

# MvpLED™ SL-V-G15AA

## High Power Green LED

### Green LED

#### Introduction

The advantages of the patented and proprietary MvpLED™ design especially in Thermal management, and Optical efficacy, are realized in light quality, lifetime, color consistency, reliability and overall efficiency of the luminaire. Available in Blue, Green and UV SemiLEDs high efficiency chips bring real benefits to any lamp or luminaire manufacturer.

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

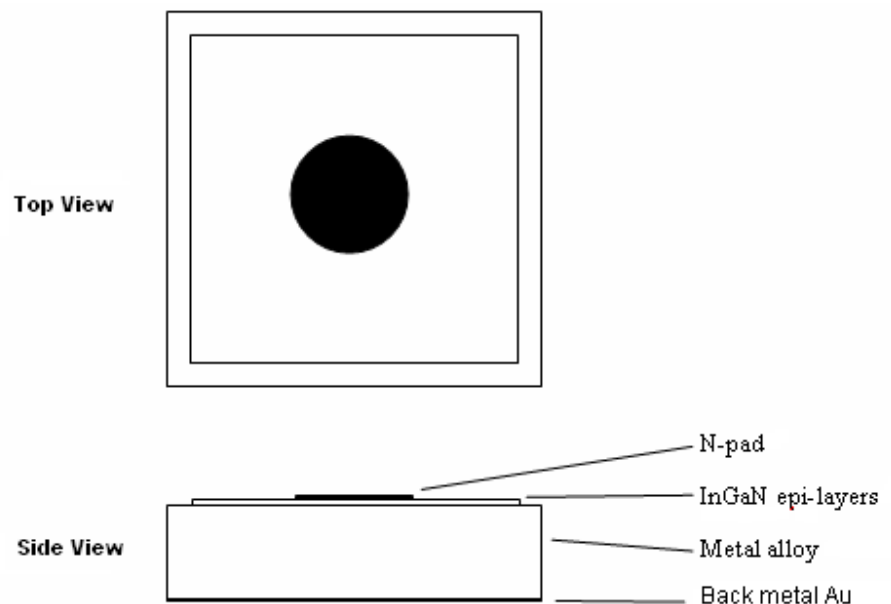
## Feature

Metal alloy device-----	Low cost high thermal conductivity
Thickness 80 $\mu\text{m}$ -----	Less thermal distance
P-N junction high at 75 $\mu\text{m}$ -----	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

Illumination  
 Outdoor Video Display Board  
 Mobile phone 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	340 $\mu\text{m}$ X 340 $\mu\text{m}$	$\pm 20 \mu\text{m}$
Base area	400 $\mu\text{m}$ X 400 $\mu\text{m}$	$\pm 25 \mu\text{m}$
Chip thickness	80 $\mu\text{m}$	$\pm 15 \mu\text{m}$
Bond pad size	115 $\mu\text{m}$	-10 $\mu\text{m}$ , +10 $\mu\text{m}$
Bond pad thickness	2.5 $\mu\text{m}$	$\pm 0.5 \mu\text{m}$
Junction height	75 $\mu\text{m}$	$\pm 15 \mu\text{m}$

## Optical and Electrical Characteristics at 20mA, Ta at 25°C

Parameter	Symbol	Min	Typ	Max	Remark
Forward voltage:	Vf		3.2	3.5	Volt
Spectra half width	$\Delta\lambda$		30	50	nm
Reverse current	Ir			2 $\mu$ A	Vr= 5 Volt

Measured by SemiLEDs on bare chip

## Absolute Maximum Ratings, Ta at 25°C

Forward Current (DC)	50 mA
Peak Forward Current (1/10 duty cycle @ 1KHz)	120 mA
LED Junction Temperature	125°C
Reverse Voltage	5 V
Operating Temperature	-40°C to +110°C
Storage Temperature	-40°C to +110°C
Temperature during packaging (reflow)	280°C < 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.

## BIN Table (Output Power at 20mA, Ta at 25°C)

Wd Range (nm)	0.6-0.8cd	0.8-1.0cd	1.0-1.2cd	1.2-1.4cd
500-505	CB	CC	CD	
505-510	DB	DC	DD	DE
510-515	EB	EC	ED	EE
515-520	FB	FC	FD	FE
520-525	GB	GC	GD	GE
525-530	HB	HC	HD	HE
530-535	IB	IC	ID	

## Performance Diagram

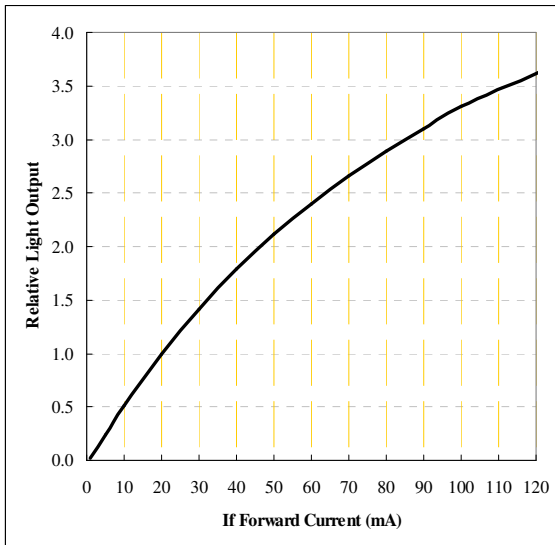


Fig-1 Relative Intensity vs. Forward Current.

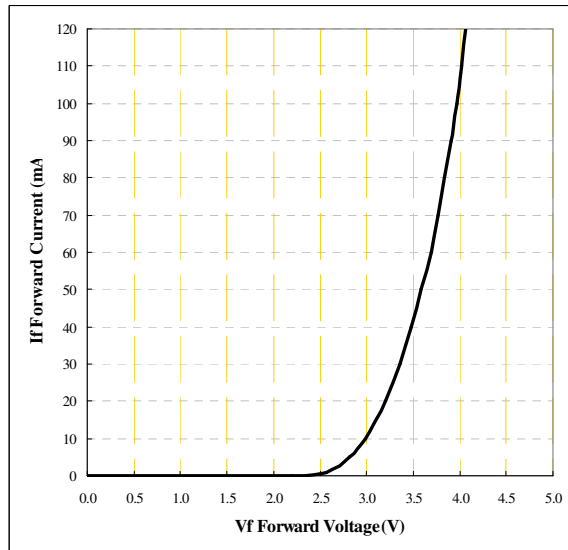


Fig-2 Forward Current vs. Forward Voltage.

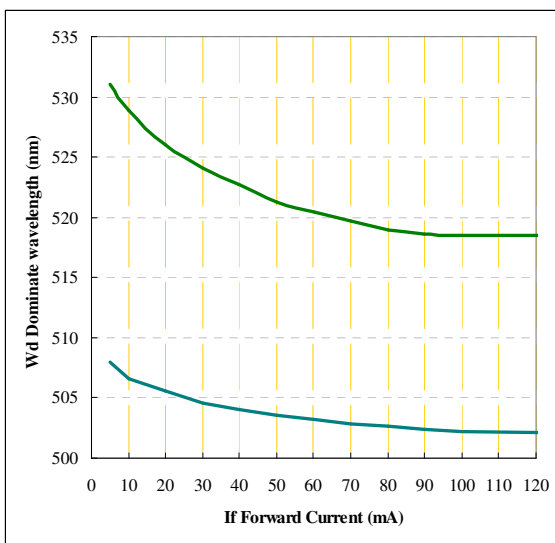


Fig-3 Forward Dominate Wavelength vs. Forward Current.

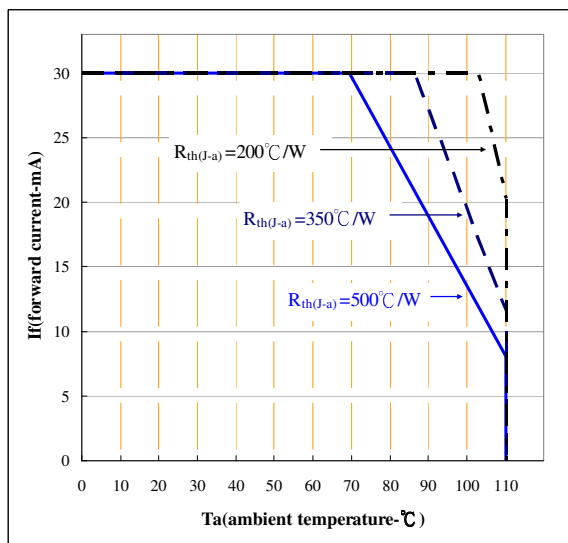


Fig-4 Maximum Driving Forward DC Current vs. Ambient Temperature.

### Note:

- 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 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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