

Host Controller

**ARM7-based SoC With Digital Docking,  
Media File Decoding, And Host Control**

**Features**

- ✓ ARM7 TDMI-based SoC
  - Up to 132MHz operating frequency
  - 8kB instruction and data unified cache
- ✓ Memory Controller
  - Supports 8-bit data bus width for SRAM interface
  - Supports 1/2/4-bit serial flash interface
  - Supports 16-bit data bus width for SDR interface
  - SDRAM usage
    - 16Mbit SDRAM x 1/2 (2/4-bank)
    - 64Mbit SDRAM x 1 (4-bank)
- ✓ On-chip USB host controller + USB PHY
  - USB 1.1 specification full-speed compatible
  - Adaptive isochronous transfer for playback
- ✓ iPod/iPhone/iPad digital docking
  - Synchronous digital audio streaming via USB
  - Supporting accessory protocol specification
  - Fully-programmable SW stack for additional functionality
- ✓ Audio Streaming interface
  - USB streaming audio input
  - Stereo serial audio (I<sup>2</sup>S) input/output
  - S/PDIF output
- ✓ Media file decoding
  - On-chip DSP for decoding encoded media file
  - MPEG 1/2/2.5, Layer 2/3 audio data decoding (MP3), WMA, AAC decoding
  - USB thumb drive file system
- ✓ On-chip peripheral:
  - SPI, I<sup>2</sup>C, UART, JTAG interface, GPIOs
  - 14-bit ADC for key input/ encoder switch
  - IR remote controller interface
  - Real-time clock / Watchdog Timer
- ✓ Host processor
  - Interface to any slave device like PWM, DSP, ADC, etc.
  - SW framework supporting any user interface including key input, encoder switch, and display
- ✓ Remote firmware update capability over USB thumb drive
- ✓ Package: 128-pin QFP

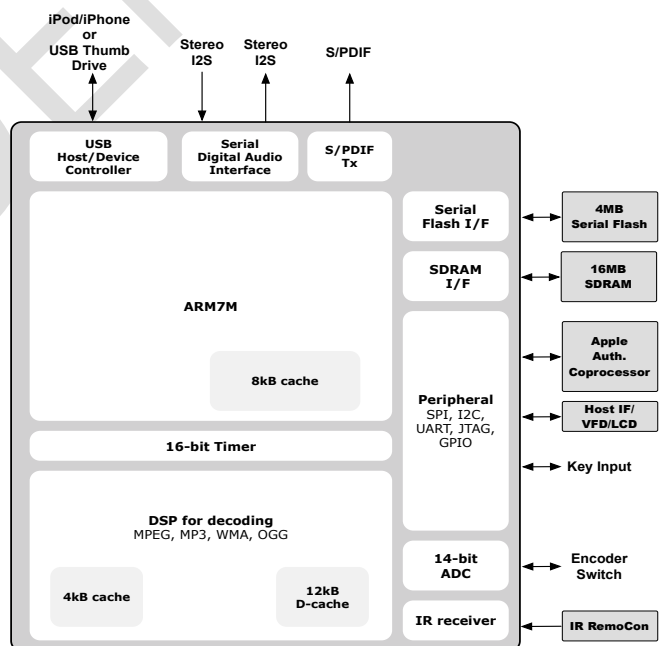
**Applications**

- ✓ Digital docking system
- ✓ Media file decoder
- ✓ Host processor for generic audio system

**Advantages**

- ✓ iPod/iPhone/iPad digital docking
- ✓ Powerful ARM-based core processor
- ✓ Value-added functionality supporting USB thumb drive, media decoding and Bluetooth
- ✓ User-friendly remote firmware update capability
- ✓ Lower BOM: No additional MICOM or USB controller and USB PHY are required

**Block Diagram**



**Description**

The PS6141 is a highly integrated system-on-chip solution to provide a low power and high performance digital audio applications. Its low power and static design is suitable for power-sensitive applications. It implements digital audio streaming from iPod/iPhone/iPad over USB with TDMA-free digital transmission guaranteed. To reduce total system cost, the PS6141 integrates the following functions: a ARM7-based control CPU with 8kB instruction/data caches, an advanced 24-bit DSP coprocessor, SDRAM/ Serial Flash controller, USB host controller and PHY, I<sup>2</sup>S, S/PDIF, I2C, SPI, UART, and IR receiver, ADC and GPIO for generic user control interfaces. The ARM7TDMI core within the ARM7M executes both the 32-bit ARM and 16-bit Thumb instruction sets, allowing the user to trade off between high performance and high code density.