

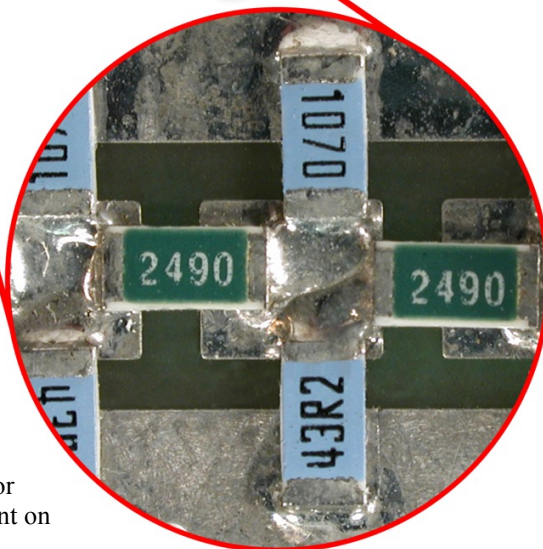
## Signal Conditioning Kits for Custom Couplings, Filters, & Terminations up to 5 GHz

### Applications

- DC Blocks
  - Feed-through 50  $\Omega$  Termination
  - Custom Attenuators
  - Multi-Pole Filters
  - Series Resistor, Inductor or R-L Network
  - Feed-through Decoupling Capacitor
  - Schottky Diode Line Terminator
  - Diode Detector
  - Transistor Switching Test Fixture\*
  - In-Line Amplifier\*
  - Diode Recovery Test Fixture\*
- \*(w/optional Bias Tee)

### Features

- $\pi$ -Network, T-Network, or Multi-Pole Filter Footprint on Both Sides of PCB
- Ground Plane and 50  $\Omega$  Transmission Line For Up To 5 GHz (SMA) or 3 GHz (BNC) bandwidth, depending on PCB
- Accepts #1206 and #0805 size SMT Components
- Populate With 1 to 28 Series or Shunt Components
- Accepts Mini-Circuits™ HFCN-2700 Series Filters (BNC  $\pi$  and T models only)
- SMA or BNC, Male/Female or Female/Female connectors
- Metal Enclosure Included for Shielding
- 16 mm OD x 68 mm or 78 mm Length (BNC)
- 11 mm x 9 mm cross section x 35 – 52 mm L (SMA)



## Product Description:

PRL's new Signal Conditioning Kits enable quick and easy fabrication of custom signal-conditioning circuits, such as attenuators, filters, DC blocks, feed-thru 50  $\Omega$  terminations, etc. They can be used to build commonly-used circuits, such as a 50  $\Omega$  shunt termination, or to build one-of-a-kind fixtures not commercially available. Three PCB designs ( $\pi$ , T and multi-pole) enable easy construction of nearly any series and/or parallel network. The double-sided footprints (identical on both sides of the PCB) enable non-standard resistor, inductor, and capacitor values to be fabricated easily and economically from standard-value components. With the addition of a Bias Tee, active device test fixtures can be built as well.

In one example, we easily fabricated a 24 dB attenuator with non-standard impedance for the interface between a vacuum tube output and a TTL input circuit, using a two-stage design with discrete SMT resistors. In another example, we level-shifted a -6 V to +10 V pulse to 0 V to +16 V for driving a high impedance circuit. In this case, we constructed a simple DC Restorer using a coupling capacitor and a shunt Schottky diode to ground.

Other examples include a feed-through decoupling capacitor, using one shunt capacitor, to make an ideal low pass filter for noise reduction at I/O ports. The kits can be populated with as few as one series component, or as many as 28 series and shunt components, enabling a wide range of applications.

Four available connector styles (BNC M/F, BNC F/F, SMA M/F, and SMA F/F) and a low-profile design enable inline insertion into your transmission line, with or without cables. A gender changer may be used to create M/M styles. Combine any PCB configuration with any connector style to suit your application. A metal enclosure provides protection and shielding.

## Sample Applications:

Application	Schematic	Kit Type		
		Pi	Tee	Multi
DC Block/ Coupling Cap		Y	Y	Y
AC Block/ RF Choke		Y	Y	Y
Series Termination		Y	Y	Y
Shunt Termination		Y	Y	Y
Precision Shunt Termination		Y	Y	Y
Feed-through Decoupling Cap		Y	Y	Y

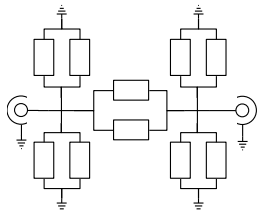
Application	Schematic	Kit Type		
		Pi	Tee	Multi
Diode Detector		Y	Y	Y
Attenuator		Y	Y	Y
Low-pass Filter		N	N	Y
High-Pass Filter		N	N	Y

Multiple units can be used in series to provide additional stages for Bandpass filters, etc. Front and back sides of PCBs provide parallel paths for Notch/Bandstop filters, etc.

## PCB Configurations:

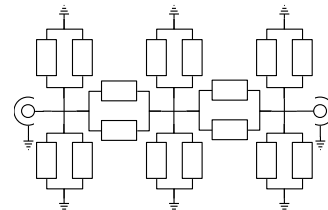
### $\pi$ Network PCB:

- Up to 2 series components
- Up to 8 shunt components
- Highest bandwidth
- Accepts Mini-Circuits™ HFCN-2700 Series Filters (BNC model only)



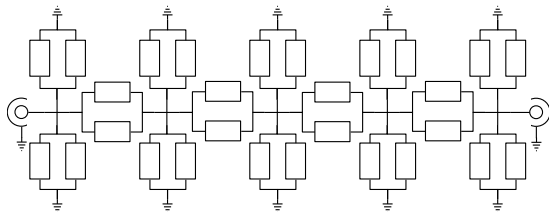
### T Network PCB:

- Up to 4 series components
- Up to 12 shunt components
- For most applications
- Accepts Mini-Circuits™ HFCN-2700 Series Filters (BNC model only)



### Multi-Pole Network PCB:

- Up to 8 series components
- Up to 20 shunt components
- Greatest flexibility for multi-pole networks



80 dB Attenuator on Multi-Pole PCB



PRL-PINET-BFF with cover installed

(Diagrams show all possible component positions on both sides of PCB. Unpopulated series positions may require 0  $\Omega$  jumpers.)

## Ordering Information: (All models include matching enclosure.)

Connector Style	PCB Configuration (vias are plated through to identical pattern on reverse side)		
	$\pi$ Network	T Network	Multi-Pole Network
Male/Female	 PRL-PINET-BMF or -SMF	 PRL-TNET-BMF or -SMF	 PRL-MNET-BMF or -SMF
Female/Female	 PRL-PINET-BFF or -SFF	 PRL-TNET-BFF or -SFF	 PRL-MNET-BFF or -SFF

More information available at [www.pulseresearchlab.com/SCK](http://www.pulseresearchlab.com/SCK), including application notes, component value worksheets, links to filter calculators, attenuator calculators, etc.