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BCM1113R
PRODUCT Brief

IP PHONE CHIP

- **The BCM1113R is a highly integrated silicon solution specifically targeted at the cost-sensitive residential, Small Office Home Office (SOHO), and Small-to-Medium sized Business (SMB) market.**
- **The BCM1113R integrates:**
  - 87.5-MHz MIPS32™ CPU (96 DMIPS) with 8K I-cache and 4K D-cache
  - Superscalar 87-MHz ZSP DSP with dual-MAC (174 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)
- **0.18µ process technology, 1.8/3.3V**
- **1.1W peak, 0.3W – 0.8W standby modes**
- **256-pin PBGA package enables 4-layer PCB designs**
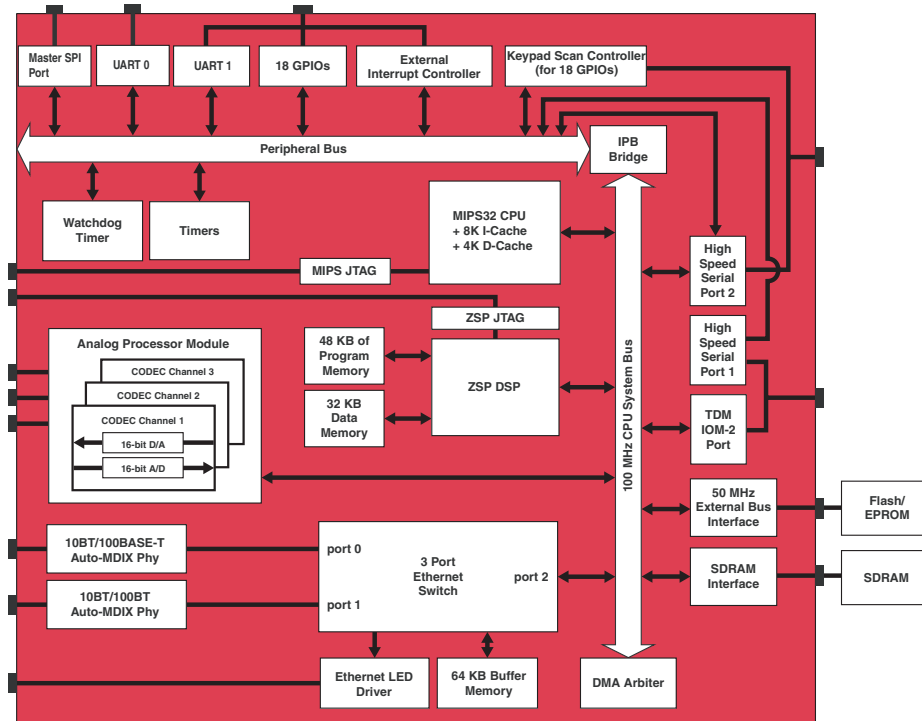- **Pin and software compatible with the BCM1101, BCM1113, BCM1115, and BCM1115R ICs**

- **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 87-MHz DSP Support**
  - VxWorks® Operating System
  - SIP, H.323, H.248/Megaco, and MGCP
  - Narrowband Vocoders: G.711, G.726, G.729A/AB, G.723.1/A and BroadVoice®16
  - Wideband Vocoders: G.722.1 and BroadVoice®32
  - Full-duplex speakerphone operation
  - Handset echo suppression
  - Enhanced Packet Loss Concealment
  - 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

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

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BCM1113R VoIP Ethernet CPE Engine

Broadcom's BCM1113R is a highly integrated IP phone chip specifically targeted at the cost-sensitive consumer equipment market.

Key modules integrated in the BCM1113R include:

- MIPS32 87.5 MHz processor with 8K 2-way set associative I-cache and 4K 2-way associated D-cache. This MCU supports the VoIP protocol stacks, VxWorks operating system, and customer application software. Programming is done in C, on top of Broadcom's object-oriented signal processing API.

- ZSP 87-MHz DSP with 48-KB instruction and 32-KB data RAM. The DSP can support narrowband voice communication using G.711, G.726, G.723.1/A, G.729A, or BroadVoice16, and wideband communications using G.722 or BroadVoice32. Full-duplex speakerphone capability is supported in conjunction with any of these voice compression techniques. The DSP also supports enhanced Packet Loss Concealment, Jitter Buffer, and telephony algorithms.

- Analog codecs: integrated analog CODECs capable of supporting both narrowband 8 Kilohertz (KHz) and wideband 16 KHz sampling, which, in conjunction with wideband voice coders, such as Broadcom's BroadVoice32, will enable IP phone networks to deliver high fidelity voice transmission

- 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 BCM1113R is pin and software compatible with the BCM1101 Enterprise IP phone chip and is suited for IP Phone products that require basic application features sets, while still requiring the same voice quality and reliability of higher end IP phone products.

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