# S1C63632

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## 4-bit Single Chip Microcomputer

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

## ■ DESCRIPTION

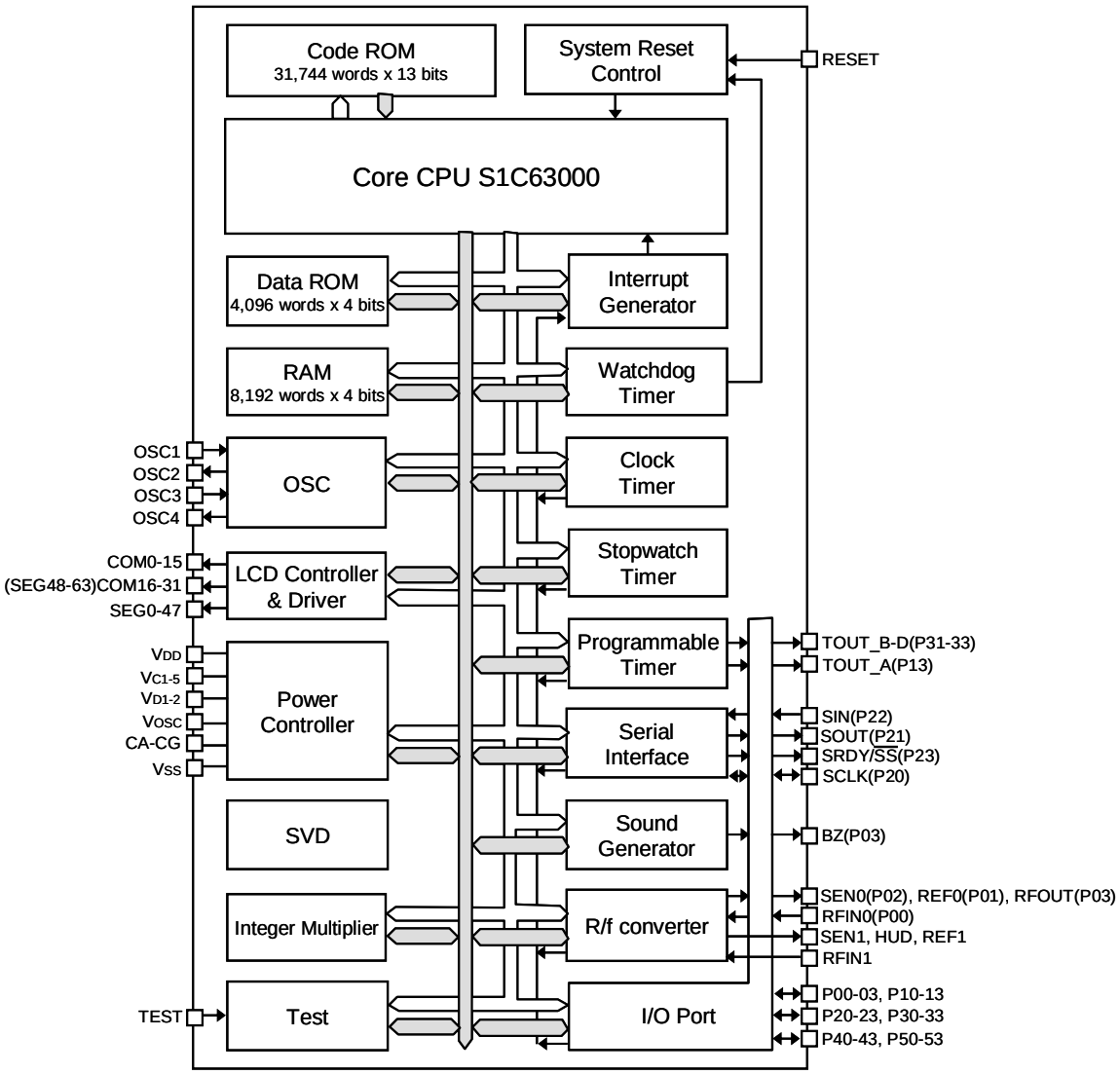
The S1C63632 is a microcomputer which has a 4-bit CPU S1C63000 as the core CPU, ROM (31,744 words × 13 bits), RAM (8,192 words × 4 bits), multiply-divide circuit, serial interface, watchdog timer, programmable timer, time base counters (2 systems), a dot matrix LCD driver that can drive a maximum 1,536dots of LCD panel, and an R/f converter that can measure temperature and humidity using sensors such as a thermistor. The S1C63632 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: | 31,744 words × 13 bits | | |
| | Data ROM: | 4,096 words × 4 bits | | |
| RAM capacity | Data memory: | 8,192 words × 4 bits | | |
| | Display memory: | 2,048 bits | | |
| I/O port | 24 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 6 special output pins *2) | | | |
| Serial interface | 1 port (8-bit clock synchronous system) | | | |
| LCD driver | 48 segments × 32 commons, 56 segments × 24 commons, or | | | |
| | 64 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 | QFP20-144pin, VFBGA10H-144 or die form | | | |

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

## ■ BLOCK DIAGRAM



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