



MEMS TUNABLE OPTICAL FILTER

With Control Board

OVERVIEW

sercalo's Tunable Optical Filter is based on MEMS technology and is designed for ITU C and L band with a FWHM bandwidth of 0.6 nm. It can be independently controlled by an UART interface or an I2C/SMBus serial bus and features a user-programmable channel grid.

The highly reliable tuning mechanism uses an integrated micro-mirror with switching time below 50 ms and insertion loss below 3 dB.

The component is designed to conform to Telcordia 1221 reliability standards.

FEATURES

- *37 x 20 x 10 mm³ size*
- *User-programmable channel grid*
- *UART and I²C/SMBus interface*

Ordering Information:



800 Village Walk #316
Guilford, CT 06437
Ph: 203-401-8093
Email orders to: sales@xsoptix.com
Fax orders to: 800-878-7282

APPLICATIONS

- *Reconfigurable Optical Add/Drop Multiplexers*
- *Optical power monitors*
- *Optical sensor interrogators*
- *Low cost spectrometer*
- *Low cost tunable laser*

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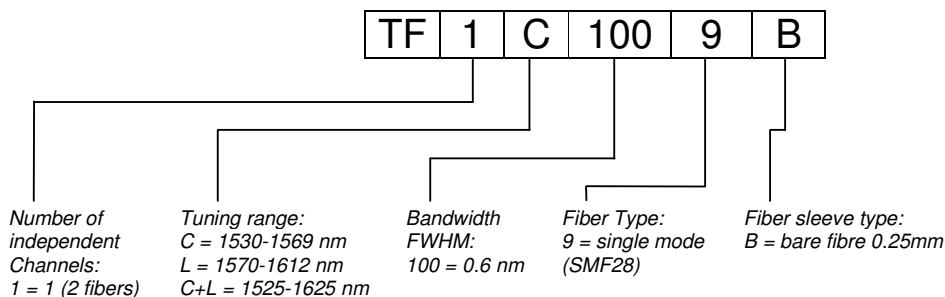
DESCRIPTION

The tunable Filter is composed of an optical system and an electrical driver interface with a size of only 37x20x10 mm³. The device operating principle is depicted in Figure 2. Light from the input fiber is collimated onto a fused silica grating. The grating diffracts the incoming light into its spectrum with a distinct angle for each wavelength. A MEMS mirror reflects the light onto the output collimator, which only couples a small fraction of the spectrum into the output fiber. By modifying the mirror tilt angle user can chose the wavelength of the filter.

TECHNICAL SPECIFICATIONS

	Unit	Min	Typ	Max
Optical Filter				
Tuning range (span)	nm		80	
Central wavelength			1575	
Insertion loss	dB		2.0	3.0
Bandwidth @ 0.5 dB	nm		0.20	
Bandwidth @ 3 dB	nm		0.45	
Bandwidth @ 20 dB	nm		1.2	
Return loss	dB	30		
Wavelength repeatability	nm		0.01	
Wavelength temperature dependence	pm/K		1	5
Switching time	ms		10	50
PDL	dB		0.3	
Durability	cycles		No wear	
Side Mode Suppression Ratio (SMSR)	dB		25	
Integrated Driver				
Supply voltage (Vdd)	V	4.75	5	5.25
Power consumption (idle)	W		0.2	
Power consumption (operating)	W		1	
UART speed	baud	9600		115200
SMBus/I ² C bus speed	kHz			400
Logic level low	V		0	0.3
Logic level high	V	3.0	5	
Package				
Operation temperature	°C	0		70
Storage temperature	°C	-40		70
Size (including control board)	mm		37 x 20 x 10	
Size (only optical engine)	mm		16 x 11.2 x 9.2	
Weight	g		75	

ORDERING INFORMATION



CONNECTOR PINOUT

Pin number	Description
1	Ground (GND)
2	Supply voltage (V _{DD})
3	Reserved ¹
4	UART TX data
5	Reserved ¹
6	UART RX data
7	System reset (/RST)
8	SMBus/I ² C SDA
9	SMBus/I ² C SCL
10	Ground (GND)

¹Let reserved pins unconnected.

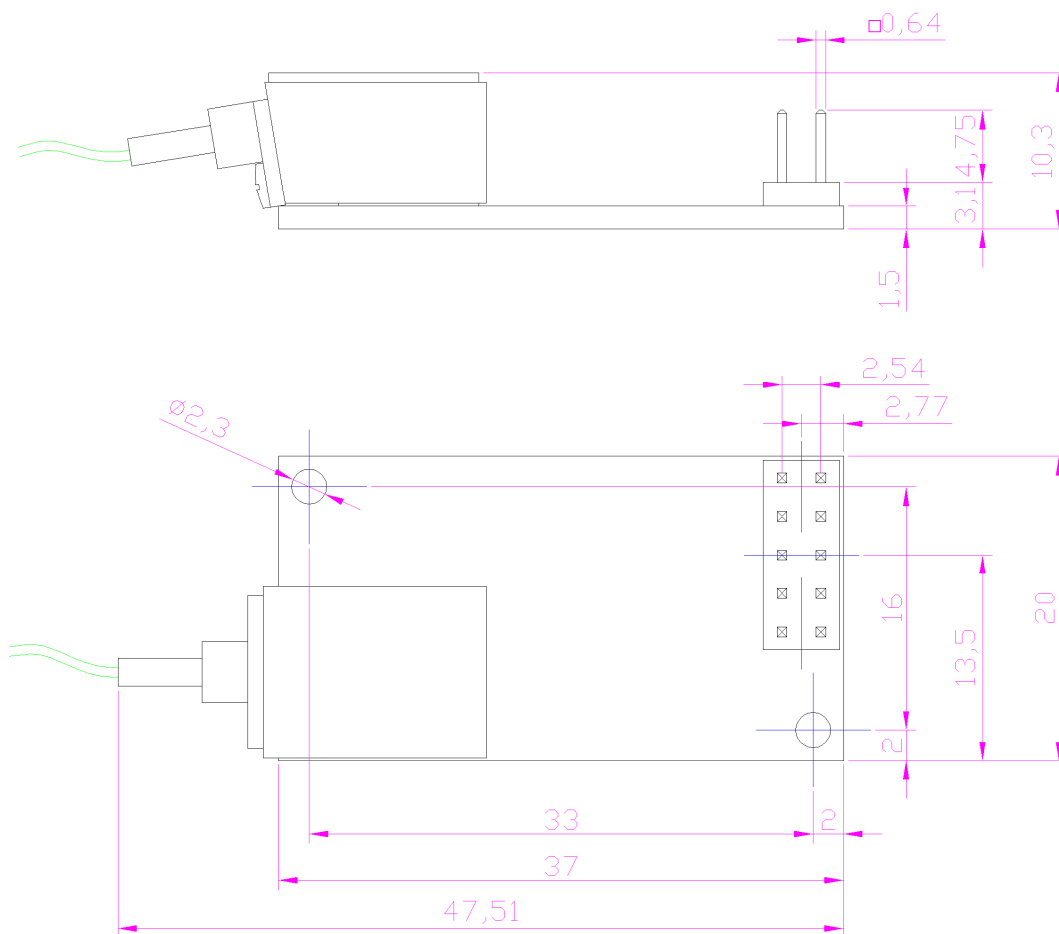


Figure 1 – Device layout (dimensions are in millimeters)

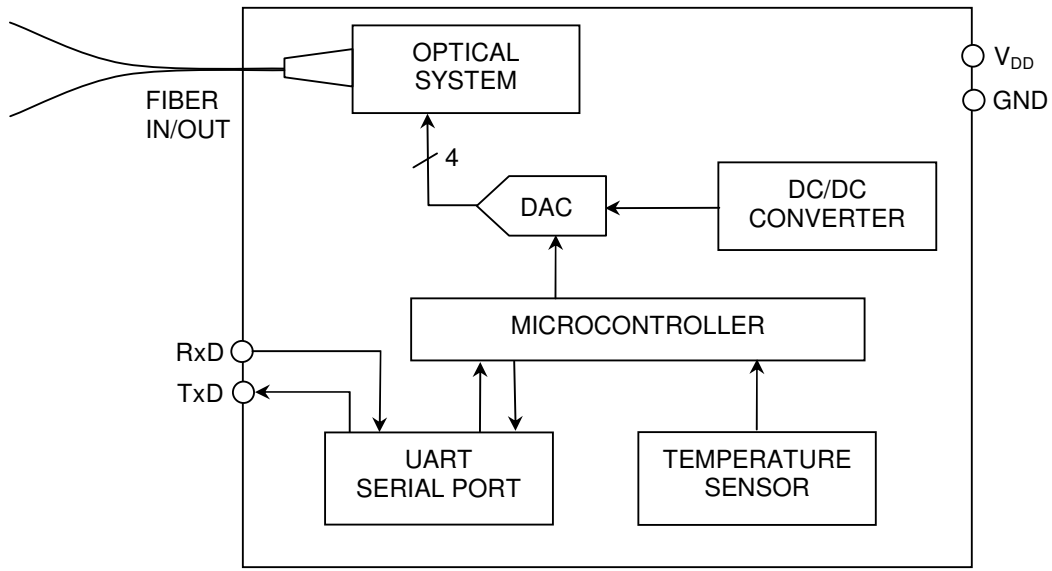


Figure 2 – Functional block diagram

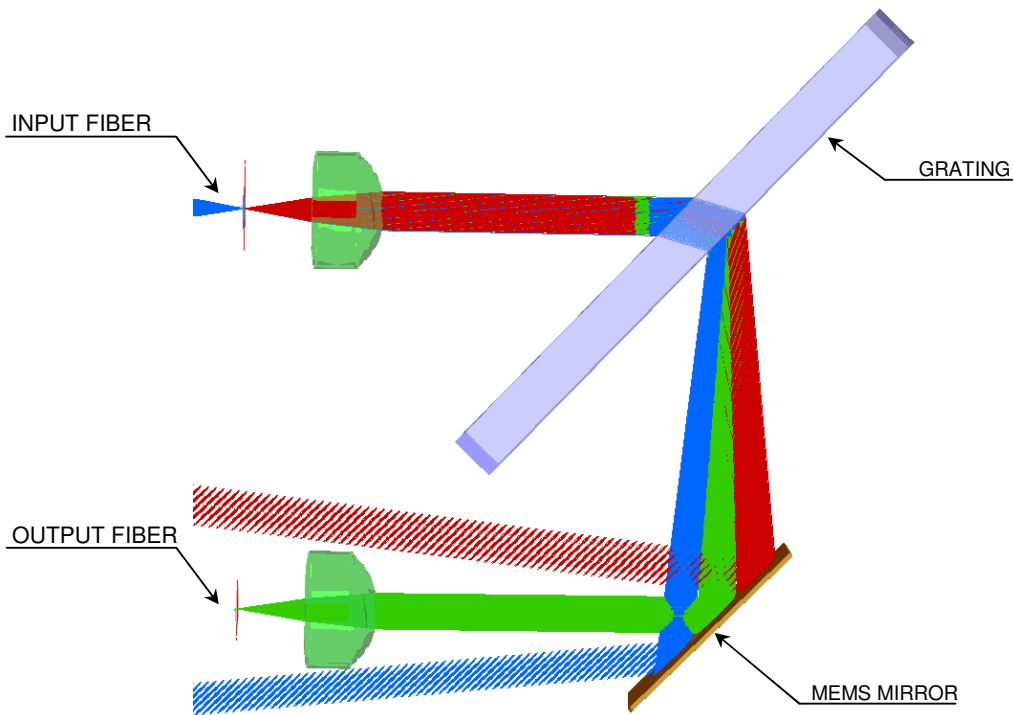


Figure 3 – Tunable filter operating principle

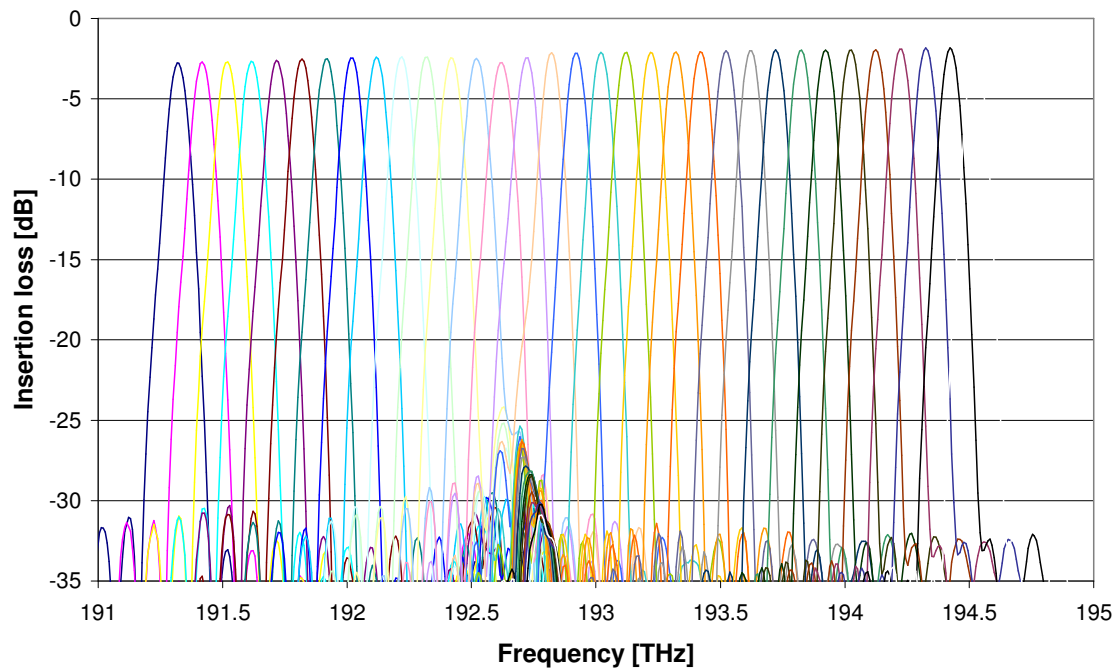


Figure 4 – 100GHz spacing, 32 channels

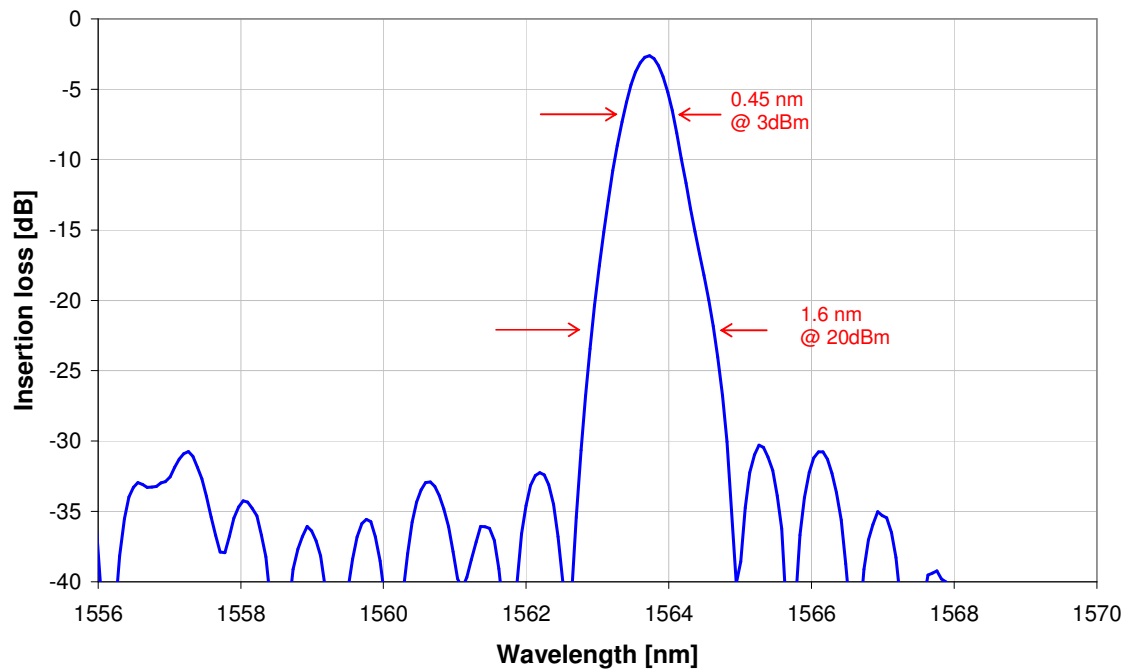


Figure 5 – Typical filter shape