

MEMS™ 1x12 Mini Non-Latching Series Fiber Optic Switch

(Protected by U.S. pending patents)

Product Description

The MEMS™ Mini 1x12 Non-Latching Series Fiber Optic switch connects optical channels by redirecting incoming optical signals into selected output fibers. This is achieved using a patent pending MEMS configuration and activated via an electrical control signal. It uniquely features rugged thermal activated micro-mirror movement instead of rotation and latched to preserve the selected optical path after the drive signal has been removed.

This novel design significantly reduces packaging requirement, offering unprecedented high stability as well as an unmatched low cost.



Performance Specifications

MEMS™ Mini 1x12 Series Switch	Min	Typical	Max	Unit
Operation Wavelength	Singe Band	1260~1360 or 1510~1610		nm
	Dual Band	1260~1360 and 1510~1610		
	Broad Band	1260~1620		
Insertion Loss ^{[1][2]}		1.0	2.0	dB
Wavelength Dependent Loss		0.2	0.3	dB
Polarization Dependent Loss (SM)			0.15	dB
Extinction Ratio (PM)	18	25		dB
Return Loss ^{[1][2]}	50			dB
Cross Talk ^{[1][2]}	50			dB
Repeatability			±0.05	dB
Switching Time		10		ms
Durability	10 ⁹			Cycle
Switching Type		Non-Latching		
Operating Temperature	-5		70	°C
Storage Temperature	-40		85	°C
Optical Power Handling ^[3]		300	500	mW
Fiber Type	SM	SMF-28 fiber or equivalent		
	PM	Panda 250, 400 fiber or equivalent		

[1]. Within operating temperature and SOP.

[2]. Excluding connectors.

[3]. Continuous operation, for pulse operation call.

Applications

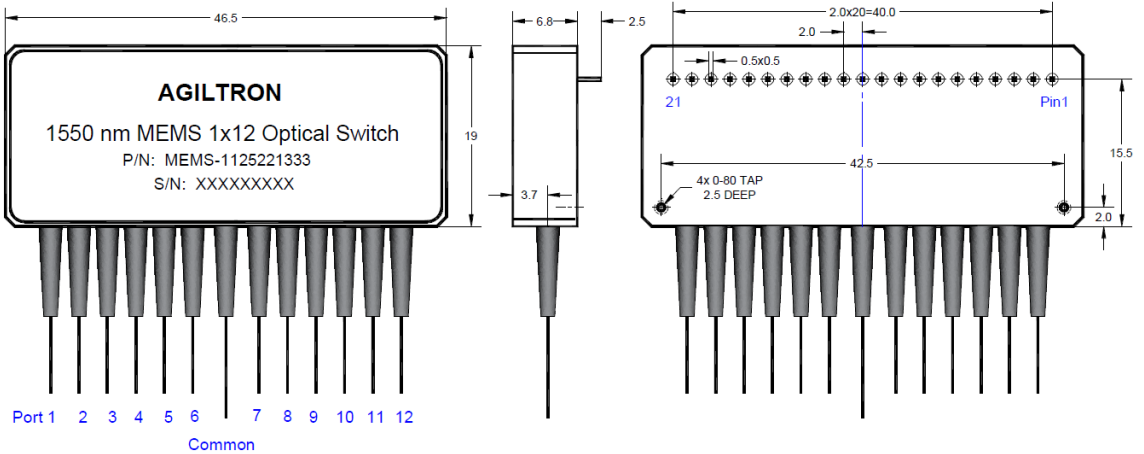
- Channel Blocking
- Configurable Add/Drop
- System Monitoring
- Instrumentation



Revision: 11-13-2020

MEMS™ 1x12 Mini Non-Latching Series Fiber Optic Switch

Mechanical Dimensions (mm)



Port Color	Green	Black	Red	Blue	White	Yellow
Port #	Common	1, 6, 11	2, 7, 12	3, 8	4, 9	5, 10

Electrical Driving Requirements

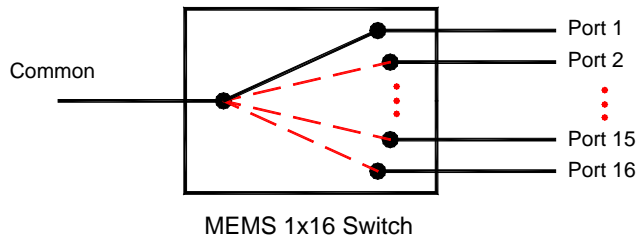
MEMS 1x12 Non-Latching Switch Driving Table

Optical Path	Control Signal Applied on Pin #																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
C ↔ P1	+V		0	0		0	0		0	0		0	0		0	0		0	0		0	0
C ↔ P2	0		+V	0		0	0		0	0		0	0		0	0		0	0		0	0
C ↔ P3	0		0	+V		0	0		0	0		0	0		0	0		0	0		0	0
C ↔ P4	0		0	0		+V	0		0	0		0	0		0	0		0	0		0	0
C ↔ P5	0		0	0		0	+V		0	0		0	0		0	0		0	0		0	0
C ↔ P6	0		0	0		0	0		+V	0		0	0		0	0		0	0		0	0
C ↔ P7	0	0		0	0		0	0		0	+V		0	0		0	0		0	0	0	NC
C ↔ P8	0		0	0		0	0		0	+V		0	+V		0	0		0	0		0	0
C ↔ P9	0		0	0		0	0		0	+V		0	0		+V	0		0	0		0	0
C ↔ P10	0		0	0		0	0		0	+V		0	0		0	+V		0	0		0	0
C ↔ P11	0		0	0		0	0		0	+V		0	0		0	0		+V	0		0	0
C ↔ P12	0		0	0		0	0		0	+V		0	0		0	0		0	+V		0	0

Note : [1].C: Common port. P1: Port 1. [2].+V: 4 ~ 5 VDC, Typical is 4.5 VDC. [3].NC: No electronic connection. [4]. Power Consumption for each chip is about 170 mW.

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Functional Diagram



Ordering Information

	Type	Wavelength	Switch	Package	Fiber Type	Fiber Length	Connector		
MEMS ^[1]	1x9=109	1260-1620=B	Non-Latching=2	Standard=2	SMF-28=1	Bare fiber=1	None=1		
MEPM ^[2]	1x10=110	C+L=2		Special=0	Panda 400=A	900 um tube=3	FC/PC=2		
	1x11=111	1310=3			Panda 250=B	Special=0	FC/APC=3		
	1x12=112	1550=5					SC/PC=4		
	Special=000	1310 & 1550=9					SC/APC=5		
		Special=0					ST/PC=6		
							LC=7		
							Duplex LC=8		
							Special=0		

[1]. MEMS: MEMS 1x12 Mini Single Mode Switch.

[2]. MEMP: MEMP 1x12 Mini PM Switch.

MEMS 1x1, 1x2, ..., Dual 2x2 Fiber Optical Switch

(*SM & MM: 1x1, 1x2, 2x2, Dual 1x1, Dual 1x2, Dual 2x2, Quad 1x1. *PM: 1x1, 1x2)

10⁹ Switching Cycle Test

We have tested MEMS 1x2 switch at the resonant frequency ~300Hz for more than 40 days, as shown in the attachment, which corresponding over 10⁹ switching cycles. The measurements show little changes in Insertion loss, Cross Talk, Return loss ect, all parameters are within our specs.

