

What are solid-state devices?

A solid-state device is completely made from a solid material. Its flow of charges is confined within this solid material. The term 'solid-state' is often used to distinguish these devices from earlier technologies like vacuum and gas-discharge tubes.

What material are solid-state devices made from?

Solid-state devices are completely made from a solid material, and their flow of charges is confined within this solid material. More specifically, these devices act as solid-state switches in the circuits, meaning they can act as a switch without any mechanical movement.

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What is a solid state power controller (SSPC)?

Solid state power controllers (SSPC) are semiconductor devices that control power (voltage and/or current) supplied to a load. They perform supervisory and diagnostic functions in order to identify overload conditions and prevent short circuits.

What makes solid-state devices different from earlier technologies?

The term "solid-state" is often used to show the difference between the earlier technologies of vacuum and gas-discharge tube devices. Solid-state devices are completely made from a solid material, and their flow of charges is confined within this solid material.

What is a solid state voltage regulation module?

The solid state voltage regulation module (also known as the solid state power voltage regulation module, the solid state power regulating module, the solid state voltage regulating module and the solid state power voltage regulator module) are used to adjust the voltage or power of the AC load.

January 12-16, 2009 USPAS Pulsed Power Engineering E Cook 21 Solid-state Devices - General Observations o Low jitter (ns) o Switching speed varies from very fast (ns) to ...

Compared with the Silicon material, SiC (Silicon Carbide) has more outstanding material properties for fabricating power devices, such as higher breakdown electric field ...

Power Device Corporation (PDC) is the world leader in the design and manufacture of high-reliability data bus, motion control and solid-state power controller products for aerospace and defense vehicles, and industrial ...

Power electronics based on the switching of power semiconductor devices. With the development of power semiconductor technology, the power handling capabilities and ...

Many solid-state devices use DC power. The rectifier blocks part of the AC wave to modify it so that it is closer to a DC voltage. For example, the rectifier can be designed to chop off the bottom half of an AC voltage sine ...

Narrowly speaking, power modules are referring to solid-state modules to differentiate with solid state relays. The main function of the solid state relay is electronic ...

Power electronics devices like MOSFETs, IGBTs, SCRs etc. o Cycloconverters: They convert fixed voltage fixed frequency AC supply into variable voltage variable frequency ...

Transient Thermal Analysis of Solid-State Power Devices--Making a Dreaded Process Easy Abstract: In spite of its importance in the rating and reliable application of power diodes and ...

High-temperature superconducting (HTS) magnets operating in persistent current mode suffer from current decay. The footprint and energy requirements of a solid-state power ...

We start the course with a broad review of ideal power devices, semiconductor material properties, breakdown voltages and a detailed analysis of PN junctions along with the ...

We present a high-energy local power supply based on a flexible and solid-state supercapacitor for miniature wireless implantable medical devices. Wireless radio-frequency ...

The use of innovative techniques, supported on dc-dc isolated converter topologies, brought from solid-state power electronics, taking advantage of all the capabilities of such ...

Therefore, SiC devices are obvious choices for solid state circuit breakers. Figure 3 depicts how Si, SiC and GaN correspond with each other across the various operating frequencies and output powers. Construction of ...

Today the technologies regarding the solid-state devices are in huge development. Well-established Silicon power devices in the field of the power conversion belong to several families having a ...

Power management with PDC's Solid-State Power Controller (SSPC) solutions offer dramatic SWaP-C saving advantages over the electromechanical switches, relays, and circuit breakers they replace. PDC's power conversion and supply ...

The SSPC is a kind of smart solid-state electrical switch based on semiconductor power devices (such as

MOSFETs, SCR, and IGBT) with functions such as inverse-time ...

Protective devices such as circuit breakers play a critical role in electric power distribution systems in more electric aircraft (MEA). Due to the extreme safety requirements, fast response ...

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The solid-state pulsed power generators (PPGs) are widely used in various modern industrial applications for their high repetition rate and long lifetime. The o

Power electronics can be defined as the application of solid-state electronics for the control and conversion of electrical power. Power electronics is a technology for the conversion, regulation, and management of electric ...

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