

ENTERPRISE MULTIMEDIA IP COMMUNICATIONS PROCESSOR

FEATURES

- **Processors**
 - 500 MHz ARM1176 with SIMD media and Java® acceleration
 - 333 MHz CEVA TeakLite-III™ DSP with dual-MAC
- **Multimedia Capabilities**
 - Hardware video decode engine
 - 2D graphics engine
 - High-resolution display controller, backlight controller, and touchscreen controller
- **Three-port 10/100/1000BASE-TX Ethernet switch**
 - Programmable packet inspection and DoS protection engines
 - IEEE 802.1p/Q support
 - Jumbo frame support
 - IPv4 and IPv6 packet filtering and frame classification
- **Two 10/100/1000BASE-TX Ethernet MACs and PHYs**
 - Supports automatic power-down green modes
- **Security Engine**
 - Secure boot
 - Hardware cryptographic acceleration
 - Hardware random-number generator
 - Battery-backed, secured SRAM, and real-time clock (RTC)
 - Tamper detection
- **Audio Subsystem**
 - Three super-wideband capable ADCs and two DACs with integrated programmable gain amplifiers
 - I²S, PCM interfaces
- **External Memory Support**
 - DDR2 SDRAM
 - NOR, NAND, and Serial Flash
- **Advanced peripherals**
 - Keyscan
 - LED matrix
 - Peripheral Bus
 - Power-on Reset (POR)
 - SD/SDIO/MMC Host
 - I²C, SPI, high-speed UART
 - Timers
 - Two USB 2.0 configurable high-speed controllers
 - General-purpose I/O with programmable pull-ups/downs
 - Internal voltage regulators
- **Advanced Power Management Module**
- **65 nm process technology**
- **436-pin FBGA Pb-free, halogen-free package**

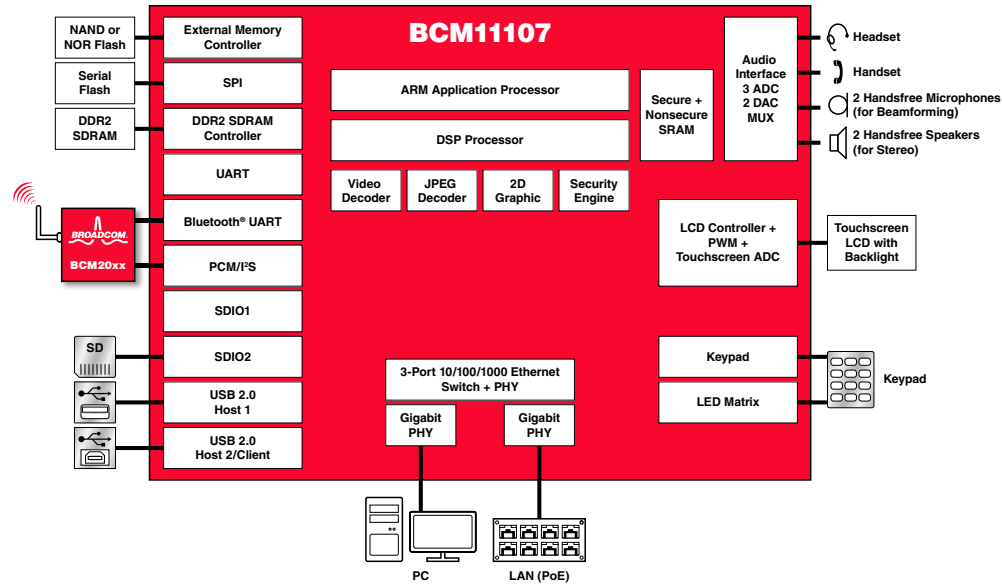
SUMMARY OF BENEFITS

- **Superior SoC Integration**
 - Enables high performance, enterprise-class multimedia terminals leveraging a single-chip solution
 - Enables lower total system Bill of Materials (BOM) costs
 - Reduces system power consumption
 - Integration with PhonexChange™ IP communications software reduces development costs and time-to-market.
- **Realizable low-power green phones**
 - Enables IEEE Class I PoE Fast Ethernet phones
 - Enables IEEE Class II PoE Gigabit Ethernet phones
 - Integrated power management module enables configurable lower power system standby modes.
- **Enhanced User Experience**
 - High performance processor cores enable advanced end user and productivity enhancing applications such as Unified Communications, rich GUI/web browsers, multimedia content
 - Scalable solution enables up to high definition video conferencing via Broadcom® low-power video coprocessor.
- **Enhanced Audio Experience**
 - Integrated support for wideband and super wideband audio technology, enabling high definition voice solutions.
 - Multiple microphone inputs enable advanced audio acoustics.
 - Multiple audio outputs enable stereo speakerphone capabilities.
- **Enhanced Security**
 - Secure signaling and media communications
 - Device and user authentication
- **Robust Ethernet Switching**
 - Wirespeed 10/100/1000BASE-T switching capabilities deliver Gigabit bandwidth to the co-resident desktop PC.
 - Integrated packet inspection and DoS protection engines guard against attacks intended to disable endpoints.
 - Integrated QoS technology supports all types of connections, including voice, video, and multimedia, guaranteeing delivery of time-sensitive packets.
- **Advanced Peripheral Support**
 - Dual USB 2.0 host ports enable external media and devices
 - USB 2.0 device port enables PC connectivity
 - Glueless interface to VideoCore® III coprocessor, Bluetooth®, and Wi-Fi® modules enable low-cost, scalable platforms

HARDWARE PLATFORMS

- **BCM91107SP Reference Design**
 - Multimedia IP phone reference design
- **BCM91107VP Reference Design**
 - Video IP phone reference design

OVERVIEW



BCM1107 Block Diagram

The BCM1107 is the flagship Ethernet Multimedia IP Phone system-on-a-chip (SoC) in the next generation of Broadcom IP communications processors. Designed to meet the needs of large enterprise markets, the BCM1107 enables high-performance, next-generation multimedia-capable Gigabit Ethernet IP phones via a high level of integration, feature-rich applications, an enhanced audio experience, robust Ethernet switching, enhanced security, and advanced peripheral support. Combining the field-proven PhonexChange voice, video, and multimedia firmware optimized for Broadcom's IP communications silicon, the BCM1107 defines a cost and energy-efficient system-on-a-chip.

The chip integrates a Gigabit Ethernet (10/100/1000 Mbps) switch with enhanced packet filtering, QoS, VLAN, security, and Denial of Service (DoS) attack protection and two Gigabit Ethernet (10/100/1000 Mbps) transceivers, allowing for the development of Fast Ethernet or Gigabit IP phone products without the additional cost of adding external transceivers.

The BCM1107 enables a new class of secure IP phone, which requires robust security for media privacy, theft of service prevention, denial of service prevention, secure phone and user identification, secure firmware and data storage, physical intrusion detection, and secure control of debug.

Leveraging integrated, super-wideband ADCs and DACs and Broadcom's High Fidelity SmartAudio[®] voice enhancement technology, the BCM1107 is able to provide the ultimate audio experience. For multimedia applications, output channels can be synchronized to support stereo output. Multiple microphone inputs are leveraged to provide superior spatial-noise performance.

SmartAudio is Broadcom's innovative audio clarity technology that significantly improves audio quality over IP networks. It includes Broadcom's high quality

acoustic echo cancellation algorithm, advanced jitter buffer, packet loss concealment (PLC), beamforming, and high definition voice speech technologies, including Broadcom's high-fidelity BroadVoice[®] codec.

The chip's high-performance ARM processor and DSP support Broadcom's field-proven PhonexChange IP Communications software suite. PhonexChange includes a SIP call-signaling stack, Broadcom's SmartAudio, Multimedia processing module, provisioning, security and graphics software, along with IP phone device drivers, Linux[®] Operating System Board Support Package, and example reference application software. PhonexChange's optional Video, Bluetooth, and Wi-Fi[®] modules further enable IP phone OEMs to design advanced scalable products.

The ARM processor further allows customers to add product-differentiating application software, including leveraging ARM's third-party network and Linux's open source applications and algorithms.

Leveraging the BCM1107's integrated multimedia engine, IP phone OEMs are able to build innovative next-generation products featuring large, high resolution, color touchscreen displays that include video streaming, digital picture frame, and other multimedia applications.

When gluelessly paired to a Broadcom's BCM1181 multimedia processor, IP phone OEMs may create scalable personal telepresence platforms.

The BCM1107 meets the needs of low-power green phones. In addition to low maximum power requirements for IP phone designs, PhonexChange firmware incorporates a power management module to control power features of the IP phone in order to minimize power consumption during low-usage periods.

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