Raman laser FBG fiber Bragg grating

1240/1270/1484nm

Product Description

Efficient multi-stage Raman lasers based on phosphosilicate fibers can be created at different wavelengths. The Raman shift of 1330 cm-1 is approximately three times greater than that of Ge doped fibers. The output emission spectra of two cascaded 1.48 μ m Raman fiber lasers are shown in the figure

Product features

Specially designed for efficient Raman lasers、 with flexible and adjustable key parameters、adaptable to various fiber platforms、high reliability and customization

Part Number

MP-GTL-FBG-RL-880

Application area

Fiber optic communication | biomedical imaging | nonlinear optics and terahertz generation | scientific research and advanced technology

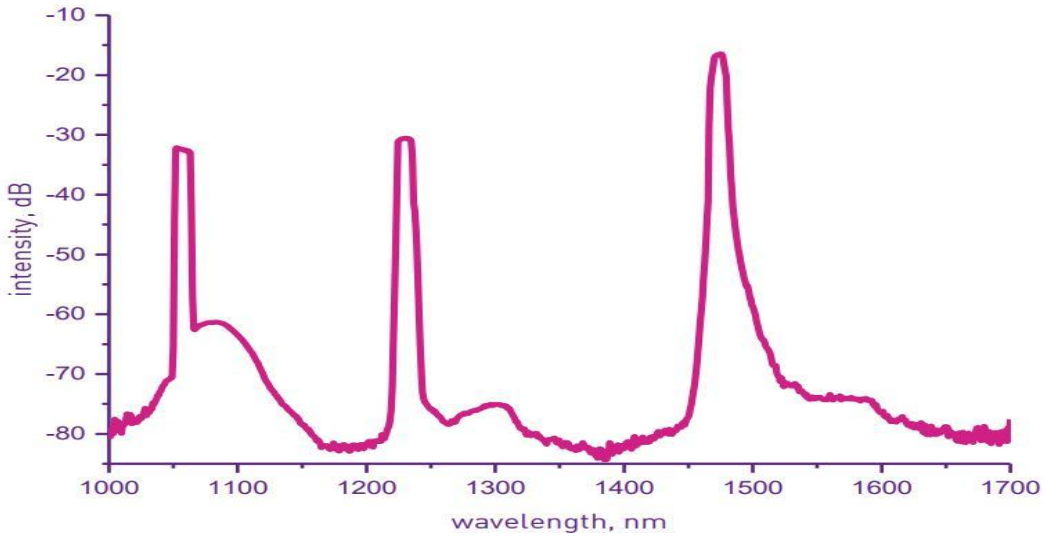
Core parameters

Wavelength Range	Bandwidth	Reflectivity
1240,1270,1484nm	0.15-1.2nm	5-99.9%

General Parameters

FBG Characteristics	MP-GTL-FBG-RL-880	Tolerance/Notes
Wavelength Range nm	1240, 1270, 1484	± 0.1 ~ ± 1 Customized
Fiber type	SM、PM、Double cladding、	Customized

	LMA	
Reflectivity, %	5 ~ 99,9	2 ~ 5 Customized
Bandwidth (FWHM), nm	0.15~ 1,2	Customized
SLSR,dB	~8	Customized
FBG pigtail length, m	⩾ 0.5	Customized
FBG inscription thought the fiber protective coating	Acrylate, polyimide	Customized
FBG Recoating	None, acrylate, polyimide	Customized
Tensile Strength, Kpsi	>100	Customized
Optical Connectors	Bare fiber, FC/APC, LC/APC	Customized



Special application fiber Bragg gratings (FBG) include

Wavelength locker FBG

WDM ITU filter 100/200 GHz FBG

Raman laser FBG

Fabry-Perot interferometer FBG

High-temperature resistant fiber Bragg grating

Radiation-resistant FBG

The application range of the special FBG series:

External reflector for laser diodes

Filtering optical signals

Optical add/drop multiplexers in WDM systems

Measuring minute temperature or strain changes

Evaluating small vibrations or sound signals

Multi-stage Raman lasers

High-temperature applications

Nuclear industry

Aerospace

MP-GTL-FBG-WL-810 Wavelength-Locking Fiber Bragg Grating

Used as an external reflector for laser diodes. With the help of these FBGs, it is

easy to stabilize the wavelength generation of pump semiconductor lasers and single-frequency lasers. Low-reflection gratings with a Full Width at Half Maximum (FWHM) bandwidth of 0.3 nm to 0.8 nm and a reflectivity of 2% to 5% are ideal for stabilizing pump power in lasers. FBGs with a FWHM bandwidth of around 0.1 nm and a reflectivity of 10% to 20% are placed near the semiconductor laser crystal to create single-frequency sources. FORC Photonics offers wavelength-locking FBGs with highly precise wavelength positions (up to ±0.02 nm).

MP-GTL-FBG-WDM-810 Series WDM ITU Filter 100/200 GHz Fiber Bragg Grating

With narrow spectral bandwidth, this FBG is a good element for filtering optical signals. It is widely used as an optical add/drop multiplexer in WDM systems, allowing for high levels of Side-Lobe Suppression Ratio (SLSR) to prevent adjacent channel crosstalk in the system. These FBGs have a flat-top reflection spectrum and steep spectral drop-offs. The non-thermal encapsulation of these FBGs ensures wavelength stability of<0.16 nm in the temperature range from 0° C to +70°C, which is essential for stable operation.

MP-GTL-FBG-RL-880 Raman Laser Fiber Bragg Grating

Can be used to create highly efficient multi-stage Raman lasers based on phosphate-silicate fibers at different wavelengths. Compared to germanium-doped fibers, it allows for about three times the Raman shift. For

many applications that require very precise measurements of small temperature or strain variations using acoustic waves, paired FBGs can enhance sensitivity.

MP-GTL-FBG-FPI-810 Fabry-Pérot Interferometer Fiber Bragg Grating

This is a pair of FBGs that can detect very small phase shifts. By applying electrically, magnetically, or acoustically enhanced coatings on the fiber between the gratings, extremely small changes in these fields can be measured. For sensing purposes and to assess small vibrations or acoustic signals through interference measurement methods, a low-finesse Fabry-Pérot cavity is typically sufficient.

MP-GTL-FBG-HE-810 High-Environment Fiber Bragg Grating

These FBGs can be provided as separate or different wavelength FBG chains, enabling multi-point temperature monitoring. Various types of single-mode (SM) fibers and fiber coatings can be used to write these gratings. High-temperature acrylate-coated fibers are suitable for temperatures up to +150°C. Polyimide or metal (copper, aluminum) coated fibers are used for high-temperature applications up to +300°C and +500°C, respectively. With steel tube protection, our high-environment FBGs can be used at temperatures up to +700°C.

MP-GTL-FBG-RH-880 Radiation-Hard Fiber Bragg Grating

Written with radiation-hard pure quartz core fibers, this FBG is well-suited for applications in the nuclear industry, aerospace, and other radiation-intensive environments.

The following configurations can be modified according to customer requirements to customize the fiber Bragg grating solution:

<table>
<tr><td rowspan="2">Parameter/PN#</td><td>MP-GTL-FBG-WL-810Wavelength Locker FBGs</td><td rowspan="2">MP-GTL-FBG-WDM-810WDMITU Filter100/200GHzFBGs</td><td>MP-GTL-FBG-RL-880</td><td rowspan="2">MP-GTL-FBG-FPI-810Fabry- Perot Interferometer FBGs</td><td>MP-GTL-FBG-HE-810</td><td>MP-GTL-FBG-RH-880</td></tr>
<tr><td>Wavelength Locker FBGs</td><td>Raman LaserFBGs</td><td>HardEnvironment FBGs</td><td>RadiationHardFBGs</td></tr>
<tr><td>Wavelength Range [nm]</td><td>630-2300</td><td>1530-1565 (C-band) or Customized 1510-1580</td><td>1240，1270，1484</td><td colspan="2">600-2300</td><td>1000-2300</td></tr>
</table>

Quick Order Wavelength [nm]]	30 values from 633 to 2300	-	-	-	30 values from 633 to 2300	-
Fiber Type	SM, PM, Customized	SM, Corning SMF-28	SM, PM, Dual-core, LMA, Customized	SM, PM, Dual-core, Radiation-resistant, Customized	SM, PM, Dual-core, LMA, Customized	SM, PM, Dual-core, Radiation-resistant, Customized
Reflectivity [%]	2-5,10-20	10-99, Flat-top typical >99.5	5-99.9	0.5-99		
Bandwidth (FWHM) [nm]	0.3-0.8,0.1-0.15	100/200GHzon ITU For 100GHz:@-0.5dB >0.3nm, @-20dB0.65 nm	0.15-1.2	0.3-0.8	0.15-0.8	0.3-0.5

Distance Between FBGs [mm]	-	-	-	1-200，Customized	-	-
Channel Isolation [dB]	-	-20	-	-	-	-
Insertion Loss [dB]	-	<0.15	-	-	-	-
Cladding Mode Loss [dB]	-	<0.5 (only for cladding mode suppression fiber)	-	-	-	-
Return Loss[dB]	~10	-	~8	-	~8	~8
FBG pigtail length[	⩾0.5，Customized					

m]						
FBG Coating	None, Acrylic, Polyimide, Aluminum, Copper, Customized	None, Acrylic, Polyimide, Customized		None, Acrylic, Polyimide, Aluminum, Copper, Customized.		
Tensile Strength [kpsi]	>100	-	>100			
Thermal Wavelength Stability(0°C-+70°C)[nm]	-	<0.16	-	-	-	-
Optical Connec	Bare Fiber, FC/APC, LC/APC, Customized					

tor						
Dimensi onsLxW xH[mm]	-	66×18×12	-	-	-	-