

# MvpLED™ SL-V-U45ACD

## 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 a minimal use of Sapphire and a 90% efficient Reflective Layer, SemiLEDs chips exhibit an almost perfect Lambertian radiation pattern.

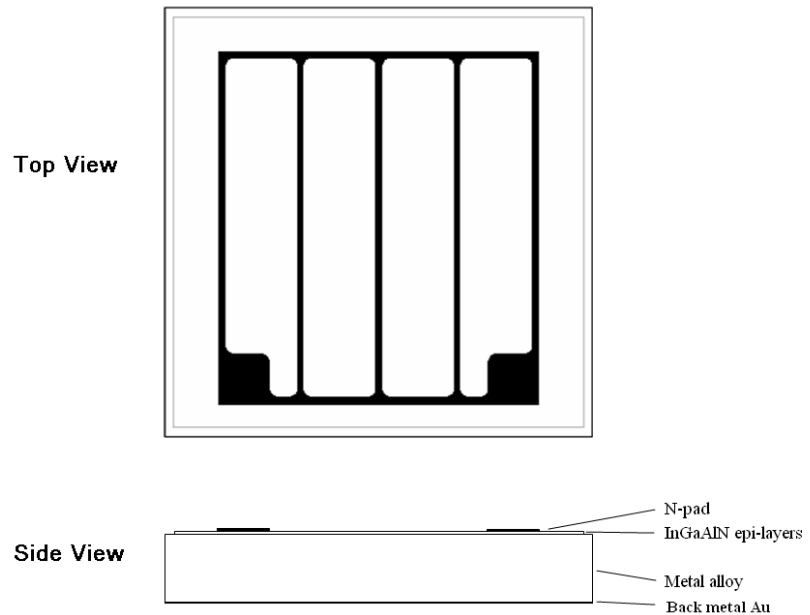
SemiLEDs' patented and unique process uses a limited amount of Sapphire, which can be recycled and reused multiple times, significantly reducing the Carbon footprint. The reduced dependence on Sapphire also removes a thermal management bottleneck while providing the most environmentally friendly LED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

#### RoHS and REACH Compliant

## 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	1050 $\mu\text{m}$ X 1050 $\mu\text{m}$	$\pm 20 \mu\text{m}$
Base area	1200 $\mu\text{m}$ X 1200 $\mu\text{m}$	$\pm 50 \mu\text{m}$
Chip thickness	145 $\mu\text{m}$	$\pm 15 \mu\text{m}$
Bond pad size	140 $\mu\text{m}$	$\pm 15 \mu\text{m}$
Bond pad thickness	2.5 $\mu\text{m}$	$\pm 0.5 \mu\text{m}$
Junction high	140 $\mu\text{m}$	$\pm 15 \mu\text{m}$

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

Parameter	Symbol	Min	Typ	Max	Remark
Forward voltage:	Vf		3.7	4.2	Volt
Spectra half width	$\Delta\lambda$		12	20	nm

Measured by SemiLEDs on bare chip

## Absolute Maximum Ratings, Ta at 25°C

Forward Current (DC)	500 mA
Peak Forward Current (1/10 duty cycle @ 1KHz)	800 mA
LED Junction Temperature	125°C
Reverse Voltage	<b>Note 2</b>
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)	45-60mW	60-80mW	80-100mW	100mw-120mw	120mw-150mw		
360-365	AB	AC	AD	AE	AF		
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Wp Range (nm)	60-80mW	80-100mW	100-120mW	120-150mW	150-180mW	180-210mW	210-250mW
365-370	BC	BD	BE	BF	BG	BH	
370-375		CD	CE	CF	CG	CH	CI

**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.

**Caution:** Users are requested to comply with the laws and public regulations concerning safety.

## Performance Diagram

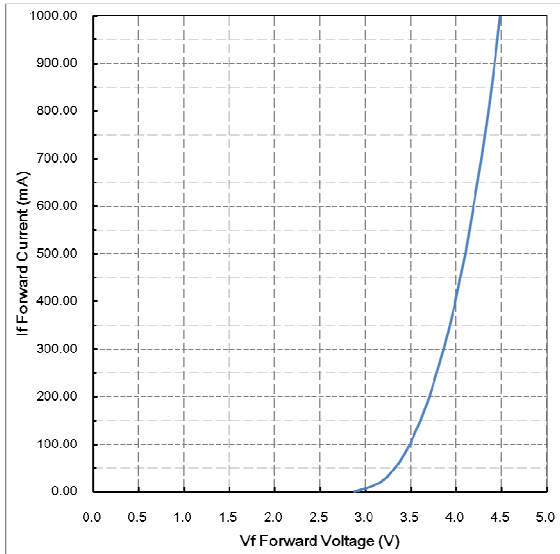


Fig-1 Forward Current vs. Forward Voltage.

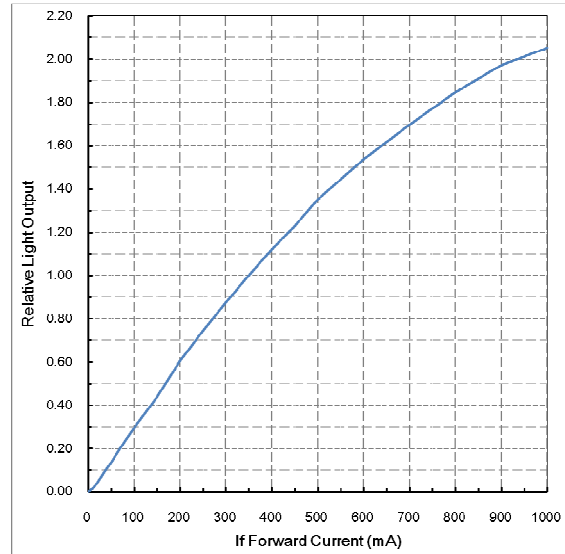


Fig-2 Relative Light Output vs. Forward Current.

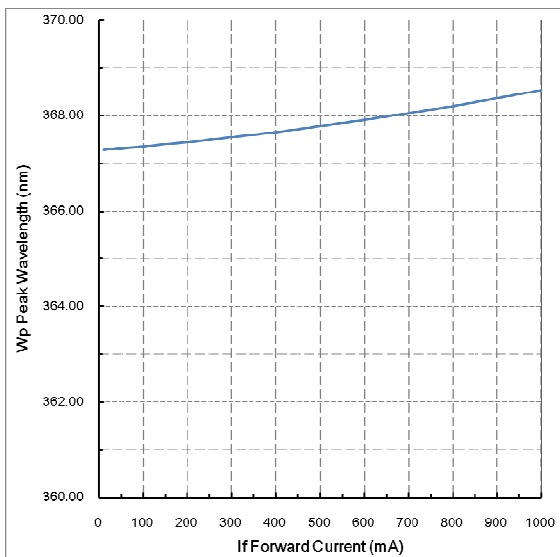


Fig-3 Peak Wavelength vs. Forward Current.

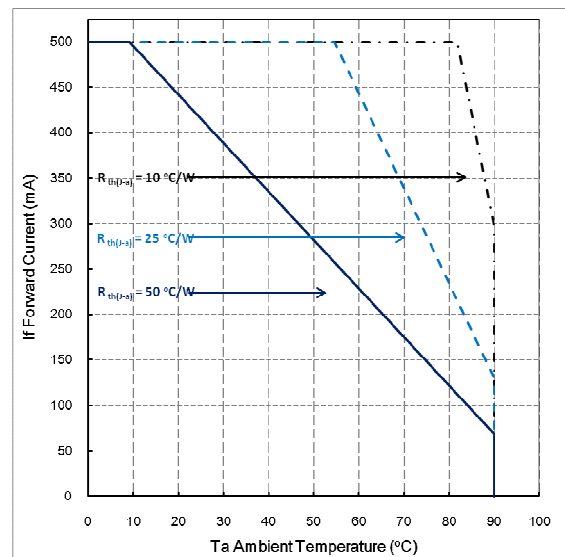


Fig-4 Maximum Driving Forward DC Current vs. Ambient Temperature.

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## About Us

**SemiLEDs Corporation** is a US based 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](mailto:investors@semileds.com).

For further company or product information, please visit us at [www.semileds.com](http://www.semileds.com) or please contact [sales@semileds.com](mailto:sales@semileds.com).



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