KEITHLEY

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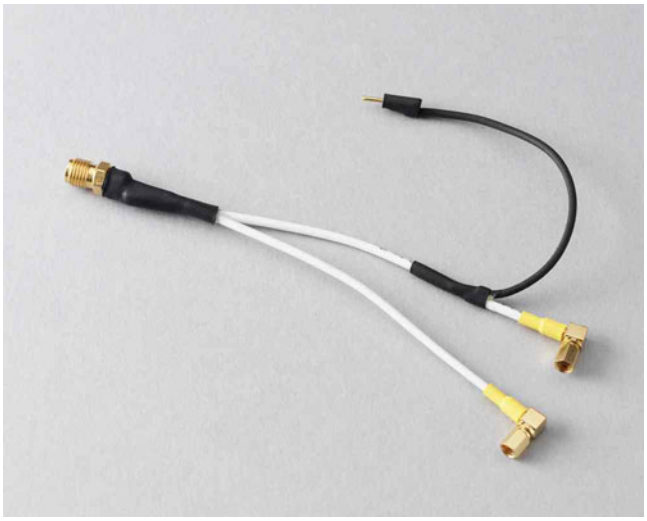
Model 4200-PRB-C

4200 Pulse SMA to SSMC Y Adapter

Overview

The Keithley Instruments Model 4200-PRB-C (Figure 1, below) is an adapter cable that allows connection and use of the 4200-PIV package with DC probe manipulators. The cable has a single female SMA that connects to the SMA cable connected to a 4200-RBT; the other end splits into two gold SSMC plugs (female connectors). The black wire, with integrated connector, is used to connect to the shield of another 4200-PRB-C cable.

Figure 1
4200 Pulse SMA to SSMC Y Adapter



The 4200-PRB-C is compatible for on-wafer device testing with the following analytical prober manipulators:

- Cascade DCM-2xx DC probe manipulators
- Suss Microtec probe manipulators
- Signatone SCA-50 coaxial probes
- Any probe interconnect with SSMC connectors near the probe tip:
  - American Probe & Technologies:
    - 74CJ series coaxial probe holder

WARNING **The procedures contained in this document are intended for use by qualified personnel only. Do not perform these procedures unless qualified to do so.**

Failure to recognize and observe normal safety precautions could result in personal injury or death.

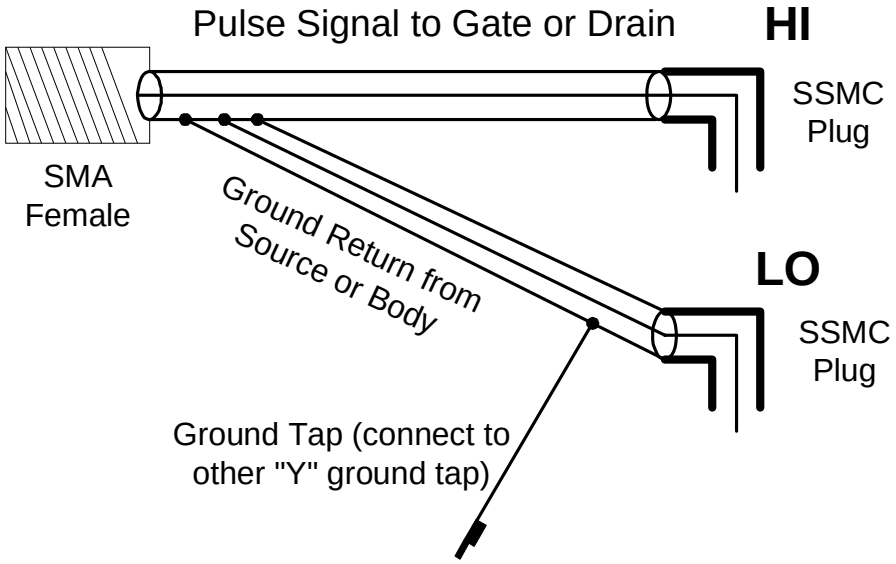
One probe is required for each pad on the DUT. Since the 4200-PIV is used for testing transistors, either 3 or 4 probes are typically required (meaning a pair of 4200-PRB-C cables are used).

These Y cables are appropriate for on-wafer pulse IV testing of nominally DC structures. They are *not* appropriate for higher frequency devices. There is no hard upper frequency limit due to the effect of device impedance, device layout, and probe configuration. In general, any device that has a Ft much above 1 GHz might oscillate when using a DC probe connection scheme and the 4200-PRB cables. Also, if the device has an RF layout (G-S-G), these adapter cables and DC probe manipulators will most likely be insufficient. In the case of RF G-S-G pad layout, use the shorter SMA cables supplied with the 4200-PIV package to connect directly from the 4200-RBT to the RF manipulator.

A pair of 4200-PRB-C cables are supplied with the 4200-PIV package. These cables are used to provide a pair of HI and a pair of LO signal paths to DC probe tips. In addition, each Y cable has a third conductor which is a ground tap, used to connect both LO paths together. Typically, these signal paths are as follows:

HI from Adapter 1 to Gate
LO from Adapter 1 to Source
HI from Adapter 2 to Drain
LO from Adapter 2 to Substrate
LO Tap from Adapter 1 to LO Tap from Adapter 2

Figure 2
4200-PRB-C Schematic

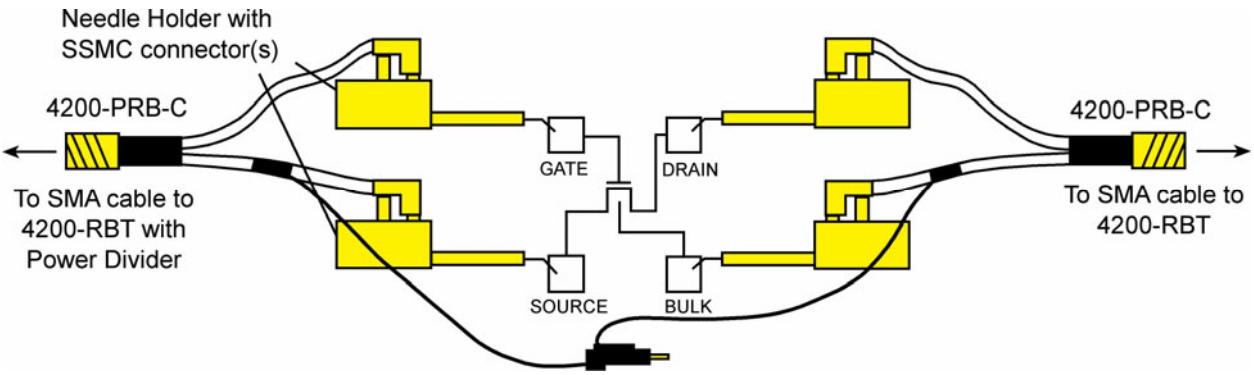


Y Cable use

WARNING **Hazardous voltages can be exposed during use of this adapter cable, creating a risk of electric shock which could result in personal injury or death. Do not touch internal electrical connections. Remove all sources of power before connecting or disconnecting cables.**

No interlock features are provided by this adapter—properly make all connections before energizing instrumentation connected to this adapter.

Figure 3
Connections for 4-terminal device



Model 4200-SCS

NOTE *When using the 4200-PRB-C with the Model 4200-SCS, make sure to disable Model 4200-SCS high-voltage output to prevent potential exposure to high voltage. Disabling the interlock will prevent voltages greater than 42V from being output. To disable Model 4200-SCS high voltage, remove the interlock plug on the back of the system.*

To use the 4200-PRB-C with the 4200-SCS with the 4200-PIV package:

1. Set up and connect the 4200-SCS. For 4200-SCS set up, refer to the 4200-SCS Quick Start Guide and 4200-SCS Reference Manual.
2. Set up and connect the 4200-PIV. For 4200-PIV set up, refer to the 4200-SCS Applications Manual.
3. Prepare the probe connection by disconnecting the DC cables from the SSMC connectors on the needle holders.
4. Continue setup of PIV by connecting a 4200-PRB-C cable to the 15 cm (6 inch) SMA cable attached to each 4200-RBT. Refer to Figures 3-5. Don't forget to connect the black shield jumpers to each other as shown in Figures 3 and 5.
5. Finish setup by verifying connections and running DC and/or Pulse IV tests using the 4200 Project Pulse IV-Complete.

Figure 4.
Photo of two 4200-PRB-C adapters attached to Cascade DMC-200 manipulators

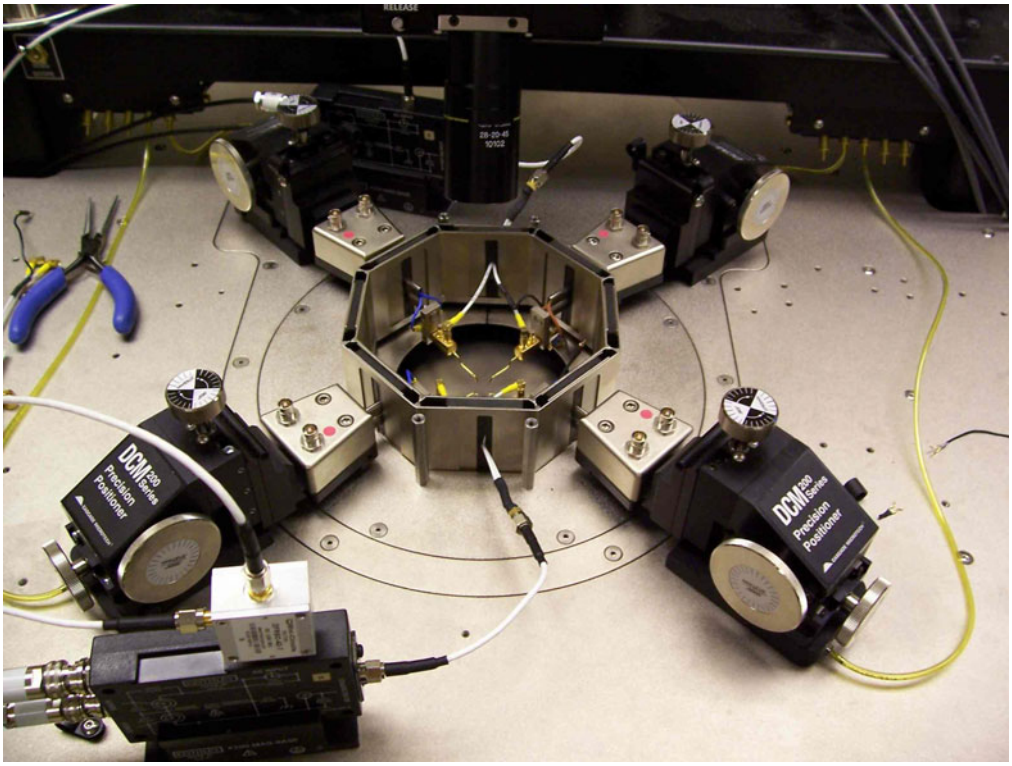


Figure 5.
Closeup of two 4200-PRB-C attached to Cascade DMC-200 manipulator SSMC connectors (note the two ground taps connected together on the right, just inside the shield enclosure).