



## SMB1N-770-02

- Red High Power LED
- 770 nm, 330 mW
- SMD package, PA9T
- Dimension: 5.0 x 5.2 x 5.5 mm
- Viewing Angle: 20°



### Description



**SMB1N-770-02** is a surface mount AlGaAs High Power LED with a typical peak wavelength of **770 nm** and radiation of **330 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 ( $T_{CASE}=25^{\circ}C$ )

Parameter	Symbol	Values		Unit
		Min.	Max.	
Power Dissipation	$P_D$		2500	mW
Forward Current	$I_F$		800	mA
Pulse Forward Current * <sup>1</sup>	$I_{FP}$		2000	mA
Reverse Voltage	$V_F$		5	V
Thermal Resistance	$R_{THJA}$		10	KW
Junction Temperature	$T_J$		100	°C
Operating Temperature	$T_{CASE}$	- 40	+ 85	°C
Storage Temperature	$T_{STG}$	- 40	+ 100	°C
Lead Solder Temperature * <sup>2</sup>	$T_{SLD}$		+ 250	°C

\*<sup>1</sup> duty=1%, pulse width = 10  $\mu$ s

\*<sup>2</sup> must be completed within 5 seconds

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

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Peak Wavelength	$\lambda_P$	$I_F=800mA$	760	770	780	nm
Half Width	$\Delta\lambda$	$I_F=800mA$		30		nm
Forward Voltage	$V_F$	$I_F=800mA$		2.2	2.5	V
	$V_{FP}$	$I_{FP}=2A$		3.0		
Radiated Power * <sup>1</sup>	$P_O$	$I_F=800mA$		330		mW
		$I_{FP}=2A$		820		
Radiant Intensity * <sup>2</sup>	$I_E$	$I_F=800mA$		760		mW/sr
		$I_{FP}=2A$		1800		
Viewing Angle	$\varphi$	$I_F=100mA$		20		deg.
Rise Time	$t_R$	$I_F=800mA$		60		ns
Fall Time	$t_F$	$I_F=800mA$		60		ns

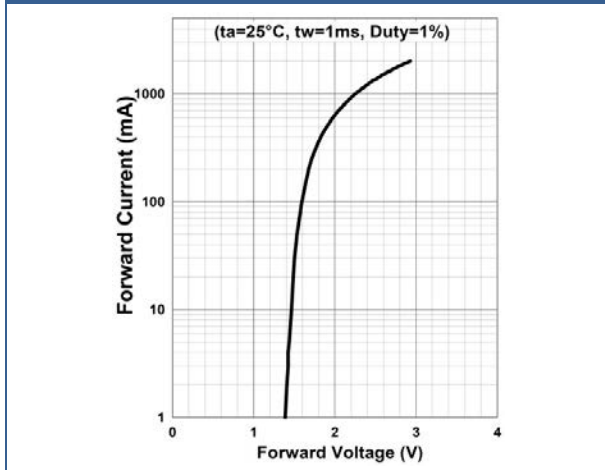
\*<sup>1</sup> measured by S3584-08

\*<sup>2</sup> measured by Tektronix J-6512

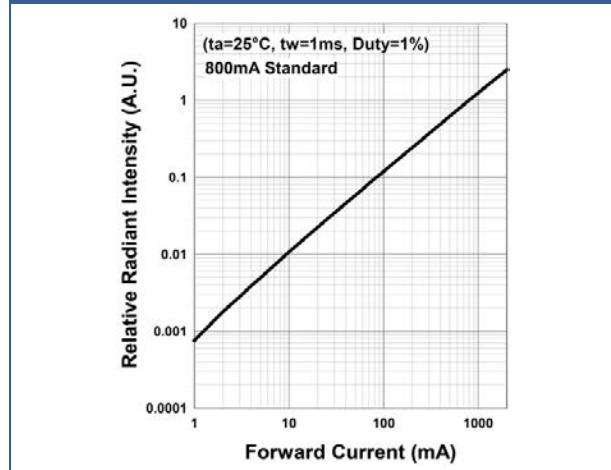


## Typical Performance Curves

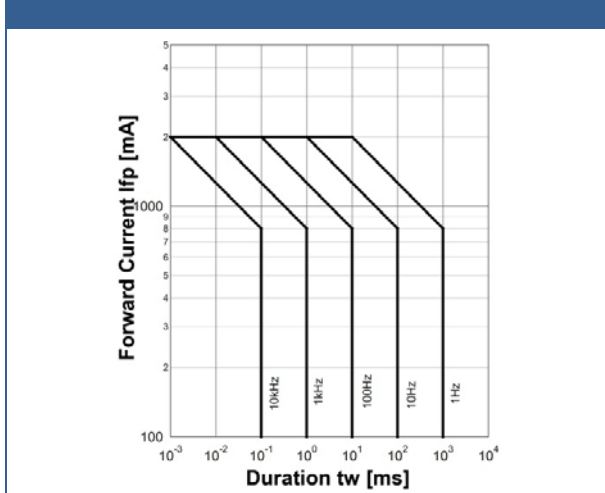
### Forward Current vs. Forward Voltage



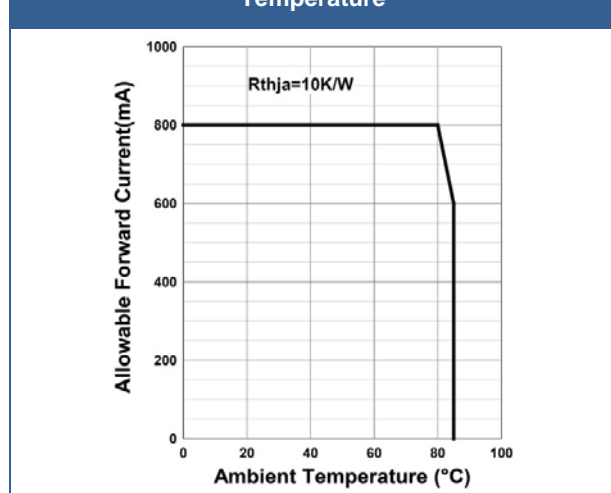
### Rel. Radiant Intensity vs. Forward Current



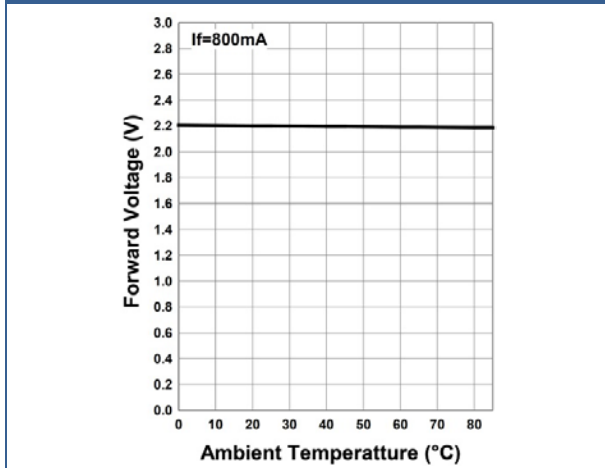
### Forward Current vs. Pulse Duration



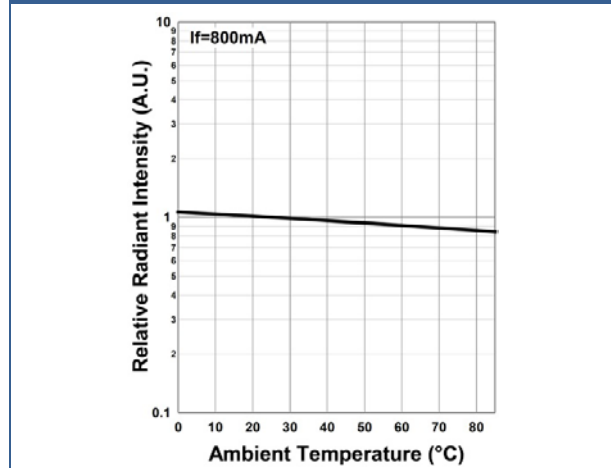
### Allowed Forward Current vs. Ambient Temperature



### Forward Voltage vs. Ambient Temperature

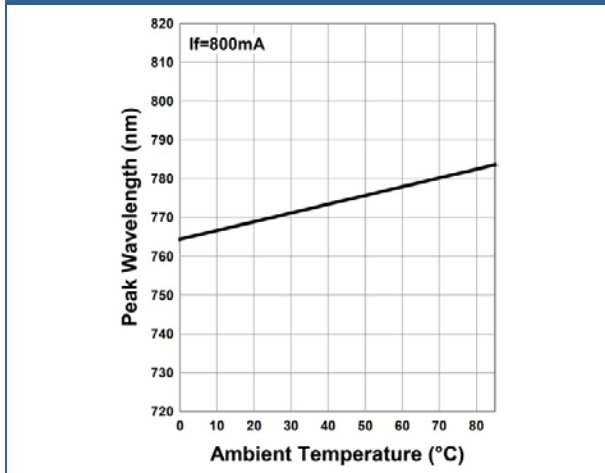


### Rel. Radiant Intensity vs. Ambient Temperature

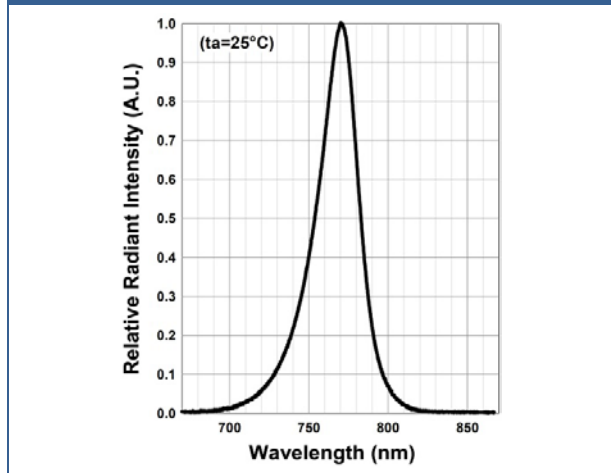




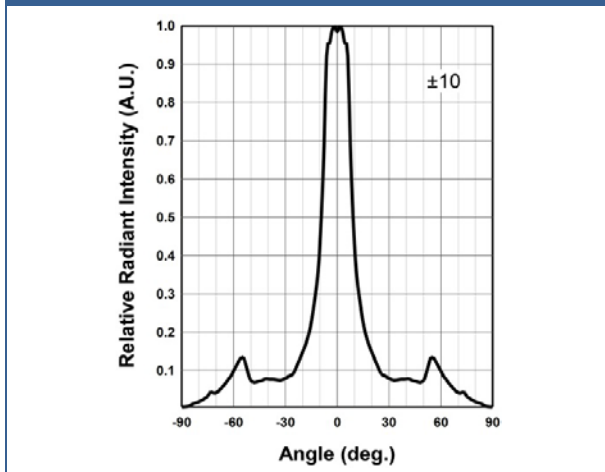
Peak Wavelength vs. Ambient Temperature



Relative Spectral Emission



Radiation Characteristics



## Outline Dimensions

SMB1N
lens

Lead	Description
Pin a1	LED Anode
Pin c1	LED Cathode

All Dimensions in mm



## Precautions

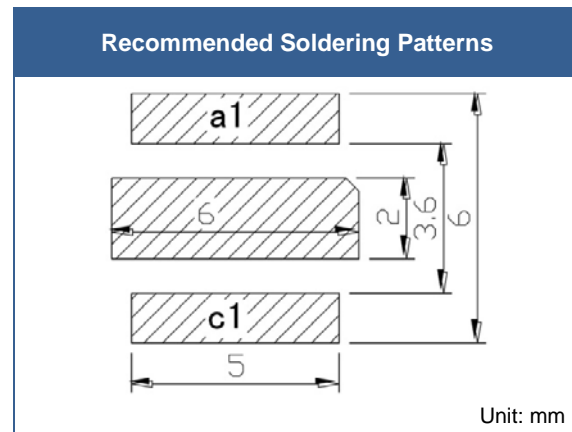
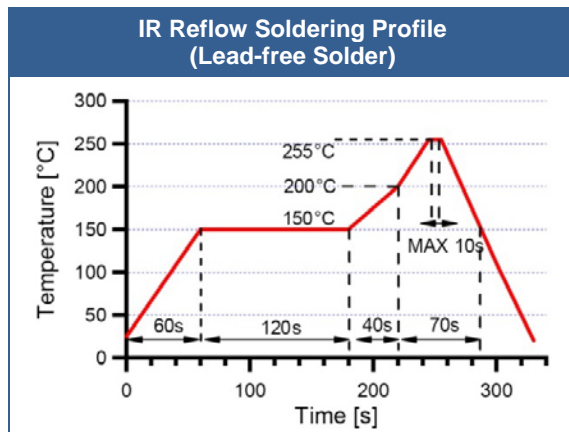
### Soldering:

- 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.