

ALLEN AVIONICS

AVS SERIES MINIATURE LOWPASS VIDEO FILTERS

ALLEN AVIONICS, INC.

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ALVAS00007

AVS SERIES

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MINIATURE LOWPASS VIDEO FILTERS

The AVS Series, Miniature Broadcast-Quality Filters were designed with Original Equipment Manufacturers in mind. Their miniature size and superior performance will enhance any analog or digital video product.



Flat amplitude and group delay, combined with excellent transient response, make the AVS Series Filters especially suitable for digital processing equipment as Pre-Filters before A/D converters and Post-Filters after D/A converters.

Sin x/x correction is available for Post filtering with no increase in package size. Wide bandwidths and sharp stopband ratios assure all information will be transmitted to the D/A converter while maximizing attenuation at the Nyquist frequency.

Six different stopband ratios from 1.25 to 1.75 are available. Sin x/x correction is available for all stopband ratios. The AVS Series Filters are available in Single-in-Line and Dual-in-Line epoxy packages or in metal cases, all for PC board mounting.

FEATURES

- 6 different stopband ratios
- Available packages: Single-in-Line, Dual-in-Line, or metal cases, all for PC board mounting.
- Phase and Delay Equalized over the passband.
- Stopband attenuated to over 100 MHz.
- Sin x/x correction available in all packages
- Any cutoff frequency available from 2 MHz to 30 MHz.
- 75 Ohm impedance.
- Specifications can be modified to meet special customer requirements.
- Custom packaging available.

APPLICATIONS

- NTSC and PAL video systems.
- Microwave and TV studio equipment.
- Anti-aliasing filters.
- Pre and Post-Filtering for A/D and D/A converters.
- Analog and digital filtering applications for test and measurement systems.

AVS FILTER SPECIFICATIONS

To calculate your own filter, use the formulas below:

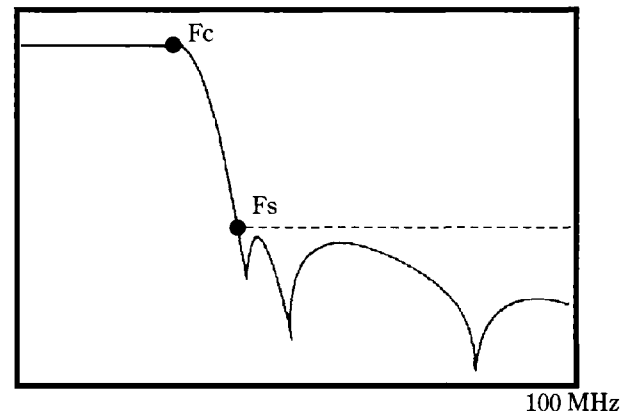
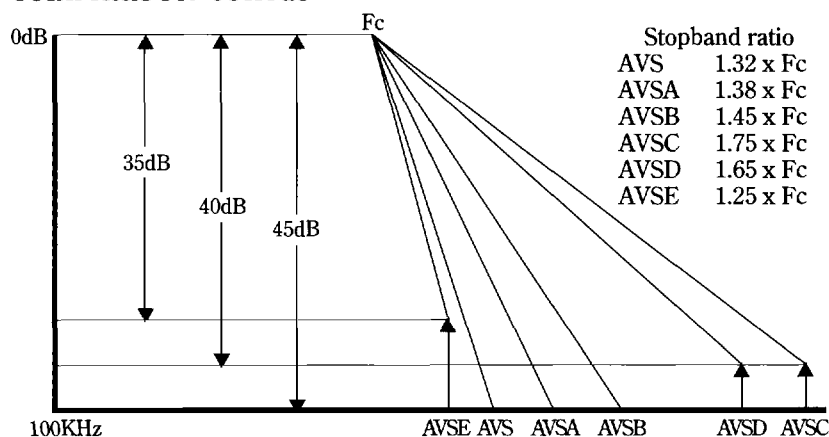
<i>Filter Type:</i>	AVS	AVSA	AVSB	AVSC	AVSD	AVSE
End of passband ripple frequency (F_c)	supplied to your requirement					
Maximum passband ripple to F_c	.25dB	.2dB	.1dB	.3dB	.3dB	.3dB
-3dB frequency = multiply F_c by	1.07	1.12	1.15	1.19	1.17	1.10
-12 dB frequency = multiply F_c by	1.15	1.20	1.24	1.34	1.31	1.15
Start of stopband (F_s) = multiply F_c by	1.32	1.38	1.45	1.75	1.65	1.25
Stopband attenuation	45dB	45dB	45dB	40dB	40dB	35dB
Stopband ratio = F_s/F_c	1.32	1.38	1.45	1.75	1.65	1.25
Impedance	75 Ω	75 Ω	75 Ω	75 Ω	75 Ω	75 Ω
Approximate propagation (group) delay, T_d (microseconds) = K/F_c (MHz)	K = 2.50	K = 2.83	K = 2.58	K = 1.19	K = 1.82	K = 2.50
Group delay ripple (nanoseconds, peak-to-peak)	$\pm 1.5\%$ of nominal group delay					
End of group delay ripple (% of passband)	90%	100%	90%	100%	100%	95%

Sin x/x correction available in all models with no increase in package size. Insertion loss Pre-Filter 1 dB max. Post-Filter depends on sample rate and frequency.

Comparison using one frequency: 5.0 MHz

<i>Filter Type:</i>	AVS	AVSA	AVSB	AVSC	AVSD	AVSE
End of passband ripple frequency (F_c)	5.0	5.0	5.0	5.0	5.0	5.0
Maximum passband ripple to F_c	.25dB	.2dB	.1dB	.3dB	.3dB	.3dB
-3dB frequency (nominal)	5.35	5.60	5.75	5.95	5.85	5.50
-12 dB frequency (nominal)	5.75	6.00	6.20	6.70	6.55	5.75
Start of stopband (F_s)	6.60	6.90	7.25	8.75	8.25	6.25
Stopband attenuation	45dB	45dB	45dB	40dB	40dB	35dB
Stopband ratio = F_s/F_c	1.32	1.38	1.45	1.75	1.65	1.25
Impedance	75 Ω	75 Ω	75 Ω	75 Ω	75 Ω	75 Ω
Approximate propagation (group) delay, T_d (microseconds) = K/F_c (MHz)	500	566	516	238	364	500
Group delay ripple (nanoseconds, peak-to-peak)	15	17	15.5	7.2	10.9	15
End of group delay ripple (MHz) (% of passband)	4.50	5.00	4.50	5.00	5.00	4.75

COMPARISON CURVES



TECHNICAL DATA FOR AVS SHAPE FACTOR

<i>Part Number</i>	<i>End of Passband Ripple (MHz)</i>	<i>Nominal -3dB Frequency* (MHz)</i>	<i>Nominal -12dB Frequency* (MHz)</i>	<i>-45dB Stopband Frequency* (MHz)</i>	<i>Maximum Peak-to-Peak Delay Distortion nanoseconds to MHz</i>		<i>Approximate Propagation Delay nanoseconds</i>
AVS02P36	2.36	2.53	2.71	3.12	32	2.12	1060
AVS02P60	2.60	2.78	2.99	3.43	30	2.34	960
AVS02P83	2.83	3.03	3.25	3.74	28	2.55	885
AVS03P09	3.09	3.31	3.55	4.08	25	2.78	810
AVS03P31	3.31	3.54	3.81	4.37	24	2.98	755
AVS03P56	3.56	3.81	4.09	4.70	22	3.20	700
AVS03P78	3.78	4.04	4.35	4.99	21	3.40	660
AVS03P97	3.97	4.25	4.57	5.24	20	3.57	630
AVS04P01	4.01	4.29	4.61	5.29	20	3.61	625
AVS04P20	4.20	4.49	4.83	5.54	19	3.78	595
AVS04P25	4.25	4.55	4.89	5.61	18	3.82	590
AVS04P51	4.51	4.83	5.19	5.95	17	4.06	555
AVS04P75	4.75	5.08	5.46	6.27	16	4.27	525
AVS05P23	5.23	5.60	6.01	6.90	15	4.71	480
AVS05P46	5.46	5.84	6.28	7.21	14	4.91	460
AVS05P70	5.70	6.10	6.56	7.52	14	5.13	430
AVS06P18	6.18	6.61	7.11	8.16	13	5.56	405
AVS06P65	6.65	7.12	7.65	8.78	12	5.98	375
AVS07P13	7.13	7.63	8.20	9.41	11	6.42	350
AVS09P50	9.50	10.17	10.93	12.54	8	8.55	265
AVS10P45	10.45	11.18	12.02	13.79	8	9.40	240
AVS11P41	11.41	12.21	13.12	15.06	7	10.27	220
AVS12P35	12.35	13.21	14.20	16.30	7	11.11	200

Group Delay Ripple is $\pm 1.5\%$ of the propagation delay to 90% of the end of passband ripple (Fc). *Reference Frequency 100 KHz.

The above table lists the most popular cutoff frequencies. Any other cutoff frequency can be supplied to your requirement.

TECHNICAL DATA FOR AVSA SHAPE FACTOR

<i>Part Number</i>	<i>End of Passband Ripple (MHz)</i>	<i>Nominal -3dB Frequency* (MHz)</i>	<i>Nominal -12dB Frequency* (MHz)</i>	<i>-45dB Stopband Frequency* (MHz)</i>	<i>Maximum Peak-to-Peak Delay Distortion nanoseconds to MHz</i>		<i>Approximate Propagation Delay nanoseconds</i>
AVSA01P75	1.75	1.96	2.10	2.42	49	1.75	1620
AVSA02P25	2.25	2.52	2.70	3.11	38	2.25	1260
AVSA02P75	2.75	3.08	3.30	3.80	32	2.75	1030
AVSA03P20	3.20	3.58	3.84	4.42	28	3.20	885
AVSA03P50	3.50	3.92	4.20	4.83	25	3.50	810
AVSA03P80	3.80	4.26	4.56	5.24	23	3.80	745
AVSA04P00	4.00	4.48	4.80	5.52	22	4.00	710
AVSA04P50	4.50	5.04	5.40	6.21	20	4.50	630
AVSA05P20	5.20	5.82	6.24	7.18	17	5.20	545
AVSA06P00	6.00	6.72	7.20	8.28	15	6.00	470
AVSA06P50	6.50	7.28	7.80	8.97	14	6.50	435
AVSA07P10	7.10	7.95	8.52	9.80	13	7.10	400
AVSA09P50	9.50	10.64	11.40	13.11	9	9.50	300
AVSA10P50	10.50	11.76	12.60	14.49	8	10.50	270
AVSA11P50	11.50	12.88	13.80	15.87	7	11.50	245
AVSA12P40	12.40	13.89	14.88	17.11	7	12.40	230

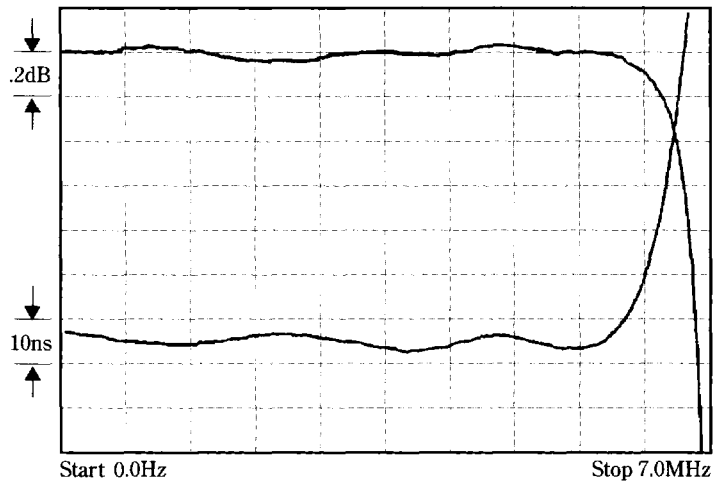
Group Delay Ripple is $\pm 1.5\%$ of the propagation delay to 100% of the end of passband ripple (Fc). *Reference Frequency 100 KHz.

The above table lists the most popular cutoff frequencies. Any other cutoff frequency can be supplied to your requirement.

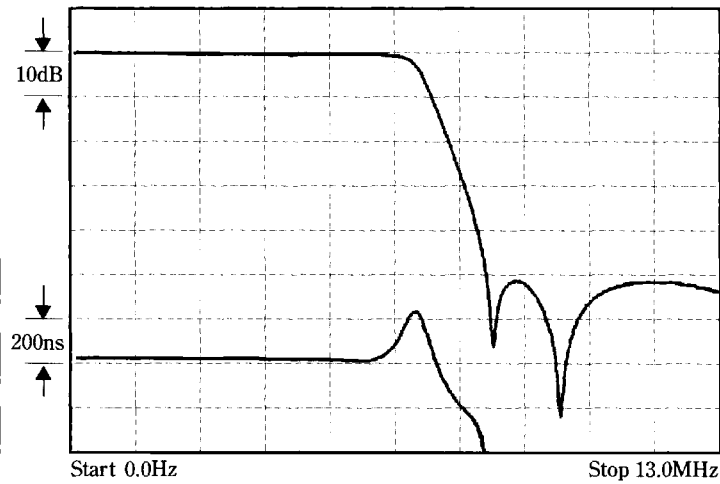
PERFORMANCE DATA

Actual Plots of Performance

Amplitude & Delay AVS06P18



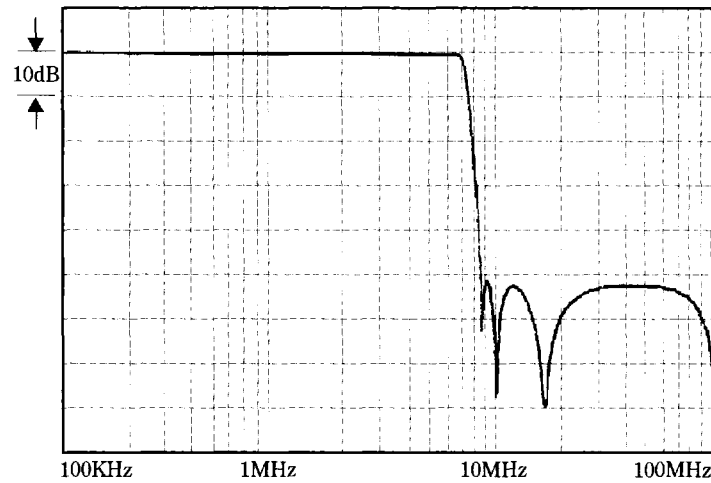
Amplitude & Delay AVS06P18



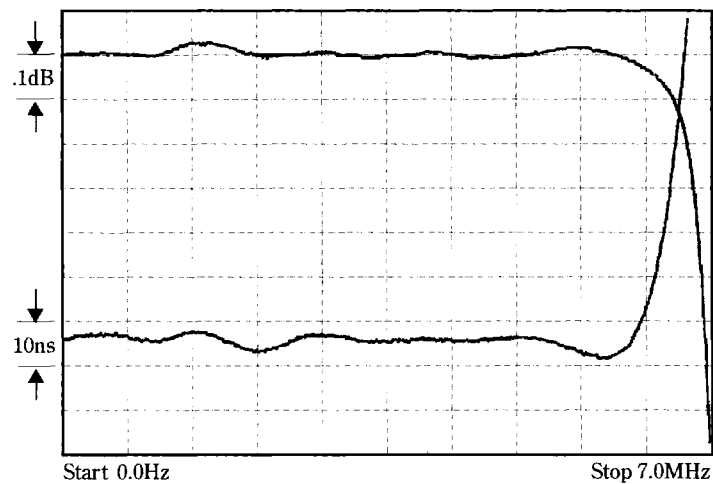
Amplitude & Return Loss AVS06P18



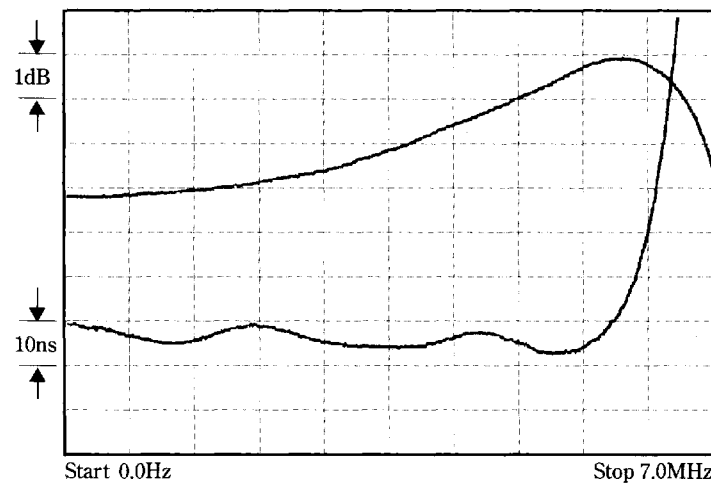
Amplitude to 100 MHz AVS06P18



Amplitude & Delay AVSA06P18



Amplitude & Delay AVS06P00S



ORDERING PROCEDURE

How to Order:

Pre-Filter & Post Filter

Filter Series

AVS
AVSA
AVSB
AVSC
AVSD
AVSE

Cutoff Frequency (Fc)

Case Style (V, H, M)

Post-Filter only

Sin x/x Correction (S)

Sample Rate (MHz)

Examples:

AVS05P53V
AVSA03P50H
AVSB12P35M
AVSE06P18V S14.32

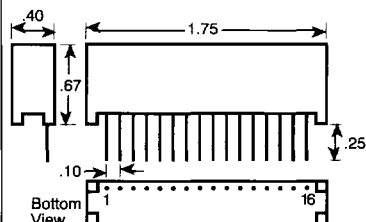
Filter Series/Shape Factor can be AVS through AVSE.

Cutoff Frequency can be any 4-digit number from 2.00 MHz to 30.00 MHz. "P" represents the decimal point.

Case Style options are V (Single-in-Line Package); H (Dual-in-Line Package); or M (Metal Case Package).

Sin x/x correction and Sample Rate used on Post-Filter only.

Single-in-Line Package



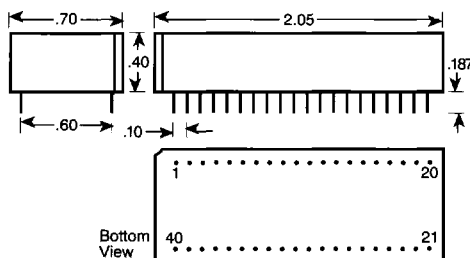
Pin Functions:

IN = 1 & 2
OUT = 15 & 16
GROUND = 3, 4, 13 & 14
All others no connection.

Pin Specifications:

Pin Width .020"
Pin Thickness .010"
Pin Length .250"
Pin Spacing .100"

Dual-in-Line Package



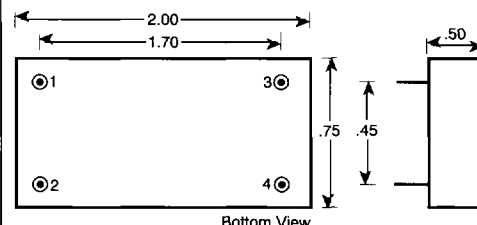
Pin Functions:

IN = 1 & 2
OUT = 15 & 16
GROUND = 3, 4, 13 & 14
All others no connection.

Pin Specifications:

Pin Width .020"
Pin Thickness .010"
Pin Length .187"
Pin Spacing .100"

Metal Case Package



Pin Functions:

IN = 2
OUT = 4
GROUND = 1 & 3

Pin Specifications:

Pin Diameter .030"
Pin Length .250"

Custom packaging available, please contact factory.

Note: Pin numbers for reference only.

For additional technical or ordering information,
please call our Technical Sales Department at

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