

Manual Etalon-Based Fiber Optic Tunable Filter



(patent pending)

DATASHEET

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Features

- 1000nm to 2400nm
- 1nm Bandwidth
- 100nm Tuning Range
- SM and PM
- <3dB loss
- Up to 5W Optical Power
- Compact and Low Cost
- Low IL and PDL

Applications

- DWDM networks
- Fiber Sensing
- ASE control
- Tunable Fiber Laser

Based on a proprietary thin film cavity filter technology, we produce Fiber Optic Tunable Filters with central wavelengths of 1060nm to 2050nm. Other center wavelength can also be made. It is tunable continuously over a wide spectral range up to 100 nm with a 1nm peak bandwidth. Longer center wavelength has larger tuning range. The wavelength tuning is made by manually rotating a precise micrometer. Our unique high reliability and low insertion loss design presents a most cost-effective solution for OEM applications from fiber optic networks to fiber sensing interrogation.

The current standard configurations are in volume production thus having low cost benefit. Other wavelength is available that requires extra cost to make the filter.

These grating-based tunable filters block the off-bands.

Specifications

Parameter	Min	Typical	Max	Unit
Center Wavelength	350		2400	nm
Tuning Range ^[1]	-	± 30	± 50	nm
Tuning Resolution	-	0.1	-	nm
Insertion Loss ^[2]	1.5	2	3.5	dB
Bandwidth @-3dB	-	1	1.2	nm
Bandwidth @-20dB	-	10	-	nm
Off-Band Suppression	-	30	-	dB
PDL (SM fiber only)	-	0.15	0.35	dB
PMD (SM fiber only)	-	-	0.5	ps
Polarization Extinction Ratio (PM fiber only)	18	23	30	dB
Return Loss	40	-	-	dB
Optical Power Handling (CW)	Standard version	-	0.5	W
		-	10	W
Operating Temperature	0	20	60	°C
Storage Temperature	-10	-	70	°C

Notes:

[1]. Longer the wavelength, larger the tuning range

[2]. It is defined as the total light coupled out over the filter's spectral passing band. Measured using a broadband light source with integration of the transmission peak. Extra loss can occur if the laser source does not match the filter profile. A special filter can be made to match the application. The smaller the fiber core, the higher the loss. Excluding connector loss

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#)

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Rev 06/17/25

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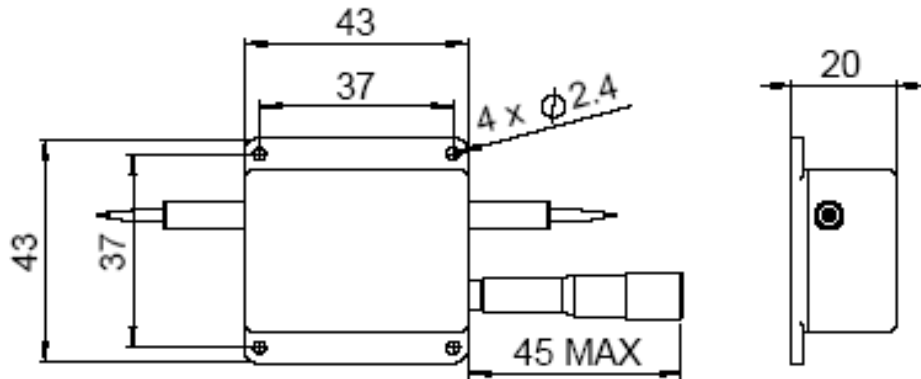
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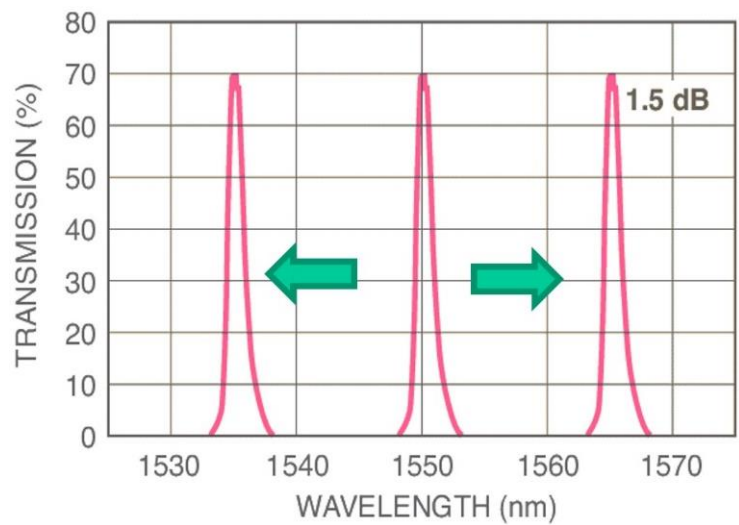
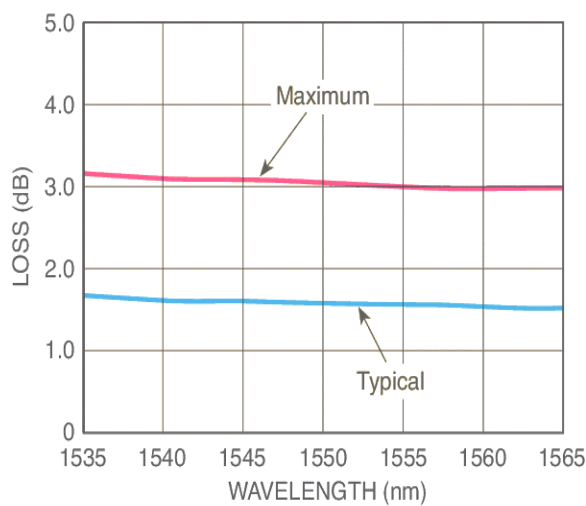
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Mechanical Dimension (mm)



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Typical Transmission Curve



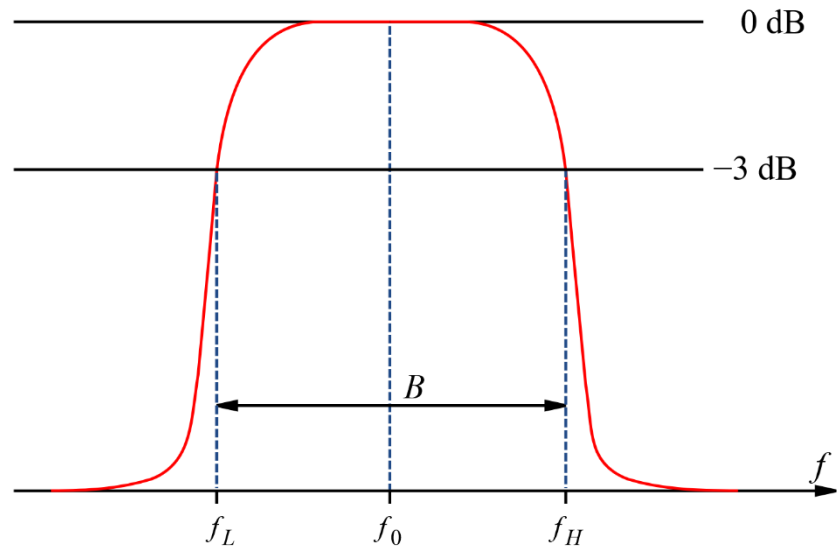
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Bandwidth Definition



Ordering Information

	F1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prefix	Type	Wavelength	Power	PER	Fiber Type	Fiber Cover	Fiber Length	Connector
FOTF-	02* 33* [1]	2100± 60nm = 1	0.3W = 1	Standard = 2	SMF-28 = 1	Bare fiber = 1	0.25m = 1	None = 1
		2295± 55nm = K	5W = 2	26 = 3	HI1060 = 2	900um tube = 3	0.5m = 2	FC/PC = 2
		2195± 55nm = J	10W = 3	28 = 4	PM980 = 3	Special = 0	1.0 m = 3	FC/APC = 3
		2095± 55nm = I	15W = 4	30 = 5	PM1550 = 4		Special = 0	SC/PC = 4
		2050± 50nm = H	20W = 5		PM1310 = 8			SC/APC = 5
		2000± 50nm = 2			Special = 0			ST/PC = 6
		1960± 40nm = 4						LC/PC = 7
		1850± 50nm = A						Special = 0
		1800± 50nm = G						
		1620± 40nm = 7						
		1550± 50nm = 9						
		1550± 40nm = 5						
		1480± 40nm = 8						
		1395± 55nm = F						
		1310± 40nm = 3						
		1230± 50nm = E						
		1145± 45nm = D						
		1130± 40nm = C						
		1060± 40nm = 6						
		1005± 45nm = B						
		Special = 0						

[1]. The 3-port device is a fixed wavelength filter with light input from Port 1. The selected wavelength exits through Port 2, while the rejected light goes to Port 3, located on the side of the housing.

* Old part number

Red Items require NRE of \$1950 to make the filter

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How to test the insertion loss of a tunable optical filter

The filter only works in a specific range. Beyond this range, extra peaks may show. These peaks can be blocked with special order. Please follow these instructions to do an optical insertion loss test:

1. Connect a broadband fiber-coupled laser source to OSA, sweep one time over the specified range of the tunable filter, and then fix the curve in Trace A as a reference.
2. Connect the broadband laser source to the fiberoptic tunable filter fiber as input, then connect the other fiber port of the tunable filter as the output to the OSA.
3. Set OSA Trace B as 'write,' Trace C as 'Calculate: B-A.' Auto sweep Trace C from the specific range. Tune the micrometer to shift the peak at a different wavelength. Use 'Peak search' to record IL at a different wavelength."