S1C88349



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 x 4 bytes of memory, making them ideal for high performance data bank systems.

■ FEATURES

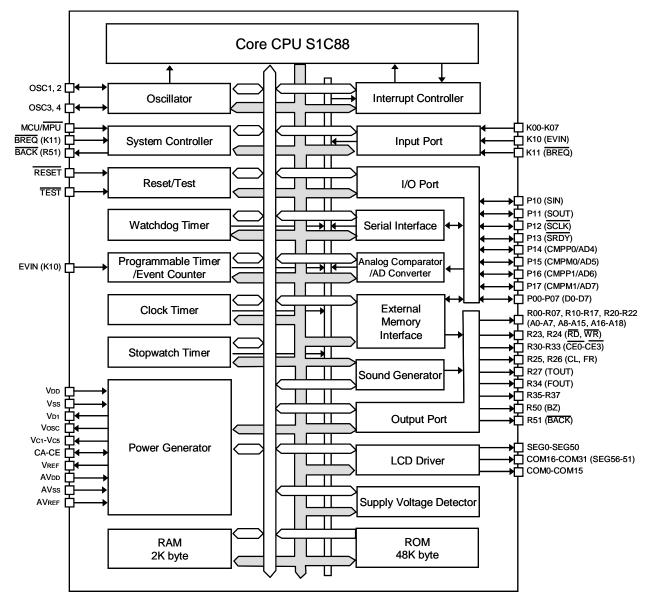
Core CPU	S1C88 (MODEL3) CMOS 8-bit core CPU			
OSC1 oscillation	Crystal oscillation circuit/CR oscillation circuit/external clock input 32.768 kHz (Typ.)			
circuit				
OSC3 oscillation	Crystal oscillation circuit/ceramic oscillation circuit/CR oscillation circuit/external clock input 8.2			
circuit	MHz (Max.)			
Instruction set	608 types (usable for multiplication and division instructions)			
Min. instruction	0.244 µsec/8.2 MHz (2 clock)			
execution time				
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 (also usable as a general output port when not used as a bus)			
	RD signal: 1bit —			
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				
Serial interface	1ch (optional clock synchronous system or asynchronous system)			
Timer	Programmable timer (8 bits): 2ch			
	(1ch can be set as a 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 (supports5 x 8 or 5 x 5 fonts)			
	51 segments x 32 commons (1/5 bias)			
	67 segments x 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	Can detect up to 16 different voltage levels			
detection				
(SVD) circuit				
Interrupt	External interrupt: Input interrupt 2 systems (3 types)			
	Internal interrupt: Timer interrupt 3 systems (9 types)			
	Serial interface interrupt 1 system (3 types)			
0 1 1	A/D converter interrupt 1 system (1 type)			
Supply voltage	Normal mode: $2.4 \text{ V} - 5.5 \text{ V}$ (Max. 4.2 MHz) $V_{D1} = 2.2 \text{ V}$			
	Low power mode: $1.8 \text{ V} - 3.5 \text{ V}$ (Max. 80 kHz) $V_{D1} = 1.2 \text{ V}$			
	High speed mode: $3.5 \text{ V} - 5.5 \text{ V}$ (Max. 8.2 MHz) $V_{D1} = 3.3 \text{ V}$			
Current consumption	SLEEP mode: 0.3 µA			

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	HALT mode:	1.5 μA (Typ./normal mode)
	Run (32 kHz):	9 μA (Typ./normal mode)
	Run (4 MHz):	1.1 mA (Typ./normal mode)
Supply form	QFP18-176pin, QFP	21-176pin 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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