SemiLEDs

PRODUCT DATASHEET

MvpLED™ SL-V-U15AA
High Power UV LED

UV LED

Introduction

Market applications using UV LEDs are diverse and represent a significant opportunity for any LED packager or integrator. Traditional mercury lamps have many disadvantages that limit UV applications, and mercury is a notorious pollutant. Features of the LED including form factor, wavelength and lifetime, add flexibility to UV applications. SemiLEDs' portfolio of mercury free UV products will enhance and in some cases revolutionize the way applications are built in UV market segments such as Curing, Currency/Document Verification, Tanning, Medical, and Sterilization.

All SemiLEDs UV chips are made using our patented metal alloy vertical MvpLED™ technology. This allows for maximum heat transfer from the junction to the board or heat sink. These features along with the optical advantages facilitate designs using higher drive currents to maximize light density.

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

SemiLEDs' patented and unique process consumes no Sapphire, significantly reducing the Carbon footprint. The lack of a Sapphire base 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 80 µm ---Less thermal distance

P-N junction high at 75 µm--------------------------------------- Silver epoxy die attachment compatible

One pad structure---Low package cost

Nearly Perfect Lambertian emission pattern------------------Easier for optics design

Patterned surface ---Maximum light extraction

Applications

LED phosphor lighting

UV air purifier

Medical applications

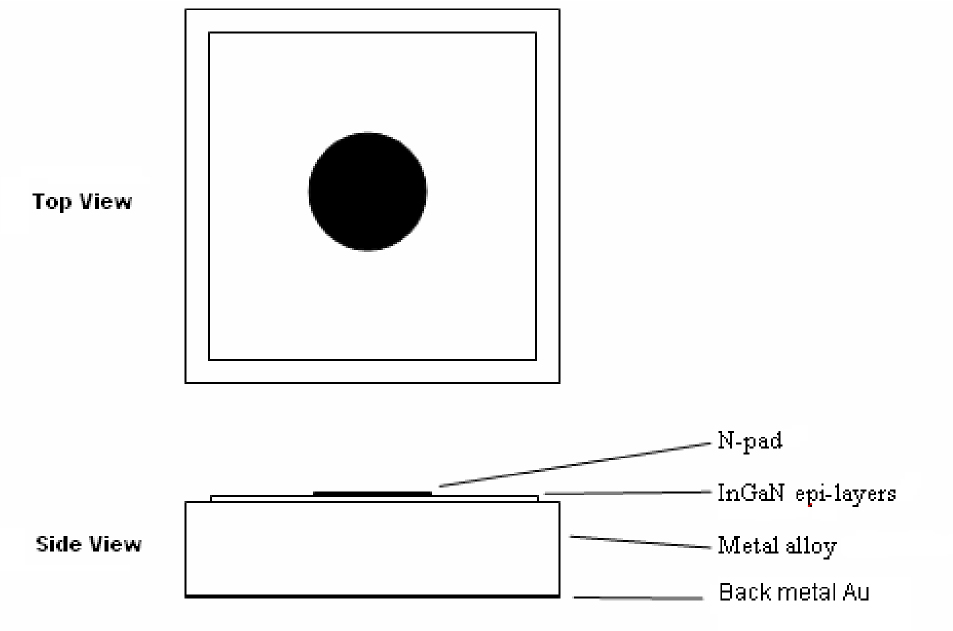
UV activated applications

Counterfeit detection

Special chemical detection

High resolution optics

Chip Mechanical Diagram



Mechanical Specifications

P-N junction area	340 µm X 340 µm	± 20 µm
Base area	380 µm X 380 µm	± 20 µm
Chip thickness	80 µm	± 15 µm
Bond pad size	90 µm	-5 µm, + 10 µm
Bond pad thickness	2.5 µm	± 0.5 µm
Junction high	75 µm	± 15 µm

Optical and Electrical Characteristics at 20mA, Ta at 25℃

Parameter	Symbol	Min	Typ	Max	Remark
Forward voltage:	Vf		3.3	3.6	Volt
Spectra half width	Δλ		12	25	nm
Reverse current	Ir			2 µA	Vr= 3 Volt

Measured by SemiLEDs on bare chip

Absolute Maximum Ratings, Ta at 25℃

Forward Current (DC)	30 mA
Peak Forward Current (1/10 duty cycle @ 1KHz)	120 mA
LED Junction Temperature	125℃
Reverse Voltage	Note 2
Operating Temperature	-40℃ to +110℃
Storage Temperature	-40℃ to +110℃
Temperature during packaging (reflow)	280℃ < 10 sec

Note: 1.Maximum ratings are strongly package dependent and may differ between different packaged devices. The values given were collected by SemiLEDs' in-house package.

2. UV LEDs should never be operated with reverse bias.

BIN Table (Output Power at 20mA, Ta at 25℃)

Wp Range(nm)	8-10mW	10-12mW	12-15mW	15-20mW	20-25mW
395-400	HE	HF	HG		
400-405	IE	IF	IG	IH	
405-410		JF	JG	JH	JI
410-415		KF	KG	KH	KI
415-420			LG	LH	LI

Performance Diagram

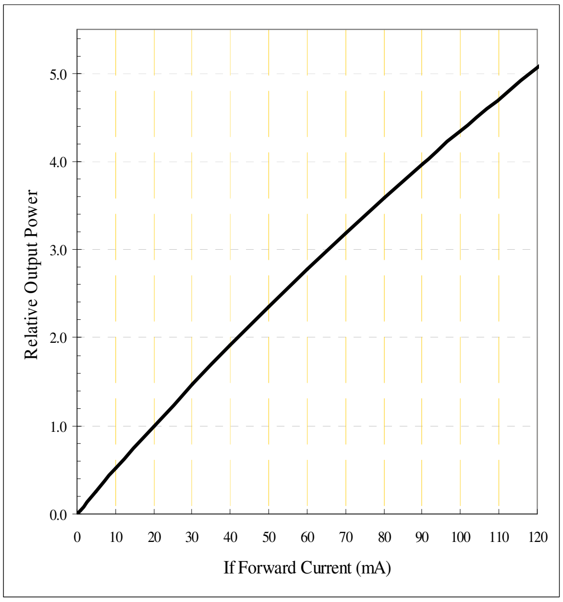


Fig-1 Relative Intensity vs. Forward Current.

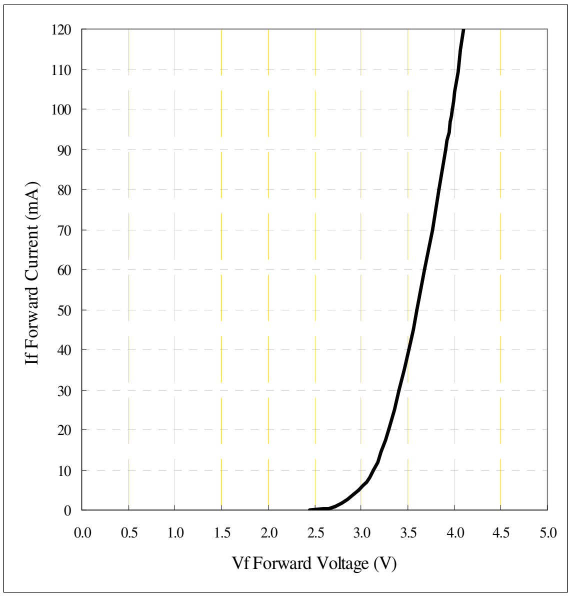


Fig-2 Forward Current vs. Forward Voltage.

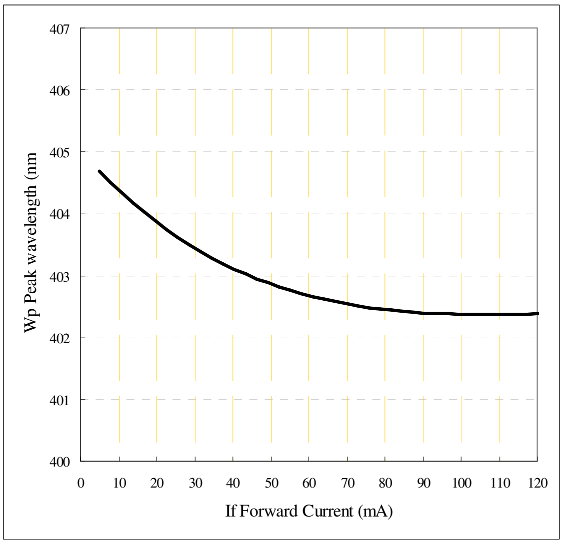


Fig-3 Forward Dominate Wavelength vs. Forward Current.

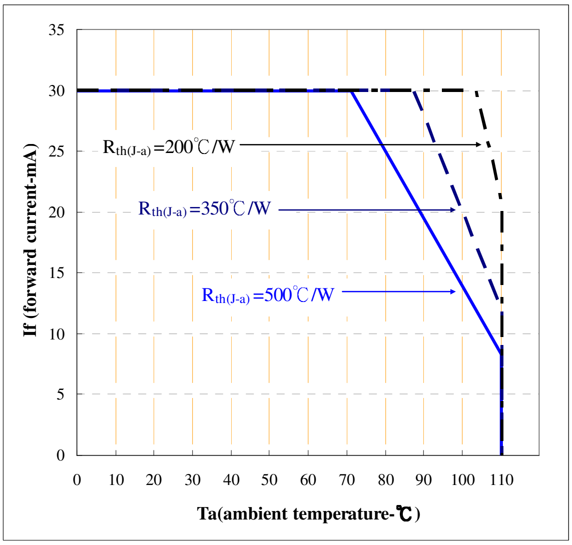


Fig-4 Maximum Driving Forward DC Current vs. Ambient Temperature.

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 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 metal alloy vertical LED chips in blue (white), green and UV using our patented and proprietary MvpLED™ technology. This unique design allows for higher performance and longer lumen maintenance. SemiLEDs new high power I-core MvpLEDs™ can deliver over 120lm/W. In December 2008 The World Economic Forum recognized SemiLEDs innovations with the 2009 Technology Pioneer Award.

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