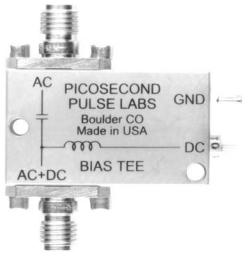
Model 5542
Bias Tee

• 10 kHz to > 50 GHz **• 7 ps Risetime**



The Model 5542 is an ultra-broadband, coaxial 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 10 kHz to beyond 50 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 is a much smaller package than previous PSPL bias tees.

Bandwidth (-3 dB) guaranteed	> 40 GHz, 2.92 mm > 50 GHz, 2.4 mm	**Capacitance and Max DC Voltage**	0.22 µF, -50% +80%, 16 V
Risetime (10%-90%)	7 ps typical	**Inductance and Max DC Current**	1.5 mH ±20% 100 mA
Low Frequency (-3 dB)	10 kHz typical	**Resistance**	5.6 Ω
Insertion Loss See guaranteed limit lines, S_{21} plot	0.2 dB mid-band 2 dB typical at 40 GHz (2.92 mm) or 50 GHz (2.4 mm)	**RF Power**	5 W avg. max., f < 10 GHz
		Isolation	>50 dB, f > 100 MHz
Impedance	50 Ω	**Delay**	140 ps
Return Loss	>25 dB 0.04 to 1 GHz >15 dB f < 20 GHz	**Dimensions**	See drawing on p. 2
Warranty	One year. See Terms and Conditions of Sale for details		

Ordering Information

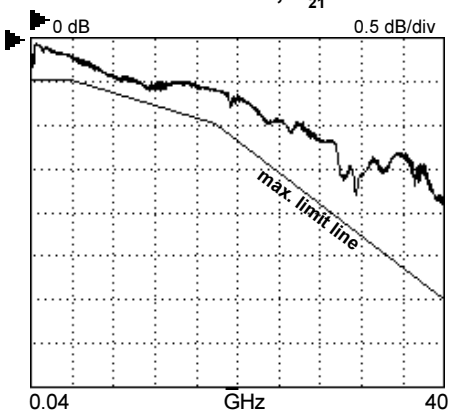
Model Number	Connector Configuration *
5542-219	2.92 mm jacks (f) on AC & AC+DC, solder pin on DC
5542-202	2.4 mm jacks (f) on AC & AC+DC, solder pin on DC

* Other connector combinations are available on request.

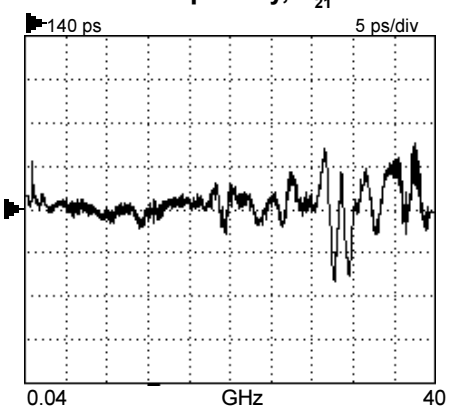
Microwave Frequency Response

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

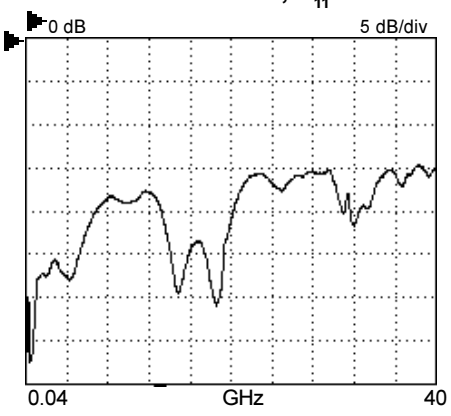
Insertion Loss, S_{21}



Group Delay, S_{21}

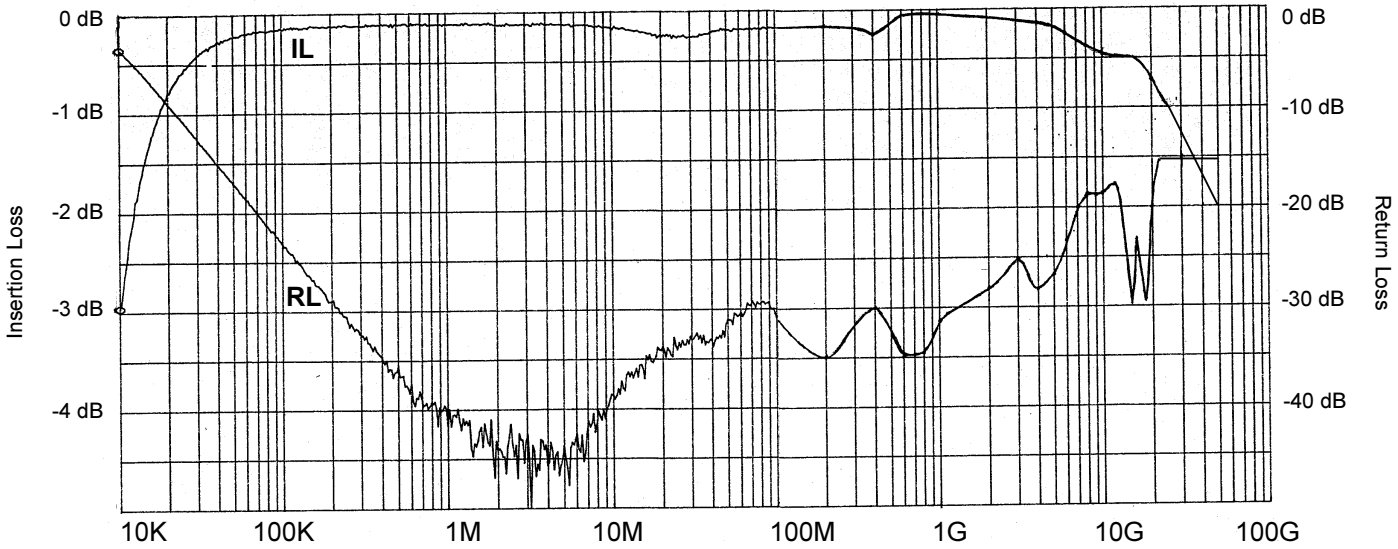


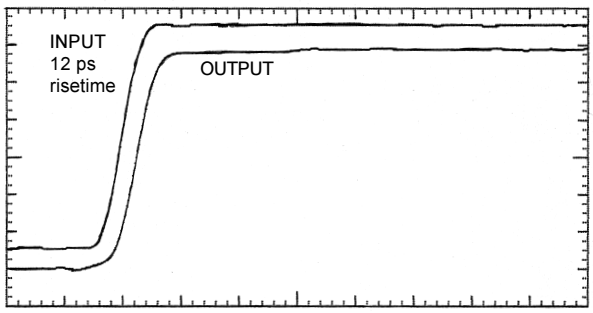
Return Loss, S_{11}



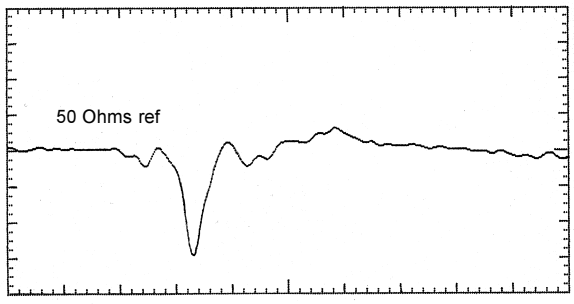
Typical Frequency Domain Response

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



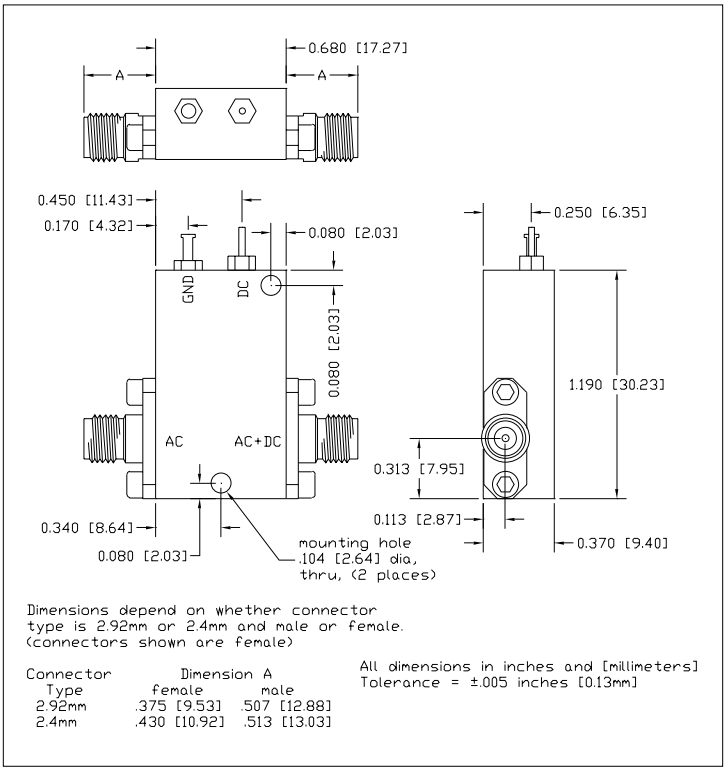


Step Response, 20 ps/div



2% rho/div, 100 ps/div
25 ps TDR of AC input port

5542 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 analyzer.

[3] Step response measured using a PSPL Model 4015C pulse generator and an HP-54124A, 50 GHz oscilloscope. See AN-5a for details.