



## THE BIG DEAL

- Solid-state, high-performance switch
- Convenient rack-mountable chassis
- High port count (1 to 80)
- Ethernet & USB control



## APPLICATIONS

- High volume production testing / ATE
- 5G FR1, WiFi 6E, Bluetooth testing
- MIMO antenna testing
- RF signal routing / switch matrices

<b>Model Name</b>	ZTS-1SP80T-63H
<b>Case Style</b>	99-01-3086
<b>Connector</b>	N-type & SMA female

Refer to our website for compliance methodologies and qualifications



## PRODUCT OVERVIEW

Mini-Circuits' ZTS series platform allows multiple solid-state switch types to be combined and integrated into a single rack-mount package with software control via USB and Ethernet. ZTS-1SP80T-63H integrates a combination of Mini-Circuits' USB-1SP16T-83H (SP16T) and USB-1SP8T-63H (SP8T) models into a single SP80T (1 x 80) switch configuration, operating from 10 MHz to 6 GHz with fast switching and high isolation. All RF connections are accessible on the front panel of the 19-inch 2U height rack chassis, with N-type for the COM port and SMA for ports J1-J80.

The system can be controlled via USB or Ethernet (supporting both HTTP and Telnet network protocols). 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.

Mini-Circuits' novel serial interface allows multiple switch racks to be cascaded together into a daisy-chain; the full chain effectively becoming a single system with every switch controlled through a single USB or Ethernet connection and software interface.

## KEY FEATURES

Feature	Advantages
High performance switches	Single SP80T (1 x 80) configuration with high isolation is well suited to automated test setups with large numbers of devices or channels under test
Rack-mount chassis	Compact, 2U height 19" rack-chassis with all RF connections on the front, suits integration in automated production test environments
Ethernet & USB control	USB HID and Ethernet (HTTP / Telnet / SSH) interfaces ensure compatibility with most software environments and connection requirements.



## ELECTRICAL SPECIFICATIONS @ 25°C

Parameter	Conditions	Min	Typ	Max	Units
Frequency		10	-	6000	MHz
Path Loss	10 – 3000 MHz	-	10	13	dB
	3000 – 6000 MHz	-	14	17	
Isolation	Between Ports	65	75	-	dB
	COM to any terminated port	65	75	-	
Return Loss	1 – 3000 MHz	-	18	-	dB
	3000 – 6000 MHz	-	12	-	
Input Power	Thru Path, Cold Switching	-	-	+30	dBm
	Into Termination	-	-	+24	

## MECHANICAL SPECIFICATIONS

Dimensions	19" (W) x 2U (H) x 15" (D)			
Case Drawing	99-01-3086			
Case Material	Aluminum (with protective coating to prevent corrosion)			
RF Connectors	Panel	Connector	Quantity	Port Labels
	Front	N-type female	1	Com
SMA female		80	J1-J80	
	Front Panel		Rear Panel	
Panel Marking	<ul style="list-style-type: none"> <li>ZTS-1SP80T-63H</li> <li>Solid-State SP80T</li> <li>10-6000 MHz</li> </ul>		<ul style="list-style-type: none"> <li>CE / EAC / UKCA</li> <li>Serial number / date code / model name</li> </ul>	
Panel Items			<ul style="list-style-type: none"> <li>Power on / off switch with LED</li> <li>AC mains power input (IEC C14 inlet)</li> <li>USB type B socket</li> <li>RJ45 (LAN) socket</li> <li>2 x D-Sub 9-pin (SPI In &amp; Out)</li> </ul>	
Power Supply	AC mains power input (AC mains (100-240 V, 50 / 60 Hz))			
Fuse	2A, 250V rating			

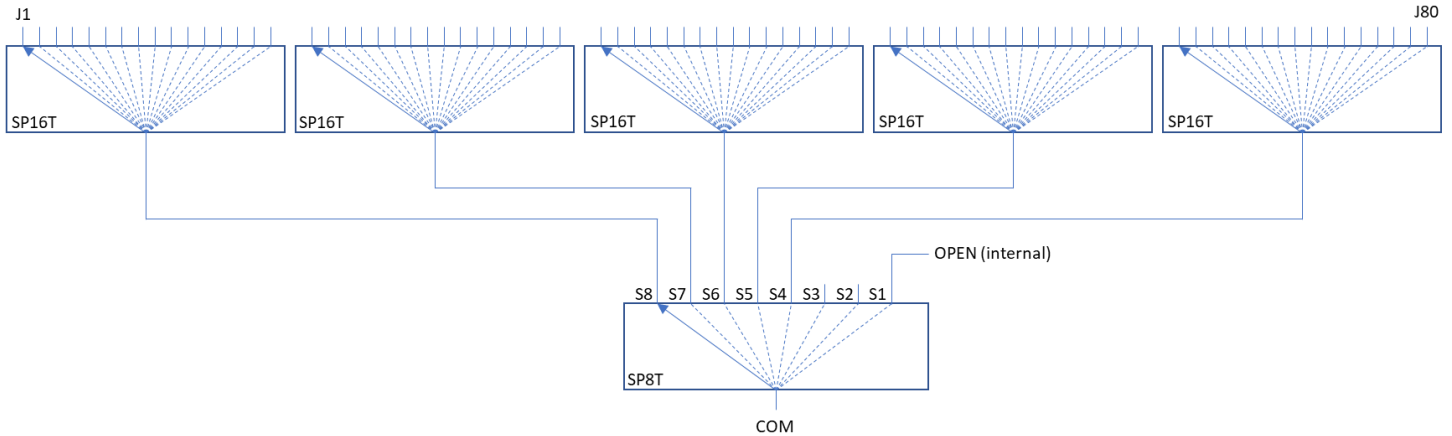
## MAX RATINGS

Parameter	Conditions	Limits	Units
Temperature	Operating	0 to +50	°C
	Storage	-15 to +60	
Input Power (No Damage)	Through path	+30	dBm
	Into internal termination	+24	



## FUNCTIONAL BLOCK DIAGRAM

- Absorptive SP80T (single-pole, eighty throw) switch
- Ports J1 to J80 are internally terminated in 50Ω when disconnected
- COM is reflective in the disconnected state (connected internally to S1 - open circuit)

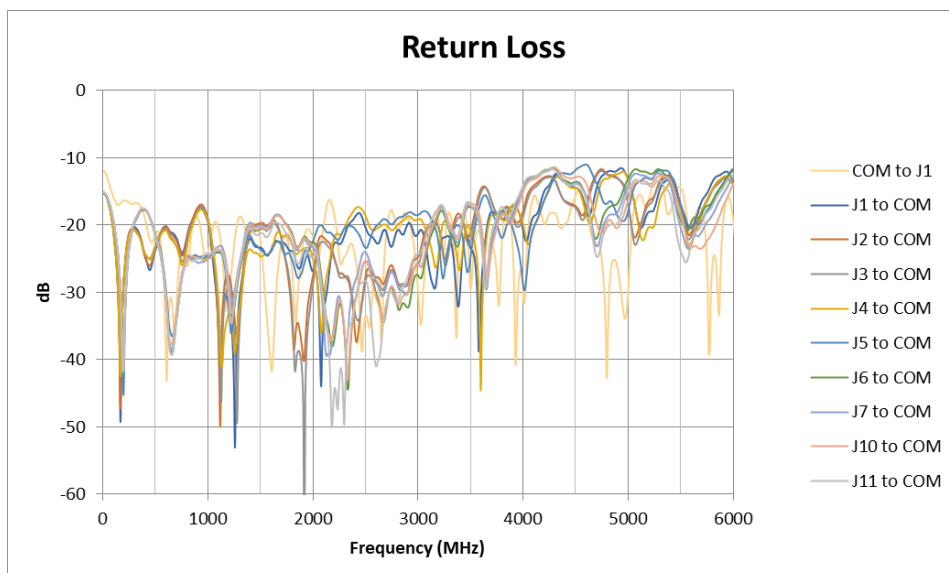
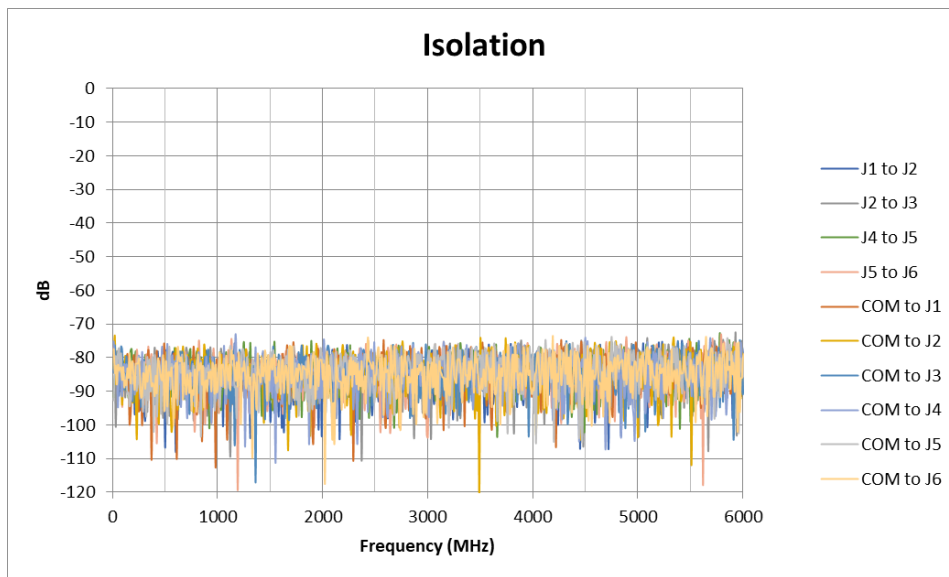
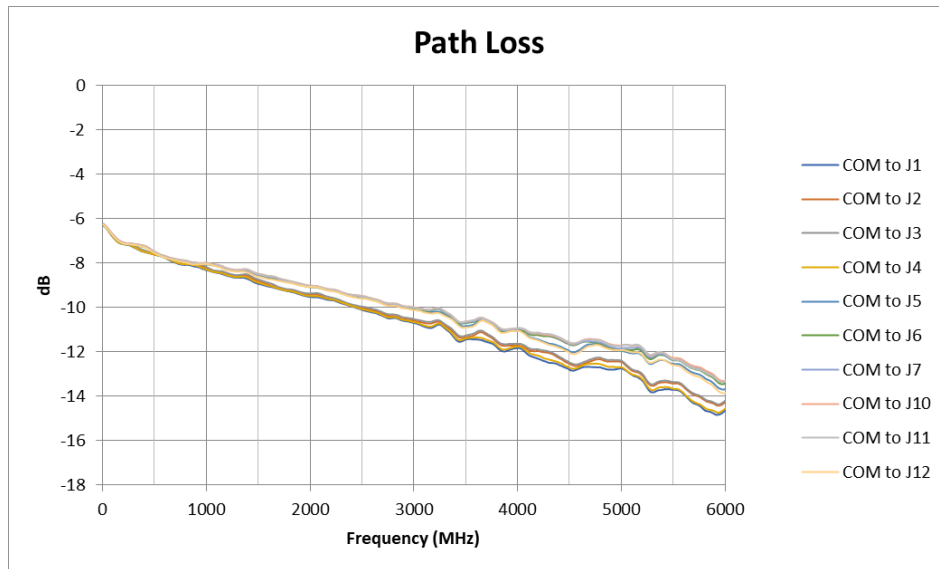


## SWITCH STATE TABLE

Command	Switch Path
:SP80T:STATE:0	All ports disconnected
:SP80T:STATE:1	Com to port J1
:SP80T:STATE:2	Com to port J2
:SP80T:STATE:3	Com to port J3
:SP80T:STATE:4	Com to port J4
:SP80T:STATE:5	Com to port J5
:SP80T:STATE:6	Com to port J6
:SP80T:STATE:7	Com to port J7
:SP80T:STATE:8	Com to port J8
...	...
:SP80T:STATE:80	Com to port J80

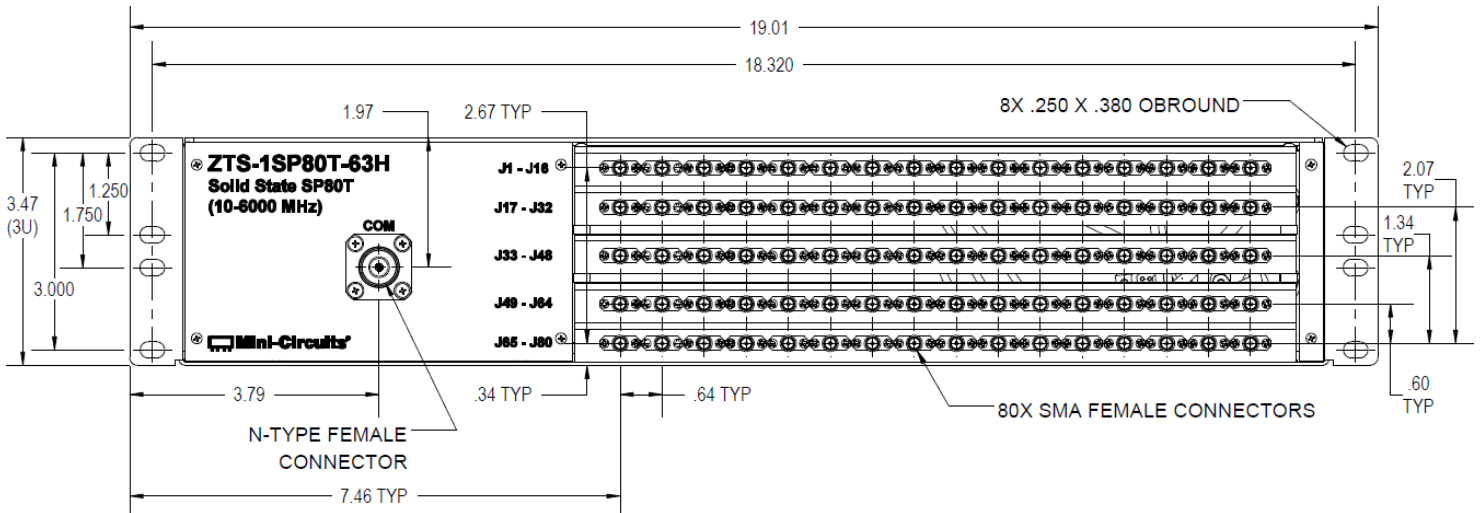
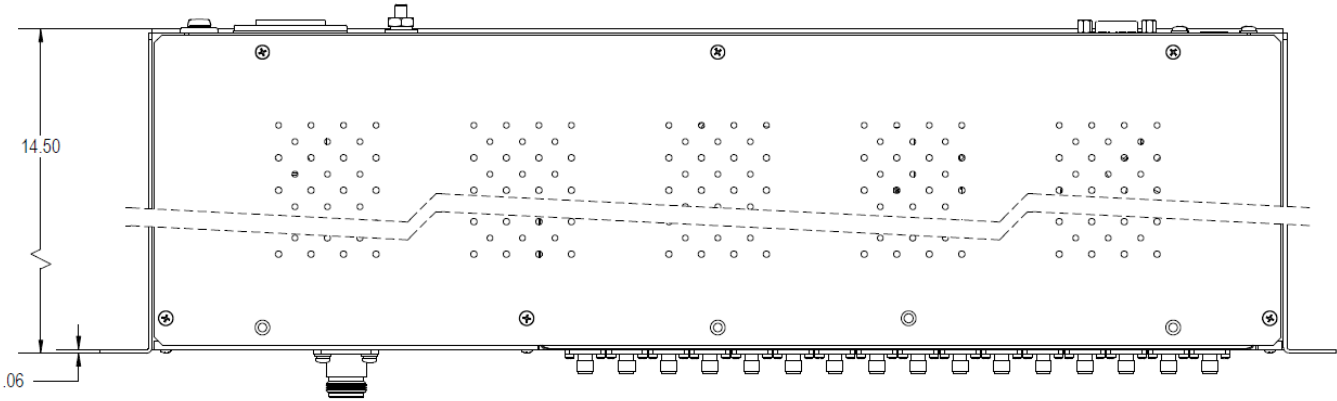
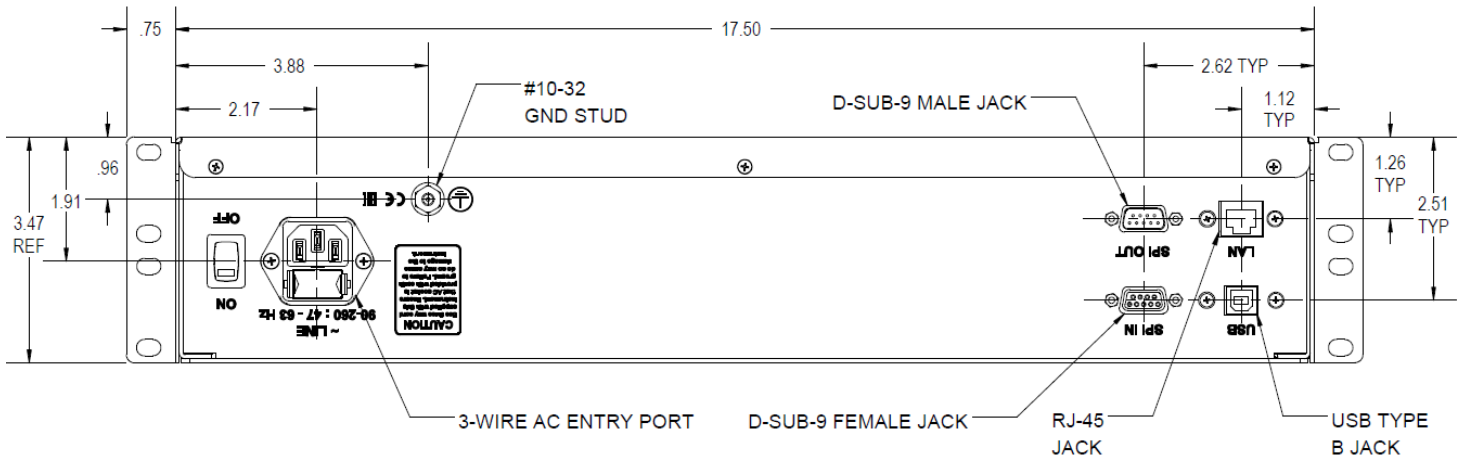


## TYPICAL PERFORMANCE DATA





## OUTLINE DRAWING



DIMENSIONS ARE IN INCHES

TOLERANCES ON:

2 PL DECIMALS ± .03

3 PL DECIMALS ± .015



## SOFTWARE SPECIFICATIONS

Please contact [testsolutions@minicircuits.com](mailto:testsolutions@minicircuits.com) for support

<b>Ethernet Control</b>	<b>Supported Protocols</b>	TCP / IP, SSH, HTTP, Telnet, DHCP, UDP
	<b>Max Data Rate</b>	100 Mbps (100Base-T Full Duplex)
<b>USB Control</b>	<b>Supported Protocols</b>	HID - High Speed
	<b>Min Communication Time</b>	400 $\mu$ s typ
<b>Software Support</b>	<ul style="list-style-type: none"> <li>• Mini-Circuits' Universal GUI for USB &amp; LAN control (Windows only)</li> <li>• ASCII / SCPI command syntax for LAN programming (all OS)</li> <li>• ActiveX / .Net DLL APIs for USB programming (Windows only)</li> <li>• Interrupt codes for direct USB programming (all OS)</li> <li>• Full programming instructions and examples for a wide range of languages</li> </ul>	
<b>Downloads</b>	<b>Software &amp; Documentation</b>	<a href="https://www.minicircuits.com/softwaredownload/multissw.html">https://www.minicircuits.com/softwaredownload/multissw.html</a>

## 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
:SP80T:STATE:port	Set the switch path: port = the switch port to connect Example. :SP80T:STATE:48 (set switch to state 48)
:SP80T:STATE?	Get the state of the SP80T

## GRAPHICAL USER INTERFACE (GUI)



## ORDERING INFORMATION

Please contact Mini-Circuits' Test Solutions department for price and availability:

[testsolutions@minicircuits.com](mailto:testsolutions@minicircuits.com)

## INCLUDED ACCESSORIES

Model Name	Quantity	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)

\*Please specify one option on the purchase order, at no charge

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

Revision	Updates	Date	Creator	Reviewer
1	Original web publication	2-Nov-21	LW	N/A
2	Updated format; added block diagram; added max ratings	10-Feb-23	LW	CM

### NOTES

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard. Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)