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16-bit Single Chip Microcontroller

- Low Power MCU(operating voltage 1.8V, 0.75uA/SLEEP, 2.5uA/HALT)
- Flash memory(32KByte), 8.2MHz high speed operating at 1.8V power voltage
- LCD driver: max 12 segment, 8seg x 8com or 12seg x 4com
- Analog I/F: A/D converter(INL/DNL Max. 1.5LSB), R/F converter
- RISC CPU core S1C17: the compact code optimized for C, and high throughput of an instruction / clock, supports serial ICE

■ DESCRIPTIONS

The S1C17611 is a 16-bit MCU featuring high-speed low-power operations, compact dimensions, wide address space and on-chip ICE. A/D converter and R/F converter are built in and sensor of various analog I/F can be connected. It is suitable for the application of health care product, sports watch and meter module etc. with sensor that is required a small size and micro display in the battery driven.

■ FEATURES

- CPU
Epson original 16-bit RISC CPU core S1C17
Multiplier/divider (COPRO)
 - 16 bit x 16 bit multiplier/16 bit ÷ 16 bit divider
 - 16 bit x 16 bit + 32 bit product-sum operation
- IOSC oscillator circuit
2.7 MHz (typ.)
Oscillating start up 5 μs (max.)
Boot Clock (External components not required.)
- OSC3 oscillator circuit
Crystal oscillator circuit or ceramic oscillator circuit, 8.2 MHz (max.)
or external clock input
- OSC1 oscillator circuit
Crystal oscillator circuit 32.768 kHz (typ.)
- Internal Flash memory
32 Kbytes (for both instructions and data)
Allows 1,000 rewrites (min.)
Read/write protection function
Allows onboard rewriting with the ICD Mini (S5U1C17001H) debug tool and self-rewriting via software.
2 Kbytes
12 bytes
10 bit resolution 4ch
DC oscillation/AC oscillation/External input 1ch.
Max. 19-bit general purpose input/output
(shared with peripheral circuit input/output pins)
- Internal RAM
●Internal Display RAM
●A/D Converter
●R/F Converter
●Input/output port
- Serial interface
SPI (master/slave) 1ch.
I2C (master) 1ch.
I2C (slave) 1ch.
UART (460,800 bps, IrDA1.0 compatible) 1ch.
8-bit timer (T8F) 1ch.
16-bit timer (T16) 3ch.
PWM timer (T16E) 2ch.
Clock timer (CT) 1ch.
Stopwatch timer (SWT) 1ch.
Watchdog timer (WDT) 1ch.
8-bit OSC1 PWM timer (T8OSC1) 1ch.
- Timer
8 SEG x 8 COM or 12 SEG x 4 COM (1/3 bias)
Internal booster power supply circuit (16-value programmable ontrast)
15-value programmable (1.8 V to 3.2 V)
NMI, P Port Input interrupt 3ch.
Serial Interface interrupt 4ch.
Timer interrupt 9ch.
LCD, SVD, ADC, RFC interrupt
- LCD driver
8 SEG x 8 COM or 12 SEG x 4 COM (1/3 bias)
Internal booster power supply circuit (16-value programmable ontrast)
15-value programmable (1.8 V to 3.2 V)
NMI, P Port Input interrupt 3ch.
Serial Interface interrupt 4ch.
Timer interrupt 9ch.
LCD, SVD, ADC, RFC interrupt
- Power supply voltage detection (SVD) circuit
●Interrupt
1.8 V to 3.6 V (for normal operations)
2.7 V to 3.6 V (for flash deletion/programing)
Including voltage regulator circuit (with binary programmable operating voltage)
- Power supply voltage
-25°C to 70°C
SLEEP mode: 0.6 μA typ. (OSC1=OFF, IOSC=OFF, OSC3=OFF)
- Operating temperatures
●Current consumption

S1C17611

HALT mode: 2.0 μ A typ. (OSC1=32 kHz, IOSC=OFF, OSC3=OFF, PCKEN=0x0, LCD OFF)

3.0 μ A typ. (OSC1=32 kHz, IOSC=OFF, OSC3=OFF, PCKEN=0x0, LCD ON (All LCD On, maximum contrast, V_{c2} standard))

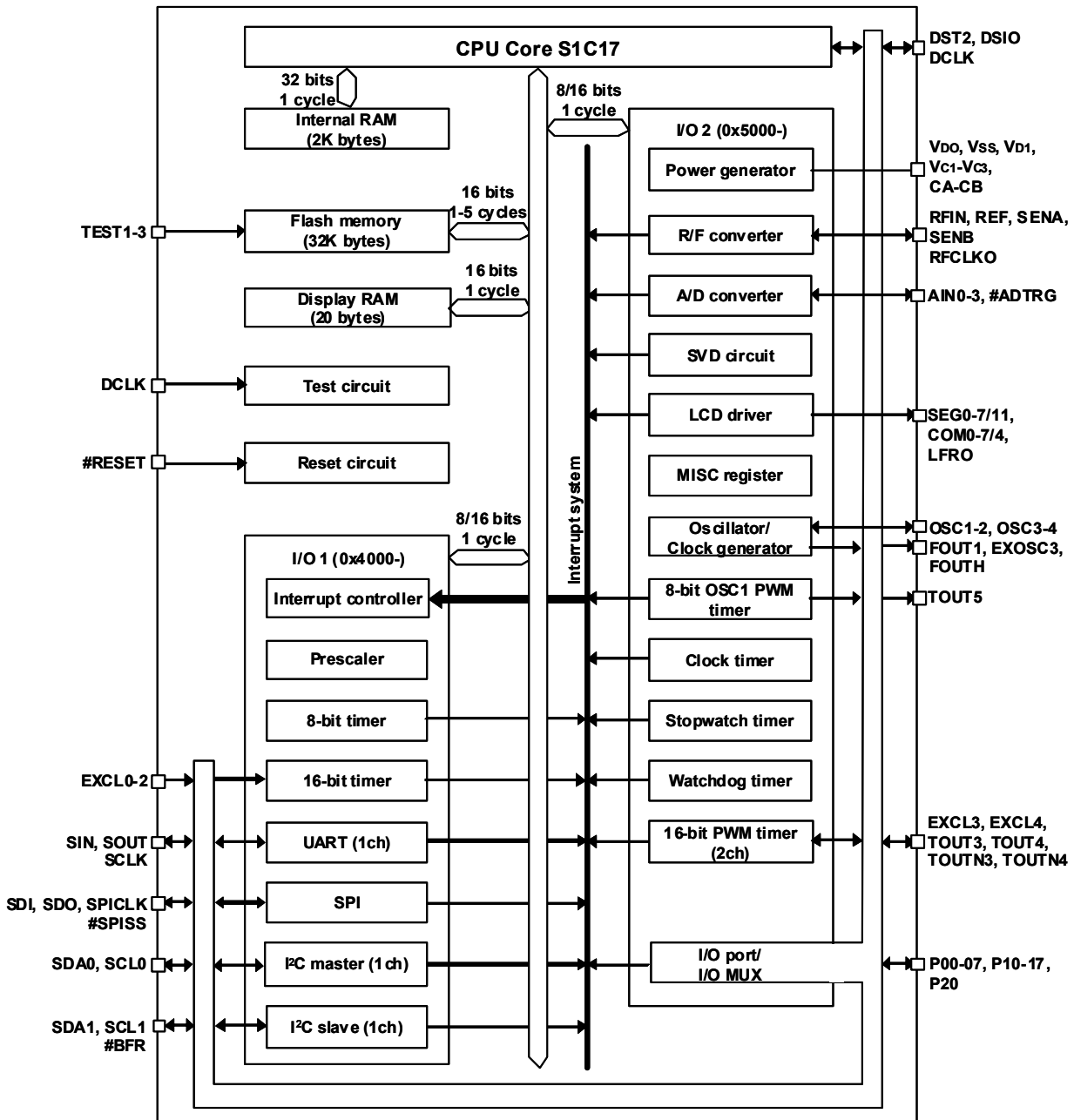
When operating: 12 μ A typ. (OSC1= 32kHz, IOSC=OFF, OSC3=OFF, LCD OFF)

400 μ A typ. (OSC1=OFF, IOSC=OFF, OSC3=1 MHz ceramic oscillator)

• Configuration as shipped

QFP12-48 7 mm x 7 mm body, 0.5 mm pitch
Bare chip 100 μ m pitch

■ BLOCK DIAGRAM



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