Low Power 16-bit Single Chip Microcontroller

- Low Power MCU (Operating voltage 1.8V, 1.2uA/ SLEEP, 2.7uA/ HALT)
- 128K-Byte Flash Memory, 12KB RAM
- High quality, stable display LCD driver (72SEG x 32COM or 88SEG x 16COM) with voltage booster
- Infrared Remote Controller with Carrier Generator
- S1C17 High Performance 16-bit RISC CPU Core with C Optimized Compact Code and Serial ICE Support

■ DESCRIPTIONS

The S1C17121 is a 16-bit MCU featuring high-speed low-power operations, compact dimensions, and wide address space. 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 processor
  - 16 bit ÷ 16bit division arithmetic unit

- **IOSC oscillator circuit**
  - 2.7 MHz (typ)
  - Boot Clock (External components not required.)

- **OSC3 oscillator circuit**
  - Crystal oscillator circuit or ceramic oscillator circuit, 4.2 MHz (max.) or external clock input

- **OSC1 oscillator circuit**
  - Crystal oscillator circuit 32.768 kHz (typ)

- **Internal ROM**
  - 32 Kbytes (for both instructions and data)

- **Internal RAM**
  - 2 Kbytes

- **Internal display RAM**
  - 40 bytes

- **A/D Converter**
  - 8ch

- **R/F Converter**
  - DC oscillation/AC oscillation/External input ch.

- **Input/output port**
  - Max. 36-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 (230,400bps, IrDA1.0 compatible) 2ch.
  - Remote controller (REMC) 1ch.

- **Timer**
  - 8-bit timer (T8F) 2ch.
  - 16-bit timer (T16) 3ch.
  - PWM timer (T16E) 1ch.
  - Clock timer (CT) 1ch.
  - Stopwatch timer (SWT) 1ch.
  - Watchdog timer (WDT) 1ch.
  - 8-bit OSC1 PWM timer (T8OSC1) 1ch.

- **LCD driver**
  - 36 SEG x 8 COM or 40 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)

- **Interrupt**
  - NMI, P Port Input interrupt 3ch.
  - Serial Interface interrupt 5ch.
  - Timer interrupt 9ch.
  - LCD, SVD, ADC, RFC interrupt

- **Power supply voltage**
  - 1.8 V to 3.6 V (for normal operations)

- **Operating temperatures**
  - -40°C to 85°C (When A/D converter is used -40°C to 50°C)

- **Current consumption**
  - SLEEP mode: 0.15 µA typ. (OSC1=OFF, IOSC=OFF, OSC3=OFF)
  - HALT mode: 0.9 µA typ. (OSC1=32kHz, IOSC=OFF, OSC3=OFF, PCKEN=0x00 LCD OFF)
  - 1.9 µA typ. (OSC1=32kHz, IOSC=OFF, OSC3=OFF, PCKEN=0x00 LCD ON (All LCD On, maximum contrast, VC2 standard))
  - When operating: 7 µA typ. (OSC1=32kHz, IOSC=OFF, OSC3=OFF, LCD OFF)
  - 250 µA typ. (OSC1=OFF, IOSC=OFF, LCD OFF)
S1C17121

OSC3=1MHz ceramic oscillator

Shipping form

- TQFP14-100 12 mm x 12 mm body, 0.4 mm pitch
- VFBGA7H-144 7 mm x 7 mm, body, 0.5 mm pitch
- Chip