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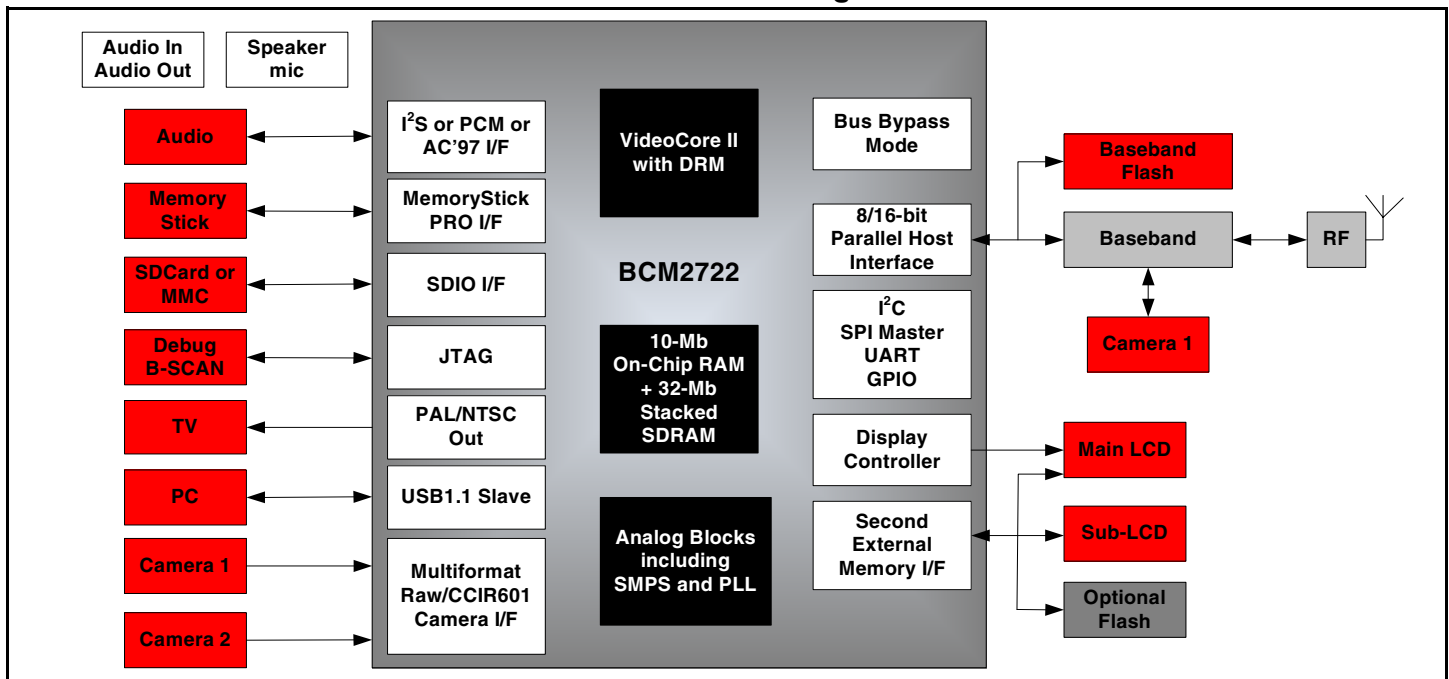
BCM2722
PRODUCT Brief

HIGH-PERFORMANCE MOBILE MULTIMEDIA PROCESSOR

FEATURES

- **Very low power**
  - MPEG-4 encode from only 10 mW
  - CIF MPEG-4 encode @ 30 fps: only 38 mW including audio
- **NTSC/PAL direct video output**
- **VGA MPEG-4 encode/decode at 30 fps with audio**
- **2-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-chip USB 1.1**
- **1.25-MB SRAM + 4-MB SDRAM**
- **High-quality graphics acceleration for 3D games**
- **SD, MMC, SDIO, and Memory Stick® interfaces**
- **100% programmable**

SUMMARY OF BENEFITS

- **Based on the VideoCore®II processing engine, the BCM2722 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 and stacked SDRAM 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.**

BCM2722 Block Diagram

Specifications

Processor
- 150-MHz dual-ALU VideoCore II
- 128-Kbit instruction and data caches
- 10 Mbits of on-chip SRAM + 32-Mbit stacked SDRAM

Power Modes
- Run
- Sleep
- Hibernate
- Power-down

Camera Interface
- Programmable 8/16-bit CMOS/CCD camera input port
- Up to 2-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
- Secondary memory interface (e.g., for connection to memory-mapped LCD, flash, and external peripherals)
- Memory Stick PRO™
- SD, MMC, and SDIO
- Support for NAND/NOR flash including NAND boot
- High-speed DMA

LCD Controller and 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 analog 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 (10.9 mm x 10.1 mm)
- 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 BCM2722 in power-down.
- Clock manager: 3 PLLs generate precision clocks up to 200 MHz for external devices.

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