



SMB1N-940-02

- Infrared High Power LED
- 940 nm, 120 mW
- SMD package, PA9T
- Dimension: 5.0 x 5.2 x 5.5 mm
- Viewing Angle: 24°



Description



SMB1N-940-02 is a surface mount AlGaAs High Power LED with a typical peak wavelength of **940 nm** and radiation of **120 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 | | 1000 | mW |
| Forward Current | I_F | | 600 | mA |
| Pulse Forward Current *1 | 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 *2 | T_{SLD} | | + 250 | °C |

*1 duty=1%, pulse width = 10 μ s

*2 must be completed within 5 seconds

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

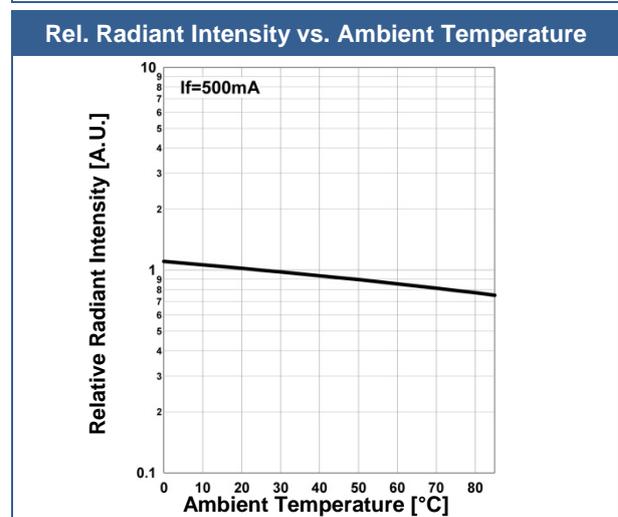
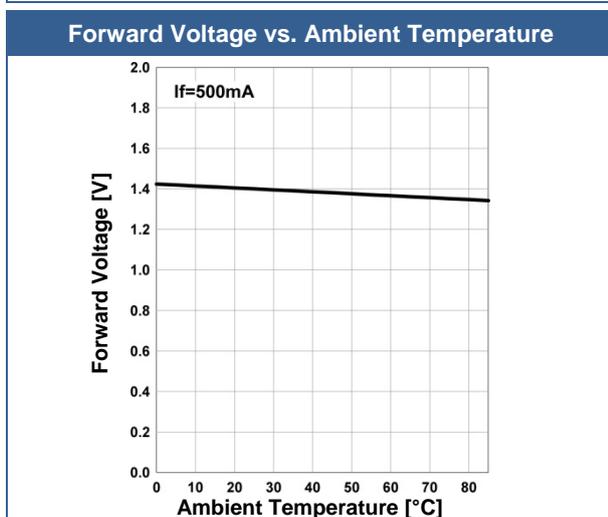
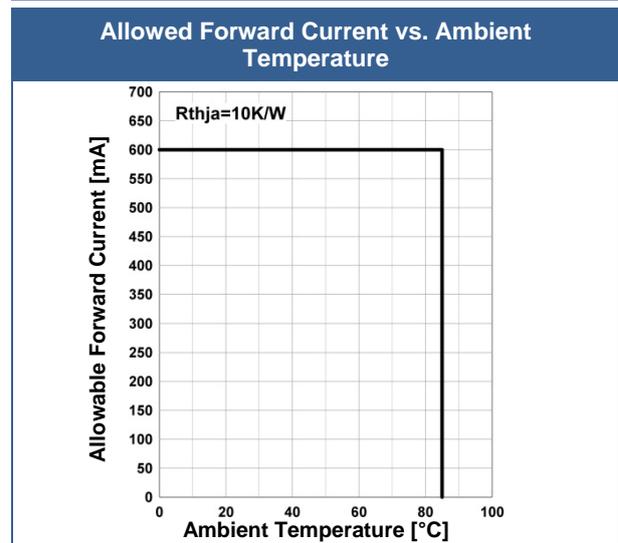
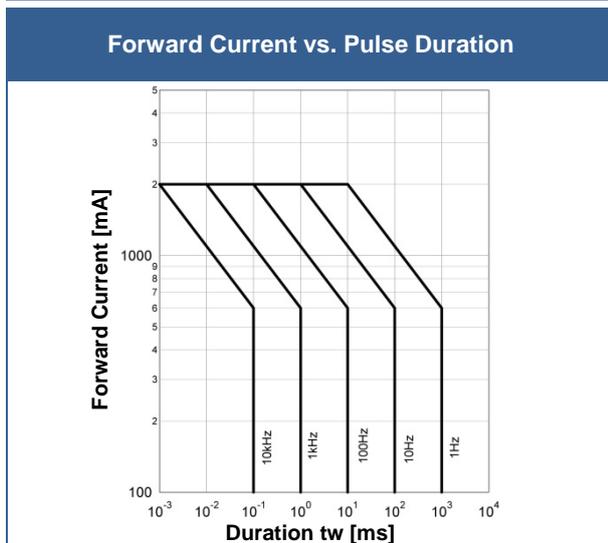
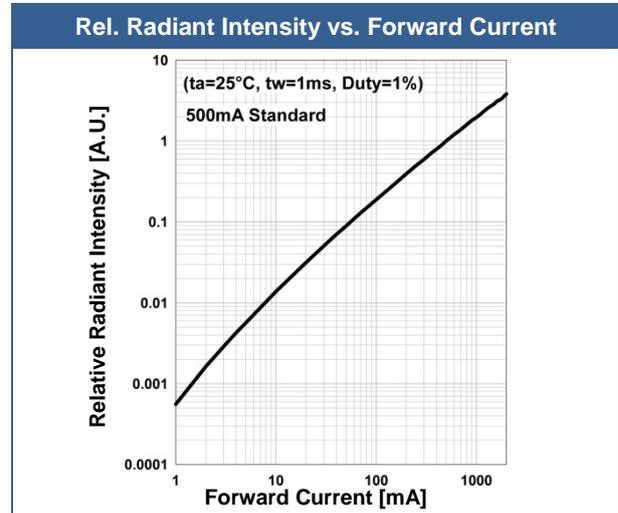
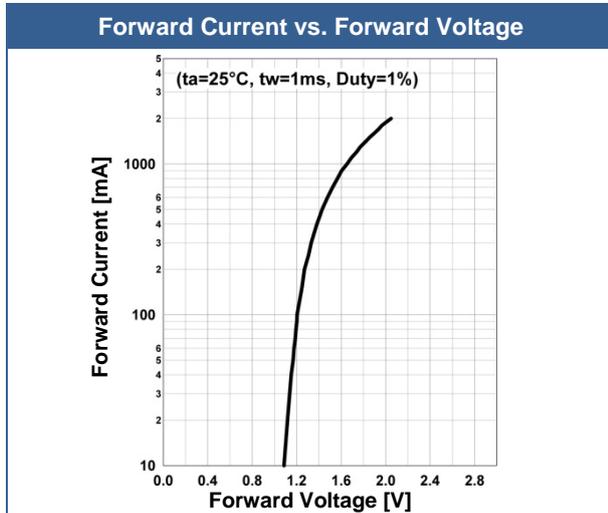
| Parameter | Symbol | Conditions | Values | | | Unit |
|----------------------|-----------------|-------------|--------|------|------|-------|
| | | | Min. | Typ. | Max. | |
| Peak Wavelength | λ_P | $I_F=500mA$ | 930 | 940 | 950 | nm |
| Half Width | $\Delta\lambda$ | $I_F=500mA$ | | 70 | | nm |
| Forward Voltage | V_F | $I_F=500mA$ | | 1.4 | 1.65 | V |
| | V_{FP} | $I_{FP}=2A$ | | 2.0 | | |
| Radiated Power *1 | P_O | $I_F=500mA$ | | 120 | | mW |
| | | $I_{FP}=2A$ | | 460 | | |
| Radiant Intensity *2 | I_E | $I_F=500mA$ | | 240 | | mW/sr |
| | | $I_{FP}=2A$ | | 920 | | |
| Viewing Angle | φ | $I_F=100mA$ | | 24 | | deg. |
| Rise Time | t_R | $I_F=500mA$ | | 4000 | | ns |
| Fall Time | t_F | $I_F=500mA$ | | 5000 | | ns |

*1 measured by S3584-08

*2 measured by Tektronix J-6512

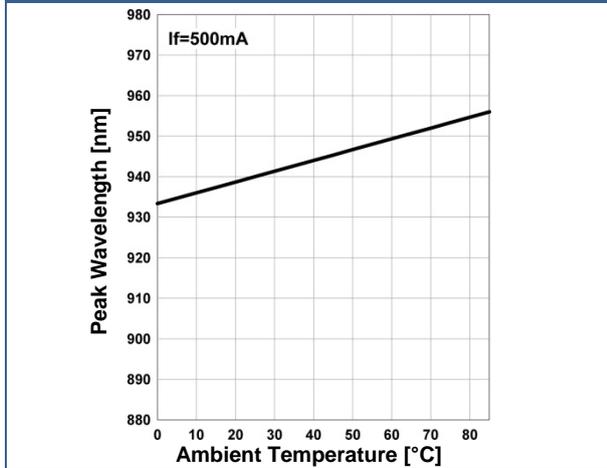


Typical Performance Curves

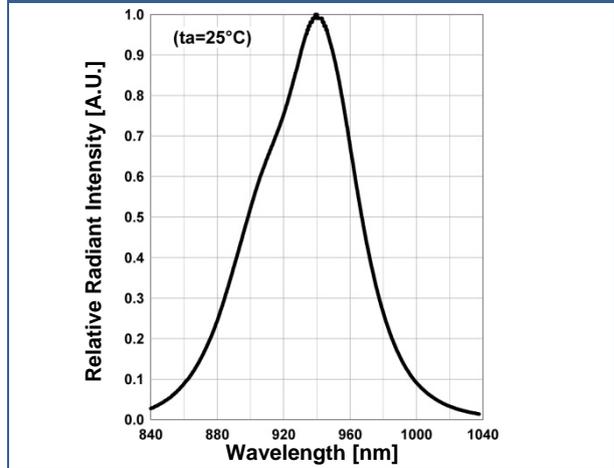




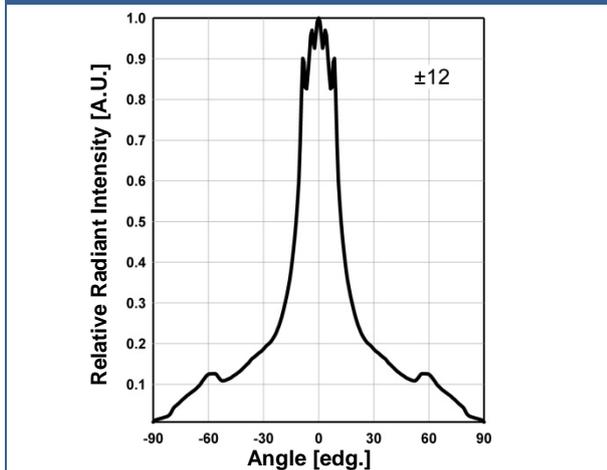
Peak Wavelength vs. Ambient Temperature



Relative Spectral Emission



Radiation Characteristics



Outline Dimensions

SMB1N
lens

The drawing shows the following dimensions and features:

- Top view: Anode width 5 mm, cathode width 5.2 mm, AnodeMark width 5.5 mm.
- Side view: Total height 5.5 mm, lens height 1 mm.
- Bottom view: Anode pad width 4.6 mm, cathode pad width 4.2 mm, heatsink width 5.2 mm.
- Solder land patterns: Pin a1 (width 6 mm), Pin c1 (width 5 mm).

| Lead | Description |
|--------|-------------|
| Pin a1 | LED Anode |
| Pin c1 | LED Cathode |

All Dimensions in mm



Precautions

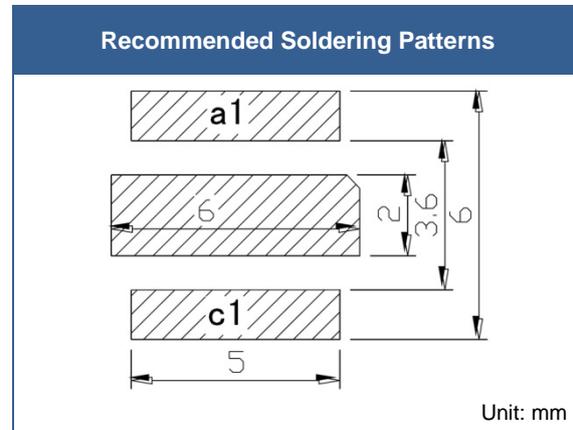
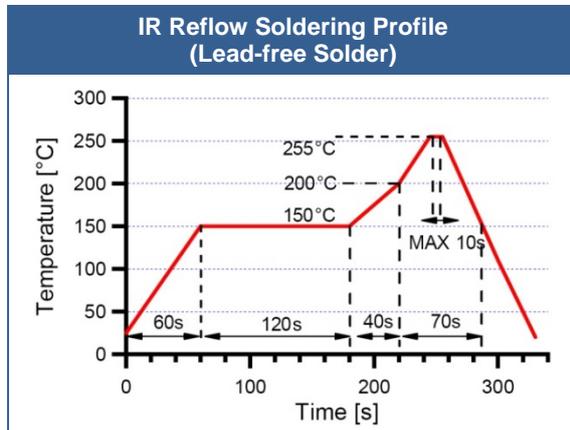
Soldering:

- 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.