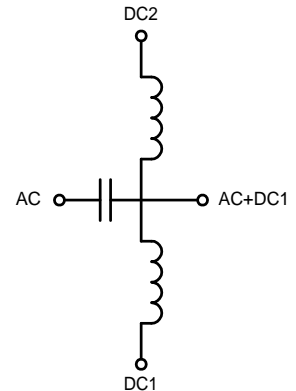
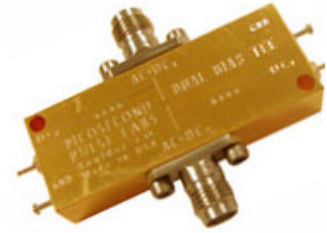


- 12 kHz to > 40 GHz
- 7 ps Risetime

The Model 5542K 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. Both biasing networks are connected to the AC+DC<sub>1</sub> Port. This bias tee is intended for Kelvin measurements in which a DC bias current is supplied through one biasing network, and the DC voltage is measured using the other. It is packaged in an extremely compact housing.



### 5542K Electrical Specifications

<b>Risetime</b> (10%-90%)	7 ps typical	<b>Capacitance</b>	0.22 $\mu$ F, -50% +80%
<b>Bandwidth</b> (-3 dB)	>40 GHz guaranteed	<b>DC Voltage</b>	16 V max.
<b>Low Frequency</b> (-3 dB)	12 kHz typical	<b>Inductance</b> each DC path	1.5 mH, $\pm$ 20%
<b>Insertion Loss</b> See guaranteed limit lines, S <sub>21</sub> plot	0.2 dB mid-band	<b>DC Current</b> each DC path	100 mA max.
		<b>Resistance</b> each DC path	5.6 $\Omega$
<b>Impedance</b>	50 $\Omega$	<b>RF Power</b>	5 W avg. max., f < 10 GHz
<b>Return Loss</b>	>20 dB, 1 MHz to 4 GHz >13 dB, f < 20 GHz	<b>DC Path Bandwidth</b>	8 kHz typical
		<b>Delay</b>	140 ps
<b>Isolation</b>	>50 dB, f >100 MHz	<b>Dimensions</b>	See drawing, p. 3
		<b>Warranty</b>	One year

### Ordering Information

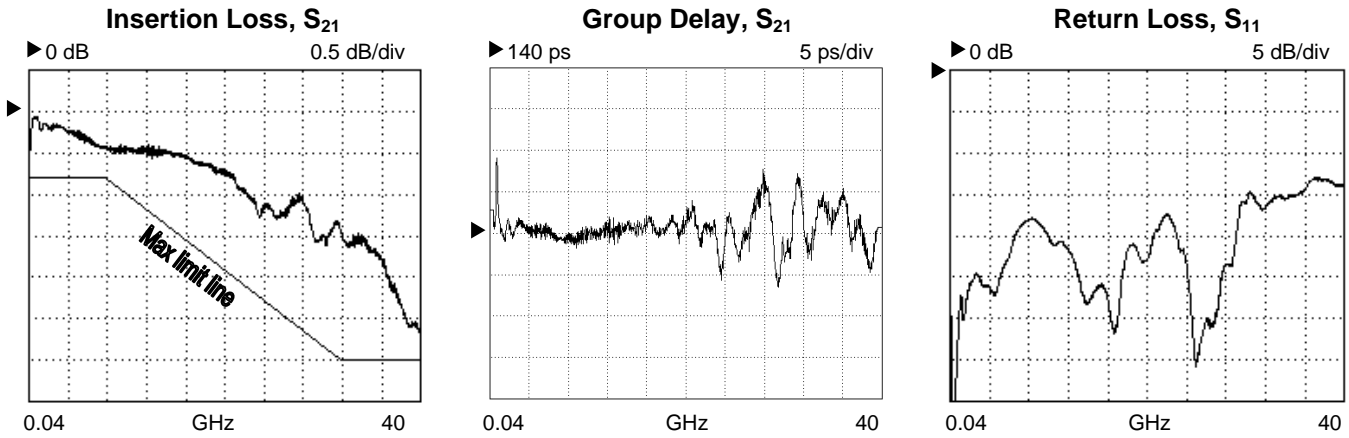
Model Number	Connector Configuration *
5542K-219	2.92 mm jacks (f) on AC+DC <sub>1</sub> & AC, solder pins on DC <sub>1</sub> & DC <sub>2</sub>
5542K-227	2.92 mm plug (m) on AC+DC <sub>1</sub> , 2.92 mm jack (f) on AC, solder pins on DC <sub>1</sub> & DC <sub>2</sub>
5542K-229	2.92 mm plugs (m) on AC+DC <sub>1</sub> & AC, solder pins on DC <sub>1</sub> & DC <sub>2</sub>
5542K-202	2.4 mm jacks (f) on AC+DC <sub>1</sub> & AC, solder pins on DC <sub>1</sub> & DC <sub>2</sub>

\* Other connector combinations may be available on request.

**Microwave Frequency Response**

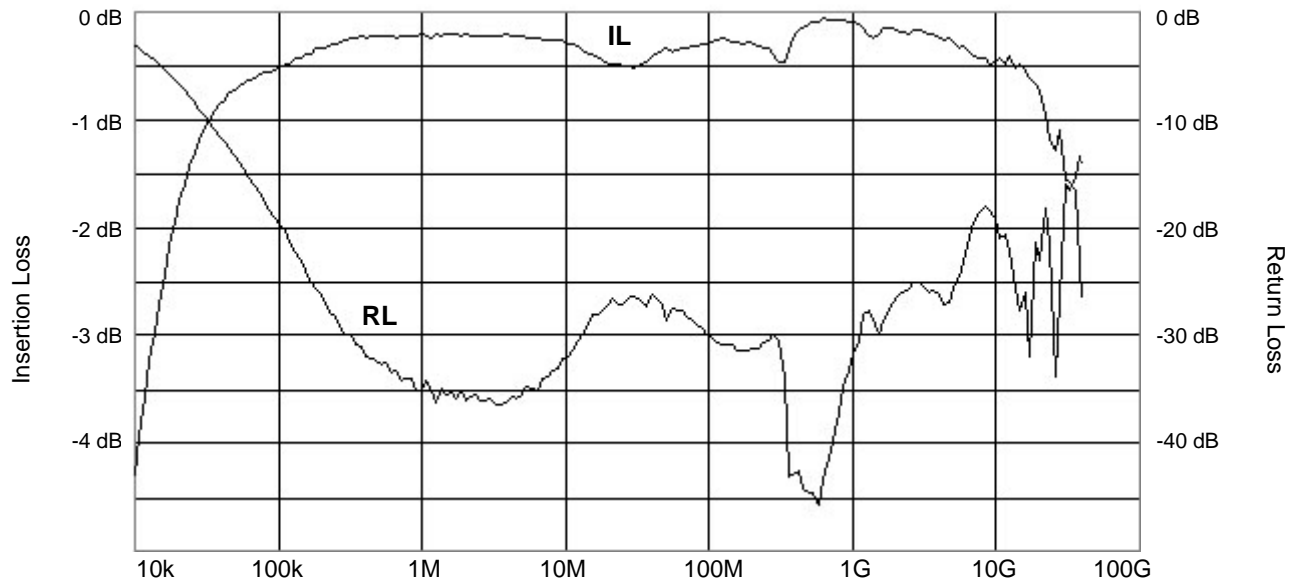
Linear sweep from 0.04 to 40 GHz (4GHz/div).

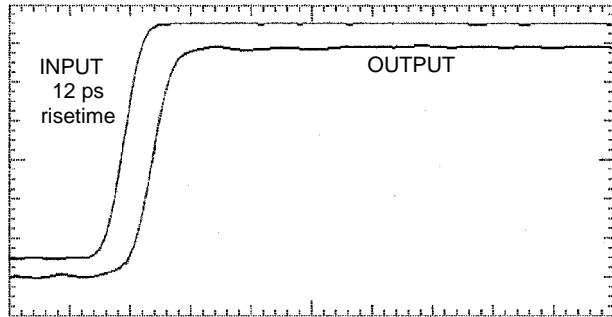
AC+DC<sub>1</sub> connector is input (port 1). AC+DC<sub>2</sub> connector is output (port 2)



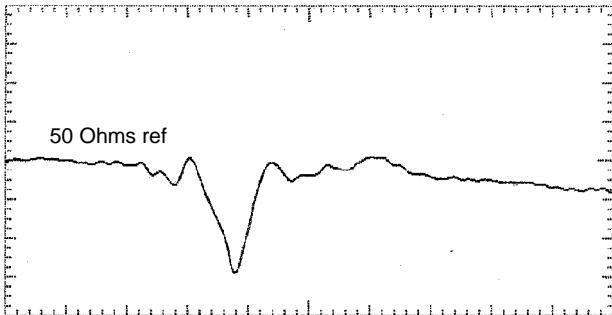
**Typical Frequency Domain Response**

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



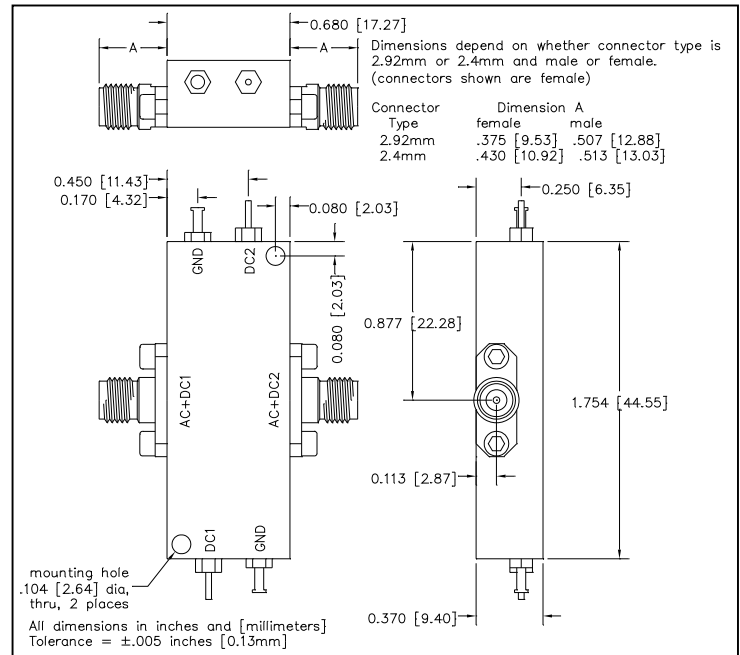


Step Response, 20 ps/div



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

5542K 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.