RACK MOUNTED | USB & ETHERNET CONTROL

RF SP8T Switch Matrix ZTM-4SP8T-26

Mini-Circuits®

50Ω   DC to 26.5 GHz

THE BIG DEAL

- 4 x mechanical SP8T absorptive switches
- Excellent performance to 26.5 GHz
- Convenient rack-mountable chassis
- Ethernet & USB control

CASE STYLE: YD2861

DOWNLOAD   SOFTWARE PACKAGE

Refer to our website for compliance
methodologies and qualifications

CE   UK CA

APPLICATIONS

- Benchtop and rack mounted automated test systems
- 5G FR1, WiFi 6E, UWB, Bluetooth
- Military radio, radar & electronic warfare
- Test & measurement systems
- Fail-safe / redundancy switching

PRODUCT OVERVIEW

Mini-Circuits' ZTM-4SP8T-26 comprises 4 independently controlled, electro-mechanical SP8T switches. Each switch operates over a wide bandwidth, from DC to 26.5 GHz, with high isolation and low insertion loss. The absorptive switches are of a failsafe / normally open and break-before-make-configuration with a lifetime of 2 million switching cycles when used within the noted specifications.

The switch system is housed in a rugged 19" rack chassis, 3U height, with all SMA (f) RF connectors and LED switch position indicators on the front panel. The modular design of the ZTM series switch rack supports easy maintenance and re-configuration in the field, without the need to return the whole system to a Mini-Circuits facility.

The switches are controlled via USB or Ethernet, allowing control directly from a PC, or remotely over a network. Full software support is provided, including our user-friendly GUI application for Windows and a full API with programming instructions for Windows and Linux environments (both 32-bit and 64-bit systems).

Custom switch configurations can be configured to fit any requirement, using Mini-Circuits' online configurator tool at www.minicircuits.com/WebStore/ztm.html.

KEY FEATURES

Feature	Advantages
High performance switches	Mechanical absorptive switches provide high reliability, repeatable high performance, and internal terminations of input signals on the disconnected paths.
Rack-mount chassis	Compact 3U height, 19" rack-mountable chassis with RF connections on the front, suits integration in automated production test environments.
Ethernet & USB control	USB HID and Ethernet (HTTP / Telnet) interfaces ensure compatibility with most software environments and connection requirements.

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ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Conditions	Min.	Typ.	Max.	Unit
Frequency Range	-	DC	-	26.5	GHz
Insertion Loss	DC – 8	-	0.15	0.3	dB
	8 – 18	-	0.35	0.6	
	18 – 26.5	-	0.8	1.1	
Isolation	DC – 8	70	80	-	dB
	8 – 18	60	75	-	
	18 – 26.5	55	70	-	
Return Loss[3]	DC – 8	-	20	-	:1
	8 – 18	-	16	-	
	18 – 26.5	-	14	-	
Switching Time	-	-	25	-	ms
RF Input Power[1]	DC – 8	-	-	20	W
	8 – 18			10	
	18 – 26.5			5	
Switch Lifetime (per Switch)	100 mW hot switching [2]	2	-	-	million cycles
	1W hot switching	-	1	-	

1. Maximum power for any connected through path as stated; maximum power into any internal termination is 1W per port, 3W total.
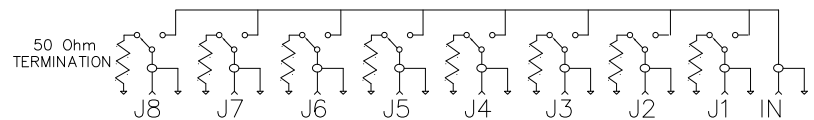2. Hot switching power above this level will degrade the switch lifetime.
3. Ports 1-8 all states; Com in connected states only.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	0°C to 50°C
Storage Temperature	-15°C to 85°C
Supply Voltage	260 Vac

SWITCHING CONFIGURATION:
• Normally open (all ports disconnected)
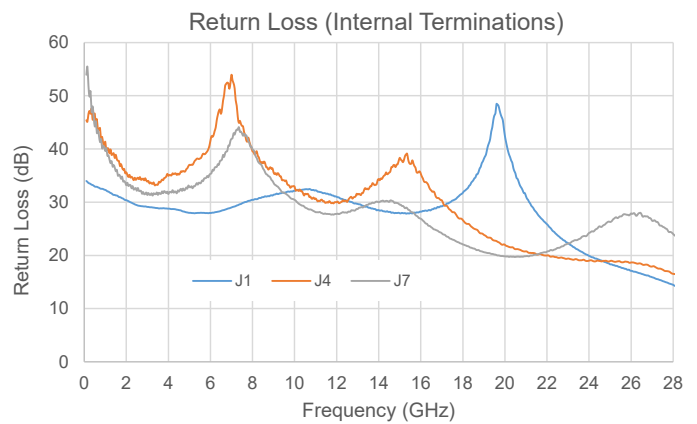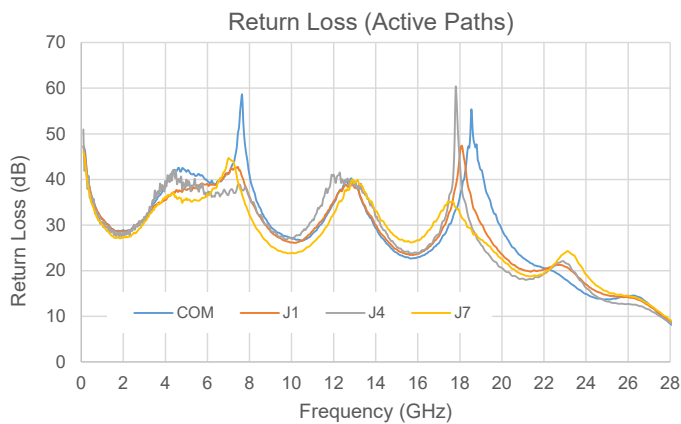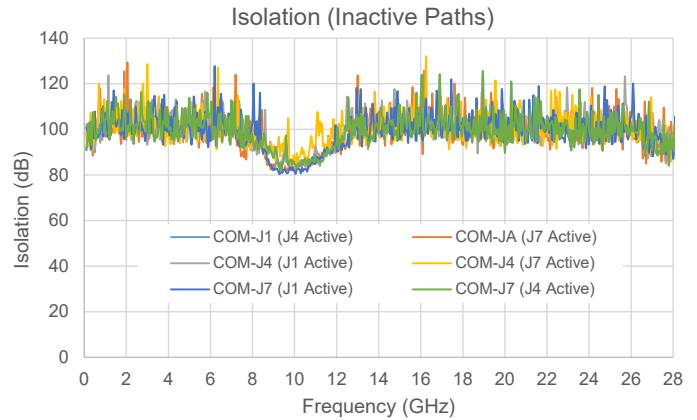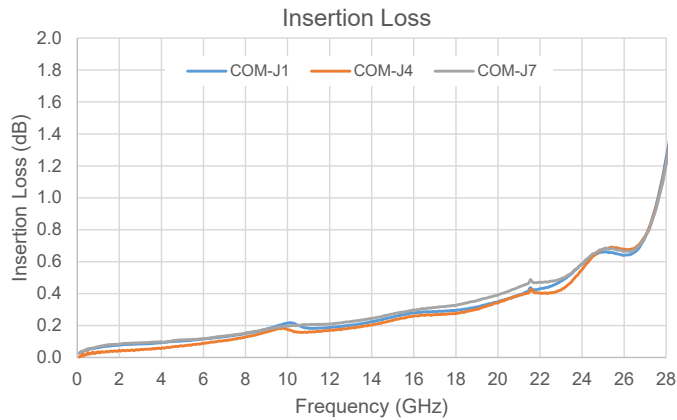• Absorptive (internal terminations on ports J1-J8)

MECHANICAL & ENVIRONMENTAL SPECIFICATIONS

Dimensions	19" (W) x 3U (H) x 13" (D)			
Case Style	YD2681			
Case Material	Aluminum (with protective coating to prevent corrosion)			
RF Connectors	**Panel**	**Connector**	**Quantity**	**Port Labels**
	Front	SMA female	36	COM & 1-8 per switch
Panel Marking	**Front Panel**		**Rear Panel**	
	• ZTM-4SP8T-26 • Modular Test System		• CE / EAC / UKCA • Serial number / date code / model name	
Panel Items	• Power on / off switch with LED • LED switch position indicators • Carry handles		• AC mains power input (IEC C14 inlet) • USB type B socket • RJ45 (LAN) socket	
Power Supply	AC mains power input (90-260 V, 47-63 Hz)			
Fuse	2A, 250V rating			
Power Consumption	150 W max			
Temperature	Operating: 0 to +50 ºC			

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TYPICAL PERFORMANCE CURVES

Insertion Loss

COM-J1 — COM-J4 — COM-J7

Isolation (Inactive Paths)

COM-J1 (J4 Active)　COM-JA (J7 Active)
COM-J4 (J1 Active)　COM-J4 (J7 Active)
COM-J7 (J1 Active)　COM-J7 (J4 Active)

Return Loss (Active Paths)

COM — J1 — J4 — J7

Return Loss (Internal Terminations)

J1 — J4 — J7

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OUTLINE DRAWING

SP8TA 18GHz
SP8TA 26GHz
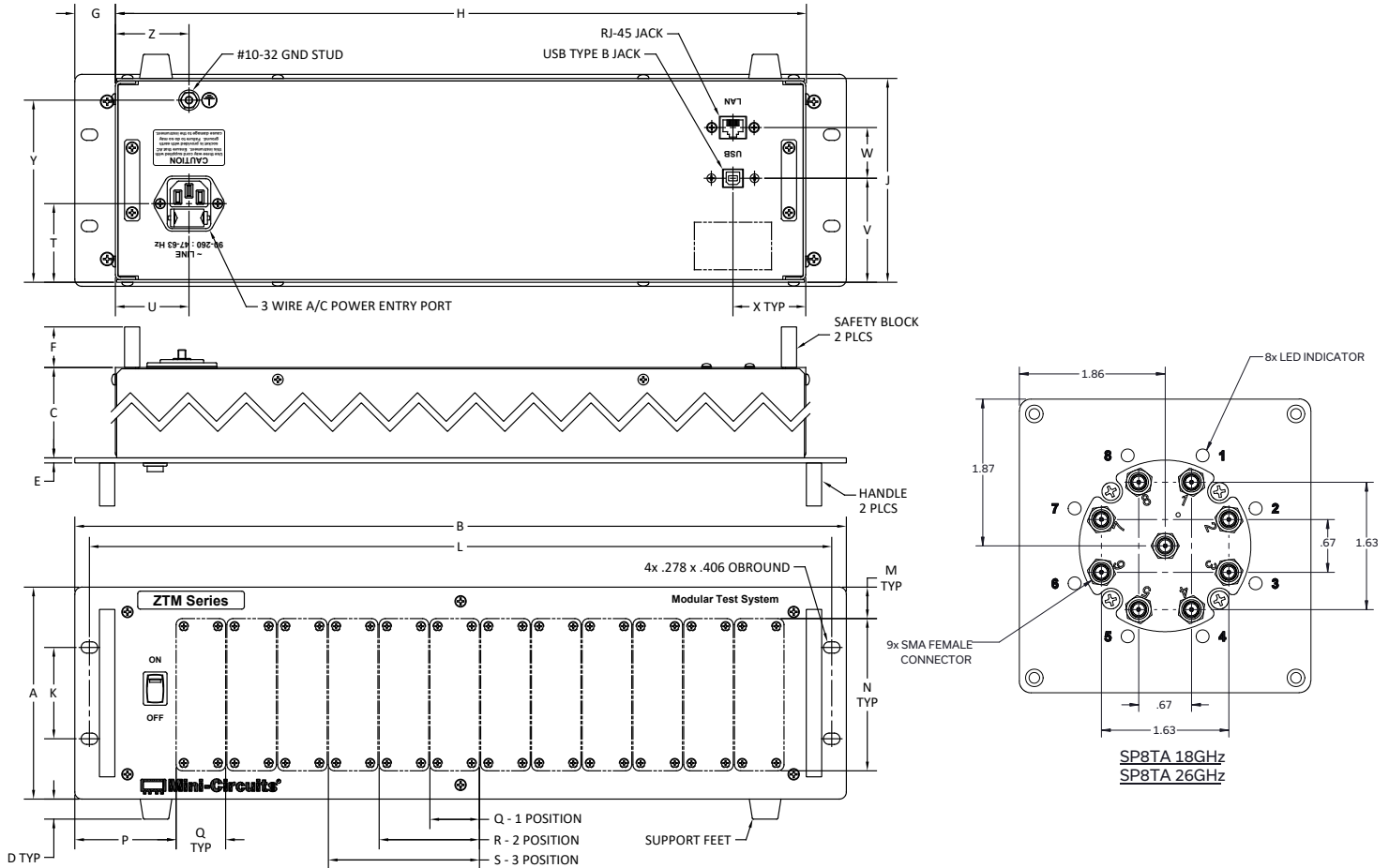
OUTLINE DIMENSIONS (Inch / mm)

A	B	C	D	E	F	G	H	J	K	L	M	N
5.22	19.00	13.00	0.49	0.13	1.00	1.000	0.95	17.00	5.02	2.25	18.28	3.75
132.6	482.6	330.2	12.45	3.30	25.4	25.4	24.13	431.8	127.5	57.2	464.3	95.3

P	Q	R	S	T	U	V	W	X	Y	Z		wt
2.50	1.22	2.47	3.72	1.94	1.81	2.56	1.25	1.79	4.49	1.81		grams
63.5	31.0	62.7	94.49	49.28	46.0	65.0	31.75	45.5	114.0	46.0		4535

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SOFTWARE & CONTROL SPECIFICATIONS

- Mini-Circuits' full software and support package including user guide, Windows GUI, DLL files, programming manual and examples can be downloaded free of charge from:
- www.minicircuits.com/softwaredownload/ztm_rcm.html
- Please contact testsolutions@minicircuits.com for support

Ethernet Control	Supported Protocols	TCP / IP, SSH, HTTP, Telnet, DHCP, UDP
	Max Data Rate	100 Mbps (100Base-T Full Duplex)
USB Control	Supported Protocols	HID - High Speed
	Min Communication Time	400 µs typ
Software Support	• Mini-Circuits' Universal GUI for USB & LAN control (Windows only) • ASCII / SCPI command syntax for LAN programming (all OS) • ActiveX / .Net DLL APIs for USB programming (Windows only) • Interrupt codes for direct USB programming (all OS) • Full programming instructions and examples for a wide range of languages	

PROGRAMMING COMMANDS

- The key ASCII / SCPI commands for control of the system are summarized below
- These can be sent via the USB or Ethernet API
- Please refer to the programming manual for full details

Command / Query	Description
:MN?	Read model name
:SN?	Read serial number
:FIRMWARE?	Read firmware version
:SP8T:sw_number:STATE:port	Set a single switch state: • sw_number = 1 to 4 • port = the switch state to set • :SP8T:1:STATE:2 (set switch 1 to state 2)
:Csw_number=port	Short-hand to set a single switch state: • sw_number = 1 to 4 • port = the switch state to set • C1=2 (set switch 1 to state 2)
:SP8T:sw_number:STATE?	Get the state of a single switch: • sw_number = 1 to n • :SP8T:1:STATE? (get the state of switch 1)

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GRAPHICAL USER INTERFACE (GUI) FOR WINDOWS

- Connect via USB or Ethernet
- Run GUI in "demo mode" to evaluate software without a hardware connection
- View and set all switch states
- Configure Ethernet settings
- Upgrade firmware
- Send SCPI commands

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ORDERING INFORMATION

Please contact Mini-Circuits' Test Solutions department for price and availability: testsolutions@minicircuits.com

Model	Description
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Included Accessories	Part No.	Description
CBL-3W-xx*	1	AC power cord (IEC C13 connector to local plug)
USB-CBL-AB-7+	1	USB cable (6.8 ft)
CBL-RJ45-MM-5+	1	Ethernet cable (5 ft)
HT-4-SMA	1	SMA Cable Wrench (4 in)

Cable Model	Region
CBL-3W-US	USA
CBL-3W-EU	Europe
CBL-3W-IL	Israel
CBL-3W-UK	UK
CBL-3W-AU	Australia / China