

Hitachi Releases HJ93D1/HJ931 Series Stack-Type Multi Chip Modules

- Achieved the dramatic reduction of mounting area by ability to provide SuperH™ microprocessor plus multiple memories in a package -

Tokyo, September 3, 2001— Hitachi, Ltd. (TSE: 6501) today announced the HJ93D1/HJ931 Series of stack-type Multi Chip Modules (MCMs) that enable a high-performance Hitachi SuperH™* microprocessor and multiple memories to be provided in a stacked configuration in a single compact size package. Hitachi will begin accepting orders from September, and start the shipment of the sample models for these 2 series based on reference specifications from the end of November 2001.

The HJ93D1 Series has an SH3-DSP CPU core microprocessor and the HJ931 Series has an SH-3 CPU core product. Designed for use in portable products such as digital cameras and PDAs, these series provide a microprocessor plus flash and synchronous DRAM (SDRAM) or SRAM in a single package--items for which single-chip implementation is normally difficult--and achieve a compact size through the use of a stack structure, enabling simplifying system design.

For example, in the case of the HJ93D1 Series, an SH3-DSP core SH7729R (100MHz in this MCM) plus two 64-Mbit SDRAMs can be housed in a small package (size: 13 mm × 13 mm, height: 1.7 mm max.). This requires only the same mounting area as a single SH7729R CSP package product, enabling the mounting area to be reduced by approximately 60% compared to a Hitachi's system configuration employing three packages.

[Background]

The digital consumer product market--especially in the field of portable products such as digital video cameras, digital still cameras, and PDAs--requires high performance together with compact size, and there is a growing demand for SoC (System on Chip) products that provide single-chip implementation of a microcomputer/ASIC plus memory, and SiP(System in Package) products that employ a single package. There has been a particularly dramatic increase in the demand for MCMs as they offer shorter development times and lower development costs than SoCs, together with the ability to respond easily to diversifying product needs and rapid market changes.

Following the earlier release of the HJ94/93D/93 Series of MCMs incorporating a SuperH and SDRAMs in a single package, Hitachi has now completed commercial development of the HJ93D1/HJ931 Series of MCMs that also enable multiple memories to be incorporated, and employ a stack type that allows implementation in a single smaller package.

[About these Products]

The HJ93D1/HJ931 Series offer the following features.

(1) Ultra-small systems

A high-performance Hitachi SuperH SH3-DSP core or SH-3 core, with a proven track record as an embedded microprocessor, can be housed compactly in a single package together with multiple memories.

In addition, the provision of a SuperH plus a mix of memory types eliminates the need for bus design between SuperH and memories by the user, simplifying system design and enabling product development to be completed in a shorter timeframe.

(2) Lower EMI (Electro-magnetic Interference) noise

Shorter board wiring resulting from miniaturization reduces the effects of noise and allows stable, high-speed operation to be achieved.

(3) Shorter MCM product development times

The time from finalization of the MCM development product specifications to receipt of samples is as little as eight weeks or so. (assuming the use of existing LSI chips). User ASIC incorporation will be also supported.

The HJ93D1 Series has a SuperH processor with an SH3-DSP CPU core. The high-speed voice and image data compression/expansion processing capabilities of its DSP make it suitable for use in such products as multimedia devices with a built-in browser, and digital video cameras and digital still cameras.

The HJ931 Series, incorporating a SuperH processor with an SH-3 CPU core, offers low power consumption that makes it the ideal choice for portable information terminals such as handheld PCs and PDAs.

[Development Tools]

The E10A card emulator is available as a support tool when designing a system that uses one of these new products.

Note: * SuperH is a trademark of Hitachi, Ltd.

< Application System Products >

Compact digital consumer products such as digital video cameras and digital still cameras, handheld PCs, PDAs, and mobile phones

< Price > * For example *

Series Name	MPU	Memory	Package Outline	Sample Price (Yen)
HJ93D1Series	“SH7729R” (at 100MHz)	Two 64-Mbit SDRAMs	218 pin LFBGA 13 mm × 13 mm × 1.7 mm (max.)	5,200
HJ931 Series	“SH7709S” (at 100MHz)	Two 64-Mbit SDRAMs		4,800

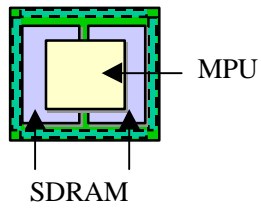
< Specifications > * For example *

Series Name	HJ93D1/HJ931 Series
MPU	SH3-DSP core “SH7729R”/ SH-3 core “SH7709S”
Memory	Two 64-Mbit SDRAMs
MPU operating frequency in this products	Internal bus: 100MHz (max.)* External bus: 33 MHz (max.)
Operating Power Supply Voltage	VDDQ: 3.3 V VDD: 1.8V
Operating Temperature	0°C to 70°C
Package Outline	218 pin LFBGA 13 mm × 13 mm × 1.7 mm (max.)
Features	- SuperH plus multiple memories in one package - Smaller package size using stack type

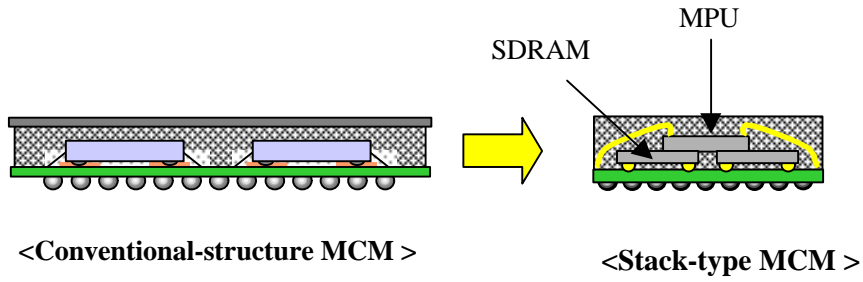
* 133MHz(max.) version will be supported.

< Stack-type MCM > * For example *

<Top view>



<Side view>



<Conventional-structure MCM >

<Stack-type MCM >