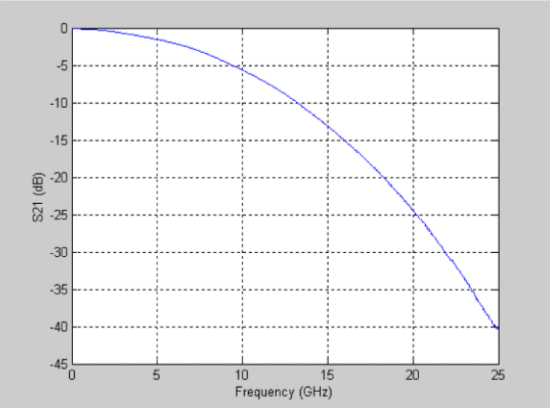
Flat Group Delay Low-Pass Filter

PSPL5933 Datasheet

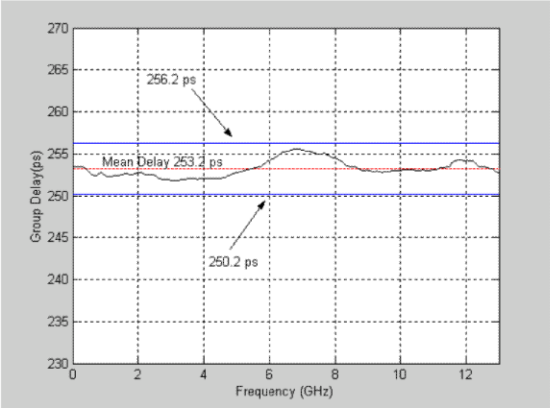
The PSPL5933 Flat Group Delay Low-Pass Filter is designed for OEM use in high-speed digital networks and telecom systems. The devices use a proprietary, absorptive filter design that has attenuation and time domain characteristics similar to those of the 4th order Bessel-Thomson filter. Traditional Bessel-Thomson 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 PSPL5933 filters by absorption. It has excellent impedance matches and very good return losses, both within and above the filter pass band. The Flat Group Delay style filter exhibits quasi-Gaussian insertion loss characteristics, with superior time domain performance.

Typical performance, option 7P46GHZ

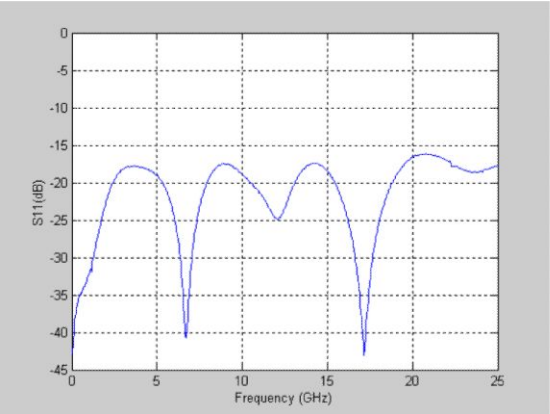
The following figure shows the insertion loss from 0 to 25 GHz.



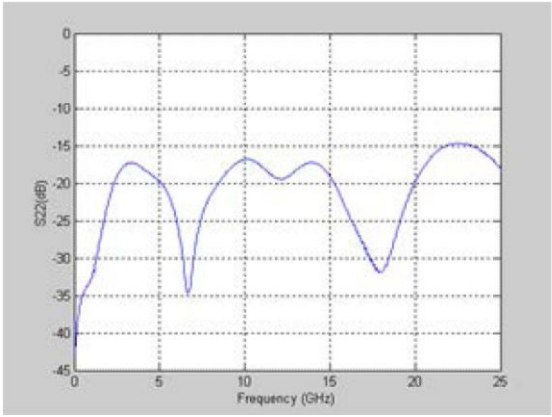
The following figure shows the group delay from 0.1 to 13 GHz.



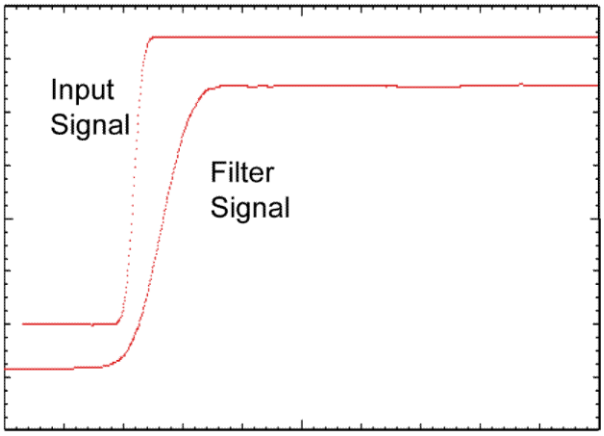
The following figure shows the input return loss from 0 to 25 GHz.



The following figure shows the output return loss from 0 to 25 GHz.

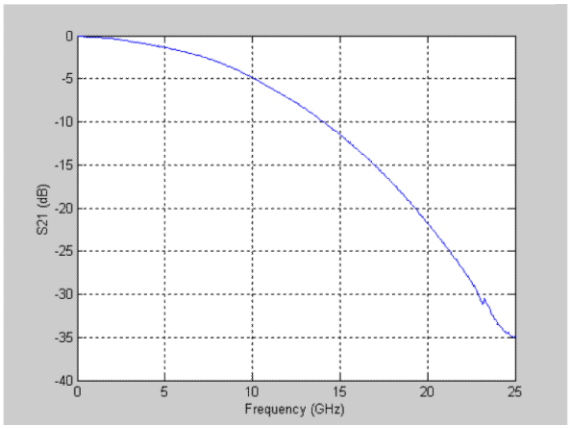


The following figure shows the TDT response to 15 ps step with the time base at 50 ps/div.

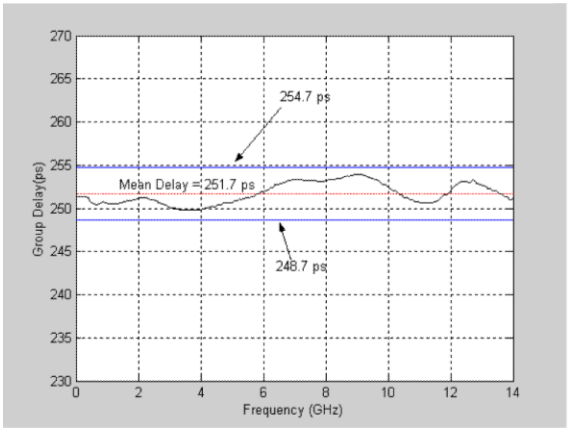


Typical performance, option 8GHZ

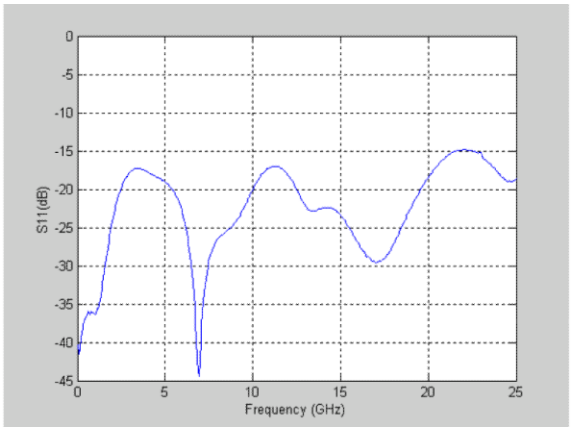
The following figure shows the insertion loss from 0 to 25 GHz.



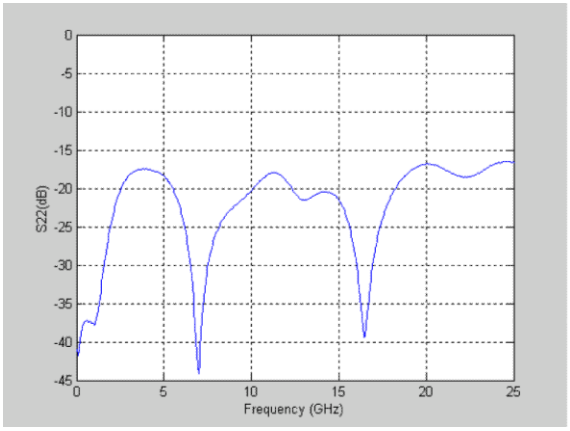
The following figure shows the group delay from 0.1 to 14 GHz.



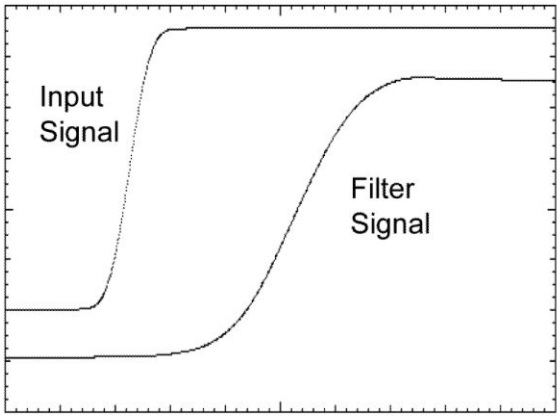
The following figure shows the Input return loss from 0 to 25 GHz.



The following figure shows the output return loss from 0 to 25 GHz.



The following figure shows the TDT response to 15 ps step with the time base at 20 ps/div.

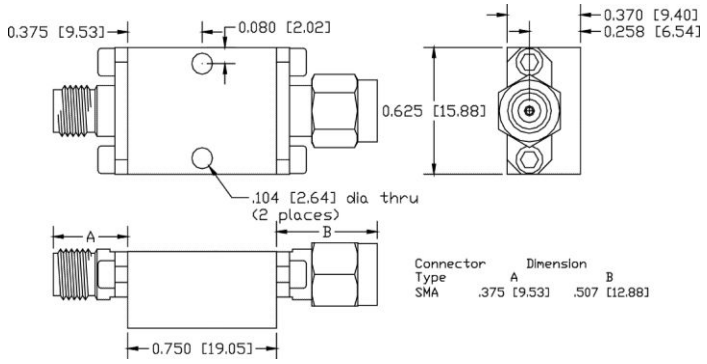


Specifications

All specifications apply to all models unless noted otherwise.

Parameter [1]	PSPL5933 opt. 7P46GHZ	PSPL5933 opt. 8GHZ
Impedance	50 Ω	
Bandwidth (-3 dB)	7.46 GHz	8 GHz
Bandwidth Tolerance (at 23 °C)	± 3% maximum	
Bandwidth Thermal Drift	-2.1 MHz / °C typical, -3.1 MHz / °C maximum	
Rise time, 10% – 90%	47 ps	46 ps
RF Power	29 dBm maximum	
Operating Temperature	-10 to +70 °C, maximum power	
Return Loss (S_{11} and S_{22})	>12 dB	
Group Delay	253 ps	
Group Delay Flatness	±3 ps	
Connectors	SMA jack (f) & plug (m)	
Warranty	One year	

Mechanical dimensions



1 All parameters listed are typical unless max/min guaranteed limits are provided.

Ordering information

Models

PSPL5933	Flat Group Delay Low-Pass Filter

Options

PSPL5933 7P46GHZ	7.46 GHz 3 dB frequency
PSPL5933 8GHz	8 GHz 3 dB frequency

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