

# etMEMS™ 4x4 Fiberoptic Switch

(Protected by U.S. patent 13/210,703 and pending patents)

## Product Description

The etMEMS Series 4x4 Non-Latching Fiberoptic switch connects 4 optical channels by redirecting incoming optical signals into 4 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 and latches 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

etMEMS 4x4 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 <sup>1 2</sup>		1.2	2.0	dB
Wavelength Dependent Loss		0.2	0.3	dB
Polarization Dependent Loss			0.2	dB
Return Loss <sup>1 2</sup>	50			dB
Cross Talk <sup>1 2</sup>	50			dB
Repeatability			±0.05	dB
Durability	10 <sup>9</sup>			Cycle
Switching Type		Non-Latching		
Operating Temperature	-5		70	°C
Storage Temperature	-40		85	°C
Optical Power Handling <sup>3</sup>		300	500	mW
Fiber Type		SMF-28		

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



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## Electrical Driving Requirements

etMEMS 4x4 Non-Latching Switch Driving Table

Status	Optical Path	Pin No.																																			
		1	3	5	6	8	10	11	13	15	16	18	20	21	23	25	26	28	30	31	33	34	36	38													
1	I1-01, I2-02, I3-03, I4-04		H	L		L	L		H	L		L	L		L	H		L	L		L		L	L		L		L	L		L	L		L	L		
2	I1-01, I2-02, I3-04, I4-03		H	L		L	L		H	L		L	H		H	L		L	L		L		L	L		L		L		L	L		L	L		L	L
3	I1-01, I2-03, I3-04, I4-02	GND	H	L	GND	L	L	GND	L	H	GND	L	H	GND	L	L	GND	H	L	GND	L		L	L	GND	L		L		L	L		L	L		L	L
4	I1-01, I2-04, I3-03, I4-02		H	L		L	L		L	H		L	L		L	L		L	H		L		L	L		L		L		L	L		L	L		L	L
5	I1-01, I2-04, I3-03, I4-02		H	L		L	L		L	L		L	L		H	L		L	H		L		L	L		L		L		L	L		L	L		L	L
6	I1-01, I2-04, I3-02, I4-03		H	L		L	L		L	L		L	L		H	L		H	L		L		L	L		L		L		L	L		L	L		L	L
7	I1-02, I2-01, I3-03, I4-04		L	H		L	L		L	L		L	L		L	L		L	H		L	L		L	L		L		L	L		L	H		L	H	
8	I1-02, I2-01, I3-04, I4-03		L	H		L	L		L	L		L	L		L	H		H	L		L	L		L	L		L		L	L		L	L		L	H	
9	I1-02, I2-03, I3-01, I4-04	GND	L	H	GND	L	L	GND	L	H	GND	L	L	GND	L	L	GND	L	L	GND	L		L	L	GND	L		L		L	L		L	L		L	L
10	I1-02, I2-03, I3-04, I4-01		L	H		L	L		L	H		L	H		L	L		L	L		L		L	L		L		L		L	L		L	L		L	L
11	I1-02, I2-04, I3-01, I4-03		L	H		L	L		L	L		L	L		H	L		H	L		L		L	L		L		L		L	L		L	L		L	L
12	I1-02, I2-04, I3-03, I4-01		L	H		L	L		L	L		L	L		H	L		L	H		L		L	L		L		L		L	L		L	L		L	L
13	I1-03, I2-02, I3-01, I4-04		L	L		H	L		H	L		L	L		L	L		L	L		L	L		L	L		L		L	L		L	L		L	L	
14	I1-03, I2-02, I3-04, I4-01		L	L		H	L		H	L		L	H		L	L		L	L		L	L		L	L		L		L	L		L	L		L	L	
15	I1-03, I2-01, I3-02, I4-04	GND	L	L	GND	H	L	GND	L	L	GND	L	L	GND	L	L	GND	L	L	GND	L		L	H	GND	L		L		L	L		L	L		L	H
16	I1-03, I2-01, I3-04, I4-02		L	L		H	L		L	L		L	H		L	L		L	L		L		L	L		L		L		L	L		L	L		L	H
17	I1-03, I2-04, I3-02, I4-01		L	L		H	L		L	L		L	L		H	L		L	L		L		L	L		L		L		L	L		L	L		L	L
18	I1-03, I2-04, I3-01, I4-02		L	L		H	L		L	L		L	L		H	L		L	L		L		L	L		L		L		L	L		L	L		L	L
19	I1-04, I2-03, I3-02, I4-01		L	L		L	H		L	H		L	L		L	L		L	H		L	L		L	L		L		L	L		L	H		L	L	
20	I1-04, I2-03, I3-01, I4-02		L	L		L	H		L	H		L	L		L	L		H	L		L	L		L	L		L		L	L		L	L		L	L	
21	I1-04, I2-02, I3-03, I4-01	GND	L	L	GND	L	H	GND	L	H	GND	L	L	GND	L	L	GND	L	L	GND	L		L	L	GND	L		L		L	L		L	L		L	L
22	I1-04, I2-02, I3-01, I4-03		L	L		L	H		L	H		L	L		L	L		L	L		L		L	L		L		L		L	L		L	L		L	L
23	I1-04, I2-01, I3-02, I4-03		L	L		L	H		L	L		L	L		L	L		L	H		L	L		L	L		L		L	L		L	L		L	H	
24	I1-04, I2-01, I3-03, I4-02		L	L		L	H		L	L		L	L		L	L		L	H		L	L		L	L		L		L	L		L	L		L	H	

Note: Pin 2, 4, 7, 9, 12, 14, 17, 19, 22, 24, 27, 29, 32, 35, 37, 39, and 40 are no electric connection.

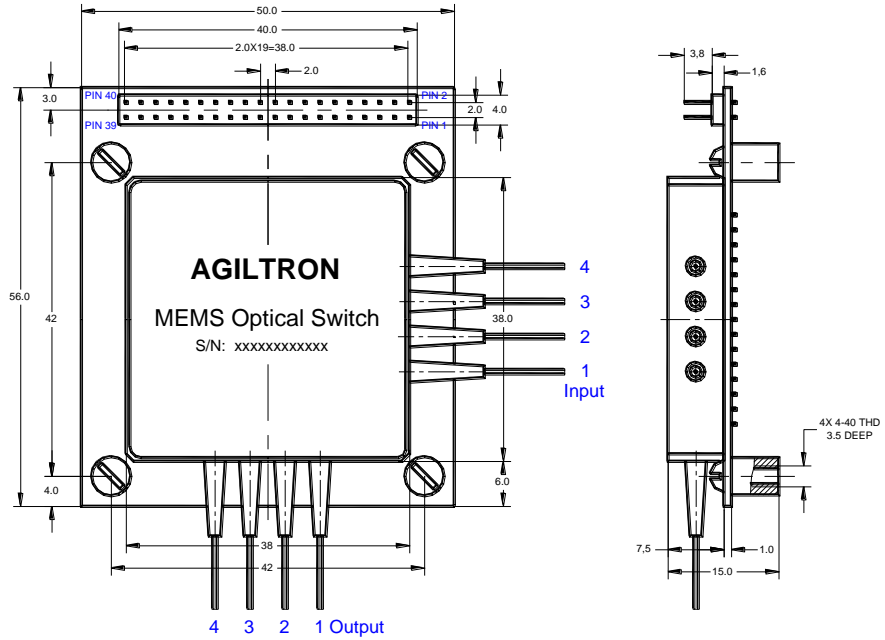
Driving Voltage	Min	Typical	Max	Unit
H	4.0	4.5	5.0	V
L			0.8	V
Power Consumption		170	340 [2]	mW



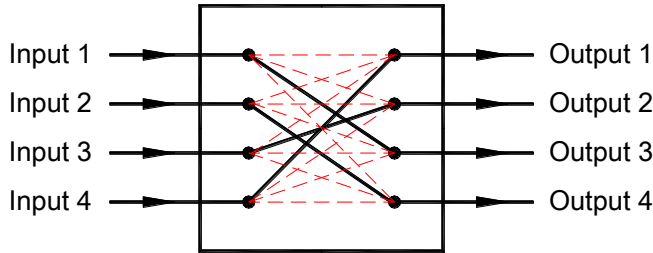
# etMEMS™ 4x4 Fiberoptic Switch



## Mechanical Dimensions (Unit: mm)



## Functional Diagram



## Ordering Information

MEMS-	Type	Wavelength	Switch	Package	Fiber Type	Fiber Length	Connector	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 2 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2x4=24 4x4=44 Special=00	C+L=2 1310=3 1550=5 1310 & 1550=9 1260~1620=B Special=0	Non-Latching=2 Special=0	Standard=2 Special=0	SMF-28=1 Special=0	Bare fiber=1 900um 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 Special=0

