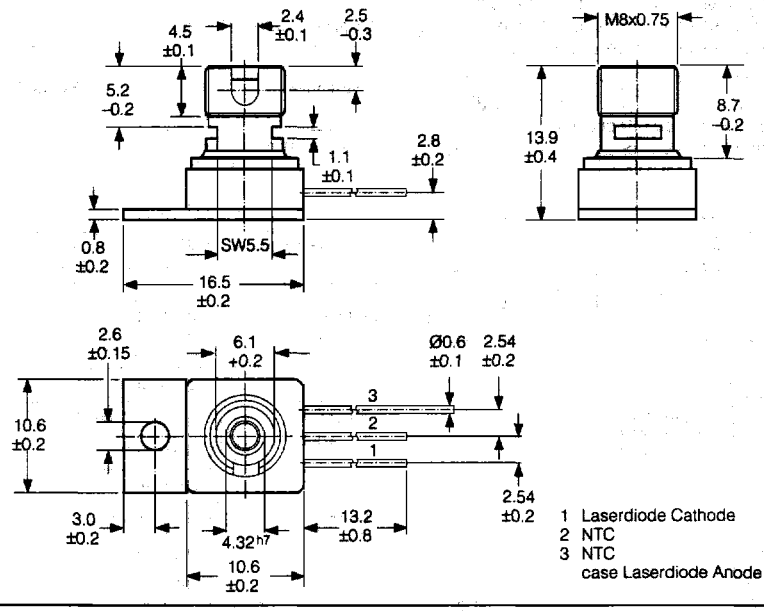
SIEMENS

808 nm SPL 2F81*
850 nm SPL 2F85*
940 nm SPL 2F94*

Laser Diode in TO-220 Package with FC-connector 0.75 W cw (Class 4 Product)

Dimensions in mm



FEATURES

- **Efficient radiation source for pulsed and CW-operation**
- **Reliable InGe(Al)As strained quantum-well material**
- **Small TO-220 package with efficient thermal coupling**
- **Includes thermistor to control temperature/ wavelength**
- **Single emitting area 200 µm x 1 µm**
- **FC-type connector for efficient fiber coupling**

APPLICATIONS

- **Pumping solid state lLasers (Nd: YAG, Yb: YAG, . . .)**
- **Medical**
- **Laser soldering**
- **Energy transmission**
- **Testing and measuring**

NOTES FOR OPERATION

Eye Protection

This laser is a **Class 4 Laser** product. Refer to the relevant safety regulations for protection during handling and operation.

Overload Protection

The specified values are valid as long as the diode has not been overloaded. Voltage spikes from the power supply unit, even when applied for nanoseconds only, may cause irreversible damage to the laser diode. Such spikes may occur when the power supply is turned on or off, or they may reach the laser diode from the line via coupling capacitance of electronically controlled devices.

The power supply should therefore be provided with appropriate protection circuits.

Note

Other wavelengths in the 780 nm to 980 nm range are available upon request.

*** Formerly SFH 487406, SFH 487426, and SFH487446 respectively.**

HANDLING NOTES

1. Package

To avoid electrostatic damage, it is recommended to observe the same rules as for handling MOS-devices.

2. Mechanical attachment

2.1 Mounting hole (suitable for M 2.5)
Because of the good thermal conductivity of the TO 220 base plate (copper), the heat loss is properly dissipated even if the component is attached on one side only. Some mounting techniques are shown below (Fig. 1-3).

2.2 For exact positioning of the TO component and other parts, e.g. lenses, the TO 220 package can be attached with appropriate clamping devices or by screws (max. M2.5).

Figure 1.

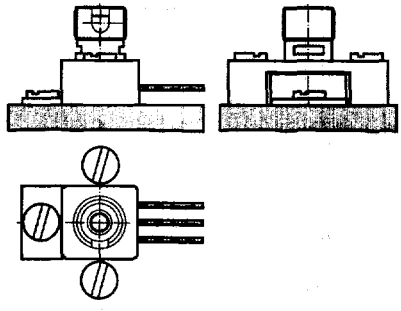


Figure 2.

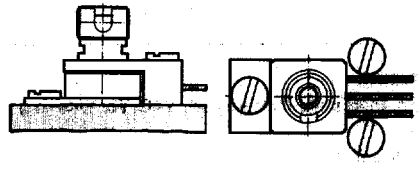
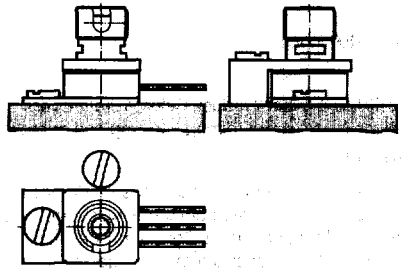


Figure 3.



3. Soldering

When soldering the TO base to a heat sink, do not exceed the following limits:

Max. soldering temperature: 125°C

Max. soldering time: 1 min

Maximum Ratings T_A=25°C

Output Power (continuous wave)[1] (P_{OPT}) ..... 0.8 W
Output Power (quasi-continuous wave)[1] (P_{QCW}) ..... 1.1 W
$t_P \leq 150$ µs, Duty Cycle ≤1%
Reverse Voltage (V_R) ..... 3 V
Operating Temperature (T_{OP}) ..... –10 to +60°C
Storage Temperature (T_{STG}) ..... –40 to +70°C
Maximum Soldering Temperature (T_S), max. 5 s ..... 250°C

1. Optical data refer to output after a fiber of 5 m length (core Ø 125 µm, 0.35 NA, attenuation 8 dB/km).

Characteristics (T_A=25°C)

Parameter		Symbol	Value			Unit
			Min.	Typ.	Max.	
Emission Wavelength[1]		λ_{peak}	803	808	813	nm
			840	850	860	
			935	940	945	
Spectral Width (FWHM)[1]		$\Delta\lambda$		2		nm
Output Power[2]		P_{opt}		0.75		W
Differential Efficiency[2]	SPL 2F81, 808 nm	η	0.60	0.70	0.85	W/A
	SPL 2F85, 850 nm		0.60	0.70	0.80	
	SPL 2F94, 940 nm		0.55	0.60	0.70	
Threshold Current	SPL 2F81, 808 nm	I_{th}	0.40	0.45	0.55	A
	SPL 2F85, 850 nm		0.30	0.40	0.50	
	SPL 2F94, 940 nm		0.30	0.35	0.40	
Operating Current[1]	SPL 2F81, 808 nm	I_{op}	1.3	1.5	1.8	A
	SPL 2F85, 850 nm		1.3	1.5	1.8	
	SPL 2F94, 940 nm		1.4	1.6	1.8	
Operating Voltage[1]		V_{op}		2.0		V
Differential Series Resistance		r_s		0.2	0.4	Ω
Characteristic Temperature Threshold[3]		T_0		150		K
Temperature Coefficient of Current		$\partial I_{op}/\partial T$		0.5		%/K
Temperature Coefficient of Wavelength[4]		$\partial\lambda/\partial T$	0.25	0.27	0.30	nm/K
Thermal Resistance, (junction→heat sink)		R_{thJA}		10		K/W
NTC Thermistor				**Typical Values**		
Resistance at room temperature (25°C)		R_{NTC}		10		kΩ

1. Standard operating conditions refer to 0.75 W after 5 m of fiber (core Ø 125 µm, 0.35 NA, attenuation 8 dB/km).
2. Optical power measurements refer to output from fiber.
3. Model for the thermal behavior of threshold current: $I_{th}(T_2)=I_{th}(T_1) \times \exp (T_2 - T_1)/T_0$
4. Depending on emission wavelength.

Optical Characteristics (T_A=25°C)

Figure 4. Radiant power P_{opt} versus (I_F)

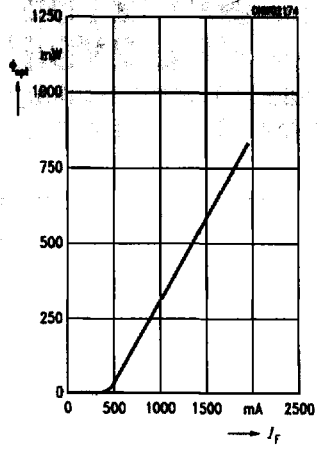


Figure 5. Mode spectrum I_{REL} versus (λ)

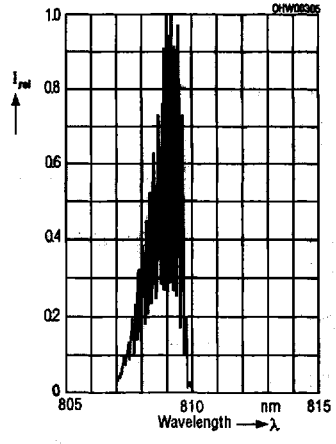


Figure 6. NTC Thermistor R_T=f(T_A)
(P_{opt}=1.0 W)$R_{T25°C}$=10 kΩ ±1%)