

MvpLED™ SL-V-U60ACD

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.

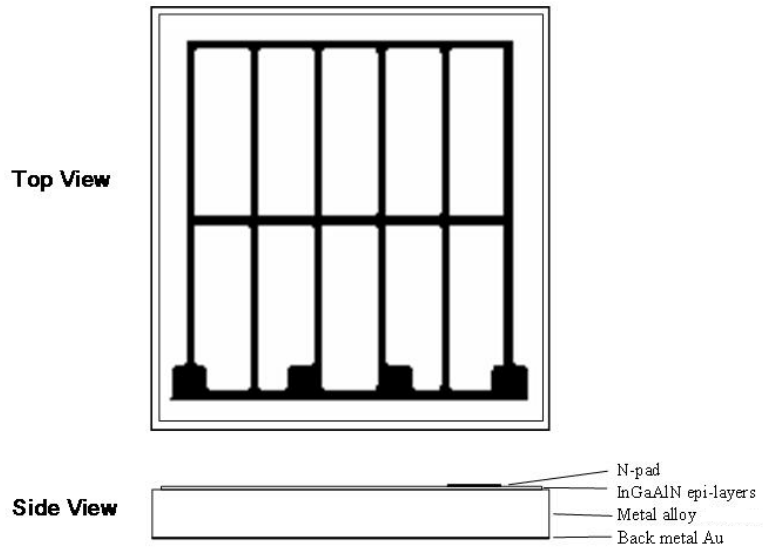
SemiLEDs' patented and unique process consumes no Sapphire, significantly reducing the Carbon footprint. The lack of a Sapphire base also removes a thermal management bottleneck while providing the most environmentally friendly LED on the market.

RoHS and REACH Compliant

Applications

UV air purifier
 Medical applications
 UV activated applications
 Counterfeit detection
 Special chemical detection
 High resolution optics
 UV curing

Chip Mechanical Diagram



Mechanical Specifications

P-N junction area	1420 μm X 1420 μm	$\pm 50 \mu\text{m}$
Base area	1520 μm X 1520 μm	$\pm 50 \mu\text{m}$
Chip thickness	145 μm	$\pm 15 \mu\text{m}$
Bond pad size	140 μm	$\pm 15 \mu\text{m}$
Bond pad thickness	2.5 μm	$\pm 0.5 \mu\text{m}$
Junction high	140 μm	$\pm 15 \mu\text{m}$

Optical and Electrical Characteristics at 350mA, Ta at 25°C

Parameter	Symbol	Min	Typ	Max	Remark
Forward voltage:	Vf		3.5	3.9	Volt
Spectra half width	$\Delta\lambda$		10	20	nm

Measured by SemiLEDs on bare chip

Absolute Maximum Ratings, Ta at 25°C

Forward Current (DC)	1500 mA
Peak Forward Current (1/10 duty cycle @ 1KHz)	2000 mA
LED Junction Temperature	125°C
Reverse Voltage	Note 2
Operating Temperature	-40°C to +110°C
Storage Temperature	-40°C to +110°C
Temperature during packaging (reflow)	280°C < 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 350mA, Ta at 25°C)

Wp Range(nm)	36-45mW	45-60mW	60-80 mW	80-100 mW	100-120 mW	120-150 mW	150-180 mW
365-370	BA	BB	BC	BD	BE	BF	
370-375	CA	CB	CC	CD	CE	CF	CG

Performance Diagram

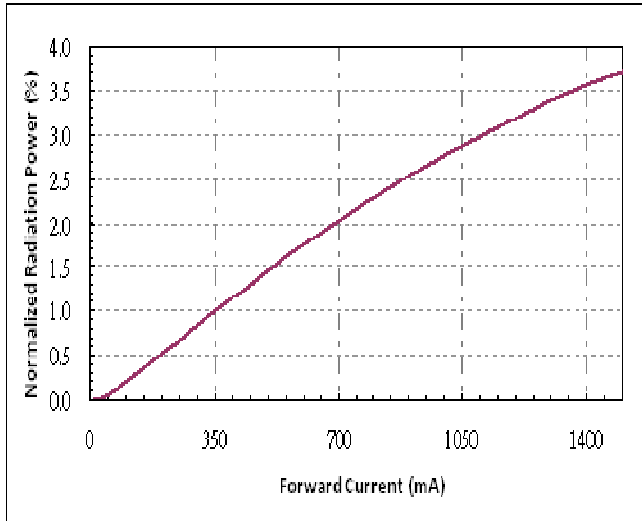


Fig-1 Relative Output Power vs. Forward Current.

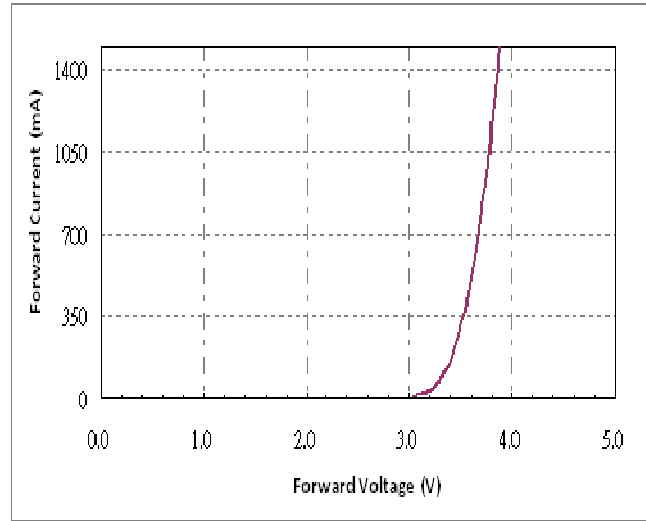


Fig-2 Forward Current vs. Forward Voltage.

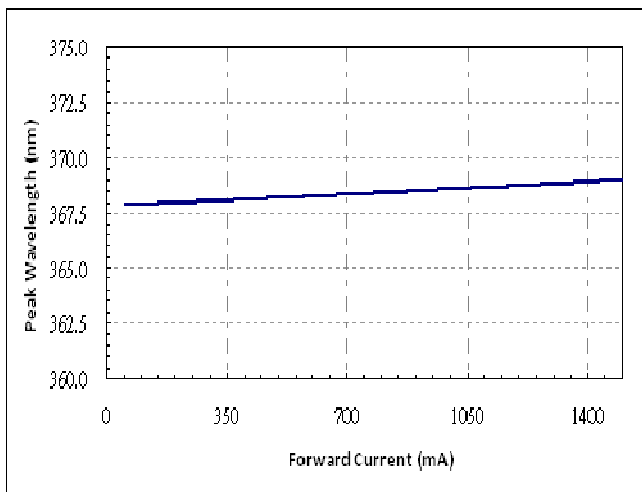


Fig-3 Forward Dominate Wavelength vs. Forward Current.

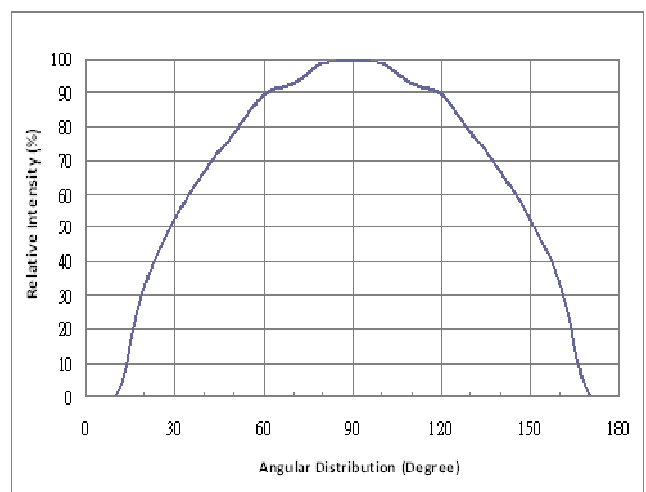


Fig-4 Maximum Driving Forward DC Current vs. Ambient Temperature.

Note:

- 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.
- 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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