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BCM3216 PRODUCT Brief

BCM3216 DOCSIS® 3.0 UPSTREAM MAC CHIP

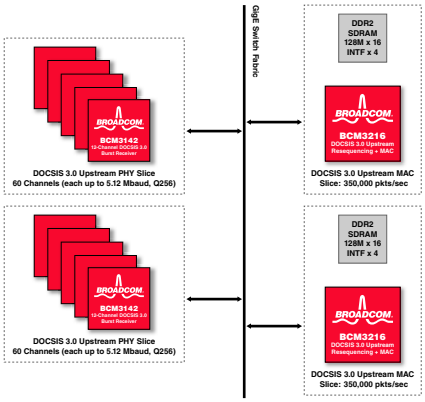
FEATURES

- The Broadcom BCM3216 is a DOCSIS® 3.0 Upstream MAC chip for Cable Modem Termination System (CMTS) equipment used in broadband cable networks.
- Supports up to 512 L2TPV3 sessions to handle 128 physical upstream channels.
- Dual-packet port provides a high-throughput data interface to network equipment via standard IEEE 802.3z™ GMII Ethernet interface.
- Full DOCSIS 1.0/2.0/3.0 upstream support including: Segment sequence reordering and DOCSIS frame extraction, Baseline Privacy with DES/AES, Payload Header Suppression, Concatenation, and Fragmentation.
- Supports seamless interface to BCM3142 12-Channel DOCSIS 3.0 Burst Receiver either through direct connection or with a switch fabric.
- Supports Broadcom's packet accelerator technology Propane® for increased efficiency in upstream operation.
- Supports up to 350,000 packets-per-second or operation up to 600 Mbps.
- Supports up to 64K flows with a flexible association between L2TPV3 Session and SID to FLOW ID.
- Support for junction temperature of 0°C to 85°C

SUMMARY OF BENEFITS

- A high-performance, integrated solution for upstream transmission for data, video and telephony applications over cable HFC networks.
- Hardware support for MAC-layer per-packet functions including bonding reassembly, fragmentation, concatenation, and payload header suppression, offloads system CPU, giving higher overall system performance.
- Flexible association between MAC and PHY capacity enables high-density equipment designs with efficient scalability, reducing equipment floor space requirements.
- Provides full DOCSIS/EuroDOCSIS™ 3.0 compliance for use in CMTS equipment.
- Faster line rates enable advanced data services over cable without stranding deployed equipment.
- Dual-packet ports architecture relieves congestion on ingress and egress thus reducing switch fabric buffer requirements.
- All provisioning is in-band over the packet port and carried over UDP/IP.
- Egress packets are encapsulated in UDP/IP with per flow destination selection of up to eight PDU or MAC management destinations.
- The BCM3216 is field upgradable both for firmware and hardware.

DOCSIS 3.0 Cable Modem Termination System (CMTS) Block Diagram



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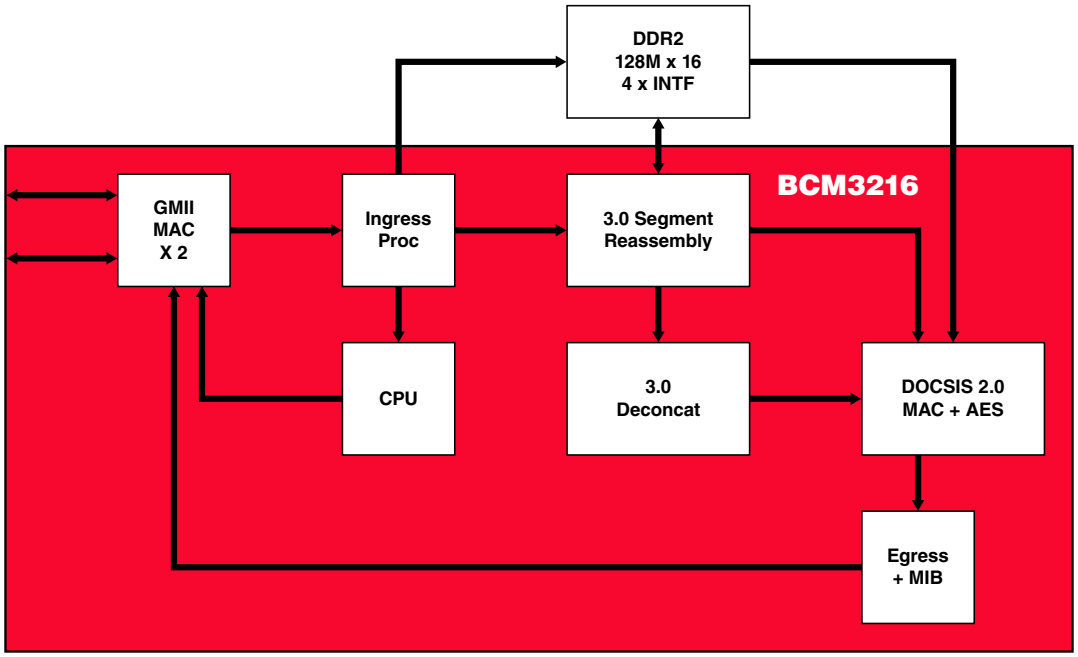
OVERVIEW



BCM3216 Block Diagram

The BCM3216 is a highly integrated DOCSIS® 3.0 CMTS MAC IC for use in DOCSIS 3.0 CMTS products. Based on cost-effective hardware-processing engines, the BCM3216 provides a powerful yet cost-effective solution for a variety of CMTS architectures. With hardware support for bonding traffic reassembly, concatenation parsing, fragment reassembly, payload header suppression, and advanced physical-layer data rates, the BCM3216 serves as the heart of a next-generation CMTS.

The BCM3216 performs packet reassembly for bonded traffic, DES and AES decryption, fragment reassembly, deconcatenation, payload header expansion, Propane® packet acceleration, upstream MIB statistic gathering, and priority queuing for the resultant packets. DOCSIS MAC management messages can be forwarded to different destinations than data packets for a flexible interface to both a Network Processing Engine and System Controller using standard protocols.

The Ethernet MAC provides a standard interface (IEEE 802.3z GMII) for transporting packets to and from the BCM3216. All configuration and management of the BCM3216 is done via the GMII interface.

A single BCM3216 can support up to 512 L2TPV3 reassembly sessions. Since each logical channel is associated with at least one session ID, one BCM3216 can interface with as many as 512 logical channels (128 physical channels assuming four logical channels per physical channel). The BCM3216 can have a seamless or network interface to the BCM3142 DOCSIS 3.0 12-channel CMTS burst receiver. A BCM3216 reassembly session is allocated for each Quality of Service (QoS) and Session ID permutation when QoS is enabled in the BCM3142. For example, if two levels of QoS are enabled in the BCM3142, then each logical channel will consume two reassembly sessions.

The BCM3216 chip integrated feature set significantly reduces the board space in DOCSIS 3.0 CMTS equipment, giving manufacturers a silicon solution that is both cost-effective and easy to use.

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