

# MEMS Ultra-Mini 1x2 Fiber Optical Switch >70dB Crosstalk

(Protected by US Patents 10752492, 10730740)

## Product Description

The MEMS Ultra-Mini Fiber Optical 1x2 Switch with high cross talk 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. The Ultra-Mini switches are Telcordia GR1221 qualified.

Agiltron provides driving circuit design and customer integrations. A low cost and convenient USB driver is also available.



## Performance Specifications

MEMS Ultra-Mini Series Switch	Min	Typical	Max	Unit
Operation Wavelength		1260~1610		nm
Insertion Loss <sup>[1]</sup>		0.6	1.0	dB
PDL (SM)			0.1	dB
Extinction Ratio (PM)	18			dB
Return Loss <sup>[1]</sup>	50			dB
Cross Talk <sup>[1]</sup> (SM, PM)	70	73	90	dB
Switching Time		5	10	ms
Repeatability			±0.05	dB
Repetition Rate		10		Hz
Durability	10 <sup>9</sup>			Cycle
Power Consumption (activated)		270		mW
Switching Type		Non-Latching		
Operating Temperature <sup>[3]</sup>	-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
Fiber Type	Single Mode	SMF-28 or equivalent		
	PM	Panda 1550/250 PM or equivalent		

[1]. Excluding connectors.

[2]. Adjusting driving voltage increase this cross talk by aligning the MEMS mirror blocking position

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

## Features

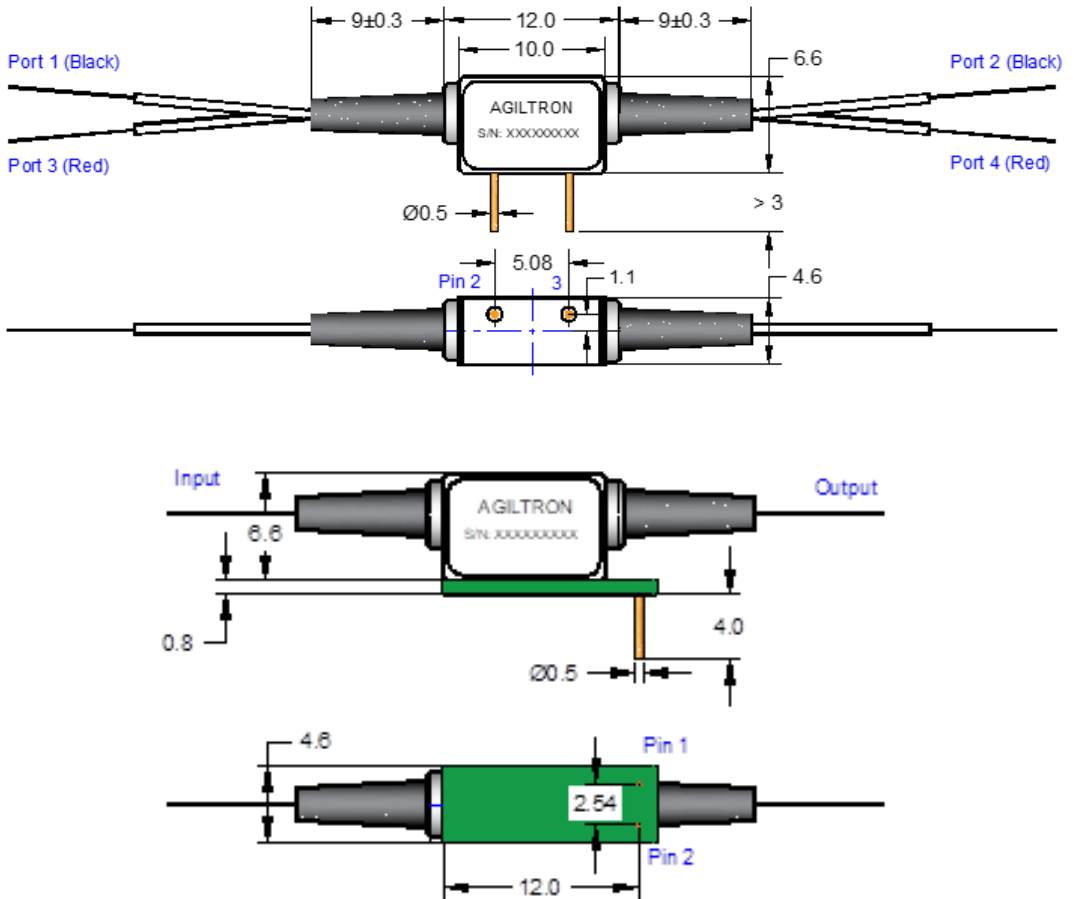
- High Reliability
- Direct DC drive
- Ultra Small
- ESD Insensitive



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## 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	Pin 1	Pin 2	Pin 3
Status I	Port 1 → 2	NC <sup>[1]</sup>	0	+V <sup>[2]</sup>
Status II	Port 1 → 3	NC	0	0

[1]. NC: No electronic connection.

[2]. +V: 3.8 ~ 4.2VDC @ T<=45°C operation; 3.8 ~ 4.0VDC @ T>45°C operation.





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## Vibration (40-1200Hz) Test Results

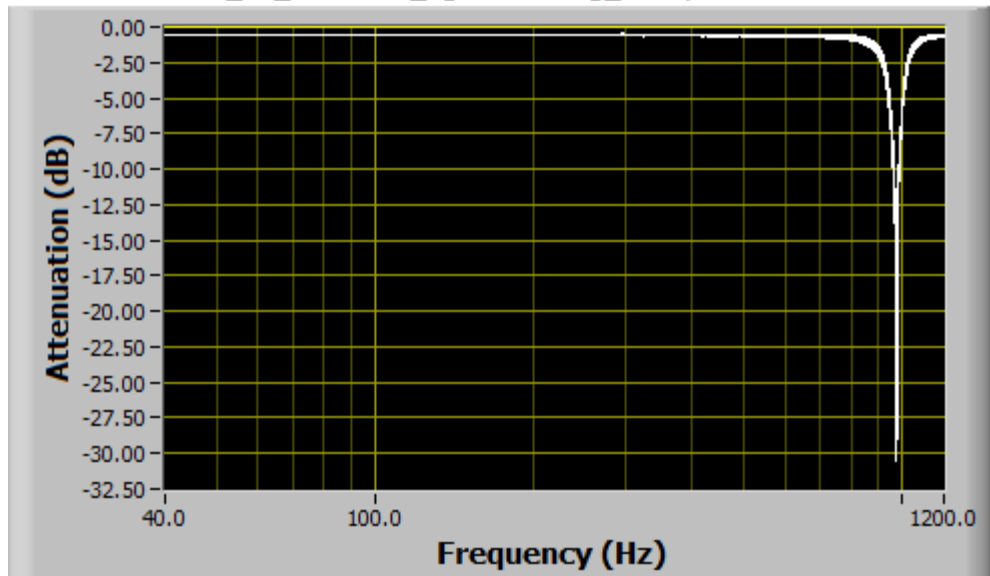
### Test condition:

1. Acceleration: 1g from 40Hz to 100Hz, and then from 100Hz to 1200Hz, from 1g to 2g
2. Vibration direction: Z axis of MSOA SN# U03081
3. Measure fiber optical insertion loss change

### Results:

1. Resonation frequency: ~976 Hz, max IL change ~30dB
2. IL change <0.1dB for frequency <200Hz, 0.1-0.2dB for frequency 200-500Hz.

MSOA-U03081-Z\_0V\_40-100Hz\_1g-1000Hz-2g\_1 oct/min



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## Ordering Information

Prefix	Type	Wavelength*	Switch	Package	Fiber Type	Fiber Cover	Fiber Length	Connector
MISW-	1x1 N/T <sup>[1]</sup> =1T 1x1 N/O <sup>[2]</sup> =1O 1x2=12 Special=00	1550=5 1060=1 1310=3 850=8 <span style="color: red;">1310/1550=9</span> <span style="color: red;">850-1310=A</span> <span style="color: red;">1260-1620=B</span> Special=0	Non-latching=2	Large Crosstalk=H Package 3=3 <sup>[3]</sup> Package 3/5V=4 <sup>[4]</sup> Special=0	SMF-28=1 HI1060=2 HI780=3 PM1550=B PM1310=D PM980=E PM850=F Special=0	Bare fiber=1 900 um tube=3 Special=0	0.25m=1 0.5m=2 1.0m=3 Special=0	None=1 FC/PC=2 FC/APC=3 SC/PC=4 SC/APC=5 ST/PC=6 LC=7 Duplex LC=8 MTP=9 Special=0

[1]. **N/T**: MEMS U--MINI Non-Latching 1x1 Switch, **N**ormally **T**ransparence.

[2]. **N/O**: MEMS U--MINI Non-Latching 1x1 Switch, **N**ormally **O**paque.

[3]. Package 3: see drawing; rotate pin 90 degree with an adapting PCB

[4]. Package 3/5V: rotate pin 90 degree with an adapting PCB and add a resistor for 5V control

\* Red: Special Order

NOTE: **Opaque** means the light is blocked when no electrical power is present.

