

## Managed Switch with 8/16/24 FE Ports + 2 GbE/4 GbE/2 GbE + 2.5G SerDes

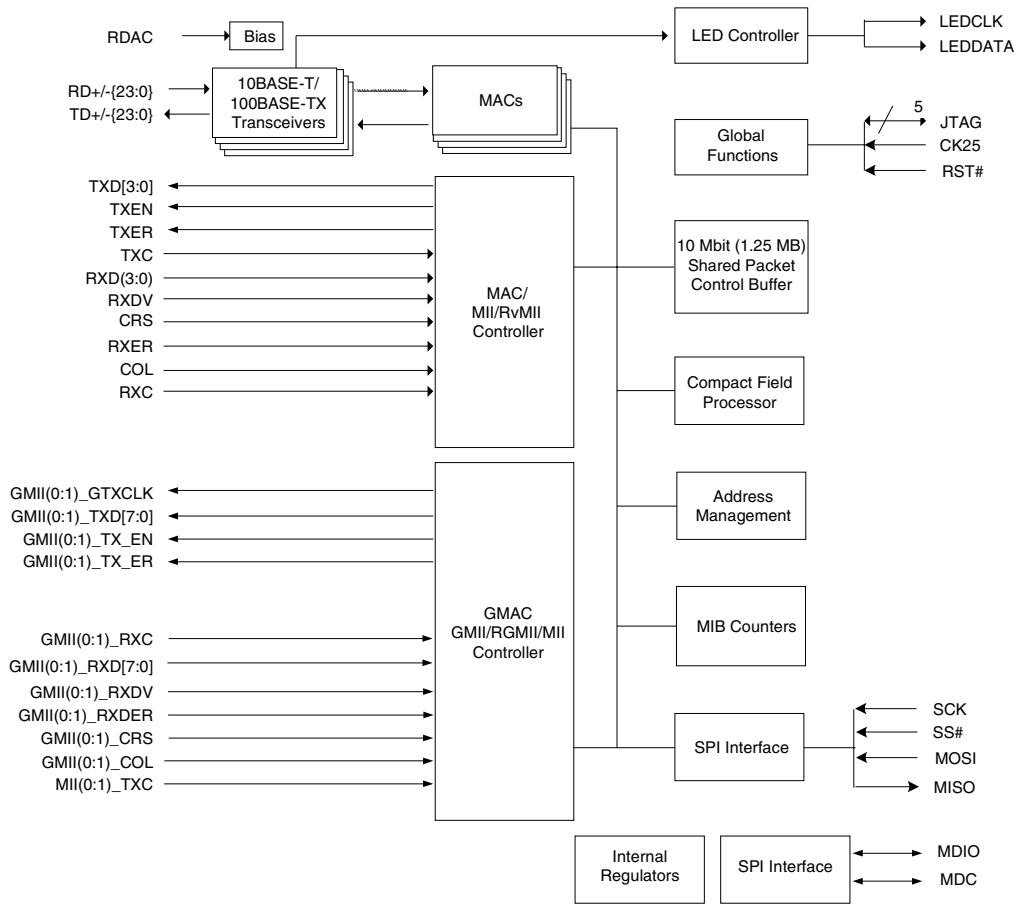
### FEATURES

- **Tenth-generation L2+ Fast Ethernet (FE) switch with interfaces**
  - 8-/16-/24-port 10/100 transceivers for TX/RX supporting auto power-down modes
  - 8/16/24 MAC and one MAC/GMAC for IMP
  - Two GMACs or four GMACs or two GMACs with one 2.5G MAC
  - 10 Mbit (1.25 MB) packet buffer and control memory
  - Management port with RvMII/MII or RGMII interface
- **Nonblocking switch fabric**
- **65 nm design with lower power consumption**
- **Pin-to-pin compatible with earlier generation BCM532x2:**
  - BCM53282 pin-to-pin compatible with BCM53202
  - BCM53283 pin-to-pin compatible with BCM53212
  - BCM53284 pin-to-pin compatible with BCM53242
  - BCM53286 pin-to-pin compatible with BCM53262
- **Optimized for managed-switch design**
- **Fully compliant with DSL Forum TR-101 (Migration to Ethernet-based DSL Aggregation)**
- **Flexible TCAM-based Compact Field Processor with four slices for packet classification and filtering**
- **VLAN Features**
  - Packet Remarking, S-VID, C-VID flexible mapping
  - Flexible QinQ support (add/drop one or two VLAN tags)
  - Ingress VLAN Mapping and Egress VLAN Mapping
  - S-Tag and C-Tag PCP/DEI, DSCP remarking
  - Programmable global ISP\_TPID
  - IEEE 802.1™Q-based VLAN with 4K entries
  - Port-based VLAN
  - MAC-based VLAN
  - Protocol-based VLAN
  - VLAN-based direct forwarding

### FEATURES (CONT.)

- **MAC Address Learning**
  - 16K MAC addresses: automatic learning and aging
  - 4K-entry multicast address table
  - Enable/disable MAC learning based on per-port, per-VLAN, or per-packet flow (Compact Field Processor)
- **Virtual Multicast Packet Replication**
- **Port mirroring (Ingress/Egress), IGMP/MLD snooping**
- **Spanning Tree support (IEEE 802.1d/1s/1w)**
- **Link Aggregation support with automatic link failover**
- **Supports IEEE 802.1x Extensible Authentication Protocol Over LAN (EAPOL) higher layer protocol**
- **Denial of Service (DoS) attack prevention**
- **Supports IEEE 802.3ah OAM remote loopback and trap OAM protocol packets to IMP port**
- **Hardware supports remote monitoring (RMON)**
- **Jumbo frame support of up to 2048 bytes**
- **Programmable Broadcast, Multicast, and Unknown Unicast storm control**
- **Programmable per-port and per-queue Bandwidth/Rate control, enable or disable IPG and Preamble Start Frame Delimiter (SFD) included**
- **Min Bandwidth guarantee and Max Bandwidth limit scheduler**
- **IEEE 802.1p-, Port/Virtual Port-, Protocol-, VID-, and DiffServ-based (IPv4/IPv6) QoS packet classification with eight priority queues per port**
- **MDC/MDIO and SPI interfaces; SPI speed of up to 25 MHz**
- **Internal oscillator simplifies design and reduces cost.**
- **JTAG**
- **Only two power rails required: 2.5V and 1.2V. 3.3V is optional.**
- **Typical power consumption (all ports running at full speed with full traffic at normal voltage at room temperature):**
  - BCM53282: 1.5W
  - BCM53283: 2.6W
  - BCM53284/BCM53286: 3.6W
  - BCM53288: 4.0W

# OVERVIEW



**BCM53284M Block Diagram**

The Broadcom<sup>®</sup> BCM5328XM is a tenth-generation RoboSwitch<sup>™</sup> design based on the field-proven BCM53242/BCM53262 device. This integrated 65 nm CMOS device combines all the functions of a high-speed switch system including packet buffers, PHY transceivers, Media Access Controllers (MACs), address management, and a nonblocking switch fabric. It is designed to be fully compliant with the IEEE 802.3<sup>™</sup> and IEEE 802.3x specifications, including the MAC control Pause frame, auto-negotiation, and all industry-standard Ethernet and Fast Ethernet devices. The BCM5328XM contains 8/16/24 full-duplex 10BASE-T/ 100BASE-TX Fast Ethernet transceivers. Each transceiver performs all physical layer interface functions for 10BASE-T Ethernet on Category 3, 4, or 5 Unshielded Twisted Pair (UTP) cable and 100BASE-TX Fast Ethernet on Category 5 UTP cable. The BCM5328XM has two GMII/ RGMII interfaces or four SGMII/SerDes

interfaces or two SGMII/SerDes with 2.5G combo SerDes interface. An additional MAC is included for CPU connection using an interface.

The BCM5328XM has a rich feature set suitable for streaming VoIP, video, and data traffic for multimedia applications. The BCM5328XM supports up to eight QoS queues per port. Traffic QoS can be assigned based on Port-ID, IEEE 802.1p, or DiffServ. Together with 4K entries, IEEE 802.1Q VLAN, IEEE 802.1x EAPOL protocol filtering, MAC-based link aggregation with dynamic failover, per-port and per-queue bandwidth/rate control, and IGMP snooping at Layer 3 allow system vendors to build advanced L2+ switch systems for the Multiple Tenant/ Multiple Dwelling Unit (MTU/MDU) markets. The BCM5328XM provides 70+ on-chip MIB counters to collect receive and transmit statistics for each port and supports extended RMON.

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