PRODUCT DATASHEET

I-core™ (IC) LED
SL-V-W45AK
High Power White LED

White LED

Introduction

The new High Power White LED from SemiLEDs represents the next era of LED chip technology by combining SemiLEDs patented and proprietary I-core™ MvpLED blue chip technology with a phosphor layer directly on the chip surface to create white light. The advantages of SemiLEDs White LED technology is delivered through excellent light quality, lifetime, color consistency, reliability and brightness. SemiLEDs new White LEDs are suitable for a wide range of general lighting applications including indoor and outdoor lighting and architectural lighting.

SemiLEDs' unique MvpLED chip technology features a patented Copper-Alloy base that is a better conductor of heat than any other substrate on the market. 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 while consuming no Sapphire. The lack of a Sapphire base removes a thermal management bottleneck while providing the most environmentally friendly LED on the market. Coupled with the lack of Sapphire and a 90% efficient Reflective Layer, SemiLEDs chips exhibit an almost perfect Lambertian radiation pattern.

RoHS and REACH Compliant

Feature

Metal alloy base---------- Low cost high thermal conductivity

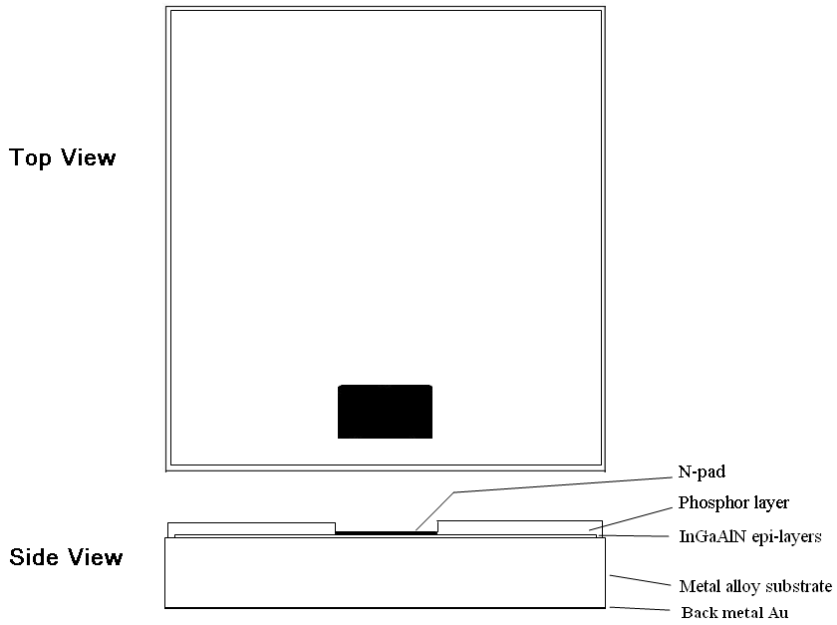
Thickness 145 µm ---------- Consolidated metal base

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

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 thickness	2.5 µm	± 0.5 µm
Junction height	140 µm	± 15 µm

Note: The bond pad size is design for single wire or two wire bonding. We recommend using gold ball bonding as an electrical connection. The gold ball can't bond over the pad area. We recommend controlling the gold ball size ≦120um.

Optical and Electrical Characteristics at 350mA, Ta at 25℃

Parameter	Symbol	Min	Typ	Max	Remark
Forward voltage:	Vf		3.2	3.6	Volt
Reverse current	Ir			2 μA	Vr= 5 Volt

Measured by SemiLEDs on bare chip

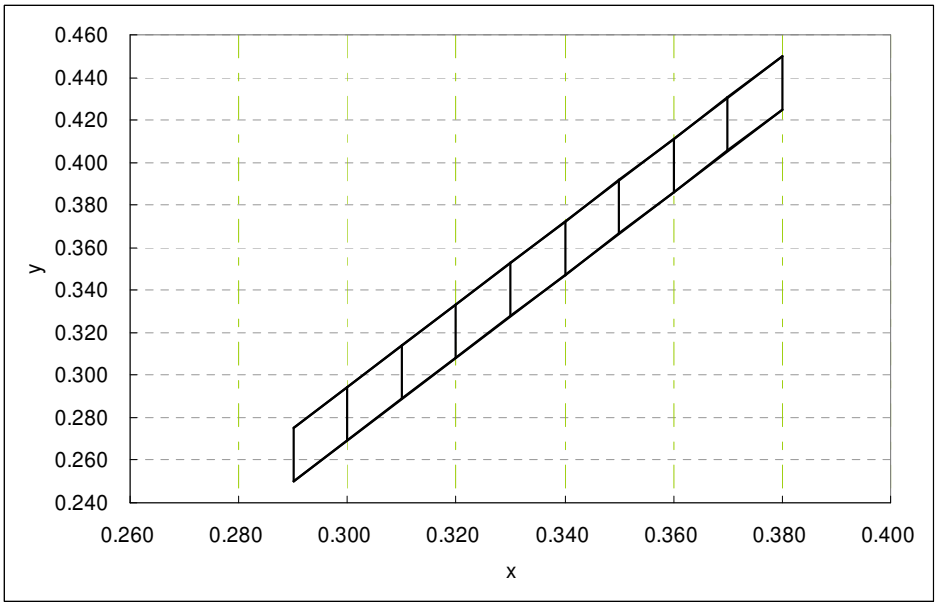
Absolute Maximum Ratings, Ta at 25℃

Forward Current (DC)	500 mA
Peak Forward Current (1/10 duty cycle @ 1KHz)	800 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.

Binning (at 350mA, Ta at 25℃)

- **Color Binning**



Notes: CIE 1931 x,y coordinates is measured with an accuracy of ±0.005

- **Radiometric Power Bin Code**

Range(mW)	
Min.	Max.
300	350
350	400
400	450

Notes: The Radiometric Power measurement accuracy is ±10%

Note:

a. Minimum and maximum value refers to the limits and set up of SemiLEDs' testers.

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 is a US based manufacturer of ultra-high bright 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. SemiLEDs new high power I-core MvpLEDs can deliver 120lm/W. In December 2008, The World Economic Forum recognized SemiLEDs' innovations with the 2009 Technology Pioneer Award.

www.semileds.com

AMERICAS
SemiLEDs Corporation
999 Main Street, Suite 1010
Boise, ID 83702
United States

Tel +1.208.389.7426
Fax +1.208.389.7515
sales@semileds.com

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

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