

MITSUBISHI (OPTICAL DEVICES)
FU-630SLD-8M1/10M1/12M1

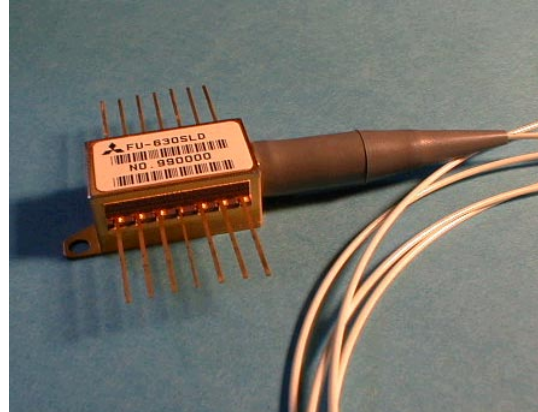
1.48 μm PUMP LD MODULE WITH SINGLEMODE FIBER (EDFA)

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 to a light source for use in bi-directional pumped EDFA.

FEATURES

- MQW laser diode module specifically optimized for pump laser applications
- Emission wavelength is in 1.48 μm 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 pump source for erbium-doped fiber amplifier(EDAF)

ABSOLUTE MAXIMUM RATINGS (T_{ld}=25°C)

Parameter		Symbol	Conditions	Rating	Unit
Laser diode	Forward current	I _f	CW	800	mA
	Reverse voltage	V _{rl}	-	2	V
Photodiode for monitoring	Reverse voltage	V _{rd}	-	20	V
	Forward current	I _{fd}	-	2	mA
Cooler (Note)	Voltage	V _{pem}	-	4.5	V
	Current	I _{pem}	-	1.8	A
Operating case temperature		T _c	-	-20~+65	°C
Storage temperature		T _{stg}	-	-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 ($T_{\text{ld}}=25^{\circ}\text{C}, T_{\text{c}}=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Limits			Unit	
			Min.	Typ.	Max.		
Threshold current	I_{th}	CW	-	30	60	mA	
Operating current	I_{op}	CW	-8M1	-	350	600	mA
			-10M1		450	600	
			-12M1		550	600	
Operating Voltage	V_{op}	CW, $I_{\text{f}}=I_{\text{op}}$ (Note 1)	-	1.4	2	V	
Optical output power from fiber end	P_{f}	CW, $I_{\text{f}}=I_{\text{op}}$	-8M1	80	-	-	mW
			-10M1	100	-	-	
			-12M1	120	-	-	
Central wavelength	λ_{c}	CW, $I_{\text{f}}=I_{\text{op}}$	1460	1475	1490	nm	
Spectral width(RMS)	$\Delta\lambda$	CW, $I_{\text{f}}=I_{\text{op}}$	-	10	20	nm	
Tracking error (Note 2)	E_{r}	$T_{\text{c}}=-20\sim+65^{\circ}\text{C}, \text{APC}, \text{ATC}$	-	0.3	-	dB	
Differential efficiency	η	-	-8M1	-	0.18	-	mW/mA
			-10M1	-	0.18	-	
			-12M1	-	0.23	-	
Monitor current	I_{mon}	CW, $I_{\text{f}}=I_{\text{op}}, V_{\text{rd}}=5\text{V}$	0.05	-	2	mA	
Dark current (PD)	I_{d}	$V_{\text{rd}}=5\text{V}$	-	0.1	1	μA	
Capacitance (PD)	C_{t}	$V_{\text{rd}}=5\text{V}, f=1\text{MHz}$	-	10	-	pF	

Note 1. I_{f} : LD forward current

2. $E_{\text{r}}=\text{MAX}\{10\times\log(P_{\text{f}}(T_{\text{c}})/P_{\text{f}}(25^{\circ}\text{C}))\}$

THERMAL CHARACTERISTICS ($T_{\text{ld}}=25^{\circ}\text{C}, T_{\text{c}}=-20\sim+65^{\circ}\text{C}$)

Parameter	Symbol	Test Conditions	Limits			Unit	
			Min.	Typ.	Max.		
Thermistor resistance	R_{th}	$T_{\text{ld}}=25^{\circ}\text{C}$	9.5	10	10.5	$\text{K}\Omega$	
B constant of thermistor resistance	B	-	-	3950	-	K	
Cooling capacity	ΔT	$T_{\text{c}}=65^{\circ}\text{C}$	40	-	-	$^{\circ}\text{C}$	
Cooler current	I_{pe}	$\Delta T=40^{\circ}\text{C}$		1	1.5	A	
Cooler Voltage	V_{pe}	$\Delta T=40^{\circ}\text{C}$	-8M1	-	2	3	V
			-10M1	-	2	3	
			-12M1	-	3.2	3.5	

OPTICAL FIBER SPECIFICATION

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

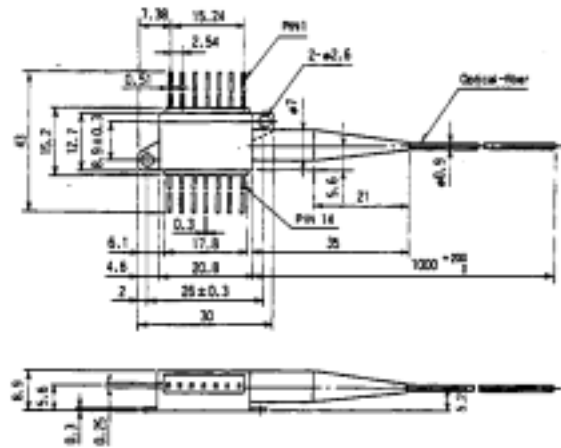
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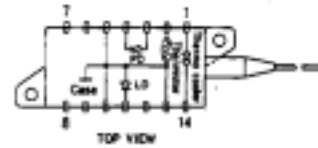
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OUTLINE DIAGRAM

(Unit : mm)



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



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