PRODUCT DATASHEET

I-core™ (IC) LED
SL-V-B40AK
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

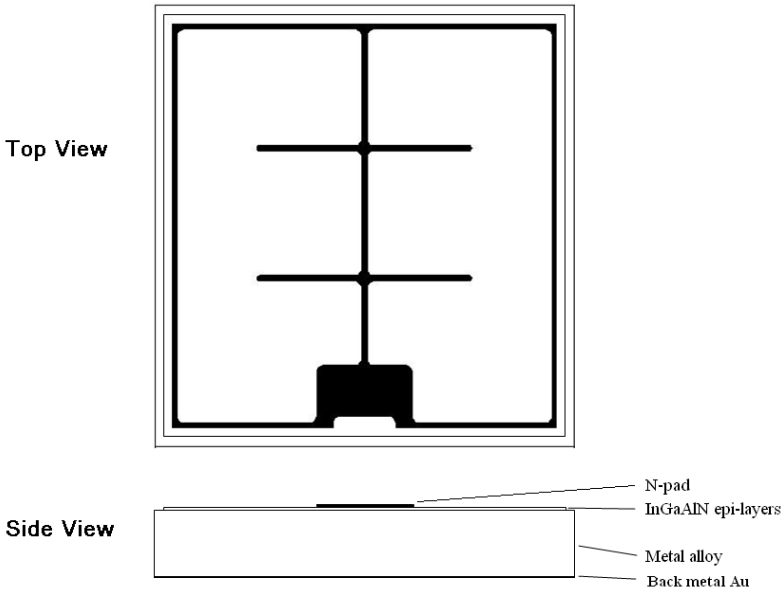
Feature

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 Lambertian 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	970 µm X 970 µm	± 20 µm
Base area	1070 µm X 1070 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 350mA, Ta at 25℃

Parameter	Symbol	Min	Typ	Max	Remark
Forward voltage:	Vf		3.2	3.6	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)	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 and are only given for information.

BIN Table (Output Power at 350mA, 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
300-320	BDC0	BEC0	BFC0	BGC0	BHC0	BJC0	BKC0
320-340	BDC2	BEC2	BFC2	BGC2	BHC2	BJC2	BKC2
340-360	BDC4	BEC4	BFC4	BGC4	BHC4	BJC4	BKC4
360-380	BDC6	BEC6	BFC6	BGC6	BHC6	BJC6	BKC6
380-400	BDC8	BEC8	BFC8	BGC8	BHC8	BJC8	BKC8
400-420	BDD0	BED0	BFD0	BGD0	BHD0	BJD0	BKD0

IS(mW)/wd(nm)	465-467.5	467.5-470	470-472.5	472.5-475	475-477.5	477.5-480
300-320	BLC0	BMC0	BNC0	BPC0	BQC0	BRC0
320-340	BLC2	BMC2	BNC2	BPC2	BQC2	BRC2
340-360	BLC4	BMC4	BNC4	BPC4	BQC4	BRC4
360-380	BLC6	BMC6	BNC6	BPC6	BQC6	BRC6

Performance Diagram

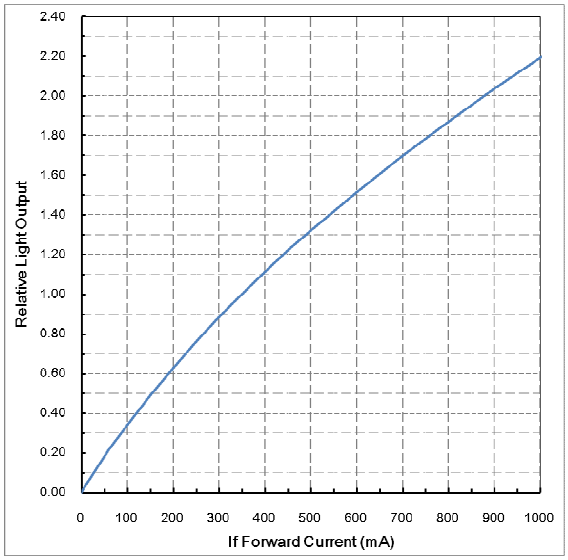


Fig-1 Relative Light Output vs. Forward Current.

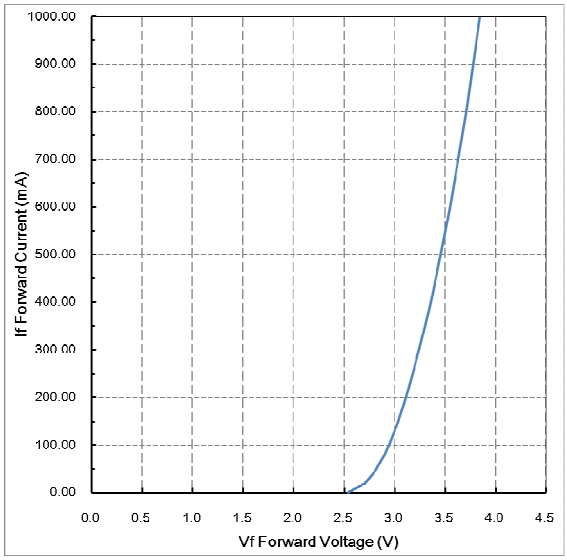


Fig-2 Forward Current vs. Forward Voltage.

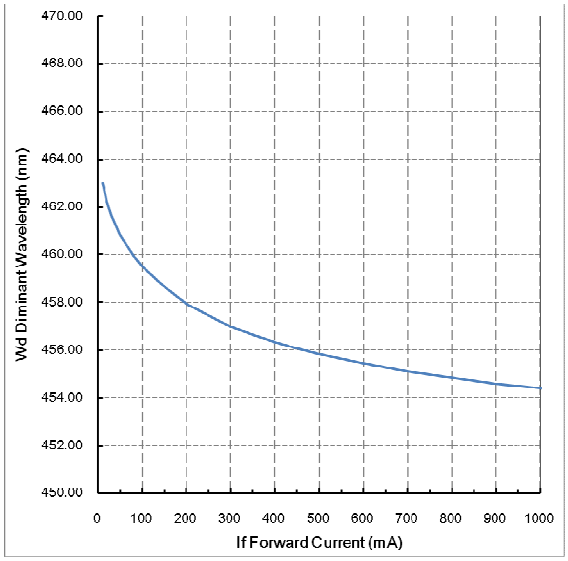


Fig-3 Dominant Wavelength vs. Forward Current.

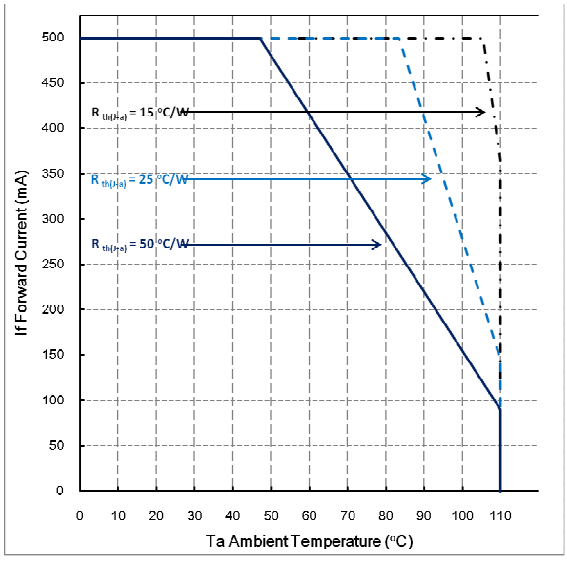


Fig-4 Maximum Driving Forward DC Current vs. Ambient Temperature

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**.

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