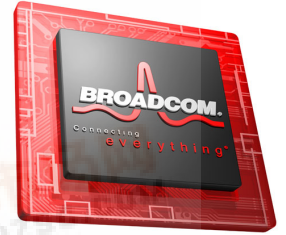# BROADCOM
Connecting
e v e r y t h i n g®

BCM2702
PRODUCT Brief

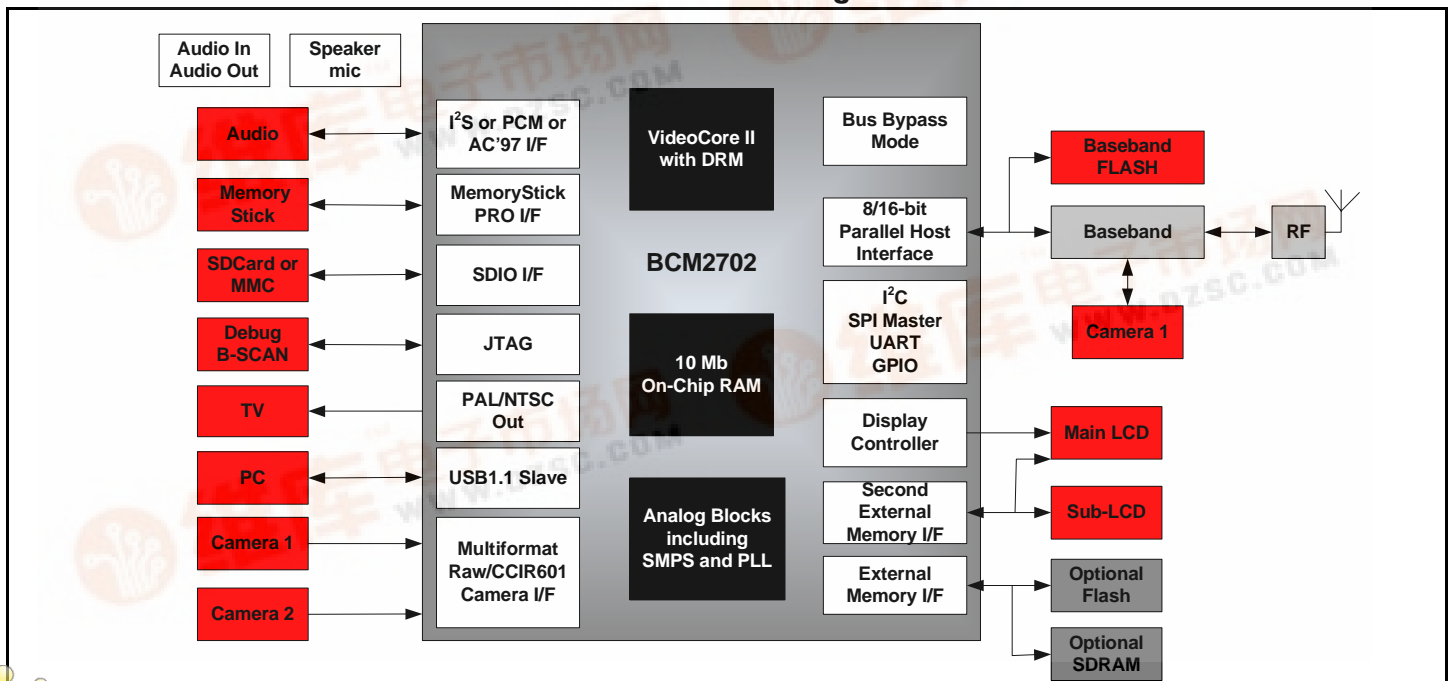# HIGH-PERFORMANCE MOBILE MULTIMEDIA PROCESSOR

FEATURES

- **Very Low Power**
  - MPEG-4 encode from only 10 mW
  - CIF MPEG-4 encode @ 30fps: only 38mW including audio
- **NTSC/PAL direct video output**
- **VGA MPEG-4 encode/decode at 30 fps with audio**
- **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**
- **On-board USB 1.1**
- **1.25 MB of on-chip SRAM**
- **High-quality graphics acceleration for 3D games**
- **SD, MMC, SDIO and MemoryStick interfaces**
- **100% programmable**

SUMMARY OF BENEFITS

- Based on the new VideoCore®II processing engine, the BCM2702 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 handheld multimedia products.
  - Designed and optimized for video record/playback, mobile TV, and 3D mobile gaming at extremely low power.
- Fully programmable architecture which 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 all the necessary middleware and services for rapid and seamless integration with a host processor, as well as a complete development kit with a fully featured toolchain for rapid development of applications.

BCM2702 Block Diagram

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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
- I^2C 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

- 281-pin TFBGA package (10.9mm x 10.1mm)
- 0.13 micron CMOS

Audio Interfaces

- AC '97
- I^2S
- 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 BCM2702 in Power-Down
- Clock manager: 3 PLLs generate 195-KHz – 200-MHz clocks for external devices

Connecting
everything®

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