

MvpLED™ SL-V-G40AC

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

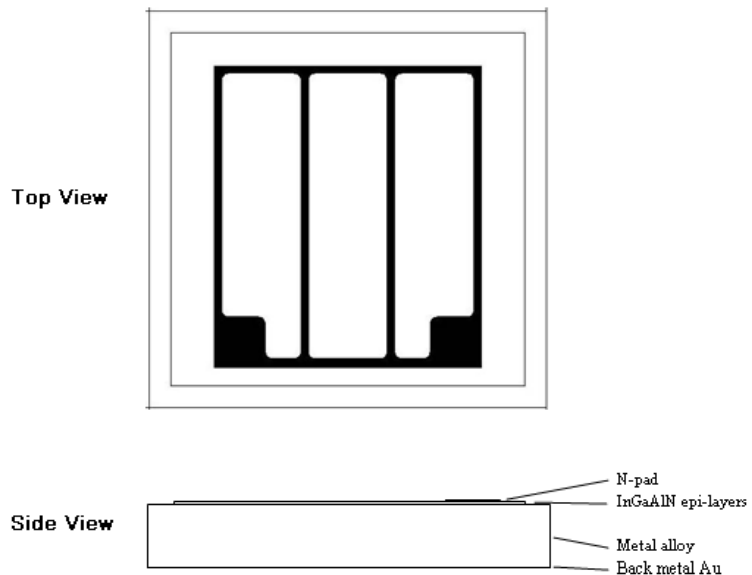
Feature

Metal alloy device	Low cost high thermal conductivity
Thickness 145 μm	Less thermal distance
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
 Architecture lighting
 High Power LED
 Entertainment lighting
 Signalling
 Signage
 Light Engine
 Landscape

Chip Mechanical Diagram



Mechanical Specifications

P-N junction area	970 μm X 970 μm	$\pm 20 \mu\text{m}$
Base area	1070 μm X 1070 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 height	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		3.3	3.6	Volt
Spectra half width	$\Delta\lambda$		35	50	nm
Reverse current	Ir			2 μ A	Vr= 5 Volt

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	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 350mA, Ta at 25°C)

Wd Range (nm)	6-8cd	8-10cd	10-12cd	12-14cd	14-16cd	16-18cd	18-20cd	20cd up
480-485	SG	SH	SA	SB				
485-495	TG	TH	TA	TB				
490-495		AH	AA	AB	AC			
495-500		BH	BA	BB	BC			
500-505			CA	CB	CC	CD		
505-510			DA	DB	DC	DD	DE	
510-515			EA	EB	EC	ED	EE	EF
515-520			FA	FB	FC	FD	FE	FF
520-525			GA	GB	GC	GD	GE	GF
525-530			HA	HB	HC	HD	HE	
530-535			IA	IB	IC	ID	IE	

Performance Diagram

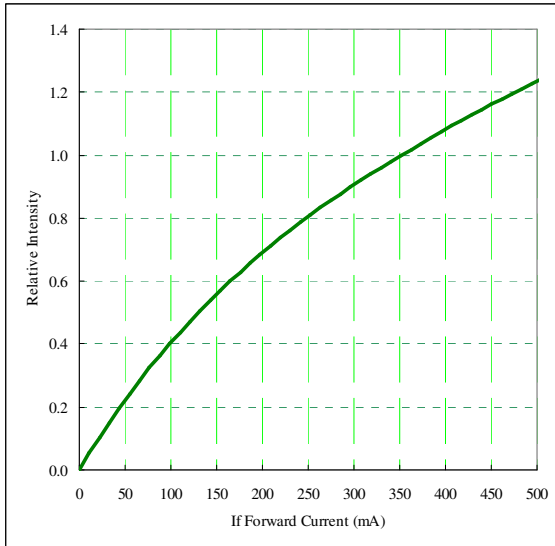


Fig-1 Relative Intensity vs. Forward Current.

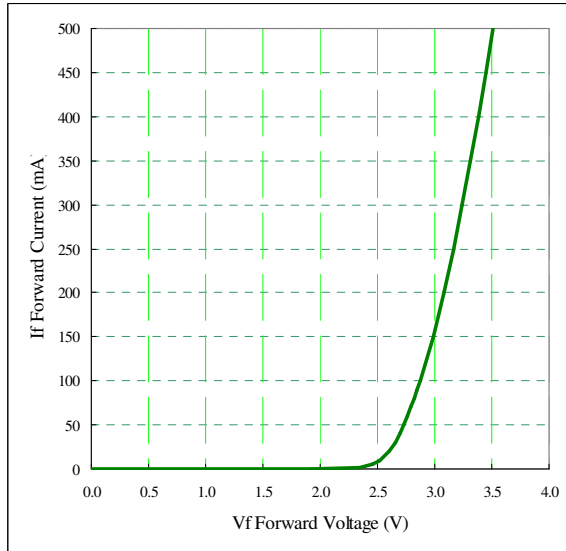


Fig-2 Forward Current vs. Forward Voltage.

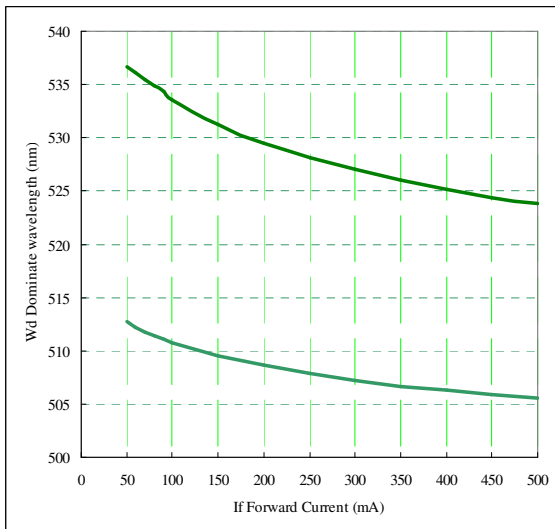


Fig-3 Forward Dominate Wavelength vs. Forward Current.

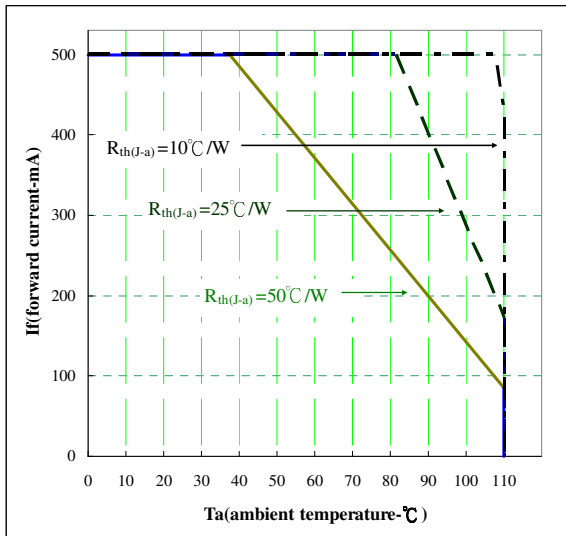


Fig-4 Maximum Driving Forward DC Current vs. Ambient Temperature.

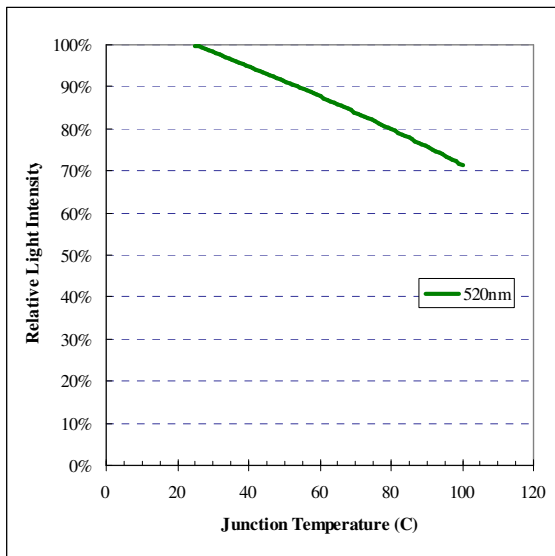


Fig-5 Relative Intensity vs. Junction Temperature.

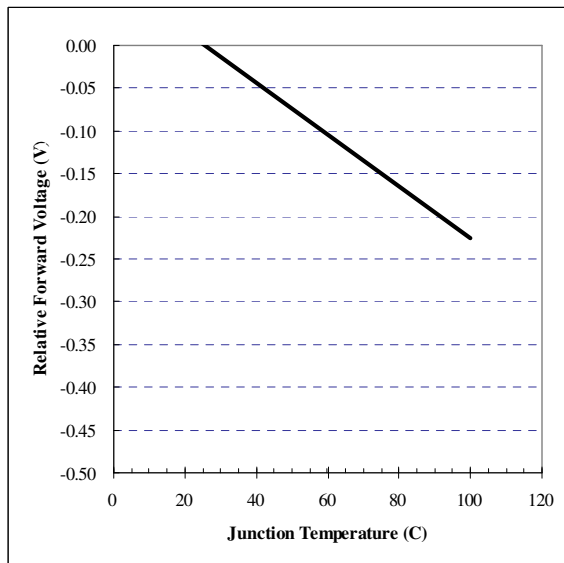


Fig-6 Relative Forward Voltage vs. Junction Temperature.

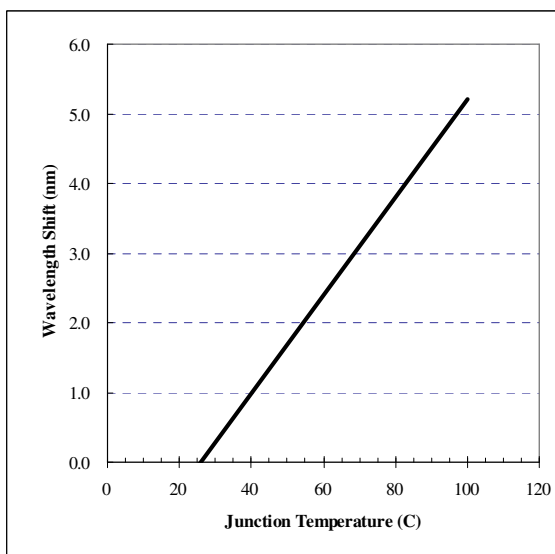


Fig-7 Wavelength Shift vs. Junction Temperature.

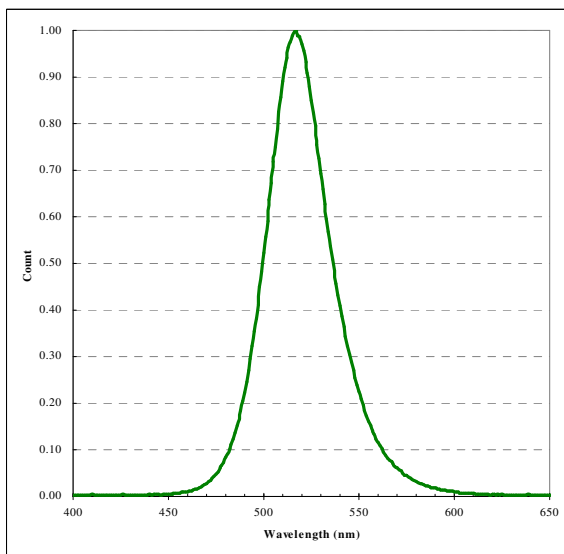


Fig-8 Relative Intensity vs. Peak Wavelength.

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 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.

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