PRODUCT INFORMATION

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8-Bit On-Chip Flash Memory Microcontroller Developed

2.8-V operation achieved for the first time in the industry, making this device optimal for mobile IC card systems

LC86F8604A

Overview

IC cards feature much larger data capacities and provide significantly more powerful data protection functions than the currently popular magnetic cards. As a result, the IC card is expected to be much more widely used in the near future and to become the leading card technology in the 21st century, being used for banking cards, credit cards, and in corporate internal ID card systems.

Sanyo has now developed the LC86F8604A 8-bit on-chip flash memory microcontroller (flash microcontroller) that operates at 2.8 V. This flash microcontroller provides the functions required in IC cards, including data retention without battery backup, a large data storage capacity, and intelligent data I/O functions. In addition, at the same time it also achieves the low-voltage operation that is critically important in IC card systems that are used in battery powered mobile equipment such as notebook personal computers and PDAs.

This newly developed flash microcontroller includes the 132-KB large-capacity flash memory that has been a unique feature of Sanyo products for some time now as its data storage medium for both programs and data. Additionally, while earlier flash microcontrollers required a power-supply voltage of 3 V or higher, due to the development of high-precision process technology unique to Sanyo, this product can operate at 2.8 V for the first time in the industry, thus improving its ease of use in mobile equipment.

Unlike mask ROM, flash memory is reprogrammable. Additionally, unlike DRAM or SRAM, data is retained with no backup power supply. Including flash memory in an IC card microcontroller has several advantages. First, the IC card software can be reloaded to respond to changes in the IC card standards or other version up grades, and second, it allows the IC card data to be retained without a backup power supply. Thus the flash microcontroller has many features that make it optimal for use in IC cards.

Sanyo is committed to providing a full product line of flash microcontrollers that take advantage of the features of the flash microcontroller, for use in multimedia equipment, in IC cards, and for system control in a wide range of data storage equipment. The low-voltage flash microcontroller of this

release was developed and is being released as part of this commitment to strengthening this product line. Sanyo will be aggressively developing and releasing flash microcontrollers that take advantage of this low-voltage process technology to respond to the growing market for mobile equipment.

Features

- Flash memory erase and rewrite at a power-supply voltage of 2.8 V achieved for the first time in the industry.
- 132-KB on-chip flash memory
- 2.8-V single-voltage power supply
- On-board reprogramming function
- The flash memory can be erased in 128-byte block units.

Specifications

- Sanyo original 8-bit CPU core (Minimum bus cycle time: 0.5 µs, minimum instruction cycle time: 1 µs)
- 132 KB of flash memory and 256 bytes of RAM on chip
- Two 8-bit timers
- 8-bit synchronous serial interface
- Package: QFP64

Sample Availability

Sample of the LC86F8604A is available in April 1998; production quantities will be anticipated in the end of 1998.

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