TVP5150AM1 Anti-Aliasing Filters

1 Overview

Anti-alias filtering may be required if out-of-band noise is present on the inputs to the TVP5150AM1. Figure 1 shows two example filters with good cost/performance characteristics for typical applications. A different filter is shown for S-Video because the TVP5150AM1 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.

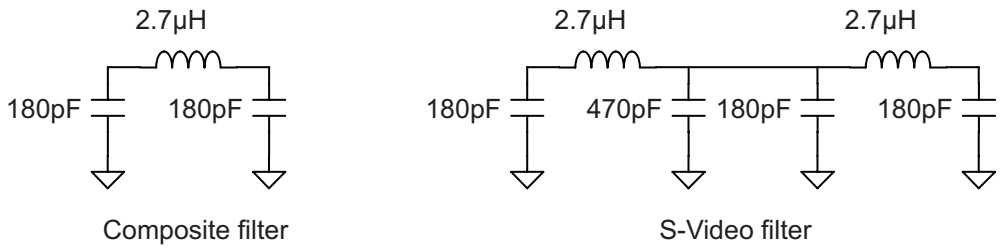

Figure 1. Example Anti-Aliasing Filters for Composite and S-Video

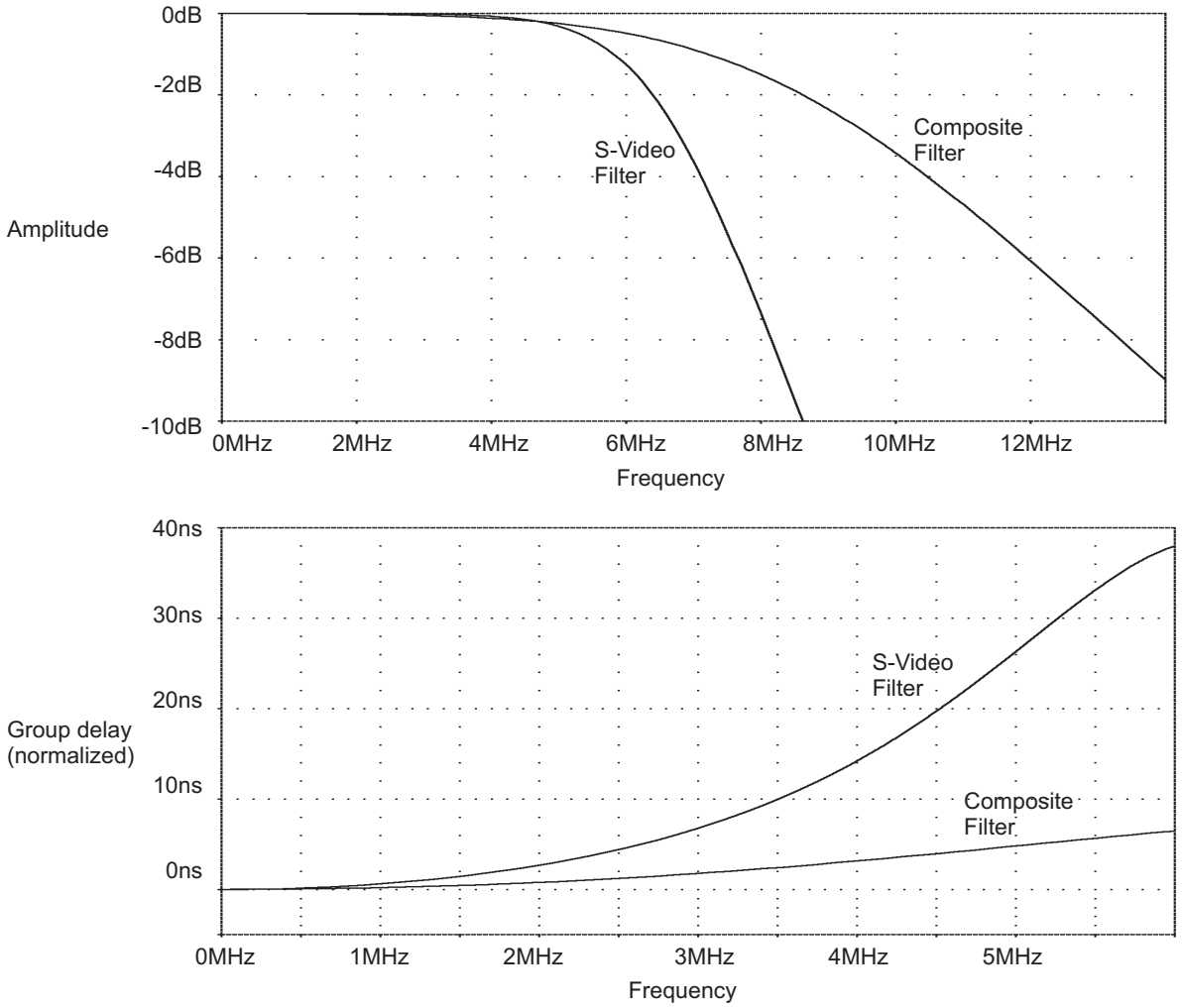

Figure 2. Example Anti-Aliasing Filter Characteristics

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		–47 dB		PAL sampled image for composite
22.8 MHz	–20 dB		–51 dB		PAL sampled image for composite

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