S1C63654



4-bit Single Chip Microcomputer

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

■ DESCRIPTION

The S1C63654 is a microcomputer which has a high-performance 4-bit CPU S1C63000 as the core CPU, ROM (4,096 words × 13 bits), RAM (512 words × 4 bits), serial interface, watchdog timer, programmable timer, time base counters (2 systems), an LCD driver that can drive a maximum 32 segments × 6 commons, sound generator and R/f converter built-in. The S1C63654 features low current consumption, this makes it suitable for battery driven portable equipment with R/f converter.

■ FEATURES

OSC1 oscillation circuit 32.768 kHz (Typ.) crystal oscillation circuit

OSC3 oscillation circuit 4 MHz (Max.) ceramic

(2 MHz Max. when OSC3 is used as the R/f converter operating clock)

or 1.1 MHz (Typ.) CR 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:61 µsec 122 µsec 183 µsec

> During operation at 4 MHz: $0.5 \,\mu sec \, 1 \,\mu sec$ 1.5 µsec

Code ROM: 4,096 words × 13 bits ROM capacity Data ROM: 1,024 words × 4 bits RAM capacity 512 words × 4 bits Data memory:

48 words × 4 bits Display memory:

8 bits (Pull-down resistors may be supplemented *1) Input port Output port 4 bits (It is possible to switch the 2 bits to special output *2) 8 bits (It is possible to switch the 4 bits to serial I/F input/output *2) I/O port

Serial interface 1 port (8-bit clock synchronous system) LCD driver 32 segments × 6, 5, 4 or 3 commons (*2)

Time base counter Clock timer

Stopwatch timer (1/1000 sec, with direct key input function)

Programmable timer 8-bit PWM × 2 ch. or 16-bit PWM × 1 ch. (*2)

Watchdog timer Built-in

Sound generator With envelope and 1-shot output functions 2 ch., CR oscillation type, 20-bit counter R/f converter Supports resistive humidity sensors

Supply voltage detection (SVD) circuit Criteria voltage is selectable from 8 types (1.85 to 2.90 V *2) External interrupt Input port interrupt: 2 systems

Internal interrupt Clock timer interrupt: 4 systems

Stopwatch timer interrupt: 4 systems Programmable timer interrupt: 4 systems Serial interface interrupt: 1 system R/f converter interrupt: 2 systems 2.4 to 3.6 V: Max. 4 MHz operation in normal mode

Power supply voltage

2.4 to 3.6 V: 32 kHz operation in halver mode 1.8 to 3.6 V: 32 kHz operation in normal mode

Operating temperature range -20 to 70°C

Current consumption (Typ.) Low-speed operation (OSC1 = 32 kHz crystal oscillation):

3.0 V (LCD ON, halver mode) During HALT $0.65 \mu A$ During operation 3.0 V (LCD ON, halver mode) $2.5 \mu A$

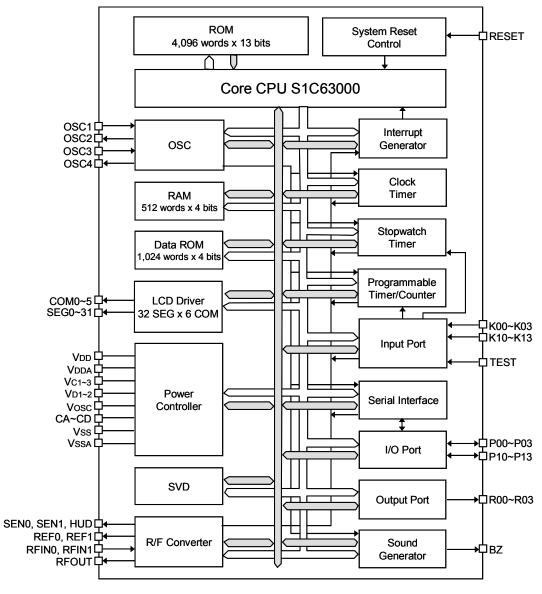
High-speed operation (OSC3 = 4 MHz ceramic oscillation):

During operation 3.0 V (LCD ON) 800 μΑ

QFP15-100pin (plastic) or chip Shipment form

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

BLOCK DIAGRAM



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