

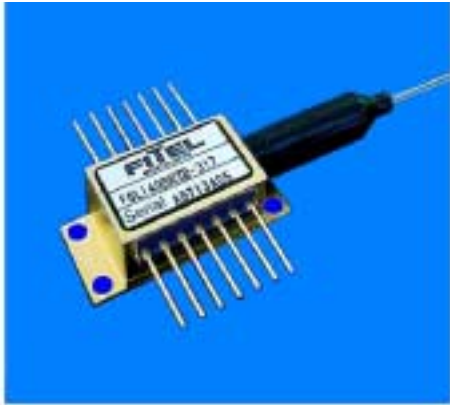
Data Sheet

FOL1405Rxy / 1480nm Pump Laser Module

Date DEC.22.2004 ODC-2C001D



1480nm Pump LDM up to 320mW



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 FOL1405R 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 320 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 320 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, PM fiber only)
- Epoxy free design inside the module for long term Reliability

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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	70	°C	PD Reverse Voltage	VrPD	-	20	V
LD Forward Current	If	-	1600	mA	TEC Current	Ic	-1.1	4.5	A
LD Reverse Voltage	Vr	-	2	V	TEC Voltage	Vc	-	4.5	V

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

Parameters	Sym.	Min.	Typ.	Max.	Unit	Conditions	
Output Power	Pf ¹⁾				mW	IfBOL=<1100mA,	
FOL1405RRO		250	-	-			
FOL1405RRP		260	-	-			
FOL1405RSA		270	-	-			IfBOL=<1200mA,
FOL1405RSB		280	-	-			
FOL1405RTC		290	-	-			IfBOL=<1300mA,
FOL1405RTD		300	-	-			
FOL1405RTV	320	-	-				
Center Wavelength(FP)	λ_c	1460	-	1490	nm	RMS(-20dB), Rated Power	
Center Wavelength(FBG)	$\lambda_c^{2)}$	$\lambda_c-1.5$	λ_c	$\lambda_c+1.5$	nm	RMS(-20dB), Rated Power	
Spectral Width(FP)	$\Delta\lambda$	-	-	8	nm	RMS(-20dB), Rated Power	
Spectral Width(FBG)	$\Delta\lambda$	-	-	3	nm	RMS(-20dB), Rated Power	
LD Operating Forward Voltage	Vf	-	-	2.6	V	Rated Power	
LD Forward Current at EOL	IfEOL	-	-	1.2xIfBOL	mA	End of Life	
Monitor Current	Im	100	-	2000	μ A	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	k Ω	Ts=25°C	
Thermistor B Constant	Bth	-	3900	-	K	Ts=25°C	

1)Pf; Available Pf may depend upon center wavelength selected.
2) λ_c ; Selected center wavelength from 1420nm to 1510nm available.

Thermo-Electric Cooler Characteristic & Power Consumption

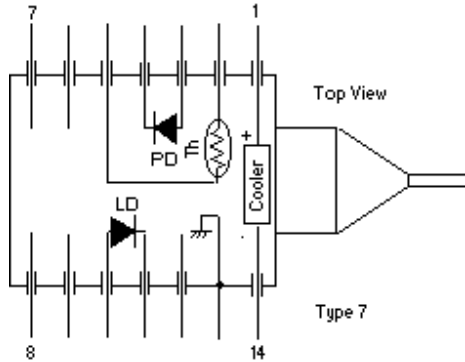
Part Number	Itec[A]	Vtec[V]	4) Ptotal[W]	Condition
RR* series Pf=250 to 260[mW]	2.5	3.2	10.5	Max. Val, Ts=25°C, Δ T=45°C, IfEOL
RS* series Pf=270 to 280[mW]	2.7	3.4	12.3	Max. Val, Ts=25°C, Δ T=45°C, IfEOL
RT* series Pf=290 to 320[mW]	2.9	3.7	14.1	Max. Val, Ts=25°C, Δ T=45°C, IfEOL

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

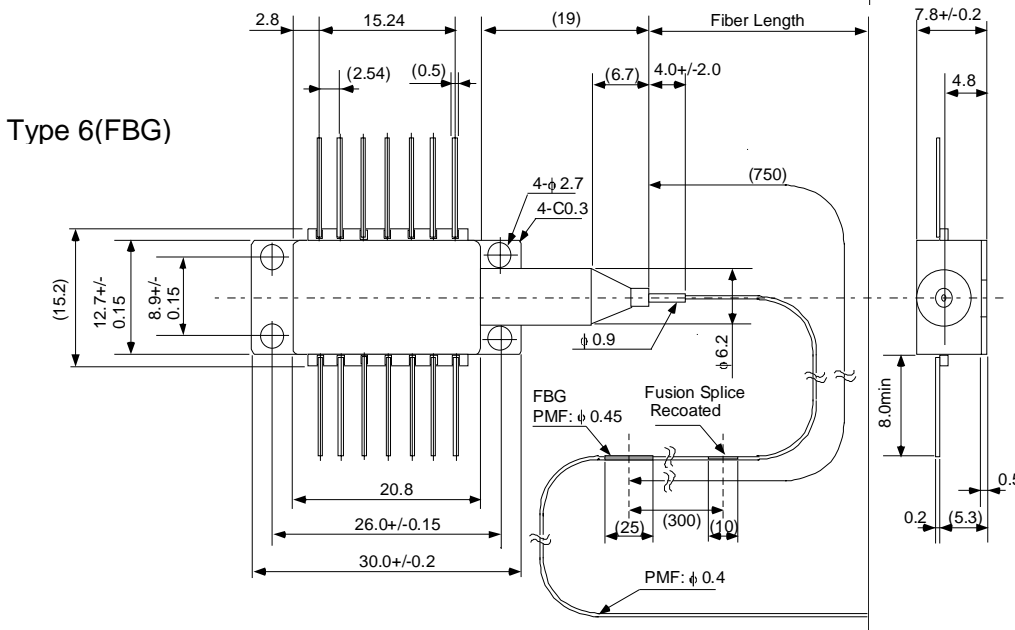
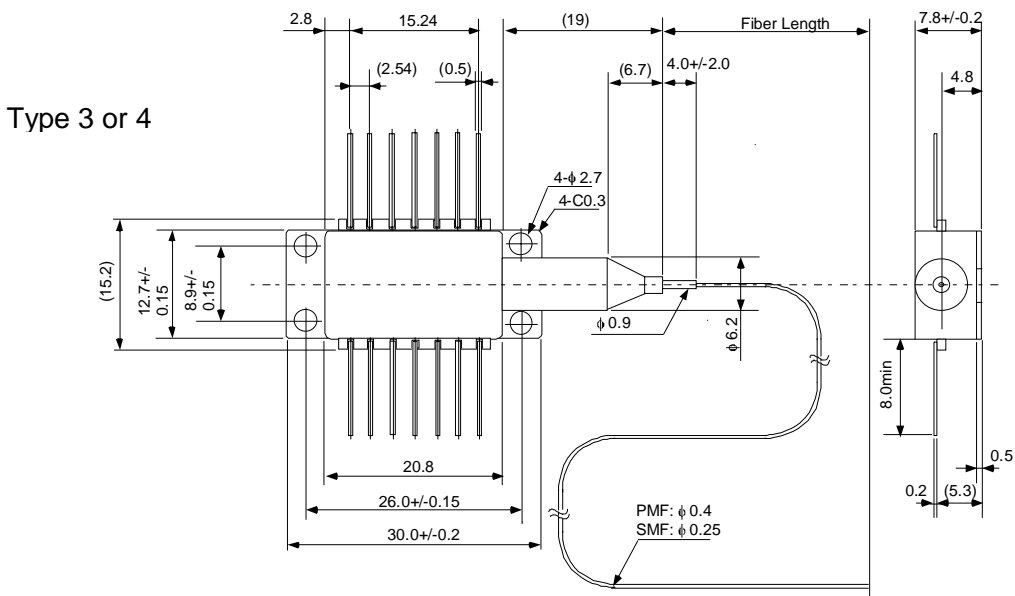
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Dimensions & Pin Assignment



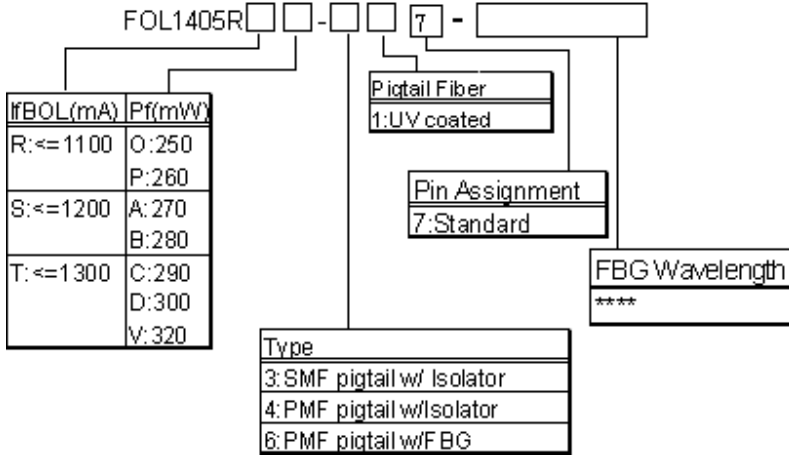
Pin#	Function	Pin#	Function
1	Cooler(+)	8	No Connection
2	Thermistor	9	No Connection
3	PD anode(-)	10	LD anode(+)
4	PD cathode(+)	11	LD cathode(-)
5	Thermistor	12	No Connection
6	No Connection	13	Case GND
7	No Connection	14	Cooler(-)



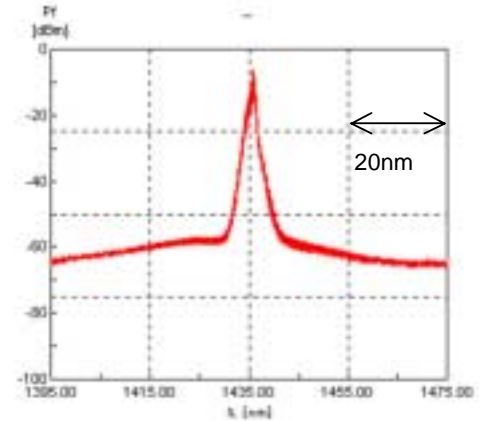
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Ordering Information



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



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