

ENTERPRISE IP PHONE CHIP

FEATURES

- The BCM1113 is the most highly integrated silicon solution targeted for midrange Voice-over IP enterprise phones
- The BCM1113 integrates:
 - 87.5-MHz MIPS32TM CPU (96 DMIPS) with 8K I-cache and 4K D-cache
 - Superscalar 108-MHz ZSP DSP with dual-MAC (216 MIPS), 48K instruction, and 32K data RAM
 - Three-port 10/100BASE-T Ethernet switch with 64K buffer memory
 - Two 10/100BASE-T Ethernet PHYs with in-line power over Ethernet support
 - Three wideband audio ADCs and DACs
 - 9 x 9 keyscan controller
 - Ethernet status LED driver
 - TDM IOM-2[®] port
 - Two UARTs
 - Two high-speed serial ports
 - General purpose I/O
 - Interrupt control unit
 - DMA support unit
 - SDRAM interface
 - External bus interface
 - IEEE 1149.1 (JTAG)
- 0.18 μ process technology, 1.8/3.3V
- 1.1W peak, 0.3W – 0.8W standby modes
- 256-pin PBGA package enables 4-layer PCB designs
- Pin and software compatible with the BCM1101, BCM1113R, BCM1115, and BCM1115R ICs

SUMMARY OF BENEFITS

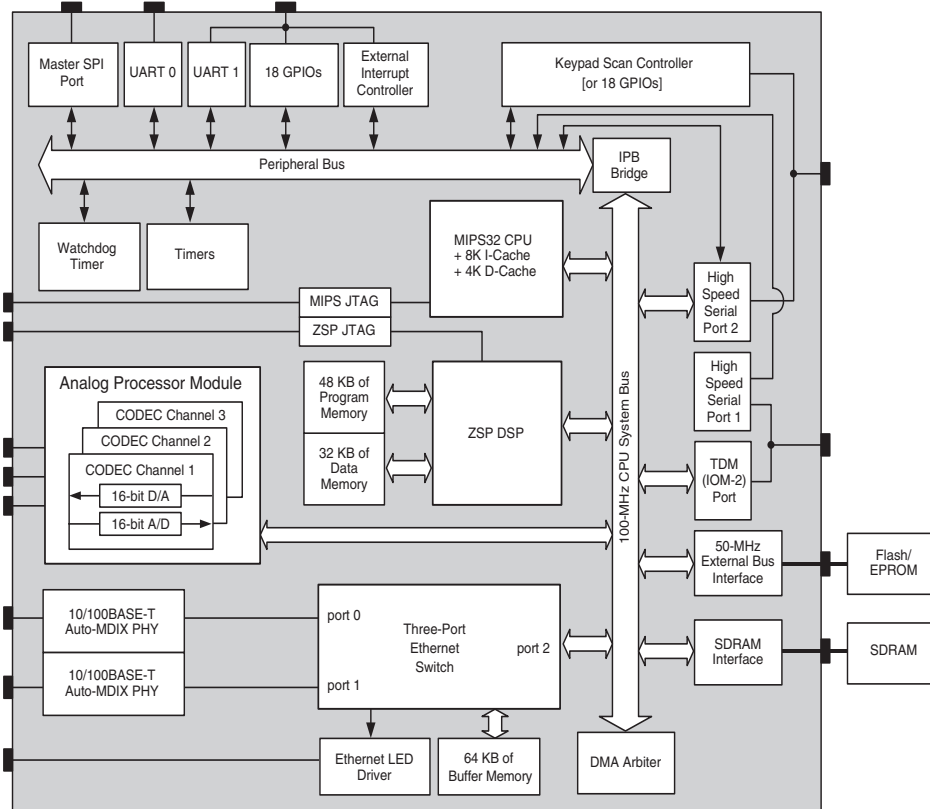
- **10/100BASE-T Ethernet Switch with 802.1p/Q support**
 - 802.1p priority queuing ensures QoS for voice packets and minimizes latency
 - Supports modification of 802.1p priority tags on packets to enforce priority tagging rules
 - 802.1Q VLAN support allows for segmenting physical networks into multiple logical networks
 - MIPS32 CPU not burdened by data packet processing, leaving more cycles for application program
 - Enables wire-speed non-blocking operation
 - Blocks unnecessary traffic by learning local MAC addresses
 - Segments network, preventing any restriction on number of hops
- **87.5-MHz MIPS32 CPU and 108-MHz DSP Support**
 - VxWorks Operating System
 - SIP, H.323, H.248/Megaco, and MGCP
 - G.711, G.726, G.729A/AB/E, G.723.1/A, G.728, G.722.1 and BroadVoice[®]
 - Full-duplex speakerphone operation
 - Handset echo suppression
 - Two- and three-channel conferencing using complex vocoders
 - Enhanced Packet Loss Concealment
 - Paging (via a G.711 channel)
 - User application software
- **10/100BASE-T Ethernet MACs and PHYs**
 - Integrates support for Cisco in-line power specification
 - Compliant with 802.3af power over Ethernet standard
 - Provides auto-MDI/MDIX, enabling the use of straight or crossover cables in either port
- **Wideband audio CODECs**
 - Enables support of emerging wideband vocoding standards

HARDWARE PLATFORMS

- **BCM91101 reference platform**
 - Ethernet IP phone reference platform for midrange IP Phones designs

OVERVIEW

BCM1113 VoIP Ethernet CPE Engine



The Broadcom BCM1113 is a highly integrated IC targeted for the mid-range Enterprise Voice-over IP market.

Key modules integrated in the BCM1113 include:

- MIPS32 87.5-MHz processor with 8K 2-way set associative I-cache and a 4K 2-way associative D-cache. This MCU supports the VoIP protocol stacks, jitter buffer management, and application program. Programming is done in C, on top of Broadcom's object-oriented signal processing API.
- ZSP 108-MHz DSP with 48-KB instruction and 32-KB data RAM. The DSP supports a wide range of vocoders, acoustic echo cancellation for full-duplex speakerphone, fax modems, and a variety of telephony algorithms (e.g., DTMF and Call Progress Tones).
- Analog codecs. Three ADCs and DACs are integrated, eliminating the need for an analog switch to allow the sharing of a codec between multiple interfaces.

- 10/100BASE-T Ethernet switch, media access controllers, and transceivers. The three-port Ethernet switch integrates three full-duplex capable Media Access Controllers (MACs), a serial management port, an address resolution engine, a non-blocking switch controller, 64K of internal switch memory, 802.1p prioritization for voice packets, 802.1Q VLAN support for segmenting physical networks into multiple logical networks, and a set of Management Information Base (MIB) statistics registers. The two transceivers perform all of the functions for 100BASE-T Ethernet in full- or half-duplex mode over Category (CAT) 5 twisted-pair cable and 10BASE-T Ethernet in full- or half-duplex mode over CAT 3, 4, or 5 twisted-pair cable. They support auto-MDI/MDIX detection to allow the use of any cable type in either port. The transceivers also integrate support for in-line powering over Ethernet.

The BCM1113 integrates all the key silicon components of an Ethernet IP Phone into a single device and is pin and software compatible with the BCM1101. The BCM1113 is suited for SOHO Voice-over IP phone products that require mid-range application feature sets (e.g., basic user applications operating on 2-line character displays) while still requiring the same voice quality and reliability of higher end IP phone products.

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