PCI 8x9 RF Coaxial Matrix Card 50-725A

- 8x9 RF Coaxial Matrix
- Up To 500 MHz Bandwidth
- 50 Ω and 75 Ω Versions Available
- High Quality Ruthenium Reed Relays
- High Density SMB Coaxial Connectors
- 75 Ω Version Suitable for Telecoms and High Quality Video Switching
- VISA, IVI & Kernel Drivers Supplied for Windows
- Supported by eBIRST ™
- 3 Year Warranty

The 50-725A is an 8x9 RF Matrix Card suitable for switching frequencies up to 500 MHz. It is available in either 50 Ω or 75 Ω versions with SMB coaxial connectors. It is intended for the easy construction of high performance bidirectional matrix switching systems.

Automatic isolation switches are located on all coaxial connectors (refer to diagram), these disconnect the matrix from the external test fixture. This maximizes isolation and RF performance.

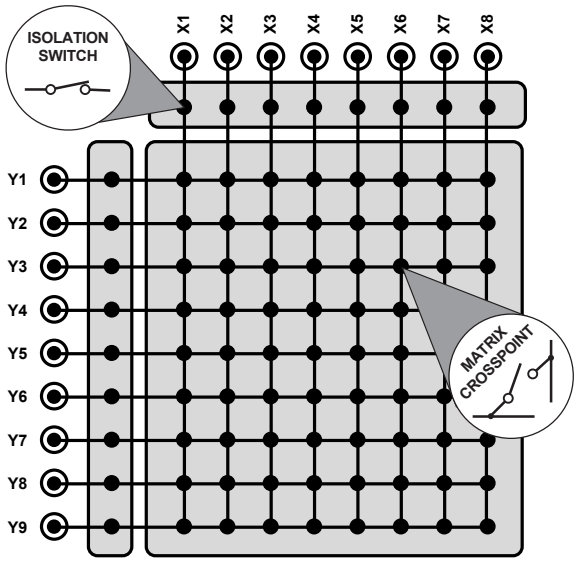
Matrix Operations

The 50-725A is a true 8x9 high density matrix, any combination of crosspoints may be selected. Only the signal is switched, all grounds are common.

Supported by *eBIRST*

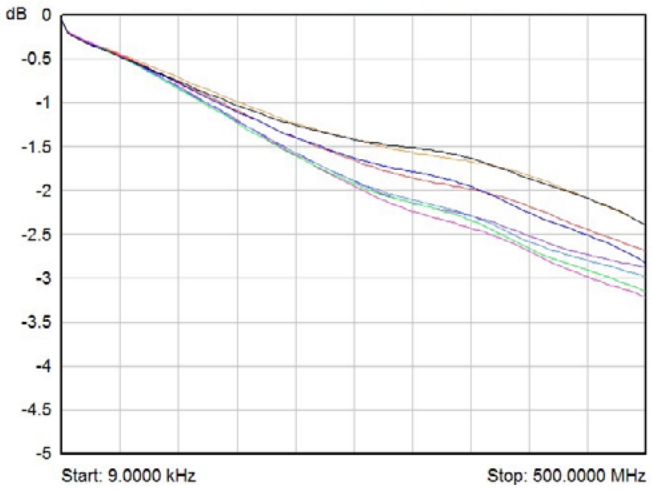
eBIRST test tools simplify switching fault-finding by quickly testing the system and graphically identifying the faulty relay.

For more information go to: pickeringtest.com/ebirst

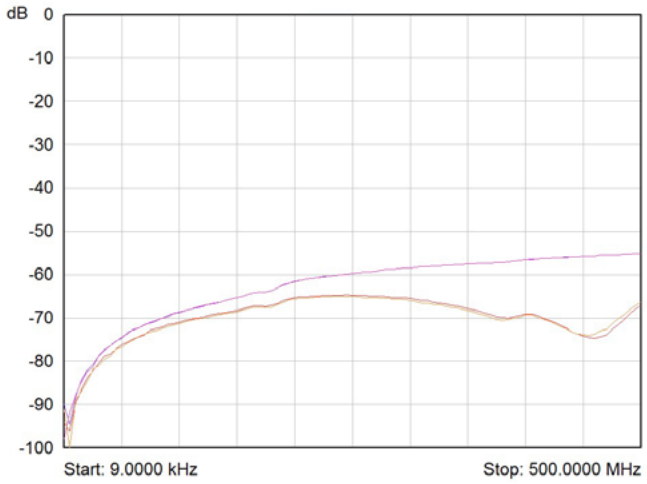


8x9 Coaxial Matrix Schematic Diagram

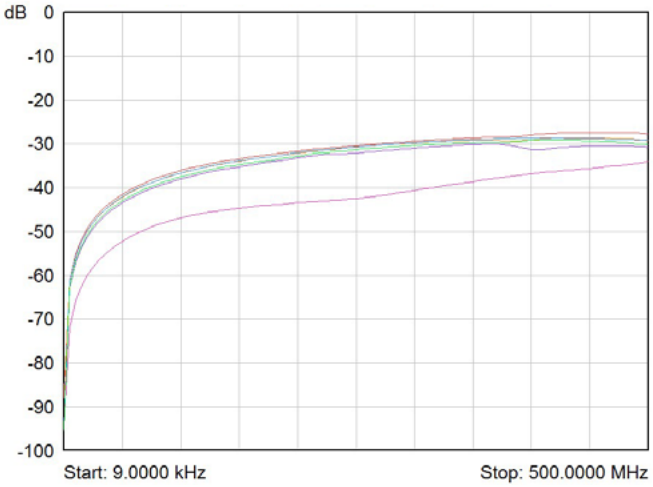
RF Performance Plots for the 50-725A-511 50 Ω RF Coaxial Matrix



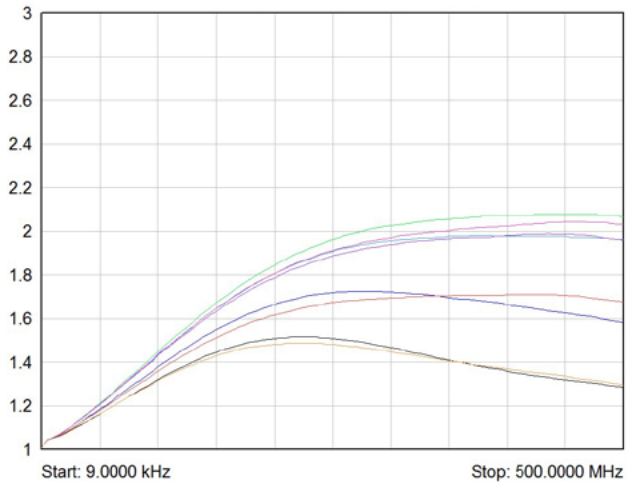
50-725A-511 (50 Ω Version) Insertion Loss to 500 MHz



50-725A-511 (50 Ω Version) Isolation to 500 MHz

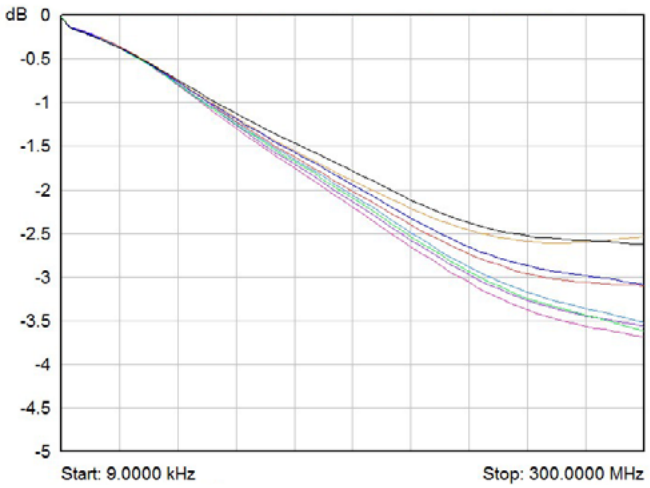


50-725A-511 (50 Ω Version) Crosstalk to 500 MHz

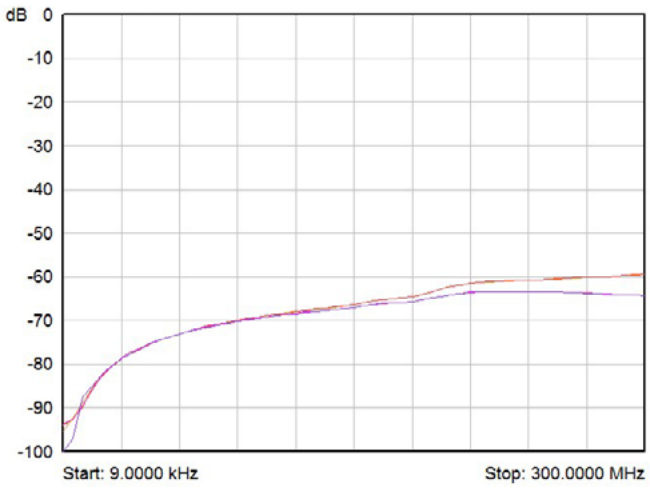


50-725A-511 (50 Ω Version) VSWR to 500 MHz

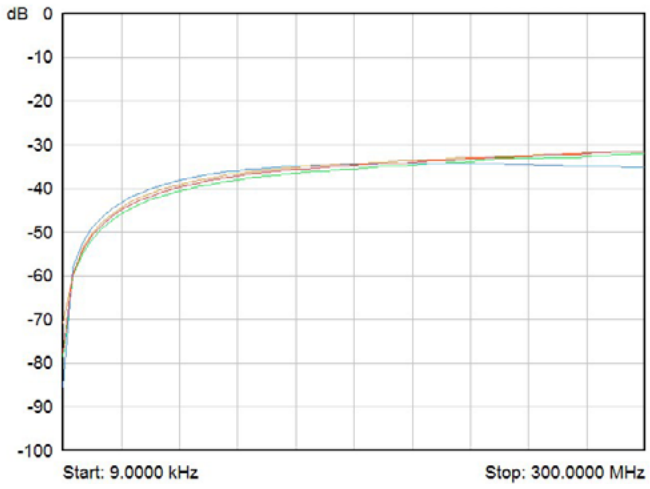
RF Performance Plots for the 50-725A-751 75 Ω RF Coaxial Matrix



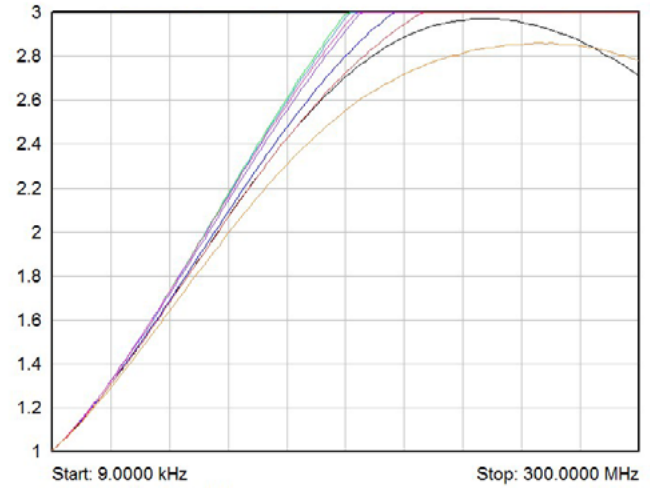
50-725A-751 (75 Ω Version) Insertion Loss to 300 MHz



50-725A-751 (75 Ω Version) Isolation to 300 MHz



50-725A-751 (75 Ω Version) Crosstalk to 300 MHz



50-725A-751 (75 Ω Version) VSWR to 300 MHz

Relay Type

The 50-725A is fitted with ruthenium sputtered reed relays, these offer very stable switch contact resistance with expected life of 10^9 operations when switching typical RF signals. Spare RF relays are built onto the circuit board to allow easy maintenance with minimum downtime.

All reed relays are manufactured by our Relay Division, for more information please refer to: pickeringrelay.com

General Switching Specification

Max Switching Voltage:	100 V
Max Power:	3 W
Max Switch Current:	0.25 A
Max Carry Current:	0.5 A
Characteristic Impedance:	50 Ω or 75 Ω
On Path Resistance:	<750 mΩ
Off Path Resistance:	>1x10^8 Ω
Differential Thermal Offset:	<40 µV
Operate Time:	<1.0 ms, 0.5 ms typical.
Expected Life	
Low power load:	>1x10^9 operations
Full power load:	>5x10^6 operations

RF Specification

Maximum Frequency - 50 Ω Version:	500 MHz
Maximum Frequency - 75 Ω Version:	150 MHz
Insertion Loss - 50 Ω Version:	<4 dB to 500 MHz
Insertion Loss - 75 Ω Version:	<4 dB to 150 MHz
V.S.W.R. - 50 Ω Version:	<3:1 at 400 MHz
V.S.W.R. - 75 Ω Version:	<3:1 to 100 MHz
Isolation - 50 Ω Version:	50 dB at 500 MHz
Crosstalk - 50 Ω Version:	30 dB at 100 MHz 25 dB at 500 MHz
Crosstalk - 75 Ω Version:	40 dB at 25 MHz 30 dB at 150 MHz

Note: Matrix RF Performance is entirely dependent upon the combination of crosspoints currently selected, these figures are for one selected crosspoint on any X or Y channel only, refer to graphs.

Power Requirements

+3.3 V	+5 V	+12 V	-12 V
350 mA	1 A typical	0	0

Mechanical Characteristics

Single slot short PCI format.
3D models for all versions in a variety of popular file formats are available on request.

Connectors

Signals via 17 off SMB coax connectors, for pin outs please refer to the operating manual.

Operating/Storage Conditions

Operating Temperature:	0 °C to +55 °C
Humidity:	Up to 90 % non-condensing
Altitude:	5000 m
Storage Temperature:	-20 °C to +75 °C
Humidity:	Up to 90 % non-condensing
Altitude:	15000 m

PCI Compliance

The 50-725A card complies with the PCI Specification 2.0 (issued Feb 2004).

Signalling Environment: 33 MHz, 32-bit Universal (+3.3 V & +5 V).

Safety & CE Compliance

All cards 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

PCI RF 8x9 Coaxial Matrix, 50 Ω SMB	50-725A-511
PCI RF 8x9 Coaxial Matrix, 75 Ω SMB	50-725A-751

Product Customization

Pickering PCI cards 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.

Support Products

eBIRST Switching System Test Tool

This product is supported by the *eBIRST* test tools which simplify the identification of failed relays, the required *eBIRST* tools are below. For more information go to: pickeringtest.com/ebirst

Product	Test Tool	Adaptor
50-725A	93-005-001	93-005-202

Spare Relay Kits

Kits of replacement relays are available for the majority of Pickering's PXI switching products, simplifying servicing and reducing down-time.

Product	Relay Kit
50-725A	91-100-004

For further assistance, please contact your local Pickering sales office.

Mating Connectors & Cabling

For connection accessories for the 50-725A card range please refer to the 90-011D RF Cable Assemblies data sheet where a complete list and documentation can be found for accessories.

Pickering can supply mating RF connectors and cable assemblies to enable easy integration of the 50-725A series of RF Matrix cards

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. These accessories are detailed in Connector Accessories data sheets, where a complete list and documentation can be found for each accessory.

Connectors & Backshells

Multi-way Cable Assemblies

RF Cable Assemblies

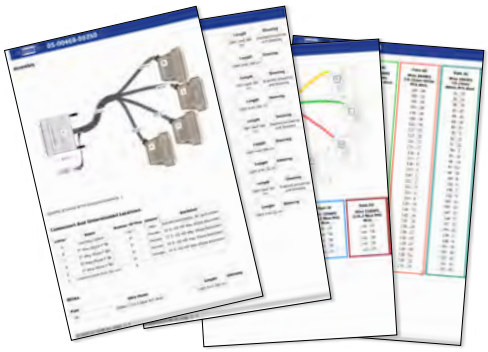
Breakouts

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.

- Fully supported on modern browsers and tablet operating systems.
- Built-in tutorials and videos allow you to get quickly up to speed.
- Store cable assemblies in the Cloud and develop over time.
- Each cable design has a downloadable PDF documentation file detailing all specifications

Start designing your custom cabling, go to pickeringtest.com/cdt



Mass Interconnect

We recommend the use of a mass interconnect solution when an Interchangeable Test Adapter (ITA) is required for PXI/LXI based test systems. Our modules are fully supported by 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 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 more information go to pickeringtest.com/os

The VISA driver support is provided for LabVIEW Real Time Operating Systems (Pharlap and Linux-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++)
- **Programming Languages** C, C++, C#, Python
- **Keysight** VEE and OpenTAP
- **Mathworks MATLAB, Simulink**
- **Marvin** ATEasy
- **MTQ Testsolutions** Tecap Test & Measurement Suite

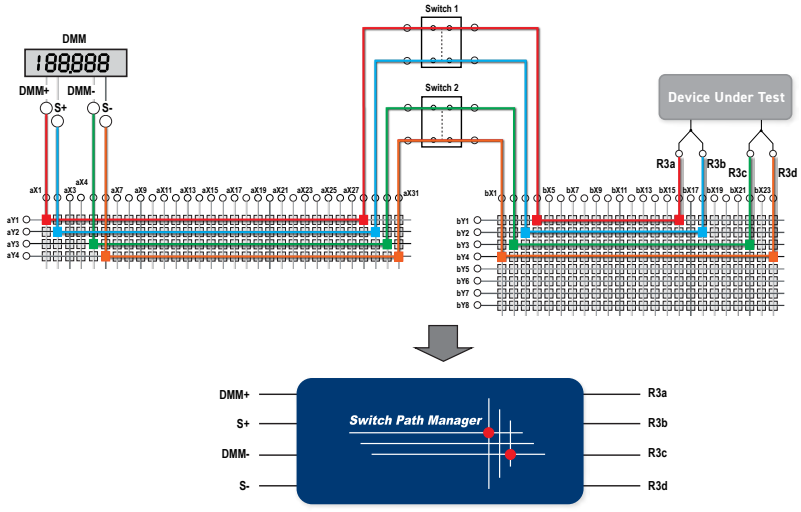
Drivers for popular Linux distributions are available, other environments are also supported, please contact Pickering with specific enquiries. We provide Soft Front Panels (SFPs) for our products for familiarity and manual control, as well as comprehensive documentation and example programs to help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

To learn more about software drivers and development environments 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 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 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 three years from the date of delivery to the original purchaser. Extended warranty and service agreements are available with various levels for 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 go to pickeringtest.com/support

Available Product Resources

We have a library of resources including success stories, product and support videos, articles and white papers as well as application-specific brochures to assist you. We have also published reference books on switching technology and the PXI and LXI standards.

To view, download or request any of our product resources go to pickeringtest.com/resources