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COUPLING AND TERMINATION MODULES

APPLICATIONS

- AC coupling between signals
- Waveform Clipping
- RF Signal Isolation
- RF I/O Port Decoupling
- Precision 50 Ω Termination
- RF Signal Detection
- DC Restoration

FEATURES

- DC Blocks with 0.1, 2.2 or 300 µf
- RF Chokes with 1 µh or 10 µh
- Series- or Shunt-connected Diodes
- Series-Connected Resistors to 1 MΩ
- 50 Ω, ±0.5% Feedthrough Terminations
- Dual AC- or DC-coupled 50 Ω Terminations
- SMA M/F I/O Connectors for inline use with no cabling required.
- Selected models available in BNC M/F configurations
- 0.41W x -0.35H x 1.50-in. or 0.41W x -0.35H x 1.25-in. Modules ("A" suffix)



Clockwise from top-left:

1) PRL-ACX-12dB, AC-Coupled 50 Ω Attenuator (12 dB)
2) PRL-ACT-50, Dual Ch. AC-Coupled 50 Ω Termination
3) PRL-FTC-104A, Feedthrough Decoupling Cap (0.1 µf)
4) PRL-SC-104A, DC Block (0.1 µf)
5) PRL-FTR-50, Feedthru 50 Ω Termination

DESCRIPTION

The PRL Series of Coupling and Termination Modules are two-terminal devices containing components which are series-connected, shunt-connected, or combination of both. They are intended for use in general purpose lab and production test environments. For example, in a given test setup one may need to insert a DC Block, an Attenuator, a 50 Ω Termination, a Feed-through Decoupling Capacitor, an RF Choke, a Series Diode, etc. in order to accommodate a change in the test requirement.

Series-Connected	Shunt-Connected	Series and Shunt-Connected
Series Capacitor	Feed-Through Shunt Capacitor	AC-Coupled 50Ω Termination
Series Inductor	Feed- Through Shunt Resistor	AC-Coupled Attenuator
Series Schottky Diode	Feed- Through Shunt Schottky Diode	DC-Coupled Attenuator
Series Resistor		

AVAILABLE MODELS AND SPECIFICATIONS:

DC Blocks, Series-Connected Capacitors

Model No.	Capacitance value/Type	VSWR	Tr/3dB BW	Application
PRL-SC-104A	0.1 µf, ±10%, 30 V, X7R	<1.1 @ 3.0 GHz	40 ps/>8 GHz	AC Coupling
PRL-SC-225A	2.2 µf, ±20%, 30 V, Z5U	<1.2 @ 2.5 GHz	50 ps/7 GHz	AC Coupling

RF Chokes, Series-Connected Inductors

Model No.	Inductance Value	Irms Max	DCR max	SRF Typical	Application
PRL-SL-102A	1000 nh, ±5%	300 mA	3.5 Ω	400 MHz	RF Isolation
PRL-SL-103A	10 µh, ±5%	300 mA	3 Ω	60 MHz	RF Isolation

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Series-Connected Schottky or PN Junction Diodes

Model No.	Equivalent Device Type	VBR	If @ 1V Vf	CT	Application	Comments
PRL-SSDP	HSMS-2813/-2814 (Schottky)	20 V	70 mA	2.4 pf	RF Detector	2 devices in //
PRL-SDP	1N914	100 V	10 mA	4 pf	General purpose detector	

Series-Connected Resistors

Model No.	Resistance Value	Max. Vr	Application
PRL-SR-50	50 Ω ±1%	5 V	Back 50 Ω Termination
PRL-SR-450	450 Ω ±1%	10 V	10X attenuator
PRL-SR-950	950 Ω ±1%	15 V	20X attenuator
PRL-SR-106A	1 MΩ ±1%	100 V	Current source

Shunt-Connected Capacitors

Model No.	Value/Type	Application
PRL-FTC-104A	0.1 µf, ±10%, 30 V, X7R	Decoupling/AC short

Shunt-Connected Resistive Terminations

Model No.	Value/Type	Max Vr/Ir	Application/Description
PRL-ACT-50	50 Ω, ±1%	5 V Max.	Dual AC Coupled 50 Ω termination
PRL-DCT-50	50 Ω, ±1%	5 V Max.	Dual DC Coupled 50 Ω termination
PRL-FTR-50	50 Ω, ±0.5%	5 V Max.	Precision Feed-Thru Termination.
PRL-FTR-0	0 Ω, +0.005 Ω	500 mA Max.	Short circuit termination

Shunt-Connected Diodes

Model No.	Type	VBR	If @ 1V Vf	CT	Application	Comments
PRL-FTSDPD	HSMS-2813/-2814, SBD	20 V	70 mA	2.4 pf	+Signal clipping	Grounded Cathode, 2 devices in //
PRL-FTSDND	HSMS-2813/-2814, SBD	20 V	70 mA	2.4 pf	-Signal clipping	Grounded Anode, 2 devices in //

Cascading Modules

Although these modules are self-contained, multiple modules can be cascaded for value change or for performing different applications.

Adding a DC block, such as the PRL-SC-104A, in series with the PRL-FTSDPD/ND, shunt connected diode, produces a DC Restorer. Depending on the polarity of the diode, an AC coupled input signal can be shifted either above or below ground using the DC Restorer. For example, the maximum output of the PRL-470D, variable output driver, ranges from –5 V to +10 V into a 1 MΩ load. It can be made into either a +15 V output , when the PRL-FTSDND is used, or into a –15 V output when the PRL-SDPD is used. In each case, the diode simply limits the output swing either above or below ground.

The combination of a DC block and either a series or shunt Schottky diode can also be used as a detector.

The PRL-FTR-50, 0.5% 50 Ω feed-through termination, is especially useful for checking the DC accuracy of an attenuator. Once connected to the output of the attenuator, or any similar device, the feed-through output can be connected to a DVM without have to worry about IR loss of the interconnecting cable.

The PRL-SR-50, the series 50 Ω module can be connected to the output of an Op Amp to give the amplifier a 50 Ω back matched resistance. The higher value series resistor modules, such as the SR-450 or PRL-SR-950, can be used as 10X and 20X attenuators for circuits that need to, but can not, drive 50 Ω loads.

The RF choke module is often used for adding DC bias to a sensitive circuit node where the far end of the inductor isolates the stray capacitance of the bias circuit from the node.

Note: The PRL series of attenuators has been discontinued, but attenuators for both standard and non-standard values can be assembled quickly using our **Signal Conditioning Kits**. A full description and application note for building custom attenuators is available at http://www.pulseresearchlab.com/SCK.

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