

7174A

8x12 High Speed, Low Leakage Current Matrix Card



The Model 7174A Low Current Matrix Card is designed for semiconductor research, development, and production applications requiring high quality, high performance switching of I-V and C-V signals. The 7174A is ideal for use with Keithley Models 2635B and 2636B System SourceMeter® SMU Instruments, Model 4200-SCS, and the Agilent B1500. The card's configuration is 8 rows × 12 columns, with signal and guard switched at each crosspoint. Offset current has been reduced dramatically to <100 fA on all pathways.

Significant reductions in the level of parasitic capacitances in the 7174A help speed the process of making low level measurements. The 7174A provides an optimum solution to switching the lower level signals common to today's semiconductor characterization tests. The card's low leakage and minimal dielectric absorption ensure that key device measurements can be performed many times faster than with current switching technologies. Connections are 3-lug triax with the outer shell connected to chassis for safety and noise shielding. The center conductor is fully surrounded by the inner conducting shield, allowing fully guarded measurements to be made with higher isolation and improved speed and accuracy.

For applications that require making connections to a large number of devices or test points, the 7174A matrix can be expanded with additional cards. On-card connectors are provided to connect the rows (column expansion) between other 7174A cards in adjacent slots of the Model 707B switching mainframe. Eight female-to-female cables are provided with each 7174A to simplify expansion. Up to six 7174A cards can be connected in a single 707B switching mainframe to form an 8×72 or 12×60 matrix.

Key Features

- Fast time to measurement
- Low leakage (<100 fA offset on all signal paths)
- 2-pole switching, signal, and guard
- 200 V, 2 A signal levels
- Designed for use with Keithley 4200A-SCS, 2635B and 2636B System SourceMeter SMU Instruments, and Keysight B1500
- Compatible with Models 707A, 707B, 708A, and 708B



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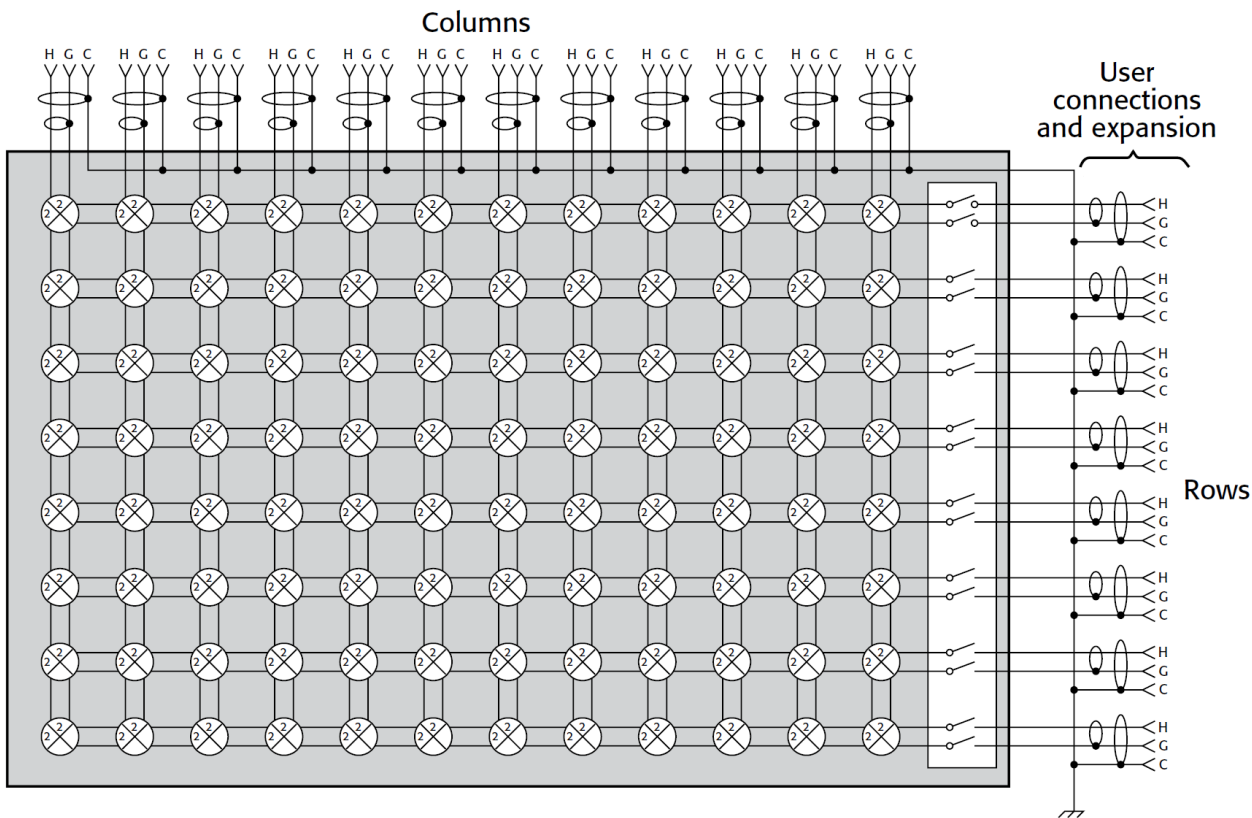
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Specifications

Specifications are subject to change without notice.

Matrix Configuration	Single 8 rows by 12 columns. Expanding the columns can be done internally by connecting the rows of multiple 7174A cards together with coax jumpers.
Crosspoint Configuration	2-pole Form A (Signal Guard).
Connector Type	Three-lug triaxial (Signal, Guard, Chassis).
Maximum Signal Level	Pin-to-pin or Pin-to-Chassis: 200 V, 2 A carry current.
Contact Life	Cold Switching: 10 ⁸ closures.
Offset Current	100 fA maximum, 10 fA typical (with 0 V applied to inputs and outputs).
Isolation	Path (Signal to Signal): >2×10 ¹⁴ Ω, 1 pF. Common (Signal to Chassis): >10 ¹⁴ Ω, <10 pF.
Settling Time	<2.5 s to 400fA (all pathways) after 10 V applied (typical).
Crosstalk (1 MHz, 50 Ω Load)	<−70 dB.
Insertion Loss (1 MHz, 50 Ω Load)	<−0.2 dB typical.
3 dB Bandwidth	50 Ω Load, 50 Ω Source: 30 MHz typical. 1 MΩ Load, 50 Ω Source: 40 MHz typical.
Relay Settling Time	<1 ms.
EMC	Conforms to European Union EMC Directive 89/336/EEC.
Safety	Conforms to European Union Directive 73/23/EEC (meets EN61010-1/IEC 1010).
Environment	For indoor, non-residential use only. Offset Current and Path Isolation Specifications: 23°C, <60% relative humidity. Operating: 0°C to 50°C, up to 35°C at 70% relative humidity. Storage: −25° to +65°C.
Maximum Leakage	Pin to Ground: 0.01 pA/V. Pin to Pin: 0.005 pA/V.
Insulation Resistance	6.7 × 10 ¹³ Ω minimum.
Capacitance	(Guard Driven): Path to Ground: <10 pF. Path to Path: 1 pF typical.
Warranty	1 year.

7174A 8x12 High Speed, Low Leakage Current Matrix Card



Ordering Information

7174A	8×12 High Speed, Low Current Matrix Card
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Supplied Accessories

	Eight row interconnect cables for card to card matrix expansion
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Available Accessories

237-TRX-T	3-Lug Triax Tee Adapter
7078-TRX-TBC	3-Lug Female Triax Bulkhead Connector with Cap
7078-TRX-3	3-Lug Triax Cable, 0.9 m (3 ft)
7078-TRX-10	3-Lug Triax Cable, 3 m (10 ft)
7078-TRX-BNC	3-Lug Triax to BNC Adapter

Services Available

7174A-3Y-EW	1-year factory warranty extended to 3 years from date of shipment
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