Field-proven, Time-tested Designs

APS has a proven track record of delivering robust, reliable power stack solutions, leveraging more than twenty years of know-how and experience designing brand-labeled power semiconductor assemblies and systems for the world’s largest semiconductor manufacturers and OEM partners.

All APS PowerStacks are subjected to rigorous design and qualification processes including electrical and thermal simulation through integrated assembly and complete full power testing with performance verification.

- Compliant with IEEE and UL 1741 standards
- Compliant with environmental standards (IEC 60721-3)
- ISO9001:2015 Registered

Design-In Support

Need power solutions? Just ask an APS engineer!

- Innovative power products
- Highly reliable and efficient solutions
- Highest-quality products

Industries Served

APS power products are used to improve efficiency, reliability, and quality of the electric power in:

- Oil & Gas
- Motors & Drives
- Distributed Generation
- Alternative Energy – Solar, Wind & Wave
- Transportation – Rail, Aerospace & Marine
- Heavy Industries – Steel, Mining, Welding & Plating
- Power Transmission & Distribution
- Energy Storage – Battery Charging
- Industrial Power Systems

Our Products

APS’s comprehensive standard high power products include IGBT Inverter Stacks, AC/DC, DC/DC, DC/AC Converters, Motor Drives and Controls, Battery Chargers, DC Phase Controllers, Ultra-Precise Power Supplies, High Power Rectifier Bridges, Fiber optic Interfaces, Snubber Boards and Gate Driver Boards for IGBTs, SCRs and MOSFETs, along with a full complement of high power semiconductor assemblies, heatsink kits and clamps.

About Us

Applied Power Systems, Inc. is an industry-leading manufacturer of advanced power conversion products, power electronic controls and high power semiconductor thermal management solutions. Focused exclusively on power electronics, APS provides innovative, leading-edge, quality-engineered products to satisfy the most demanding requirements and withstand the harshest environments.

Applied Power Systems, Inc.
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Advanced PowerStacks

Fully Integrated IGBT PowerStacks
Rated from 10kW to over 500 kW

PowerStack OVERVIEW

- Fully Integrated
- Rated from 10kW to over 500kW
- Modular design (rectifier/DC-link/Inverter)
- Incorporates IGBT modules on optimized thermal platforms with isolated planar busbars, DC link capacitors, open- or closed-loop current sensors, isolated gate drivers, isolated gate drive power supplies, resistors and cooling systems
- Available in all circuit configurations and topologies: half bridge, full bridge, chopper, single-phase bridge and complete 3-phase bridge
- Can be connected in parallel for higher output power
- Easily scalable to accommodate different size IGBTs while providing safe and reliable operation in power inverter applications controlling currents ranging from tens to thousands of amps

INTEGRATED POWERSTACK

- RECTIFIER
- HALF BRIDGE
- FULL BRIDGE
- CHOPPER
- MODULAR DESIGN

FEATURES

- Advanced Real-time Protection for: Over-current, Short circuit, Over-voltage, Over-temperature, Motor brake/Soft Start, DC Link voltage, IGBT on-state voltage, and operating temperature
- Fault reporting: Allows for fault detection at all levels
- Soft overcurrent shutdown
- Optimized deadtime operation
- Active Miller clamp
- DC Link voltage feedback
- Phase current feedback
- Temperature feedback
- Up to 10kW operation
- Air or liquid cooled

HIGH PERFORMANCE

High performance PowerStacks are available in a small footprint with high power output; normal currents up to 200A are available to realize compact inverter systems.

REAL-TIME PROTECTION

Monitors all key operating parameters to maintain specified limits and perform fail-safe shutdown.

DESIGN FLEXIBILITY

System manufacturers can implement fast and smooth design-ins for high volume solar, wind, hybrid electric vehicle, high-power uninterruptible power supply and high-efficiency motor drive applications.

MODULARITY

Easy paralleling allows multiple PowerStack inverter to be connected in parallel to support higher power applications.

CUSTOMIZATION

Customized designs can be provided to meet specific requirements to complement existing off-the-shelf PowerStacks. Options include fans for forced air-cooling, liquid cooling, DC-link voltage feedback, and snubbers. Complete controlled solutions can be provided with analog- or digital-based controller boards and DSP controllers. APS also offers Oide and SCR-based rectifier products; buck and boost converters; or customised systems specific to your needs.

Total INTEGRATION - PowerStacks provide IGBTs on an optimized thermal platform with a very low inductance laminated busbar and choice of electrolytic or film capacitor banks. PowerStacks integrated gate drivers provide optimized dead time generation and safe electrical isolation between primary and secondary side for all switching, control and monitoring functions. This saves the user costs of adding expensive circuits for electrical isolation.

Total PROTECTION - PowerStacks incorporate the industry’s leading fault protection suite to ensure they operate safely and within specified limits. By monitoring phase current, DC link voltage, IGBT on-state voltage and operating temperature, PowerStacks provide real-time protection and safely shut down when any fault is sensed.

Total CONTROL - Phase currents, DC link voltage and operating temperature are continuously monitored. Isolated analog signals of all operating parameters are fed back to the customer for real-time monitoring and control which allows system designers to quickly and easily develop highly efficient and intrinsically safe applications.

DESIGN with attention to supply chain logistics, both standard and customer-specific designs are implemented with an eye towards preventing reliance on any single supplier which eliminates sole-source components.