

## AVX AND AVX-R SERIES

INVERTING PULSE TRANSFORMERS

## AVX SERIES OF HIGH-SPEED INVERTING PULSE TRANSFORMERS



Avtech offers a range of pulse inverting transformers with rise times in the range of 80 to 500 ps, voltage ratings to 350 Volts and pulse width ratings up to 1 us.

The AVX-1 transformer is designed to be used with general purpose laboratory pulse generators and with units such as the AVI and AVL series of nanosecond pulse generators to provide an inverted output pulse with a magnitude equal to the input signal magnitude. The AVX-1 transformer rise time is less than 300 ps with a pulse propagation time through the transformer of less than 1.5 ns. AVX-1 units will accommodate pulse widths up to 100 ns at the maximum voltage rating of 350 Volts but will operate with pulse widths of at least 1 us with 10 Volt input pulses.

Similarly, the AVX-1A operates at wider pulse widths (to 1us), for amplitudes to 100V, with 400 ps rise time.

The AVX-2 transformer exhibits an ultra-fast rise time of less than 80 ps and is designed for use with sub-nanosecond rise time pulse generators (such as the Avtech AVP, AVM, AVH and AVN series, and others). The pulse propagation delay time of Model AVX-2 is less than 0.3 ns. Typical input and output waveforms for an AVX-2 unit are shown above. Model AVX-3 exhibits a rise time of 200 ps with peak voltage and pulse width ratings of 50 Volts and 50 ns, respectively, and a pulse propagation time of 0.7 ns or less.

The two connectors on the transformer are reversible - either may be used for the input or output. Both sides of the transformer are ground-referred (i.e., not floating). See the AVX-R Series for inverting transformers with higher voltage and pulse width ratings.

Model:	AVX-1	AVX-1B	AVX-1A	AVX-2	AVX-3		
Rise time <sup>1</sup> :	300 ps	500 ps	400 ps	80 ps	200 ps		
Max. PW:	100 ns	1 us	1 us	10 ns	50 ns		
Droop:	≤ 10% at maximum pulse width						
Impedance:	50 Ohms						
Max. voltage <sup>3</sup> :	350V	200 V	100 V	50 V	50 V		
Connectors:	SMA female (both) <sup>2</sup>						
Size: (H x W x D)	AVX-1B: 28 x 33 x 58 mm (1.1" x 1.3" x 2.3") Others: 38 x 28 x 23 mm (1.5" x 1.1" x 0.9")						
Chassis:	cast aluminum, blue enamel						

1) Measured 20%-80%, in response to a step input.

 To specify one SMA male connector and one SMA female connector, add the suffix -MF to the model number.

 Higher input voltages are normally possible if the maximum pulse width is reduced. Contact Avtech for details about specific applications.



## AVX-R SERIES OF WIDE-PULSE INVERTING PULSE TRANSFORMERS

Avtech offers a range of pulse inverting transformers with rise times in the range of 1 ns, voltage ratings to 700 Volts and pulse width ratings to 10 us.

The AVX-R1 transformer is designed to be used with general purpose and high-speed pulse generators to provide an inverted output pulse with a magnitude equal to the input signal magnitude. The AVX-R1 transformer rise time is less than 1 ns and it will accommodate pulse widths up to 5 us at the maximum voltage rating of 100 Volts.

The AVX-R2 transformer also exhibits a rise time of less than 1 ns and is designed for use with pulse generators providing outputs of up to 200 Volts and pulse widths as high as 5 us. It can support a maximum pulse widths of 10 us at 100V, falling to 5 us at 200V.

The 2 ns rise time Model AVX-R4 is similar but will accommodate input pulse amplitudes as high as 400 Volts.

For maximum performance, the Model AVX-R5 will operate to pulse widths of 10 us at 500 V, or 5 us at 700 V. It is suitable for use with the AVRZ-5, AVR-5B, and AVR-7B series of high-voltage pulse generators. Its rise time is 5 ns.

Model AVX-R6 will operate to pulse widths of 200 ns at 350 V, or 100 ns at 700 V. It is suitable for use with some models in the AVRK series. Its rise time is 1 ns.

Package sizes vary from 1.1" x 1.3" x 2.3" (AVX-R1) to 6.7" x 4.8" x 2.2" (AVX-R5). Most models have BNC connectors. Both sides of the transformer are ground-referred. They are not floating.

The input ports of Models AVX-R1, AVX-R2, and AVX-R4 include a shunt 470 $\Omega$  resistance to ground followed by a series DC blocking capacitor. As consequence the input and output ports are not reversible. The AVX-R5 and AVX-R6 do not have these components, so the input / output ports are interchangeable.

These models are intended for low-duty-cycle pulse applications. Contact Avtech for your special requirements such as higher voltage and pulse width ratings.

Model:	AVX-R1	AVX-R2	AVX-R4	AVX-R5	AVX-R6			
Max. input:	100 V	200 V	400 V	700V	700V			
Maximum pulse width:	5 us	10us@100V 5us@200V	5 us	10us@500V 5us@700V	200ns@350V 100ns@700V			
Rise time1:	1 ns	1 ns	2 ns	5 ns	1 ns			
Impedance:	50 Ohms							
Droop:	5% maximum							
H/W/D, mm: inches:	28×33×58 1.1×1.3×2.3	43×76×76 1.7×3.0×3.0	43×66×109 1.7×2.6×4.3	102×159×159 4.0x6.3x6.3	43×76×76 1.7×3.0×3.0			
Connectors:		SMA female						

1) Measured 20%-80%, in response to a step input.

2) To specify SMA female connectors, add the suffix -SMA to the model number.

