

980nm Pump Laser Diode Module



Applications

- Pump Source for Er-Doped Fiber Amplifier
- C- Band EDFA
- Single Channel Amp to DWDM Amp

Product Type : FOL0906 and FOL0908 Series

Descriptions

- The FOL0906 and FOL0908 series has been designed for use in a wide variety of optical amplifier, such as EDFA used in optical transmission systems, especially in dense wavelength-division-multiplexing (DWDM) systems.
- A strained 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 lensed-fiber system enables high coupling efficiency and the output power up to 450 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 450 mW (operating)
- 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
- Wavelength stabilization with external FBG
- PMF pigtail is available.
- Epoxy free design inside the module for long term Reliability
- EU RoHS compliant (Exemption 7b applied)

Absolute Maximum Rating

Parameters	Sym.	Min.	Max.	Unit
Storage Temperature	Tstg	-40	85	°C
Operating Case Temperature	Tc	-20	75	°C
Fiber Output Power	Pf	-	500	mW
LD Forward Current	If			
FOL0906		-	1000	mA
FOL0908		-	1100	
LD Reverse Voltage	Vr	-	2	V
PD Forward Current	IfPD	-	5	mA
PD Reverse Voltage	VrPD	-	20	V
TEC Current	Ic	-0.6	2	A
TEC Voltage	Vc	-	4.5	V

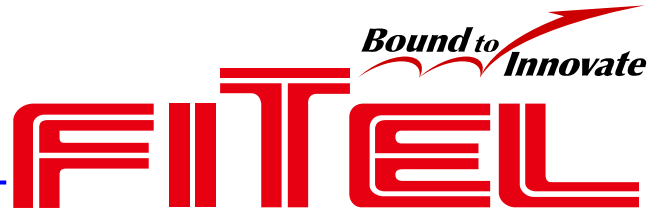
Specifications

(LD Temperature (Ts) = 25°C)

Parameters	Sym.	Min.	Typ.	Max.	Unit	Conditions
Output Power						
FOL0906A23	Pf	230	-	-	mW	IfBOL=<560mA
FOL0906A24		240	-	-		IfBOL=<560mA
FOL0906A25		250	-	-		IfBOL=<580mA
FOL0906A26		260	-	-		IfBOL=<600mA
FOL0906A27		270	-	-		IfBOL=<620mA
FOL0906A28		280	-	-		IfBOL=<620mA
FOL0906A29		290	-	-		IfBOL=<650mA
FOL0906A30		300	-	-		IfBOL=<650mA
FOL0908A31		310	-	-		IfBOL=<680mA
FOL0908A32		320	-	-		IfBOL=<690mA
FOL0908A33		330	-	-		IfBOL=<700mA
FOL0908A34		340	-	-		IfBOL=<710mA
FOL0908A35		350	-	-		IfBOL=<730mA
FOL0908A36		360	-	-		IfBOL=<750mA
FOL0908A37		370	-	-		IfBOL=<770mA
FOL0908A38		380	-	-		IfBOL=<800mA
FOL0908A39		390	-	-		IfBOL=<820mA
FOL0908A40		400	-	-		IfBOL=<850mA
FOL0908A41		410	-	-		IfBOL=<870mA
FOL0908A42		420	-	-		IfBOL=<890mA
FOL0908A43	430	-	-	IfBOL=<910mA		
FOL0908A44	440	-	-	IfBOL=<930mA		
FOL0908A45	450	-	-	IfBOL=<950mA		
Threshold Current	Ith	-	70	85	mA	CW
Center Wavelength	λ_c	λ_c-1	λ_c	λ_c+1	nm	Peak, Rated Power $\lambda_c=974\sim 976\text{nm}$
Spectral Width	$\Delta\lambda$	-	-	2	nm	FWHM, Rated Power
Wavelength Stability (Temp)	$\Delta\lambda/\Delta T$	-	0.01	0.02	nm/°C	T: FBG Temp.
LD Forward Voltage	Vf	-	-	2.5	V	Rated Power
LD Forward Current at EOL	IfEOL	-	-	1.1xIfBOL	mA	End of Life
Kink Free Power	Pkink	1.1xPf	-	-	mW	-
Optical Power stability	ΔPf	-	-	2.0	%	30mW~Pf, 60s peak to peak
Monitor Responsivity	Im/Pf	2	-	20	$\mu\text{A/mW}$	VrPD=5V, Average 0mW ~ Pf
Monitor Dark Current	Id	-	-	100	nA	VrPD=5V

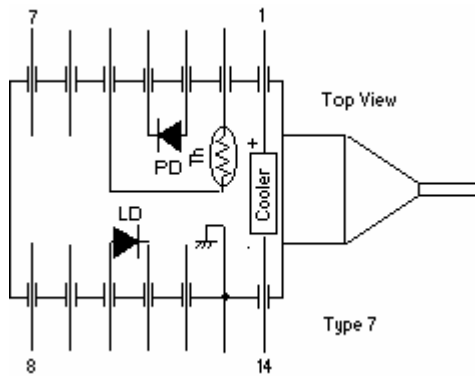
ODC-9H001B

Data Sheet
FOL0906 and FOL0908 Series
 Mar. 2010



Parameters	Sym.	Min.	Typ.	Max.	Unit	Conditions
TEC Current FOL0906 FOL0908	Ic	- -	- -	1.4 1.5	A	max. $\Delta T=50^{\circ}\text{C}$, IfEOL
TEC Voltage FOL0906 FOL0908	Vc	- -	- -	3.2 3.5	V	max. $\Delta T=50^{\circ}\text{C}$, IfEOL
Thermistor Resistance	Rth	9.5	10	10.5	k Ω	Ts=25 $^{\circ}\text{C}$
Thermistor B Constant	Rth	-	3900	-	K	Ts=25 $^{\circ}\text{C}$
Tracking Error	T.E.	-0.5	-	0.5	dB	Tc=-5~75 $^{\circ}\text{C}$ Referred to Tc=25 $^{\circ}\text{C}$

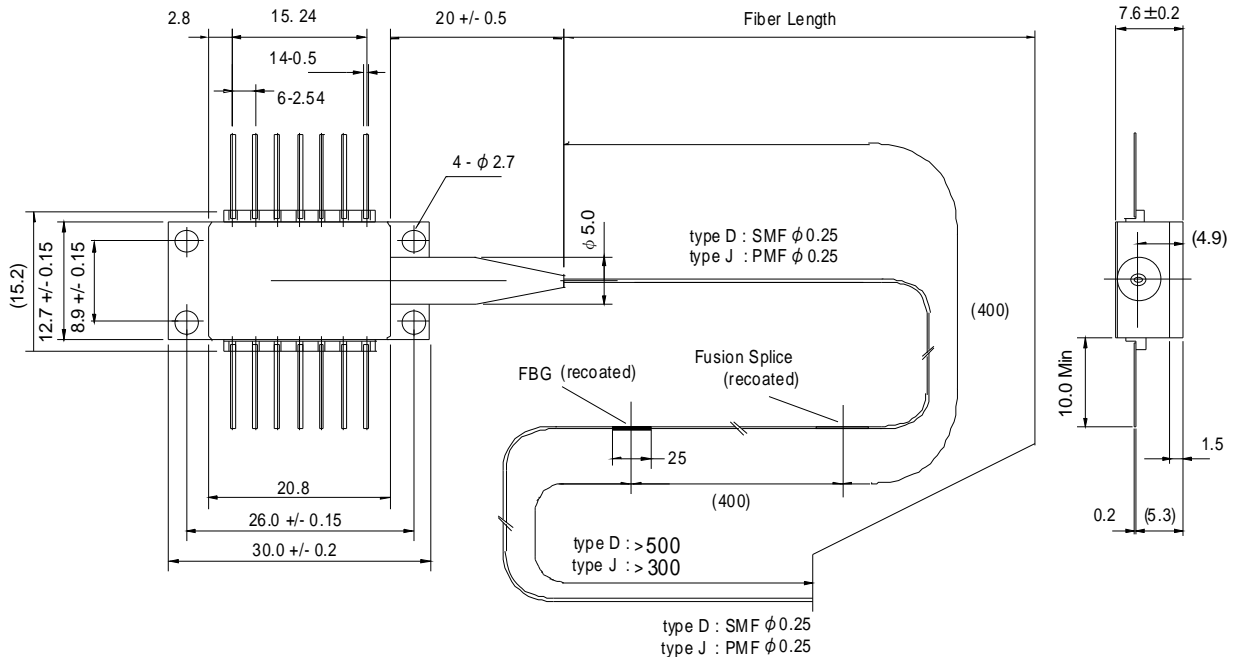
Pin Assignment



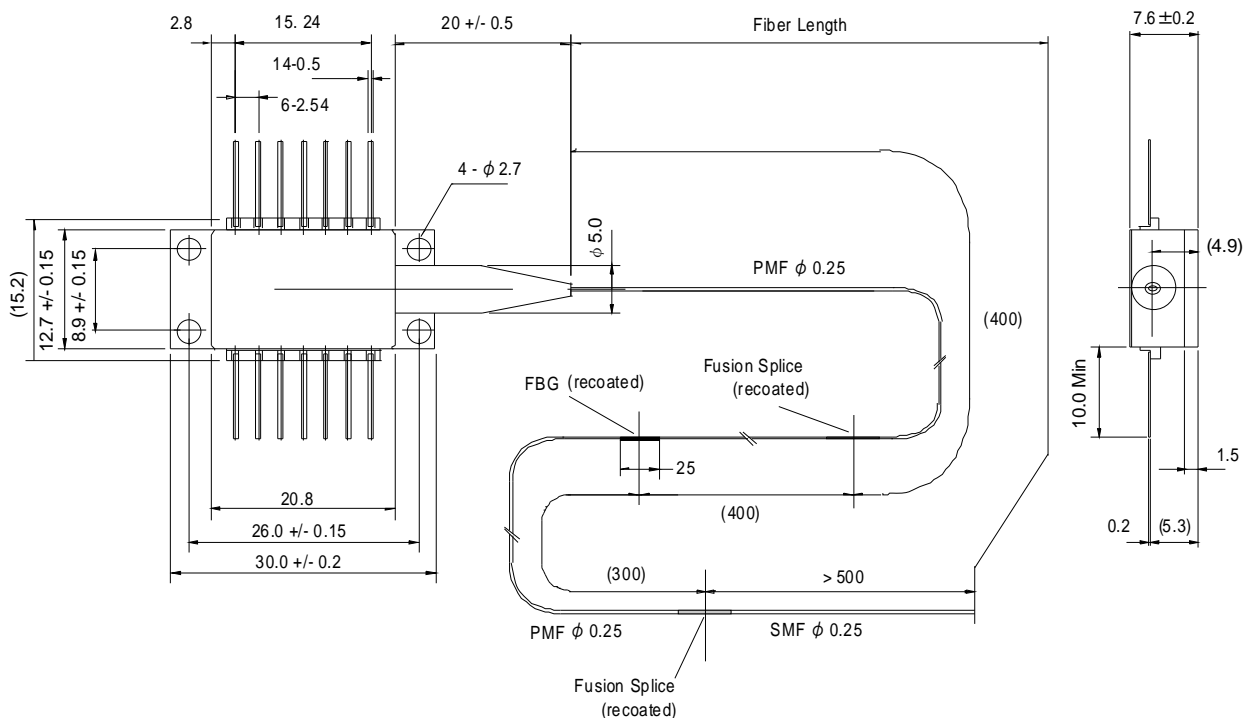
Pin#	Function	Pin#	Function
1	Cooler(+)	8	No Connection
2	Thermistor	9	No Connection
3	PD anode(-)	10	LD anode(+)
4	PD cathode(+)	11	LD cathode(-)
5	Thermistor	12	No Connection
6	No Connection	13	Case GND
7	No Connection	14	Cooler(-)

Dimensions

D17 (FOL0906 only, All SMF) and J17 (All PMF)



H17(PMF+SMF)



Ordering information

FOL 0 9 0 A - 1 7 -

Wavelength ex.976

Output power

FOL0906A23~30

FOL0908A31~45

ex. 250mW : FOL0906A25

400mW : FOL0908A40

D: SMF pigtail w/FBG (Corning™ HI 1060), **FOL0906 only**

H: PMF pigtail w/FBG + SMF interface (Corning™ HI 1060)

J: PMF pigtail 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.



ISO is a trademark of The International Organization for Standardization.

Telcordia is a trademark of Telcordia Technologies, Inc.

Corning is a trademark of Corning Inc.

Furukawa Electric reserves the right to improve, enhance and modify the features and specifications of FITEL products without prior notifications.

FURUKAWA ELECTRIC CO., LTD.

Japan
Head Office
 2-2-3, Marunouchi
 Chiyoda-ku
 Tokyo 100-8322, JAPAN
 Tel: +81-3-3286-3253
 Fax: +81-3-3286-3978
<http://www.furukawa.co.jp>
 Email:comsales@ho.furukawa.co.jp

North America
OFS Fitel, LLC
Specialty Photonics Division
 25 Schoolhouse Road
 Somerset, NJ 08873 USA
 Tel: +1-732-748-7402
 Fax: +1-732-748-7436
<http://www.SpecialtyPhotonics.com>
 E-mail:info@SpecialtyPhotonics.com

Europe
Furukawa Electric Europe Ltd.
 3rd Floor, Newcombe House
 43-45 Notting Hill Gate
 London W11 3FE, UK
 Tel: +44-20-7221-6000
 Fax: +44-20-7313-5310
<http://www.furukawa-fitel.co.uk>
 E-mail:sales@furukawa-fitel.co.uk

ASIA
Furukawa Electric Hong Kong Ltd.
 Suite 2606, Shell Tower,
 Times Square, 1 Matheson Street,
 Causeway Bay, Hong Kong
 Tel: 852-2512-8938
 Fax: 852-2512-9717
<http://www.fehk.com.hk/>
 E-mail: guest@fehk.cn