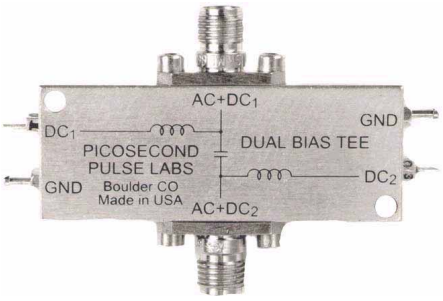
Model 5542LL

Bias Tee

• 12 kHz to > 40 GHz • 7 ps Risetime



The Model 5542LL is an ultra-broadband, coaxial dual bias insertion tee and DC blocking capacitor. It passes ultra-fast rise pulses with a minimum of waveform distortion. Its risetime is only 7 ps. The frequency response is flat over many decades, and the -3 dB bandwidth extends from 12 kHz to beyond 40 GHz. It is now available with your choice of either 2.92 mm, 40 GHz, or 2.4 mm, 50 GHz connectors. The 2.92 mm connector is mechanically and electrically compatible with SMA and 3.5 mm connectors. The 2.4 mm connector is mechanically and electrically compatible with the 1.85 mm connector. This bias tee is ideal for 40 Gbit systems and other RF and microwave applications. It has two DC inputs to apply independent DC bias to each RF port. In addition, it is packaged in an extremely compact housing.

Risetime (10%-90%)	7 ps typical	**Capacitance**	0.22 µF, -50% +80%
Bandwidth (-3 dB)	>40 GHz guaranteed	**DC Voltage**	16 V max.
Low Frequency (-3 dB)	12 kHz typical	**Inductance** each DC path	1.5 mH, ±20%
Insertion Loss See guaranteed limit lines, S_{21} plot	0.2 dB mid-band	**DC Current** each DC path	100 mA max.
		Resistance each DC path	5.6 Ω
Impedance	50 Ω	**RF Power**	5 W avg. max., f< 10 GHz
Return Loss	>20 dB, 1 MHz to 4 GHz >13 dB, f < 20 GHz	**Delay**	140 ps
		Dimensions	See drawing, p. 2
Isolation	>50 dB, f >100 MHz	**Warranty**	One year

Ordering Information

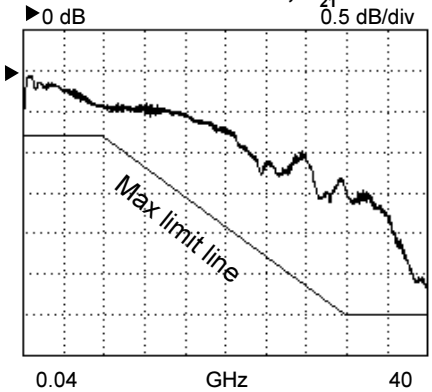
Model Number	Connector Configuration *
5542LL-221	2.92 mm jacks (f) on AC+DC_1 & AC+DC_2, solder pins on DC_1 & DC_2
5542LL-204	2.4 mm jacks (f) on AC+DC_1 & AC+DC_2, solder pins on DC_1 & DC_2

* Other connector combinations are available on request.

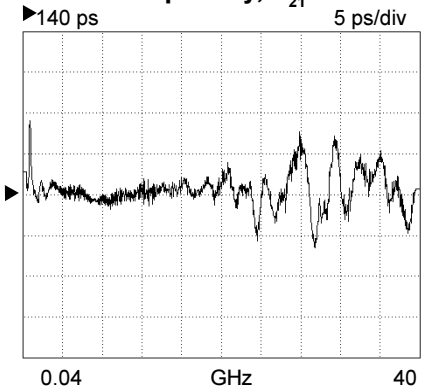
Microwave Frequency Response

Linear sweep from 0.04 to 40 GHz (4GHz/DIV). AC+DC_1 connector is input (port 1).
AC+DC_2 connector is output (port 2).

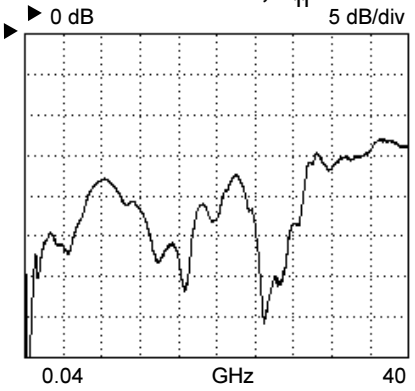
Insertion Loss, S_{21}



Group Delay, S_{21}

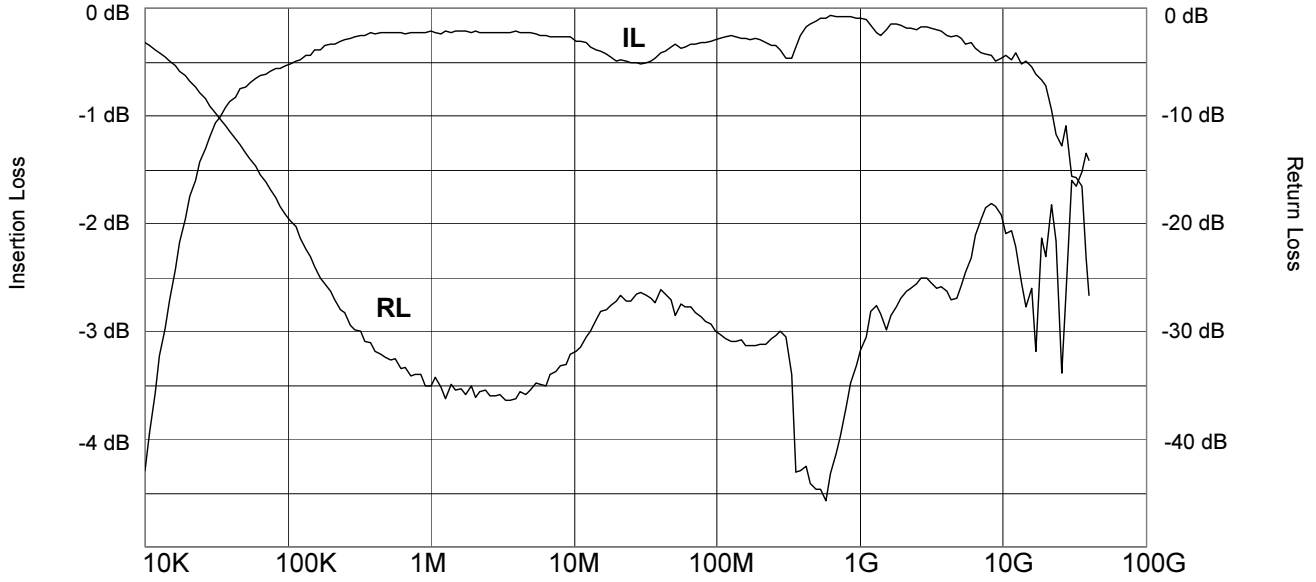


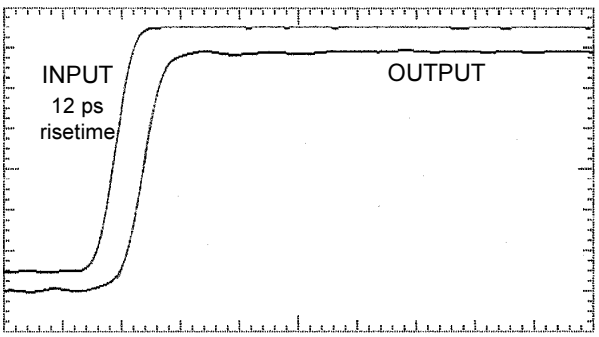
Return Loss, S_{11}



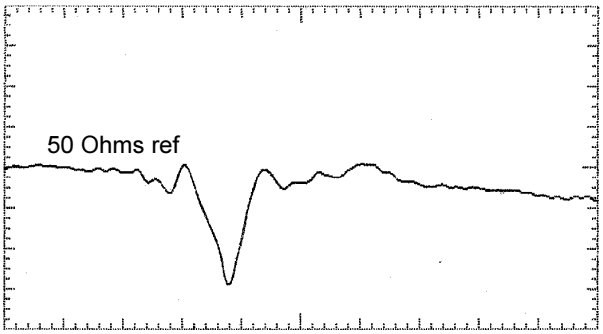
Typical Frequency Domain Response

Log sweep from 10 kHz to 50 GHz. Insertion loss scale is 0.5 dB/div. Return loss scale is 5 dB/div.





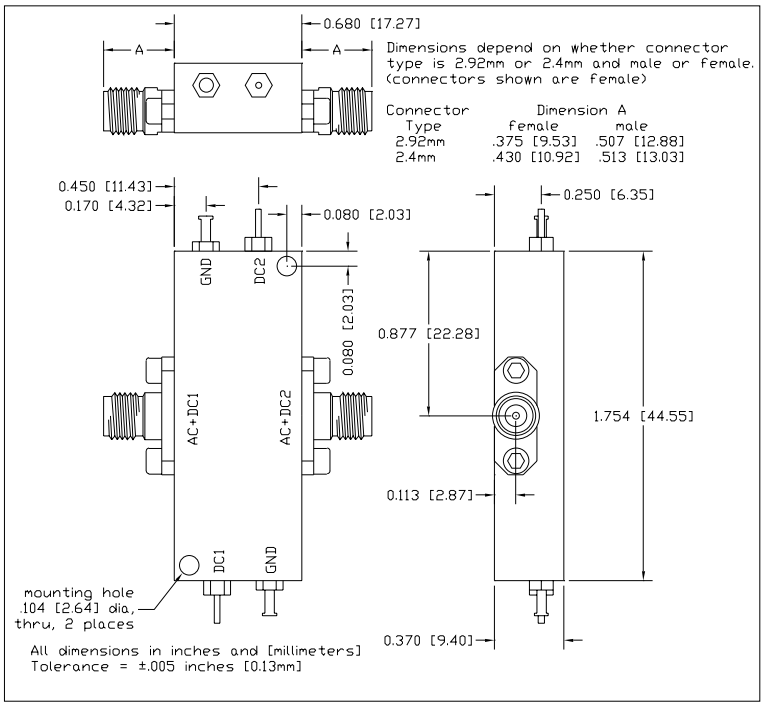
Step Response, 20 ps/div



2% rho/div, 100 ps/div

25 ps TDR of AC input port

5542-LL Mechanical Drawing



Notes

[1] Parameters listed in table and shown on plots are typical values. The -3 dB bandwidth and the insertion loss frequency response are guaranteed to be within the limits shown. **[2]** Frequency response measured using an HP-3577A, 5 Hz -200 MHz and a Wiltron 37369A, 40 MHz - 40 GHz vector network analyzers. **[3]** Step response measured using a PSPL Model 4015C pulse generator and an HP-54124A, 50 GHz oscilloscope. See AN-5a for details.