

## Low Power 16-bit Single Chip Microcontroller

- Low Power MCU (operating voltage 1.8 V, 0.6  $\mu$ A/SLEEP, 2.0  $\mu$ A/HALT)
- Flash memory(32KByte), 8.2MHz high speed operating at 1.8V power voltage
- LCD driver: max 128 segment, 16seg x 8com or 20seg x 4com
- Analog I/F: A/D converter(INL/DNL Max. 1.5LSB), R/F converter
- S1C17 High Performance 16-bit RISC CPU Core with C Optimized Compact Code and Serial ICE Support

### ■ DESCRIPTIONS

The S1C17601 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  
16 bit x 16 bit + 32 bit product-sum operation, 16 bit ÷ 16 bit division arithmetic unit
- IOSC oscillator circuit  
2.7 MHz (typ.)  
Oscillating start up 5  $\mu$ s (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 (S5U1C17702H) debug tool and self-rewriting via software.
- Internal RAM  
2 Kbytes
- Internal Display RAM  
20 bytes
- A/D Converter  
10 bit resolution 4ch
- R/F Converter  
DC oscillation/AC oscillation/External input 1ch.
- Input/output port  
Max. 24-bit general purpose input/output (shared with peripheral circuit input/output pins)
- Serial interfaces  
SPI (master/slave) 1ch  
I<sup>2</sup>C (master) 1ch  
I<sup>2</sup>C (slave) 1ch  
UART (460,800 bps, IrDA1.0 compatible) 1ch
- Timers  
8-bit timer (T8F) 1ch  
16-bit timer (T16) 3ch  
PWM timer (T16E) 1ch  
8-bit OSC1 timer (T8OSC1) 1ch  
Clock timer (CT) 1ch  
Stopwatch timer (SWT) 1ch  
Watchdog timer (WDT) 1ch
- LCD Driver  
16 SEG x 8 COM or 20 SEG x 4 COM (1/3 bias)  
Internal booster power supply circuit (16-value programmable contrast)
- Supply voltage detector  
15-value programmable (1.8 V to 3.2 V)
- Interrupts  
NMI, P Port Input interrupt 3ch.  
Serial Interface interrupt 4ch.  
Timer interrupt 9ch.  
LCD, SVD, ADC, RFC interrupt
- Power supply voltage  
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)
- Operating temperature  
-25°C to 70°C
- Power consumption  
SLEEP mode: 0.6  $\mu$ A typ. (OSC1=OFF, IOSC=OFF, OSC3=OFF)

# S1C17601

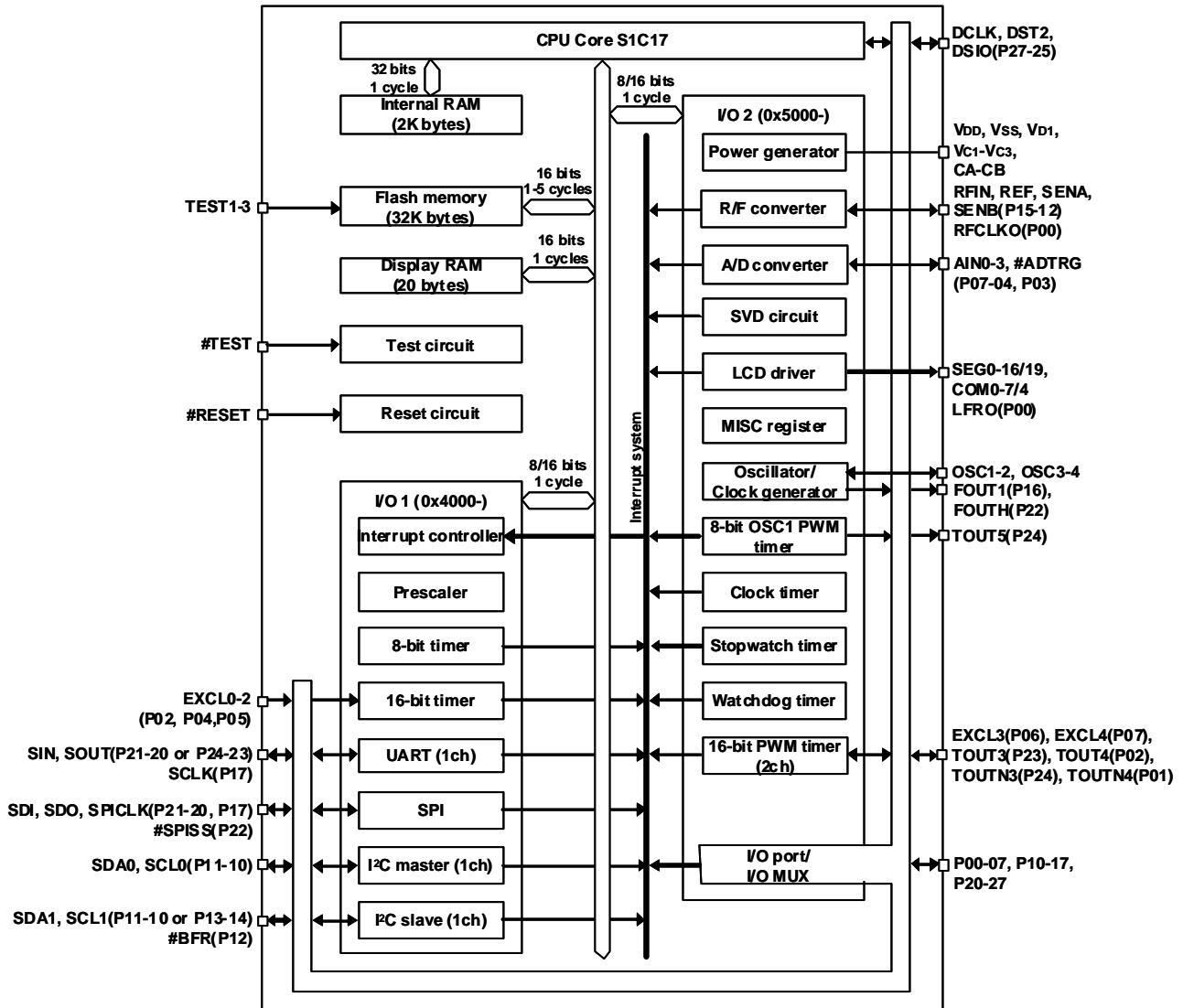
HALT mode: 2.0  $\mu$ A typ. (OSC1=32 kHz, IOSC=OFF, OSC3=OFF, PCKEN=0x0,  
LCD OFF)  
2.7  $\mu$ A typ. (OSC1=32 kHz, IOSC=OFF, OSC3=OFF, PCKEN=0x0,  
LCD ON (All LCD On, maximum contrast, VC2 standard))

When operating: 12  $\mu$ A typ. (OSC1= 32kHz, IOSC=OFF, OSC3=OFF, LCD OFF)  
340  $\mu$ A typ.(OSC1=OFF, IOSC=OFF, OSC3=1 MHz ceramic oscillator)

TQFP13-64 package (10 mm x 10 mm body, 0.5 mm pitch)  
VFPGA8H-81 package (8 mm x 8 mm, body, 0.8 mm pitch)  
Bare chip 100  $\mu$ m pitch

● Shipping form

## Block Diagram



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