S1C63158

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4-bit Single Chip Microcomputer

- Original Architecture Core CPU
- Low Current Consumption
- Wide-range Operating Voltage (0.9V to 3.6V)
- High Speed Operation in Low Voltage
- A/D Converter

■ DESCRIPTION

The S1C63158 is a microcomputer which has a high-performance 4-bit CPU S1C63000 as the core CPU, ROM (8,192 words × 13 bits), RAM (512 words × 4 bits), serial interface, watchdog timer, programmable timer, time base counter (1 system), SVD circuit, a 4-channel A/D converter and a special input port that can implement key position discrimination function using with the A/D converter. The S1C63158 features low voltage/high speed (4 MHz Max.) operation and low current consumption (2 µA Typ. in HALT mode), this makes it suitable for battery driven portable equipment such as a head phone stereo.

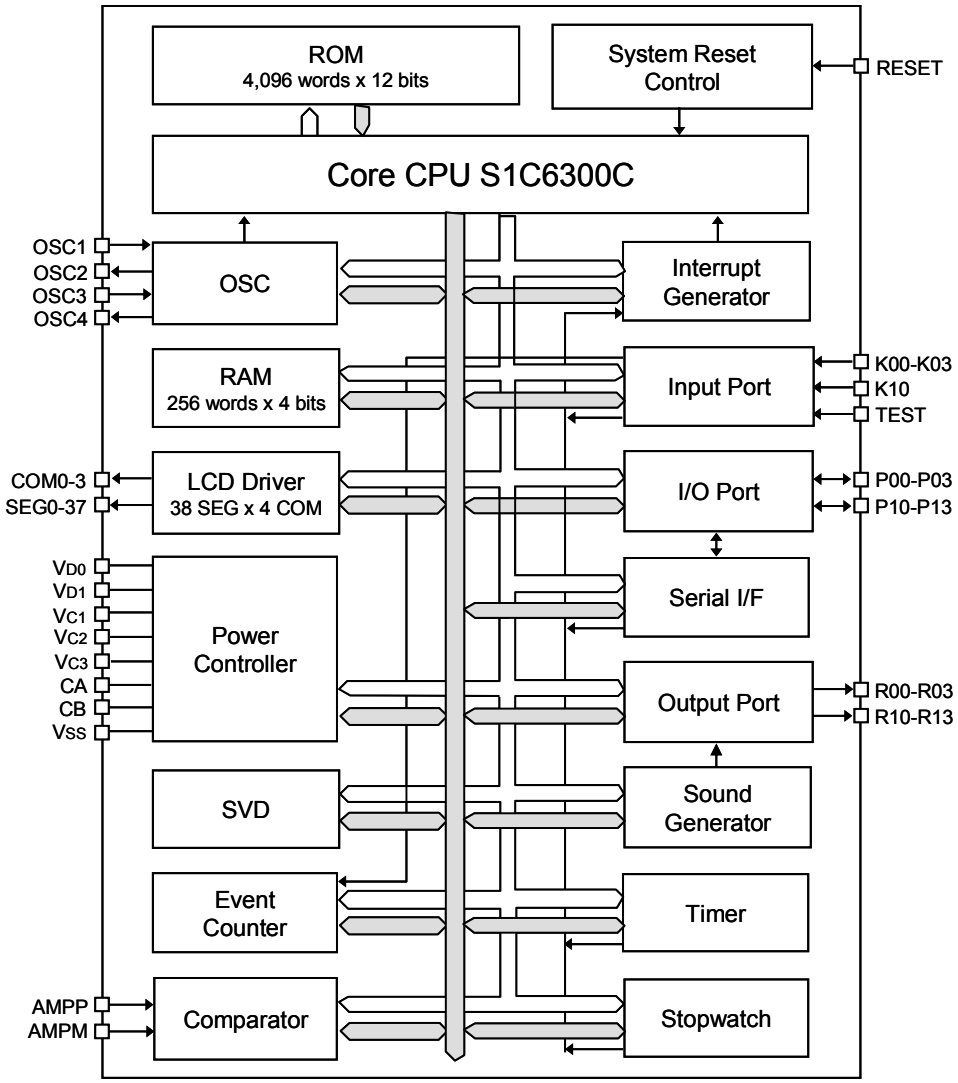
■ FEATURES

OSC1 oscillation circuit	32.768 kHz (Typ.) Crystal oscillation circuit or CR oscillation circuit (∗ 1)
OSC3 oscillation circuit	2 MHz (Typ.) CR or Ceramic oscillation circuit (∗ 1)
Instruction set	Basic instruction: 46 types (411 instructions with all) Addressing mode: 8 types
Instruction execution time	During operation at 32.768 kHz: Min. 61 µsec During operation at 4 MHz: Min. 0.5 µsec
ROM capacity	Code ROM: 8,192 words × 13 bits
RAM capacity	Data memory: 512 words × 4 bits
Input port	9 bits 8 bits (Pull-up resistors may be supplemented ∗ 1) 1 bit (Input interrupt for key position sensing by A/D)
Output port	12 bits (It is possible to switch the 2 bits to special output ∗ 2)
I/O port	20 bits (It is possible to switch the 4 bits to serial input/output ∗ 2) (It is possible to switch the 4 bits to A/D input ∗ 2)
Serial interface	1 port (8-bit clock synchronous system)
Time base counter	1 system (Clock timer)
Programmable timer	Built-in, 2 channels × 8 bits, with event counter function or 1 channel × 16 bits (∗ 2)
Watchdog timer	Built-in
A/D converter	8-bit resolution Maximum error: ±3 LSB, A/D clock: Max. 1MHz (0.9 to 3.6 V, VC2 mode should be set when the supply voltage is 1.6 V or less.)
Buzzer output	Buzzer frequency: 2 kHz or 4 kHz (∗ 2), 2 Hz interval (∗ 2)
Supply voltage detection (SVD) circuit	16 values, programmable (1.05 V to 2.60 V)
External interrupt	Input port interrupt: 2 systems Key sensing interrupt: 1 system
Internal interrupt	Clock timer interrupt: 4 systems Programmable timer interrupt: 2 systems Serial interface interrupt: 1 system A/D converter: 1 system
Power supply voltage	0.9 V to 3.6 V
Operating temperature range	-20°C to 85°C
Current consumption (Typ.)	Single clock: During HALT (32 kHz) 1.5 V (normal mode) 2 µA During operation (32 kHz) 1.5 V (normal mode) 4 µA Twin clock: During operation (4 MHz) 3.0 V (normal mode) 900 µA
Package	QFP12-48pin, QFP13-64pin (plastic) or chip

∗ 1: Can be selected with mask option

∗ 2: Can be selected with software

■ BLOCK DIAGRAM



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