



PRODUCT SPECIFICATION

Product Name	1xN MEMS Optical Switch Series
Product Model	
Description	Multimode
File NO.	
Customer	

	Drafter	Reviewer	Approver	Customer Confirm
Signature				
Date				



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Document History

Version	DATE	DESCRIPTION OF CHANGE	Modifier
V1.0	2020.6.13	First release	GL
V1.1	2021.4.29	Add Module Type 4	SH

1 DESCRIPTION

1.1 Product Function

MEMS 1xN OSW is based on micro-electro-mechanical system technology. It allows channel selection between one input fiber and N output fibers by rotating the mirror of MEMS chip.

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.

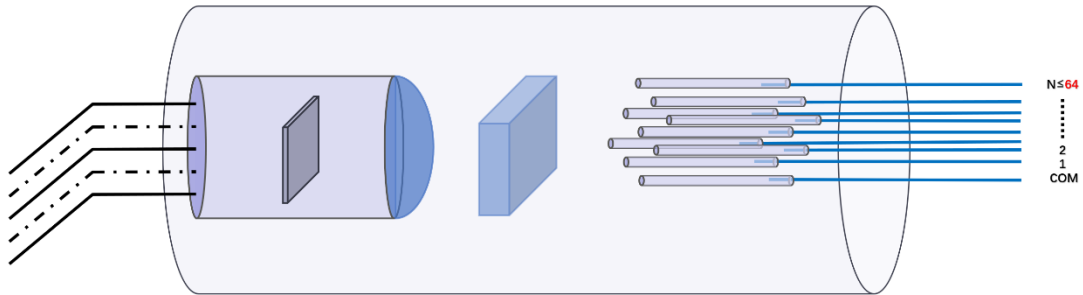
1.2 Features

- Proven MEMS durability and reliability
- Compact Form Factor
- Fast switching time
- Qualified to Telcordia GR-1073-CORE and RoHS

1.3 Applications

- Optical signal switching and routing
- Optical network protection and restoration
- Optical path monitoring (Working with OTDR or OCM)
- Instrumentation resource sharing
- As part of high-end modules such as OXC or MCS

1.4 Product Configurations



Note: "C":common port

"1、2、3...64":possible selected output ports=1~64;

1.5 Related Product List

Customer Code	Customer P/N	Code	P/N
			AZ-MOSW-14-13/15-M-025-1-00-C
			AZ-MOSW-18-13/15-M-025-1-00-C
			AZ-MOSW-14-850-M-025-1-00-C
			AZ-MOSW-14-980-M-025-1-00-C
			AZ-MOSW-18-850-M-025-1-00-C
			AZ-MOSW-116-850-M-025-1-00-C
			AZ-MOSW-116-850-M-025-1-00-CP
			AZ-MOSW-120-850-M-09-0.5-LC/UPC-M4

2 MAIN SPECIFICATIONS

Table 1 Optical Specifications

PARAMETER		VALUE	UNIT	NOTE
Wavelength		13:1290~1330 15:1525~1568 850:820~880 980:950~1010	nm	Or customer specify
Test Wavelength		850/980/1310/1550/	nm	
OSW Channels		4/8/12/16		N
Insertion Loss	1x2	≤ 1.0 , typical 0.8 @S	dB	@CWL,23°C Without Connectors @S: 850 or 980 or 13 or 15 (if with connectors, IL increased by 0.2~0.3dB)
	1x4			
	1x8			
	1x12			
	1x16			
	1x18			
	1x20			
Return Loss		≥ 30	dB	Or customer specify
Repeatability		≤ 0.1	dB	
Crosstalk		≥ 30	dB	Or customer specify
Polarization Dependence Loss		≤ 0.2	dB	
Wavelength Dependence Loss		≤ 0.3 @S	dB	@CWL ± 20 nm, 23°C
Temperature Dependence Loss		≤ 0.4 @N ≤ 16	dB	
Switch Time		≤ 20	ms	Module Or customer specify
Durability		$\geq 1 \times 10^9$	cycle	
Maximum optical Power		≤ 500	mW	

Table 2 Electrical and Mechanical Specifications

PARAMETER	VALUE	UNIT	NOTE
Switch Mode	Non-latching		
Control Voltage	<60	V	Cylindric package
	5±0.25		Module type
Dimension	Φ6.2×47	mm	Cylindric package
	75×30×13		M1, single stage, N≤20
	80×60×16		M4, single stage, N≤20
	80×60×16		M4, double stage, N≤40

3 OPERATION/STORAGE TEMPERATURE/HUMIDITY

Table 3 Environmental conditions

PARAMETER	VALUE	UNIT	NOTE
Operation Temperature	-5~65	°C	
Storage Temperature	-40~85	°C	
Operation Humidity	5~95	%RH	
Storage Humidity	5~95	%RH	

4 PIGTAIL AND CONNECTOR

Table 4 Pigtail and connector type/length

PARAMETER	VALUE	UNIT	NOTE
Fiber Type	G657A2 or G657B3 250um bare fiber		
Fiber Pigtail (All Ports)	250um fiber or 900um loose tube		
Fiber Length (All Ports)	1.00±0.05	m	Or customer specify
Optical Connector (All port)	None		Or customer specify

5 MECHANICAL DRAWINGS

Figure 1 Cylindric package (1xN, N ≤ 20)

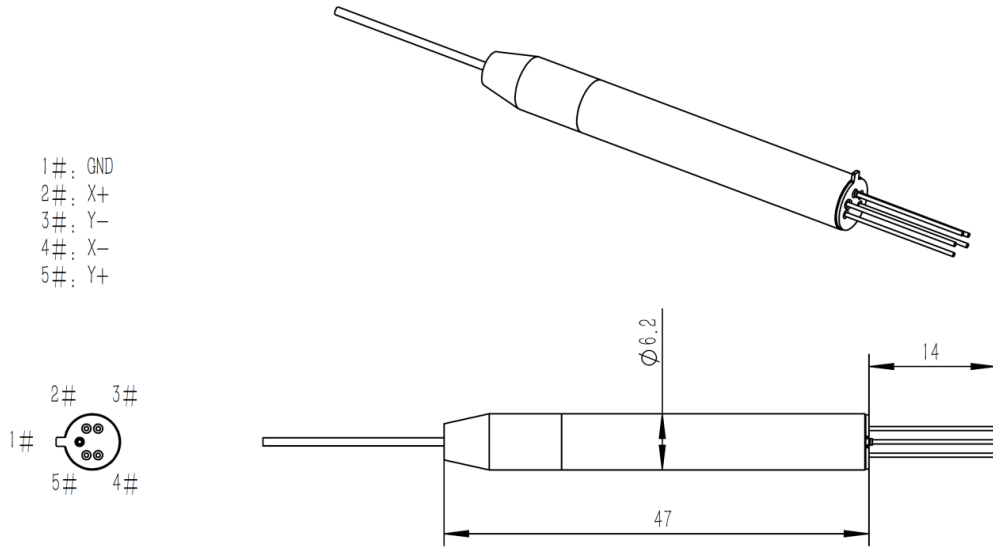


Figure 2 External PCB version (1xN, N ≤ 20)

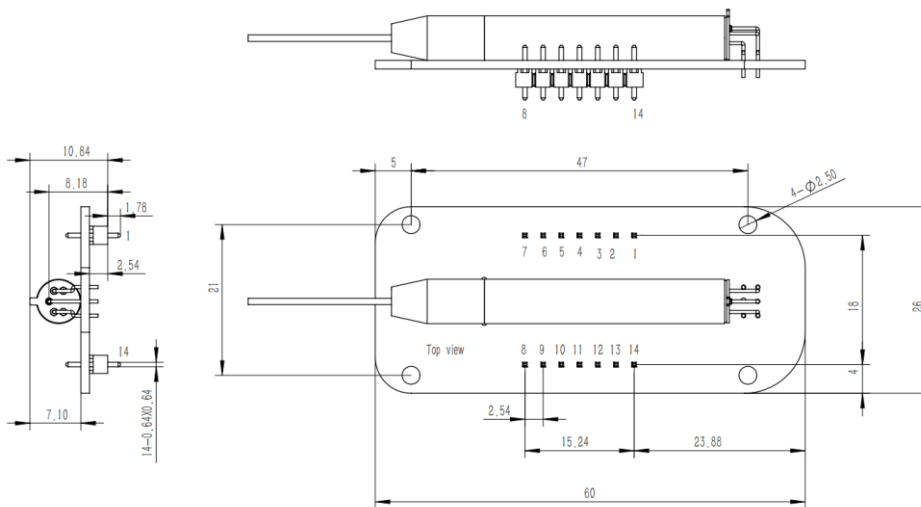
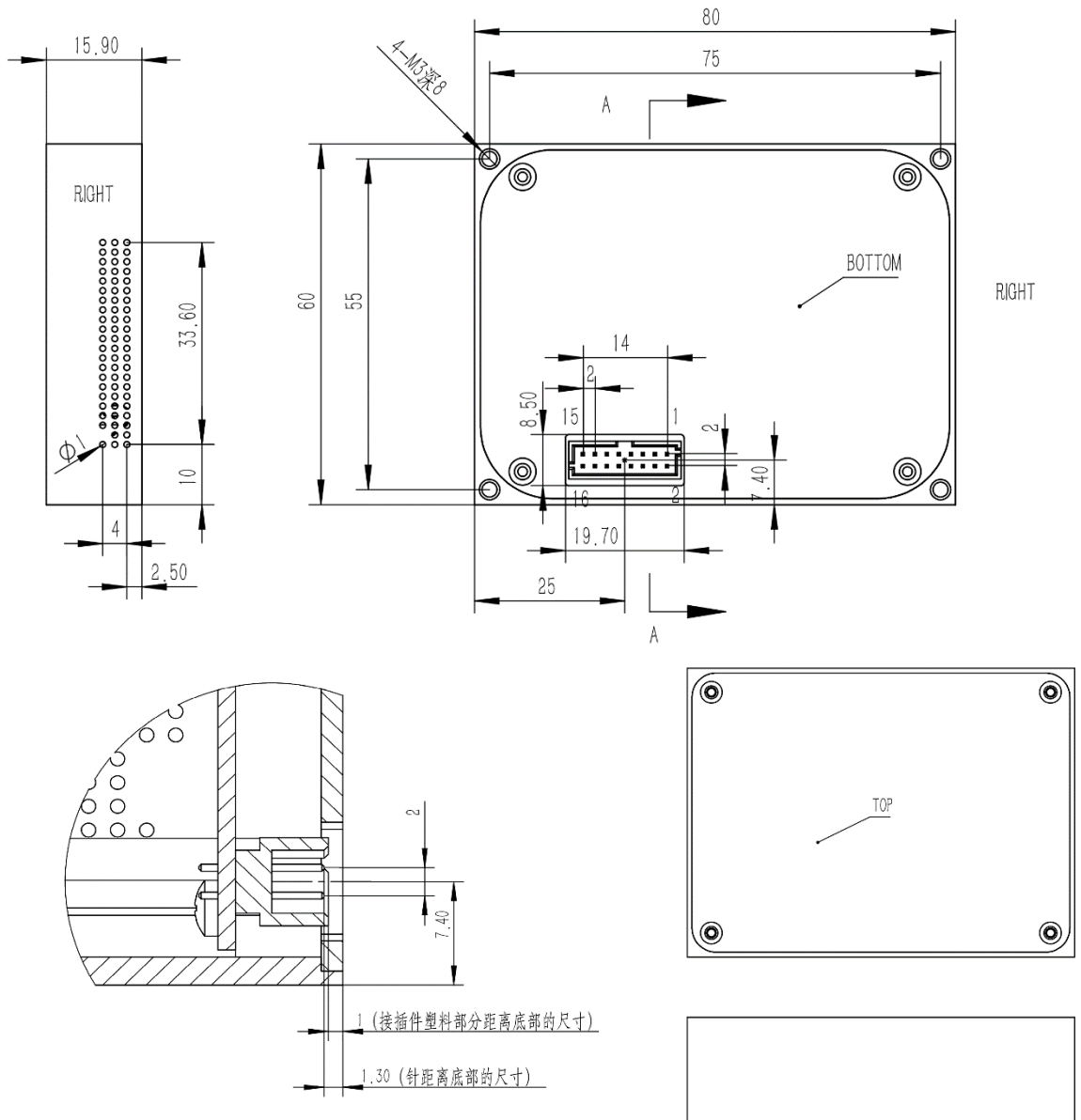


Figure 3 Module Type 1 (1xN, N ≤ 20)

TBD

Figure 4 Module Type 4 (1xN, N ≤ 40)



6 OPTIC PORTS AND ELECTRONIC PINS DEFINITION

6.1 Electronic Pins Definition

Table 5 Electronic PIN Definition for Module type 1

Pin Number	Name	Input/Output	Level	Function
1	NC	No connect		
2	VCC	Power supply		+(5.0±5%) V Power Supply Max 100mA
3	I/O		LVTTL	Reserved
4	GND			Power supply ground
5	I/O		LVTTL	Reserved
6	TXD	Output	LVTTL	TTL UART data output
7	RXD	Input	LVTTL	TTL UART data input
8	I/O		LVTTL	Reserved
9	I/O		LVTTL	Reserved
10	I/O		LVTTL	Reserved
11	Case GND			Case ground
12	I/O		LVTTL	Reserved
13	I/O		LVTTL	Reserved
14	Reset	Input	LVTTL	Reset, low active, the pulse width needs 4ms

Table 6 Electronic PIN Definition for Module type 4

Pin Number	Name	Input/Output	Level	Function
1	D6	IN	LVTTL	Parallel D6 Input
2	D5	IN	LVTTL	Parallel D5 Input
3	/RESET	IN	LVTTL	Low level active for hardware reset.
4	NC			Reserved
5	GND	Power		Ground
6	GND	Power		Ground
7	VCC	Power		5~12V



Pin Number	Name	Input/Output	Level	Function
8	VCC	Power		5~12V
9	TXD	Power		UART Serial Data Output
10	RXD	OUT	LVTTL	UART Serial Data Input
11	D4	IN	LVTTL	Parallel D4 Input
12	D3	IN	LVTTL	Parallel D3 Input
13	D2	IN	LVTTL	Parallel D2 Input
14	D1	IN	LVTTL	Parallel D1 Input
15	D0	IN	LVTTL	Parallel D0 Input
16	/STROBE	IN	LVTTL	Falling edge active to synchronize command execution

6.2 UART Port Control Setting

Baud Rate: 115200

Start Bits: 1

Data Bits: 8

Parity: None

Stop Bits: 1

Flow Control: None

6.3 Port Control Grammar

Command

FLAG	LEN	RES	COMMA	DATA	SUM
2 Byte	1 Byte	1 Byte	1 Byte		1 Byte

FLAG: 0xEFEF or 0xA5A5

LEN: Total number of command bytes from RES to SUM

RES: 0xFF

SUM: Checksum, $SUM = FLAG + LEN + RES + COMMA + DATA$

Response



FLAG	LEN	RES	RESP	DATA	SUM
2 Byte	1 Byte	1 Byte	1 Byte		1 Byte

FLAG: 0xEDFA

LEN: Total number of command bytes from RES to SUM

RES: 0xFF

SUM: Checksum, SUM=FLAG+LEN+RES+COMMA+DATA

6.4 Port Controls Command

Set Channel						
Command	FLAG1	LEN	RES	COMMA	DATA	SUM
	0xEFEF	0x04	0xFF	0x04	CHANNEL (1byte)	SUM
	eg: Set channel N Set channel 1: EF EF 04 FF 04 01 E6 Set channel 2: EF EF 04 FF 04 02 E7 Set channel 3: EF EF 04 FF 04 03 E8 Set channel 4: EF EF 04 FF 04 04 E9 Set channel 7: EF EF 04 FF 04 07 EC					
Response	FLAG2	LEN	RES	RESP	DATA	SUM
	0xEDFA	0x04	RES	0x04	Success: Fail: 0xEF	SUM
	eg: ED FA 04 FF 04 EE DC					

Get Channel						
Command	FLAG1	LEN	RES	COMMA	DATA	SUM
	0xEFEF	0x03	RES	0x02		SUM
	eg: EF EF 03 FF 02 E2					
Response	FLAG2	LEN	RES	RESP	DATA	SUM
	0xEDFA	0x04	RES	0x02	CHANNEL	SUM

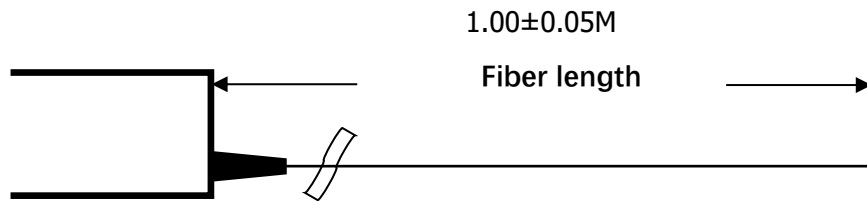


					(1byte)	
eg: ED FA 04 FF 02 07 F3						

Note:When channel 0 is set, the voltage is 0, that is block state

7 FIBER LENGTH

Figure 2 Fiber Length Definition



8 LABEL DEFINITION

8.1 On the module

P/N: xxxxxxxxxxxx

S/N: xxxxxxxx

8.2 Label Definition

Figure 3 Label Definition



X=com,CH1,CH2,CH3.....CHN

8.3 Others

ESD Packing

RoHS and GR-1073 compliance



9 ORDERING INFORMATION

AZ - MOSW - - - - - - -

Channel Configuration

1N	1xN Switch
14	1x4
18	1x8
116	1x16

Wavelength Configuration

13	1290 – 1330 nm
15	1525 – 1568 nm
850	820 – 880 nm
980	950 – 1010nm
Or customer specify	

Fiber Type

M	Multimode
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Fiber Dia.

025	Φ 0.25 mm, bare fiber
09	Φ 0.9 mm

Fiber Length

1	1 m
Or customer specify	

Connector

00	No connector
Or customer specify	

Package

C	Cylindric package
CP	External PCB version
M	Module, single stage, maximum support 1x20
M4	Module, single stage, maximum support 1x20 Module, double stage, maximum support 1x40