

FU-622SLD-2M7/2M3/2M6/2M4

1.48 μm PUMP LD MODULE WITH SINGLEMODE FIBER (EDFA)

DESCRIPTION

Mitsubishi's FU-622SLD series 1480nm laser diode modules are designed as optical pumping sources for erbium-doped fiber amplifier (EDFA). This module is suitable to a light source for use in co-directional pumped EDFA or counter directional pumped EDFA.

FEATURES

- Laser Diode specifically optimized for pump laser applications
- Emission wavelength is in the 1.48 μ m band
- Built-in thermal electric cooler
- Butterfly package
- With photodiodes for optical output monitoring
- Diodes are hermetically sealed for high reliability

APPLICATION

Optical pump source for erbium-doped fiber amplifier (EDFA)

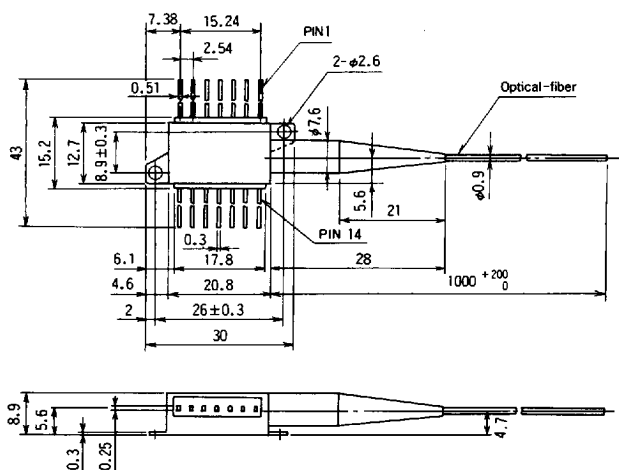
ABSOLUTE MAXIMUM RATINGS ($T_{LD} = 25^{\circ}\text{C}$)

Parameter		Symbol	Conditions	Rating	Unit
Laser diode	Forward current	IF	CW	800	mA
	Reverse voltage	VRL	—	2	V
Photodiode for monitoring	Reverse voltage	VRD	—	20	V
	Forward current	IFD	—	2	mA
Cooler (Note)	Voltage	Vpem	—	4.5	V
	Current	Ipem	—	1.8	A
Operating case temperature		Tc	—	− 20 ~ + 65	°C
Storage temperature		Tstg	—	− 40 ~ + 70	°C

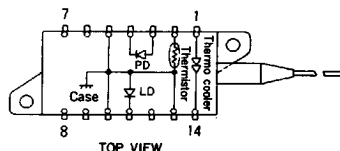
Note. Even if the thermo-electric cooler (TEC) is operated within the rated conditions, uncontrolled current loading or operation without heatsink may easily damage the module by exceeding the storage temperature range. Thermistor resistance should be properly monitored by the feedback circuit during TEC operation to avoid the catastrophic damage.

OUTLINE DIAGRAM

(Unit : mm)



PIN	FUNCTION
1	COOLER ANODE
2	THERMISTER
3	PD ANODE
4	PD CATHODE
5	GND
6	NC
7	NC
8	NC
9	NC
10	GND
11	LD CATHODE
12	NC
13	LD ANODE, GND
14	COOLER CATHODE



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CHARACTERISTICS (T_{LD} = 25 °C, T_c = 25 °C, Unless otherwise noted)

Parameter	Symbol	Test conditions	Limits												Unit
			FU-622SLD-2M7			FU-622SLD-2M3			FU-622SLD-2M6			FU-622SLD-2M4			
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Threshold current	I _{th}	CW	—	30	60	—	30	60	—	30	60	—	30	60	mA
Operating current	I _{OP}	CW	—	300	400	—	350	500	—	400	500	—	450	600	mA
Operating voltage	V _{OP}	CW, I _F = I _{OP} (Note 1)	—	1.4	2.0	—	1.4	2.0	—	1.4	2.0	—	1.4	2.0	V
Optical output power from fiber end	P _F	CW, I _F = I _{OP}	70	—	—	80	—	—	90	—	—	100	—	—	mW
Light-emission center wavelength	λ _C	CW, I _F = I _{OP}	1460	1475	1490	1460	1475	1490	1460	1475	1490	1460	1475	1490	nm
Spectral width (RMS)	Δλ	CW, I _F = I _{OP}	—	10	20	—	10	20	—	10	20	—	10	20	nm
Tracking error (Note 2)	E _r	T _C = - 20~+ 65 °C, APC, ATC	—	0.3	—	—	0.3	—	—	0.3	—	—	0.3	—	dB
Differential efficiency	η	—	—	0.26	—	—	0.25	—	—	0.24	—	—	0.23	—	mW/mA
Monitor current	I _{mon}	CW, I _F = I _{OP} , V _{RD} = 5V	0.1	—	1.0	0.05	—	2.0	0.05	—	2.0	0.05	—	2.0	mA
Dark current (photodiode)	I _d	V _{RD} = 5V	—	0.1	1	—	0.1	1	—	0.1	1	—	0.1	1	μA
Capacitance (photodiode)	C _t	V _{RD} = 5V, f = 1MHz	—	10	—	—	10	—	—	10	—	—	10	—	pF

Note 1. I_F = LD forward current

2.
$$E_r = \text{MAX} \left| 10 \cdot \log \frac{P_F}{P_F(25^\circ\text{C})} \right|$$

THERMAL CHARACTERISTICS (T_{LD} = 25 °C, T_c = -20~+65 °C)

Parameter	Symbol	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
Thermistor resistance	R _{th}	T _{LD} = 25 °C	9.5	10	10.5	kΩ
B constant of thermistor resistance	B	—	—	3950	—	K
Cooling capacity	ΔT	T _c = 65 °C	40	—	—	°C
Cooler current	I _{pe}	ΔT = 40 °C	—	1	1.5	A
Cooler voltage	V _{pe}	ΔT = 40 °C	—	2	3	V

OPTICAL-FIBER SPECIFICATIONS

Parameter	Limits	Unit
Type	SM	—
Mode field dia.	10 ± 1	μm
Cladding dia.	125 ± 2	μm
Jacket dia.	0.9	mm