



ENTERPRISE IP PHONE CHIP

FEATURES

- The BCM1101 is the most highly integrated silicon solution for feature-enhanced Voice over IP enterprise phones.
- The BCM1101 Integrates:
 - 150-MHz MIPS32[®] CPU (165 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.
 - 9x9 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, 0.3–0.8W standby modes.
- 256-pin PBGA package enables four-layer PCB designs.

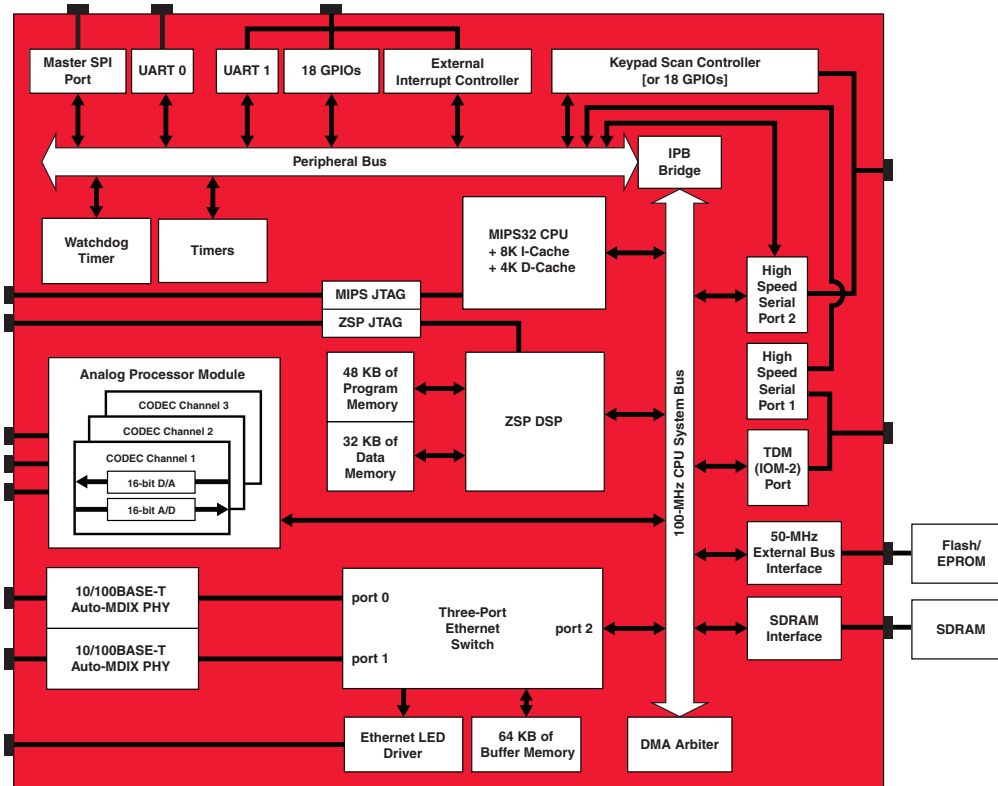
SUMMARY OF BENEFITS

- **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.
- **150-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.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).
 - Advanced user applications.
- **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.
- **BCM91101SP reference platform.**
 - Ethernet IP phone reference platform for feature-enhanced, touch screen IP phone designs.

OVERVIEW



BCM1101 VoIP Ethernet CPE Engine

The Broadcom BCM1101 represents a new level of integration for feature-enhanced Ethernet IP phone products.

Key modules integrated in the BCM1101 include:

- MIPS32 150-MHz processor with 8K two-way set associative I-cache and a 4K two-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 BCM1101 represents the first silicon solution that integrates all the key silicon components of an Ethernet IP Phone into a single device, thereby reducing the overall system cost and complexity of Enterprise IP phone products, while at the same time increasing their voice quality and the reliability of the network to which they are attached.

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