



SMB1N-405V-02

- Violet High Power LED
- 405 nm, 710 mW
- SMD package, PA9T
- Dimension: 5.0 x 5.2 x 5.5 mm
- Viewing Angle: 22°



Description



SMB1N-405V-02 is a surface mount AlInGaN High Power LED with a typical peak wavelength of **405 nm** and radiation of **710 mW**. It comes in SMD package (PA9T) with silver plated soldering pads (lead free solderable), copper heat sink, and molded with silicone resin.

Maximum Ratings ($T_{CASE}=25^{\circ}\text{C}$)

Parameter	Symbol	Values		Unit
		Min.	Max.	
Power Dissipation	P_D		2100	mW
Forward Current	I_F		500	mA
Pulse Forward Current ^{*1}	I_{FP}		700	mA
Reverse Voltage	V_F	not designed for reverse operation		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 ^{*2}	T_{SLD}		+ 250	°C

^{*1} duty=1%, pulse width = 10 μs

^{*2} must be completed within 5 seconds

Electro-Optical Characteristics ($T_{CASE}=25^{\circ}\text{C}$)

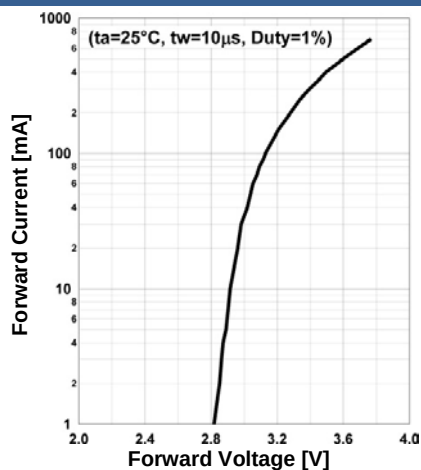
Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Peak Wavelength	λ_P	$I_F=500\text{mA}$	400	405	410	nm
Half Width	$\Delta\lambda$	$I_F=500\text{mA}$		12		nm
Forward Voltage	V_F	$I_F=500\text{mA}$		3.6	4.2	V
	V_{FP}	$I_{FP}=700\text{mA}$		3.8		
Radiated Power *	P_O	$I_F=500\text{mA}$		710		mW
		$I_{FP}=700\text{mA}$		910		
Viewing Angle	ϕ	$I_F=100\text{mA}$		22		deg.
Rise Time	t_R	$I_F=500\text{mA}$		55		ns
Fall Time	t_F	$I_F=500\text{mA}$		75		ns

^{*1} measured by S3584-08

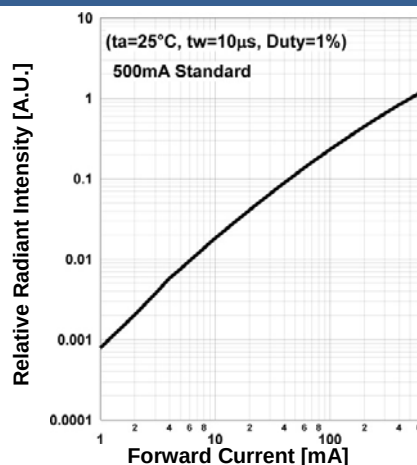


Typical Performance Curves

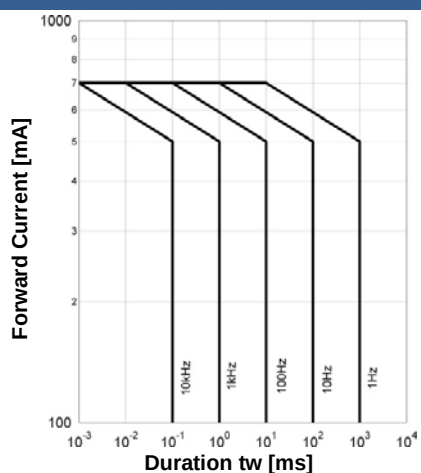
Forward Current vs. Forward Voltage



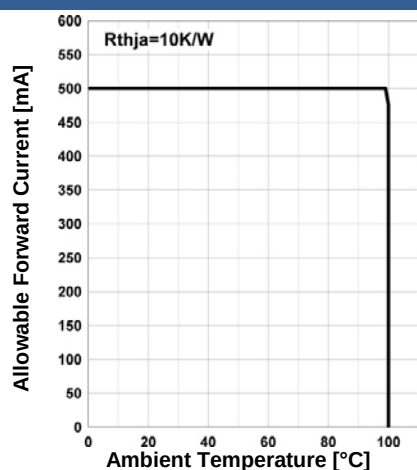
Rel. Radiant Intensity vs. Forward Current



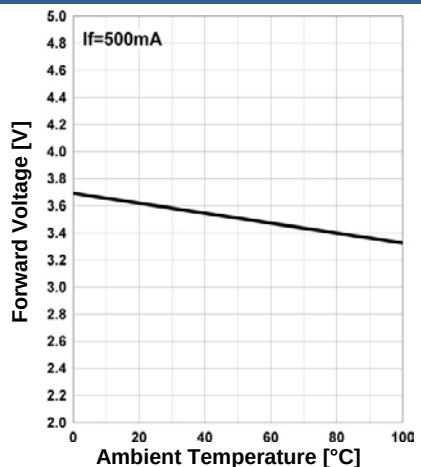
Forward Current vs. Pulse Duration



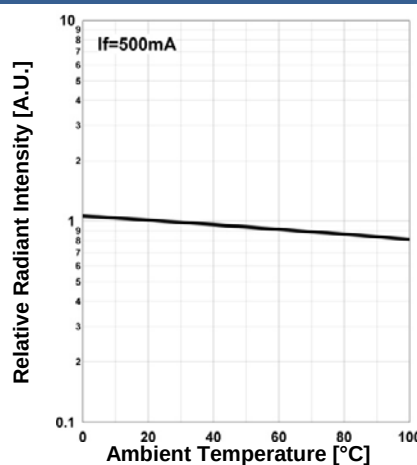
Allowed Forward Current vs. Ambient Temperature



Forward Voltage vs. Ambient Temperature

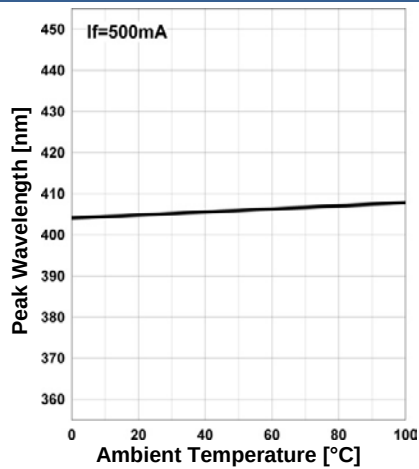


Rel. Radiant Intensity vs. Ambient Temperature

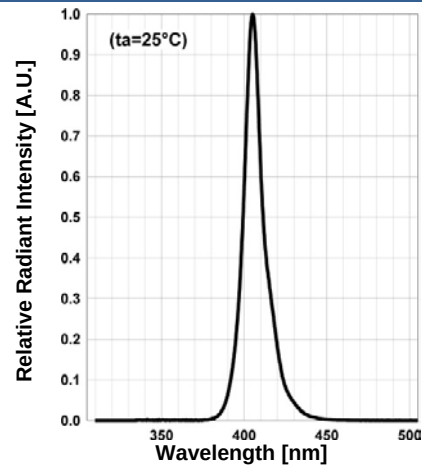




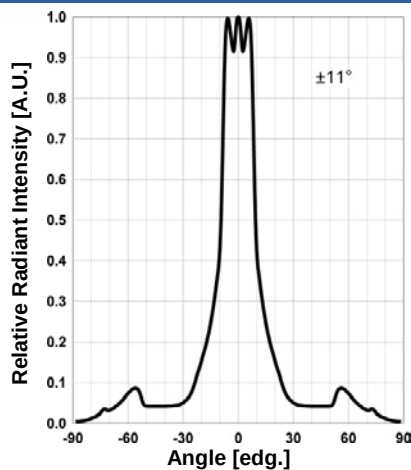
Peak Wavelength vs. Ambient Temperature



Relative Spectral Emission



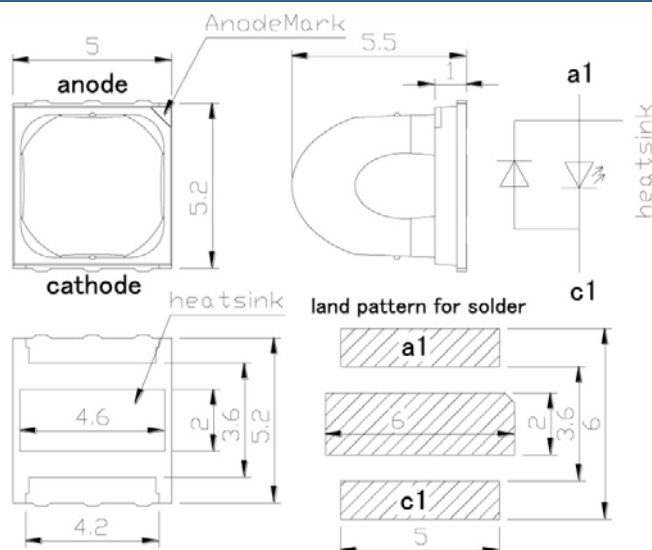
Radiation Characteristics



Outline Dimensions

SMB1N

lens



All Dimensions in mm



Precautions

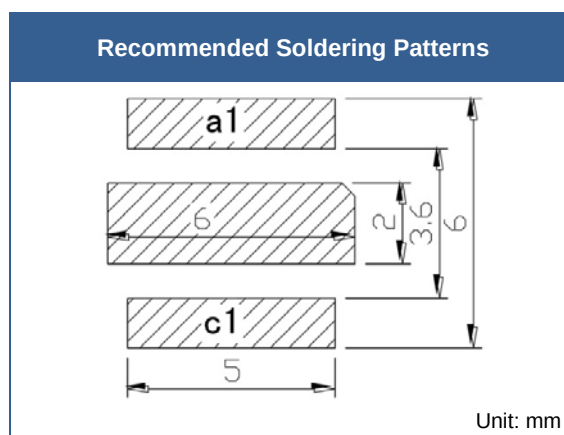
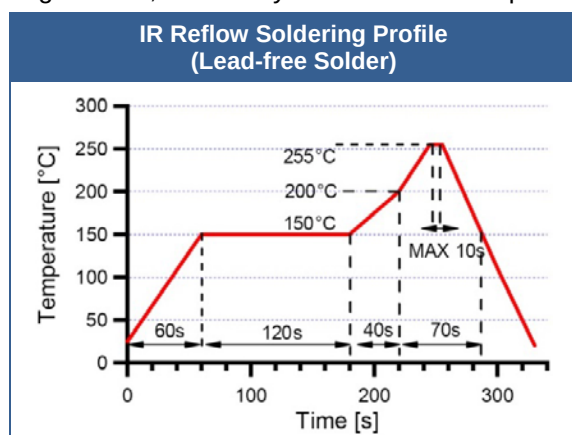
Soldering:

- 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:

This LED is designed to be reflow soldered on to a PCB. If dip soldered or hand soldered, its reliability cannot be guaranteed.

Nitrogen reflow soldering is recommended. Air flow soldering conditions can cause optical degradation, caused by heat and/or atmosphere.



Above table specifies the maximum allowed duration and temperature during soldering. It is strongly advised to perform soldering at the shortest time and lowest temperature possible.

Cleaning:

Cleaning with isopropyl alcohol, propanol, or ethyl alcohol is recommended

DO NOT USE acetone, chloroform, 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 **high intensity light**, which is hazardous to skin and eyes, and may cause cancer. Do avoid exposure to the emitted light. **Protective glasses are recommended.** 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.