

4-bit Single Chip Microcomputer

- Original Architecture Core CPU
- Low Current Consumption
- High Speed Operation in Low Voltage

■ DESCRIPTION

The S1C63616 is a microcomputer which has a 4-bit CPU S1C63000 as the core CPU, ROM (16,384 words × 13 bits), RAM (2,048 words × 4 bits), multiply-divide circuit, serial interface, watchdog timer, programmable timer, time base counters (2 systems), a dot matrix LCD driver that can drive a maximum 1,280 dots of LCD panel, and an R/f converter that can measure temperature and humidity using sensors such as a thermistor. The S1C63616 features low current consumption, this makes it suitable for battery driven clocks and watches with temperature and humidity measurement functions.

■ FEATURES

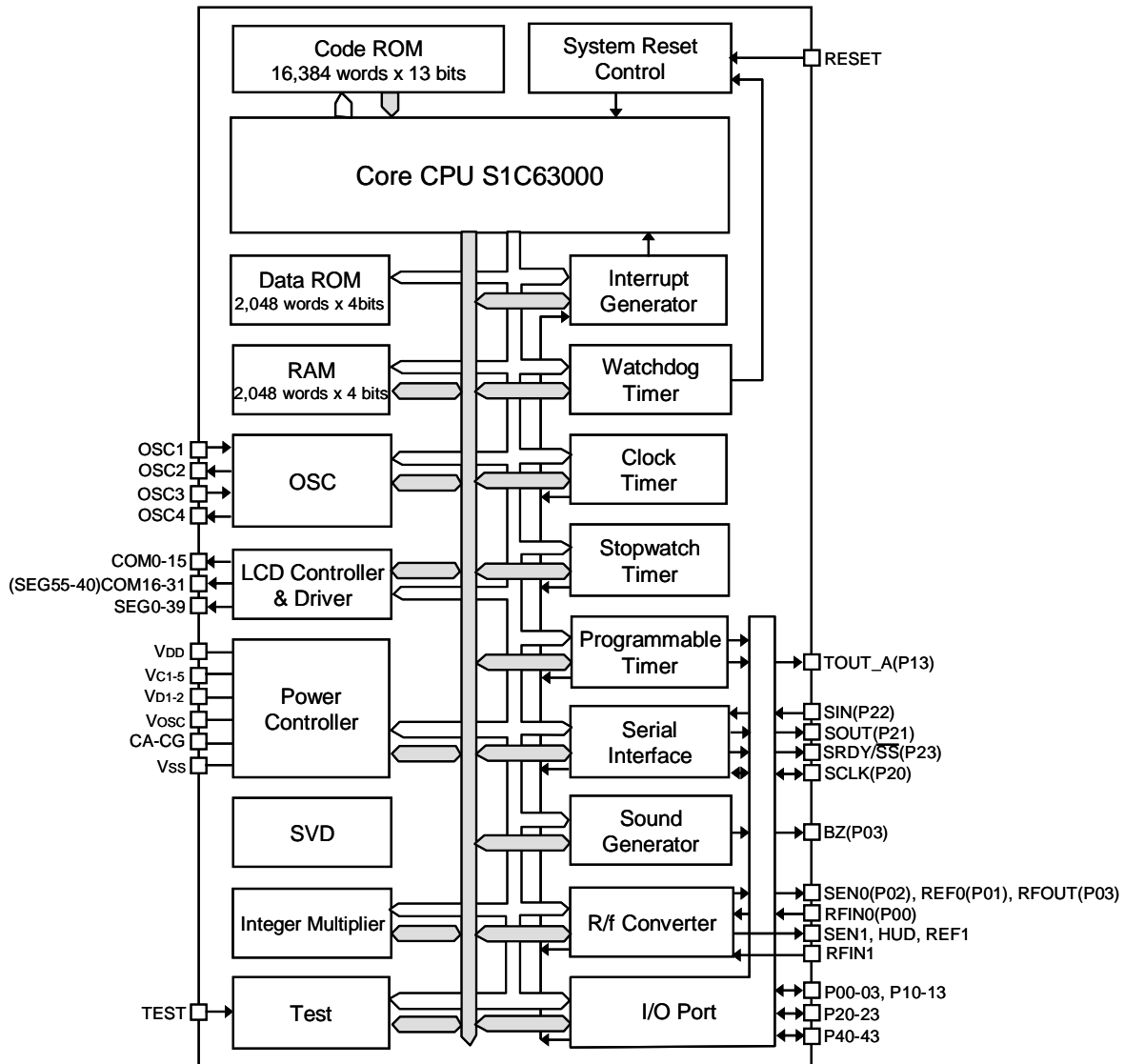
OSC1 oscillation circuit	32.768 kHz (Typ.) crystal oscillation circuit
OSC3 oscillation circuit	4.2 MHz (Max.) ceramic or 1.8 MHz (Typ.) CR oscillation circuit (*1)
Instruction set	Basic instruction: 47 types (411 instructions with all) Addressing mode: 8 types
Instruction execution time	During operation 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: 16,384 words × 13 bits Data ROM: 2,048 words × 4 bits
RAM capacity	Data memory: 2,048 words × 4 bits Display memory: 2,048 bits
I/O port	16 bits (pull-down resistors may be incorporated*1 Shared with 4 serial I/F I/O pins, 4 R/f converter I/O pins, and 3 special output pins *2)
Serial interface	1 port (8-bit clock synchronous system)
LCD driver	40 segments × 32 commons, 48 segments × 24 commons, or 56 segments × 16 commons (*2)
Time base counter	Clock timer Stopwatch timer (1/1000 sec, with direct key input function)
Programmable timer	16-bit timer × 4 ch. (each 16-bit timer is configurable to two 8-bit timer channels *2)
Watchdog timer	Built-in
Sound generator	With envelope and 1-shot output functions
R/f converter	2 ch., CR oscillation type, 20-bit counter Supports resistive humidity sensors
Multiply-divide circuit	8-bit accumulator × 1 ch. Multiplication: 8 bits × 8 bits → 16-bit product Division: 16 bits ÷ 8 bits → 8-bit quotient and 8-bit remainder
Supply voltage detection (SVD) circuit	Programmable 16 detection voltage levels (*2)
External interrupt	Key input interrupt: 8 systems
Internal interrupt	Clock timer interrupt: 8 systems Stopwatch timer interrupt: 4 systems Programmable timer interrupt: 16 systems Serial interface interrupt: 1 system R/f converter interrupt: 3 systems
Power supply voltage	1.6 to 5.5 V
Operating temperature range	-40 to 85°C
Current consumption (Typ.)	During SLEEP (32 kHz) 0.08 μA During HALT (32 kHz) 0.6 μA During running (32 kHz) 2.5 μA During running (4 MHz) 320 μA
Shipment form	TQFP15-128pin or die form

*1: Can be selected with mask option

*2: Can be selected with software

S1C63616

■ BLOCK DIAGRAM



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SEIKO EPSON CORPORATION

EPSON semiconductor website

MICRODEVICES OPERATIONS DIVISION

http://www.epson.jp/device/semicon_e/

Device Sales & Marketing Department

421-8 Hino, Hino-shi, Tokyo 191-8501, JAPAN
Phone: +81-42-587-5814 FAX: +81-42-587-5117

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