

TVP5154A Anti-Aliasing Filters

1 Overview

Anti-alias filtering may be required if out-of-band noise is present on the inputs to the TVP5154A. [Figure 1](#) shows two example filters with good cost/performance characteristics for typical applications. A different filter is shown for S-Video, because the TVP5154A sample rate for each S-Video component is 13.5 MHz, compared to 27 MHz for composite video. Similarly effective noise attenuation therefore requires a steeper rolloff and a higher-order filter.

The example S-Video filter is shown in a form that can be implemented in two stages separated by a switch, so that only the second stage is used for composite video input. If a two-stage approach is not desired, then the 470-pF/180-pF capacitor pair may be replaced in the design with a single 680-pF capacitor.

[Figure 2](#) and [Table 1](#) show amplitude and group delay characteristics for the example filters of [Figure 1](#).

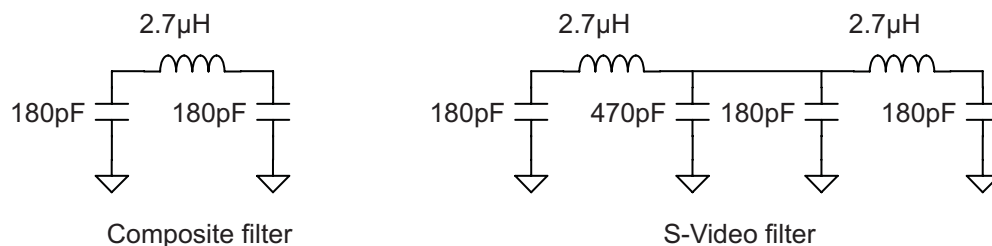
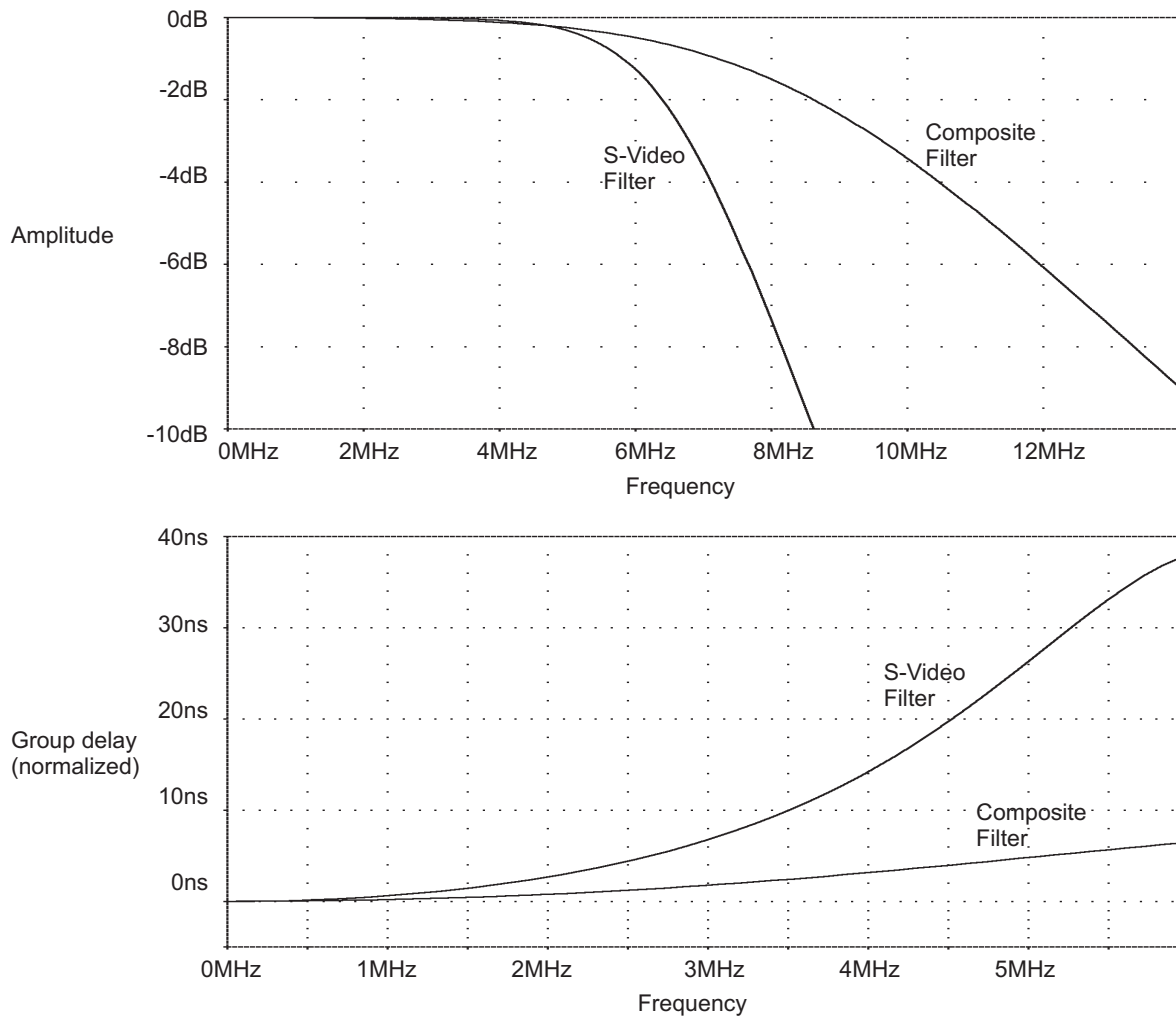


Figure 1. Example Anti-Aliasing Filters for Composite and S-Video


Figure 2. Example Anti-Aliasing Filter Characteristics
Table 1. Example Anti-Aliasing Filter Characteristics (Detail)

Frequency	Composite Filter		S-Video Filter		Notes
	Amplitude	Delay	Amplitude	Delay	
3.58 MHz		3 ns		11 ns	NTSC color subcarrier
4.2 MHz	-0.1 dB	4 ns	-0.1 dB	16 ns	NTSC bandwidth
4.43 MHz		4 ns		19 ns	PAL color subcarrier
6 MHz	-0.5 dB	7 ns	-1.3 dB	38 ns	PAL-D bandwidth
7.5 MHz	-1.1 dB		-5.4 dB		PAL sampled image for S-video
9.3 MHz	-2.7 dB		-13 dB		NTSC sampled image for S-video
21 MHz	-18 dB		-047 dB		PAL sampled image for composite
22.8 MHz	-20 dB		-051 dB		PAL sampled image for composite

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