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**RENEASAS TECHNOLOGY INTRODUCES SH-MOBILE3A APPLICATION PROCESSOR TO SUPPORT ADVANCED MULTIMEDIA CAPABILITIES IN HIGH-END MOBILE PHONES**

*Highly integrated chip allows the design of mobile phones that can deliver the latest information and entertainment functions and services, including terrestrial digital TV broadcasts and high-resolution pictures from 5-megapixel camera modules.*

SAN JOSE, Calif., — February 8, 2004 — Renesas Technology America, Inc. today announced the SH-Mobile3A (part number: SH73380), the newest member of the popular SH-Mobile series of mobile phone application processors. The SH-Mobile3A device incorporates the latest multimedia processing functions that must be performed in high-end phones. In particular, it supports exciting new information and entertainment services and capabilities, including terrestrial digital TV broadcasts and high-resolution (5-megapixel) camera modules.

According to Brian Davis, business development manager, advanced solutions group, Renesas Technology America, Inc., “The SH-Mobile3A delivers a rich new multimedia platform solution for premium mobile phones that give users amazing utility and extraordinary entertainment value. Renesas developed and optimized it in close cooperation with major companies in the mobile communication industry specifically to facilitate major boosts and innovations in multimedia phone functionality.”

**Fast CPU core drives functions that support the latest processing standards**

At the heart of the SH-Mobile3A chip is the next generation SuperH RISC core implementing a superscalar architecture with integral DSP and multiple on-chip caches. It delivers 389 MIPS processing performance at 216MHz, for a high rating of 1.8 MIPS/MHz. This architecture offers leading edge performance with lower power consumption, enabling long viewing time for digital broadcasts on a portable device. The CPU runs higher level software functions that accelerate system integration and ensure high quality digital broadcast applications independent of the cellular interface.

A key multimedia function is the newly developed video processing unit. It provides support for the high-speed video compression specified by both the H.264 standard for ISDB-T (Terrestrial Integrated Services Digital Broadcasting) TV services, and the MPEG-4 standard for movie and videophone applications. The versatile video engine can also support other digital TV broadcasting formats for mobile phones that may be adopted in various countries, such as DVB-H (Digital Video Broadcasting for Handheld) and DMB (Digital Multimedia Broadcasting).

The built-in camera interface of the SH-Mobile3A supports direct connection to camera modules up to 5-megapixel resolution, so users of high-end phones can take high quality photographs. Besides handling large volumes of image data, the camera interface supports digital-zoom display and overlay display capabilities using on-screen display functions and hardware cursor support. Moreover, the SH-Mobile3A's video output unit allows the captured images to be viewed on an NTSC or PAL TV set.

A mobile phone based on the SH-Mobile3A device can provide impressive picture-taking capabilities. An on-chip JPEG hardware accelerator processes images quickly: 0.02 seconds/photo or less for VGA size images, and 0.1 seconds/photo or less for SXGA size. This speed allows the creation of a wide array of attractive camera applications, since users will be able to snap photos in rapid succession.

The SH-Mobile3A device incorporates a variety of other peripheral functions that are ideal for mobile phone systems: an LCD controller compatible with TFT color LCD panel, a sound interface, and more.

Renesas Technology is committed to helping to drive new product development in mobile phones for world markets and continues to create devices that facilitate the trend toward increasingly advanced and higher-level multimedia applications. The company aims to make available in a timely manner new products that are optimized to the requirements of the market.

### Price and availability

Device	Renesas Part #	Frequency	Package	Sample Price
<b>SH-Mobile3A:</b> 216MHz, 32-bit application processor for high-end mobile phones, offering 5-Megapixel camera and video support functions, audio output and more	SH73380	216MHz, max.	409-pin CSP	\$48.00 (April 2005)

### Reader contact

Readers can find additional product and contact information on the Renesas Technology Web site at [www.renesas.com](http://www.renesas.com).

**About Renesas Technology Corp.**

Renesas Technology Corp. designs and manufactures highly integrated semiconductor system solutions for mobile, automotive and PC/AV markets. Established on April 1, 2003 as a joint venture between Hitachi, Ltd. and Mitsubishi Electric Corporation and headquartered in Tokyo, Japan, Renesas Technology is one of the largest semiconductor companies in the world and the world's leading microcontroller supplier globally. Besides microcontrollers, Renesas Technology offers flash memories, system-on-chip devices, Smart Card ICs, mixed-signal products, SRAMs and more.

[www.renesas.com](http://www.renesas.com)

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*Note to Editors: A specification summary is included in this release, and a photo of the SH-Mobile3A application processor is available.*

## Specifications: Renesas Technology SH-Mobile3A Application Processor

Item	Specifications
Device	<b>SH-Mobile3A</b>
Product name	SH73380 (R8A73380BG)
CPU core	SH4AL-DSP (32-bit RISC/DSP CPU core)
Power supply voltage	Internal: 1.1V to 1.3V External: 2.5V to 3.3V or 1.65V to 1.95V
Maximum operating frequency	216MHz
Maximum processing performance	389 MIPS (at 216MHz operation)
On-chip RAM	128KBytes
Cache memory	4-way set associative type; 64Kbytes, with a 32Kbyte area for instructions and a separate 32Kbyte area for data
X/Y memory (for DSP)	16KBytes
On-chip peripheral functions	<ul style="list-style-type: none"> <li>• 5-megapixel camera support functions</li> <li>• VPU4 (H.264/MPEG-4 full hardware accelerator)</li> <li>• JPEG hardware accelerator</li> <li>• 2-D/3-D graphics engine</li> <li>• DMAC x6 channels</li> <li>• MMU</li> <li>• Video output unit (NTSC/PAL)</li> <li>• LCD controller supporting TFT color liquid crystal display</li> <li>• USB function (USB 2.0 full-speed compatible)</li> </ul>
Interfaces	<ul style="list-style-type: none"> <li>• Dedicated interface (connection to baseband LSI, etc.)</li> <li>• Transport stream (TS) interface</li> <li>• NAND/AND flash memory interface</li> <li>• Video I/O (direct camera module connection interface)</li> <li>• I<sup>2</sup>C interface</li> <li>• Clock-synchronous serial interface x1 channel</li> <li>• Serial interface with FIFO x2 channels</li> <li>• Asynchronous serial interface x4 channels</li> <li>• Sound interface unit x2 channels</li> <li>• Key-scan interface</li> </ul>
Package	409-pin CSP (12mm x 12mm x 1.4mm, 0.5mm pin pitch)

Note: I<sup>2</sup>C (Inter IC Bus) is an interface specification proposed by Royal Philips Electronics of the Netherlands.

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