pattern.

SemiLEDs' patented and unique process uses a limited amount of Sapphire, which can be recycled and reused multiple times, significantly reducing the Carbon footprint. The reduced dependence on Sapphire also removes a thermal management bottleneck while providing the most environmentally friendly LED on the market.

RoHS and REACH Compliant

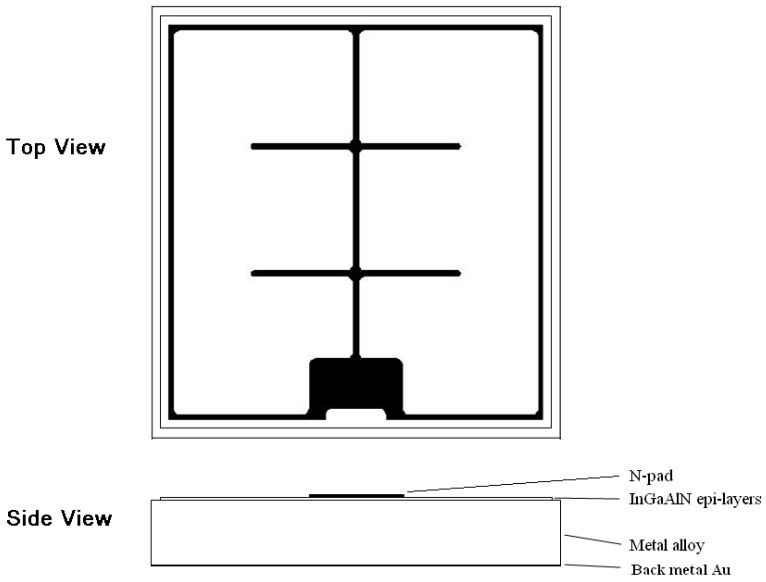
Feature

Metal alloy device---------- Low cost high thermal conductivity
Thickness 145 µm ---------- Consolidated metal alloy
P-N junction high at 140 µm---------- Silver epoxy die attachment compatible
One pad structure----------Low package cost
Nearly Perfect Lambert an emission pattern ----------Ideal for white light design
Patterned surface ----------Maximum light extraction

Applications

LCD backlight
Digital Camera Flash light
High Power LED
Automotive lighting
Signalling
Signage
Miniature Light Engine

Chip Mechanical Diagram



Mechanical Specifications

P-N junction area	1050 µm X 1050 µm	± 20 µm
Base area	1200 µm X 1200 µm	± 50 µm
Chip thickness	145 µm	± 15 µm
Bond pad size	140 µm X 280 µm	± 15 µm
Bond pad thickness	2.5 µm	± 0.5 µm
Junction height	140 µm	± 15 µm

Note: The bond pad size is designed for single wire or two-wire bonding. We recommend using gold ball bonding as an electrical connection. The gold ball must not extend outside of the pad area.

Optical and Electrical Characteristics at 700mA, Ta at 25℃

Parameter	Symbol	Min	Typ	Max	Remark
Forward voltage:	Vf		3.5	3.9	Volt
Spectra half width	Δλ		20	40	nm
Reverse current	Ir			2 μA	Vr= 5 Volt

Measured by SemiLEDs on bare chip and is only given for information.

Absolute Maximum Ratings, Ta at 25℃

Forward Current (DC)	700 mA
Peak Forward Current (1/10 duty cycle @ 1KHz)	1000 mA
LED Junction Temperature	125℃
Reverse Voltage	5 V
Operating Temperature	-40℃ to +110℃
Storage Temperature	-40℃ to +110℃
Temperature during packaging (reflow)	280℃ < 10 sec

Maximum ratings are strongly package dependent and may differ between different packaged devices. The values given were collected by SemiLEDs' in-house package and are only given for information.

BIN Table (Output Power at 700mA, Ta at 25℃)

IS(mW)/wd(nm)	447.5-450	450-452.5	452.5-455	455-457.5	457.5-460	460-462.5	462.5-465
600-650	BDF0	BEF0	BFF0	BGF0	BHF0	BJF0	BKF0
650-700	BDF5	BEF5	BFF5	BGF5	BHF5	BJF5	BKF5
700-750	BDG0	BEG0	BFG0	BGG0	BHG0	BJG0	BKG0
750-800	BDG5	BEG5	BFG5	BGG5	BHG5	BJG5	

Performance Diagram

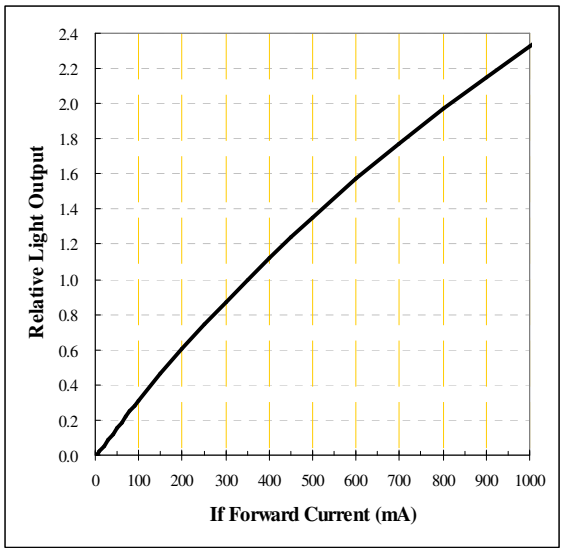


Fig-1 Relative Light Output vs. Forward Current.

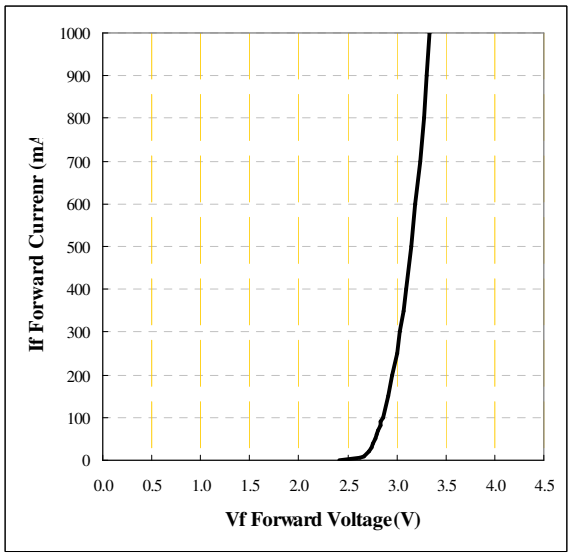


Fig-2 Forward Current vs. Forward Voltage.

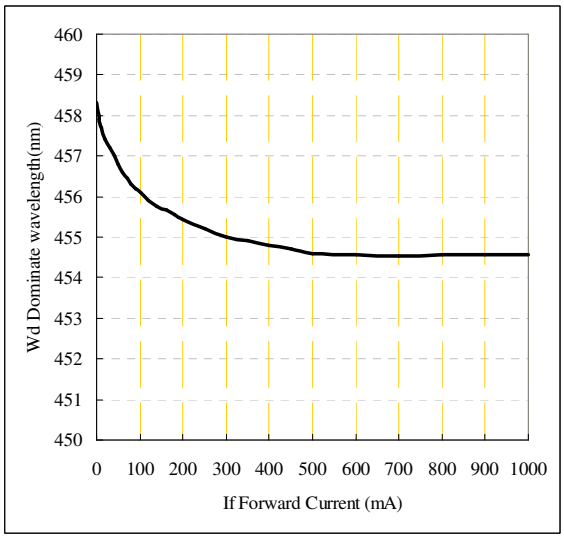


Fig-3 Dominate Wavelength vs. Forward Current.

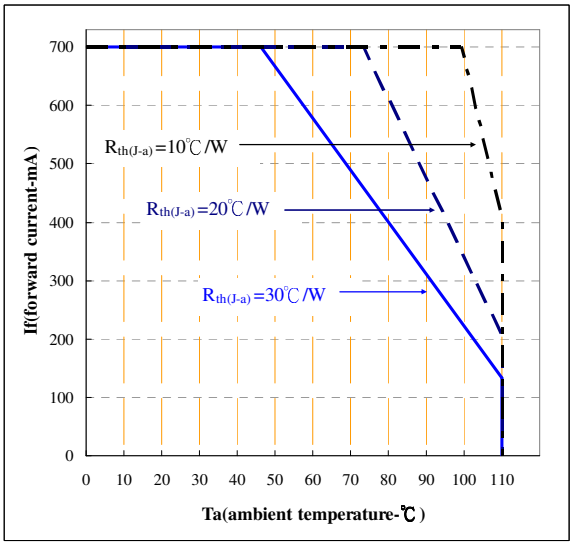


Fig-4 Maximum Driving Forward DC Current vs. Ambient Temperature.

Note:

a. Minimum and maximum value refers to the limits and set up of SemiLEDs' testers. All other measurement data are defined as long-term production mean values and are only given for information

b. A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system. Life support devices or systems are intended (i) to be implanted in the human body, or (ii) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered. Components used as a critical component must be approved in writing by SemiLEDs.

About Us

SemiLEDs Corporation is a US manufacturer of ultra-high brightness LED chips with state of the art fabrication facilities in Hsinchu Science Park, Taiwan. SemiLEDs specializes in the development and manufacturing of vertical LED chips in blue (white), green, and UV using a patented copper alloy base. This unique design allows for higher performance and longer lumen maintenance. In December 2008, The World Economic Forum recognized SemiLEDs innovations with the 2009 Technology Pioneer Award. SemiLEDs is fully ISO 9001:2008 Certified

SemiLEDs is a publicly traded company on NASDAQ Global Select Market (stock symbol "LEDS"). For investor information, please contact us at **investors@semileds.com**.

For further company or product information, please visit us at **www.semileds.com** or please contact **sales@ semileds.com**.

www.semileds.com

ASIA PACIFIC
3F, No. 11, KeJung Rd.
Chu-Nan Site
Hsinchu Science Park
Chu-Nan 350, Miao-Li County
Taiwan, ROC

Tel: +886-37-586788
Fax: +886-37-582688
sales@semileds.com