

Key product features

1. **Built-in circuits that will reduce the number of components in customers' products, save board space, and shrink software development times**
 - A high-accuracy RTC with temperature compensation and a built-in 32.768 kHz crystal unit
 - A 12-bit successive-approximation AD converter that enables connection of common voltage output analog sensors
 - An LCD driver that can directly drive an LCD with up to 240 segments
 - A power switching circuit that monitors the main power supply voltage and can switch to a backup power supply as needed
 - Built-in oscillator circuits (32.768 kHz and 700 kHz fixed-frequency circuits and a circuit that is switchable between 16 MHz, 12 MHz, 8 MHz, and 4 MHz)
 - A supply voltage detector (SVD) circuit that does not require an external power supply supervisor and is accurate to $\pm 2.5\%$ (-40°C to 85°C)
 - A sound generator that supports three octaves, seven notes, and seven rests
 - An IR remote controller capable of infrared remote control output*¹

2. **Interfaces for communicating with cards or connecting to a variety of sensors and devices**
 - Equipped with four types of serial interfaces: UART, SPI, I²C, and a smart card*² interface (ISO 7816-3 compliant)
 - Universal port multiplexers*³ that increase board layout design flexibility

Product specifications

Product model number	S7C17M11
CPU core	16-bit RISC processor + multiplier/divider
Flash memory	128 kilobytes
RAM	8 kilobytes
Operating voltage	Guaranteed operating range: 2.5 V - 3.6 V
Current consumption	SLEEP Mode (RTC Mode ON): 2.25 μA (typical) RUN Mode (32.768 kHz): 8 μA (typical) RUN Mode (8 MHz): 1,500 μA (typical)
32.768 kHz frequency stability	0°C to 50°C : $\pm 3.8 \times 10^{-6}$ (monthly rate ≤ 10 sec) -30°C to 70°C : $\pm 5 \times 10^{-6}$ (monthly rate ≤ 13.2 sec) -40°C to 85°C : $\pm 10 \times 10^{-6}$ (monthly rate ≤ 26.4 sec)
LCD driver	136 segments max. (34 SEG x 4 COM) 192 segments max. (30 SEG x 6 COM) 240 segments max. (30 SEG x 8 COM)
I/O ports	42 max.
Analog-digital converter	8 inputs (12-bit successive-approximation ADC)
Supply voltage detector	Voltage detection accurate to $\pm 2.5\%$ (-40°C to 85°C) at 32 levels between 1.2 V and 5.0 V
Serial interfaces	UART (4 ch.), SPI (1 ch.), I ² C (2 ch., one of which is used to control the high-accuracy RTC), and ISO 7816-3 compliant smart card interface (2 ch.)
Package	H4QFP15-100 (16 mm x 16 mm; pin pitch: 0.5 mm)

*1 A control circuit for infrared remote control

*2 Cards the size of a credit card and with embedded integrated circuits

*3 A circuit that allows users to flexibly assign I/O functions of peripheral circuits to I/O ports