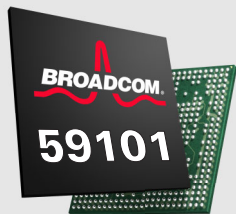


# Broadcom BCM59101 Controller and Power Management Technology

Connecting  
everything®



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



### Highlights

- Industry-first quad PSE controller to simplify PoE designs
- Compatible with other Broadcom POE-enabled products
- Most power-efficient IEEE 802.3af PoE system
- User-friendly host interface
- High IEEE standards support combined with broad hardware and software integration and features
- Supports applications for various markets
- Low BOM cost

### Overview

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 highly integrated architecture with revolutionary enhancements that are targeted at reducing the complexity of Power over Ethernet (PoE) designs.

The BCM59101 integrates the following: microcontroller, power switches, low-loss current sense function, detection, classification, and voltage converters as well as 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 provides 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. Additionally, the BCM59101 is designed and tested to withstand cable discharge events as well as ESD events in excess of 2 kV.

### Architectural 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: switches, current sense functionality, microcontroller, and AC and DC disconnect options

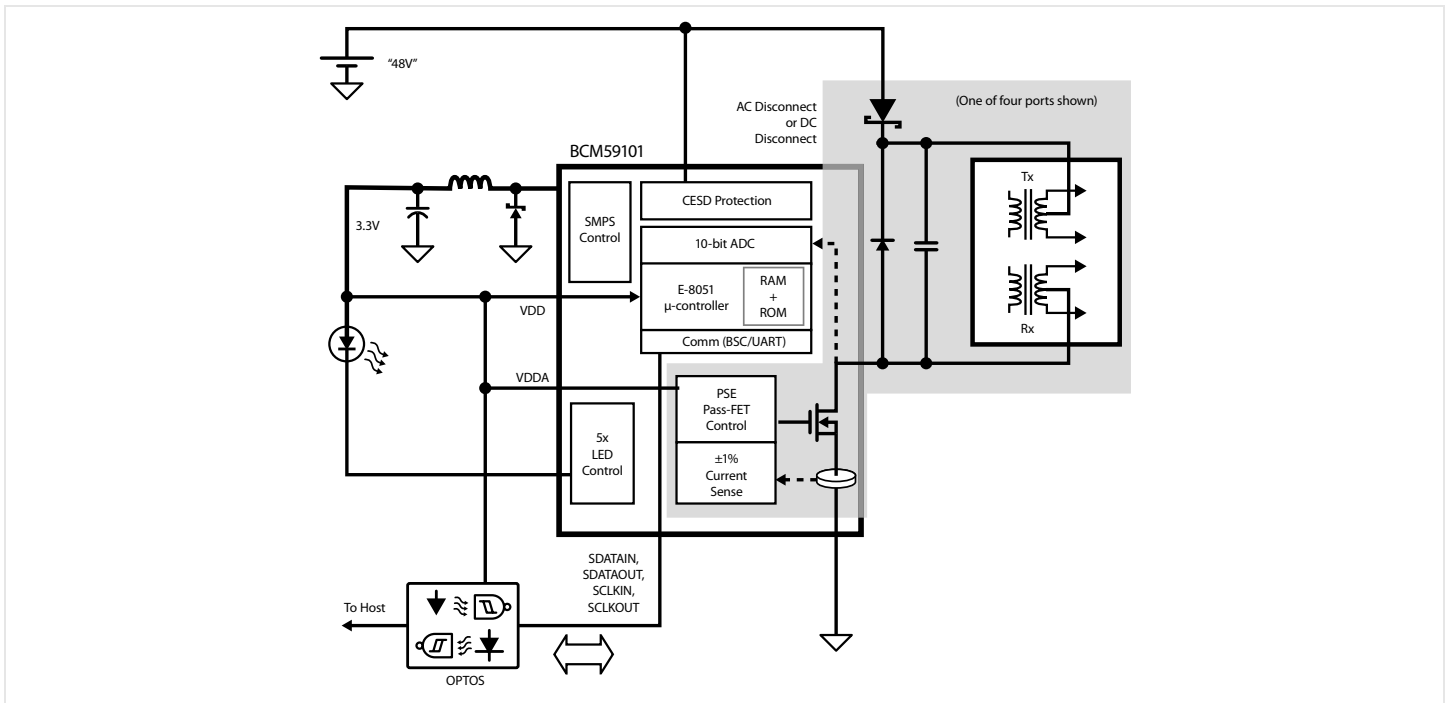
- Extensive hardware features
  - Certified by Underwriters Laboratory (UL) as a current-limiting device per QVGS, so fuses are not necessary.
  - 15.4W per port to support PoE PDs.
  - Programmable current limit for both IEEE 802.3af and extended power ranges.
  - Low power dissipation eliminating heat sink.
  - Broadcom Serial Control (BSC) and UART interface support to the host.
  - Robust switch protection circuit withstands cable discharge and ESD events (CESD).
  - 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.
  - Overtemperature protection.
  - Operates from a single 48V supply.
- Extensive software features
  - Self-contained power allocation software.
  - Integrated four-port power management.
  - Integrated power management for all ports in cascaded version.

### Benefits

- Highest integration allows the following:
  - Lowest total BOM count.
  - Easier PCB placement and PCB area saving.
  - Full functionality without external  $\mu$ -controller, including power management.
  - Eliminates need for an external 48V to 3.3V power conversion.

	BCM59101
Enterprise	●
SMB	●
Service Provider	●
ONT/ONU	●

○ Supported ● Best Choice



BCM59101 Module Architecture

## Benefits (cont.)

- Further reduces BOM count via 3.3V DC:DC capability to be shared across multiple BCM59101 devices
- Eliminates need for a heat sink
- Easy layout and design 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

## Ordering Information

BCM59101BKMLG

## Part Number

BCM59101

## About Broadcom

Broadcom Corporation is a major technology innovator and global leader in semiconductors for wired and wireless communications. Broadcom® products enable the delivery of voice, video, data and multimedia to and throughout the home, the office and the mobile environment. We provide the industry's broadest portfolio of state-of-the-art system-on-a-chip and software solutions to manufacturers of computing and networking equipment, digital entertainment and broadband access products, and mobile devices.

These solutions support our core mission: Connecting everything®.

Broadcom, one of the world's largest fabless communications semiconductor companies, with 2010 revenue of \$6.82 billion, holds more than 4,800 U.S. and 2,000 foreign patents, and has more than 7,800 additional pending patent applications, and one of the broadest intellectual property portfolios addressing both wired and wireless transmission of voice, video, data and multimedia.

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