

# BCM89586M

## Automotive BroadR-Reach® Ethernet Switch

### Overview

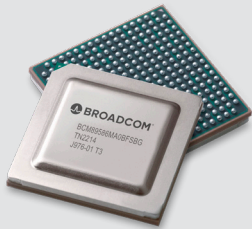
The Broadcom® BCM89586M device is a fully integrated BroadR-Reach® multilayer switch that supports automotive qualification (AEC-Q100) for in-vehicle networking applications. The BCM89586M is the optimal solution for key automotive designs that have high-performance yet challenging low-power requirements. Built on industry-leading architecture, the BCM89586M supports multiple intuitive low-power modes, IEEE 802.1AE-compliant integrated MACSEC engines that can support up to 1 Gb/s of encryption and decryption on a number of ports, as well as an automotive cable diagnostics feature.

The BCM89586M can interconnect with other devices for scalable, high-performance systems through multiple interfaces including RGMII, SGMII, XFI, MII, RvMII, and PCIe. The BCM89586M devices support IEEE 1588v2 and IEEE 802.1AS timing functions designed for both peer-to-peer and end-to-end transparent clocking-in hardware. This product delivers the most comprehensive automotive technology solution required by OEM and Tier-1 suppliers, meeting or exceeding CISPR 25ds component-level, ISO 11452-5 Stripline, ISO 11452-4, IEC 61000-4-2, and AEC-Q100 requirements.

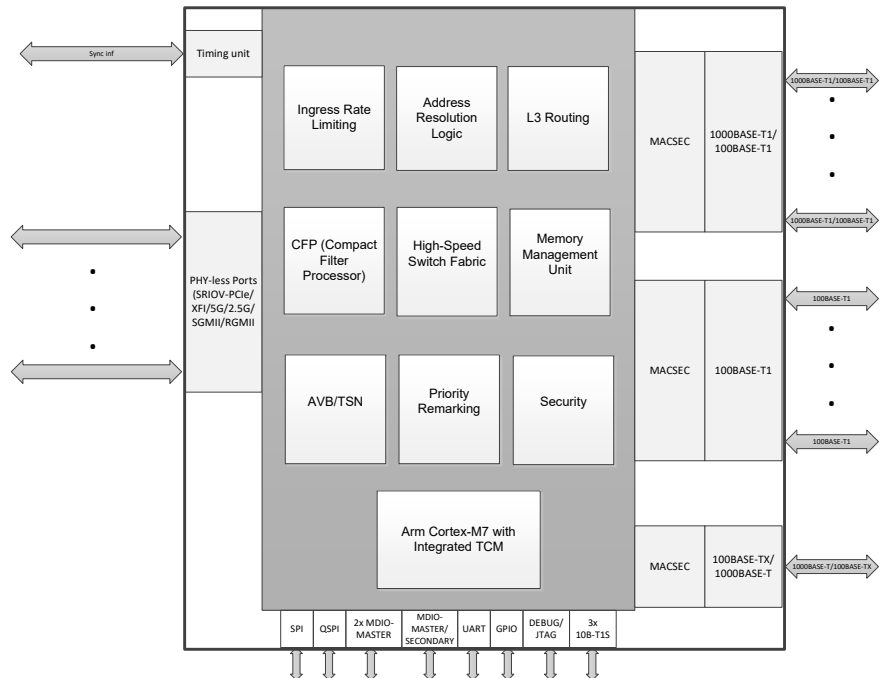
The BCM89586M is available in a 23 mm x 23 mm FCBGA package and is qualified up to automotive Grade 2 temperature range (-40°C to +105°C).

### Applications

- Gateways
- Advanced driver-assist systems (ADAS)
- Infotainment
- Onboard diagnostics



### Block Diagram



## Features

- Enhanced architecture supports nonblocking, line-rate data transfer at wirespeed performance for all frame sizes over unshielded single-pair twisted cable
- Integrated switch core has provisions for the integrated Arm Cortex-M7 processor and dedicated on-chip SRAM to send and receive frames
- Processor subsystem able to support timing stack and Audio Video Broadcast (AVB) bridging support functions
- Integrated 100BASE-T1 and 1000BASE-T1 IEEE 802.1AE MACsec PHYs
- Advance hardware traffic filtering based on the functional state of a car
- Support for TC10, deep sleep, and passive signal detect power modes, which reduce power consumption to zero during periods of inactivity
- Enhanced Layer 2/Layer 3 switching addressing new standardized Automotive Ethernet speeds:
  - Supports external IEEE 802.3cg 10BASE-T1S PHYs
  - Supports external IEEE 802.3ch multigigabit PHYs
- Integrated Layer 3 routing at up to 55 Gb/s performance
- Layer 2 anti-hack feature provides protection against common Layer 2 Ethernet attacks
- Specific architectural and design enhancements are utilized to increase design for test, reliability, and quality to surpass AEC-Q100 and EMC requirements
- Designed to support IEEE 1588 and IEEE 802.1AS timing functions
- Designed to support both peer-to-peer and end-to-end transparent clocking in hardware
- Automotive cable diagnostics feature can detect pair open/short and distance

The BCM8958X product family can interconnect with other devices for scalable, high-performance systems through multiple interfaces including XFI, PCIe gen4, SGMII, RGMII, MII, and RMII.

The BCM8958X devices support IEEE 1588 and IEEE 802.1AS timing functions designed for both peer to-peer and end-to-end transparent clocking in hardware. In addition, the IEEE 802.1AS 2020, IEEE 802.1CB, IEEE 802.1Qbv, and IEEE 802.1Qci time-synchronization features are supported.

## Ordering Information

Part Number	Package	Ambient Temperature
BCM89586MA0BFSBG	729-ball, 23 mm x 23 mm FCBGA package (0.8-mm ball pitch)	-40°C to 105°C