

POWEREX[®]

Power Semiconductor Solutions



EXPERTISE ■ INNOVATION ■ RELIABILITY

POWEREX[®]

POWER SEMICONDUCTOR SOLUTIONS



Quality Products

Powerex offers a broad line of quality products to meet your power application need.

- IGBTs
- SiC Modules
- Discrete Thyristors
- Discrete Rectifiers
- Thyristor & Diode Modules
- Fast Recovery Diode Modules
- Assemblies
- IGBT Assemblies
- Custom Modules

Powerex Also Offers:

- High reliability testing for both Powerex and non-Powerex devices.
 - Group A, B and C testing capabilities
- Unmatched packaging expertise

Impeccable Customer Service

At Powerex, your success is our success.

You can count on impeccable service and support before, during and after your purchase.

Our mission is to help engineers choose the absolute right product for their application. A dedicated group of experienced Powerex applications engineers are available to serve as an extension of your design team. They will help you to reduce your design cycle by:

- Identifying key project requirements
- Assisting in selection of the optimal device or devices
- Validating device performance
- Supporting rapid prototyping

In addition, manufacturing support continues through our logistics and stocking programs.

Please refer to the Powerex Quick Reference Guide (starting on page 2) for detailed information on our products.

Markets Served

Powerex is a leading supplier of discrete devices, modules and integrated high power semiconductor solutions, supporting many markets, including:

- AC, DC and Servo Drives (Low and Medium Voltage)
- Aircraft
 - Electro-Hydrostatic Actuators
 - Power Generators
- Alternative Energy and Distributed Power
 - Wind
 - Photovoltaic
 - Flywheel
 - Fuel Cell
 - Microturbine
- Electric Vehicles
- Induction Heating
- Industrial Pump Controls
- Medical Power Supplies
 - CT
 - MRI
 - X-Ray
- Power Generation and Distribution
- Pulsed Power
- Transportation
 - Propulsion and Auxiliary Power for Rail and Shipboard
- Uninterruptible Power Supplies (UPS)
- Welding

Knowledge and Experience - A Solid Foundation

Established on January 1, 1986, Powerex is the result of a combination of three pioneers in the power semiconductor industry – the Power Semiconductor Divisions of General Electric Company, Westinghouse Electric Corporation, and Mitsubishi Electric Corporation. In 1994, Westinghouse sold its shares to General Electric and Mitsubishi Electric. General Electric and Mitsubishi Electric currently share equal ownership of Powerex.

Powerex offers not only the highest quality product but also innovative solutions. An already broad product line is enhanced by business units devoted to:

- Custom Modules
- Customer Specific Assemblies

Reliable, cost-effective chip fabrication and device assembly

Powerex manufactures a wide range of rectifier and thyristor products at its 90,000 square-foot Youngwood, Pennsylvania USA facility where Powerex:

- Has over 40 years of experience in the manufacture of power semiconductor solutions.
- Uses tools such as Six Sigma, Statistical Quality Control and Lean Manufacturing to continuously improve quality, productivity and performance.
- Has been registered to the ISO 9001 standard since 1998 and to AS9100, the aerospace quality management system, since 2004.

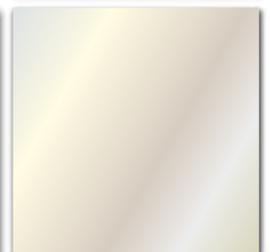
Reliable supply chain with strategically located manufacturing facilities

In addition to the Powerex manufacturing facility / corporate headquarters in Youngwood, PA, USA, Powerex also serves the global market via its manufacturing facility in Tangiers, Morocco.

Advanced Research and Development

Powerex and its strategic partners maintain a commitment to research and new product development to meet customer power semiconductor requirements, including:

- Decreased Component Size
- Reduced Costs
- Increased Energy Efficiency
- Switches that
 - Operate at higher frequencies,
 - Are more reliable, and
 - Offer integrated functions.



IGBTs

Applications Include:

- Hybrid Electric Vehicles (HEV/EV)
- Inverters
- Medical Power Supplies
- Medium Voltage Drives
- Motor Drives
- Servo Drives
- Traction Inverters
- UPS
- Welding

Circuit Configurations:

- Single
- Dual



Voltage: 1200V to 4500V
Current: 150A to 600A

SiC Modules

Hybrid Si / SiC IGBT Modules

Applications Include:

- Energy Saving Power Systems
- High Frequency Type Power Systems
- High Temperature Power Systems



SiC MOSFET Modules

Applications Include:

- High Efficiency Inverters
- High Frequency Power Supplies
- High Temperature Environment

Circuit Configurations:

- Single
- Dual
- In-Parallel
- Common Collector (Drain)
- Common Emitter (Source)

Voltage: 1200V
Current: 100A

Discrete Thyristors

Phase Control SCR / Inverter Grade SCR

Applications Include:

- Battery Chargers
- Flexible AC Transmissions
- HVDC
- Induction Heating
- Medical Equipment
- Medium Voltage Inverters
- Motor Controls
- Power Supplies
- Soft Starters
- Traction Inverters
- Transportation
- UPS
- VAR Generators
- Welding



Phase Control SCRs

Voltage: 100V to 6500V
Current: 40A to 5000A

Inverter Grade SCRs

Voltage: 200V to 2000V
Current: 40A to 2100A

Packages:

- Discrete Discs
- Discrete Studs

Features:

- Nickel Plating finish
- Hermetic Encapsulation for Long-Term Reliability to 1×10^{-6} cc/He/sec

Discrete Rectifiers

General Purpose Rectifiers

Applications Include:

- Battery Chargers
- Induction Heating/Melting
- Motor Controls
- Power Supplies
- Transportation
- Welding

Fast Recovery Rectifiers

Applications Include:

- Induction Heating
- Medical Equipment
- Motor Controls
- Transportation
- Welding

Packages:

- Discrete Discs
- Discrete Studs

Features:

- Nickel Plating finish
- Hermetic Encapsulation for Long-Term Reliability to 1×10^{-6} cc/He/sec



General Purpose

Voltage: 100V to 6500V
Current: 100A to 12,000A

Fast Recovery

Voltage: 200V to 3600V
Current: 125A to 1500A

Thyristor & Diode Modules

POW-R-BLOK™

Applications Include:

- Battery Chargers
- Induction Heating/Melting
- Medical Equipment
- Motor Controls
- Power Supplies
- UPS
- Welding

POW-R-BRIK™

Applications Include:

- AC Motor Starters
- DC Motor Controls
- Mining Power Centers
- Resistance Welding Controls
- Transportation

Circuit Configurations:

- Single
- Dual
- Split Dual
- Common Anode
- Common Cathode
- AC Switch



POW-R-BLOK™

Voltage: 600V to 5000V
Current: 40A to 2500A

POW-R-BRIK™

Voltage: 600V to 5000V
Current: 300A to 1585A

Fast Recovery Diode Modules

Applications Include:

- Motor Controls
- Power Supplies
- Switching Power Supplies
- Transportation
- Welding

Circuit Configuration:

- Single
- Dual
- Common Anode
- Common Cathode



Voltage: 600V to 3300V
Current: 48A to 420A

Assemblies

Air Cooled / Liquid Cooled / Integrated Power Structures

Applications Include:

- Battery Chargers
- Induction Heating/Melting
- Motor Controls
- Motor Starters
- Power Supplies
- Transportation
- UPS
- Welding

Circuit Configurations:

- Single
- Half-Bridge
- AC Switch
- Common Cathode/Common Anode
- Single-Phase Bridge
- Three-Phase Bridge

Options Available in Engineered Assemblies:

- | | | |
|------------|-------------------|----------------|
| ■ Bus Bars | ■ Insulators | ■ Snubbers |
| ■ Fans | ■ Terminal Blocks | (R-C Transient |
| ■ Fuses | ■ Thermal Sensors | Suppressors) |



Voltage: 200V to 6500V
Current: 30A to 30,000A

Note: Custom Assemblies Also Available

IGBT Assemblies

POW-R-PAK-GenII™

Applications Include:

- Distributed Power Generation
- Energy Storage
- Industrial Power Supplies
- Motor Drives
- Power Quality

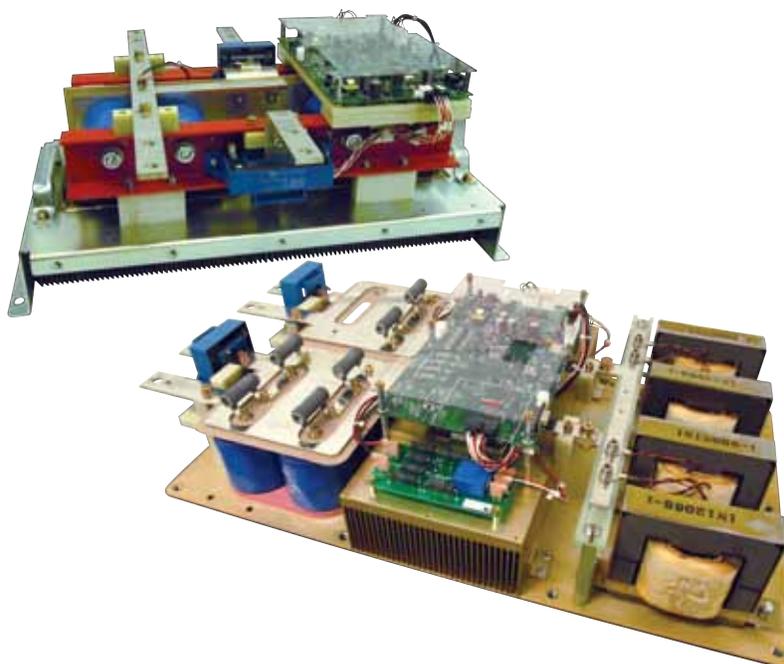
Circuit Configurations:

- Single, Brake
- Half-Bridge
- H-Bridge
- Three-Phase Bridge
- Three-Phase Bridge + Brake
- Chopper

Additional Available Options:

- Blower/Fan
- Application Specific

Note: Custom IGBT Assemblies Also Available



Voltage: 250V to 3300V
Current: 50A to 2800A

Custom Modules

Commercial / Moisture Resistant / Hermetic

Applications Include:

- Customer Specific

Substrates:

- Alumina
- Aluminum Nitride
- BeO
- IMS

Die technology:

- Diode
- FR Diode
- GTO
- HVIGBT
- IGBT
- MOSFET
- SCR
- SiC Diode
- SiC MOSFET

Packages:

- Custom Development for Both Plastic and Hermetic Packages
- Picture Frame
- Standard IGBT Cases



Voltage: 30V to 4500V
Current: 50A to 1500A

Multiple Sales Channels

- Powerex has an extensive network of experienced and knowledgeable manufacturer sales representatives and authorized distributors spanning the globe.
- To locate Powerex sales support in your country / region, go to www.pwrx.com/SalesSupport.aspx



Powerex also offers various online purchasing options, including ordering inventory in stock by credit card.

Multiple Strategically Located Manufacturing Facilities

- Youngwood, PA, USA
- Tangiers, Morocco



POWEREX®

173 Pavilion Lane, Youngwood, PA USA 15697

001-724-925-7272  www.pwrx.com   

