Enabling Green Tech Applications

Broadcom Semiconductor Products

Going Green?

Broadcom Products Enable a Green Future in Sustainable Applications

- **Optical isolation**

  To increase efficiency in power converters and inverters

- **Hall sensors**

  for efficient direct current measurement

- **Solid state relays**

  To replace mechanical relays in battery management systems

- **Fiber optic components**

  For data communication and power transmission

- **Magnetic and optical encoders**

  To increase efficiency with accurate motion control feedback

- **LEDs**

  for energy-saving, long-life applications

- **Ethernet Switches and PHYs**

  for lowest power consumption

- **AECQ-100 qualified components**

  for electric vehicles, supporting the reduction of carbon emission

- **Single Pair Ethernet**

  saving copper materials

Solar

Transportation

EV & Charging

Factory Automation

Smart Cities & Infrastructure
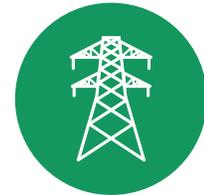
Power Generation & Distribution

Energy Storage

Wind

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Going Green?

Protect with Broadcom Optocouplers
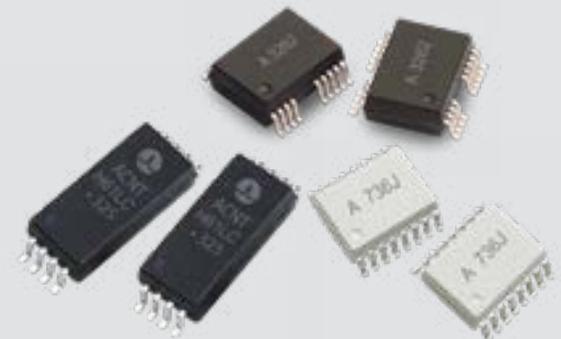
Broadcom Optocouplers

Enabling Green Energy Applications

Broadcom optocouplers are used in an array of **green applications** ranging from **solar** and **wind inverters**, **energy storage, automotive electric vehicles** and **charging** and **power supplies**. The primary purpose of an optocoupler is to provide both electrical insulation and signal isolation.

Optocouplers eliminate the effects of electrical noise caused by crosstalk, power glitches and electrical interference. They provide high voltage isolation allowing safe interface between high and low voltages in electrical circuits.

Broadcom's key optocoupler products include gate drivers for driving power switches like IGBT, SiC and GaN, isolation amplifiers for phase current and bus voltage measurements, high speed digital optocoupler for data transmission and communication.

The popularity of Broadcom optocouplers in these green applications is due to their ability to **drive inverters more efficiently**, to **reduce copper losses by providing high insulation voltage** and to **consume less power during current sensing and data transmission.**

Going Green?

Increase Efficiency with Broadcom Encoders
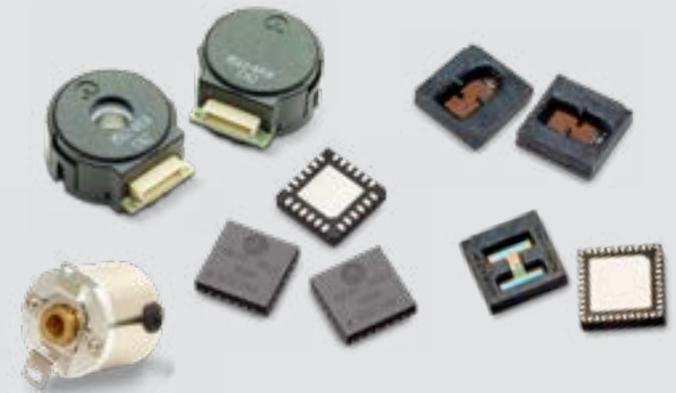
Broadcom Encoders

Industry's most versatile encoder solutions enabling green applications

Broadcom encoders are ideal for position sensing, motion control and motor feedback in an array of green applications e.g. solar and wind turbines. Incremental encoders are also used for speed control of servo motors.

Built on years of innovation and technology leadership, Broadcom´s optical and magnetic encoders are designed to operate at temperatures required for harsh and challenging environments.

☑ **Wind Turbine**
Absolute encoders are used for monitoring the Yaw control of the nacelle (the main structure which houses all generating components, gearbox, drive train, etc.).

Absolute encoders are ideal for the pitch control of the blades to adapt to different wind conditions.

Incremental encoders can be used for speed monitoring of the generator.

☑ **Solar Tracker**
Absolute encoders are an ideal solution for monitoring the panel position to adapt to optimum sunlight direction & conditions.

☑ **LiDAR (Light Detection and Ranging) in Autonomous Electric Vehicles**
LiDAR uses a pulsed laser to detect distance, velocity and angle with a high precision system solution. LiDAR can classify objects, detect lane markings and is used to precisely position an autonomous vehicle relative to a high definition map to safely navigate in a wide range of ambient and environmental conditions.

Broadcom´s encoder products are enabling LiDAR solutions in intelligent ADAS (Advance Driver Assistance Systems) in electric vehicles – our high temperature, small form factor and versatile (multiple time programmable encoding registers) reflective and magnetic encoders are the perfect fit here.

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LED Application Playbook

Energy Saving with Broadcom LEDs

Known for its LEDs' performance, efficiency and reliability, Broadcom offers an extensive portfolio of products that include high brightness and high power LEDs, PLCC surface-mount LEDs, and display backlighting module solutions. These LEDs and display modules address a wide range of markets, including electronic signs and signals, automotive, solid state lighting and LCD display backlighting.

Industrial LED Product Portfolio

LEDs

- Surface Mount ChipLEDs

- ChipLEDs for Automotive

- Subminiature Lamps

- Surface Mount PLCC LEDs

- Standard & High Brightness Through Hole Lamps

- High Brightness Surface Mount Lamps

- UV-A LEDs

- IR LEDs

LED Displays

- Smart Alphanumeric Displays

- Surface Mount & Through-hole Seven Segment Displays

- Light Bars
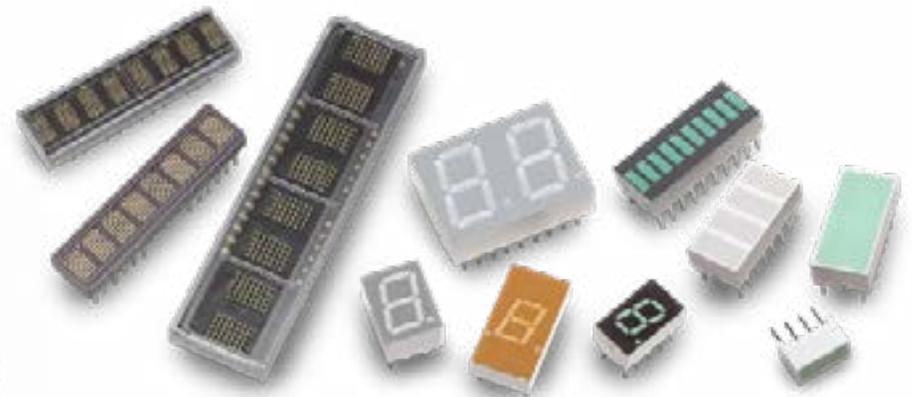
Going Green?

Industrial Fiber enables the green energy transition

Broadcom Industrial Fiber

Enabling the Green Energy Transition

Broadcom's industrial fiber products are used widely in green energy applications, including solar and wind power generation, energy storage, energy metering and monitoring, smart grid, and motor drives. These products are highly reliable in harsh industrial environments, providing mission-critical system control and communications, high-voltage isolation and protection, and accurate optical sensing and measurement.

Broadcom is a leading supplier of industrial fiber products for communication and power over fiber. Both technologies are complementary to each other and can together fulfill full optical isolation. This is fundamental for the energy transition over the coming years and decades, as it allows measurement of the electrical current in high voltage applications with a high measurement frequency. This is necessary for fast reactions in smart grids.

Very power efficient solutions e.g. Trains or power plants will use SiC gate drivers. With a complimentary solution of Power over Fiber and control signals over Fiber, it is possible to isolate gate drivers completely galvanically and drive converters more efficiently. Stable operation of HV installation will be one challenge after the energy transition. With Broadcom´s Arc flash detection portfolio, it is possible to detect failures and switch the HV installation "off" to avoid damage. We have the complete portfolio for optical Arc Flash detection including Sensor, Sensor Fiber, Detector and all necessary connectors.

Broadcom Inc. is a global infrastructure technology leader built on 50 years of innovation, collaboration and engineering excellence.

Broadcom Inc. (NASDAQ: AVGO) is a global technology leader that designs, develops and supplies a broad range of semiconductor and infrastructure software solutions.

Broadcom's category-leading product portfolio serves critical markets including data center, networking, enterprise software, broadband, wireless, storage and industrial. Our solutions include data center networking and storage, enterprise, mainframe and cyber security software focused on automation, monitoring and security, smartphone components, telecoms and factory automation.

Learn more at:
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