

## 980nm 400mW Pump Laser Module

### 1. Description:

The 980nm pump module utilizes a planar construction with chip on subcarrier. The high power chip is hermetically sealed in a epoxy-free and flux-free 14-pin butterfly package and fitted with a thermistor, thermoelectric cooler, and monitor diode.

The 980nm pump module uses FBG stabilization to "lock" the emission wavelength. It provides a noise-free narrowband spectrum, even under changes in temperature, drive current, and optical feedback. Wavelength selection is available for applications that require the highest performance in spectrum control with the highest available powers. This module complies described in Telcordia GR-468-CORE requirement.

### 2. Features:

- Kink-free operating power up to 400mW;
- epoxy-free, and flux-free 14-PIN butterfly package with SM Hi1060 or PM fiber;
- Fiber Bragg grating stabilization, Wavelength selection available;
- Integrated thermoelectric cooler, thermistor, and monitor diode.

### 3. Applications:

- Dense wavelength division multiplexing(DWDM) erbium doped fiber amplifiers(EDFA);
- Reduced pump-count EDFA architectures;
- Very long distance cable television(CATV) trunks and very high node count distribution.

### 4. Absolute Maximum Ratings:

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating case temperature	T <sub>CASE</sub>	-5	-	75	°C	-
Storage temperature	T <sub>STG</sub>	-40	-	85	°C	2000hours
LD Forward current	I <sub>F</sub>	-	-	1100	mA	-
LD Reverse current	I <sub>R</sub>	-	-	10	uA	-
LD Reverse voltage	V <sub>R</sub>	-	-	2	V	-
PD Forward current	I <sub>PD</sub>	-	-	-10	mA	-
PD Reverse voltage	V <sub>PD</sub>	-	-	20	V	-
TEC Current	I <sub>TEC</sub>	-	-	2	A	-
TEC Voltage	V <sub>TEC</sub>	-	-	3.5	V	-
Fiber bend radius	-	30	-	-	mm	-
Relative humidity	RH	0	-	95%	-	Non condensing
Lead soldering Time	-	-	-	10	Second	260 °C
Fiber axial pull force	-	-	-	5	N	-
Fiber side pull force	-	-	-	2.5	N	-

**5. Electro-Optical Characteristics(25°C laser temperature):**

Parameters	Symbol	Min.	Typ.	Max.	Unit	Notes
LD Threshold current	$I_{TH}$		90	110	mA	CW
Output power	$P_F$			400	mW	$I_F(BOL)<900mA$
LD Forward current	$I_F$			900	mA	$P_F=Rated\ Power$
Kink free power	$P_{KINK}$	450			mW	$\geq 1.2*Rated\ Power$
Kink free current	$I_{KINK}$	$\geq 1.2*I_F(BOL)$			mA	[1]
LD Forward voltage	$V_F$			2.5	V	$P_F=Rated\ Power$
Center wavelength	$\lambda_C$	973	974	975	nm	Peak, $P_F=Rated\ Power$
		975	976	977		
Peak wavelength turning	$\Delta\lambda_p/\Delta T_{amb}$			0.02	nm/°C	T: FBG Temp.
Spectrum width	$\Delta\lambda$			2	nm	RMS@-13dB
Spectrum stability		-0.5		0.5	nm	$P_F=Rated\ Power, t=60s$
Monitor responsivity	$I_M/P_F$		1	20	uA/mW	$V_{PD}=5V, P_F=Rated\ Power$
Monitor responsivity stability				20%		@All Operating Temp.
Monitor dark current	$I_D$			50	nA	$V_{PD}=5V$
TEC Current	$I_{TEC}$			2	A	$T_{CASE}=75^\circ C$
TEC Voltage	$V_{TEC}$			3.5	V	$T_{CASE}=75^\circ C$
TEC Modual power consumption	P			5	W	$T_{CASE}=75^\circ C$
Power stability >20mW 10-20mW 3.5-10mW				0.2	dB	Peak-to-peak,t=60s, DC to 50kHz sampling, $T_C=25^\circ C$
				0.5		
				1		
Tracking error	TE	-0.5		0.5	dB	$T_C=-5\sim 75^\circ C, Referred\ to\ [2]$
Thermistor resistance	$R_{TH}$	9.5	10	10.5	Kohm	$T_{STG}=25^\circ C$
Thermistor B constant	$B_{TH}$		3900		k	$T_{STG}=25^\circ C$

Notes:

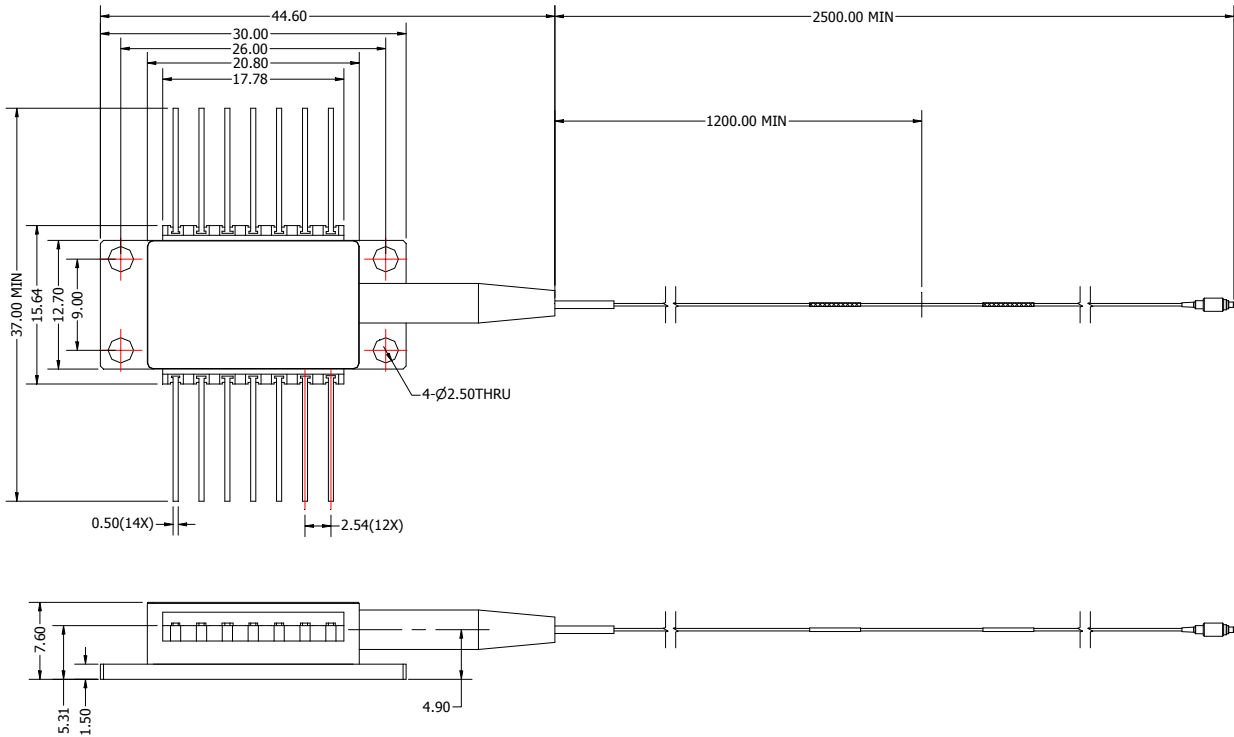
[1] Kink Current is defined as the current which deviation of light versus current slop(dL/dI)from a linear fit is beyond +/-50%, $P_{kink}\geq 1.2*Rated\ Power, I_{kink}\geq I_F(BOL)*1.2$

[2] Tracking error is defined at a given case temperature,it is the change in fibre power,at a constant monitor current, relative to the value measured at case 25°C

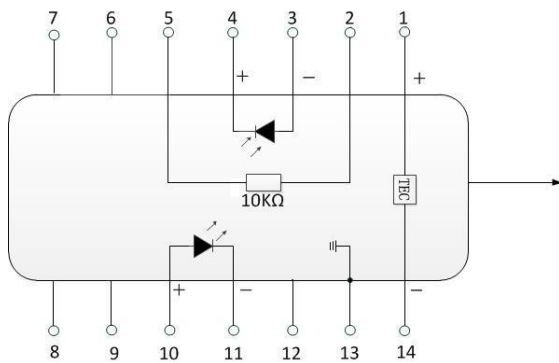
**6. Optical Fiber Specifications:**

Parameters	Description
Fiber type	PM980 fiber
Pigtail type	Bare fiber
Pigtail length	1.5±0.1m
Connector type	Without

**7. Package drawing&PIN-OUT Definition(Unit:mm):**



DIMENSION: MM  
GENERAL TOLERANCE: ± 0.1



PIN	Description	PIN	Description
1	TEC(+)	14	TEC(-)
2	Thermistor	13	Case Ground
3	PD Anode	12	NC
4	PD Cathode	11	SLD Cathode
5	Thermistor	10	SLD Anode
6	NC	9	NC
7	NC	8	NC

**8. Ordering Information:**

BFLD	-XXXF	-XX	XX	-XX	X
Laser	Wavelength	Output power	Fiber type	Connector type	Loose tube
Pump Laser	974: 974nm 976: 976nm	1H: 100mW 2H: 200mW ... 6H: 600mW	SM : Single mode PM : Polarization maintaining	FA : FC/APC SA : SC/APC N0: Null	Null: Bare fiber 1: Loose tube

e.g.:BFLD-976F-4HSM-N0 (Order information: 976nm Pump laser with FBG and 400mW output power and SM bare fiber without connector).

For other customized requirements, please contact: [sales@boxoptronics.com](mailto:sales@boxoptronics.com).