

MITSUBISHI (OPTICAL DEVICES)  
**FU-630SLD-14M2**

**1.48  $\mu\text{m}$  PUMP LD MODULE WITH SINGLEMODE FIBER (EDFA)**

**DESCRIPTION**

Mitsubishi's FU-630SLD series 1480nm laser diode modules are designed as optical pumping sources for erbium-doped fiber amplifier (EDFA). This module is suitable for use in bi-directional pumped EDFA.

**FEATURES**

- Strain-MQW laser diode module specifically optimized for pump laser applications
- Emission wavelength is in 1.48 $\mu\text{m}$  band
- Built-in optical isolator
- Built-in thermal electric cooler
- Butterfly package
- With photodiode for optical output monitor
- Diode are hermetically sealed for high reliability



**APPLICATION**

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

**ABSOLUTE MAXIMUM RATINGS (T<sub>ld</sub>=25°C)**

Parameter		Symbol	Conditions	Rating	Unit
Laser diode	Forward current	I <sub>f</sub>	CW	1000	mA
	Reverse voltage	V <sub>rl</sub>	-	2	V
Photodiode for monitoring	Reverse voltage	V <sub>rd</sub>	-	20	V
	Forward current	I <sub>fd</sub>	-	3	mA
Cooler (Note)	Voltage	V <sub>pem</sub>	-	4.5	V
	Current	I <sub>pem</sub>	-	1.8	A
Operating case temperature		T <sub>c</sub>	-	-20~+65	°C
Storage temperature		T <sub>stg</sub>	-	-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. Thermistor resistance should be properly monitored by the feedback circuit during TEC operation to avoid the catastrophic damage.

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**ELECTRICAL/OPTICAL CHARACTERISTICS** (T<sub>ld</sub>=25°C, T<sub>c</sub>=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Threshold current	I <sub>th</sub>	CW	-	30	60	mA
Operating Voltage	V <sub>op</sub>	CW, I <sub>f</sub> =600mA (Note 1)	-	1.4	2.5	V
Optical output power from fiber end	P <sub>f</sub>	CW, I <sub>f</sub> =600mA	140	-	-	mW
Central wavelength	λ <sub>c</sub>	CW, I <sub>f</sub> =600mA	1460	1480	1490	nm
Spectral width(RMS)	Δλ	CW, I <sub>f</sub> =600mA	-	10	20	nm
Tracking error (Note 2)	E <sub>r</sub>	T <sub>c</sub> =-20~+65°C, APC, ATC	-	0.3	-	dB
Monitor current	I <sub>mon</sub>	CW, I <sub>f</sub> =600mA, V <sub>rd</sub> =5V	0.05	-	-	mA
Dark current (PD)	I <sub>d</sub>	V <sub>rd</sub> =5V	-	0.1	1	μA
Capacitance (PD)	C <sub>t</sub>	V <sub>rd</sub> =5V, f=1MHz	-	10	-	pF

Note 1. I<sub>f</sub>: LD forward current

2. E<sub>r</sub>=MAX|10×log(P<sub>f</sub>(T<sub>c</sub>)/P<sub>f</sub>(25°C))|

**THERMAL CHARACTERISTICS** (T<sub>ld</sub>=25°C, T<sub>c</sub>=-20~+65°C)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Thermistor resistance	R <sub>th</sub>	T <sub>ld</sub> =25°C	9.5	10	10.5	KΩ
B constant of thermistor resistance	B	-	-	3950	-	K
Cooling capacity	ΔT	T <sub>c</sub> =65°C	40	-	-	°C
Cooler current	I <sub>pe</sub>	ΔT=40°C, I <sub>f</sub> =600mA	-	1.0	1.5	A
Cooler Voltage	V <sub>pe</sub>	ΔT=40°C, I <sub>f</sub> =600mA	-	3.0	3.5	V

**OPTICAL FIBER SPECIFICATION**

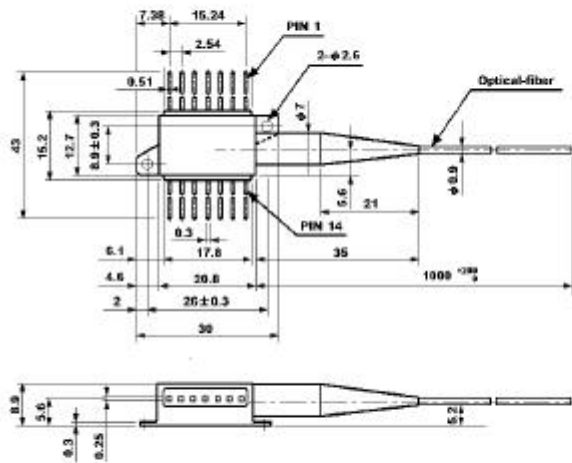
Parameter	Limits	Unit
Type	SM	-
Mode field diameter	9.5±1	μm
Cladding diameter	125±2	μm
Jacket diameter	0.9 typ.	mm

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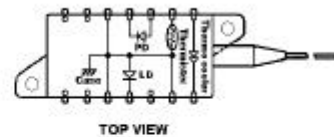
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OUTLINE DIAGRAM

(Unit : mm)



PIN	FUNCTION
1	COOLER ANODE
2	THERMISTOR
3	PD ANODE
4	PD CATHOD
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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