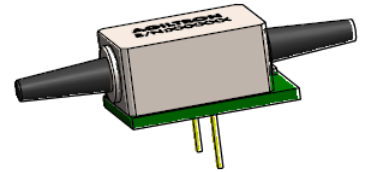


MEMS 1x2, 2x2 Adapt Fiber Optical Switch

(Protected by US Patent 10752492B2)

Product Description

This series switch is designed for ease adoption of new version with pin-pin direct plug-in replacement. Since the new versions are always smaller in size, these switches will not create size compatibility issues. This switch has an adopting PCB underneath with a resistor that can accommodate any driving voltage requirement. The MEMS Series Fiber Optical Switch uses a patented thermal activated micro-mirror, moving-in and -out optical paths, uniquely featuring high stability over a wide temperature range, small size, and exceptionally long operation life. The thermal MEMS is insensitive to moisture and ESD and has no short and long-term drifts, uniquely providing a high-reliability platform for over 25 years of continuous operation. The device also functions as a high-performance variable attenuator in which the output light intensity can be continuously controlled by applying a voltage between the two states.



Performance Specifications

MEMS Ultra-Mini Series Switch	Min	Typical	Max	Unit
Operation Wavelength	Single Mode	1260~1610		nm
	Multimode	810~890 and/or 1260/1360		
Insertion Loss ^{[1], [2]}		0.6	1.0 / 1.2 ^[3]	dB
PDL (Single mode)			0.1	dB
Extinction Ratio	PM fiber	18		dB
Return Loss ^[1]	SM, PM	50		dB
	Multimode	35		
Cross Talk ^[1]	SM, PM	50		dB
	Multimode	45		
Switching Time		5	10	ms
Repeatability			±0.05	dB
Repetition Rate		10		Hz
Durability		10 ⁹		Cycle
Power Consumption (activated)			170	mW
Switching Type		Non-Latching		
Operating Temperature ^[5]		-5	70	°C
Storage Temperature		-40	85	°C
Optical Power Handling		300	500	mW
Package Dimension		10L x 6.6W x 4.6H		mm
Package Weight		1.9		g

[1]. Excluding connectors.

[2]. Multimode IL measured @ Light Source CPR < 14dB.

[3]. Dual band, and Dual 1x2, Full 2x2, Dual Full 2x2..

[5]. Lower temperature version is available, please call us.

Features

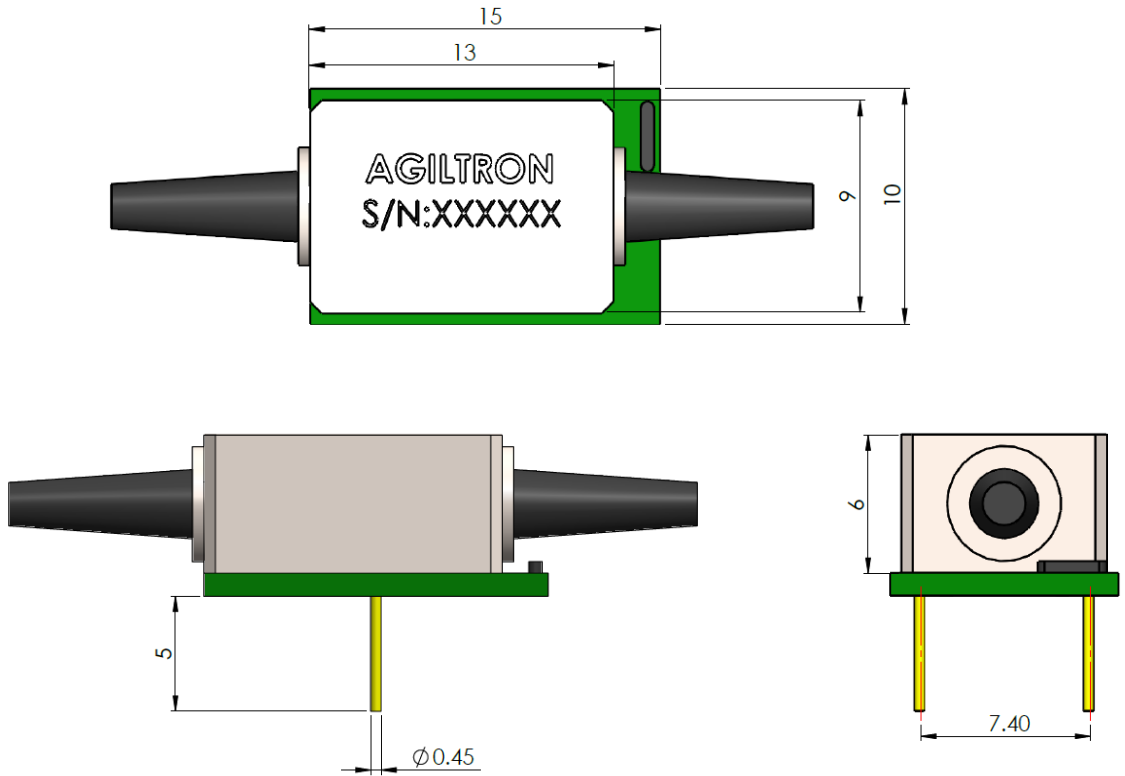
- High Reliability
- Direct DC drive
- Ultra Small
- ESD Insensitive



Revised on 5/24/21

MEMS Ultra-Mini 1x2, 2x2 Fiber Optical Switch

Mechanical Dimension (unit: mm)



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

Electrical Driving Requirements

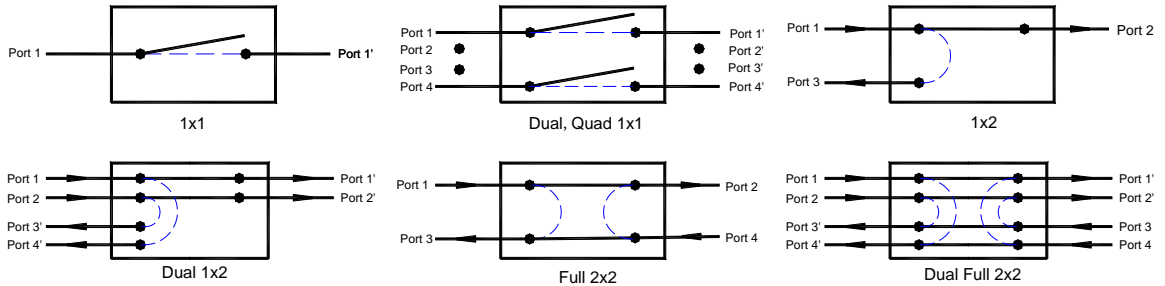
Status	Optical Path				Pin No.		
	1x2	Dual 1X2	Full 2x2	Dual Full 2x2	Pin 1	Pin 2	Pin 3
Status I	Port 1→2	Port 1→1' Port 2→2'	Port 1→2 Port 4→3	Port 1→1' Port 2→2' Port 3→3' Port 4→4'	NC [1]	0	+V [2]
Status II	Port 1→3	Port 1→4' Port 2→3'	Port 1→3 Port 4→2	Port 1→4' Port 2→3' Port 3→2' Port 4→1'	NC	0	0

[1]. NC: No electronic connection. [2]. +V: 3.8~4.5 VDC, Typical is 4.0 VDC. [3]. Power Consumption is about 170 mW.



MEMS Ultra-Mini 1x2, 2x2 Fiber Optical Switch

Functional Diagram



Ordering Information

Type	Wavelength	Switch	Package	Fiber Type	Fiber Length	Connector
MASW ^[1]	1260-1620=B	Non-latching	Standard=1	SMF-28=1	Bare fiber=1	None=1
MADU ^[2]	1060=1	0-5V=3	With 900 um tube=2	MM 50/125=5	900 um tube=3	FC/PC=2
MAQU ^[3]	1310=3	0-4.5V=4	Special=0	MM 62.5/125=6	Special=0	FC/APC=3
	2x2=22	0-4V =5				SC/PC=4
	Special=00					SC/APC=5
	850 =8					ST/PC=6
	1310/1550=9					LC=7
	850/1310=A					Duplex LC=8
	Special=0					MTP=9
						Special=0

- [1]. **MASW**: MEMS Adopt 1x1, 1x2, 2x2 **SWITCH**.
- [2]. **MADU**: MEMS Adopt **DUAL** 1x1, 1x2, 2x2 Switch.
- [3]. **MAQU**: MEMS Adopt **QUAD** 1x1.
- [5]. **N/T**: MEMS U-MINI Non-Latching 1x1 Switch, **N**ormally **T**ransparent.
- [6]. **N/D**: MEMS U-MINI Non-Latching 1x1 Switch, **N**ormally **O**paque.

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, etc., all parameters are within our specs.

