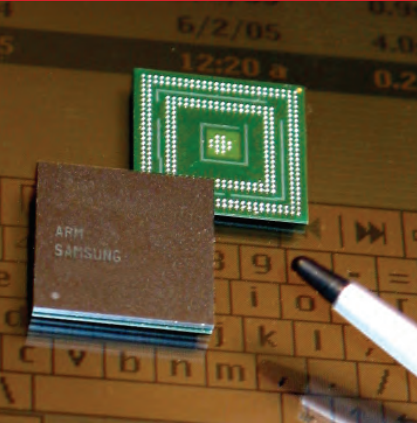# Samsung SC32442 MSP

NEXT-GENERATION PoP SOLUTION FOR SMARTPHONES

By using NAND flash, the SC32442 MSP supports smartphone and handheld designers who are looking for a high-density, non-volatile storage solution for the OS image and MP3, imaging and video files.

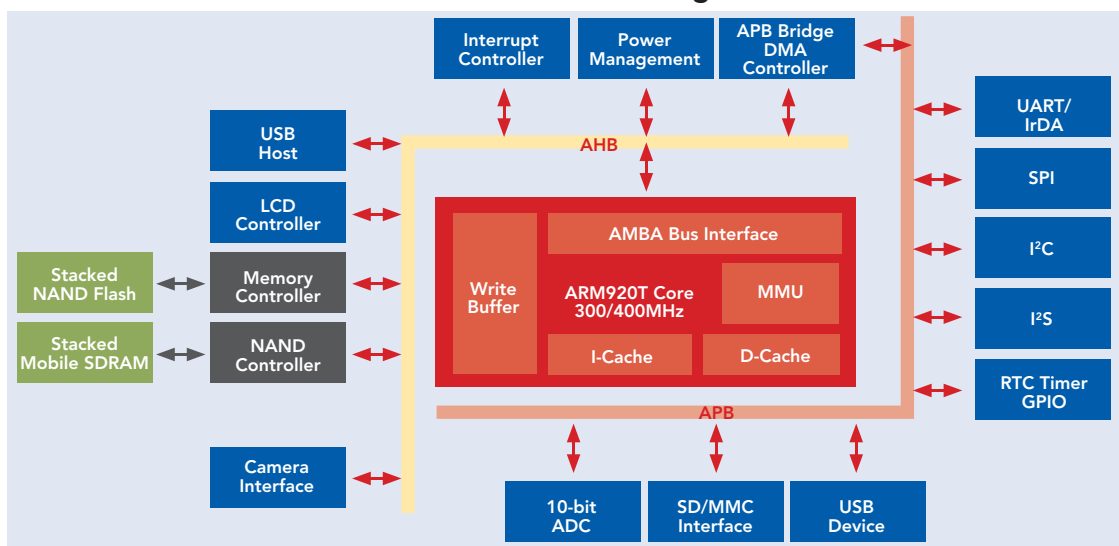## High-performance, Low-power Integrated Processor/Flash/SDRAM

As the race continues to create ever-smaller smartphones and handheld devices with superior functionality, Package-on-Package (PoP) technology is increasingly the choice of demanding designers. With its new SC32442 MSP device, Samsung has utilized its sub-micron design and packaging skills to produce the first PoP configuration of its kind.

This 14x14mm device integrates a powerful ARM® processor with a NAND flash and mobile SDRAM MCP, reducing board real estate by 60% compared to discrete components. Another advantage of the SC32442 MSP's compact design and small footprint is reduced routing on the PCB and reduced EMI.

Samsung's advanced PoP device helps designers eliminate extra parts and lower BOM costs. For example, the device's mobile application processor has a NAND controller, which gives the designer the option of eliminating expensive NOR flash. In addition, the processor includes a comprehensive set of system peripherals, saving designers the time spent to configure additional logic components.

Samsung manufactures all the components in the device -- the mobile processors, DRAM and flash -- giving customers the advantage of its superior expertise and technologies. The SC32442 MSP is the ideal solution for creating smaller, thinner, higher-performance handhelds with long battery life. These include the latest smartphones and other multi-function handhelds.

SC32442 MSP Block Diagram

SC32442 MSP
Key Benefits

- Highly integrated design reduces board real estate 60%

- Powerful 300MHz or 400MHz ARM core

- Power Gating Technology for low leakage, fast wake-up

- Use of smaller batteries allows streamlined designs

- Simplified routing, reduced EMI

- NAND Flash Bootloader; no need for NOR flash

- Support of mobile operating systems

- Includes comprehensive set of system peripheral interfaces

Technology Delivers High Performance, Low Leakage & Fast Wake-up

Leakage current is an important issue for designers of high-performance handhelds. Samsung's advanced Power Gating Technology gives the SC32442 MSP best-of-both-worlds capabilities. Its powerful processor can also deliver fast wake-up times and low power leakage. Usually, high-megahertz processors have no power mode to save state at low leakage. However, Samsung's new PoP device allows a high-performance handset to wake up in under 0.6 milliseconds while leakage current in idle mode is reduced by up to 90%. And since low leakage reduces power consumption, designers can create more compact, streamlined handhelds because smaller batteries can be used.

OS Support for Multi-function Handhelds

Samsung's SC32442 MSP supports key operating environments in broad use today, including Microsoft Windows Mobile, Linux, Palm OS and Symbian. The size and many performance advantages of this new PoP device make it optimal for a range of handhelds, particularly smartphones, PDA/phones, advanced wireless PDAs, game terminals and other mobile devices.

Key Features

ARM920T CPU Core (300/400MHz)
- 64-way set-associative cache with 16KB I-Cache & 16KB D-Cache
- MMU

Memory Organization
- NAND Flash, 1.8v
- Mobile SDRAM, 1.8v, 100/133MHz
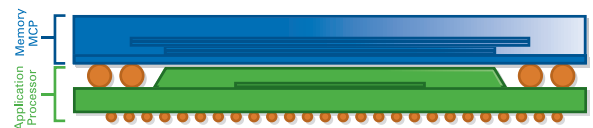
On-chip Peripherals
- NAND Flash Bootloader/Controller
- LCD Controller
- Camera Interface
- USB Host/Device Interface
- DMA Controllers
- UARTs
- Multi-master I^2C-Bus Interface
- I^2S-Bus Interface for audio
- 16-bit PWMs and 16-bit Timer for OS
- 130 multiplexed GPIO ports
- 8-channel 10-bit ADCs and Touchscreen Interface
- 16-bit Watchdog Timer
- RTC
- On-chip Clock Generator with PLL
- 2-channel SPIs (Synchronous Serial I/O)
- SD Host & MMC Interface v1.1

Package
- 332 FBGA (14x14mm)

Configurations

- Processor + 32MB mobile SDRAM + 64MB NAND Flash
- Processor + 32MB mobile SDRAM + 128MB NAND Flash
- Processor + 64MB mobile SDRAM + 128MB NAND Flash
- Processor + 64MB mobile SDRAM + 256MB NAND Flash

The SC32442 MSP stacks an ARM processor with NAND flash and mobile SDRAM MCP.