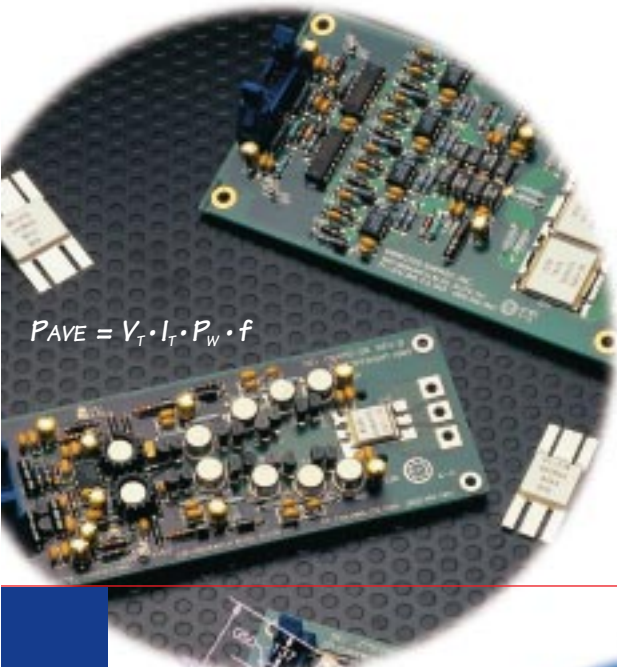


THE PULSE OF THE FUTURE



$$P_{AVE} = V_T \cdot I_T \cdot P_w \cdot f$$

HIGH SPEED *PULSED POWER* TECHNOLOGY



DIRECTED  
ENERGY  
INCORPORATED



## PULSE TECHNOLOGY PRODUCTS AND SOLUTIONS THAT WORK

Directed Energy, Inc. is a leading supplier of innovative high-speed, pulsed-power instruments and components for OEM, laboratory and manufacturing applications. Founded in 1987, DEI is continually redefining the standards in pulsed-power components and instrumentation. We supply customers with reliable, solid-state pulsed voltage and current instruments that rely on advanced proprietary and patented techniques and circuit designs for outstanding performance and reliability. DEI's pulsed technology spans many fields, including lasers and electro-optics, electro-acoustics, dielectric testing, component characterization, and basic R&D.

DEI's standard product line includes high-voltage pulse generators and modulators, laser diode drivers, pulsed current sources, and high speed/high frequency power MOSFET transistors. In addition to benchtop instruments, DEI has developed complete, integrated, packaged turnkey solutions for materials testing, pulsed component characterization and laser diode burn-in and qualification requirements. Many of our systems simplify the testing process by integrating high-power pulsed electronic circuitry with integrated microprocessor control and a computer-based graphical user interface.

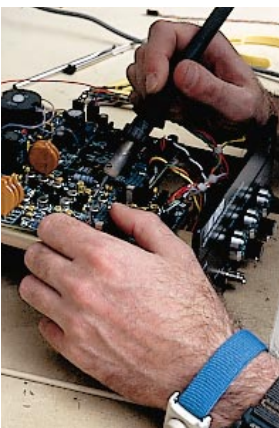
DEI specializes in OEM solutions to meet your most demanding requirements. Ranging from compact open-frame modules to rack-mount instruments, DEI's OEM products are designed to meet your specific electrical, mechanical and cost requirements with complete, self-contained solutions. DEI's OEM laser-diode drivers, modulators and pulse generators are incorporated into a wide range of systems and equipment, including rangefinders, remote sensing, mass spectrometers and laser-diode test instruments.

For stock, OEM, and custom solutions, DEI is your choice in pulsed power technology.

### COMPONENTS TO INSTRUMENTATION

DEI is unique in its ability to offer solutions from the individual component level to integrated turnkey systems.

DEI's patented DE-SERIES Fast Power™ MOSFET transistors, used in many of our high-speed pulse generators and laser-diode drivers, are an ideal component for high speed, high frequency switching requirements. These devices, only one quarter the volume and an eighth the weight of standard MOSFET transistors, offer five times faster switching speed and three times higher power dissipation capability than conventional power MOSFET transistors. Whether you need a high-speed, high-power switch, or a computer-controlled multi-channel burn-in system, DEI delivers pulse technology solutions that pack more pure performance into smaller component sizes.



$$I_{RMS} = I_{PK} \sqrt{f \cdot P_w}$$



$$L = K \frac{(U_o U_r A)}{f}$$



### POWER MOSFET TRANSISTORS

DEI's patented DE-SERIES Fast Power™ MOSFET is designed from the substrate up for high power, high speed, high frequency switching requirements. DEI products improve upon conventional power MOSFET transistors, at:

- 5 times faster switching
- 3 times the power dissipation capability
- 1/4 the volume
- 1/8 the weight

Measured dollar-per-Watt, the DEI Fast Power™ MOSFETs outperform all other power and RF transistors on the market at frequencies greater than 2Mhz. For high-power RF generation, DEI devices are the switching components of choice.



#### GENERAL-PURPOSE PULSE GENERATORS

DEI's line of general-purpose pulse generators offer very fast rise and fall times, with infinite pulse width variability. Primary applications include:

- Beam modulation
- Gating and chopping
- Triggering and gating of electro-optic and electro-acoustic devices
- Pulsed component testing and characterization



#### PULSE GENERATORS FOR BEAM STEERING, GATING AND DRIVING GRIDS

Pulse generators designed to drive capacitive loads such as deflection plates and extraction grids for electron or ion beam steering, gating, deflection, or extraction. These pulsers can also be used to drive any high impedance, capacitive load, including:

- Pockels cells and Q switches
- Microchannel plates
- Photomultiplier tubes
- Control grids of power vacuum tubes
- Acoustic transducers



#### LASER DIODE DRIVERS

DEI's laser diode drivers are designed to drive high power laser diodes and other very low impedance loads in pulsed or quasi-CW mode, with pulse widths of 6ns to >10ms, and peak current of 1A to >200A. Applications include:

- Laser range finders
- Laser speed detectors
- LIDAR
- Imaging
- Driving diode-pumped solid-state lasers



#### DIELECTRIC TEST SYSTEMS

The DTS Series Motorette / Dielectric Test Systems are designed for accelerated magnet wire insulator breakdown testing, to study the failure mechanisms associated with the operating conditions that PWM (pulse-width modulation) and ASD (adjustable-speed drive) motors create. With microprocessor control and a computer-based graphical user interface, the DTS test systems are designed to precisely control:

- Pulse Voltage
- Pulse Repetition Frequency
- Pulse Rate of Rise
- Duty cycle
- Current trip point
- Sample temperature



## A WORLD OF APPLICATIONS

DEI technology is at work for customers around the world, including start-ups, emerging technology leaders, and many Fortune 500 companies. DEI applications are as diverse as the demand for pulse generation technology, from particle physics to industrial power:

- Testing dielectric materials for the world leader in industrial electric motors
- Providing precision voltage pulses for characterization of semiconductor devices
- Testing devices for a world-leading supplier of laser optic technology
- Gating ion beams for a leading manufacturer of mass spectrometry equipment
- Enhancing military radar instrumentation
- Helping direct particle beams for an international consortium's experiments in fundamental particle physics
- Probing earth's atmosphere in one of the world's most advanced lasers

## BETTER SOLUTIONS, FASTER TURNAROUNDS

Competitive pressures in today's fast-paced global marketplace can be extraordinary, and time-to-market is critical to a product's success. Using DEI's established core technologies as the building blocks, we can turn your specification into a final product in record time, with quality and reliability assured. Our proven technology, comprehensive design and manufacturing facilities, and responsive technical support enables us to play a key role in delivering quality products faster. Helping companies large and small gain strategic advantages in the race to market.

## THE ESSENTIAL IN PULSED POWER

In high-voltage and high-current pulsed applications, DEI's technology offers virtually unlimited design options for pulse width, frequency and amplitude agility. We cover the entire performance spectrum, from volts to kilovolts, milliamps to hundreds of amps, milliwatts to megawatts. From off-the-shelf products to custom turnkey systems to OEM modules, the core technology is in place today, ready to address your requirement.



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#### PIONEERS IN PULSE TECHNOLOGY

For over a decade, DEI has supplied customers with innovative, reliable solid-state pulsed voltage and current components, modules and instruments, using patented and proprietary techniques and circuit designs to define the outer edge of what's possible.

From the individual device level to entire turnkey systems, DEI provides integrated pulsed power solutions that perform as promised. For solutions you can count on, contact us at 970-493-1901. Find out what the right technology can mean for your pulsed power application.

***DEI - The Pulse Of The Future***



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