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# Samsung S3C6410 Mobile Processor

POWERING ADVANCED PERSONAL NAVIGATION DEVICES  
AND SMARTPHONES RUNNING DEMANDING 3D APPLICATIONS

The 65nm S3C6410 reduces power requirements and also includes interfaces for low-power memory while supporting DVFS. The processor's capabilities enable on-screen, hardware-accelerated 3D graphics.

## Unequalled Graphics Performance with Low Power Requirements

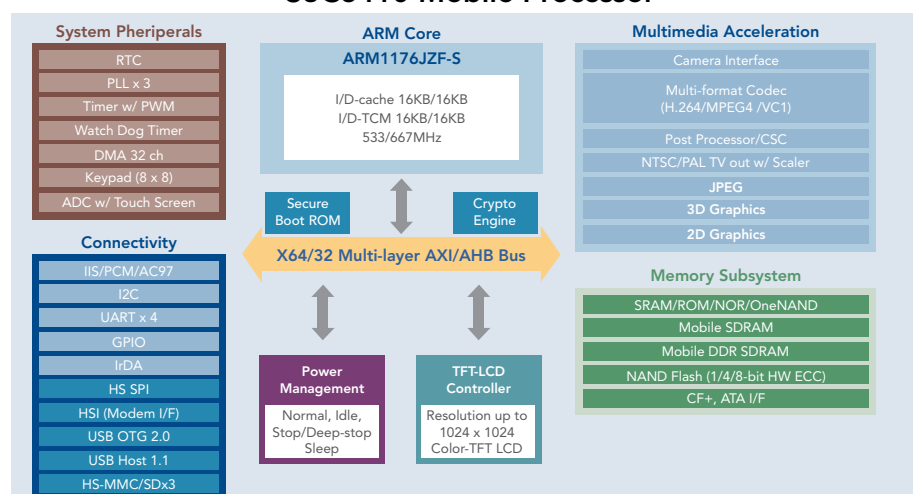
The Samsung S3C6410 mobile processor gives designers an unbeatable combination of 3D performance and low power in a cost-effective package. This 32-bit ARM11 RISC microprocessor with AXI 64-bit bus delivers up to 667MHz of processing performance. With its 3D hardware accelerator—handling 4 million polygons/second—it can power next-generation handhelds, such as mobile Internet devices and 3D UI-enhanced multimedia phones, as well as Personal Navigation Devices that display detailed images like buildings and landmarks.

This sophisticated processor enables the integration of various functions – wireless communication, navigation, camera, gaming,

music/video playing, mobile TV and PDA applications – into one device. An integrated Multi-Format Codec allows SD-quality video capture and playback at 30 frames/second as well as real-time video conferencing, with support of 5.1-channel Dolby sound. However, the S3C6410 also extends battery life because it was built using Samsung's 65nm low-power process.

Samsung's memory leadership is an advantage in giving the processor many options to handle the demanding memory bandwidths of high-end communications services. Memory support includes dual DRAM and flash/ROM external memory ports for parallel access. The DRAM port can support mobile DDR, standard SDRAM or integrated OneDRAM™ memory while the flash/ROM port supports NAND flash, NOR flash, OneNAND™ and ROM.

## S3C6410 Mobile Processor



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With its breakthrough 3D graphics capabilities and cost-effective price point, the Samsung S3C6410 is an ideal solution for next-generation handhelds such as PNDs that can display detailed images like buildings and landmarks.



## Enables Broad Feature Sets and Small Device Designs

The Samsung S3C6410 is one of the highest-performance mobile processors available today. Along with its speed, 2D/3D multimedia capabilities and rich memory support, it offers the industry's broadest set of on-chip peripheral interfaces, including TFT-LCD 24-bit true-color controller, system manager for power management, 32-channel DMA, 4-channel timers and 12-bit ADC for touch-screen applications. All the major high-level operating systems are accommodated. The new processor is both pin and software compatible with the S3C6400 and S3C6430, facilitating development of a tiered product family from a single platform. For extremely small device designs, the Samsung S3C6410 is available in a Package-on-Package configuration.

## Samsung S3C6410 Key Features

- ARM1176ZJF 533/667MHz VFP/SIMD
- 65nm low-power process
- DVFS power management
- Dedicated x32 mDDR/DDR, x32 mSDR/SDR
- WVGA or higher display resolution
- Hard-wired 3D GFX accelerator
  - 4M triangles/second
  - OpenGL ES 1.1/2.0

- Hard-wired multimedia (>WVGA)
  - MPEG-4 SP codec: SD/D1 >30fps
  - H.264/263 BP codec: SD/D1 >30fps
  - VC-1 (WMV9) decoder: SD/D1 >30fps
  - JPEG/2D hardware
  - Hardware rotator & post processor
  - TV-out (DAC + image enhancer)
- 32-channel DMA
- Security hardware: DES/3DES, AES, SHA-1
- High-speed connectivity
  - UART interfacing BT EDR 2.0 up to 3Mbps
  - High-speed SPI, 50Mbps for mobile TV
  - USB 2.0 OTG
  - High-speed MMC 8-bit 50MHz MMC+/eMMC
  - SDHC 4-bit 50MHz for high-density SD cards/iNAND 2.0 and WiFi 802.11a/b/g
  - I2S for 5.1-channel Dolby and stereo audio
- BOM cost savings by integrating:
  - USB host 1.1/USB 2.0 OTG PHYs
  - 12-bit ADC with TS + built-in FETs
  - Direct boot/NAND FS for NAND SLC/MLC, moviNAND, iNAND, OneNAND
  - TV-out DAC integration
  - Built-in keypad controller
- Pin compatible with S3C6400 & S3C6430
- Package: 424 pins, 13x13, 0.5mm pitch FBGA

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