BCM59101
PRODUCT Brief

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Connecting everything®

QUAD INTEGRATED IEEE 802.3AF-2003 PSE CONTROLLER AND POWER MANAGEMENT SYSTEM WITH ENHANCED CAPABILITIES
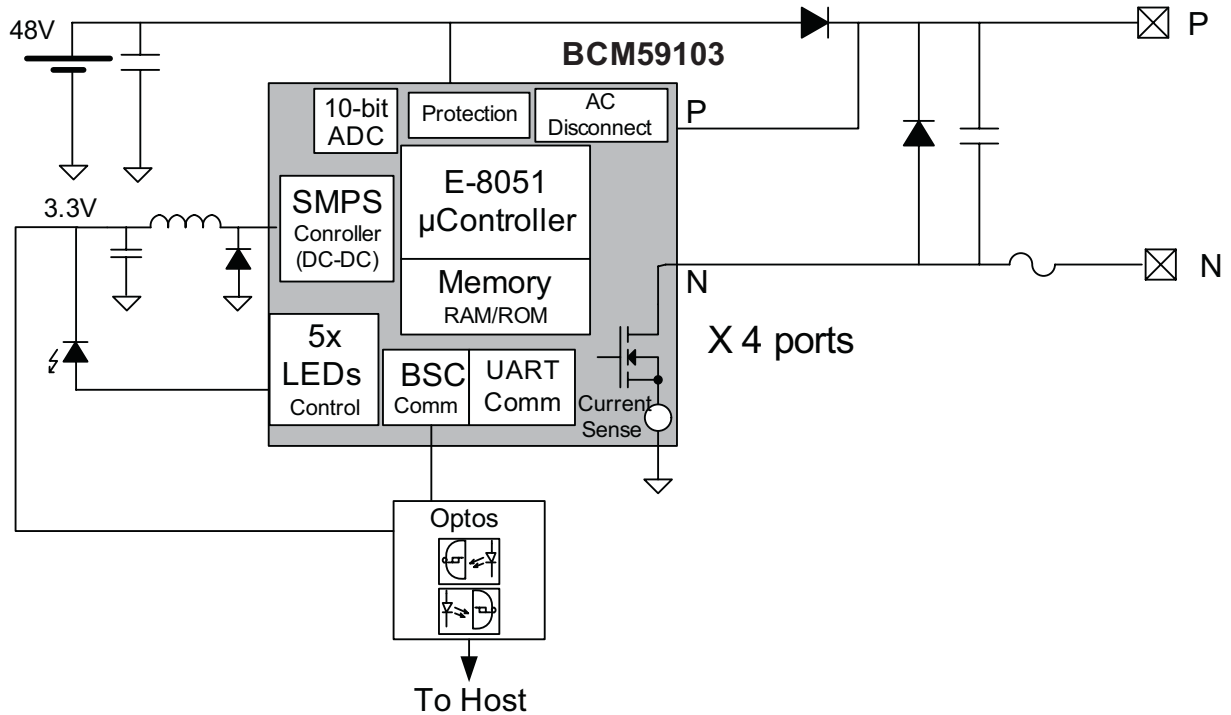
FEATURES

- **Standards support**
  - IEEE 802.3af-2003-compliant
  - IEEE 802.3af-2003 classification scheme support
  - Supports Pre-IEEE 802.3af-2003 legacy detection

- **High hardware integration**
  - Integrated switches
  - Integrated current sense functionality
  - Integrated microcontroller
  - Integrated AC and DC disconnect options

- **Extensive hardware features**
  - 15.4W per port to support Power Over Ethernet (POE) PDs via integrated circuitry
  - Programmable current limit for both IEEE 802.3af and extended power ranges
  - Low-power dissipation eliminating heat sink in IEEE 802.3af mode
  - Broadcom serial control (BSC) interface support to the host
  - UART interface support to the host
  - Robust switch protection circuit withstands cable discharge and ESD events (CESD)
  - Autonomous, semi-autonomous, or manual modes
  - Real-time current, voltage and temperature measurements available per port
  - Cascading of multiple devices up to 64 ports support with the option of single hardware and software interface for the host
  - Includes four LED drivers reporting POE port activity
  - Integrated 3.3V buck regulator (DC:DC) to support up to 200 mA
  - Over-temperature protection
  - Operates from a single 48V supply

- **Extensive software features**
  - Self-contained power allocation software
  - Integrated 4-port power management
  - Integrated power management for all ports in cascaded version

SUMMARY OF BENFITS

- **Highest integration that allows for**
  - Lowest total BOM count
  - Easier PCB placement and PCB area saving
  - Full functionality without external u-controller including power management
  - Eliminates the need for an external 48V to 3.3V power conversion

- **Further reduces BOM count via 3.3V DC:DC capability to be shared across multiple BCM59101 devices**

- **Enables support of POE PDs such as emerging Wi-Fi® APs, security cameras, and IP phone via 15.4W per port capability**

- **Eliminates the need for a heat sink in IEEE 802.3af mode via no-dissipation-Rsense and DC:DC to 3.3V**

- **Makes layout and design easy via simple ground/power plane**

- **Works with Broadcom POE-enabled products for easy implementation**

- **Architected with system-oriented features to allow for system-level differentiation, including:**
  - Single point of interface for host hardware and software
  - Power management across all ports in cascaded configuration
  - Programmable current limits and dynamic measurement per port
  - Rapid power-down to support multiple power supply failures

- **Supports a variety of applications:**
  - Routers and switches for Enterprise, SMB, SOHO, and commercial markets
  - Ethernet midspans
  - PSE power injectors
  - Integrated magnetics

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BCM59103

X 4 ports

To Host

BCM59101 Module Architecture

The BCM59101 is a highly integrated quad power source equipment (PSE) controller compatible with IEEE 802.3af-2003. The controller is the industry first to offer a highly integrated architecture with revolutionary enhancements that are targeted at reducing the complexity of Power Over Ethernet (POE) designs.

The BCM59101 integrates the microcontroller, power switches, low-loss current sense function, detection, classification, and voltage converters, 3.3V bias regulator (DC:DC converter) and AC disconnect functionality.

The high level of integration and innovation make the device the most power efficient integrated IEEE 802.3af POE system.

The BCM59101 offers a networking-oriented host interface that offers a full suite of power management. This easy to use interface can be extended to manage up to 64-cascaded ports through a single host interface.

The BCM59101 is designed with robustness and legacy support. It offers detection and classification mechanisms capable of detecting both IEEE 802.3af-compatible devices and legacy devices simultaneously. In addition, the BCM59101 is designed and tested to withstand cable discharge events as well as ESD events in excess of 2 kV.

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Phone: 949-926-5000
Fax: 949-926-5203
E-mail: info@broadcom.com
Web: www.broadcom.com

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