

Hitachi Releases 16-Bit Single-Chip Microcontroller with High-Speed Synchronous Serial Communication Interface and the CAN Interface for In-Vehicle LAN Standard

— Suitable for airbag control systems requiring high-performance, high-speed communication —

Tokyo, December 12, 2002— Hitachi, Ltd. (TSE: 6501) today announced the H8S/2628F, an F-ZTAT™*¹ microcontroller with on-chip flash memory and a maximum operating frequency of 24 MHz. Designed for use in automobile airbag control and chassis control systems, the H8S/2628F incorporates the CAN*² interface for in-vehicle LAN and a high-speed synchronous serial communication interface (SSU*³) with chip select for connection to other devices. Sample shipments will begin in February 2003 in Japan. In addition, mask ROM versions are being developed. Volume production of the H8S/2628M (128 kilobytes of on-chip mask ROM) and H8S/2627M (96 kilobytes of on-chip mask ROM) is planned to start in March 2004 in Japan.

Recently, the trend of Automotive systems and Factory Automation and similar industrial systems have seen an increasing shift from conventional serial communication to high-speed, high-reliability CAN bus communication and this has led to an increased demand for microcontrollers, which incorporate a CAN interface. In addition, the number of airbags to be controlled is increasing and features such as seatbelt pretensioners are also increasing. As a result, the number of peripheral devices such as sensors also increases, creating a need for high-performance microcontrollers capable of supporting high-speed communication with peripheral devices.

Hitachi has already released the H8S/2623 Series and H8S/2612 Series products incorporating a CAN interface for airbag control systems. To meet the needs of high-functionality and higher-performance, Hitachi has released the 16-bit single-chip microcontroller H8S/2628F. In addition to a CAN interface, it incorporates a high-speed synchronous serial communication interface and supports a faster operating speed.

The new H8S/2628F employs a 0.35 μm process. It incorporates the H8S/2000 CPU core, which is Hitachi's highest 16-bit microcontroller model and realizes a minimum instruction execution time of 41.6 ns (at 24 MHz operating frequency). The on-chip interfaces include a CAN interface, a serial communication interface (SCI), and a high-speed synchronous serial communication interface (SSU). In addition, its compact 100-pin package size enables design of compact high-performance airbag control system. The H8S/2628F also has 128 kilobytes of on-chip flash memory that can be programmed or erased using a single power supply. This simplifies system development.

The major features of the product are listed below.

< Features >

1. Improved Serial Communication Function for High-Speed Serial Communication with Peripheral Devices

In addition to a serial communication interface (SCI), the H8S/2628F also has a new module implementing a high-speed synchronous serial communication interface with chip select (SSU). Data transfer of 8-, or 16-, or 32-bit unit is supported and the maximum transfer rate is 6 megabits per second. This enables high-speed communication with other devices such as EEPROM (Electrically Erasable and Programmable Read Only Memory) or sensors.

2. CAN Supporting and CAN bus wake-up function

The H8S/2628F incorporates HCAN^{*4}, which is compliant with the Bosch CAN version 2.0B active standard. The CAN interface allows data buffer storage of 16 messages and achieves a maximum communication speed of 1 Mbps (bit per second). In addition, a built-in wake-up function makes it possible to restore the microcontroller to normal operation from the low-power standby mode (a necessity in systems designed to be installed in automobiles) using the CAN bus. This enables to reduce the external circuitry required previously.

3. The Highest Operating Frequency of 24 MHz in CAN Supporting 16-Bit Microcontroller, 1.2 Times the Performance of Existing Products

The H8S/2628F supports a maximum operating frequency of 24 MHz which is the highest speed in 16-bit single-chip microcontrollers incorporating a CAN interface. Previous products, such as the H8S/2612 Series, had a maximum operating frequency of 20 MHz, so the new H8S/2628F raises the level of processing performance by some 20%.

The C compiler, assembler, linkage editor, librarian, simulator, debugger, etc., for the existing H8S Series is available for use as a software development environment, and the E6000 real time simulator is available as a hardware development environment. The emulator used for the H8S/2612 Series can also be used with the H8S/2628F.

Hitachi plans to continue developing products optimized for various automobile control systems.

- Notes: 1. F-ZTATTM (Flexible Zero Turn Around Time) is a trademark of Hitachi, Ltd.
2. CAN (Controller Area Network) is an in-vehicle LAN specifications proposed by Robert Bosch GmbH of Germany.
3. SSU (Synchronous Serial communication Unit) is a 4-line high-speed synchronous serial communication module with chip select.
4. HCAN (Hitachi Controller Area Network): Full CAN supporting modules (16-message buffer) compliant with Bosch CAN version 2.0B active specifications.

< Typical Applications >

- Automobiles: Airbag control systems, chassis control systems, etc.
- Industrial equipment: Factory automation systems, etc.

< Prices in Japan >(For Reference)

Product Code	Flash Capacity (bytes)	Package	Sample Price (Yen)
H8S/2628F HD64F2628	128 K	QFP-100 (14 mm × 14 mm)	1,700

< Specifications >

Item		H8S/2628 Series specifications		
Product Code		F-ZTAT™ version	Mask ROM version*	
		H8S/2628F (HD64F2628)	H8S/2628M (HD6432628)	H8S/2627M (HD6432627)
Memory	ROM (bytes)	128K	128K	96K
	RAM (bytes)	8K	8K	6K
Process		0.35 μm CMOS		
Operating frequency / Power supply voltage		4 MHz to 24 MHz / 4.5 V to 5.5 V		
Operating temperature		-40°C to +85°C		
CPU core		H8S/2000 CPU core		
		<ul style="list-style-type: none"> General use registers: 16 bits × 16 		
Timer		<ul style="list-style-type: none"> 16-bit general use timer (TPU): 6 channels 8-bit output compare × 4 		
Synchronous serial communication interface (SSU)		<ul style="list-style-type: none"> 8-bit, 16-bit, 32-bit clock synchronous: 2 channels 		
Serial communication interface (SCI)		<ul style="list-style-type: none"> 8-bit clock synchronous, asynchronous: 2 channels 		
CAN		<ul style="list-style-type: none"> HCAN × 1 channel (compliant with Bosch CAN version 2.0B active specification, FULL CAN support/16-message buffer) CAN bus wakeup function 		
Data transfer controller		<ul style="list-style-type: none"> Automatic data transfer triggered by interrupt or software (normal, repeat, block transfer mode) 		
A/D converter		<ul style="list-style-type: none"> 10-bit resolution × 16 channels 		
I/O ports	Input/output	60		
	input	16		
Clock		<ul style="list-style-type: none"> System clock generator (4–24 MHz crystal oscillator) External clock 		
Interrupt	External sources	7		
	Internal sources	58		
Power-down functions		<ul style="list-style-type: none"> Medium speed mode Sleep mode Software standby mode Hardware standby mode <p>Also, module stop function</p>		
Package		QFP-100 (14 mm × 14 mm, 0.5 mm pin pitch)		

* Mask ROM version is currently under development.

Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
