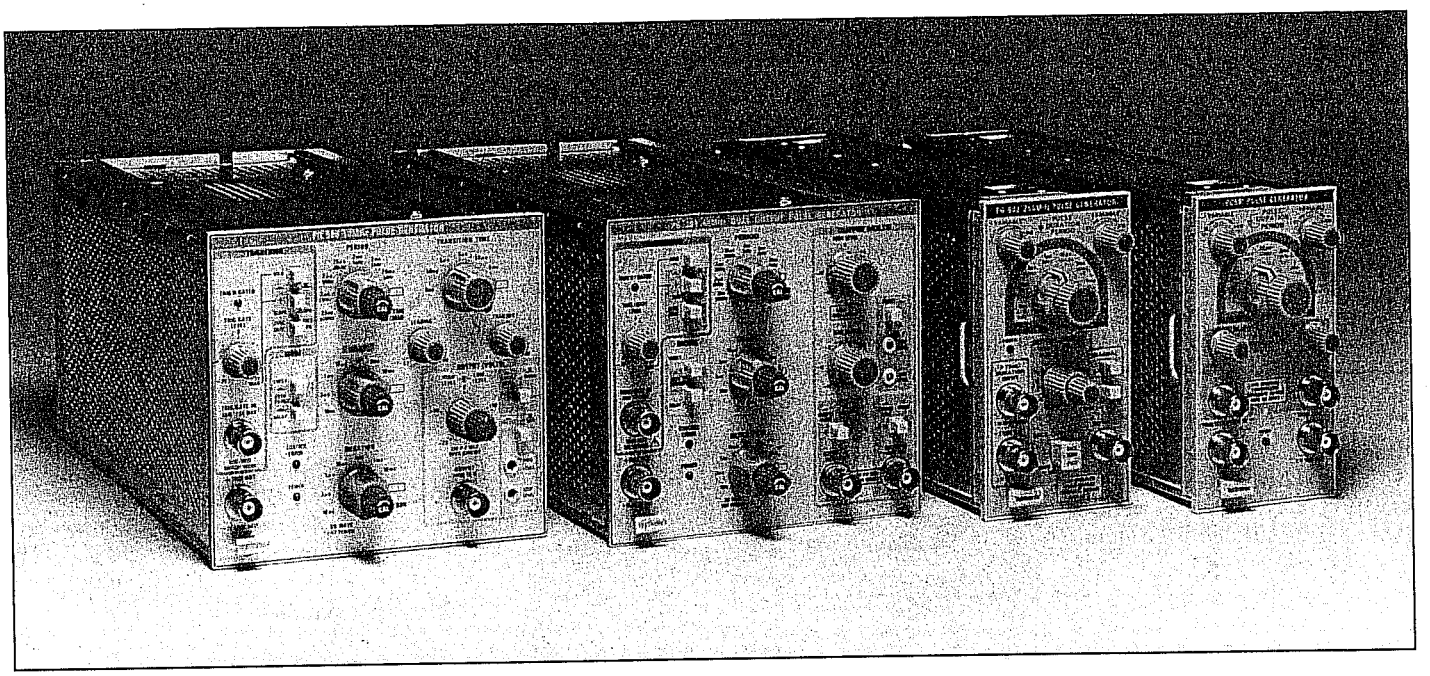
PULSE GENERATORS



Whether testing wide-band systems, simulating data transmission signals, or driving a laser, the TM 500 series Pulse Generators have the required capabilities to meet your needs. The general purpose, yet versatile PG 508 features independently variable rise and fall times for close approximations of real world events. The 50 MHz PG 507 provides complementary dual outputs, making it ideally suited for digital applications. These multipurpose generators can also be used for stimulus of high-impedance MOS, HTL, and CMOS logic circuits.

In 50 ohm systems, the repetition rates, amplitudes, and transition times of the PG 501 and PG 502 are designed to be compatible with common TTL, DTL, and ECL circuits.

EXTENDED FUNCTIONALITY

The DD 501 Digital Delay is an events-counting device that can be used with pulse, function and clock generators in such applications as precise digital delay between two related events, divide-by-N frequency divider, precision gate generator, counted burst output from a gated pulse or frequency generator, etc.

PULSE GENERATOR SELECTION GUIDE

Characteristic	PG 507	PG 508	PG 501	PG 502
Pulse Period (s)	≤20 n to ≥200 m (50 MHz to 5 Hz)			≤4 n to ≥100 m (250 MHz to 10 Hz)
Pulse Duration (s)	≤10 n to ≥100 m			≤2 n to ≥50 m
Duty Factor (s)	≥70% to 0.2 μ period, ≥50% at 20 n period			≥50%
Square-Wave Mode	✓	✓		✓
Pulse Delay (s)	≤10 n to ≥100 m*1		Fixed, 20 n	Fixed, 17 n
Double Pulse	✓	✓		
Transition Times (s)	fixed, ≤3.5 n, ≤4 n @ >5 V	≤5.5 n to ≥50 m, variable	Fixed, ≤3.5 n	Fixed, ≤1 n
Aberrations (% p-p)	≤5 +25 mV into 50 Ω	≤5 +50 mV into 50 Ω	±3.5 into 50 Ω	±5 (duration ≥5 ns)
Amplitude (V p-p from 50-Ω source impedance)	≥7.5, ±7.5-V window	≥10, ±10-V window	≥5	5, ±5-V window
Simultaneous Outputs	Complementary	No	Positive & negative	No
Pulse Coincidence	≤1 ns at 50% ampl.	NA	≤1 ns at 50% ampl.	NA
External Input Input Impedance (Ω)	1 M or 50	1 M or 50	50	50
Trigger Level (V) Sensitivity (mV p-p)	−3 to +3 80 to 10 MHz, 250 to 50 MHz		+1	+1
Trigger Output (50% square wave or follows external signal)	≥+2 V from 50 Ω, ≈35 ns before pulse (23 ns in square wave or external duration modes)		≥+2 V from 50 Ω, ≈8 ns before pulse	≥+2 V from 50 Ω, ≈10 ns before pulse
Price	$2,975	$2,,360	$870	$3,100

*1 *Add 60 ns for delay from external trigger.*

PG 508

- **Independently Variable Rise and Fall Times to 5 ns**
- **20-V Output in a ±20-V Window to Impedance, 10 V into 50 Ω**
- **Normal or Complement Output**

The PG 508 is a versatile, general-purpose, 50-MHz pulse generator. The circuitry of the PG 508 is designed so that rise and fall waveforms closely simulate real-world waveforms. This capability is particularly useful in research-and-development applications demanding versatility in rise and fall times, such as testing of amplifiers, slew-rate testing, comparator simulation, and logic-circuitry performance tests.

For example, controllable rise and fall times are extremely desirable when working with CMOS where logic power consumption increases with slower rise times. Also, variable rise and fall times are used to reduce ringing (transient distortion) problems associated with too fast a pulse.

The PG 508 features a vernier control on the rise and fall times controllable from 100 to 1. This completely overlaps the next decade range and increases the PG 508's versatility in applications simulating different rise and fall times, especially the output of nonlinear devices. This overlap feature can also be used to generate a ramp signal or simulate unequal slew rates in an amplifier.

Also adding to the simplicity of using the PG 508 is the capability of changing output amplitude while variable rise and fall times remain constant.

PG 507

- **Dual Outputs With Tracking Level Controls**
- **Normal or Complement Pulse Output on Both Channels**
- **15-V Output in a ±15-V Window Into High Impedance, 7.5 V Into 50 Ω**
- **3.5-ns Rise/Fall Times**

The PG 507 is a high-performance, 50-MHz pulse generator designed specifically for logic-design applications.

The PG 507 features complementary dual outputs that greatly increase its applicability in logic-design areas, especially interfacing within systems or to peripherals. For instance, the complementary outputs allow simulation of line drivers or opposite-phase clocks.

The PG 507 also offers versatility to the design engineer in an analog environment. For example, the dual outputs can be used to test differential input amplifiers or multiplexers.

The PG 507 features four output modes: normal complement mode (Channel A output positive going, Channel B output negative going), opposite phase complement mode (Channel A output negative going, Channel B output positive going), simultaneous negative mode (Channel A output negative going, Channel B output negative going), and simultaneous positive mode (Channel A positive going, Channel B output positive going).

In addition, the Output High Level and Low Level voltage controls track between channels, making amplitude settings easy.

This unique output flexibility within the normal and complement modes is particularly useful in logic-design or control applications requiring simultaneous signals.

PG 502

- **10 Hz to 250 MHz**
- **1-ns Rise Time**
- **5-V Output ±5-V Window**
- **Independent Pulse Top and Bottom Level Controls**
- **Selectable Internal Reverse Termination**
- **Manual Trigger Button**
- **Optional Rise Time Limiter**

The PG 502 features fast rise and fall times, independent top and bottom pulse levels, and adjustable pulse duration. The fast rep rate makes the instrument ideal for design and testing of fast logic and switching circuits.

PG 501

- **5 Hz to 50 MHz**
- **Simultaneous Plus and Minus Outputs**
- **5 V and 3.5 ns into 50 Ω**
- **Independent Period and Duration Controls**
- **Trigger Out**
- **Optional Manual Trigger Generator**

The PG 501 is a 50-MHz Pulse Generator featuring simultaneous plus and minus outputs, a wide range of pulse-period durations and duty factors, trigger output, and external trigger/duration input. Its performance and ease of operation make it well-suited to basic digital and analog applications.

Manual (One-Shot) Trigger Assembly

For instruments that do not have a manual trigger (such as the PG 501), or where remote triggering is required, the Manual Trigger Assembly initiates a pulse or a full chain of events at the push of a button.

The Trigger Assembly produces a debounced output pulse nominally 2 ms in width and 3 V in amplitude (from 50 ohms) with rapid rise and fall times. It will send pulses as fast as the operator can cycle the pushbutton.

Automated Triggering with the DD 501

Both the PG 507 and the PG 508 can be adapted with the DD 501 to provide automated triggering in a gated or delayed trigger mode. For more information on the DD 501 see the Function Generators section.

50 Ohm Precision Coaxial Cable

The PG 502, PG 506, and SG 506 are internally calibrated for use with this 3-ft, 50 ohm, coaxial cable into a 50 ohm load.

Rise Time Limiter

For use with the PG 502 Pulse Generator which has a pulse rise and fall time of less than one nanosecond. In some applications, such as TTL logic where slower rise time is needed, this fast pulse can be limited to six nanoseconds by using the rise time limiter.

ORDERING INFORMATION

PG 508 50-MHz Pulse Generator **$2,360**
Includes: Instruction manual (070-2044-01).
PG 508T 50-MHz Pulse Generator **$2,780**
Includes: PG 508, TM 503A Mainframe, and 016-0195-03 Blank panel.
For counted burst order the DD 501 Digital Delay **$1,930**
Suggested 10-inch BNC 50-ohm cable (2 required) for interconnecting PG 508 and DD 501
Order 012-0208-00 **$28**
PG 507 50-MHz Pulse Generator **$2,975**
Includes: Instruction manual (070-2962-00).
PG 502 250-MHz Pulse Generator **$3,100**
Includes: Instruction manual (070-1598-01).
PG 501 50-MHz Pulse Generator **$870**
Includes: Instruction manual (070-1361-01).
DD 501 Digital Delay. **$1,930**
Includes: Instruction manual (070-1818-01).

RECOMMENDED PROBES

See Signal Acquisition section.
P6062B—1X/10X, dc to 100 MHz. **$175**
P6108A—10X, dc to 100 MHz. **$75**
P6122—10X, dc to 100 MHz. **$58**

OPTIONAL ACCESSORIES

50-Ω Cable—Order 012-0482-00 **$29**
Trigger Generator—
Order 016-0597-00 **$260**
Risetime Limiter—
Order 015-0249-00 **$200**

To order, call your local Tektronix Sales Office, or call Tek's National Marketing Center.
Toll free: 1-800-426-2200, Ext. 99.