Renesas Technology Releases SH-MobileJ3 Application Processor for Mid-Range Mobile Phone Models

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Four-megapixel camera support plus on-chip MPEG-4 and JPEG processing hardware accelerators, allowing implementation of a wide variety of multimedia functions

Renesas Technology Corp. today announced the SH-MobileJ3 (product name: SH7326) featuring 4-megapixel camera support and on-chip image processing hardware accelerators as a new model in the SH-Mobile Series of mobile phone application processors, for use in mid-range mobile phone system models. Sample shipments will begin in Japan in May 2005.

The SH-MobileJ3 is an SiP (System in Package) product offering enhanced image processing functions compared with Renesas Technology's current SH-MobileJ2 for mid-range mobile phone models, and incorporating 128-Mbit SDRAM. This new application processor offers excellent cost-performance with the inclusion of the following features.

(1) Four-megapixel camera interfaces and advanced image processing functions

The SH-MobileJ3 supports 4 megapixels as compared with the 2 megapixels of the current SH-MobileJ2, as well as two camera interfaces instead of one. Major image processing enhancements include the

provision of an MPEG-4 full hardware accelerator with 30 fps (frame per second) decoding processing capability for a QVGA-size display, and a JPEG hardware accelerator that has been field-proven in digital still camera chips. These features enable fast, high-quality, high-functionality image processing to be implemented at low power consumption.

(2) High-performance CPU core and on-chip functions suited to next-generation mid-range mobile phone models

The SH-MobileJ3 features a high-performance 32-bit SH3-DSP CPU core with a maximum operating frequency of 133 MHz, as well as an increase in on-chip SRAM capacity for high-speed work memory use from the 32 Kbytes of the SH-MobileJ2 to 128 Kbytes, for smoother application operation. Peripheral functions suited to next-generation mid-range models have also been added. The inclusion of such features as a TFT color liquid crystal panel compatible LCD controller and video output unit, an IrDA interface for infrared communications, and USB2.0 Function (Full Speed) support facilitates the implementation of a wide variety of next-generation mid-range model functions.

Product Background

As the range of mobile phone applications has expanded greatly to include games, camera functions, and so forth, mobile phone systems have become more complex and development times and costs have also increased. In response to this problem, Renesas Technology introduced the SH-Mobile Series specifically for application processing use and offers system development solutions.

The SH-Mobile Series offers a lineup of different products for high-end, mid-range, and popular mobile phone models, with products being developed to keep pace with advances in the mobile phone market. With

next-generation mid-range mobile phones expected to include features equivalent to those of current high-end models, Renesas Technology is now releasing the SH-MobileJ3, based on technologies and functions developed for high-end models, featuring enhancements of the image processing functions of the current SH-MobileJ2 for mid-range model use.

Product Details

An SH-Mobile Series processor is connected to the baseband LSI of a mobile phone system and performs dedicated voice, image, or similar multimedia application processing. Dedicated interfaces allow connection to baseband LSIs of various systems, and the provision of such features as on-chip accelerator functions and extension interfaces, as well as a power management system specifically for mobile phone use, make it possible to customize mobile phones and achieve a market edge.

The SH-MobileJ3 is the successor of the current SH-MobileJ2 for mid-range mobile phone models, and offers enhancements of major image processing functions.

The number of camera interfaces has been increased to two, upgraded to high-definition 4-megapixel camera compatibility. For example a mobile phone incorporating a camera and TV tuner that previously required the addition of external circuitry can be implemented using an SH-MobileJ3 without the need for such circuitry, enabling system costs to be reduced.

An MPEG-4 full hardware accelerator is included for moving image processing. Where the SH-MobileJ2 performed only primary MPEG-4 processing by hardware, all processing is now executed by hardware, enabling lower power consumption to be achieved. In addition, the CPU load can be greatly reduced compared with the previous case where

some processing was performed by middleware, significantly improving processing performance. This allows faster, smoother display in sophisticated systems handling moving image playback and recording, videophone, and the like.

For still image processing, the SH-MobileJ3 features the inclusion of a JPEG hardware accelerator that has been field-proven in numerous digital still cameras. Using hardware to execute JPEG processing previously handled by middleware allows the necessary memory buffer size to be greatly reduced, enabling compression and expansion to be performed approximately ten times faster than with Renesas Technology's previous product, for smoother image display.

The SH-MobileJ3 incorporates a wealth of functions ideally suited to next-generation mid-range model systems requiring high performance and functionality, including an LCD controller supporting TFT color liquid crystal panels, a video output unit capable of outputting moving images shot with a camera to a TV set, a Version 1.2a compliant IrDA interface, a USB2.0 Function (Full Speed compliant) module, a keyboard interface, and a memory card interface.

The capacity of flash memory connectable to a NAND/AND flash memory interface has been substantially increased from the maximum 512 Mbits of the previous product to 4 Gbits, helping to implement such mobile phone functional enhancements as expansion of data storage capacity.

A development platform equipped with a keyboard, small LCD panel, and ultra-miniature camera is available as a user application development environment, simplifying the development of various kinds of sophisticated multimedia-capable application programs in a short time-frame.

The package used is a 281-pin CSP (9 mm x 11 mm x 1.4 mm, 0.5 mm pin pitch), an SiP with on-chip 128-Mbit SDRAM that requires a smaller mounting area.

Renesas Technology will continue to meet evolving mobile phone system needs by developing products offering optimal solutions for next-generation systems and extending the SH-Mobile Series product lineup.