MITSUBISHI (OPTICAL DEVICES)

FG-603S-T01

ERBIUM-DOPED FIBER AMPLIFIER

DESCRIPTION

Mitsubishi's FG-603S-T01 is an erbium-doped fiber amplifier (EDFA) used to directly amplify light at 1550nm.

The FG-603S-T01 uses 1480nm laser to optically pump an erbium-doped fiber, which acts as the gain media. The wavelength of the pump light is set for optimal absorption into the erbium-doped fiber by electronically controlling the temperature of the pump laser. The FG-603S-T01 is sufficiently isolated to prevent reflection back to the user's external optical transmitter and to prevent stimulated emission (lasing) from occurring internally.

FEATURES

- Flat gain profile from 1530nm to 1560nm
- High output power (+13dBm)
- Low noise figure (6dB)
- Isolated input and output ports
- Wide operating temperature range
- Built in pump laser control circuit
- Built in output power monitor circuit
- Built in shutdown circuit

APPLICATION

Long-haul telecommunications

Analog transmission systems

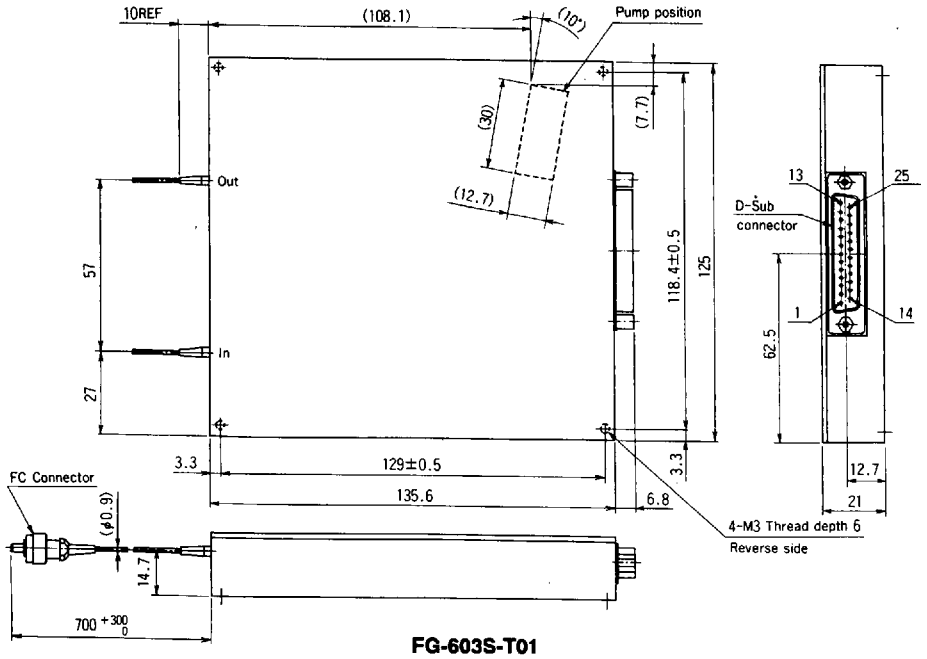
ABSOLUTE MAXIMUM RATINGS (Tc = 25℃)

Parameter	Symbol	Rating			Unit
		Min.	Typ.	Max.	
Power supply voltage	Vcc	0	–	+6	V
Power supply voltage	VEE	0	–	−6	V
Operating case temperature (Note 1)	Tc	0	−25	65	℃
Storage temperature	Tstg	−40	–	65	℃

Note 1. The body never exceeds the maximum value specified above

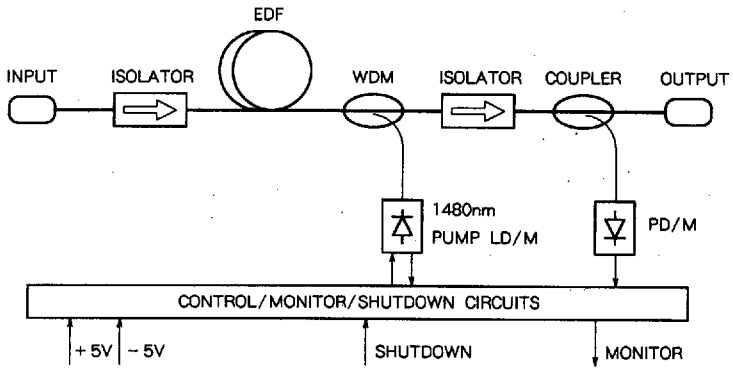
OUTLINE DIAGRAM

(Unit : mm)



FG-603S-T01

BLOCK DIAGRAM



CHARACTERISTICS (Tc = 0~65℃, unless otherwise noted)

(1) OPTICAL CHARACTERISTICS

Parameter	Symbol	Test conditions		Limits			Unit
				Min.	Typ.	Max.	
Signal wavelength range	λ_{OP}	–		1530	1550	1560	nm
Input signal power	P_{in}	–		−2	–	0	dBm
Pomp center wavelength	λ_P	–		–	1480	–	nm
Output signal power(Note 1)	P_{OUT}	λ_{OP} = 1530~1560nm, P_{in} = −2~0dBm		+11	+12	+13	dBm
Optical return loss (Note 2)	R_L	Input & Output ports		25	–	–	dB
Noise figure	NF	P_{in} = −2dBm	1530nm	–	–	10.0	dB
			1560nm	–	–	6.0	

Note 1. P_{out} = +12dBm(min.), +14dBm(max.) also available
2. Without the insertion loss of the connectors' for measurement.

(2) ELECTRICAL CHARACTERISTICS (Tc = 0~65℃, unless otherwise noted)

Parameter		Test conditions	Ratings	Unit
Pump disable		–	TTL high = Disable	–
Pump bias monitor		–	1 ± 5%	mV/mA
Pump LD temperature monitor		T_{LD} = 25℃	10 ± 5%	mV/℃
Output power monitor		P_{OUT} = 12dBm, λ_{OP} = 1530~1560nm	600 ± 10%	mV
Positive power supply	Voltage	–	+4.75~+5.25	V
	Current	T_{LD} = 25℃, Tc = 25℃	0.1max	A
Negative power supply	Voltage	–	−5.25~−4.75	V
	Current	T_{LD} = 25℃, Tc = 25℃	0.8max	A
		T_{LD} = 25℃, Tc = 40℃	1.5max	
		T_{LD} = 25℃, Tc = 65℃	2.2max	

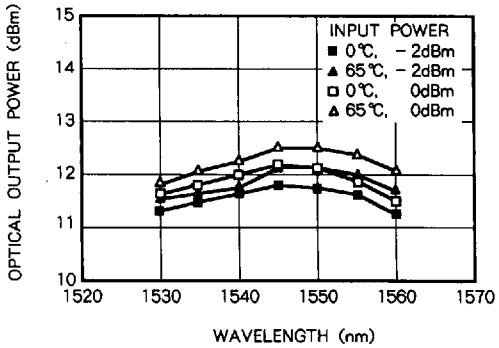
FIBER PIGTAILS

Parameter	Ratings	Unit
Type	SM	–
Mode-filed dia.	10 ± 1	μm
Cladding dia.	125 ± 3	μm
Jacket dia.	0.9 typ.	mm
Min. bending dia.	Φ60 (min.)	mm
Tensile strength	5 (min.)	N
	10 (min.)	sec.

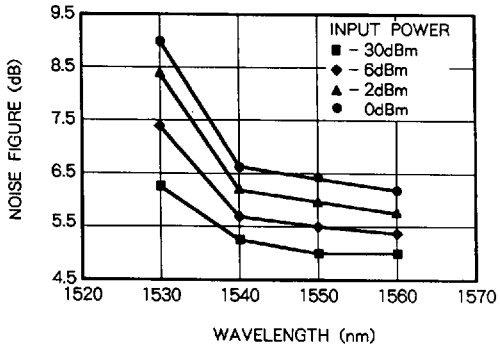
PIN ASSIGNMENT

Pin No.	Parameter	Pin No.	Parameter	Pin No.	Parameter	Pin No.	Parameter	Pin No.	Parameter
①	Pump bias monitor	⑥	– 5V	⑪	NC	⑯	Pump disable	㉑	NC
②	NC	⑦	GND	⑫	– 5V	⑰	NC	㉒	NC
③	Output power monitor	⑧	NC	⑬	GND	⑱	NC	㉓	NC
④	Pump temp. monitor	⑨	NC	⑭	NC	⑲	+ 5V	㉔	NC
⑤	NC	⑩	NC	⑮	NC	⑳	NC	㉕	+ 5V

TYPICAL CHARACTERISTICS



OUTPUT POWER VS. WAVELENGTH



OUTPUT POWER VS. WAVELENGTH