Data Sheet
FOL1402Pxy / 1480nm Pump Laser Module
Date DEC.23.2004 ODC-2A001E

1480nm Pump LDM up to 200mW

Applications

- Pump Source for Er-Doped Fiber Amplifier
  - C- and/or L-Band EDFA
  - Single Channel Amp to DWDM Amp
- Pump Source for Raman Amplifier

Description

- The FOL1402P series has been designed for use in a wide variety of optical amplifier, such as EDFA or Raman Amplifier used in optical transmission systems, especially in dense wavelength-division-multiplexing (DWDM) systems.
- A strained multi-quantum well laser diode chip is integrated with thermo-electric cooler (TEC), thermistor and PIN photodiode in a hermetically sealed 14 pin butterfly package.
- A 2-lens-system couples a round shape light from the laser chip efficiently to the fiber and enables the output power up to 200 mW.
- This laser module complies with telecom requirements described in Telcordia™ GR-468 requirement and manufactured in an ISO™9001 certified production line.

Features

- Rated output power up to 200 mW (CW)
- Widely deployed reliable package design with industry compatible 14 pin butterfly footprint
- Internal Thermo-electric cooler (TEC) and Thermistor for stable operation
- Integrated PIN photodiode for back facet monitor
- Internal optical Isolator (optional)
- Single mode fiber and Polarization maintaining fiber pigtail
- Wavelength stabilization available with external FBG (optional)
- Epoxy free design inside the module for long term reliability

Absolute Maximum Ratings

Parameters	Sym.	Min.	Max.	Unit	Parameters	Sym.	Min.	Max.	Unit
Storage Temperature	Tstg	-40	85	°C	PD Forward Current	IfPD	-	5	mA
Operating Case Temperature	Tc	-20	75[1)]	°C	PD Reverse Voltage	VrPD	-	20	V
LD Forward Current	If	-	1000	mA	TEC Current	Ic	-0.6	2	A
LD Reverse Voltage	Vr	-	2	V	TEC Voltage	Vc	-	4.5	V

1) FOL1402PN series: Max. 70°c

Optical and Electrical Specifications (Sensor Temperature (Ts) = 25°C)

Parameters	Sym.	Min.	Typ.	Max.	Unit	Conditions
Output Power	Pf[2)]				mW	
FOL1402PJX		120	-	-		IfBOL=<500mA, max. ΔT=50°C
FOL1402PJY		130	-	-		
FOL1402PLZ		140	-	-		IfBOL=<600mA, max. ΔT=50°C
FOL1402PLE		150	-	-		
FOL1402PLF		160	-	-		
FOL1402PMG		170	-	-		IfBOL=<700mA, max. ΔT=50°C
FOL1402PMH		180	-	-		
FOL1402PMI		190	-	-		
FOL1402PNJ		200	-	-		IfBOL=<800mA max. ΔT=45°C
Center Wavelength(FP)	λc	1460	-	1490	nm	RMS(-20dB), Rated Power
Center Wavelength(FBG)	λc[3)]	λc-1.5	λc	λc+1.5	nm	RMS(-20dB), Rated Power
Spectral Width(FP)	Δλ	-	-	8	nm	RMS(-20dB), Rated Power
Spectral Width(FBG)	Δλ	-	-	3	nm	RMS(-20dB), Rated Power
LD Operating Forward Voltage	Vf	-	-	2.5	V	Rated Power
LD Forward Current at EOL	IfEOL	-	-	1.2xIfBOL	mA	End of Life
Monitor Current	Im	50	-	1000	μA	VrPD=5V, Rated Power
Monitor Dark Current	Id	-	-	100	nA	VrPD=5V
Extinction Ratio	Re	16	-	-	dB	Type4 and Type6
Isolation	Iso	30	-	-	dB	Type3 and Type4
TEC Spec.	-	Refer to below			-	-
Thermistor Resistance	Rth	9.5	10	10.5	kΩ	Ts=25°C
Thermistor B Constant	Bth	-	3900	-	K	Ts=25°C

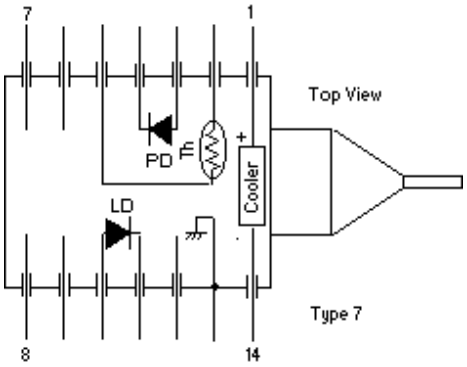
2)Pf: Available Pf may depend upon center wavelength selected.
3)λc: Selected center wavelength from 1420nm to 1510nm available.

Thermo-Electric Cooler Characteristic & Power Consumption

Condition	Max Val.,Ts=25°C,ΔT=45°C,IfEOL			Max Val., Ts=25°C,ΔT=50°C,IfEOL		
Part Number	Itec[A]	Vtec[V]	4)Ptotal[W]	Itec[A]	Vtec[V]	4)Ptotal[W]
PJ* series Pf=120 to 130[mW]	1.1	2.4	3.5	1.2	2.7	4.0
PL* series Pf=140 to 160[mW]	1.2	2.7	4.4	1.3	3.0	5.1
PM* series Pf=170 to 190[mW]	1.4	3.1	5.8	1.5	3.5	6.8
PN* series Pf=200[mW]	1.7	3.6	7.8	-	-	-

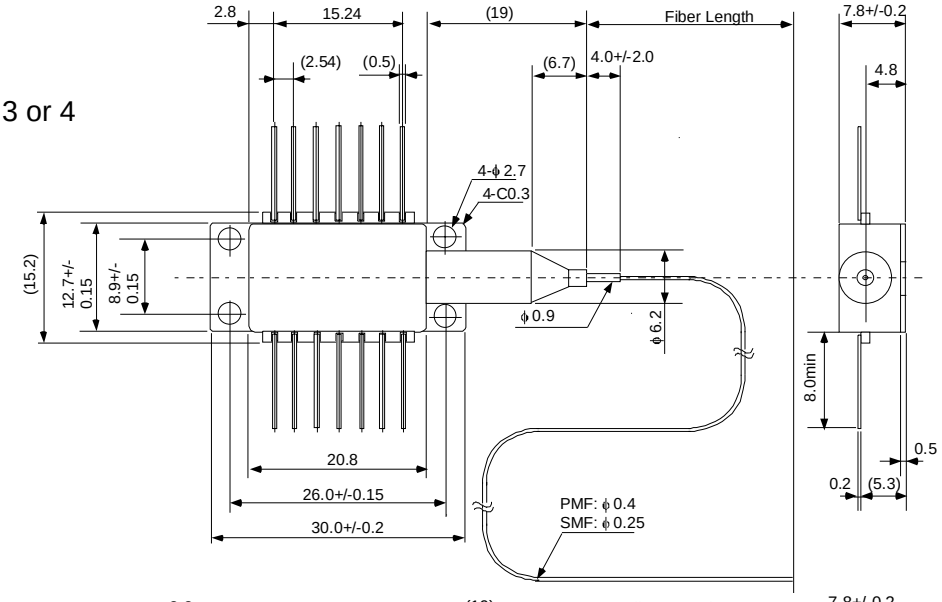
4) Ptotal = Wtec + Wld (Total Power Consumption)

Dimensions & Pin Assignment

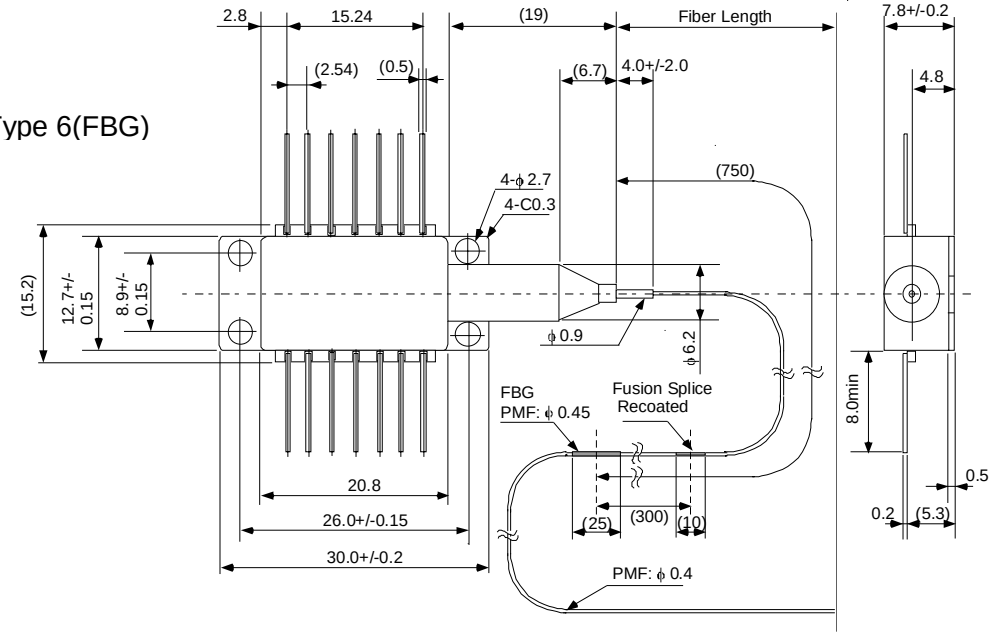


Pin#	Function	Pin#	Function
1	Cooler(+)	8	No Connection
2	Thermistor	9	No Connection
3	PD anode(−)	10	LD anode(+)
4	PD cathode(+)	11	LD cathode(−)
5	Thermistor	12	No Connection
6	No Connection	13	Case GND
7	No Connection	14	Cooler(−)

Type 3 or 4



Type 6(FBG)



Ordering Ioformation

FOL1402P□□-□□7-□

IfBOL(mA)	Pf(mW)
J: <=500	X:120 Y:130
L: <=600	Z:140 E:150 F:160
M: <=700	G:170 H:180 I:190
N: <=800	J:200

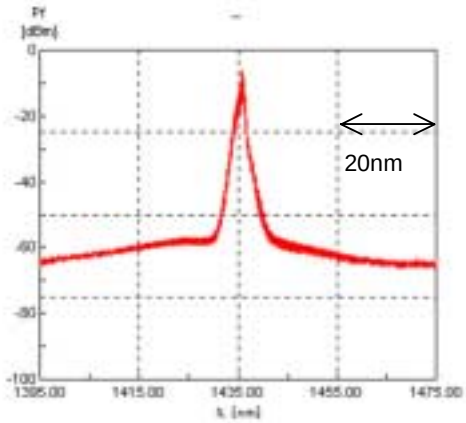
Pigtail Fiber
1:UV coated

Pin Assignment
7:Standard

FBG Wavelength
****

Type
3:SMF pigtail w/ Isolator
4:PMF pigtail w/Isolator
6:PMF pigtail w/FBG

Spectrum (w/FBG)



Safety Information

This product complies with 21 CFR 1040.10 and 1040.11, Class 3b laser product. Invisible laser radiation is emitted from the end of the fiber or connector. Avoid direct exposure to the beam

THE FURUKAWA ELECTRIC CO., LTD.

Furukawa Electric Co, Ltd
Headquarters
2-3 Marunouchi 2-chome
Chiyoda-ku Tokyo
100-8322 Japan
T: 81-3-3286-3253
F: 81-3-3286-3515
www.furukawa.co.jp

Furukawa Electric Europe, Ltd
3rd FL Newcombe House
43-45 Notting Hill Gate
London, UK
T: 44-20-7221-6000
F: 44-20-7313-5310
www.furukawa-fitel.co.uk
sales@furukawa-fitel.co.uk

Furukawa America, Inc.
200 Westpark Drive,Suite 190
Peachtree City, GA 30269
T:770-487-1234
Toll-Free:1-866-GO-FITEL(463-4835)
F:770-487-9910
www.furukawaamerica.com
oesales@FurukawaAmerica.com