S1C6F016

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CMOS 4-bit Single Chip Microcontroller

- High Performance 4-bit Core CPU S1C63000
- Flash EEPROM 16K x 13bit / 4K x bit
- Segment LCD Driver (Max:56SEG x 8COM)
- R/F Converter to Measure Temperature and Humidity
- Low Current Consumption
- Low Voltage Operation

■ DESCRIPTIONS

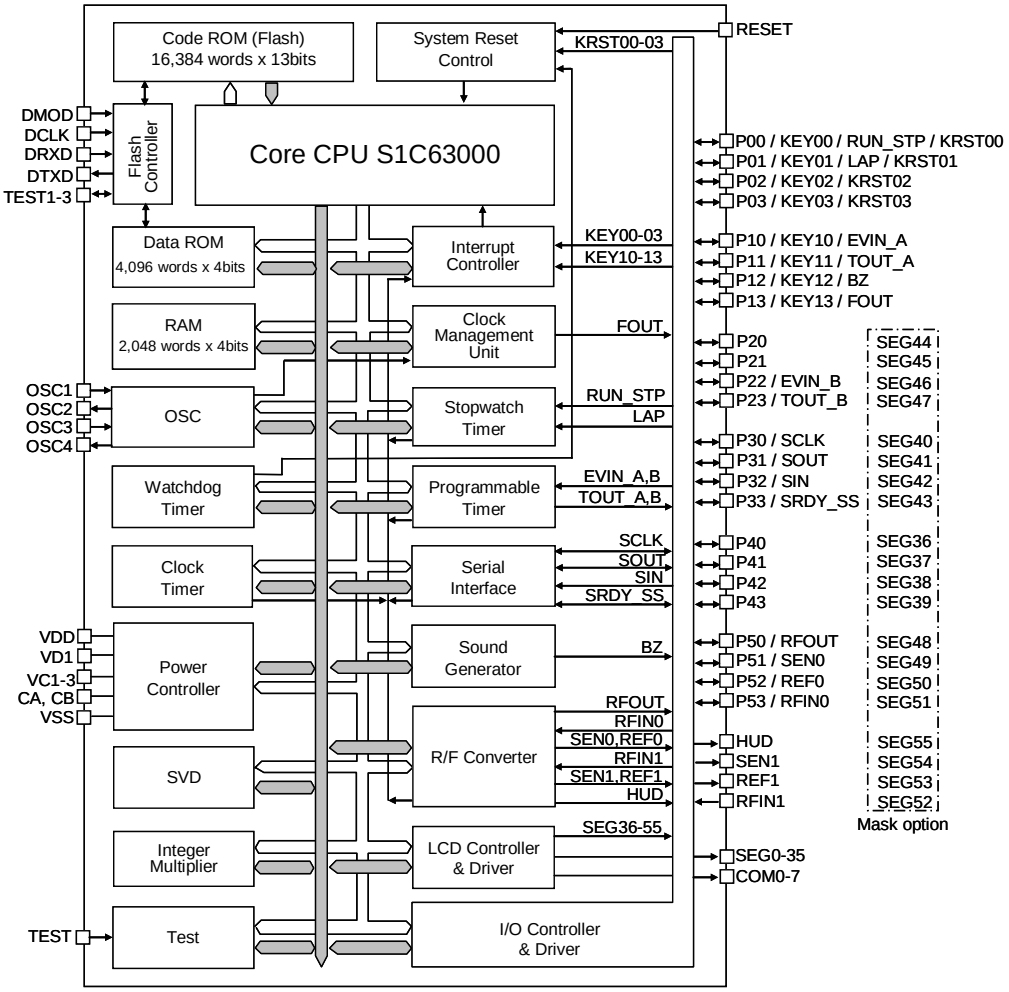
The S1C6F016 is a microcontroller features low voltage operations and low current consumption. It consists of a 4-bit core CPU S1C63000 as the core CPU, Flash EEPROM (16K words x 13 bits), RAM (2K words x 4 bits), supply voltage detection (SVD) circuit, serial interface, timers, sound generator, and integer multiplier. It also incorporates a segment LCD controller/driver that can drive a maximum 56-segment x 8-common LCD panel, and an R/F converter that can measure temperature and humidity using sensors such as a thermistor.
The S1C6F016 is suitable for battery driven clocks and watches with temperature and humidity measurement functions.

■ FEATURES

● CPU	4-bit CMOS core CPU S1C63000	
● OSC1 oscillation circuit	32.768kHz (Typ.) crystal oscillation circuit	
● OSC3 oscillation circuit	4.2MHz (Max.) ceramic oscillation circuit	
	1.8MHz (Typ.) CR oscillation circuit (extenal R), or	
	500kHz (Typ.) CR oscillation circuit (built-in R) (*1)	
● Instruction set	47 types of basic instructions (411 instructions with all),	
	8 types of addressing modes	
● Instruction execution time	During operation at 32.768kHz: 61µsec 122µsec 183µsec	
	During operation at 4MHz: 0.5µsec 1µsec 1.3µsec	
● Flash EEPROM capacity	Code ROM: 16,384 words x 13 bits	
	Data ROM: 4,096 words x 4 bits	
● RAM capacity	Data memory: 2,048 words x 4 bits	
	Display memory: 448 bits	
● LCD driver	56 segments (Max., *1) x 3 to 8 commons (*2)	
● I/O ports	24 bits	
● Serial interface	1 port (8-bit clock synchronous system with SPI supported)	
● Time base counters	Clock timer	
	1/1000-second stopwatch timer with direct key input function	
● Programmable timer	16-bit timer x 2 channels	
	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 channels, CR oscillation type R/F converter with 20-bit counters,	
	supports resistive humidity sensors	
● Integer Multiplier	8-bit accumulator x 1 channel	
	Multiplication: 8 bits x 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	8 systems
● Internal interrupt	Watchdog timer (NMI)	1 systems
	Clock timer	8 systems
	Stopwatch timer	4 systems
	Programmable timer	8 systems
	Serial interface	1 systems
	R/F converter	3 systems
● Power supply voltage	1.8 to 3.6V (for normal operation), 2.7 to 3.6V (for Flash programming) (*1)	
● Operation temperature range	-20 to 70°C	
● Current consumption (Typ.)	During SLEEP (32kHz)	0.7µA
	During HALT (32kHz)	2µA
	During running (32kHz)	9µA
	During running (4MHz)	950µA
● Shipment form	QFP15-100pin or die form	

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

■ BLOCK DIAGRAM



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