

Battery
connector

9V

MILITARY POWER From

POWEREX[®]



*A Global Power In
Power Semiconductor
Technology*

Powerex . . .
on the
leading edge
of research and
manufacturing
technology



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The Mission

Powerex has positioned itself as a prime supplier to the defense industry. Since 1986, Powerex has been a global supplier of high power semiconductors. Strong worldwide sales provide the necessary clout for on-going investment in new equipment and new and proven technologies.

Powerex continues to meet the challenges of technology adoption, sound management practices, research and development, worker training and manufacturing skills. Facilities and technology modernization, a balanced approach to capital investment and a market driven sales philosophy provide a strong commercial industrial base that supports military procurement and the ability to maintain and support fielded systems.

If reliability and qualification testing are necessary for your program, Powerex has a fully MIL-qualified testing facility for Group A, B and C testing.



Powerex is a certified supplier to commercial and industrial markets, and is ISO 9001 CERTIFIED.

Powerex's Industrial Base Supports Military Demands.

Investing to meet the challenges of WORLDWIDE industrial demand has set a solid base for the development of the latest in military power semiconductor technology.

**INNOVATION,
INVENTION,
ASSEMBLY,
CUSTOM POWER
APPLICATIONS,
WAFER**

**MANUFACTURING TECHNOLOGY,
and CUSTOMER SUPPORT ensure Powerex as a source for leading edge power switching devices.**

New classes of military power semiconductors feature compact multi-element and multi-component packaging that operate at higher frequencies, are multi-function in design and provide the highest levels of durability available.

Powerex offers innovative solutions to the military's on-going need for advanced silicon technology and packaging. Powerex has been instrumental in developing ceramic packaging, and the packaging of custom high current devices used in weapons platforms such as tank turrets and fighting vehicles.

High power modules are on the leading edge of power semiconductor technology with cost effective solutions to a myriad of military applications.



Proven Technology

Powerex uses two proven technologies to fabricate high performance modules for power applications: soldered-down and wire-bonded chip technology; and Compression Bonded Encapsulation (CBE) of SCR/Diode elements. These two established technologies, along with the advent of new semiconductor chips, electronic materials and design techniques, combine to redefine the boundaries of power semiconductor modules. When coupled with Powerex's "design for reliability" philosophy and rigorous testing regimens, these proven technologies provide the highest quality and reliability possible. The Powerex module fabrication facility is ESD compatible, good solder bonds are verified by X-ray analysis, and efficient heat removal during operation is confirmed by automated thermal impedance measurements.



Powerex is a pioneer in high power applications, turning ideas into cost-effective, practical products. A continuing investment in high power has significantly advanced silicon technology and packaging, bringing to market the newest generation of semiconductor devices.

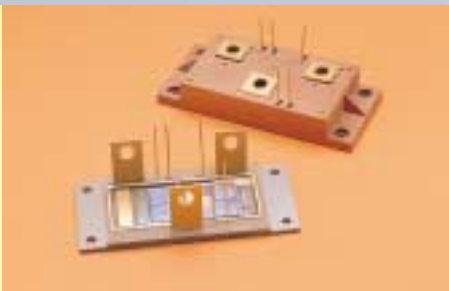
Technologies and ideas that are developed and refined for specific applications are also made available to other industry segments. This allows all Powerex customers access to the latest technological developments and product offerings.

Powerex leads the way in high power devices with a broad line of stud and disc devices in various sizes and construction styles. Advanced generations of standard rectifiers, fast recovery rectifiers, phase control SCR's and inverter grade SCR's are offered in hermetically sealed compression bonded packaging.

Powerex complements its device technology with products such as POW-R-BRIKS, POW-R-BLOKS, and assemblies with water or air cooled heat sinks that provide our customers with time and cost saving installation and ease of use.

A new approach to hermetic packaging.

The latest in hermetic packaging is offered as IGBT module switching devices. Each module consists of two IGBT transistors in a half bridge configuration with each transistor connected to a reverse super-fast recovery free-wheel diode. All components are located in a hermetically sealed chamber and are electrically isolated from the heat sinking base plate, offering simplified system assembly and thermal management. (Ask Powerex for an abstract outlining in detail the process and the benefits).



6 SCR Module for the fighter jet generators

Specifically designed for jet fighters, the 6 SCR module design represents cutting edge technology in a low profile, lightweight hermetic package. Current production is scheduled at 150 units per month.

3 SCR plastic modules

The SCR module is also available in a 3 SCR configuration for use as retrofits for generator systems. These plastic modules are available in hermetic and non-hermetic packages.

Dual IGBT flight surface control modules.

FROM LEFT TO RIGHT: hermetic case-installed custom wafers-metal covering-finished encased package.

Powerex has developed two IGBT modules for the next generation fighters. Both were developed as 600V-300A Dual IGBT modules. The modules were developed for separate contractors with a different design approach for each. One of the modules was designed as a high reliability moisture resistant plastic part. It has passed all testing requirements and is installed on the Latest Generation Technology Demonstration Plane. The second device was designed as a standard IGBT gate drive with over current shutdown circuits. The device conforms to all Mil-19500 qualification and has passed all required testing.



The Best Power Semiconductor Chip

A key element of any power solid state switch is the semiconductor chip. Powerex either fabricates or has access to the chip that is best for your application. Powerex has a state-of-the-art class 1,000 clean room for the fabrication of high-power diodes, SCRs, transistors and Darlingtons. Planar chip designs as well as traditional Mesa chip designs are fabricated, depending on the requirements of the final application. Powerex also has access to the industry's most advanced IGBT, MOSFET, Darlingtons transistor and fast recovery diode chips.



IFV Power Devices

The original Infantry Fighting Vehicle (IFV) was designed for control of turret rotation, turret elevation, and missile launch on the IFV.



Hybrid IFV Power Module

The first generation HYBRID has been exclusively produced at the Youngwood facility and has been in continuous production since 1986. The Hybrid module served as a launching platform for upgraded versions of the IFV module assembly.



IFV 100V-800A Dual Mosfet Modules

Using the dual module platform, Powerex has constantly innovated new power devices with the latest integrated circuit designs and features. The Mosfet modules are a significant jump in power technology and feature a dual Mosfet, 100V-800A device with RDSon of 1.55 x 10⁻³ Ohms maximum.



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In Power
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