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SMB1N-770D-02

- **IR High-Power LED**
- **770 nm, 650 mW**
- **AlGaInP chip, 1000 x 1000 µm**
- **PA9T SMD package**
- **Beam Angle: ± 10°**

Description

SMB1N-770D-02 is a surface mount AlGaInP based high power infrared LED, with a typical peak wavelength of 770 nm and optical output power of 650 mW @ 800 mA. It comes in polyamide resin SMD package (PA9T) with silver plated soldering pads (lead free solderable), copper heat sink, and silicone resin molded lens. Additional variants with different beam angles are available on request.

Maximum Ratings*

Parameter	Symbol	Values Min.	 Max.	Unit
Power Dissipation	P_D		2000	mW
Forward Current	I_F		800	mA
Pulse Forward Current **	I_{FP}		2000	mA
Reverse Voltage (I_R=10 µA)	U_R		5	V
Reverse Current (U_R=5 V)	I_R		10	µA
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 (t_{max}. 5s)	T_{SLD}		+ 250	°C

***** Operating close to or exceeding these parameters may damage the device
** duty cycle = 1 %, pulse width = 10 µs

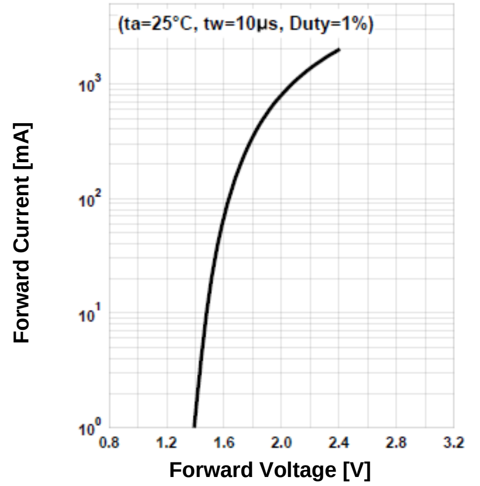
Electro-Optical Characteristics (T_{CASE} = 25°C)

Parameter	Symbol	Conditions	Values Min.	 Typ.	 Max.	Unit
Peak Wavelength	λ_P	I_F=800 mA	760		780	nm
Half Width	λ_Δ	I_F=800 mA		20		nm
Forward Voltage	U_F	I_F=800 mA		2.1	2.5	V
	U_{FP}	I_{FP}=2 A		2.6		
Total Radiated Power	P_O	I_F=800 mA	450	650		mW
		I_{FP}=2 A		1500		
Radiant Intensity	I_E	I_F=800 mA		1400		mW/sr
		I_{FP}=2 A		3200		
Viewing Angle	$2\theta_{1/2}$	I_F=100 mA		20		deg.
Rise Time	t_r	I_F=800 mA		45		ns
Fall Time	t_f	I_F=800 mA		40		ns

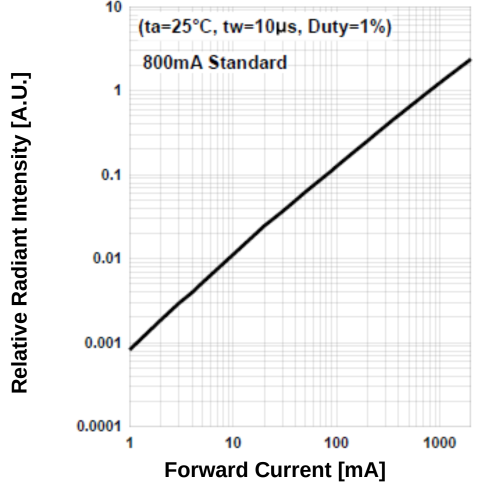
* duty cycle = 1 %, pulse width = 10 µs

Typical Performance Curves

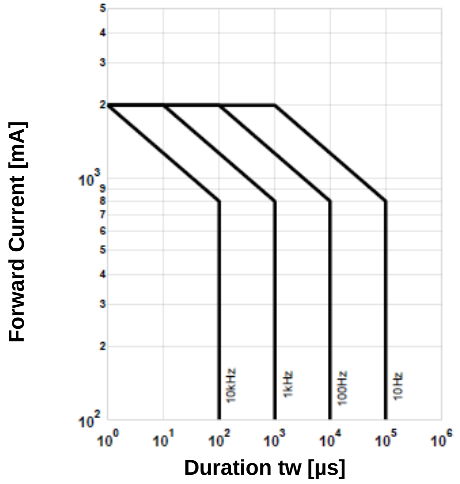
Forward Current vs. Forward Voltage



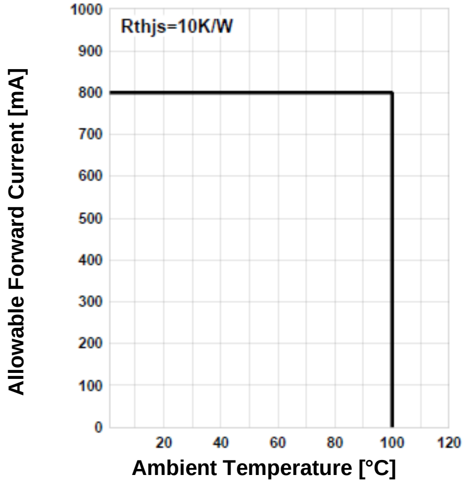
Relative Radiant Intensity vs. Forward Current



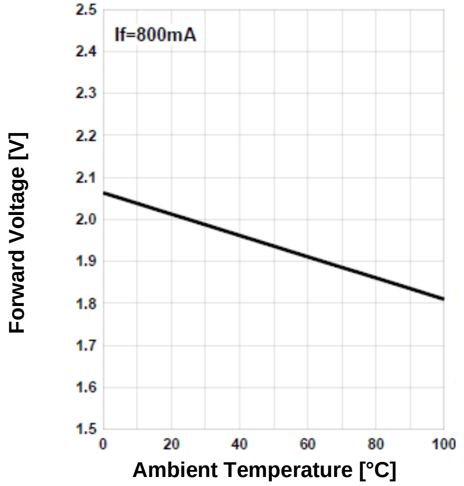
Forward Current vs. Pulse Duration



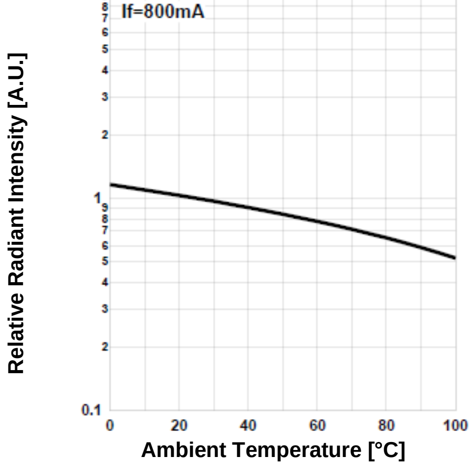
Allowed Forward Current vs. Amb. Temperature



Forward Voltage vs. Ambient Temperature

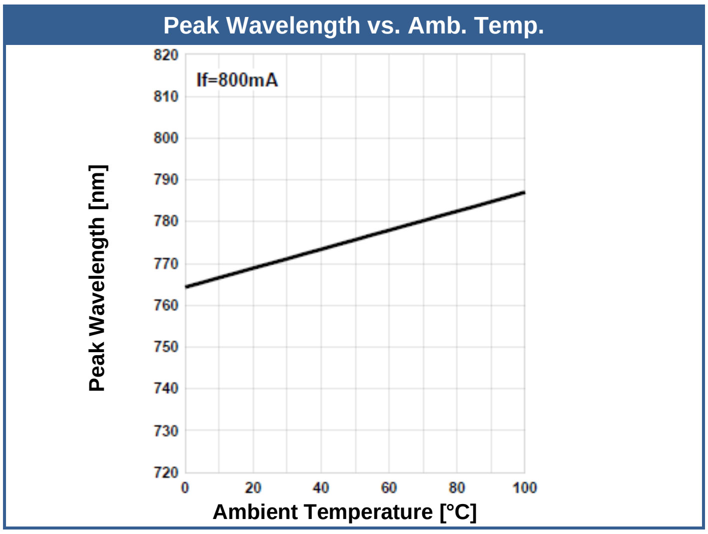


Rel. Radiant Intensity vs. Ambient Temperature

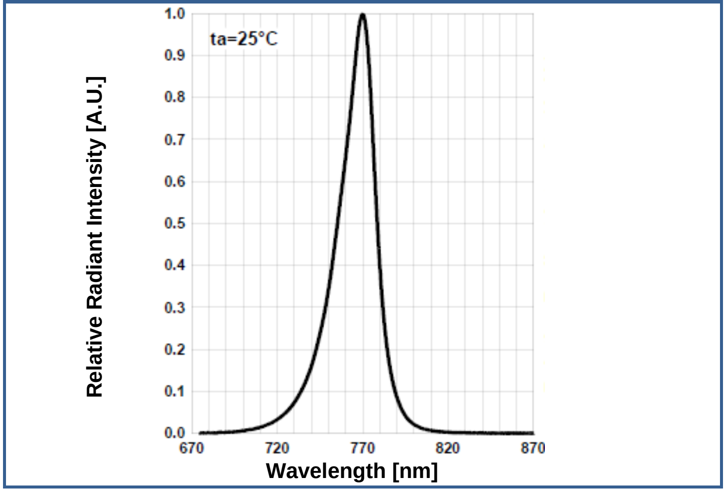


Typical Performance Curves

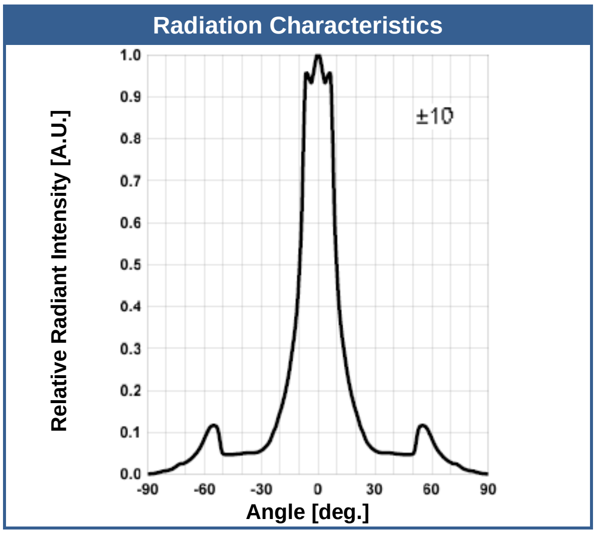
Peak Wavelength vs. Amb. Temp.



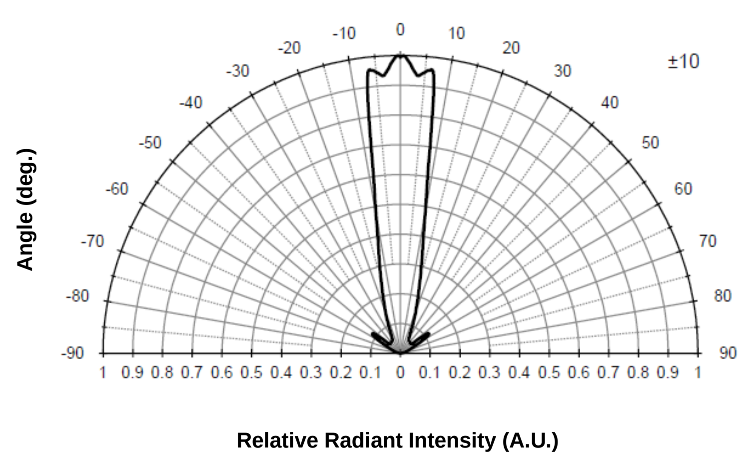
Relative Spectral Emission



Radiation Characteristics

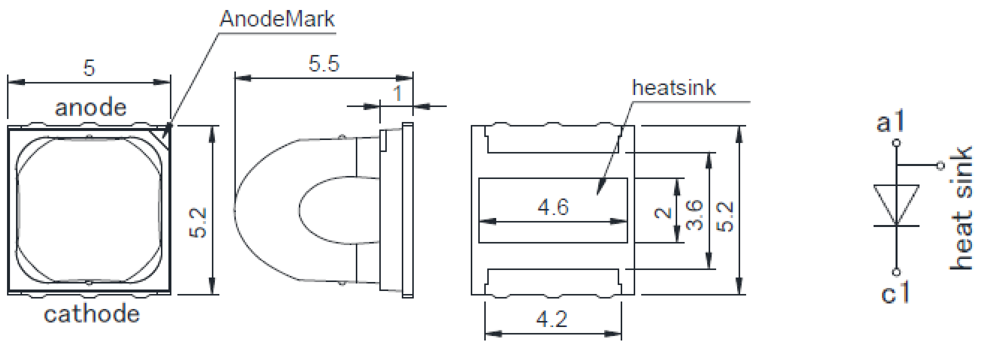


Radiation Characteristics



Outline Dimensions

PA9T



Lead	Function
Pin a1	Anode
Pin c1	Cathode

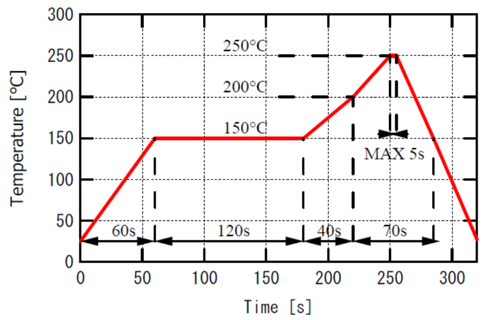
all dimensions in mm

General Notes

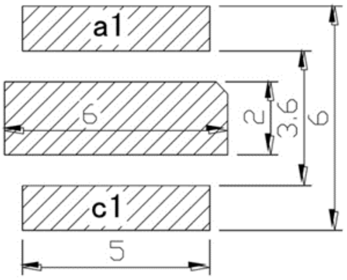
Soldering

- 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

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 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 ºC, <60 % RH**.
- After opening the aluminum bag, please solder the LEDs within **72 hours (floor life)** at **5 – 30 ºC, <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.
