S1C17153



16-bit Single Chip Microcontroller

- 16KB ROM / 2KB RAM
 - * S1C17653 is useful as for program development.
- Generates the operating clocks with the built-in oscillators.
 - OSC3B oscillator circuit: 2 MHz/1 MHz/500 kHz (typ.) internal oscillator circuit
 - OSC1A oscillator circuit: 32.768 kHz (typ.) crystal oscillator circuit
- LCD driver Number of driver outputs: 32Seg. x 4Com.
- Shipping form: Die
- RISC CPU core S1C17: the compact code optimized for C, and high throughput of an instruction/clock

■ DESCRIPTIONS

The S1C17153 is a 16-bit MCU featuring ultra-low-power operations and compact dimensions in die form. The S1C17153 is ideal for battery-driven electronic equipment, such as OTP cards, eTokens, and remote control units with a simple display.

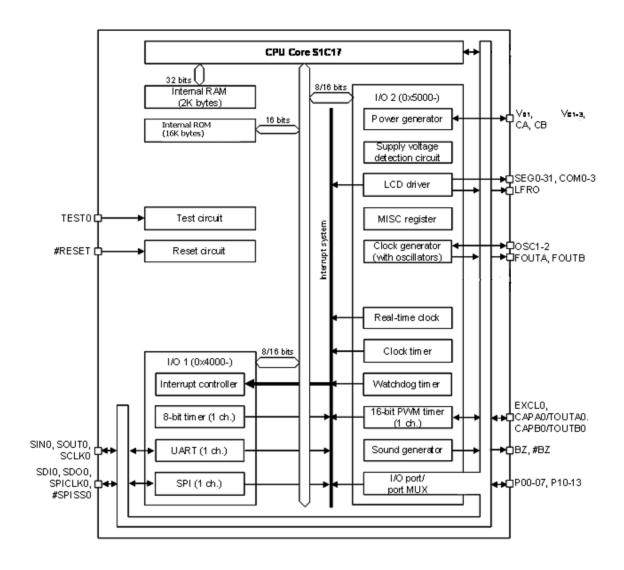
■ FEATURES

Seiko Epson original 16-bit RISC CPU core S1C17	CPU	
16-bit x 16-bit x 16-bit divider		
16-bit ÷ 16-bit divider	Multiplier/Divider (COPRO)	
Technology 16K bytes (for both instructions and data)		
Capacity		· 16-bit ÷ 16-bit divider
Capacity	Embedded ROM	
Capacity	Capacity	16K bytes (for both instructions and data)
System clock source 2 sources (OSC3B/OSC1A)	Embedded RaM	
System clock source	Capacity	2K bytes
OSC3B oscillator circuit OSC1A oscillator circ	Clock generator	
OSC1A oscillator circuit Other Other Other Ocre clock frequency control Peripheral module clock supply control LCD driver Number of driver outputs Segment output: 32 pins Common output: 4 pins Other Includes a power supply voltage booster/reducer. Includes a display data memory. I/O ports Number of general-purpose I/O ports Max. 12 bits (Pins are shared with the peripheral I/O.) Other Serial interfaces SPI UART Includes a power supply voltage booster/reducer. Pull-up control function Port input interrupt: 8 bits Serial interfaces SPI UART I channel UART I channel (IrDA1.0 supported) I channel (IrDA1.0 supported) I channel (IrDA1.0 supported) I channel (PWM output, event counter, and count capture functions) I channel (Generates NMI/reset.) Clock functions Real-time clock (RTC) I channel (Hour, minute, and second counters) Clock timer (CT) I channel (128 Hz to 1 Hz counters) Sound generator Buzzer frequency 8 frequencies selectable Volume control 8 steps adjustable Other One-shot buzzer Auto envelope function Analog circuits Supply voltage detection circuit (SVD) Interrupts		2 sources (OSC3B/OSC1A)
OSC1A oscillator circuit Other	OSC3B oscillator circuit	2M/1M/500k Hz (typ.) internal oscillator circuit
Peripheral module clock supply control LCD driver Number of driver outputs Segment output: 32 pins Common output: 4 pins Other Includes a power supply voltage booster/reducer. Includes a display data memory. I/O ports Number of general-purpose I/O ports Pull-up control function Port input interrupt: 8 bits Serial interfaces SPI 1 channel UART 1 channel (IrDA1.0 supported) Timers/Counters 8-bit timer (T8) 1 channel (Generates the SPI clock.) 16-bit PWM timer (T16A2) 1 channel (PWM output, event counter, and count capture functions) Watchdog timer (WDT) 1 channel (Generates NMI/reset.) Clock functions Real-time clock (RTC) 1 channel (Hour, minute, and second counters) Clock timer (CT) Sound generator Buzzer frequency 8 frequencies selectable Volume control 0 ther One-shot buzzer Auto envelope function Analog circuits Supply voltage detection circuit (SVD) Interrupts	OSC1A oscillator circuit	
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Includes a display data memory.	·	Common output: 4 pins
Number of general-purpose I/O ports	Other	Includes a power supply voltage booster/reducer.
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Other - Schmitt input - Pull-up control function - Port input interrupt: 8 bits Serial interfaces SPI - 1 channel - UART - 1 channel (IrDA1.0 supported) Timers/Counters 8-bit timer (T8) - 1 channel (Generates the SPI clock.) 16-bit PWM timer (T16A2) - 1 channel (PWM output, event counter, and count capture functions) Watchdog timer (WDT) - 1 channel (Generates NMI/reset.) Clock functions Real-time clock (RTC) - 1 channel (Hour, minute, and second counters) Clock timer (CT) - 1 channel (128 Hz to 1 Hz counters) Sound generator Buzzer frequency - Volume control - One-shot buzzer - Auto envelope function Analog circuits Supply voltage detection circuit (SVD) - Interrupts		
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Buzzer frequency Volume control 8 steps adjustable Other One-shot buzzer Auto envelope function Analog circuits Supply voltage detection circuit (SVD) Interrupts 8 frequencies selectable One-shot buzzer Auto envelope function 1 channel (Detection voltage: 13 levels (TBD))	Clock timer (CT)	
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Supply voltage detection circuit (SVD) 1 channel (Detection voltage: 13 levels (TBD)) Interrupts	Analog circuits	
Interrupts		1 channel (Detection voltage: 13 levels (TBD))
	Reset interrupt	#RESET pin/watchdog timer

S1C17153

NMI	Watchdog timer	
Programmable interrupts	8 systems (8 levels)	
Power supply voltage		
Operating voltage (VDD)	2.0 V to 3.6 V	
Operating temperature		
Operating temperature range	-40°C to 85°C	
Current consumption (Typ value, VDD = 2.0 V to 3.6 V)		
SLEEP state	130nA (OSC1A = Off, RTC = Off, OSC3B = Off)	
HALT state	0.42uA (OSC1A = 32kHz, RTC = Off, OSC3B = Off)	
	0.42uA (OSC1A = 32kHz, RTC = On, OSC3B = Off)	
Run state	4uA (OSC1A = 32kHz, RTC = Off, OSC3B = Off)	
	240uA (OSC1A = 32kHz, RTC = Off, OSC3B = 2MHz)	
Shipping form		
	Aluminum pad chip	

■ BLOCK DIAGRAM



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