



## GIGABIT IP PHONE CHIP

### FEATURES

- **The BCM1103 is the world's first IP phone chip that incorporates a Gigabit Ethernet (GbE) switch, hardware security, advanced quality of service (QoS) techniques, and increased processing performance in a single chip, enabling full-featured desktop IP phones.**
- **The BCM1103 integrates:**
  - 275-MHz MIPS32® CPU (400 DMIPS).
  - 125-MHz (250 MIPS) ZSP DSP with dual-MAC.
  - Three-port 10/100/1000BASE-T Ethernet switch.
  - Two 10/100/1000BASE-T Ethernet MACs.
  - Two 10/100BASE-T Ethernet transceivers.
  - Two RGMII ports for use with external Gigabit Ethernet transceivers.
  - BroadSAFE™ Hardware Security Module.
  - Two wideband audio ADCs and DACs with integrated programmable gain amplifiers.
  - USB host interface.
  - Touch screen digitizer to support touch screen displays.
  - High-speed UART supporting Bluetooth® UART transport layer protocol.
  - General-purpose UART.
  - Two IrDA encoders and decoders.
  - Keyscan interface.
  - LED matrix control.
  - LED cadence control.
  - General purpose I/O with programmable direction.
  - IEEE 1149.1 (JTAG).
  - DDR SDRAM controller.
  - Multifunction Peripheral Interface supporting PCI, PCMCIA, CardBus, EBI devices.
- **The BCM1103 supports:**
  - NOR and NAND Flash.
  - Serial Flash.
  - DDR SDRAM.
- **0.13u process technology, 1.2/2.5/3.3V.**
- **1.0W peak, 0.15W standby.**
- **420-pin PBGA Pb-free package.**

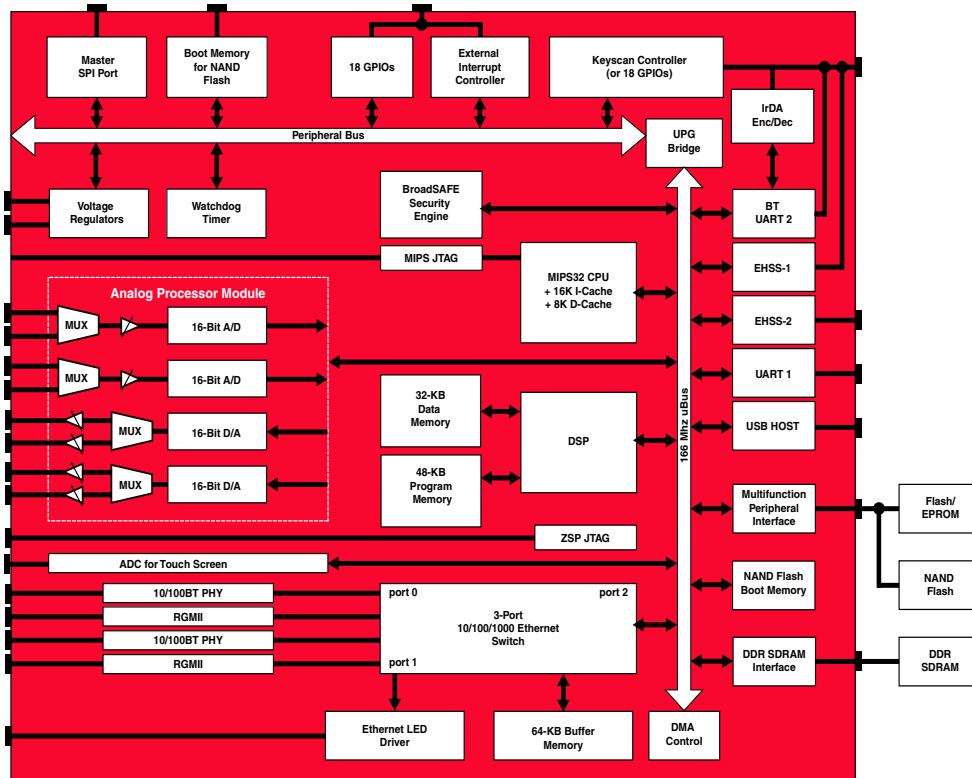
### SUMMARY OF BENEFITS

- **10/100/1000BASE-T Ethernet Switch.**
  - Configurable switch supports both Fast Ethernet and Gigabit Ethernet operation.
  - Supports IEEE 802.1p voice prioritization, 802.1Q VLAN, and 802.1x authentication for advanced Quality of Service.
  - 64-KB switch buffer ensures wire-speed, non-blocking operation.
- **Gigabit Ethernet MACs and RGMII Interfaces.**
  - Enable Gigabit IP phone products through the use of external Gigabit Ethernet transceivers.
- **10/100BASE-T Ethernet MACs and PHYs.**
  - Enables cost effective 10/100 IP phone designs.
  - Compliant with 802.3af power over Ethernet standard.
  - Integrates support for Modified Link Pulse in-line power specification.
- **BroadSAFE™ Security Module.**
  - Hardware acceleration for AES encryption and SHA-1 authentication algorithms.
  - Unique identifier embedded in the device guarantees device authenticity.
- **275-MHz RISC and 125-MHz DSP Support.**
  - Wind River® platform for consumer devices OS.
  - Advanced customer applications (e.g., GUI, web browsing, instant messaging, etc.).
  - Protocol stacks: SIP, H.323, MGCP, Megaco/H.248.
  - Narrowband vocoders: G.711, G.729A/AB, G.723.1, G.726, BroadVoice16™.
  - Wideband vocoders: G.722, G.722.1, BroadVoice32™.
  - Full-duplex speakerphone with AEC and AGC.
  - Handset, headset echo suppression.
  - Broadcom and ITU packet-loss concealment algorithms.
  - VAD, CNG.
  - Multiparty conferencing with complex vocoders.
- **Flexible peripheral interface architecture enables connection to wireless LAN, Bluetooth, and video devices without glue logic.**

### HARDWARE PLATFORM SUPPORT

- **BCM91103SP Gigabit IP reference design includes:**
  - A housing that features a large graphics display.
  - Reduced time to market.
  - PhonexChange™ suite and example application software.

# OVERVIEW



## BCM1103 Block Diagram

The Broadcom BCM1103 IP phone chip enables manufacturers to build IP phones with integrated gigabit Ethernet switching, improved voice quality, hardware security, and advanced graphics-driven applications.

The chip integrates a gigabit Ethernet (10/100/1000 Mbps) switch and two fast Ethernet (10/100 Mbps) transceivers, allowing for the development of traditional fast Ethernet IP phone designs without the additional cost of adding external transceivers. With the addition of external gigabit Ethernet transceivers, manufacturers can easily upgrade their designs to create gigabit Ethernet IP phone models.

The BCM1103 integrates Broadcom's BroadSAFE security technology, which performs voice encryption and authentication and elevates the phone's system security using a unique identifier embedded in each chip that is virtually impossible to decode, hack, or steal. This provides assurance that the identity of each phone in the network is genuine.

The chip's high-performance RISC processor and DSP supports Broadcom's field-proven PhonexChange IP telephony software suite. PhonexChange includes a wide variety of narrowband and wideband

voice coders, including Broadcom's high-fidelity BroadVoice<sup>®</sup> codec, a high-quality full-duplex speakerphone algorithm, advanced jitter buffer management and packet loss concealment techniques, and a complete library of standard telephony algorithms required for IP phone designs. The RISC processor further allows customers to add product-differentiating application software.

The chip integrates a variety of IP phone peripherals including wideband-capable analog codecs (coder/decoder) with integrated amplifiers, IrDA, USB host, and a touch screen digitizer. It also provides flexible interfaces for external peripherals and memory types. This high level of integration reduces the phone's bill of material (BOM) costs and enables phone vendors to build scalable IP phone solutions using a single architecture.

### Associated devices:

- BCM2035 Bluetooth Single-Chip HCI Solution
- BCM5482 dual 10/100/1000BASE-T Gigabit Copper Transceiver
- BCM4318 WLAN

Broadcom<sup>®</sup>, the pulse logo, Connecting everything<sup>®</sup>, the Connecting everything logo, BroadVoice<sup>®</sup>, and BroadSAFE<sup>™</sup> are among the trademarks of Broadcom Corporation and/or its affiliates in the United States, certain other countries and/or the EU. Any other trademarks or trade names mentioned are the property of their respective owners.

Connecting  
everything<sup>®</sup>



**BROADCOM CORPORATION**  
16215 Alton Parkway, P.O. Box 57013  
Irvine, California 92619-7013

© 2006 by BROADCOM CORPORATION. All rights reserved.

1103-PB03-R 03/08/06

Phone: 949-450-8700  
Fax: 949-450-8710  
E-mail: info@broadcom.com  
Web: www.broadcom.com