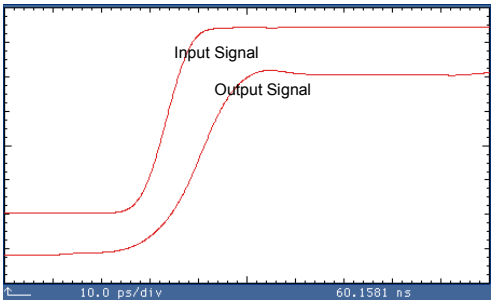
Model 5935
Risetime Filter

- **12.6 ps Risetime**
- **40 GBit/s**
- **Z-matched**
- **No Reflection**



TDT (S21) Response to 10 ps Step
Timebase 10 ps/div

The PSPL model 5935 Low-Pass Risetime Filters are designed for OEM use in high speed digital networks and telecom systems. The devices use a proprietary, absorptive filter design that has attenuation and group delay frequency responses similar to those of the 4th order ***Bessel-Thomson*** filter. Traditional Bessel-Thomson designs filter by reflecting stop-band frequency signals and thus can cause increased bit error rates and eye diagram closure due to multiple reflections. By contrast, the PSPL filters filter by *absorption*. They have excellent impedance matches and very good return losses, both within and above the filter pass band.

Parameter	Performance	Comments
Bandwidth (-3dB), f_o	28 GHz (see connector options below)	0.70 * OC-768 Bit Rate
BW Tolerance @ 23° C	± 3%	Guaranteed
Risetime	12.6 ps	10% - 90%, typical
Group Delay	160 ±6 ps	0.1-40 GHz, Guaranteed
Return Loss	>15 dB >9 dB	0-15 GHz 15-40 GHz
Max Power, avg	25 dBm	Total spectral power ≤60 GHz
Temperature	-55 to +90 °C	Case temperature
BW Thermal Drift	-1.4 MHz / °C	Typical
Impedance	50 Ω	Nominal
Warranty	One Year	See Terms and Conditions of Sale for details.
Dimensions	36.7 x 15.9 x 10.5 mm, overall	

NOTE: The parameters listed above are typical values, guaranteed where noted. Specifications are based on filter configured with 2.4mm or 1.85mm jack-plug connector configuration.

Ordering Information

Model Number	Connector Configuration*	
5935-222-28.8GHZ	2.92mm	Jack (f) — Plug (m)
5935-205-28.0GHZ	2.4mm	Jack (f) — Plug (m)
5935-302-28.0GHZ	1.85mm	Jack (f) — Plug (m)

* Other connector combinations are available on request.

Picosecond Pulse Labs

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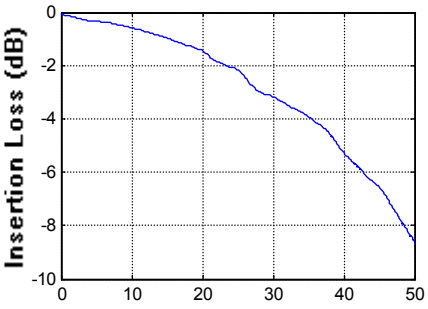
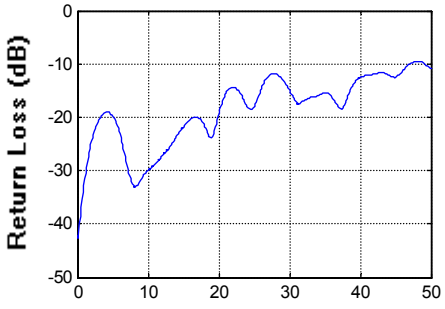
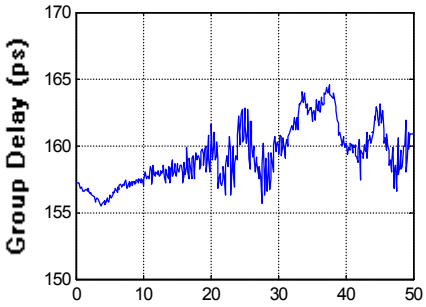


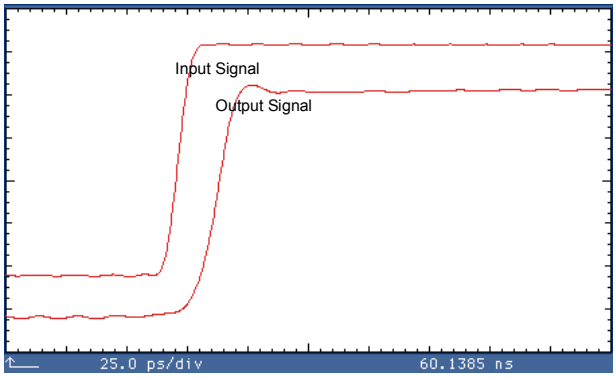
Insertion Loss, 0-50 GHz



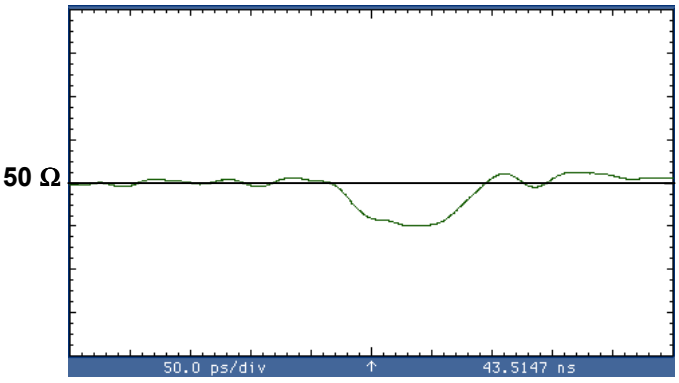
Return Loss, 0-50 GHz



Group Delay (2% Aperture), 0-50 GHz

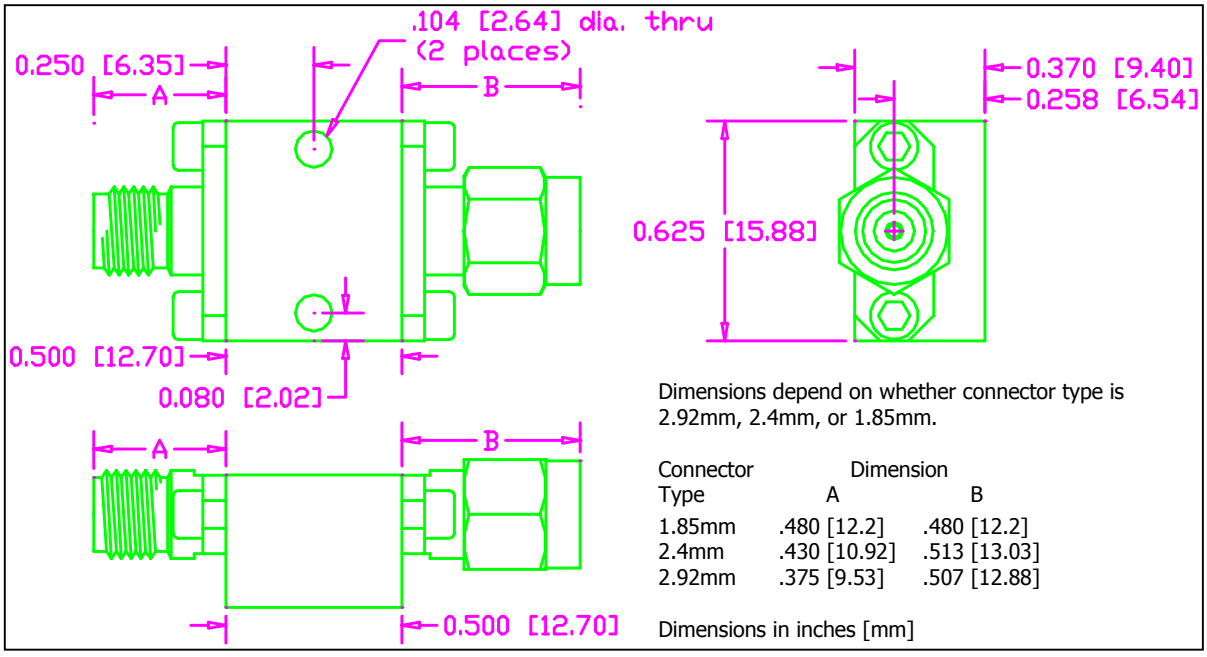


TDT Response to 10 ps step. Timebase 20 ps/div. Measured with PSPL 4015C Pulse Generator & HP54750, 50 GHz Oscilloscope. See AN-5c for details.



TDR of 5935 Filter using 25 ps step. Scale 5% ρ/div, 50 ps/div.

5935 Mechanical Drawing



Dimensions depend on whether connector type is 2.92mm, 2.4mm, or 1.85mm.

Connector Type	Dimension A	B
1.85mm	.480 [12.2]	.480 [12.2]
2.4mm	.430 [10.92]	.513 [13.03]
2.92mm	.375 [9.53]	.507 [12.88]

Dimensions in inches [mm]

1.85MM CONNECTOR ADDENDUM

Extreme care is required when handling products with 1.85 mm connectors

Introduction

The 1.85 mm connector used in this product is a precision high-frequency coaxial wave-guide constructed with small geometries necessary to sustain the high frequency performance. EXTREME CARE is required when assembling or disassembling connections using these components. The use of improper handling procedures can result in degraded performance or complete failure of the connection. Improper handling of these components will void the warranty.

Assembly and Disassembly Procedures

THE BODY OF THE COMPONENT MUST NOT BE ALLOWED TO ROTATE DURING THE ASSEMBLY OR DISASSEMBLY PROCESS. Figure 1 shows the correct placement of wrenches for assembly and disassembly.

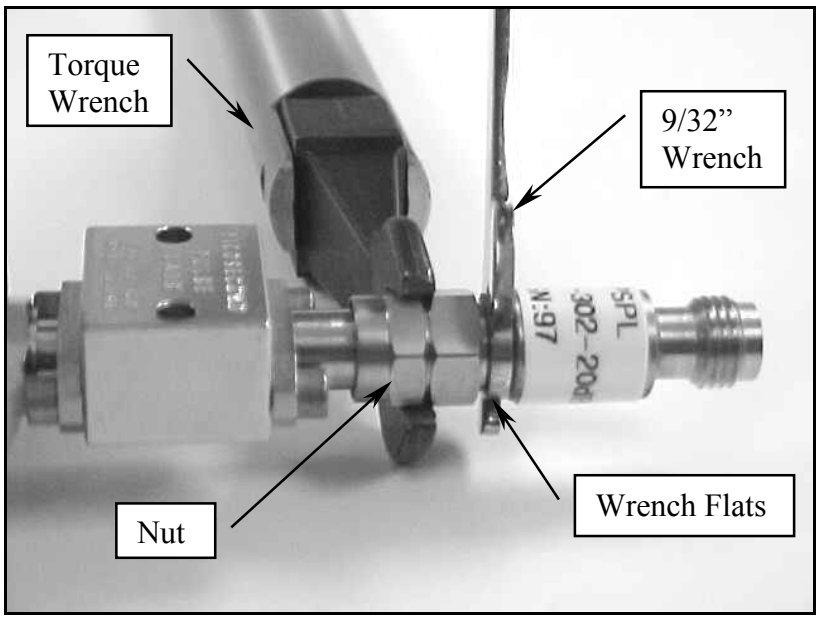


Figure 1. Proper placement of wrenches for assembling and disassembling 1.85mm connectors

Proper Assembly Technique:

1. Carefully align the two connectors to be mated.
2. Securely hold the bodies of both devices to be mated using wrenches at the wrench flats as indicated in Figure 1.
3. Tighten the connecting nut by hand. DO NOT ALLOW THE BODY OF EITHER COMPONENT TO ROTATE.
4. Use a torque wrench to tighten the connection to 8 in/lb (0.90 N-m) while securing the body of the connector with a wrench at the wrench flats. DO NOT ALLOW THE BODY OF EITHER COMPONENT TO ROTATE.

Proper Disassembly Technique:

1. Securely hold the bodies of the devices to be unmated using a wrench on the wrench flats as shown in Figure 1. Use a wrench to loosen the connection. DO NOT ALLOW THE BODY OF EITHER COMPONENT TO ROTATE.
2. Hold the body of the device to be unmated using a wrench on the wrench flats as shown in Figure 1.
3. Loosen the nut by hand. DO NOT ALLOW THE BODY OF EITHER COMPONENT TO ROTATE.

Damage Due to Improper Assembly or Disassembly

Allowing the body of the component to rotate during the assembly or disassembly process can break the center pin captivation or cause wear on the surface of the mating shoulders that form the outer conductor connection that is the ground contact. The surface wear appears as abrasion or galling of the metal surfaces that can cause an air-gap or poor ground contact, either of which create an impedance mismatch that may result in poor microwave performance. EVEN SLIGHT WEAR THAT MAY ONLY BE VISIBLE UNDER A MICROSCOPE CAN HAVE A SIGNIFICANT NEGATIVE IMPACT ON THE PERFORMANCE OF THE CONNECTOR. The photos in Figures 3 and 5 show the damage caused to the ground interface due to improper assembly and disassembly of the 1.85mm Female (Jack) and Male (Plug) connectors, respectively.

Figure 2. New Female Connector

Figure 3. Damaged Female Connector

Figure 4. New Male Connector

Figure 5. Damaged Male Connector

Warranty Issues

Please note that improper handling of these components may result in irreparable damage and will void the warranty.

Additional Information

Additional information and technical support can be obtained by contacting the Picosecond Pulse Labs Sales Department at 303.209.8100 or info@picosecond.com.