**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

- **OSC oscillator circuit**
  - 2.7 MHz (typ.)
  - Oscillating start up 5 μs (max.)
  - Boot Clock (External components not required.)

- **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.

- **Internal RAM**
  - 2 Kbytes

- **A/D Converter**
  - 10 bit resolution 4ch

- **R/F Converter**
  - DC oscillation/AC oscillation/External input 1ch.
  - Max. 19-bit general purpose input/output (shared with peripheral circuit input/output pins)

- **Serial interface**
  - SPI (master/slave) 1ch.
  - I²C (master) 1ch.
  - I²C (slave) 1ch.
  - UART (460,800 bps, IrDA1.0 compatible) 1ch.

- **Timer**
  - 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.
  - 8 SEG x 8 COM or 12 SEG x 4 COM (1/3 bias)
  - Internal booster power supply circuit (16-value programmable ontrast)

- **LCD driver**
  - 15-value programmable (1.8 V to 3.2 V)

- **Power supply voltage detection (SVD) circuit**
  - NMI, P Port Input interrupt 3ch.
  - Serial Interface interrupt 4ch.
  - Timer interrupt 9ch.

- **Power supply voltage**
  - 1.8 V to 3.6 V (for normal operations)
  - 2.7 V to 3.6 V (for flash deletion/programming)
  - Including voltage regulator circuit (with binary programmable operating voltage)

- **Operating temperatures**
  - -25°C to 70°C

- **Current consumption**
  - SLEEP mode: 0.6 μA typ. (OSC1=OFF, IOSC=OFF, OSC3=OFF)
S1C17611

HALT mode: 2.0 μA typ. (OSC1=32 kHz, IOSC=OFF, OSC3=OFF, PCKEN=0x0, LCD OFF)
3.0 μA typ. (OSC1=32 kHz, IOSC=OFF, OSC3=OFF, PCKEN=0x0, LCD ON (All LCD On, maximum contrast, Vc2 standard))
When operating: 12 μA typ. (OSC1=32 kHz, IOSC=OFF, OSC3=OFF, PCKEN=0x0, LCD OFF)
400 μA 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 μm pitch

BLOCK DIAGRAM

CPU Core S1C17

Internal RAM (2K bytes)

Flash memory (32K bytes)

Display RAM (20 bytes)

Test circuit

Reset circuit

Interrupt controller

Prescaler

8-bit timer

16-bit timer

 UART (1ch)

SPI

PC master (1ch)

PC slave (1ch)

8/16 bits 1 cycle

16 bits 1-5 cycles

8/16 bits 1 cycle

Interrupt system