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SCXI-1193

SPECIFICATIONS

SCXI™-1193

500 MHz Quad 8x1 50 Ω Multiplexer

このドキュメントには、日本語ページも含まれています。

This document lists specifications for the SCXI-1193 multiplexer module. All specifications are subject to change without notice. Visit ni.com/manuals for the most current specifications.

Configurations	Quad 8x1 multiplexers
	Dual 16x1 multiplexers
	Single 32x1 multiplexer
	Quad 4x1 terminated multiplexers
	Dual 8x1 terminated multiplexers
	Single 16x1 terminated multiplexer
	Independent

RF Performance Characteristics

Characteristic impedance (Z_0) 50 Ω, nominal

Insertion loss

8x1	
DC to 200 MHz	<0.9 dB
200 MHz to 500 MHz.....	<1.6 dB
16x1	
DC to 200 MHz	<1.2 dB
200 MHz to 500 MHz.....	<1.9 dB
32x1	
DC to 200 MHz	<1.4 dB
200 MHz to 500 MHz.....	<2.4 dB

Typical bandwidth (3 dB)

8x1	>900 MHz
16x1	>750 MHz
32x1	>600 MHz

Figure 1. Typical Insertion Loss

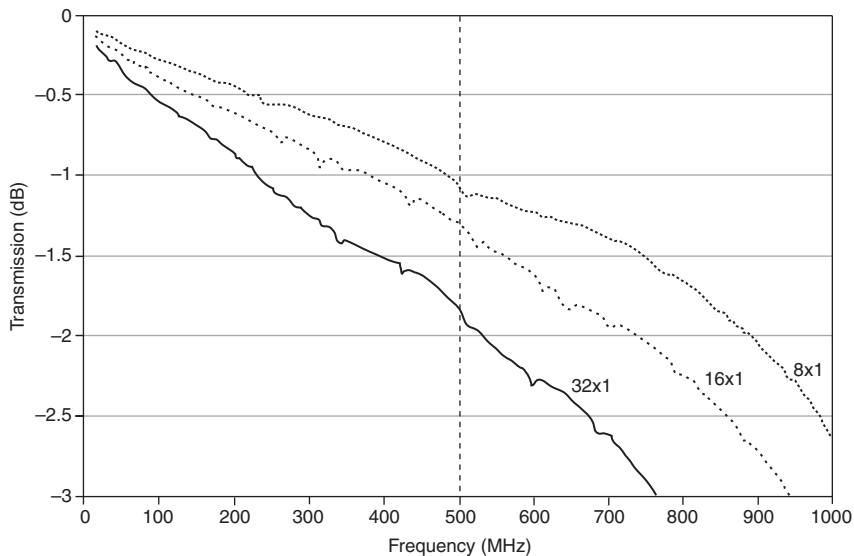
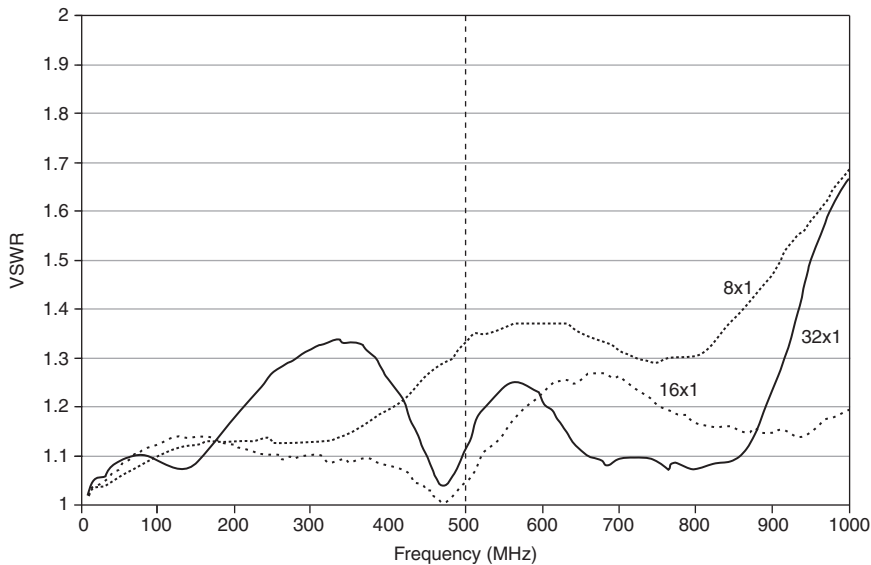


Figure 2. Typical VSWR



VSWR

8x1

DC to 200 MHz.....<1.4

200 MHz to 500 MHz.....<1.8

16x1	
DC to 200 MHz	<1.4
200 MHz to 500 MHz.....	<1.8
32x1	
DC to 200 MHz	<1.4
200 MHz to 500 MHz.....	<1.8

Channel-to-channel skew within each 8-channel bank is less than 100 ps. Only channels from standard topologies are listed in Table 1.

Table 1. Propagation Delay (ns)

COM	CH0 to CH7	CH8 to CH15	CH16 to CH23	CH24 to CH31
0	1.90 to 2.00	2.55 to 2.65	3.75 to 3.85	3.55 to 3.65
1	—	1.90 to 2.00	—	—
2	—	—	1.90 to 2.00	2.55 to 2.65
3	—	—	—	1.90 to 2.00

Typical rise time (10% to 90%)

8x1	385 ps
16x1	460 ps
32x1	550 ps

Figure 3. Typical Channel-to-Channel Isolation

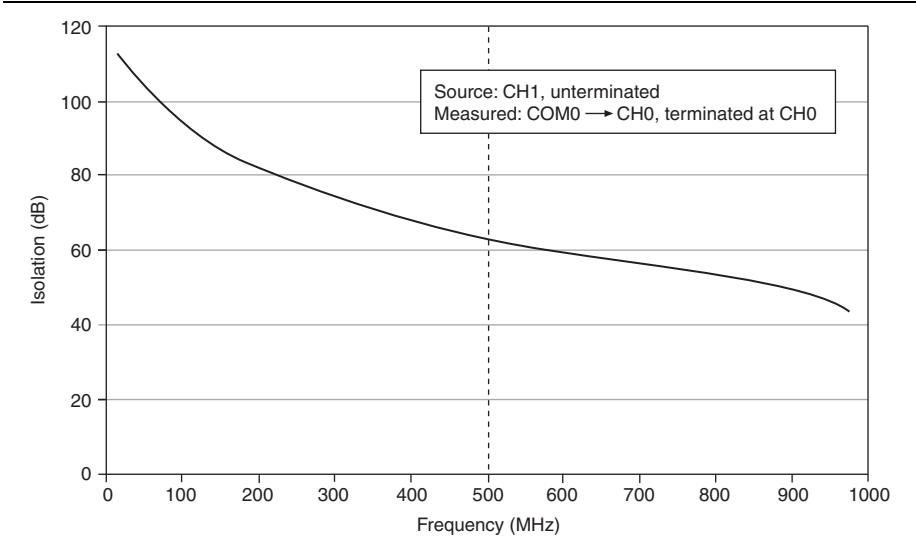
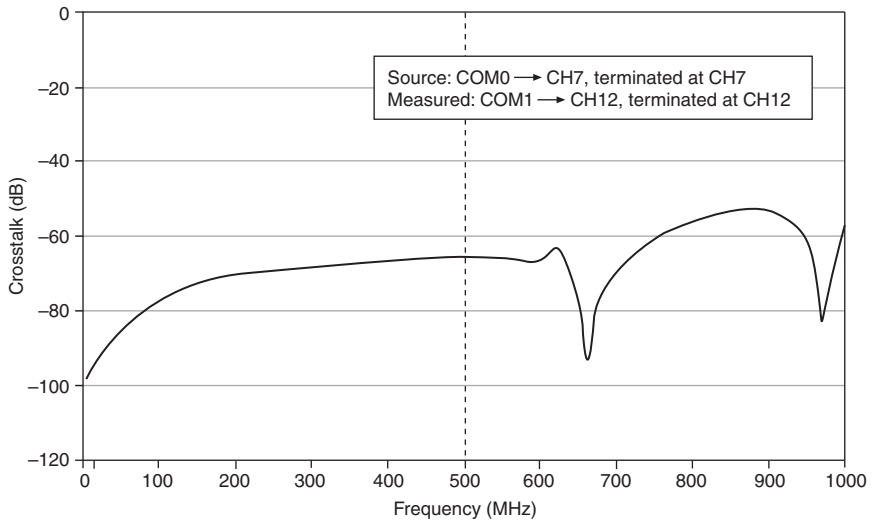


Figure 4. Typical Bank-to-Bank Crosstalk



Input Characteristics

All input characteristics are DC, AC_{rms} , or a combination unless otherwise specified.

Maximum switching voltage 60 VDC, CAT I
(channel-to-channel and channel-to-ground)



Caution This module is rated for Measurement Category I and intended to carry signal voltages no greater than 60 VDC. This module can withstand up to 800 Vpk transient overvoltage. Do not use this module for connection to signals or for measurements within Categories II, III, or IV. Do not connect to MAINS supply circuits (for example, wall outlets) of 115 or 230 VAC.

Maximum switching current 0.5 A
(per channel)

Maximum carry current 1 A
(per channel)

Simultaneous channels
at maximum current Up to 4

Maximum switching power 10 W
(per channel)



Note National Instruments recommends against switching active RF signals. As a relay actuates, the channel is momentarily unterminated. Some RF sources can be damaged by reflections if their outputs are not properly terminated. Consult your RF source documentation for more information.

DC path resistance

Initial..... <1.0 Ω

End of life $\geq$ 2.0 Ω

Path resistance is a combination of relay contact resistance and trace resistance. Contact resistance typically remains low for the life of a relay. At the end of relay life, the contact resistance rises rapidly above 1.0 Ω .

Maximum RF carry power 10 W up to 500 MHz
(per channel)

Module Load Derating

Insertion loss results in power dissipation and heat buildup within the module. Use the graphs in Figure 5 to determine the maximum power dissipated in each active channel.

Total RF power dissipation limit 7 W
(valid over the entire ambient operating temperature range)

Example 1: Single 32x1 Multiplexer

1 channel carrying a 10 W signal at 500 MHz

From Figure 5C, the dissipated RF power for the signal is 4.2 W.

Example 2: Quad 8x1 Multiplexer

2 channels carrying 5 W signals at 100 MHz, and

2 channels carrying 10 W signals at 150 MHz

From Figure 5A, the dissipated RF power for each 5 W, 100 MHz signal is 0.75 W.

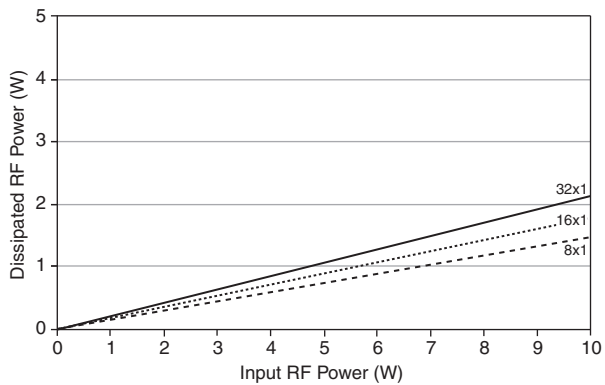
From Figure 5B, the dissipated RF power for each 10 W, 150 MHz signal is 1.9 W.

The total RF power dissipation for all four channels is:

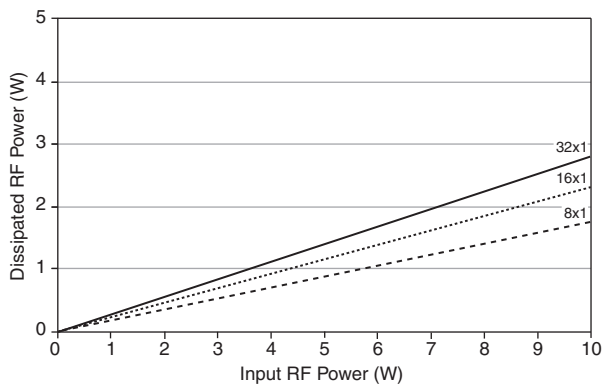
$$2 \times (0.75 \text{ W}) + 2 \times (1.9 \text{ W}) = 5.3 \text{ W}$$

Figure 5. Maximum RF Power Dissipation per Channel

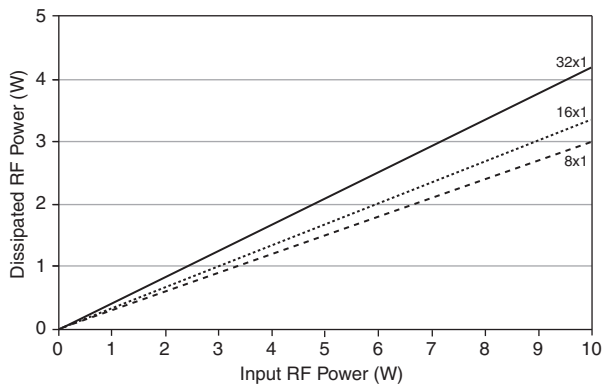
A. $f \leq 100$ MHz



B. $100 \text{ MHz} < f \leq 200 \text{ MHz}$



C. $200 \text{ MHz} < f \leq 500 \text{ MHz}$



Dynamic Characteristics

Maximum scan rate	100 channels/s
Expected relay life	
Mechanical.....	50,000,000 cycles
Electrical.....	300,000 cycles
(30 V, 0.3 A, DC resistive)	

Trigger Characteristics

Input trigger	
Sources.....	SCXI trigger lines 0 to 7, Front panel, Rear connector
Minimum pulse width.....	150 ns
Front panel input voltage	
Minimum	-0.5 V
V _L maximum	+0.7 V
V _H minimum.....	+2.0 V
Nominal	+3.3 V
Maximum.....	+5.5 V
Output trigger	
Destinations	SCXI trigger lines 0 to 7, Front panel, Rear connector
Pulse width	Programmable (1 µs to 62 µs)
Front panel nominal voltage.....	3.3 V TTL, 8 mA

Physical Characteristics

Relay type	Electromechanical, latching
Relay contact material	Silver palladium and gold
I/O connectors.....	36 MCX jacks
Trigger connectors	2 SMB jacks
SCXI DC power requirement	
+5 VDC.....	50 mA
+18.5 VDC to +25 VDC.....	170 mA
-18.5 VDC to -25 VDC.....	170 mA

Dimensions (W × H × D).....3.0 × 17.3 × 19.8 cm
(1.2 × 6.8 × 7.8 in.)

Weight960 g
(2 lb 2 oz)

Environment

Operating temperature0 °C to 50 °C

Storage temperature-20 °C to 70 °C

Relative humidity5% to 85% noncondensing

Pollution Degree2

Approved at altitudes up to 2,000 m.

Indoor use only.

Accessories

Visit ni.com for more information about the following accessories.

Table 2. RG-316 Cabling Available for the SCXI-1193

Connectors	Length	Part Number
MCX-MCX	0.3 m	188374-0R3
	1.0 m	188374-01
MCX-BNC	0.3 m	188375-0R3
	1.0 m	188375-01
MCX-SMB	0.3 m	188376-0R3
	1.0 m	188376-01
MCX-SMA	0.3 m	188377-0R3
	1.0 m	188377-01
50 Ω MCX terminator (1 GHz maximum)	—	778831-01

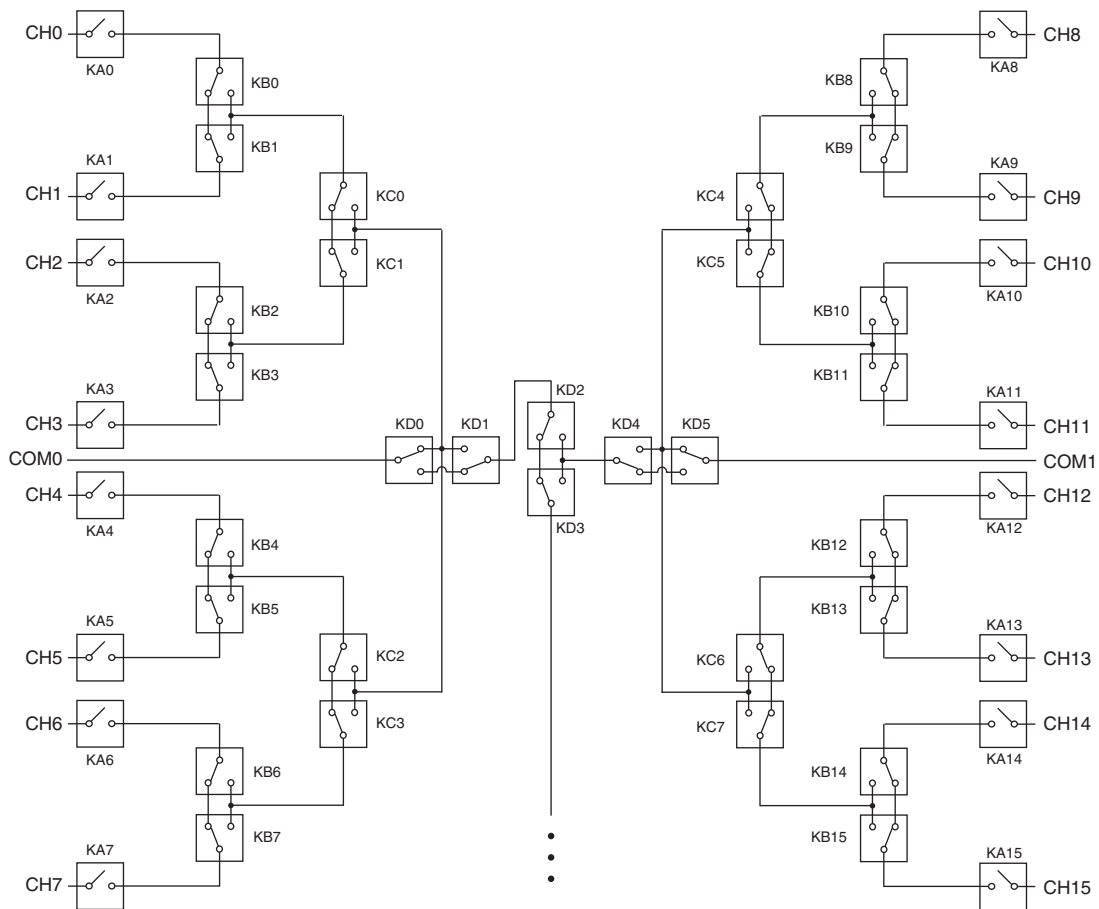


Figure 6. SCXI-1193 Power-On State

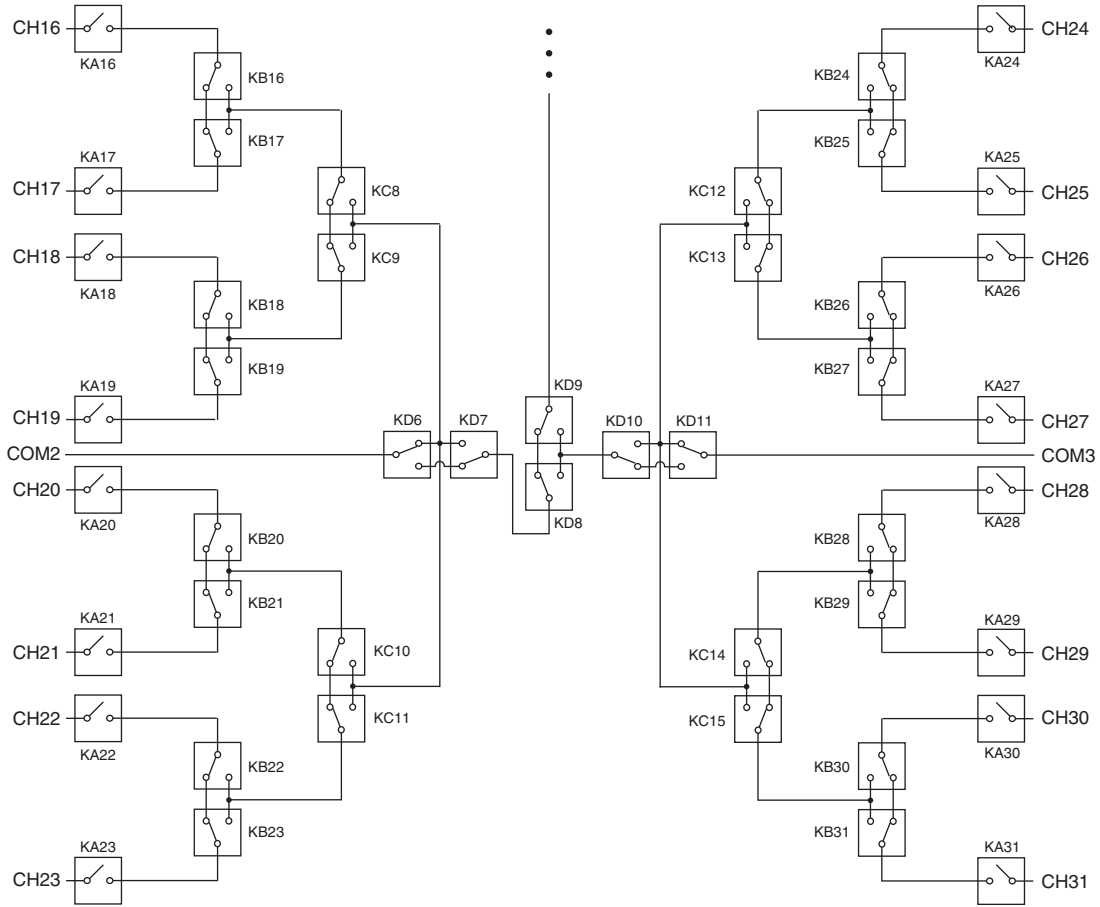


Figure 7. SCXI-1193 Power-On State (continued)

Compliance and Certifications

Safety

This product is designed to meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1
- CAN/CSA C22.2 No. 61010-1



Note For UL and other safety certifications, refer to the product label or to the Online Product Certification section.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326-1 (IEC 61326-1): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions



Note In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia, and New Zealand (per CISPR 11), Class A equipment is intended for use only in heavy-industrial locations.



Note Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generate radio frequency energy for the treatment of material or inspection/analysis purposes.



Note For EMC declarations and certifications, refer to the Online Product Certification section.

CE Compliance

This product meets the essential requirements of applicable European Directives, as follows:

Low-Voltage Directive (safety) 2014/35/EU

Electromagnetic Compatibility

Directive (EMC) 2014/30/EU

Online Product Certification

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for this product, visit ni.com/certification, search by model number or product line, and click the appropriate link in the Certification column.

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For additional environmental information, refer to the *Minimize Our Environmental Impact* web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

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