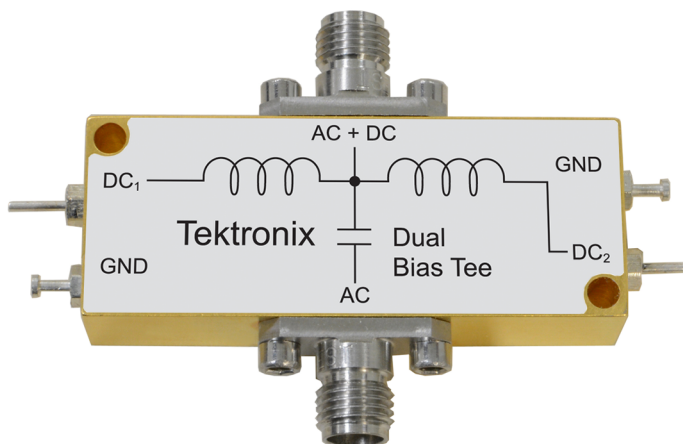


Kelvin Bias Tee

PSPL5542K Datasheet



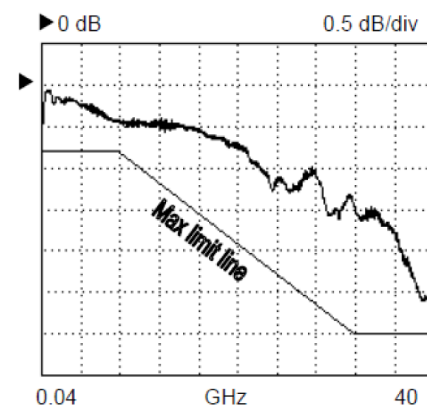
The PSPL5542K is an ultra-broadband, coaxial dual bias insertion tee and DC blocking capacitor. It passes ultra-fast rise pulses with a minimum of waveform distortion. Its rise time is only 7 ps. The frequency response is flat over many decades, and the -3 dB bandwidth extends from 12 kHz to beyond 40 GHz. The 2.92 mm connector is mechanically and electrically compatible with SMA and 3.5 mm connectors. Both biasing networks are connected to the AC+DC 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.

Key performance specifications

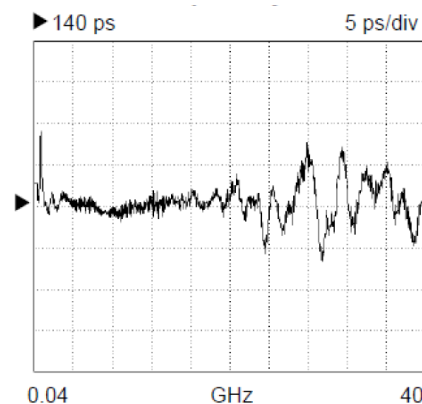
- 12 kHz to >40 GHz
- 7 ps rise time
- 16 V, 100 mA

Typical performance

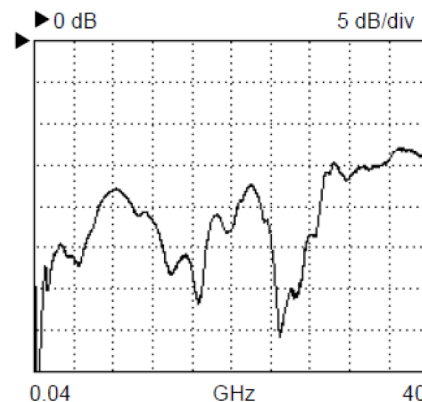
In the following plots, the Linear sweep is from 0.04 to 40 GHz (4 GHz/div), the AC connector is input (port 1), and the AC+DC connector is output (port 2).



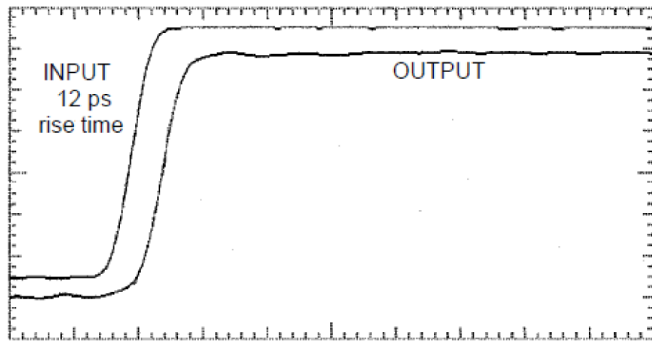
Insertion Loss, S_{21}



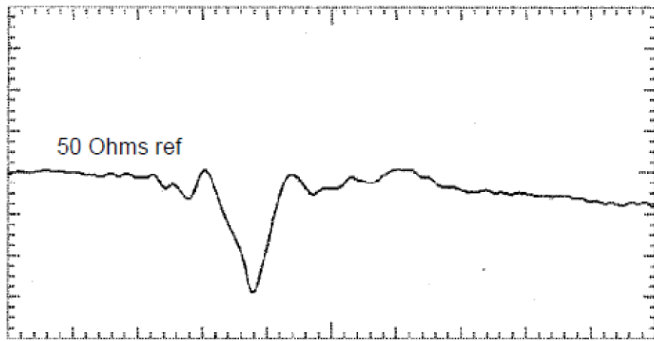
Group Delay, S_{21}



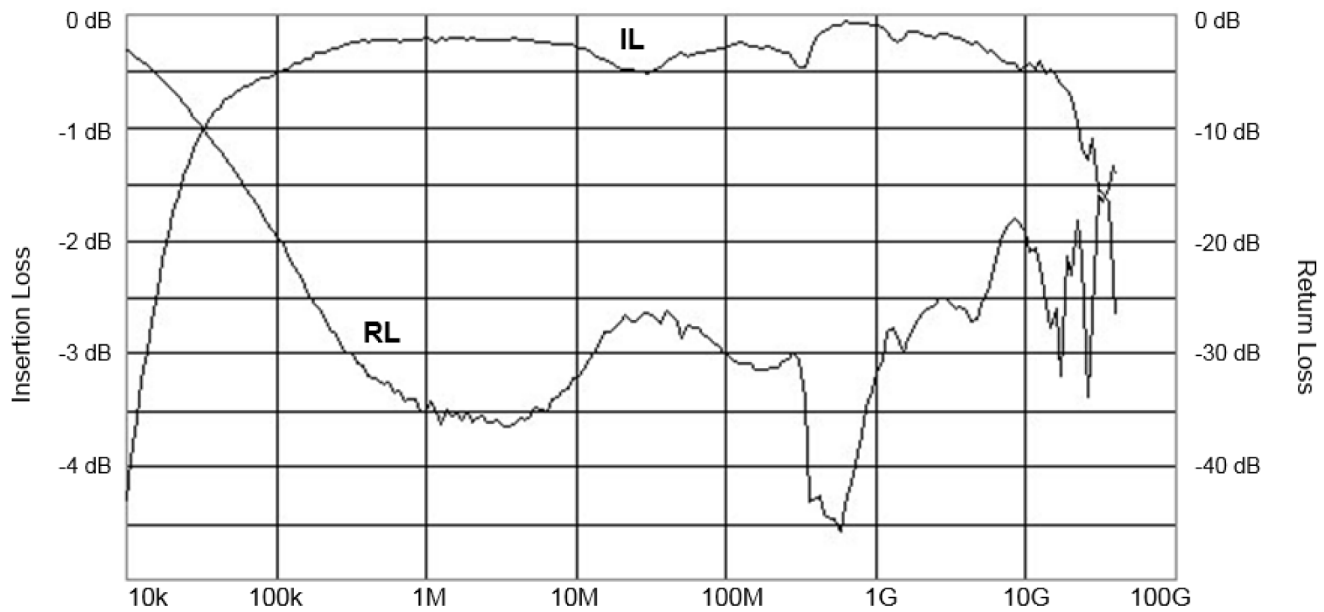
Return Loss, S_{11}



Step Response, 20 ps/div



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

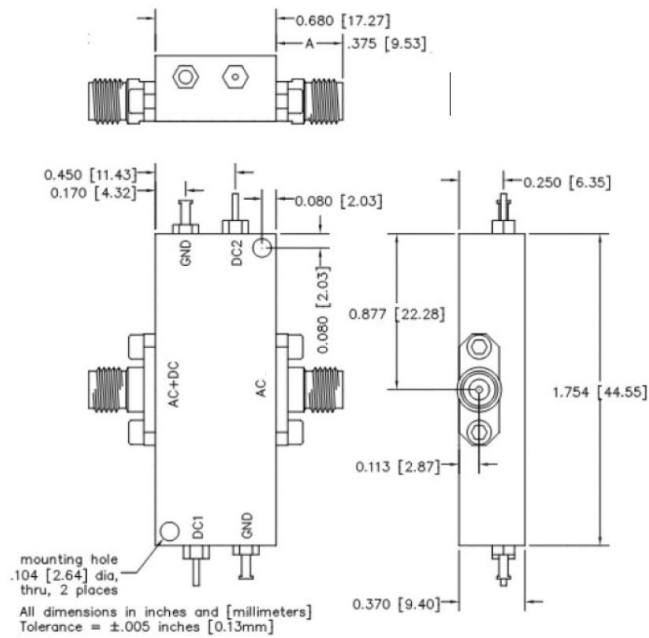


Log sweep from 10 kHz to 50 GHz. Insertion loss scale is 0.5 dB/div. Return loss scale is 5 dB/div

Specifications

Parameter	Symbol	Units	Minimum	Typical	Maximum	Comments
Impedance	Z	ohms		50		
Upper 3 dB frequency	$f_{c,h}$	GHz	40			
Lower 3 dB frequency	$f_{c,l}$	kHz		12		
Rise time	t_r	ps		7		10 – 90%
Insertion loss	S_{21}	dB		0.2		Mid-band
Return loss	S_{11}	dB		>20 >13		1 MHz to 4 GHz < 20 GHz
DC voltage	V	V			16	
DC current	I	mA			100	Each path
Capacitance	C	μ F		0.22		-50%, +80%
Inductance	L	mH		1.5		+/-20% each path
Resistance	R	ohms		5.6		Each path
RF power	P	W			5	Avg., f < 10 GHz
Isolation	S_{13}	dB		>50		f > 100 MHz
DC path bandwidth	$f_{c,DC}$	kHz		8		
Delay	Td	ps		140		AC to AC+DC port
RF Connectors	2.9 mm jacks (f)					
DC Connectors	Solder pin					
Warranty	One year					

Mechanical dimensions



Ordering information

Models

PSPL5542K	KELVIN BIAS TEE
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ASEAN / Australasia (65) 6356 3900
Belgium 00800 2255 4835*
Central East Europe and the Baltics +41 52 675 3777
Finland +41 52 675 3777
Hong Kong 400 820 5835
Japan 81 (3) 6714 3010
Middle East, Asia, and North Africa +41 52 675 3777
People's Republic of China 400 820 5835
Republic of Korea 001 800 8255 2835
Spain 00800 2255 4835*
Taiwan 886 (2) 2656 6688

Austria 00800 2255 4835*
Brazil +55 (11) 3759 7627
Central Europe & Greece +41 52 675 3777
France 00800 2255 4835*
India 000 800 650 1835
Luxembourg +41 52 675 3777
The Netherlands 00800 2255 4835*
Poland +41 52 675 3777
Russia & CIS +7 (495) 6647564
Sweden 00800 2255 4835*
United Kingdom & Ireland 00800 2255 4835*

Balkans, Israel, South Africa and other ISE Countries +41 52 675 3777
Canada 1 800 833 9200
Denmark +45 80 88 1401
Germany 00800 2255 4835*
Italy 00800 2255 4835*
Mexico, Central/South America & Caribbean 52 (55) 56 04 50 90
Norway 800 16098
Portugal 80 08 12370
South Africa +41 52 675 3777
Switzerland 00800 2255 4835*
USA 1 800 833 9200

* European toll-free number. If not accessible, call: +41 52 675 3777

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