S1C63003

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CMOS 4-bit Single Chip Microcontroller

- High Performance 4-bit Core CPU S1C63000
- Segment LCD Driver (Max:22SEG x 5COM)
- R/F Converter to Measure Temperature and Humidity
- Low Current Consumption
- Low Voltage Operation

■ DESCRIPTIONS

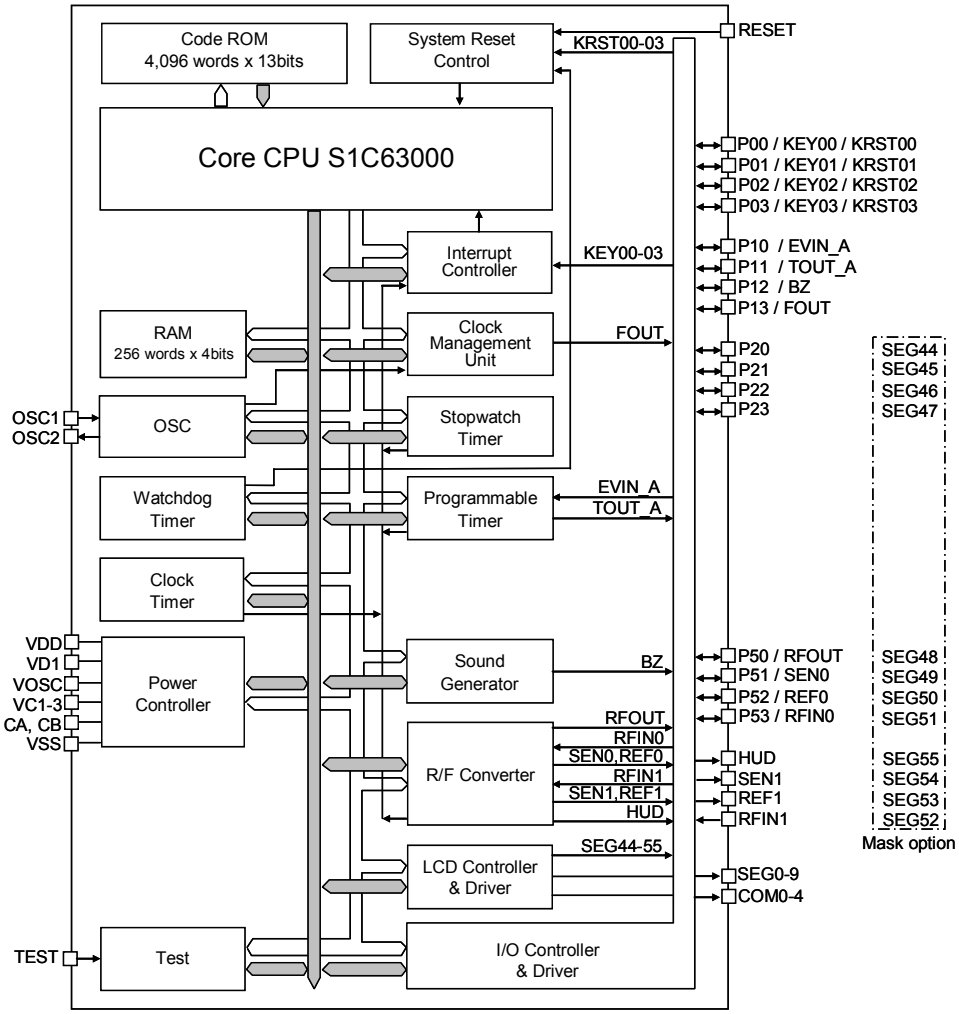
The S1C63003 is a microcontroller features low voltage operations and low current consumption. It consists of a 4-bit core CPU S1C63000 as the core CPU, ROM (4K words x 13 bits), RAM (256 words x 4 bits), timers, and sound generator. It also incorporates a segment LCD controller/driver that can drive a maximum 22-segment x 5-common LCD panel, and an R/F converter that can measure temperature and humidity using sensors such as a thermistor.
The S1C63003 is suitable for battery driven clocks and watches with temperature and humidity measurement functions.

■ FEATURES

Core		4-bit core CPU S1C63000
OSC1 oscillation circuit		32.768 kHz (Typ.) crystal oscillation circuit
OSC3 oscillation circuit		550 kHz (Typ., 3 Vmodel) /550 kHz (Typ.,1.5 V model) CR oscillation circuit (built-in R)
Instruction set		47 types of basic instructions (411 instructions with all), 8 types of addressing modes
Instruction execution time		During operation at 32.768 kHz: 61 µsec 122 µsec 183 µsec During operation at 4 MHz: 0.5 µsec 1 µsec 1.5 µsec
ROM capacity	Code ROM	4,096 words × 13 bits
	Data ROM	Not available
RAM capacity	Data memory	256 words × 4 bits
	Display memory	110 bits
I/O ports		16 bits Pull-down resistors can be included. (*1) The pins can be switched for peripheral circuit inputs/outputs. (*2)
Serial interface		Not available
LCD driver		22 segments (Max., *1) × 3 to 5 commons (*2)
Time base counters		Clock timer 1/1000-second stopwatch timer (without direct key input function)
Programmable timer		8-bit timer × 1 channel
Watchdog timer		Built-in
Sound generator		With envelope and 1-shot output functions
R/F converter		2 channels CR oscillation type R/F converter with 20-bit counters, supports resistive humidity sensors.
Integer multiplier		Not available
Supply voltage detection (SVD) circuit		Not available
External interrupt		Key input: 4 systems
Internal interrupt		
	Watchdog timer	1 system (NMI)
	Clock timer	4 systems
	Stopwatch timer	2 systems
	Programmable timer	1 system
	Serial interface	-
	R/F converter	3 systems
Power supply voltage		1.8 to 5.5 V (3 V normal type) or 1.1 to 1.7 V (1.5 V low-voltage type) (*1)
Operating temperature range		-40 to 85°C
Current consumption (Typ.)	SLEEP (32 kHz)	0.1 µA (3 V model)/0.1 µA (1.5 V model)
	HALT (32 kHz)	0.5 µA (3 V model)/0.5 µA (1.5 V model)
	RUN (32 kHz)	2.3 µA (3 V model)/2.0 µA (1.5 V model)
	RUN (4 M/1 MHz)	40 µA (550 kHz, 3 V model) /30 µA (550 kHz, 1.5 V model)
Shipment form		QFP12-48pin or die form

*1: Can be selected with mask option. *2: Can be selected with software.

■ BLOCK DIAGRAM



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