Samsung S3C2460

Mobile communication oriented Application processor for PDA/Smart Phone and application with multimedia function
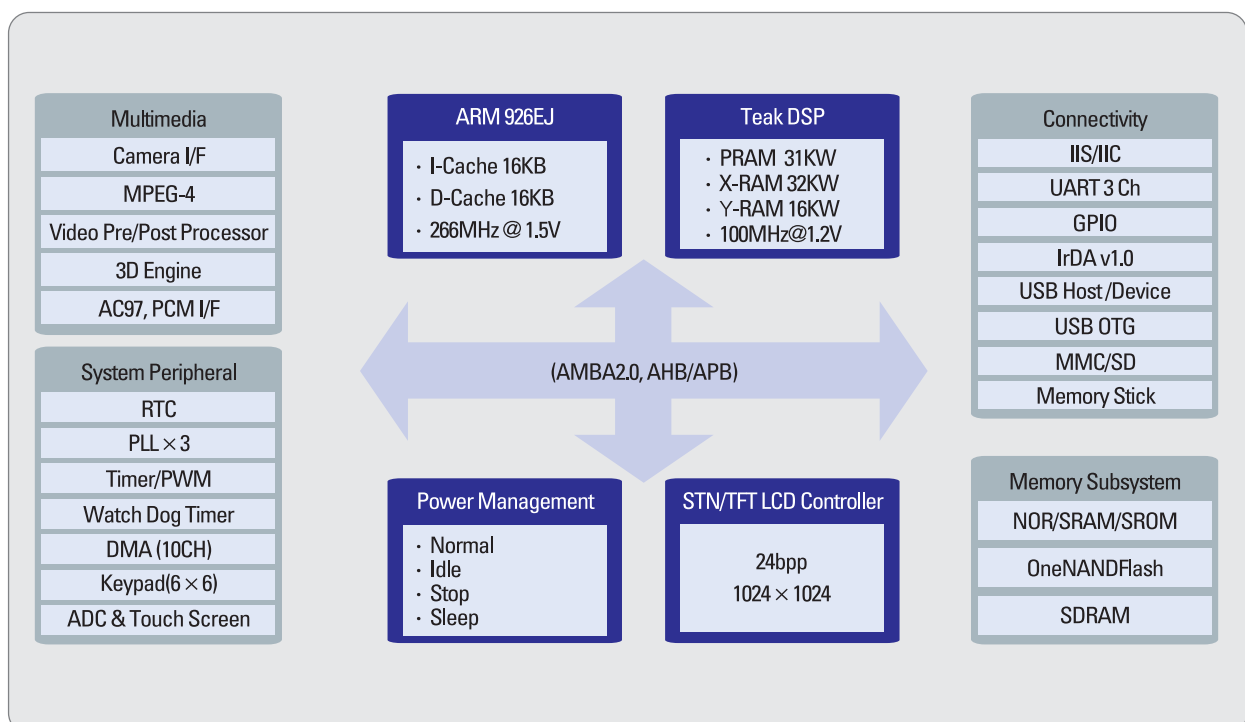
Product Brief

S3C2460 is a 16/32-bit RISC microprocessor, which is designed to provide a cost-effective, low-power, high-performance microcontroller solution for mobile phones and general applications. S3C2460 provides optimized H/W performance for 2.5G and 3G communication services, and adopts a dual 32-bit internal bus architecture which includes many powerful hardware accelerators for tasks such as motion video processing, audio processing, display manipulation and scaling. An integrated MPEG-4 H/W Encoder/Decoder supports real time video conferencing.

S3C2460 has an optimized interface to external memory capable of sustaining the demanding memory bandwidth required by high-end communication services. There is also a memory port to support external NAND flash. Internal NAND boot circuitry allows the S3C2460 to efficiently interface to an external NAND flash memory chip providing a cost-effective code storage solution.

To reduce the total system cost and enhance overall functionality, the S3C2460 includes many hardware peripherals such as Camera Interface, AC97 Codec Interface, TFT Color LCD Controller, System Manager (i.e. power management, etc.), 3-ch UARTs, 4-ch DMAs, 4-ch Timers, IrDA (FIR), SPI Interface, Modem Interface, General Purpose I/O Ports, IIC & IIS BUS Interface, USB Host & Device, 4-bit SD Host & Multimedia Card Interface, Memory Stick Interface and PLLs for clock generation.

S3C2460 has a CPU core, which has a 16/32-bit ARM926EJ-S RISC processor designed by Advanced RISC Machines, Ltd.. ARM926EJ-S is a single chip MCU, DSP and Java enabled microprocessor. The ARM926EJ-S also implements an MMU, AMBA BUS, and Harvard cache architecture with a separate 16KB instruction and 16KB data cache.

Block Diagram

Multimedia
Camera I/F
MPEG-4
Video Pre/Post Processor
3D Engine
AC97, PCM I/F

System Peripheral
RTC
PLL × 3
Timer/PWM
Watch Dog Timer
DMA (10CH)
Keypad(6 × 6)
ADC & Touch Screen

ARM 926EJ
- I-Cache 16KB
- D-Cache 16KB
- 266MHz @ 1.5V

Teak DSP
- PRAM 31KW
- X-RAM 32KW
- Y-RAM 16KW
- 100MHz@1.2V

(AMBA2.0, AHB/APB)

Power Management
- Normal
- Idle
- Stop
- Sleep

STN/TFT LCD Controller

24bpp
1024 × 1024

Connectivity
IIS/IIC
UART 3 Ch
GPIO
IrDA v1.0
USB Host /Device
USB OTG
MMC/SD
Memory Stick

Memory Subsystem
NOR/SRAM/SROM
OneNANDFlash
SDRAM

Feature

◆ ARM926EJ-S CPU Core
- 64-way set-associative cache with
- - I-Cache(16KB) and D-Cache(16KB)
- Write through or write back cache operation
- ARM Jazzelle JAVA Technology Embedded
- VFP9-vector floating point coprocessor
- U MMU supports WinCE, Windows Mobile, Linux, and Symbian OS

◆ Teak based DSP Subsystem
- Industry standard 16-bit fixed point Teak DSP core
- 32KW Program memory
- 32KW X-data memory
- 16KW Y-data memory
- Simultaneous DSP memory access by DSP subsystem and ARM-AHB subsystem

◆ System Manager
- Address space : 512MB
- Little Endian Support
- NOR/Strata Flash, ROM, SRAM, DDR/mDDR, and SDRAM/mSDRAM
- NAND Flash Bootloader

◆ Operating Conditions
- Internal : 1.5V
- External I/O : 2.3 ~ 3.6V
- Speed : 266MHz @ 1.5V
- Memory : 1.8/2.5/3.0/3.3V

◆ Package
- 416 FBGA 13 x 13

◆ On-chip Peripherals
- Power management: Normal, Idle, Power-off
- Modem Interface
- 4-ch DMA
- 10bit 8-ch ADC including TSP Controller
- Watch Dog Timer
- 4-ch Timer
- 3-ch UART
- I2C Interface
- I2S Interface
- 154 GPIO ports
- SPI Interface
- TFT LCD I/F, OSD, YUV to RGB, Scalar
- Hardware Acceleration of JPEG Encode/Decode
- USB Host (2 Ports)/Device
- SD Host (4-bit SDIO support)/MMC V2.11
- Memory Stick Host Controller
- Camera Interface
  - Max. 4096 x 4096 pixels input supported
  - 2048 x 2048 pixels input supported for scaling
- AC97 Audio Codec Interface
- PCM Signal Audio Interface
- MPEG-4 Subsystem
  - Realtime MPEG-4 Video Encoding & Decoding
  - ME (Motion Estimation)/MC (Motion Compensation)
  - DCT/IDCT/Q/IQ operations
  - VLC/VLD operations
  - Post Processor
- 3D Graphic Accelerator
  - Based on ARM MBX-RS graphics accelerator
  - 1M triangles per second
  - 32-bit Z-buffer
  - Flat and Gouraud Shading
  - Deferred texture
  - Perspective correct texturing
  - Specular highlights
  - Per vertex fog
  - Full range of OpenGL and Direct3D blend modes

Benefits

- JAVA enabled Dual core(ARM/Teak DSP) microprocessor
- Low power and high performance MPEG-4 Encoder/Decoder, 3D accelerator
- Modem Interface
- Built-in NAND Flash Boot loader,
- Various Embedded IPs

Key Applications

- PDA/Smart Phone
- Mobile TV Phone/Terminal
- Car Navigation
- Portable Game Player