

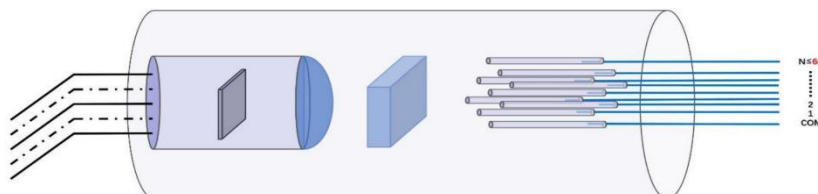
PM (Polarization-maintaining) MOSW-1X4-15-PM-09-05-03A-M1

1X4 PM MEMS optical switch, module packaging, 5V driving voltage, 1550nm, Corning PM1550 fiber 0.9mm loose tube, 0.5m length, input output FC/APC connector 54.1*13.7*24.7mm



MEMS 1xN optical switch is based on micro-electro-mechanical system technology. It allows channel selection between an input fiber and up to N output fibers by rotating the MEMS mirror.

The switch is bi-directional and can also be used as a Nx1 selector switch. The optical switch offers highly reliable, durable, long-life operation in a compact package.



Features

- ◆ Proven MEMS durability and reliability
- ◆ Compact Form Factor
- ◆ Fast switching time
- ◆ Qualified to Telcordia GR-1073-CORE and RoHS
- ◆ UART/TTL or UART/RS232 control interface

Applications

- ◆ Optical network routing
- ◆ Resource sharing in test & measurement applications
- ◆ Optical network protection and restoration

Optical Performance Specifications

Optical Parameters	Unit	Specifications		
		Min	Type	Max
Operating Wavelength	nm	1260	1310&1550	1650
Test Wavelength	nm	1310\1550		
Number of channels	----	4		
Insertion Loss ^{1,3} , (MAX)	dB		1.0	1.3
PER	dB	18		
Polarization Dependent Loss	dB			0.15
Return Loss	dB	45	50	
Crosstalk	dB	50		
TDL	dB			0.3
WDL	dB			0.3
Repeatability ²	dB			0.03
Switch Time (rise, fall)	ms		10	15
Durability	times	10 ⁹		
Operating Voltage	V			5.0
/Power Handling	mw			500
Environmental Properties	Unit	Specifications		
Operating Temperature	°C	-5 ~ 75		
Storage Temperature	°C	-40 ~ 85		
Operation Humidity	%RH	5 to 95%RH		
Other Parameters	Unit	Specifications		
Connector Type	---	FC/APC		
Fiber Type	---	Corning PM1550 fiber		
Fiber Package	---	900um loose tube		
Fiber Length	M	0.5+0.1/-0		
Pigtail Color	Input	Red		
	Output	White		

Note: 1. IL is measured at CWL, 23°C.

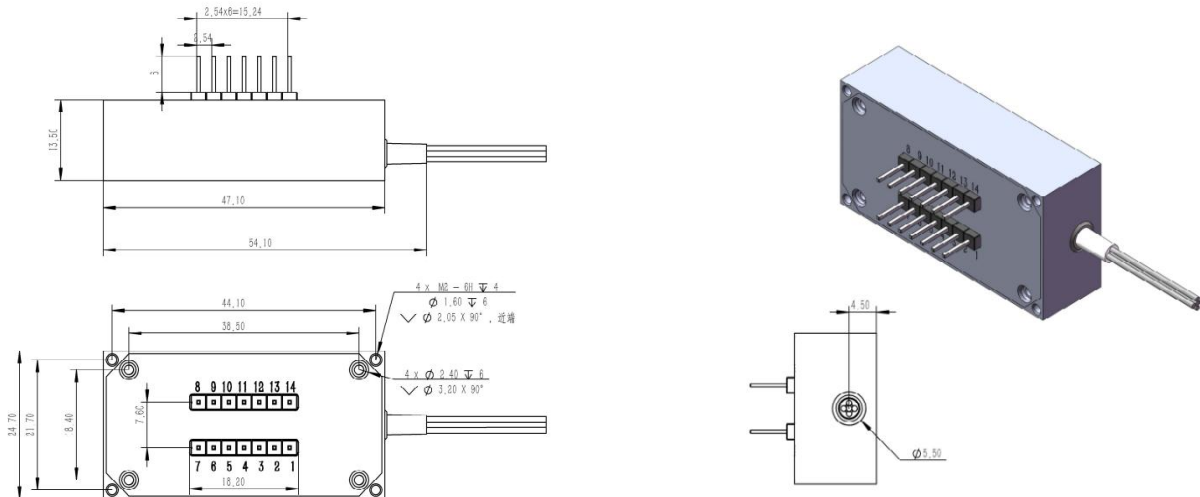
2. Repeatability is defined after 100 cycles.

3. Excluding connectors, and add 0.3dB IL for a pair of connectors.

4. IL is for single-band. Dual-band adds 0.3 dB.

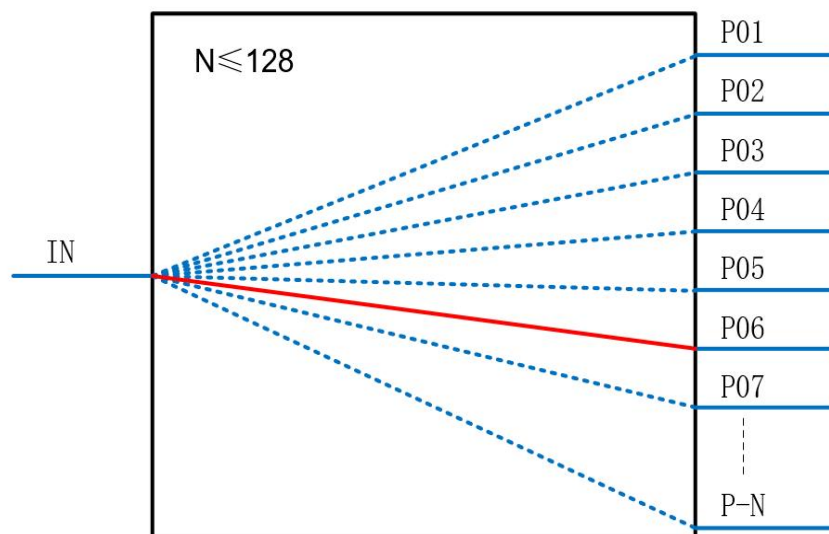
Dimensions Diagram

M1: For M1X4



Optical Route

The mems optical 1x128 switch is a non-locking product. When the voltage is removed, the mirror returns to the initial position and the input is uncoupled to any output channel. The principle of optical path switching is shown in figure below.



1×N Multichannel Optical Switch System

Electronic Requirement

Pin Definition

Pin	Type	Description	Input/output	Remark
1	D0	Parallel Data Interface 0	Input	TTL(H level default)
2	D3	Parallel Data Interface 3	Input	TTL(H level default)
3	D4	Parallel Data Interface 4	Input	TTL(H level default)
4	VIN	Power Input	Input	DC 5V~12V
5	GND	GND	Input	
6	D5	Parallel Data Interface 5	Input	TTL(H level default)
7	D2	Parallel Data Interface 2	Input	TTL(H level default)
8	TX	Serial port send	Output	TTL
9	RX	Serial port receive	Input	TTL
10	D1	Parallel Data Interface 1	Input	TTL
11	BUSY	Busy signal, high level indicates busy	Output	TTL
12	ALARM	Alarm signal, high level indicates high temperature or Initial Abnormal	Output	TTL
13	STROBE	Signal of parallel port selection, falling edge is effective	Input	TTL(H level default)
14	RESET	Hardware reset, low level effective	Input	TTL

Firmware Definition

- 1) UART parameter 115200,8,1,N
- 2) All sending instructions end with <cr>, All response instructions end with <cr><lf>content<cr><lf>.
 - (Enter <cr> with '\r', ASCII code is 13, hexadecimal code is 0x0D)
 - (The newline <lf> is represented by the '\n', the ASCII code is 10, and the hexadecimal code is 0x0A)

Channel switching instruction

Instruction	*SW
Parameter	*SWABC,000 for status of power off, 001 for channel 1
Return data	CHAN:ABC, PCB power off and no data feedback
Examples: *SW + ABC Send data: *SW001<cr> Return data: <cr><lf>OK<cr><lf>	

Enquire Product Number

Instruction	*PN
Parameter	None
Return data	PN:AB.CD.EFGH

Examples:

Send data: *PN<cr>

Return data: <cr><lf> AB.CD.EFGH <cr><lf>

Enquire Series Number

Instruction	*SN
Parameter	None
Return data	SN: ABCDEFGHIJ
Examples:	
Send data: *SN<cr>	
Return data: <cr><lf> ABCDEFGHIJ <cr><lf>	

Description of parallel communication interface

The 14PIN module has 6 TTL control pins (D0~D5) and up to 64 channels.

Use TTL to control D0~Dx pins to select the channel TTL, switch channels with [falling edges](#) STROBE.

The channel selection definitions are shown in the following table:

Channel selection	D5	D4	D3	D2	D1	D0
Channel 1	0	0	0	0	0	0
Channel 2	0	0	0	0	0	1
Channel 3	0	0	0	0	1	0
...						
Channel 63	1	1	1	1	1	0
Channel 64	1	1	1	1	1	1

[Firmware Version: C4-1, V01](#)

Odering Information

Part No.	Specification
MOSW-1X4-15-PM-09-05-03 A-M1	1X4 PM MEMS optical switch , module packaging , 5V driving voltage , 1550nm, Corning PM1550 fiber 0.9mm loose tube,0.5m length, input output FC/APC connector 54.1*13.7*24.7mm