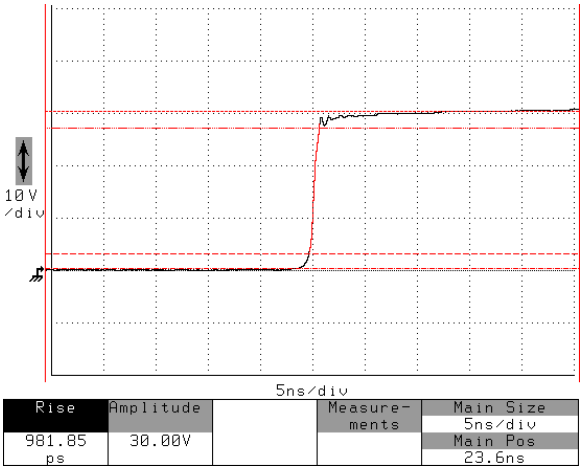
AVR-D2 SERIES

MIL-PRF-19500 WAVEFORM GENERATORS
30 VOLT, 0.2 TO 20 us,
1.5 ns RISE TIMES



- Generates MIL-PRF-19500 test waveforms
- Amplitude to ± 30 Volts (40 Volts optional)
- Pulse width 0.2 to 20 us
- Rise times less than 1.5 ns (10%-90%)
- IEEE-488.2 GPIB and RS-232 interfaces
- Optional ethernet port for VXI-11.3 support

The AVR-D2 series is specifically designed to perform MIL-PRF-19500 switching time tests of high-speed switching transistors.

The main output (channel A) provides amplitudes of ±6V to ±30V (optionally ±40V) with a pulse width adjustable from 200 ns to 20 us. A DC offset of 0 to ±15V is available on this output.

A second output (channel B) provides a ±2V, 15 ns wide pulse. A DC offset of 0 to ±1V is available on this output.

The rise times for both outputs are less than 1.5 ns (10%-90%). The CH A fall time is 2 ns or less, and the CH B fall time is 2.5 ns or less (90%-10%). Both outputs have 50 Ω source impedance. Both outputs are intended to drive 50 Ω load impedances. Only one of the two outputs is active at a time. A 1.0 ns (10%-90%) rise time option is available for the CH A output (30V units only).

Standard models provide the output waveforms on a front-panel BNC connector, and the user is responsible for assembling a suitable test jig with the necessary matching circuitry (usually specified in the military “slash sheet” and socketing. Avtech can provide suitable test jigs with high-speed sockets.

The AVR-D2-B includes a complete computer control interface. This provides GPIB and RS-232 computer-control, as well as front panel keypad and adjust knob control of the output pulse parameters. A large back-lit LCD displays the output amplitude, polarity, frequency, pulse width, and delay.

The -VXI option adds a rear-panel Ethernet connector, allowing the instrument to be remotely controlled using the VXI-11.3, ssh, telnet, and web protocols. In particular, the VXI-11.3 features allows software like LabView to control an instrument using standard VISA communications drivers and network cabling, instead of using older-style GPIB cabling and GPIB controller cards.

The AVR-D2-B requires 100-240V, 50-60 Hz prime power.

A related model, the AVR-D3-B, is available for testing high-current transistors (with amplitudes up to 250V and 5 Amps).

These models can be customized readily to meet special test requirements.

Avtech also offers a variety of pulse generators for use in recovery time tests (forward and reverse), dV/dt tests, and common mode transient immunity tests.

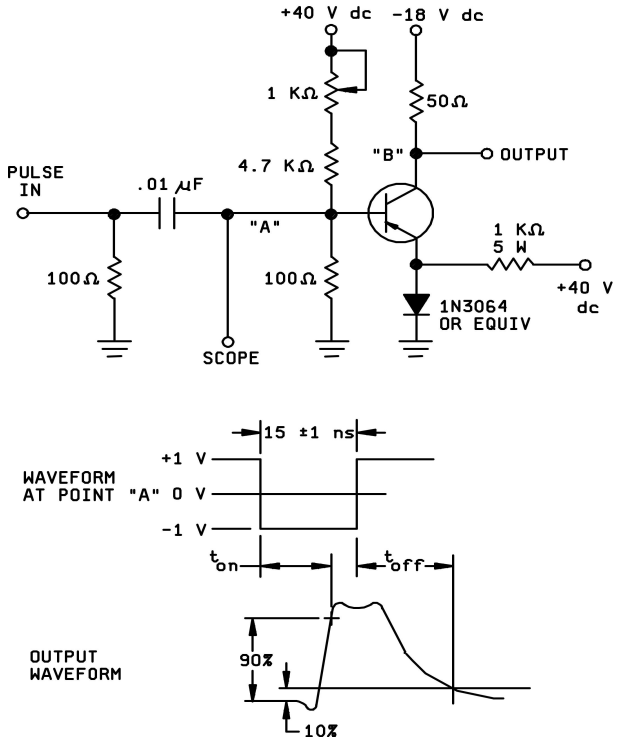
AVR-D2-B

Model:	AVR-D2-B[1]	
Output:	CH A	CH B
Amplitude: (into 50 Ohms)	6 to 30 V, adjustable[2] + or -, switchable	2 V, fixed + or -, switchable
DC offset:	-15V to +15V, adjustable	-1V to +1V, adjustable
Pulse width (FWHM):	200 ns to 20 us, adjustable	15 ns, fixed
Duty cycle:	1% maximum	N/A
Rise time of leading edge (10%-90%):	≤ 1.5 ns (≤ 1.0 ns optional[3])	≤ 1.5 ns
Fall time of trailing edge (90%-10%):	≤ 2.0 ns	≤ 2.5 ns
Pulse repetition frequency (PRF):	5 Hz - 50 kHz	
Source impedance:	50 Ohms	
Required load impedance:	50 Ohms	
GPIB and RS-232 control[2]:	Standard on -B units.	
LabView Drivers:	Check avtechpulse for availability and downloads	
Ethernet port, for remote control using VXI-11.3, ssh, telnet, & web:	Optional[4]. Recommended as a modern alternative to GPIB / RS-232.	
Settings resolution:	The resolution of the timing parameters (pulse width, delay, period) varies, but is always better than 0.15% of (|set value| + 20 ns). The amplitude resolution is < 0.1% of the maximum amplitude.	
Settings accuracy:	Typically ± 3% (±1 ns or ± 2% of max. amplitude) after 10 minute warmup. For high-accuracy applications requiring traceable calibration, verify the output with a calibrated oscilloscope.	
Jitter:	± 35 ps ± 0.015% of sync delay	
Trigger modes:	Internal trigger, external trigger (TTL level pulse, > 50 ns, 1 kΩ input impedance), front-panel "Single Pulse" pushbutton, or single pulse trigger via computer command.	
Variable delay:	Sync to main out: 0 to 1.0 seconds, for all trigger modes (including external trigger).	
Sync output:	> +3 Volts, > 50 ns, will drive 50 Ohm loads	
Monitor output:	Provides a 20 dB attenuated coincident replica of main output	
Connectors:	BNC	
Power required:	100-240 Volts, 50-60 Hz	
Dimensions, temperature range:	100 x 430 x 375 mm (3.9 x 17 x 14.8"), +5°C to +40°C	

1) -B suffix indicates IEEE-488.2 GPIB and RS-232 control of amplitude, pulse width, PRF and delay.
2) The maximum amplitude may be increased from 30V to 40V by specifying the -SOA option.
3) Add the -TRF suffix to the model number to specify the ≤ 1.0 ns rise time option. Not available with the -SOA option.
4) Add the suffix -VXI to the model number to specify the Ethernet port.

The AVR-D2 series can be used to generate the input pulses for common transistor switching time tests specified in MIL-PRF-19500 slash sheets, like these examples:

MIL-PRF-19500/177F FIG 2. Nonsaturated switching time test circuit.



MIL-PRF-19500/255V

FIG 18. Saturated turn-off switching time test circuit.