

MvpLED™ SL-V-U40AC

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.

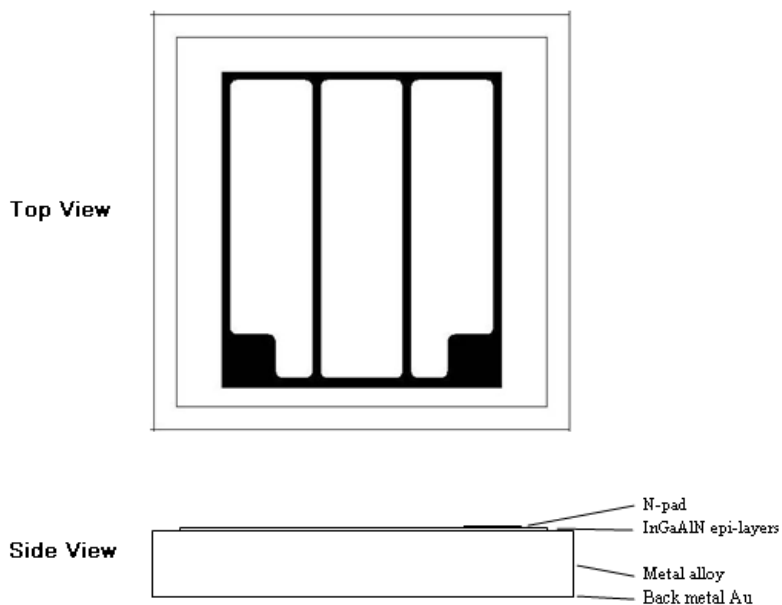
SemiLEDs' patented and unique process uses a limited amount of Sapphire, which can be recycled and reused multiple times, significantly reducing the Carbon footprint. The reduced dependence on Sapphire also removes a thermal management bottleneck while providing the most environmentally friendly LED 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	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 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		3.3	3.8	Volt
Spectra half width	$\Delta\lambda$		12	25	nm
Reverse current	Ir			10 μ A	Vr= 3 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	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
375-380	QA	DB	DC	DD	DE

Wp Range(nm)	60-80mW	80-100mW	100-120mW	120-150mW	150-200mW
380-385	EC	ED	EE	EF	EG

Wp Range(nm)	120-150mW	150-200mW	200-250mW	250-300mW	300-350mW
385-390	FF	FG	FH		
390-395		GG	GH	GI	
395-400			HH	HI	HJ

Wp Range(nm)	200-250mW	250-300mW	300-350mW	350-400mW	400-450mW
400-405	IH	II	IJ	IK	
405-410	JH	JI	JJ	JK	JL
410-415		KI	KJ	KK	KL
415-420		LI	LJ	LK	LL

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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