

TYPE R293

PROGRAMMABLE PULSE GENERATOR and POWER SUPPLY



PROGRAMMABLE PARAMETERS

- **PULSE AMPLITUDE**—6 V to 12 V into 50 Ω
- **PULSE WIDTH**—2 ns to 250 ns into 50 Ω
- **PULSE REPETITION RATE**—10 kHz to \approx 100 kHz
- **REGULATED VOLTAGE**—0 to 50 V
- **REGULATED CURRENT**—0 to 250 mA

The Type R293 is a combination pulse generator and power supply which may be used in testing time and charge parameters of semiconductor devices, testing switching and propagation times of micro-logic circuits, or in a wide variety of applications which require fast-rise and fast-fall pulses. Remote programming capabilities make the instrument useful in production line and systems applications.

Programming is accomplished by connecting resistances between appropriate program leads. One resistor per program is required for each of the five programmable functions. The value for each programmed function is linearly related to the conductance of its respective programming resistor. Any single or combination of programmable parameters can be externally programmed, with remaining parameters manually controlled from the front panel.

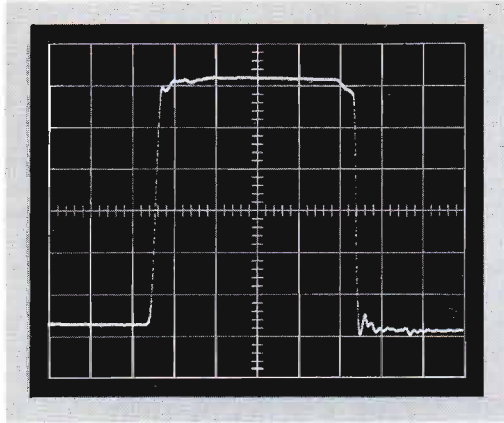
As an example, programmable parameters can be remotely controlled (automatic sequence optional) with the Type 262 Programmer. The Type 567 Readout Oscilloscope and Type 6R1A Digital Unit may be used to display the results of each measurement and indicate whether results are within, above, or below predetermined limits.

Pulse output is via a GR connector. Regulated voltage and regulated current are available via a 4-pin Bendix connector.

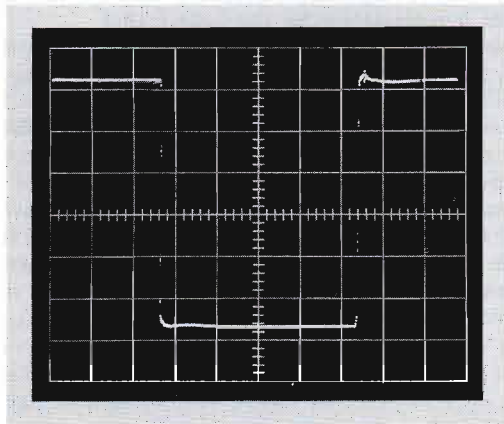
The Type R293 includes slide-out tracks for mounting in a standard 19 in rack, and requires only 3½ in of panel height.

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PULSE OUTPUT



+12-volt pulse, 5 ns/cm.



-12-volt pulse, 50 ns/cm.

PULSE CHARACTERISTICS INTO 50 Ω

CHARACTERISTIC	PERFORMANCE OR OPERATING RANGE	ACCURACY
RISETIME	≤ 1 ns at maximum amplitude	
FALLTIME	≤ 1 ns at ≥ 20-ns width, ≤ 2 ns at 2 to 20 ns width, at maximum amplitude	
*REPETITION RATE	≤ 10 kHz (ccw) to 90-100 kHz (cw), continuously variable, uncalibrated	±10% of programmed value
*WIDTH	≤ 2 ns to ≥ 250 ns, continuously variable, uncalibrated	±3% of programmed value plus 3 ns; ≤ 100 ps width jitter
*AMPLITUDE	6 V min to 12 V max, continuously variable, uncalibrated	±5%; or ±3% of programmed value
POLARITY	Positive or negative	
ABERRATIONS	Leading edge (first 10 ns): overshoot ≤ 3%; rounding ≤ 5%; ringing ≤ 3%. (After first 10 ns and before last 15 ns): droop ≤ 1%; flat-top ≤ 2%. Trailing edge (last 15 ns): overshoot ≤ 5%; rounding ≤ 5%; ringing ≤ 10%; storage ≤ 5%.	

POWER SUPPLY

REGULATED CURRENT SUPPLY

300 μA to 300 mA (continuously variable) at up to 20 V, positive or negative polarity. Accuracy* within ± (3% of dial reading) +50 μA, or ± (3% of programmed value) +50 μA. ±1% maximum change with line change from 93.5 V to 135 V. Ripple ≤ 0.5% or 50 μA, whichever is greater. Overshoot ≤ 0.5% of change in programmed current.

REGULATED VOLTAGE SUPPLY

0 to ±50 V (continuously variable) at up to 200 mA. Accuracy* within ± (2% of dial reading) +25 mV, or ± (3% of programmed value) +25 mV. ±1% maximum change with line change from 93.5 V to 135 V. Ripple ≤ 0.05% or 5 mV, whichever is greater. Overshoot ≤ 5% of change in programmed voltage.

OTHER CHARACTERISTICS

PRETRIGGER PULSE

≥ + 1/2 V into 50 Ω and ≥ + 2 V into open circuit, occurs approximately 200 ns before leading edge of main pulse. 100-ps maximum jitter between pretrigger and leading edge of main pulse.

EXTERNAL TRIGGER REQUIREMENT

≥ 2-V; DC to 100 kHz; ≤ 1-μs risetime; 200 V DC maximum.

POWER REQUIREMENTS

93.5 V to 135 V or 187 V to 270 V, low or high range selected by rear panel switch. 50 to 400 Hz, 65 watts maximum.

DIMENSIONS AND WEIGHTS

Height	3 1/2 in	8.9 cm
Width	19 in	48.3 cm
Depth	16 5/8 in	42.2 cm
Net weight	20 3/4 lb	9.4 kg
Domestic shipping weight	≈ 55 lb	≈ 25.0 kg
Export-packed weight	≈ 86 lb	≈ 39.1 kg

INCLUDED STANDARD ACCESSORIES

5-ns GR cable (017-0502-00); 4-pin power-supply output connector (131-0268-00); 24-pin remote-program connector (131-0325-00); set mounting tracks (351-0084-00); 3-conductor power cord (161-0010-03); 3 to 2-wire adapter (103-0013-00); two instruction manuals (070-0433-00); one set mounting hardware.

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Please refer to Terms and Shipment, General Information Page

*Programmable parameters. Stated program accuracy is with 1% program resistor.