

## 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

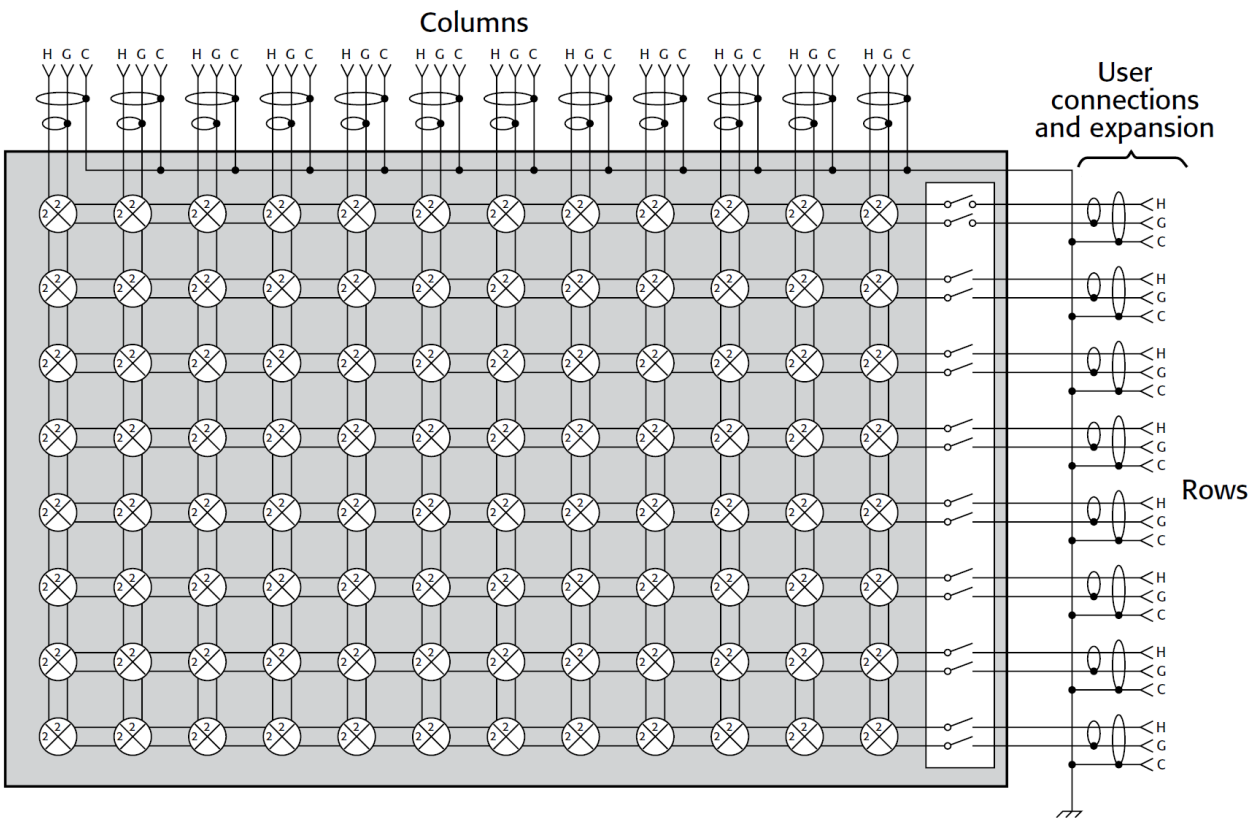
- Fast time to measurement
- Low leakage (<100 fA offset on all signal paths)
- 2-pole switching, signal, and guard
- 200 V, 2 A signal levels
- Designed for use with Keithley 4200A-SCS, 2635B and 2636B System SourceMeter SMU Instruments, and Keysight B1500
- Compatible with Models 707A, 707B, 708A,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

## Specifications

Specifications are subject to change without notice.

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

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



Ordering Information

|       |                                          |
|-------|------------------------------------------|
| 7174A | 8×12 High Speed, Low Current Matrix Card |
|-------|------------------------------------------|

Supplied Accessories

|                                                                 |
|-----------------------------------------------------------------|
| Eight row interconnect cables for card to card matrix expansion |
|-----------------------------------------------------------------|

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 |
|-------------|-------------------------------------------------------------------|

## Contact Information:

**Australia** 1 800 709 465  
**Austria\*** 00800 2255 4835  
**Balkans, Israel, South Africa and other ISE Countries** +41 52 675 3777  
**Belgium\*** 00800 2255 4835  
**Brazil** +55 (11) 3530-8901  
**Canada** 1 800 833 9200  
**Central East Europe / Baltics** +41 52 675 3777  
**Central Europe / Greece** +41 52 675 3777  
**Denmark** +45 80 88 1401  
**Finland** +41 52 675 3777  
**France\*** 00800 2255 4835  
**Germany\*** 00800 2255 4835  
**Hong Kong** 400 820 5835  
**India** 000 800 650 1835  
**Indonesia** 007 803 601 5249  
**Italy** 00800 2255 4835  
**Japan** 81(3) 6714 3086  
**Luxembourg** +41 52 675 3777  
**Malaysia** 1 800 22 55835  
**Mexico, Central/South America and Caribbean** 52 (55) 88 69 35 25  
**Middle East, Asia, and North Africa** +41 52 675 3777  
**The Netherlands\*** 00800 2255 4835  
**New Zealand** 0800 800 238  
**Norway** 800 16098  
**People's Republic of China** 400 820 5835  
**Philippines** 1 800 1601 0077  
**Poland** +41 52 675 3777  
**Portugal** 80 08 12370  
**Republic of Korea** +82 2 565 1455  
**Russia / CIS** +7 (495) 6647564  
**Singapore** 800 6011 473  
**South Africa** +41 52 675 3777  
**Spain\*** 00800 2255 4835



### CalPlus GmbH

Zentrale Berlin  
Heerstraße 32 • 14052 Berlin  
Tel.: 030 214982-0 • Fax: 030 214982-50  
office@calplus.de • www.calplus.de

### CalPlus GmbH

Niederlassung ScopeShop  
Normannenweg 30 • 20537 Hamburg  
Tel.: 040 3039595-0 • Fax: 040 3039595-50  
scopeshop@calplus.de • www.calplus.de

Find more valuable resources at [TEK.COM](http://TEK.COM)

**Tektronix®**

Copyright © Tektronix. All rights reserved. Tektronix products are covered by U.S. and foreign patents, issued and pending. Information in this publication supersedes that in all previously published material. Specification and price change privileges reserved. TEKTRONIX and TEK are registered trademarks of Tektronix, Inc. All other trade names referenced are the service marks, trademarks or registered trademarks of their respective companies.

1KW-74269-1 20 Jul 2026