



HIGH-PERFORMANCE VOIP MULTIMEDIA PROCESSOR

FEATURES

- The BCM1180 is a video and multimedia coprocessor that enables advanced Voice over IP desktop phone products.
- The BCM1180 is die-compatible with the BCM2702, the world's most power-efficient and high-performance mobile multimedia processor, and is designed and optimized for video record/playback and video conferencing.
- **Video performance in IP phone applications:**
 - CIF H.262 encode + decode at 24 fps in two-way video call
 - VGA H.264 decode at 24 fps in one-way multimedia and video playback applications
 - VGA MPEG-4 encode + decode at 30 fps with audio
- **Very low power:**
 - MPEG-4 encode from only 10 mW
 - H.264 encode + decode at 24 fps at 215 mW
- NTSC/PAL direct video output
- 8-megapixel JPEG encode and decode
- Ability to process raw Bayer camera data
- 3GP and MP4 file streaming and MMS support
- Multiple format audio recording and playback
- DRM ready
- 64-polyphony MIDI player and music synthesizer
- Onboard USB 1.1
- 1.25 MB of on-chip SRAM
- High-quality graphics acceleration for 3D games

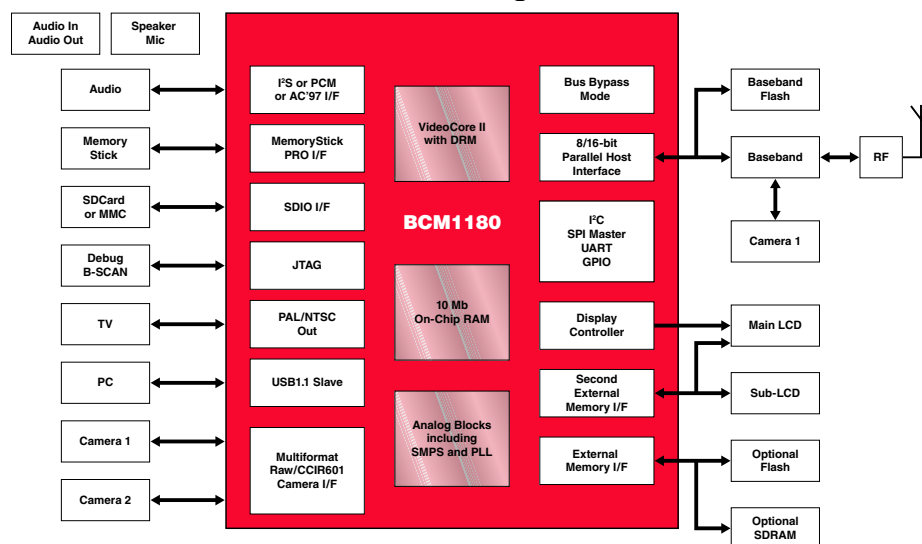
SUMMARY OF BENEFITS

- Based on the new VideoCore® II processing engine, the BCM1180 is software compatible with the established VideoCore® family, allowing rapid development of next-generation products and backward compatibility for applications software.
- Highly integrated solution combining video and audio processing, polyphonic sound synthesis, an LCD controller, and SRAM on a single chip
- Video and multimedia processor for advanced desktop multimedia VoIP products
 - Optimized for enterprise video conferencing, video playback, and multimedia streaming applications
- Fully programmable architecture that enables the full range of multimedia codecs to be implemented in software. This provides total flexibility to the system designer without the costly overhead and time-to-market uncertainty of hardware accelerators.
- Broadcom provides a fully integrated video over IP software suite enabling OEMs to develop video phone products quickly.

HARDWARE PLATFORM SUPPORT

- BCM91103VP Video IP phone reference design:
 - Desktop video phone
 - Supports BCM1103 VoIP and BCM1180 video ICs
 - PhonexChange™ voice and video software and example application software

BCM1180 Block Diagram



OVERVIEW

Specifications

Processor

- 150-MHz dual-ALU VideoCore®II
- 128 Kb instruction and data caches
- 10 Mb of on-chip SRAM

Power Modes

- Run
- Sleep
- Hibernate
- Power-down

Camera Interface

- Programmable 8/16-bit CMOS/CCD camera input port
- Up to 8-megapixel image sensors
- YUV CCIR 601/656
- Raw Bayer RGB format (8/10/12/16-bit data)
- Windowing and subsampling functions
- Can be used to connect to mobile TV front end
- Supports two image sensors

External Memory/Card Interfaces

- High-speed memory interface (connection to SDRAM, SRAM, Flash and external peripherals)
- Secondary memory interface (e.g., for connection to memory-mapped LCD and external peripherals)
- MemoryStick PRO
- SD, MMC, and SDIO
- Support for NAND/NOR Flash including NAND boot
- High speed DMA

LCD Controller & Interface

- Support for multiple displays up to XGA resolution
- Up to 24-bit internal precision (16M colors)
- 8/9/16/18/21-bit video
- RGB external data bus
- Scalable image output with pixel level interpolation
- Configurable refresh rate
- PAL/NTSC analogue TV output as S-Video or Composite
- Macrovision support

Host/Baseband Interface

- Appears as memory-mapped peripheral to host
- Programmable industry-standard interfaces
- 3-bit address and 8/16-bit data bus
- Dual software channel
- Power-efficient bypass mode

Serial Interfaces

- USB 1.1 slave
- I²C master
- SPI master
- UART for Bluetooth, IrDA

DRM

- DRM-capable
- Unique chip ID code
- Encrypted code with freely programmable key
- CPRM encryption for SD card, AES, 3DES, RSA, etc.

General Purpose and Debug Interfaces

- 52 pins of GPIO
- JTAG and emulation interface
- Boundary scan

Technology

- 340-pin PBGA package (23 mm x 23 mm)
- 0.13 micron CMOS

Audio Interfaces

- AC '97
- I²S
- PCM audio

Clock and Power Management

- On-chip SMPS controller
- Four power modes: Run, Sleep, Hibernate, and Power-Down
- 0.8V - 1.2V core operation and 0.6V in hibernation mode
- Programmable I/O 1.5V - 2.8V
- Bypass mode allows host access to memory-mapped peripherals with BCM1180 in power-down.
- Clock manager: 3 PLLs generate 195-KHz – 200-MHz clocks for external devices.

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1180-PB00-R 05/02/07

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