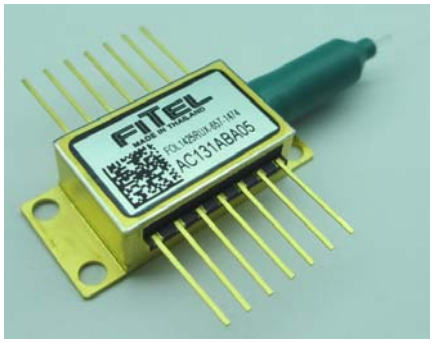
Data Sheet

FOL14xx Series (with FBG)

Mar. 2013

14xx-nm Pump Laser Diode Module (with FBG)



Applications

- **Pump Source for Raman Amplifier**
  - **C/L-band Raman**

Product Type : FOL1404Q/1405R/1425R Series

Descriptions

- The FOL14xx series (with FBG) has been designed for use in a wide variety of optical amplifier, such as 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 360 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 360 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
- Polarization maintaining fiber pigtail
- Wavelength stabilization available with external FBG
- EU RoHS compliant (Exemption 7(c)-1, 13(a) applied)

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Absolute Maximum Rating

Parameters	Sym.	Min.	Max.	Unit
Storage Temperature	Tstg	-40	85	°C
Operating Case Temperature	Tc	-20	70	°C
LD Forward Current 1404Q 1405R 1425R	If	 - - -	 1300 1600 1700	mA
LD Reverse Voltage	Vr	-	2	V
PD Forward Current	IfPD	-	5	mA
PD Reverse Voltage	VrPD	-	20	V
TEC Current	Ic	-1.1	4.5	A
TEC Voltage 1404Q 1405R,1425R	Vc	 - -	 4.2 4.5	V

Specifications

(LD Temperature (Ts) = 25°C)

Parameters	Sym.	Min.	Typ.	Max.	Unit	Conditions
Output Power[1)]	Pf	Table A			mW	
Forward Current	If					
Center Wavelength	λ	λ-1.5	λ	λ+1.5	nm	RMS(-20dB), Rated Power λ=1420~1500nm for FBG
Spectral Width[2)]	Δλ	-	-	3	nm	RMS(-20dB), Rated Power
Forward Voltage	Vf	Table A			V	Rated Power
Forward Current at EOL	IfEOL	-	-	1.2xIfBOL	mA	
Monitor Current 1404Q 1405R,1425R	Im	 50 100	 - -	 1500 2000	μA	VrPD=5V, Rated Power
Monitor Dark Current	Id	-	-	100	nA	VrPD=5V
Extinction Ratio	Re	16	-	-	dB	
TEC Specification	-	Table A				
Thermistor Resistance	Rth	9.5	10	10.5	kΩ	Ts = 25°C
Thermistor B Constant	Bth	-	3900	-	-	Ts = 25°C

1) Pf: Available Pf may depend upon center wavelength selected.

2) λc: Selected center wavelength from 1420nm to 1510nm available.

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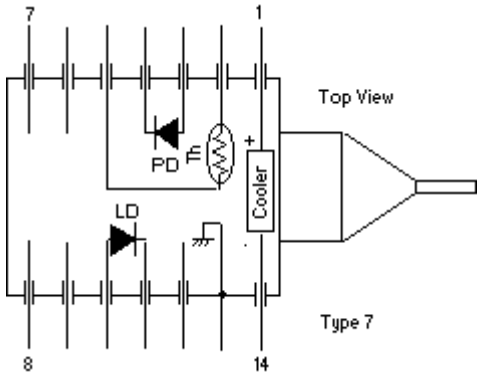
Table A

*:EOL

Part Number	Pf(mW)	If(mA) max	Vf(V) max	Tc(ºC)	Itec(A)* max	Vtec(V)* max	Wtotal(W)* max
FOL1404QPK	210	900	2.5	70	2.7	2.5	8.7
FOL1404QPL	220	900	2.5	70	2.7	2.5	8.7
FOL1404QPM	230	900	2.5	70	2.7	2.5	8.7
FOL1404QQN	240	1000	2.5	70	3.0	2.7	10.5
FOL1404QQO	250	1000	2.5	70	3.0	2.7	10.5
FOL1404QQP	260	1000	2.5	70	3.0	2.7	10.5
FOL1405RSA	270	1200	2.6	70	2.7	3.4	12.3
FOL1405RSB	280	1200	2.6	70	2.7	3.4	12.3
FOL1405RTC	290	1300	2.6	70	2.9	3.7	14.1
FOL1405RTD	300	1300	2.6	70	2.9	3.7	14.1
FOL1405RTV	320	1300	2.6	70	2.9	3.7	14.1
FOL1425RTW	340	1300	2.7	70	2.9	3.7	14.1
FOL1425RUX	360	1400	2.7	70	3.2	4.0	16.5

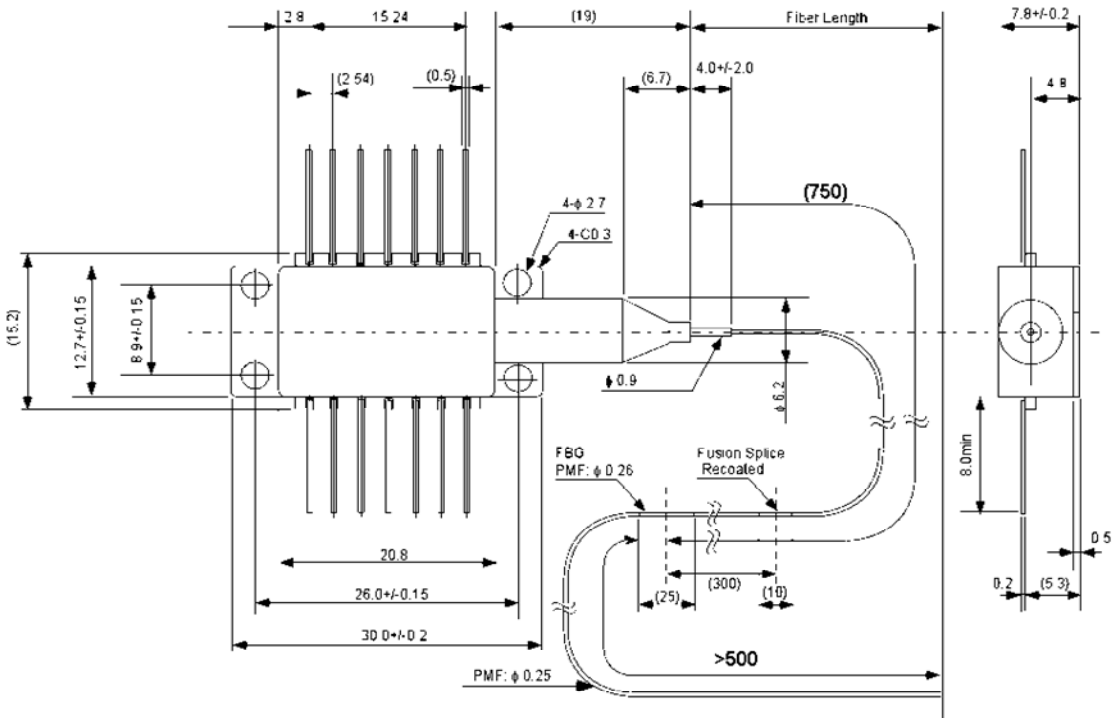
Pin Assignment



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

FOL14xxxxx-657-xxxx (w/FBG)



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Ordering information

FOL 1 4 □□□□□ - 6 5 7 - □□□□

see Table A

Wavelength *ex.1425*

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.

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