Solid-State SP16T Switch Rack   ZTS-1SP16T-83R

50Ω   1-8000 MHz

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-1SP16T-83R comprises a single high performance SP16T switch, operating from 1 MHz to 8 GHz with fast switching and high isolation. All SMA female RF connections (COM and ports 1-16) are accessible on the rear of the 19-inch 1U height rack chassis.

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 (both 32-bit and 64-bit systems).

Key Features

Feature	Advantages
High performance switches	Mini-Circuits' high performance solid-state switch modules are used, combining fast switching with high isolation
Rack-mountable chassis	The 1U height, rack-mountable chassis allows easy integration into automated production test environments
Ethernet-TCP/IP (HTTP & Telnet)	Remote control from any Windows®, Mac®, or Linux® computer, or even a mobile device with a network connection and Ethernet-TCP/IP (HTTP or Telnet protocols) support. Using a VPN would allow remote control from anywhere in the world.
USB HID (Human Interface Device)	Local control via USB connection. Plug-and-Play, no driver required. Compatible with Windows® or Linux® operating systems using 32 and 64 bit architectures.
Full software support	The user friendly Windows GUI (graphical user interface automation) allows manual control straight out of the box. A full API (application programming interface), programming examples and manuals are provided to allow automation in most programming environments.

Please contact *testsolutions@minicircuits.com* for support

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Mechanical Specifications

Dimensions	19" (W) x 1U (H) x 13" (D)
Case Material	Aluminum (with protective coatings to prevent corrosion)
Case Drawing	99-01-2966
RF Connectors	SMA female
Front panel	a) ON/OFF switch with indicator light b) Carry handles
Rear panel	a) Com and ports 1-16 (SMA female) b) AC mains power supply input c) USB & RJ45 control connections d) Label with date code/serial number/MCL part# for traceability
Control Interface	a) USB and Ethernet TCP/IP supporting HTTP and TELNET protocols
Power supply	a) AC mains power supply (90-260 V, 47-63 Hz) b) 2A, 250V fuse rating
Operating temp	0° to +50° C

Electrical Specifications at 25°C (per Switch)

Parameter	Conditions	Min	Typ	Max	Units
Frequency		1		8000	MHz
Insertion Loss	1-3000 MHz		6.5		dB
	3000-7000 MHz		8.5		
	7000-8000 MHz		10.5		
Return Loss	1-3000 MHz		12		dB
	3000-7000 MHz		12		
	7000-8000 MHz		12		
Isolation	Between ports 1-16		80		dB
	Com to 1-16 when disconnected		80		
Input Power	Cold switching - through path[1]			+30	dBm
	Hot switching			+20	
	Into internal termination			+25	

[1] Derate from +30 dBm @ 10 MHz to +25 dBm @ 1 MHz

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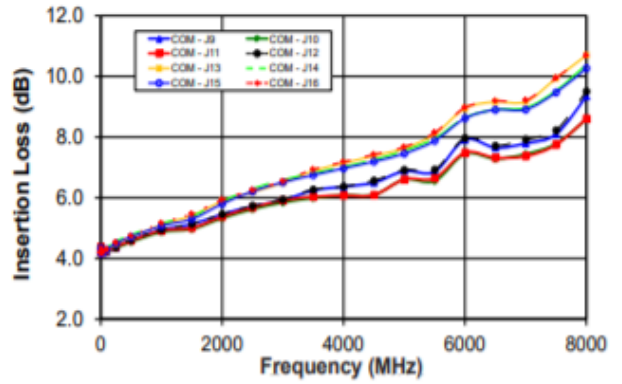## Typical Performance Data

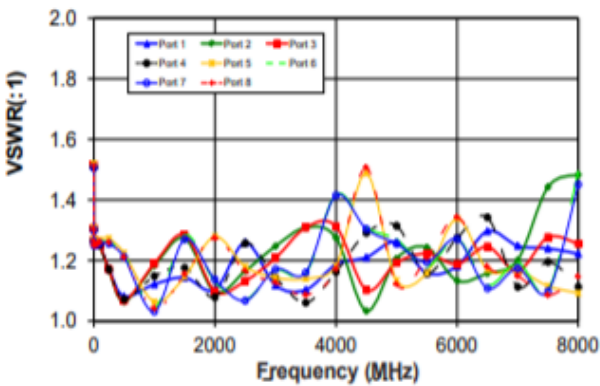**Insertion Loss over Temp.**
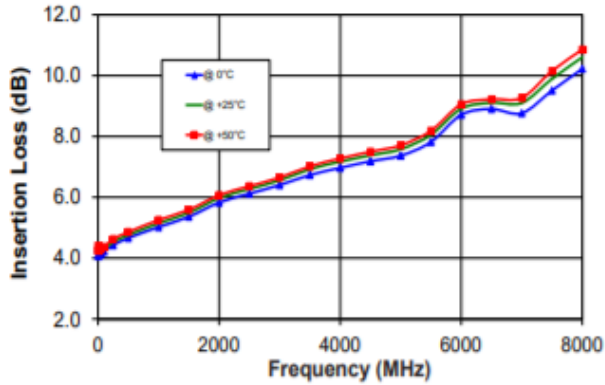
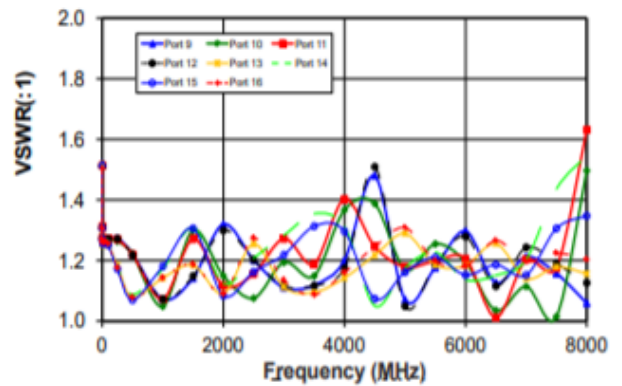**Insertion Loss of outputs J1-J8 in switch**
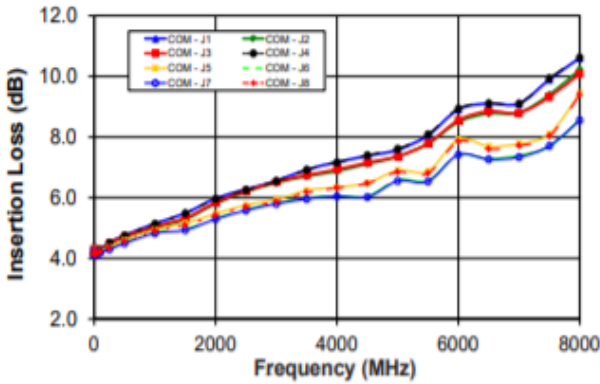
Insertion Loss of outputs J9-J16 in switch
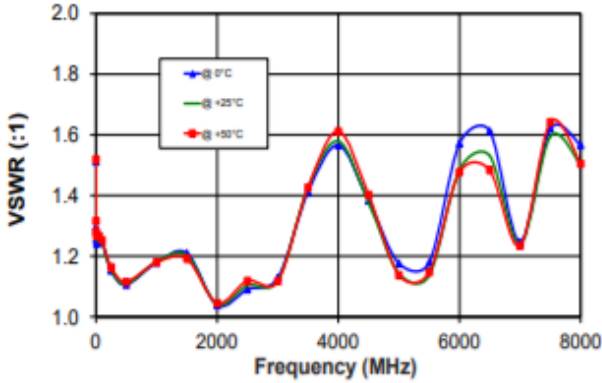

VSWR of active ports J1- J8
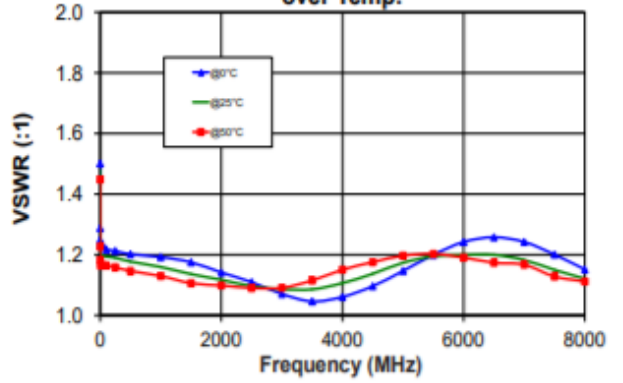

VSWR of active ports J9- J16
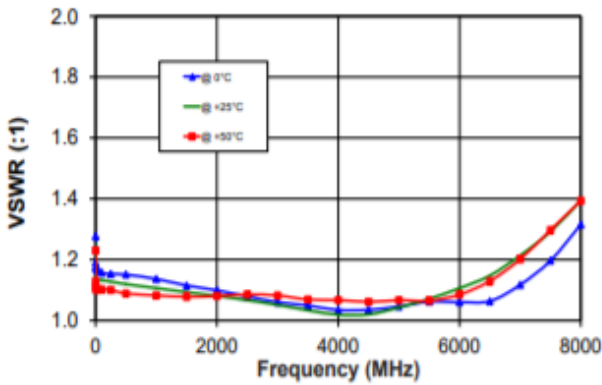
Typical Performance Data
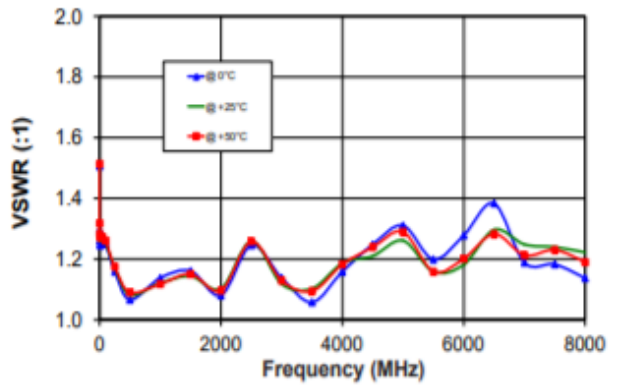
VSWR Common Port (Active) over Temp.

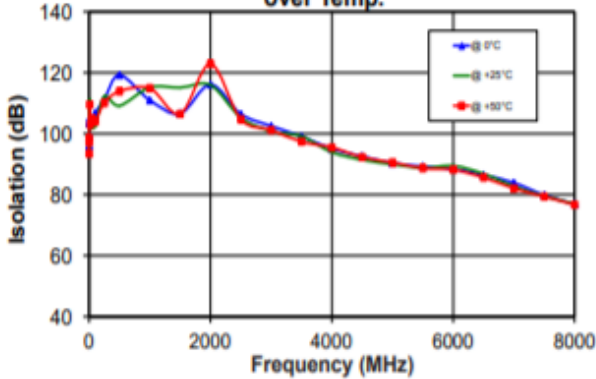**VSWR Common Port (Terminated) over Temp.**
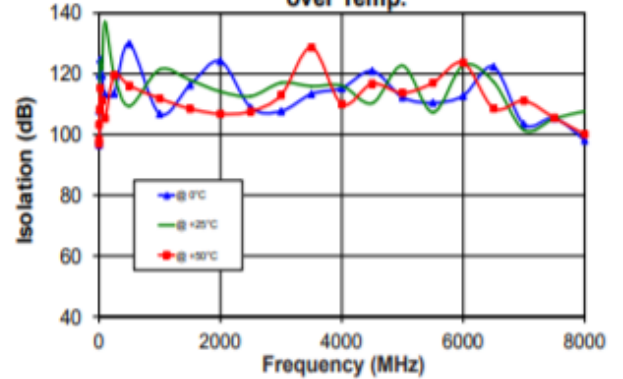

VSWR Output (Terminated) over Temp.

VSWR Output (Active) over Temp.

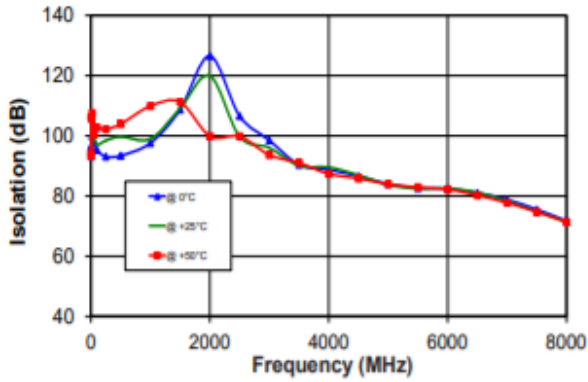

Isolation COM to J2 with J1 active over Temp.

Isolation COM to J1 with J16 active over Temp.

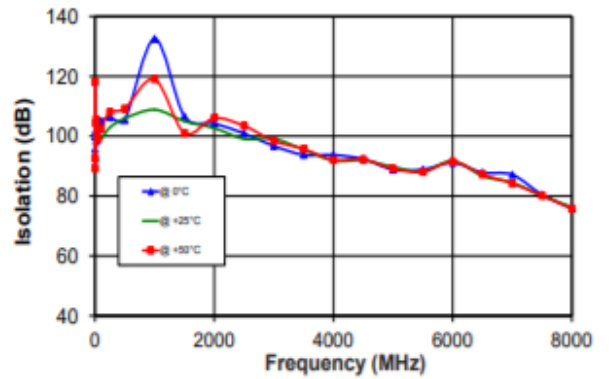# Solid-State SP16T Switch Rack ZTS-1SP16T-83R

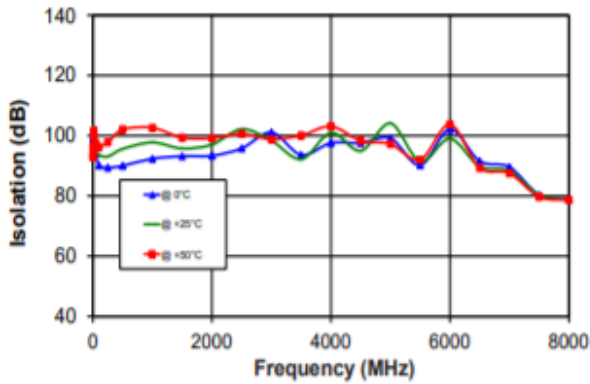## Typical Performance Data

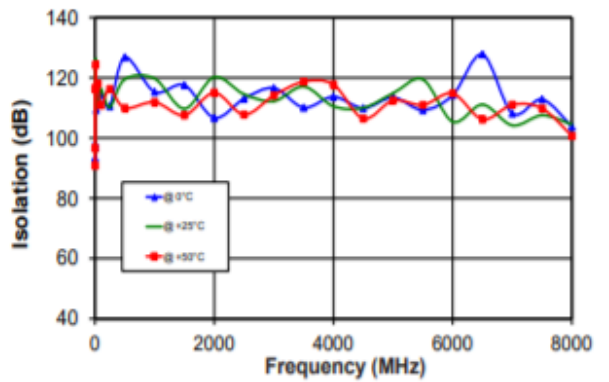Isolation COM to J8 with J7 active over Temp

Isolation J1 to J2 with J1 active over Temp

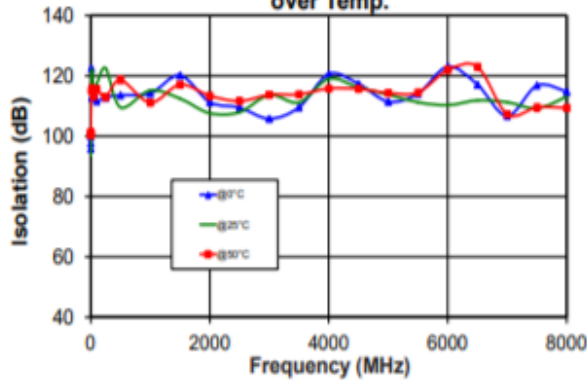

Isolation J7 to J8 with J7 active over Temp.

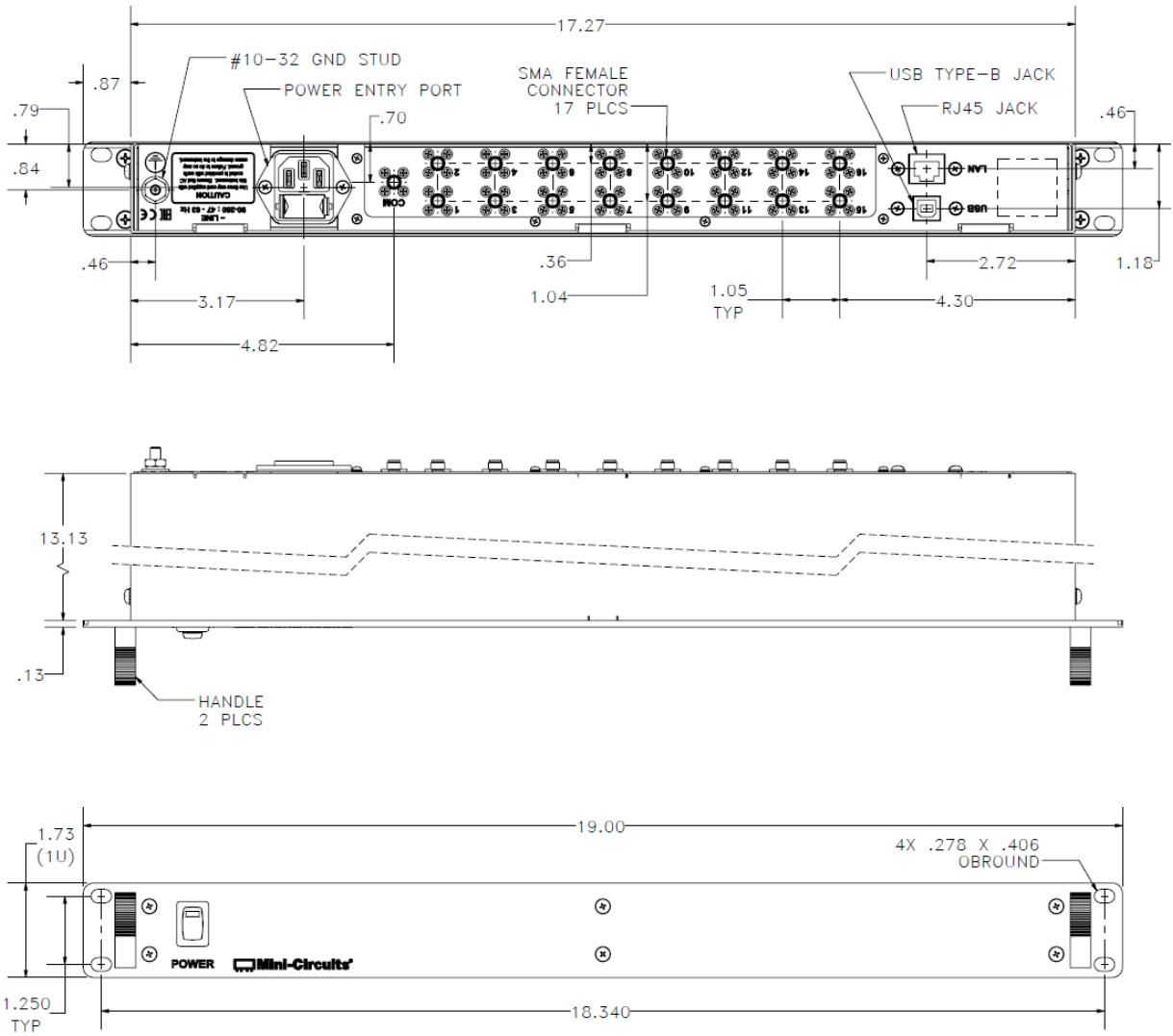Isolation J1 to J16 with J1 active over Temp

Isolation COM to J1 @ Disconnected State over Temp.

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Outline Drawing

Software Specifications

Software & Documentation Download:

- Mini-Circuits' full software and support package including user guide, Windows GUI, DLL files, programming manual and examples are available for download from:
  https://www.minicircuits.com/softwaredownload/multissw.html
- Please contact testsolutions@minicircuits.com for support

Minimum System Requirements:

Parameter	Requirements	
Interface	USB HID & Ethernet (HTTP & Telnet)	
System Requirements	GUI	Windows 98 or later
	USB API DLL	Windows 98 or later and programming environment with ActiveX or .NET support
	USB Direct Programming	Linux; Windows 98 or later
	Ethernet	Windows, Linux or Mac computer with a network port and Ethernet TCP / IP support
Hardware	Pentium II or later with 256 MB RAM	

Application Programming Interface (API)

Ethernet Support:
- Simple ASCII / SCPI command set for attenuator control
- Communication via HTTP or Telnet
- Supported by most common programming environments

USB Support (Windows):
- ActiveX COM DLL file for creation of 32-bit programs
- .NET library DLL file for creation of 32 / 64-bit programs
- Supported by most common programming environments (refer to application note AN-49-001 for summary of supported environments)

USB Support (Linux):
- Direct USB programming using a series of USB interrupt codes

Full programming instructions and examples available for a wide range of programming environments / languages.

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Graphical User Interface (GUI) for Windows - Key Features

- 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
- View temperature & fan status