

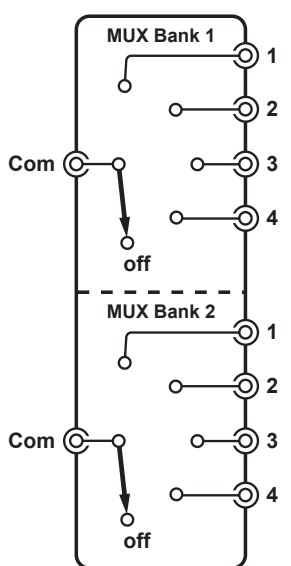
- Single or Dual, Subminiature SP6T & SP4T Multiplexers
- 6 GHz, 18 GHz, 26.5 GHz and 40 GHz Bandwidths
- High Density
- Lower Cost SP4T Options
- Extended Life for 6 GHz/18 GHz/26.5 GHz Options (>10 M Operations Per Position)
- Faster Operate Time than Conventional Microwave Relay Solutions (Typically <10.5 ms)
- VISA, IVI & Kernel Drivers Supplied for Windows
- Supported by PXI or LXI Chassis
- 3 Year Warranty

The 40-784 PXI microwave multiplexer modules are suitable for switching 50 Ω signals up to 40 GHz. Available in single or dual, SP6T or SP4T configurations, they are suitable for constructing complex microwave switching networks. Connection is by high performance front panel mounted SMA or SMA-2.9 connectors.

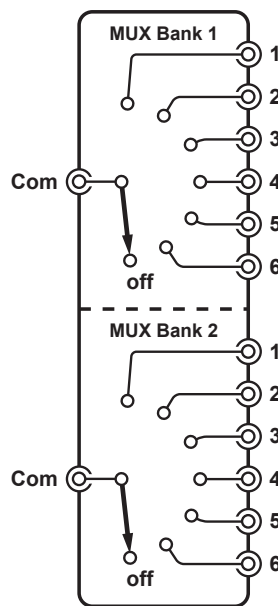
These modules give you the highest RF and microwave switching performance available within a Pickering switching system. Although designed for microwave applications, they have many uses in the RF spectrum where extremely low insertion loss and ultra high isolation are critical.



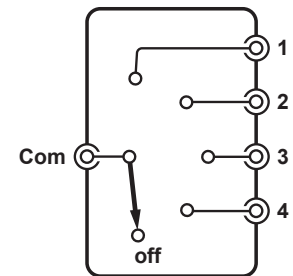
For applications where PXI slot space is critical, users should consider the remote relay versions of the 40-785 which support up to 3 remotely mounted multiplexers from a single PXI slot.



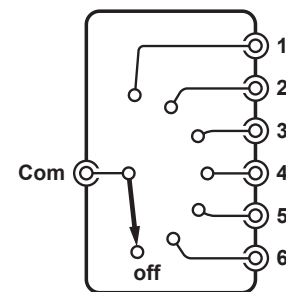
**40-784 Dual SP4T
Microwave Multiplexer**



**40-784 Dual SP6T
Microwave Multiplexer**



**40-784 Single SP4T
Microwave Multiplexer**



**40-784 Single SP6T
Microwave Multiplexer**

General Multiplexer Specification

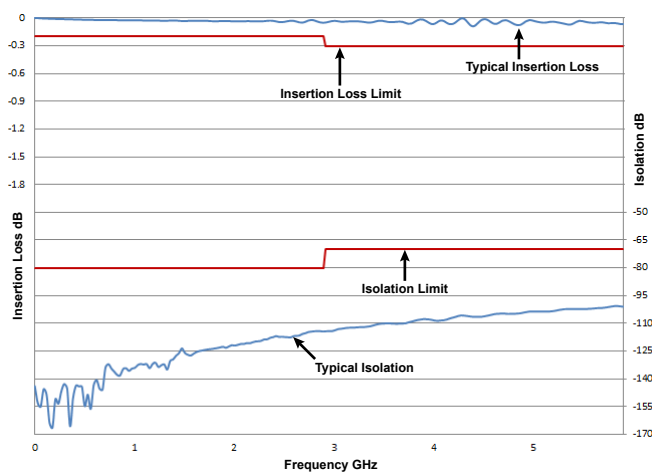
Configuration:	SP6T or SP4T μ Wave MUX with 1 or 2 independent banks
Operate Time:	<10.5 ms
Maximum Cold Switch Voltage:	100 V
Maximum Carry Current:	1 A

Multiplexer Specification - 6GHz Versions

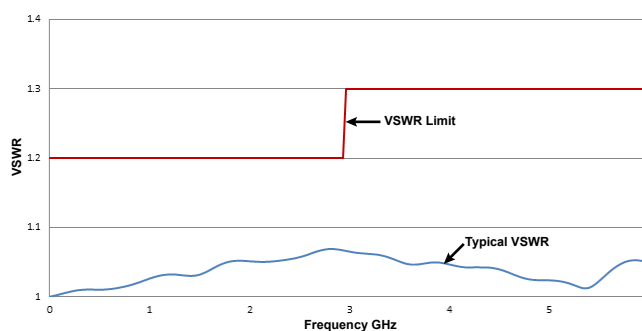
Characteristic Impedance:	50 Ω
Connectors:	SMA
Bandwidth	DC to 6 GHz
Maximum RF Carry Power:	150 W (0-3 GHz) 95 W (3-6 GHz)
Isolation:	>80 dB (0-3 GHz) >70 dB (3-6 GHz)
Insertion Loss:	<0.2 dB (0-3 GHz) <0.3 dB (3-6 GHz)
VSWR:	<1:1.2 (0-3 GHz) <1:1.3 (3-6 GHz)
Expected Life (low power):	>10 million operations per position

Multiplexer Specification - 18GHz Versions

Characteristic Impedance:	50 Ω
Connectors:	SMA
Bandwidth	DC to 18 GHz
Maximum RF Carry Power:	240 W (0-3 GHz) 150 W (3-8 GHz) 120 W (8-12.4 GHz) 100 W (12.4-18 GHz)
Isolation:	>80 dB (0-3 GHz) >70 dB (3-8 GHz) >60 dB (8-12.4 GHz) >60 dB (12.4-18 GHz)
Insertion Loss:	<0.2 dB (0-3 GHz) <0.3 dB (3-8 GHz) <0.4 dB (8-12.4 GHz) <0.5 dB (12.4-18 GHz)
VSWR:	<1:1.2 (0-3 GHz) <1:1.3 (3-8 GHz) <1:1.4 (8-12.4 GHz) <1:1.5 (12.4-18 GHz)
Propagation Delay Variation (between channels):	<1 ps
Expected Life (low power):	>10 million operations per position



Typical Insertion Loss & Isolation Plots - 6 GHz Versions



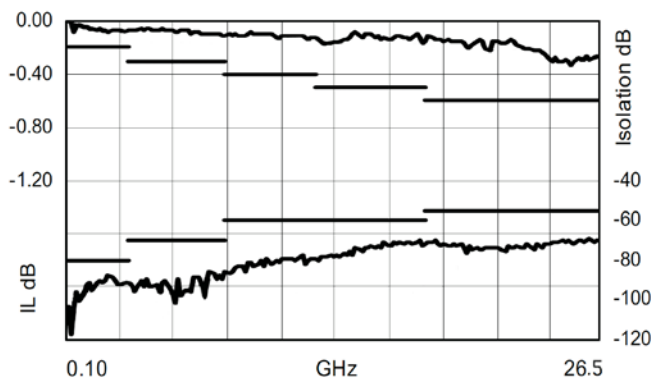
Typical VSWR Plot - 6 GHz Versions

Multiplexer Specification - 26.5GHz Versions

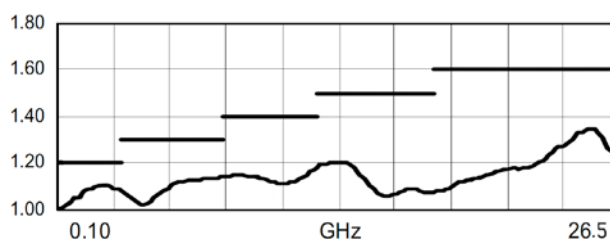
Characteristic Impedance:	50 Ω
Connectors:	SMA
Bandwidth	DC to 26.5 GHz
Maximum RF Carry Power:	150 W (0-3 GHz) 95 W (3-8 GHz) 75 W (8-12.4 GHz) 65 W (12.4-18 GHz) 25 W (18-26.5 GHz)
Isolation:	>80 dB (0-3 GHz) >70 dB (3-8 GHz) >60 dB (8-12.4 GHz) >60 dB (12.4-18 GHz) >55 dB (18-26.5 GHz)
Insertion Loss:	<0.2 dB (0-3 GHz) <0.3 dB (3-8 GHz) <0.4 dB (8-12.4 GHz) <0.5 dB (12.4-18 GHz) <0.6 dB (18-26.5 GHz)
VSWR:	<1:1.2 (0-3 GHz) <1:1.3 (3-8 GHz) <1:1.4 (8-12.4 GHz) <1:1.5 (12.4-18 GHz) <1:1.6 (18-26.5 GHz)
Expected Life (low power):	>10 million operations per position

Multiplexer Specification - 40GHz Versions

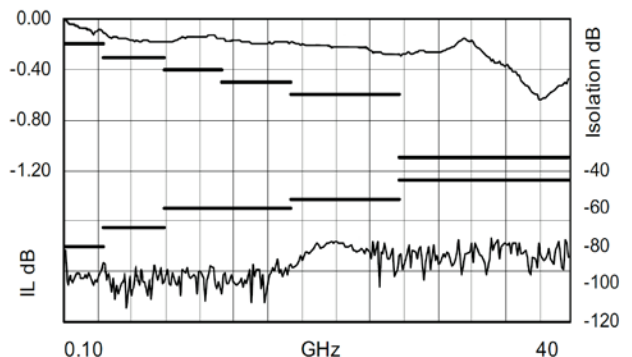
Characteristic Impedance:	50 Ω
Connectors:	SMA-2.9
Bandwidth	DC to 40 GHz
Maximum RF Carry Power:	60 W (0-3 GHz) 35 W (3-8 GHz) 30 W (8-12.4 GHz) 25 W (12.4-18 GHz) 15 W (18-26.5 GHz) 5 W (26.5-40 GHz)
Isolation:	>80 dB (0-3 GHz) >70 dB (3-8 GHz) >60 dB (8-12.4 GHz) >60 dB (12.4-18 GHz) >55 dB (18-26.5 GHz) >45 dB (26.5-40 GHz)
Insertion Loss:	<0.2 dB (0-3 GHz) <0.3 dB (3-8 GHz) <0.4 dB (8-12.4 GHz) <0.5 dB (12.4-18 GHz) <0.7 dB (18-26.5 GHz) <1.1 dB (26.5-40 GHz)
VSWR:	<1:1.2 (0-3 GHz) <1:1.3 (3-8 GHz) <1:1.4 (8-12.4 GHz) <1:1.5 (12.4-18 GHz) <1:1.7 (18-26.5 GHz) <1:2.2 (26.5-40 GHz)
Expected Life (low power):	>2 million ops per position



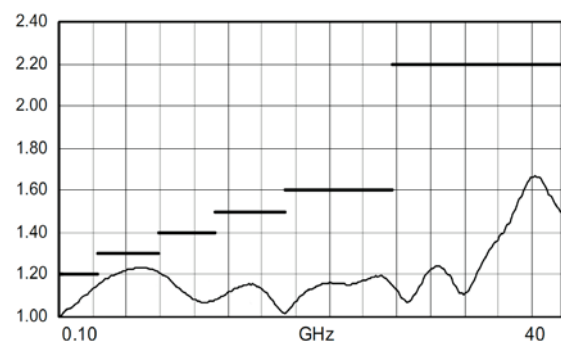
Typical Insertion Loss & Isolation Plots - 26.5 GHz Versions



Typical VSWR Plot - 26.5 GHz Versions



Typical Insertion Loss & Isolation Plots - 40 GHz Versions



Typical VSWR Plot - 40 GHz Versions

Power Requirements

+3.3V	+5V	+12V	-12V
0	0.2A	0.5A	0

Mechanical Characteristics

2 slot 3U PXI (CompactPCI card).

3D models for all versions in a variety of popular file formats are available on request.

Connectors

PXI bus via 32-bit P1/J1 backplane connector.

Signals via front panel mounted SMA or SMA-2.9 connectors.

Operating/Storage Conditions

Operating Conditions

Operating Temperature:	0°C to +55°C
Humidity:	Up to 90% non-condensing
Altitude:	5000 m

Storage and Transport Conditions

Storage Temperature:	-20°C to +75°C
Humidity:	Up to 90% non-condensing
Altitude:	15000 m

PXI & CompactPCI Compliance

The module is compliant with the PXI Specification 2.2.
Local Bus, Trigger Bus & Star Trigger are not implemented.
Uses a 33 MHz 32-bit backplane interface.

Safety & CE Compliance

All modules are fully CE compliant and meet applicable EU directives: Low-voltage safety EN61010-1:2010, EMC Immunity EN61326-1:2013, Emissions EN55011:2009+A1:2010.

Product Order Codes

Single SP6T MUX 6 GHz, 50 Ω SMA	40-784-001
Dual SP6T MUX 6 GHz, 50 Ω SMA	40-784-002
Single SP4T MUX 6 GHz, 50 Ω SMA	40-784-101
Dual SP4T MUX 6 GHz, 50 Ω SMA	40-784-102
Single SP6T MUX 18 GHz, 50 Ω SMA	40-784-021
Dual SP6T MUX 18 GHz, 50 Ω SMA	40-784-022
Single SP6T MUX 26.5 GHz, 50 Ω SMA	40-784-031
Dual SP6T MUX 26.5 GHz, 50 Ω SMA	40-784-032
Single SP4T MUX 26.5 GHz, 50 Ω SMA	40-784-131
Dual SP4T MUX 26.5 GHz, 50 Ω SMA	40-784-132
Single SP6T MUX 40 GHz, 50 Ω SMA-2.9	40-784-041
Dual SP6T MUX 40 GHz, 50 Ω SMA-2.9	40-784-042
Single SP4T MUX 40 GHz, 50 Ω SMA-2.9	40-784-141
Dual SP4T MUX 40 GHz, 50 Ω SMA-2.9	40-784-142

Product Customization

Pickering modules are designed and manufactured on our own flexible manufacturing lines, giving complete product control and enabling simple customization to meet very specific requirements.

Customization can include:

- Alternative relay types
- Mixture of relay types
- Alternative number of relays
- Different performance specifications

All customized products are given a unique part number, fully documented and may be ordered at any time in the future. Please contact your local sales office to discuss.

Mating Connectors & Cabling

For connection accessories for the 40-784 range please refer to the [90-011D](#) RF Cable Assemblies data sheet where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.



**40-784 Single SP6T
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**40-784 Dual SP4T
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Chassis Compatibility

This PXI module must be used in a suitable chassis. It is compatible with the following chassis types:

- All chassis conforming to the 3U PXI and 3U Compact PCI (cPCI) specification
- Legacy and Hybrid Peripheral slots in a 3U PXI Express (PXIe) chassis
- Pickering Interfaces LXI or LXI/USB Modular Chassis

Chassis Selection Guide

Standard PXI or hybrid PXIe Chassis from any Vendor:

- Mix our 1000+ PXI switching & simulation modules with any vendor's PXI instrumentation
- Embedded or remote Windows PC control
- Real-time Operating System Support
- High data bandwidths, especially with PXI Express
- Integrated module timing and synchronization

Pickering LXI or LXI/USB Modular Chassis—only accept our 1000+ PXI Switching & Simulation Modules:

- Ethernet or USB control enables remote operation
- Low-cost control from practically any controller
- LXI provides manual control via Web browsers
- Driverless software support
- Power sequencing immunity
- Ethernet provides chassis/controller voltage isolation
- Independence from Windows operating system



Connectivity Solutions

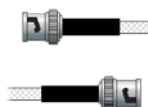
We provide a full range of supporting cable and connector solutions for all our switching products—20 connector families with 1200+ products. We offer everything from simple mating connectors to complex cables assemblies and terminal blocks. All assemblies are manufactured by Pickering and are guaranteed to mechanically and electrically mate to our modules.



Connectors & Backshells



Multiwire Cable Assemblies



RF Cable Assemblies



Connector Blocks

We also offer customized cabling and have a free online **Cable Design Tool** that can be used to create custom cable solutions for many applications. Visit: pickeringtest.com/cdt to start your design.

Mass Interconnect

We recommend the use of a mass interconnect solution when an Interchangeable Test Adapter (ITA) is required for a PXI or LXI based test system. Our modules are fully supported by both Virginia Panel and MacPanel.

Pickering Reed Relays

We are the only switch provider with in-house reed relay manufacturing capability via our Relay Division. These instrument grade reed relays feature **SoftCenter™** technology, ensuring long service life and repeatable contact performance. To learn more, please go to: pickeringrelay.com



Programming

Pickering provide kernel, IVI and VISA (NI & Keysight) drivers which are compatible with all Microsoft supported versions of Windows and popular older versions. For a list of all supporting operating systems, please see: pickeringtest.com/os

The VISA driver is also compatible with Real-Time Operating Systems such as LabVIEW RT. For other RTOS support contact Pickering. These drivers may be used with a variety of programming environments and applications including:

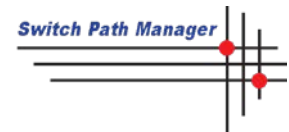
- **Pickering Interfaces Switch Path Manager**
- **National Instruments** products (LabVIEW, LabWindows/CVI, Switch Executive, MAX, TestStand, VeriStand, etc.)
- **Microsoft Visual Studio** products (Visual Basic, Visual C++)
- **Keysight** VEE and OpenTAP
- **Mathworks** Matlab
- **Marvin** ATEasy
- **MTQ Testsolutions** Tecap Test & Measurement Suite

Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help you develop test routines with ease.

To learn more about software drivers and development environments, please go to: pickeringtest.com/software

Signal Routing Software

Our signal routing software, Switch Path Manager, automatically selects and energizes switch paths through Pickering switching systems. Signal routing is performed by simply defining test system endpoints to be connected together, greatly accelerating Test System software development. To learn more, please go to: pickeringtest.com/spm



Diagnostic Relay Test Tools

eBIRST Switching System Test Tools are designed specifically for our PXI, PCI or LXI products, these tools simplify switching system fault-finding by quickly testing the system and graphically identifying the faulty relay.

To learn more, please go to: pickeringtest.com/ebirst



Three Year Warranty & Guaranteed Long-Term Support

All standard products manufactured by Pickering Interfaces are warranted against defective materials and workmanship for a period of three years from the date of delivery to the original purchaser. Extended warranty and service agreements are available for all our modules and systems with various levels to suit your requirements. Although we offer a 3-year warranty as standard, we also include guaranteed long-term support—with a history of supporting our products for typically 15-20 years. To learn more, please go to: pickeringtest.com/support

Available Product Resources

We have a large library of product resources including success stories, product and support videos, articles and white papers as well as application specific product brochures to assist when looking for the switching, simulation and connection solutions you need. We have also published handy reference books on Switching Technology and for the PXI and LXI standards.



To view, download or request any of our product resources, please visit: pickeringtest.com/resources