Hitachi Releases SH7294 for Next-Generation Mobile Phones with Built-In Camera as Second-Phase Product in SuperH™ Mobile Application Processors 'SH-Mobile Series'

- VGA camera connection and versatile screen display capabilities through enhanced camera support functions -

Tokyo, June 25, 2002— Hitachi, Ltd. (TSE: 6501) today announced the SH7294, featuring enhanced functions for next-generation mobile phones with a built-in camera, as the second-phase product in the SH-Mobile (SuperH™[1] Mobile Application Processor) Series for next-generation mobile phone system. Sample shipments will begin in July 2002 in Japan. Also announced the HJ93D1705BP Multi Chip Modules (MCMs) incorporating a stack-mounted SH7294 and 1-Mbyte SRAM, with sample shipments also beginning in July 2002 in Japan.

The SH7294 is a processor that is connected to the baseband LSI of a mobile phone system and performs dedicated processing of multimedia applications, such as audio and moving pictures applications. The SH7294 is a compact version removing RAM and some peripheral functions including USB from the first-phase product SH7290. but on the other side, it incorporates a featuring enhanced camera-support and display functions that make it suitable for use in mobile phones with a built-in camera. Use of the SH7294 allows easy and speedy development of sophisticated next-generation camera-equipped mobile phone systems, and moreover fast and efficient software development is also facilitated by a development platform and comprehensive middleware.

Mobile phones now support a wide variety of sophisticated applications, including game and moving pictures distribution. At the same time, development of mobile phone system has become more complex, requiring increased development time and cost, and it has become difficult to release new models in a timely manner in line with ever-shorter model-change cycles in the Japanese market. In response to these problems, Hitachi developed the SH-Mobile Series, with a high-speed application processing LSI provided separately from the baseband LSI that performs communication processing, and released the first-phase product SH7290 to high acclaim from the market. A conspicuous feature of the current market is the growing popularity of mobile phones with a built-in camera, and the future trend will be one of ever higher functionality, including larger screen sizes, with a VGA (640×480 pixels) camera imaging size, for example, together with more versatile display capabilities.

By this background Hitachi is releasing the SH7294 as the second-phase product in the SH-Mobile Series, featuring enhanced camera-support and display functions to meet the needs of next-generation camera-equipped mobile phones. The SH7294 incorporates a SH3-DSP CPU core which is one of SuperH family and is suitable for digital still cameras and similar multimedia portable devices, and offers an operating frequency of 120 MHz. Features of the SH7294 are summarized below.

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[Features]

(1) Enhanced camera-support functions, enabling direct connection to a VGA camera and versatile display capabilities including OSD (On-Screen Display)

Enhanced camera-support functions enable direct connection of a VGA-size (640 × 480 pixels) camera, which is expected to be the mainstream type in next-generation mobile phones. This enables high-definition images to be captured via a mobile phone, and makes possible electronic zoom display. In addition, OSD and HWC (Hardware Cursor) functions allow the implementation of versatile display capabilities such as overlapping screen display.

(2) Extended lineup of comprehensive multimedia-oriented middleware, increasing the range of supportable sophisticated applications while enabling development times to be cut

The middleware lineup has been further extended through cooperation with new partner-vendors, in addition to the MPEG-4, JPEG, and MP3 middleware, and middleware provided via cooperation with existing partner-vendors necessary for implementing multimedia applications, provided in the SH7290. Support is offered for middleware such as OMRON Corporation's face-authentication software and Hitachi Engineering Co., Ltd's fingerprint-authentication software. Linux*[2] is also newly supported by AXE, Inc. as an operating system. This enables users to develop a wide range of sophisticated applications in a short time-frame according to their specific purposes. In addition, user development support has been extended, including system software development support by Hitachi Image Information Systems.

(3) System development simplified by a development platform incorporating a variety of SH7294 peripheral modules and interfaces

A development platform is available that incorporates a variety of peripheral modules and interfaces necessary for next-generation mobile phones, including an interface to AND-type and NAND-type flash memory. A keyboard, small LCD panel, and ultra-miniature camera are also included, enabling various kinds of multimedia application programs to be developed easily and speedily.

The package used for the SH7294 is a small CSP-225 (10 mm × 10 mm, 0.5 mm pin pitch, 1.4 mm thick).

Also being released is the HJ93D1705BP MCM incorporating an SH7294 and 1-Mbyte SRAM stack-mounted in a package of same size (10 mm × 10 mm, 0.5 mm pin pitch, 1.4 mm thick), for greater space saving.

Use of these two new products will enable speedy, low-cost, and space-saving development of next-generation mobile phone systems incorporating a camera function. They will also make it possible to respond rapidly to the need for application development or modification associated with future service diversification or changes in service contents.

Hitachi will continue to develop and release products that meet the needs of successive generations of mobile phones, in line with the ever-increasing sophistication of mobile phone systems.

Notes: 1.　SuperH is a trademark of Hitachi, Ltd.
2.　Linux is a registered trademark or trademark of Linus Torvalds in the United States and other countries.

< Typical Applications >

- Next-generation camera-equipped mobile phone terminals, etc., incorporating multimedia applications

< Prices in Japan >(For Reference)

Product Code		SH7294 Operating Frequency	Package	Unit Price for 10,000-Unit Lot (Yen)
SH7294	HD6417294BP120	120 MHz	CSP-225	1,800
MCM	HJ93D1705BP	120 MHz	CSP-225	3,000

< Specifications >

(1) SH7294

Item	SH7294 Specifications
Product code	HD6417294BP120
CPU core	SH3-DSP
Power supply voltage	Internal: 1.4 V to 1.6 V, external: 2.7 V to 3.6 V
Operating frequency	120 MHz
Processing performance	156 MIPS
Cache memory	32 Kbytes
X/Y memory (for DSP)	16 Kbytes
On-chip peripheral functions	• DMAC $\times$ 6 channels • MMU • Enhanced VGA camera support function
Interfaces	• Dedicated interface (Connect to baseband LSI etc.) • NAND/AND-type flash memory interface • Video I/O (camera module connection interface) • I^{2}C interface • Serial interface with FIFO $\times$ 1 channel • Asynchronous serial interface $\times$ 1 channel
Package	225-pin CSP (10 mm $\times$ 10 mm, 0.5 mm pin pitch, 1.4 mm thick)

(2) HJ93D1705BP

Item	MCM Specifications
Product code	HJ93D1705BP
Incorporated Processor	SH7294 (120 MHz, 156 MIPS)
Incorporated SRAM	1 Mbyte
Power supply voltage	Internal: 1.4 V to 1.6 V, external: 2.7 V to 3.3 V
Package	225-pin CSP (10 mm $\times$ 10 mm, 0.5 mm pin pitch, 1.4 mm thick)