



## SMB1N-1900D

PRELIMINARY

- Infrared High Power LED
- 1900 nm, 27 mW
- InGaAs chip, 1000 x 1000  $\mu\text{m}$
- PA9T SMD package
- Beam Angle:  $\pm 64^\circ$



## Description

**SMB1N-1900D** is a surface mount InGaAsP based high power infrared LED, with a typical peak wavelength of 1900 nm and optical output power of 27 mW @ 1 A. It comes in Polyamide Resin SMD package (PA9T) with silver plated soldering pads (lead free solderable), copper heat sink, and silicone resin molded flat window.

## Maximum Ratings\*

Parameter	Symbol	Values		Unit
		Min.	Max.	
Power Dissipation	$P_D$		1600	mW
Forward Current	$I_F$		1000	mA
Pulse Forward Current **	$I_{FP}$		2000	mA
Reverse Voltage	$U_F$		2	V
Thermal Resistance	$R_{THJA}$		10	K/W
Junction Temperature	$T_J$		120	$^\circ\text{C}$
Operating Temperature	$T_{CASE}$	- 40	+ 85	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	- 40	+ 100	$^\circ\text{C}$
Lead Solder Temperature ( $t_{max}$ = 5s)	$T_{SLD}$		+ 250	$^\circ\text{C}$

\* Operating close to or exceeding these parameters may damage the device

\*\* duty cycle = 1 %, pulse width = 10  $\mu\text{s}$

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

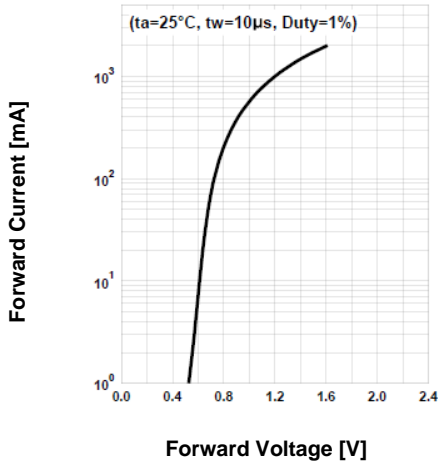
Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Peak Wavelength	$\lambda_P$	$I_F=1\text{ A}$	1850		1950	nm
Half Width	$\lambda_\Delta$	$I_F=1\text{ A}$		120		nm
Forward Voltage	$V_F$	$I_F=1\text{ A}$		1.2	1.6	V
	$V_{FP}$	$I_{FP}=2\text{ A}^*$		1.6		
Total Radiated Power	$P_O$	$I_F=1\text{ A}$	18	27		mW
		$I_{FP}=2\text{ A}^*$		47		
Radiant Intensity	$I_E$	$I_F=1\text{ A}$		/		mW/sr
		$I_{FP}=2\text{ A}^*$		/		
Viewing Angle	$2\theta_{1/2}$	$I_F=100\text{ mA}$		128		deg.
Rise Time	$t_r$	$I_F=1\text{ A}$		90		ns
Fall Time	$t_f$	$I_F=1\text{ A}$		30		ns

\* duty cycle = 1 %, pulse width = 10  $\mu\text{s}$

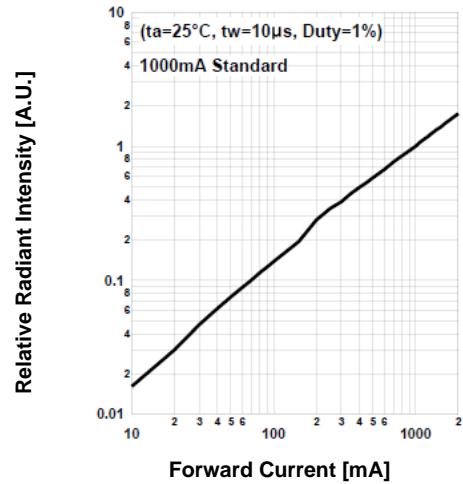


## Typical Performance Curves

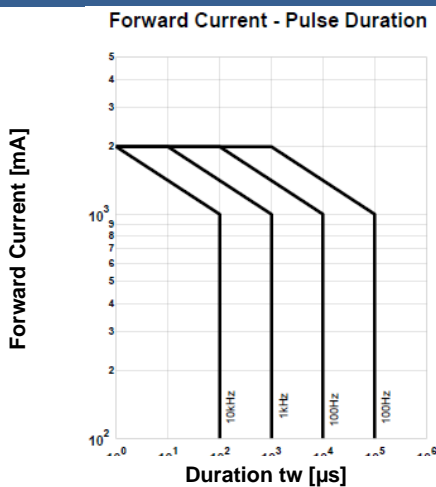
### Forward Current vs. Forward Voltage



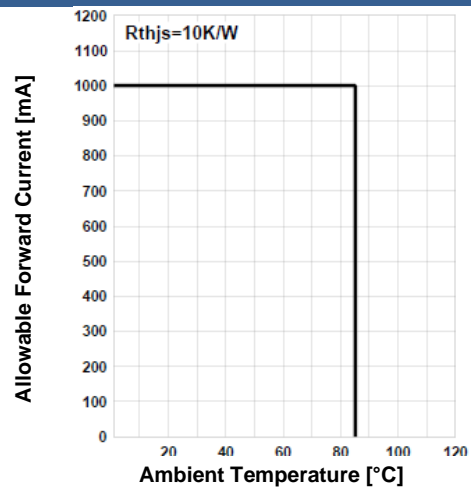
### Relative Radiant Intensity vs. Forward Current



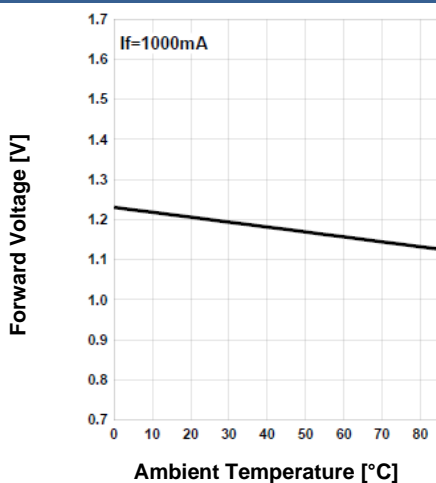
### Forward Current vs. Pulse Duration



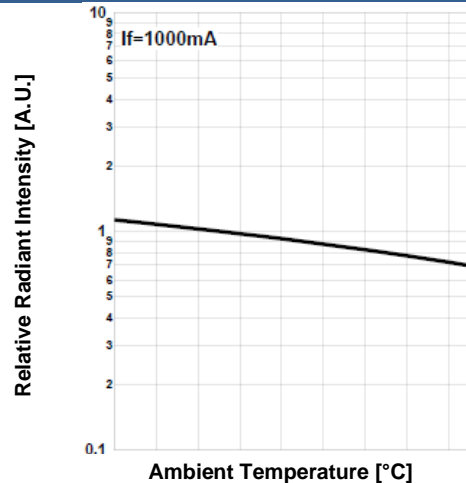
### Allowed Forward Current vs. Amb. Temperature



### Forward Voltage vs. Ambient Temperature



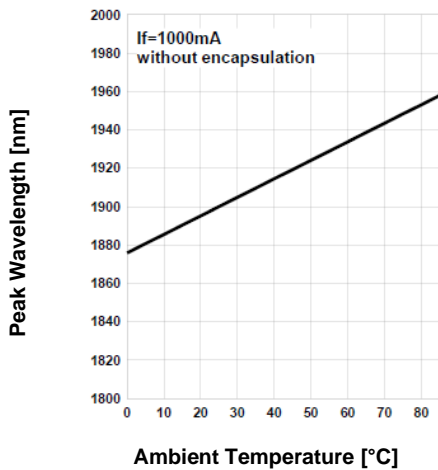
### Rel. Radiant Intensity vs. Ambient Temperature



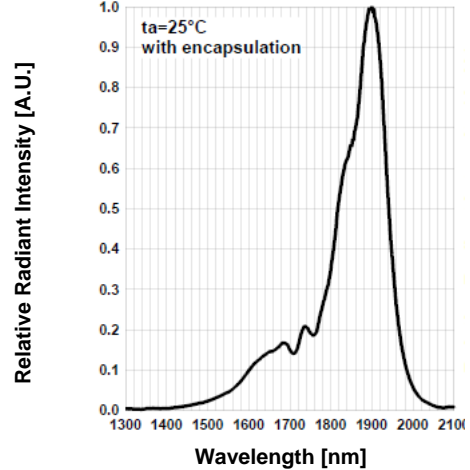


## Typical Performance Curves

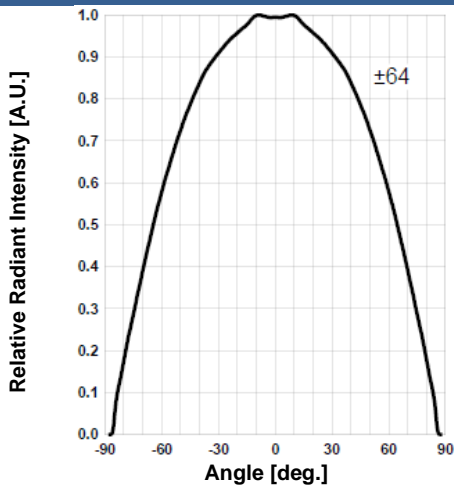
Peak Wavelength vs. Amb. Temp.



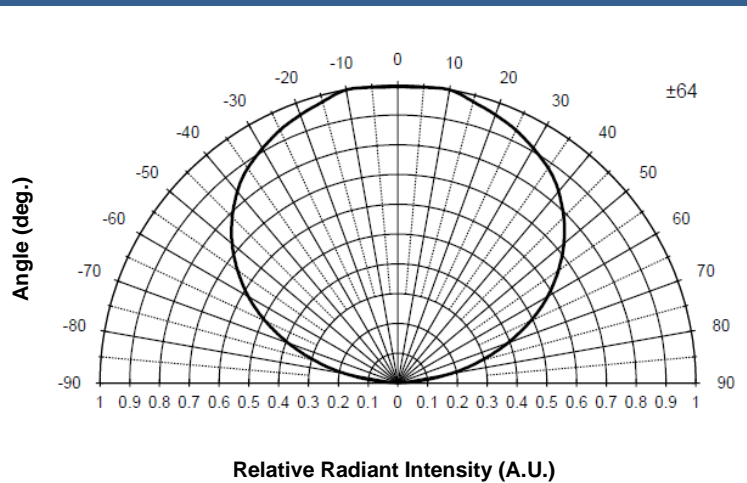
Relative Spectral Emission



Radiation Characteristics

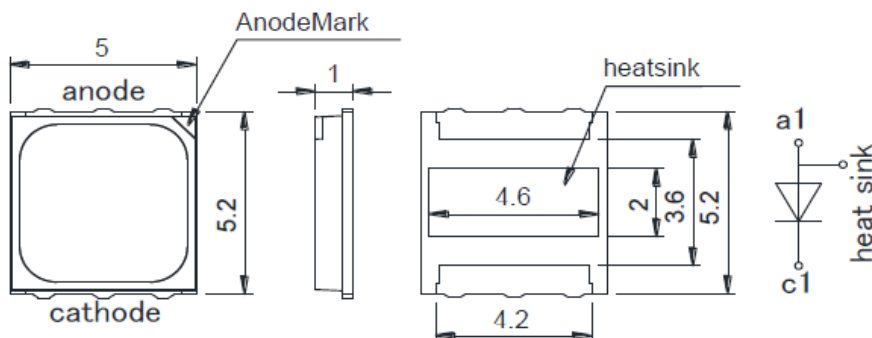


Radiation Characteristics



## Outline Dimensions

PA9T



Lead	Function
Pin a1	Anode
Pin c1	Cathode

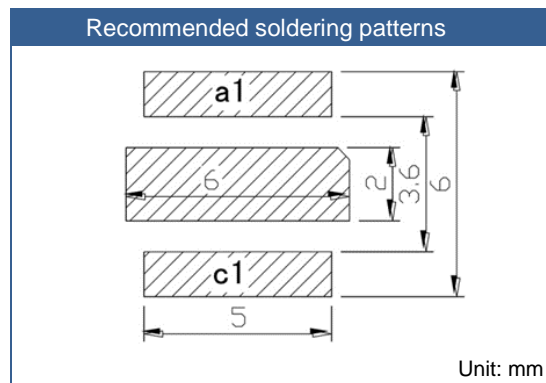
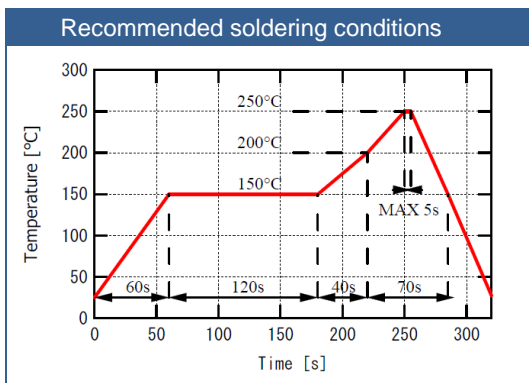
all dimensions in mm



## General Notes

### 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



### 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 LED.

### 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.

### Storage

- The **maximum shelf life** of LEDs in the originally sealed aluminum bag is **12 months**.
- Before opening the aluminum bag, please store it at **<30 °C, <60 % RH**.
- After opening the aluminum bag, please solder the LEDs within **72 hours (floor life)** at **5 – 30 °C, <50 % RH**.
- Put any unused, remaining LEDs and silica gel back in the same aluminum bag and then vacuum-seal the bag.
- It is recommended to keep the re-sealed bag in a desiccator at <30%RH.