

8-bit Single Chip Microcomputer

- Original Architecture Core CPU
- Low Current Consumption
- Wide-range Operating Voltage (1.8V to 5.5V)
- Built-in Melody Generator and A/D Converter

■ DESCRIPTION

The S1C88349 microcomputer features the S1C88 (Model 3) CMOS 8-bit core CPU along with 48K bytes of ROM, 2K bytes of RAM, three different timers, a serial interface with optional asynchronization or clock synchronization, and an A/D converter.

The S1C88349 is fully operable over a wide range of voltages, and can perform high speed operations even at low voltage. Like all the equipment in the S1C Family, these microcomputers have low power consumption.

A 19-bit external address bus and 4 bits chip enable signals make it possible for this microcomputer to control up to 512K × 4 bytes of memory, making them ideal for high performance data bank systems.

■ FEATURES

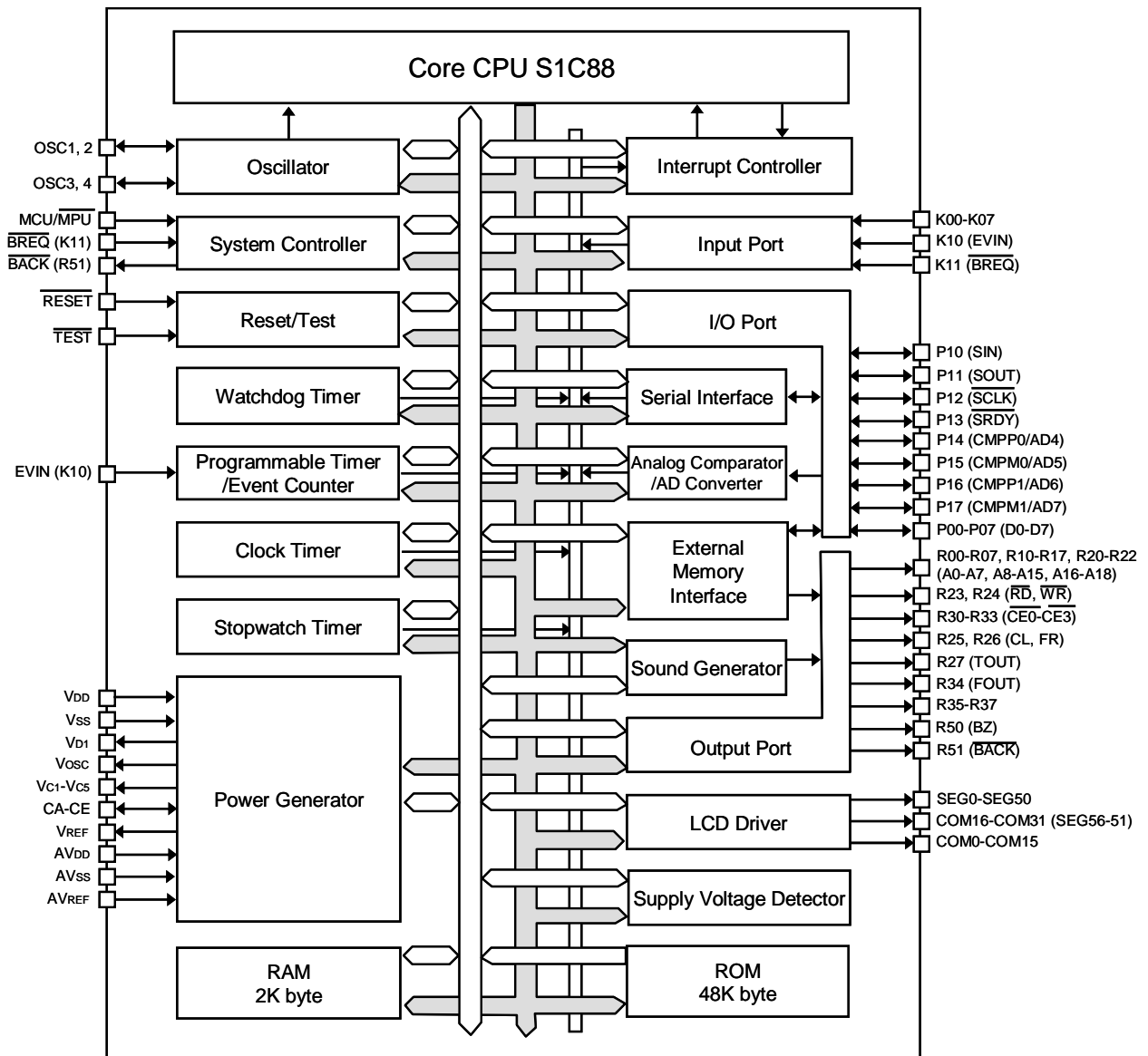
Core CPU	S1C88 (MODEL3) CMOS 8-bit core CPU
OSC1 oscillation circuit	Crystal oscillation circuit/CR oscillation circuit/external clock input 32.768 kHz (Typ.)
OSC3 oscillation circuit	Crystal oscillation circuit/ceramic oscillation circuit/CR oscillation circuit/external clock input 8.2 MHz (Max.)
Instruction set	608 types (usable for multiplication and division instructions)
Min. instruction execution time	0.244 μsec/8.2 MHz (2 clock)
Internal ROM capacity	48K bytes
Internal RAM capacity	2K bytes/RAM 3,216 bits/display memory
Bus line	Address bus: 19 bits (also usable as a general output port when not used as a bus) Data bus: 8 bits (also usable as a general I/O port when not used as a bus) CE signal: 4 bits WR signal: 1 bit RD signal: 1bit (also usable as a general output port when not used as a bus)
Input port	10 bits (2 bits can be set for event counter external clock input and bus request signal input terminal)
Output port	9 bits (6 bits can be set for buzzer output, LCD control, FOUT, TOUT and bus acknowledge signal output terminal)
I/O port	8 bits (4 bits each can be set for serial interface input/output and analog comparator/AD input)
Serial interface	1ch (optional clock synchronous system or asynchronous system)
Timer	Programmable timer (8 bits): 2ch (1ch can be set as an event counter or 2ch as a 16 bits programmable timer for 1ch) Clock timer (8 bits): 1ch Stopwatch timer (8 bits): 1ch
LCD driver	Dot matrix type (supports 5 × 8 or 5 × 5 fonts) 51 segments × 32 commons (1/5 bias) 67 segments × 16 or 8 commons (1/5 bias) Built-in LCD power supply circuit (booster type, 5 potentials)
Sound generator	Envelope function, equipped with volume control
Watchdog timer	Built-in
Analog comparator	2ch built-in (not available if A/D converter is used)
A/D converter	Resolution: 10 bits, input: 4ch, Maximum error: ±5 LSB (not available if analog comparator is used)
Supply voltage detection (SVD) circuit	Can detect up to 16 different voltage levels
Interrupt	External interrupt: Input interrupt 2 systems (3 types) Internal interrupt: Timer interrupt 3 systems (9 types) Serial interface interrupt 1 system (3 types) A/D converter interrupt 1 system (1 type)
Supply voltage	Normal mode: 2.4 V–5.5 V (Max. 4.2 MHz) $V_{D1} = 2.2 V$ Low power mode: 1.8 V–3.5 V (Max. 80 kHz) $V_{D1} = 1.2V$ High speed mode: 3.5 V–5.5 V (Max. 8.2 MHz) $V_{D1} = 3.3V$
Current consumption	SLEEP mode: 0.3 μA

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	HALT mode: 1.5 μ A (Typ./normal mode) Run (32 kHz): 9 μ A (Typ./normal mode) Run (4 MHz): 1.1 mA (Typ./normal mode)
Supply form	QFP18-176pin, QFP21-176pin or chip

* The number of bits cited for output ports and I/O ports does not include those shared with the bus.

■ BLOCK DIAGRAM



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SEIKO EPSON CORPORATION

MICRODEVICES OPERATIONS DIVISION

Device Sales & Marketing Department
421-8 Hino, Hino-shi, Tokyo 191-8501, JAPAN
Phone: +81-42-587-5814 FAX: +81-42-587-5117

EPSON semiconductor website

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

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