



# **4-bit Single Chip Microcomputer**

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

# DESCRIPTION

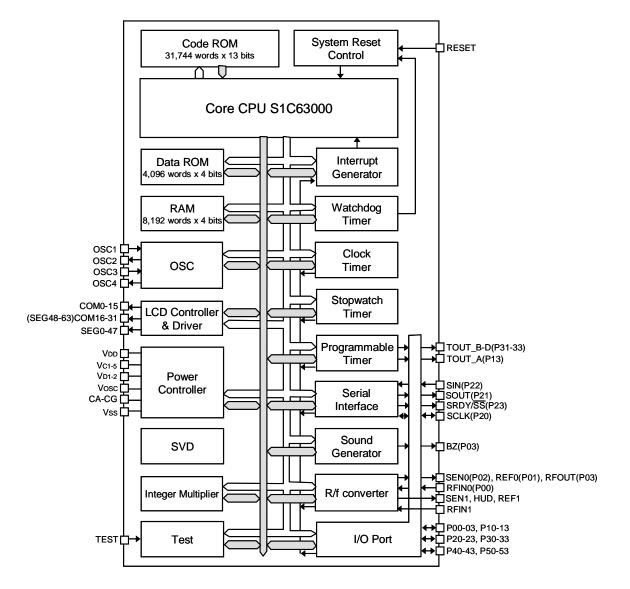
The S1C63632 is a microcomputer which has a 4-bit CPU S1C63000 as the core CPU, ROM (31,744 words  $\times$  13 bits), RAM (8,192 words  $\times$  4 bits), multiply-divide circuit, serial interface, watchdog timer, programmable timer, time base counters (2 systems), a dot matrix LCD driver that can drive 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		
	During operation at 4 MHz:	0.5 µsec 1 µsec 1.5 µsec	
ROM capacity	Code ROM: 31,744 words × 13		
	Data ROM: 4,096 words × 4 bit	S	
RAM capacity	Data memory: 8,192 words × 4 bit	S	
	Display memory: 2,048 bits		
I/O port	24 bits (pull-down resistors may be incor	porated *1	
	Shared with 4 serial I/F I/O pir	ns, 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 segmen	its x 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.	16-bit timer x 4 ch.	
5	(each 16-bit timer is configurable to two 8	3-bit timer channels *2)	
Watchdog timer	Built-in	,	
Sound generator	With envelope and 1-shot output function	IS	
R/f converter 2 ch., CR oscillation type, 20-bit counter			
	Supports resistive humidity sensors		
Multiply-divide circuit 8-b	t accumulator × 1 ch.		
	Multiplication: 8 bits × 8 bits -> 16-bit pro	duct	
		Division: 16 bits ÷ 8 bits -> 8-bit quotient and 8-bit remainder	
upply voltage detection (SVD) circuit Programmable 16 detection voltage levels (*2)			
External interrupt	Key input interrupt:	8 systems	
Internal interrupt	Clock timer interrupt: 8 system		
	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	· · · · · · · · · · · · · · · · · · ·		

# S1C63632

# BLOCK DIAGRAM



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