ROITHNER LASERTECHNIK GmbH
WIEDNER HAUPTSTRASSE 76 1040 VIENNA AUSTRIA
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SMB1N-385V-02

- **Ultraviolet High Power LED**
- **385 nm, 1000 mW**
- **Zener diode**
- **AlInGaN chip, 1000 x 1000 µm**
- **PA9T SMD package**
- **Beam Angle: 20°**

RoHS COMPLIANT Pb Pb-Free

Description

SMB1N-385V-02 is a surface mount AlInGaN based high power ultraviolet LED, with a typical peak wavelength of 385 nm and optical output power of 1000 mW @ 700 mA. It comes in SMD package (PA9T) with **protection Zener diode**, silver plated soldering pads (lead free solderable), copper heat sink, and silicone resin molded lens.

Maximum Ratings

Parameter	Symbol	Values Min.	Values Max.	Unit
Power Dissipation	P_D		2800	mW
Forward Current	I_F		700	mA
Pulse Forward Current *	I_{FP}		1000	mA
Reverse Voltage	V_F		**	V
Thermal Resistance	R_{THJA}		10	K/W
Junction Temperature	T_J		120	°C
Operating Temperature	T_{CASE}	- 40	+ 100	°C
Storage Temperature	T_{STG}	- 40	+ 100	°C
Lead Solder Temperature (max. 5s)	T_{SLD}		+ 250	°C

* duty cycle = 1 %, pulse width = 10 µs ** not designed for reverse operation

Electro-Optical Characteristics (T_{CASE} = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Peak Wavelength	λ_P	I_F=500 mA	380		390	nm
Half Width	λ_Δ	I_F=500 mA		12		nm
Forward Voltage	V_F	I_F=500 mA		3.5	3.9	V
	V_{FP}	I_{FP}=1 A*		3.8		
Total Radiated Power	P_O	I_F=500 mA		1000		mW
		I_{FP}=1 A*		1800		
Radiant Intensity	I_E	I_F=500 mA		3300		mW/sr
		I_{FP}=2 A*		6100		
Beam Angle	$2\theta_{1/2}$	I_F=100 mA		10		deg.
Rise Time	t_r	I_F=500 mA		40		ns
Fall Time	t_f	I_F=500 mA		100		ns

** duty cycle = 1 %, pulse width = 10 µs*

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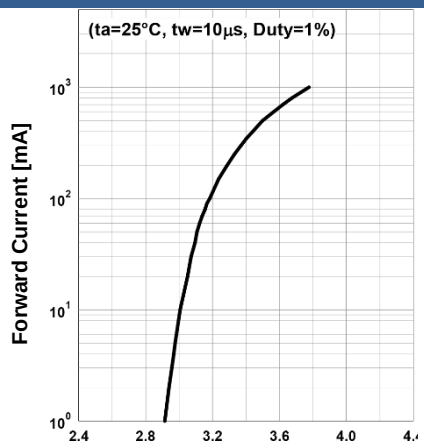
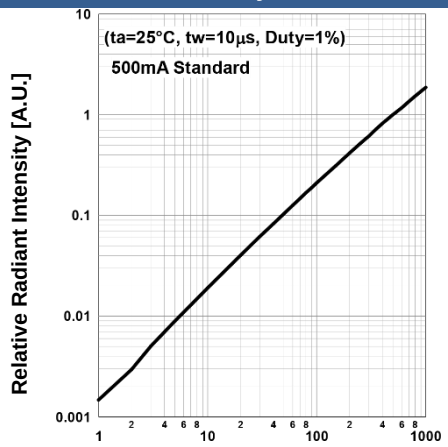
Typical Performance Curves

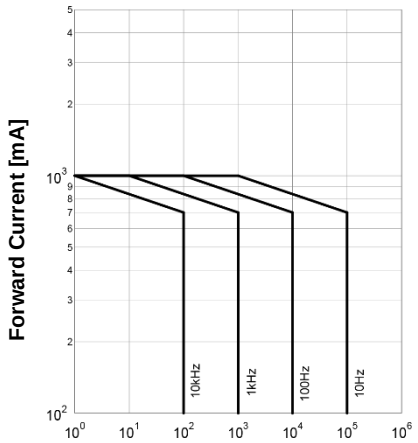
Forward Current vs. Forward Voltage



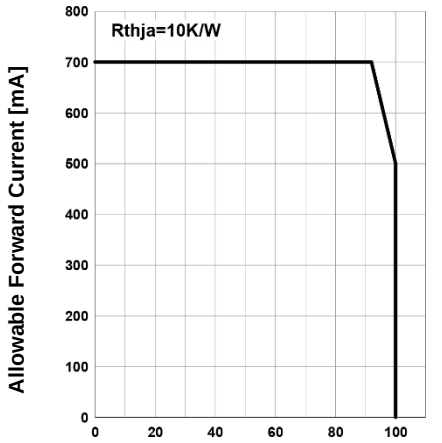
Relative Radiant Intensity vs. Forward Current



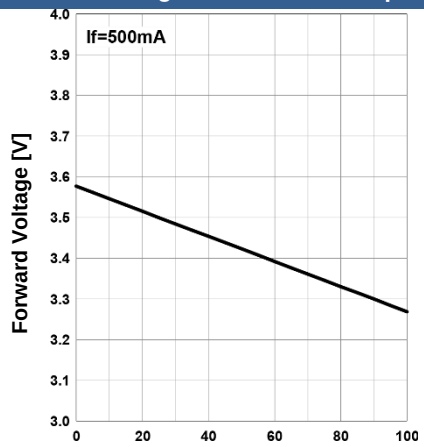
Forward Current vs. Pulse Duration



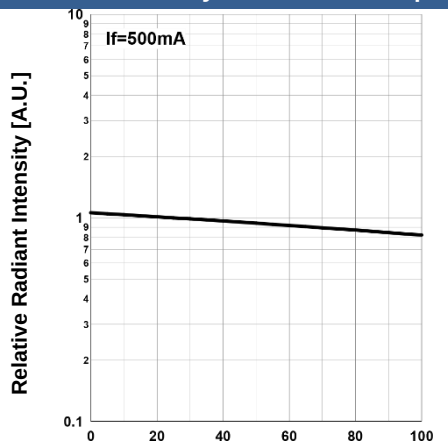
Allowed Forward Current vs. Amb. Temperature



Forward Voltage vs. Ambient Temperature



Rel. Radiant Intensity vs. Ambient Temperature



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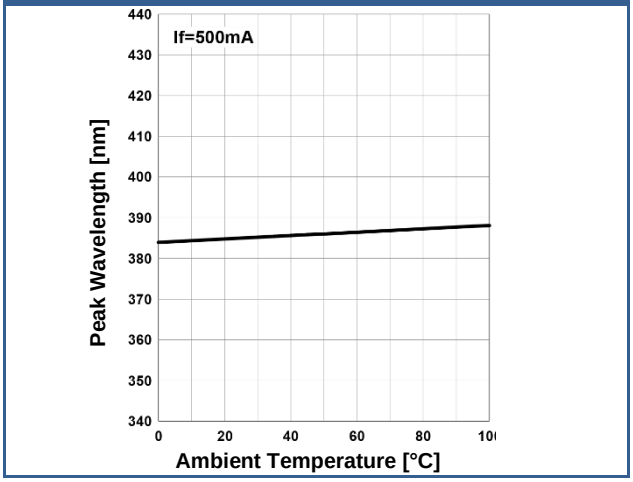
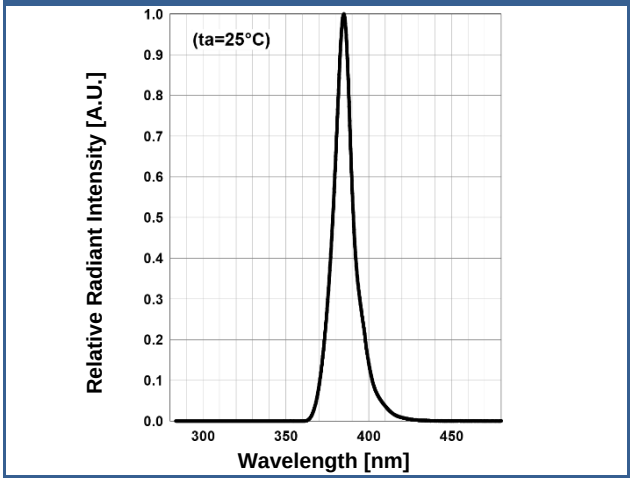
Typical Performance Curves

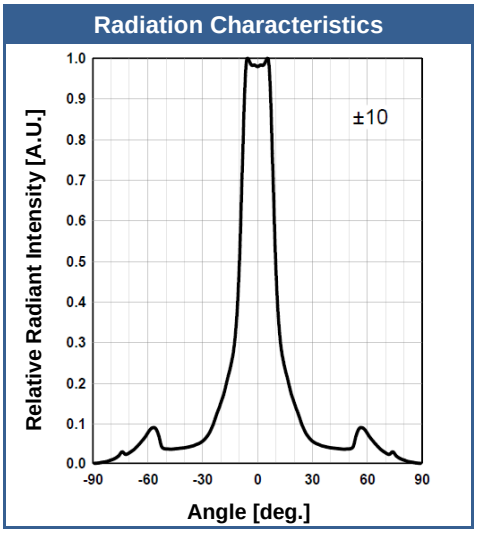
Peak Wavelength vs. Amb. Temp.



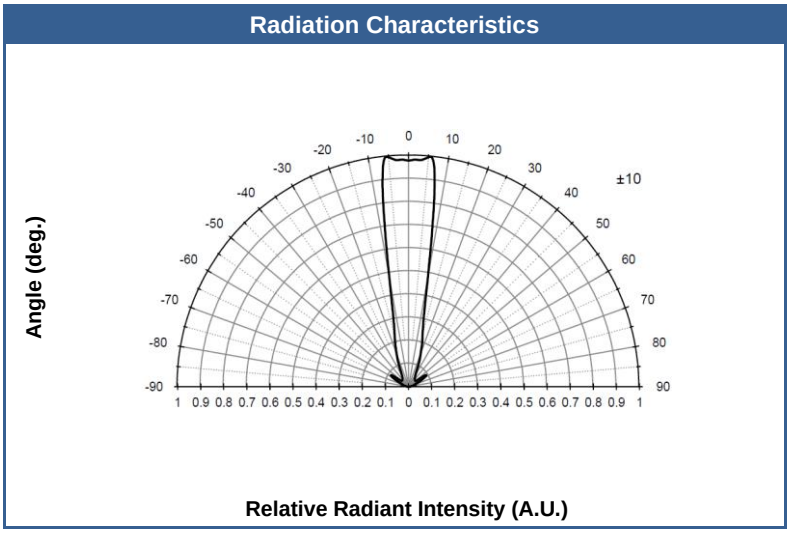
Relative Spectral Emission



Radiation Characteristics

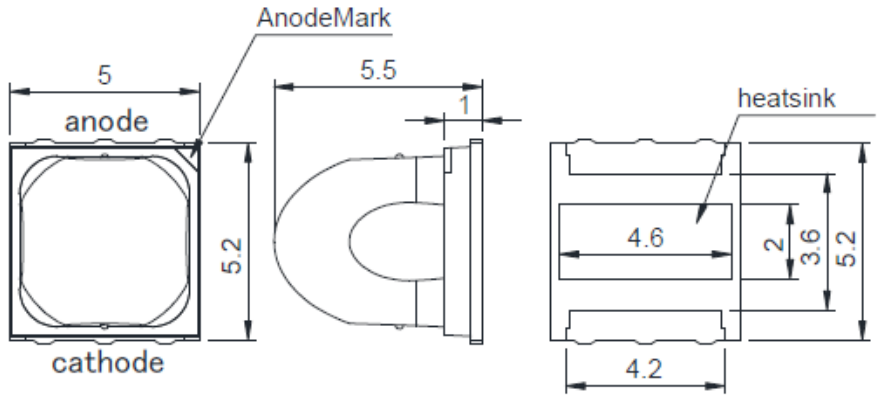


Radiation Characteristics

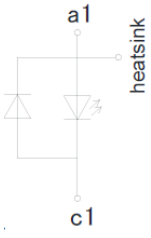


Outline Dimensions

PA9T



Lead	Function
Pin a1	Anode
Pin c1	Cathode



all dimensions in mm

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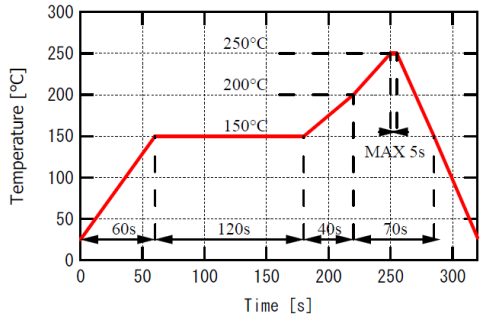
Precautions

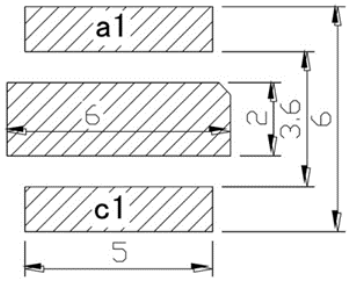
Soldering

- Do avoid overheating of the LED
- Do avoid electrostatic discharge (ESD)
- Do avoid mechanical stress, shock, and vibration
- Do only use non-corrosive flux
- Do not apply current to the LED until it has cooled down to room temperature after soldering

Recommended soldering conditions



Recommended soldering patterns



Unit: mm

Cleaning

Cleaning with isopropyl alcohol, propanol, or ethyl alcohol is recommended
DO NOT USE acetone, chloroseen, trichloroethylene, or MKS
DO NOT USE ultrasonic cleaners

Static Electricity

LEDs are sensitive to electrostatic discharge (ESD). Precautions against ESD must be taken when handling or operating these LEDs. Surge voltage or electrostatic discharge can result in complete failure of the device.

Radiation

During operation these LEDs do emit light, which **could be hazardous to skin and eyes**, and **may cause cancer**. Do avoid exposure to the emitted light. Protective glasses if needed. It is further advised to attach a warning label on products/systems.

Operation

Do *only* operate LEDs with a current source.
Running these LEDs from a voltage source will result in complete failure of the device.
Current of a LED is an exponential function of the voltage across it. Usage of current regulated drive circuits is mandatory.