

PVX-2506

50V, 10A PRECISION PULSE GENERATOR



- Designed for pulsed I-V applications
- Output Voltage To +50V
- Output Current To 10A
- 50% Maximum Duty Cycle
- Pulse widths from <math><1\mu\text{s}</math> to 100 $\mu\text{s}</math>$
- Instrument-quality analog voltage and current monitors for data acquisition
- Designed for precision pulsing of semiconductor devices for pulsed I-V characterization

The PVX-2506 pulse generator is designed for pulsed I-V (current-voltage) characterization of semiconductor devices at up to 50 Volts and 10 Amps. It is also well suited for other applications requiring high current, precision voltage pulses.

The I-V characteristics of semiconductor devices are functions of frequency and temperature. Curve tracers and other "DC" test systems typically step through a range of gate voltages and, at each gate voltage, sweep the drain voltage over the measurement range. The device essentially reaches thermal equilibrium and electronic (semiconductor-trap) equilibrium at each point, yielding different test characteristics than actual RF operational characteristics.

By pulsing the device using the PVX-2506 and taking a measurement during the pulse, the measurements can be taken before the device heats up. This circumvents the thermal effects associated with conventional "DC" testing, more closely approximates the characteristics of the device when operating at high frequencies, and doesn't activate the semiconductor "traps".

The PVX-2506 is designed using a bi-directional MOSFET output stage using DEI's DE-Series Fast Power MOSFETs. This design provides fast rise and fall times, with minimal overshoot, undershoot and ringing and fast settling times. This controlled voltage waveform allows the device under test (DUT) to stabilize at voltage within a few hundred nanoseconds, allowing I-V measurements to be made before device heating begins.

A quiescent (bias) voltage may be applied to the pulse generator, allowing the DUT to be held at a voltage other than zero, then pulsed above or below this voltage. The PVX-2506 requires an input gate signal, pulse (VHIGH) and optional quiescent (VLOW) DC power supply inputs. The output pulse width and frequency are controlled by the input gate signal. The output voltage amplitude is controlled by the amplitude of the input VHIGH and optional VLOW DC power supply amplitudes.

The front panel controls and monitors provide the flexibility to operate in pulsed mode, or to switch to DC mode, in which the DC voltage generated by the VHIGH power supply is applied directly to the DUT. Integral instrument-quality voltage and current probes are provided to facilitate pulse data acquisition.

The output pulse is launched on an innovative, low impedance cable. The design of this cable maintains the fidelity of the output pulse without introducing pulse distortion or ringing, and provides a convenient means of connecting the pulse generator to the DUT or bias tee. The pulse generator is a direct-coupled, air-cooled solidstate design, offering equally fast pulse rise and fall times, low power dissipation, and minimal over-shoot, under-shoot or ringing. It has over-current detection and shut-down circuitry to protect the pulse generator from potential damage due to arcs and shorts in the load or interconnect cable.



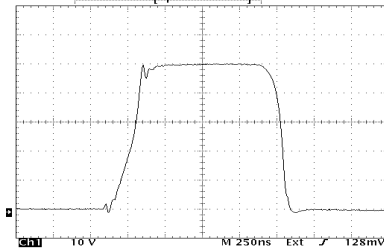
**DIRECTED
ENERGY
INCORPORATED**



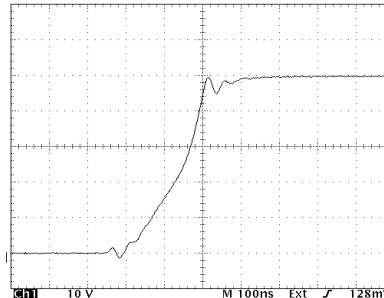
THE PULSE OF THE FUTURE

SPECIFICATIONS All specifications measured into a 5 Ohm load connected with a 4 foot output cable.

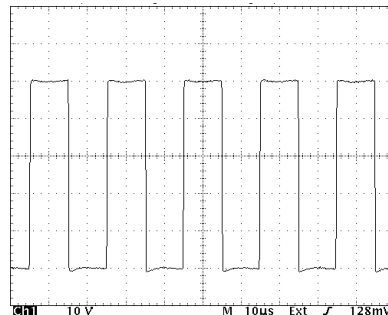
Maximum Value	75 Volts DC, Floating
Minimum Value	0 Volts DC
Input Connector	Screw Terminals Rear Panel
Output	
Maximum Value	50 Volts at 10 Amps
Minimum Value	0 Volts
Maximum Current	10 Amps
Means of Adjustment	Controlled by Pulse Input
Pulse Rise Time	<200nS at 50 Volts (10%-90%)
Typical Settling Time	<400nS Including Rise Time
Pulse Width	<1uS to 100uS, Controlled by Gate Input
Frequency Range	Single Shot to 50KHz Controlled By Input Gate
Maximum Duty Cycle	0.50 (50%)
Output Connector	8 Pin High Current D-sub
Monitor Outputs	
Voltage Monitor	1V/V Into 1M Ohm
Voltage Monitor Connector	Type BNC Front Panel
Current Monitor	0.1A Into 1M Ohm
Current Monitor Connector	Type BNC Front Panel
Control Pulse Input	
Source	External
Input Level	+5V +/- 1V Into 50 Ohms
Rise Time	<20nS
Gate Input Connector	Type BNC Front Panel
Voltage Monitor Connector	BNC, Front Panel
General	
Dimensions	19" Rack Mountable, 3 1/2" x 17" x 16"
Support Power	100-240VAC, 50/60Hz
SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE	



Typical 1uS Output Waveform, 50V, 10A, 5 Ohm Load



Typical Rise And Settling Times, 50V, 10A, 5 Ohm Load



50% Duty Cycle, 50KHz, 50V, 10A, 5 Ohm Load



**DIRECTED
ENERGY
INCORPORATED**

Directed Energy, Inc
An Ixys Company
2401 Research Blvd, Suite 108
Fort Collins, CO USA 80526
970-493-1901 Fax: 970-493-1903
Email: deiinfo@directedenergy.com
Web: Ixyscolorado.com