

MEMS 1x16 Mini Latching Series Fiber Optic Switch

(Bidirectional, SM, PM)

(Protected by U.S. pending patents)



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The MEMS 1x16 Latching Type 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. Latching performance is realized on chip design, by which the link can be kept after removal of the driving signal.

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

Applications

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

Features

- High reliability
- Intrinsic tolerance to ESD

Specifications

Parameter	Min	Typical	Max	Unit
Operation Wavelength	850±30, 1060±30, 1310±40, 1510±40			nm
Insertion Loss ^[1]		1.2	1.7 ^[2]	dB
Wavelength Dependent Loss		0.15	0.3 ^[2]	
PDL (SM)			0.1	dB
Extinction Ratio (PM)	18		0.1	dB
Cross Talk ^[1]	50			dB
Return Loss ^[1]	50			dB
Switching Time		5	10	ms
Repeatability			± 0.05	dB
Repetition Rate		5		Hz
Durability	10 ⁹			cycle
Switching Type	Latching			
Operating Temperature	-5		70	°C
Storage Temperature	-40		85	°C
Optical Power Handling (CW)		300	500	mW
Fiber Type	SM	Single mode fiber		
	PM	Panda 250, or equivalent		

Notes:

[1]. Excluding connectors



Rev 05/27/26

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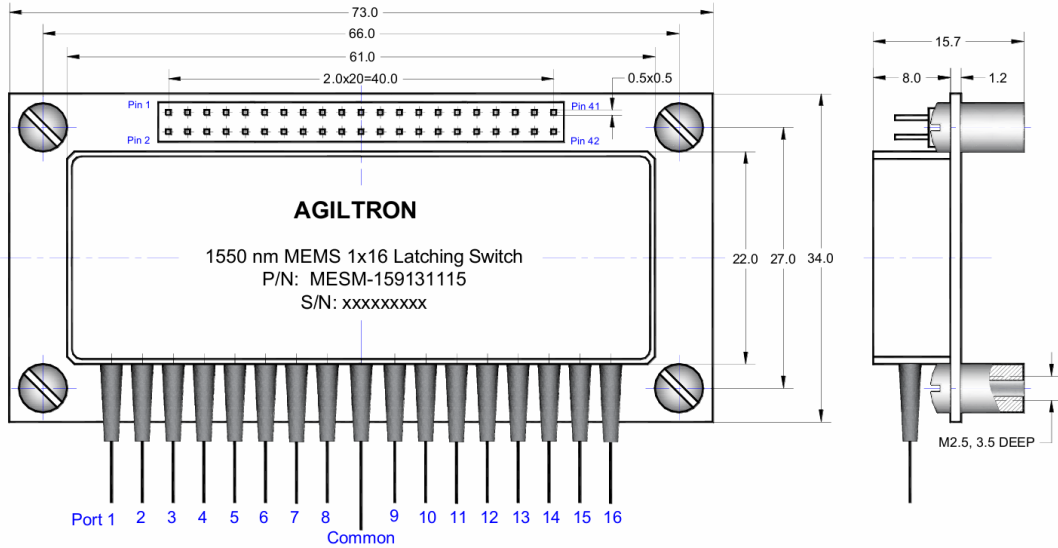
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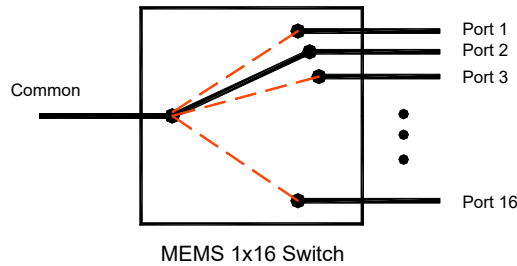


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Mechanical Footprint Dimensions (mm)



Function Diagram (Bidirectional)



Order Information (Part Number)

Prefix	Type	Wavelength	Switch	Package	Fiber Type	Fiber Cover	Fiber Length	Connector ^[3]
MESM- ^[1]	1x9 = 109	1550 = 5	Latching = 1	Standard = 1	SMF-28 = 1	Bare fiber = 1	0.25m = 1	None = 1
MEMP- ^[2]	1x10 = 110	1060 = 1			PM1550 = B	900 um tube = 3	0.5m = 2	FC/PC = 2
	1x11 = 111	850 = 8			PM1310 = D	Special = 0	1.0m = 3	FC/APC = 3
	1x12 = 112	1310 = 3			Hi1060 = 4		Special = 0	SC/PC = 4
	1x13 = 113	Special = 0			PM980 = E			SC/APC = 5
	1x14 = 114				Hi780 = 7			LC/PC = 7
	1x15 = 115				PM850 = F			Duplex LC/PC = 8
	1x16 = 116				Special = 0			LC/UPC = U
	Special = 000							Special = 0

[1]. MESM: MEMS 1x8 Single mode Mini Switch

[2]. MEMP: MEMS 1x8 Mini PM fiber Switch

[3]. The connector cannot be installed directly onto bare fiber, as it is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer can remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SM28 fiber and decreases further with smaller core fibers.

Note: PM1550 fiber works well for 1310nm

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Driving Table & Electric Requirement

Optical Path		Pin Number																																																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42										
C ^[1] ↔ P1 ^[1]	ON					H ^[3]	0 ^[3]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
	OFF					0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
C ↔ P2	ON					0	0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
	OFF					0	0	0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
C ↔ P3	ON					0	0	0	0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	OFF					0	0	0	0	0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
C ↔ P4	ON					0	0	0	0	0	0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	OFF					0	0	0	0	0	0	0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
C ↔ P5	ON					0	0	0	0	0	0	0	0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	OFF					0	0	0	0	0	0	0	0	0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C ↔ P6	ON					0	0	0	0	0	0	0	0	0	0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OFF					0	0	0	0	0	0	0	0	0	0	0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C ↔ P7	ON					0	0	0	0	0	0	0	0	0	0	0	0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OFF					0	0	0	0	0	0	0	0	0	0	0	0	0	H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C ↔ P8	ON					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	OFF					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C ↔ P9	ON					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
	OFF					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C ↔ P10	ON					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
	OFF					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C ↔ P11	ON					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
	OFF					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
C ↔ P12	ON					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
	OFF					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C ↔ P13	ON					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	OFF					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C ↔ P14	ON					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	OFF					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C ↔ P15	ON					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	OFF					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C ↔ P16	ON					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	OFF					N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

[1]. C: Common Port; P#: Output Port #.

[2]. VDC Power supply: 5.0±0.2 VDC. Static ~10mA; Pulse current is ~150mA on each chip during switching.

[3]. Driving H: 5V Pulse (5.0±0.2V) & width 40±5ms. 0: 0.0±0.2V.

[4]. No Pulse is needed.

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Switching Operation Supplement (must read)

- [1]. 17 chips in total are used and divided in three groups; group#1 with chips from PIN5 to PIN20; group#2 with chips from PIN23 to PIN38; 3rd group chip with PIN 21 & 22.
- [2]. Each chip is driven through a pair of PINs, such as PIN5 and PIN6.
- [3]. The chip in 3rd group is used to link the output in either group#1 or #2.
- [4]. For new link from the common port to any other output, the current link must be disconnected.
- [5]. If the current link between the common and output ports is known, the current link is disconnected by applying H only on the corresponding PIN, and link the common port to the desired output by applying H pulse on the corresponding PIN at same time per the driving table.
- [6]. If the current link is unknown, "H" voltage should be applied on all even number of PINs in group #1 and #2 to disconnect any possible link, and then "H" is applied on the corresponding PINs to link the common port to the desired output per the driving table.