

## 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)  
Oscillating start up 5 μs (max.)  
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  
10 bit resolution 8ch
- R/F Converter  
DC oscillation/AC oscillation/External input 2ch.
- Input/output port  
Max. 36-bit general purpose input/output (shared with peripheral circuit input/output pins)
- Serial interface  
SPI (master/slave) 1ch.  
I<sup>2</sup>C (master) 1ch.  
I<sup>2</sup>C (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=0x0, LCD OFF)  
1.9 μA typ. (OSC1=32kHz, IOSC=OFF, OSC3=OFF, PCKEN=0x0, 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,

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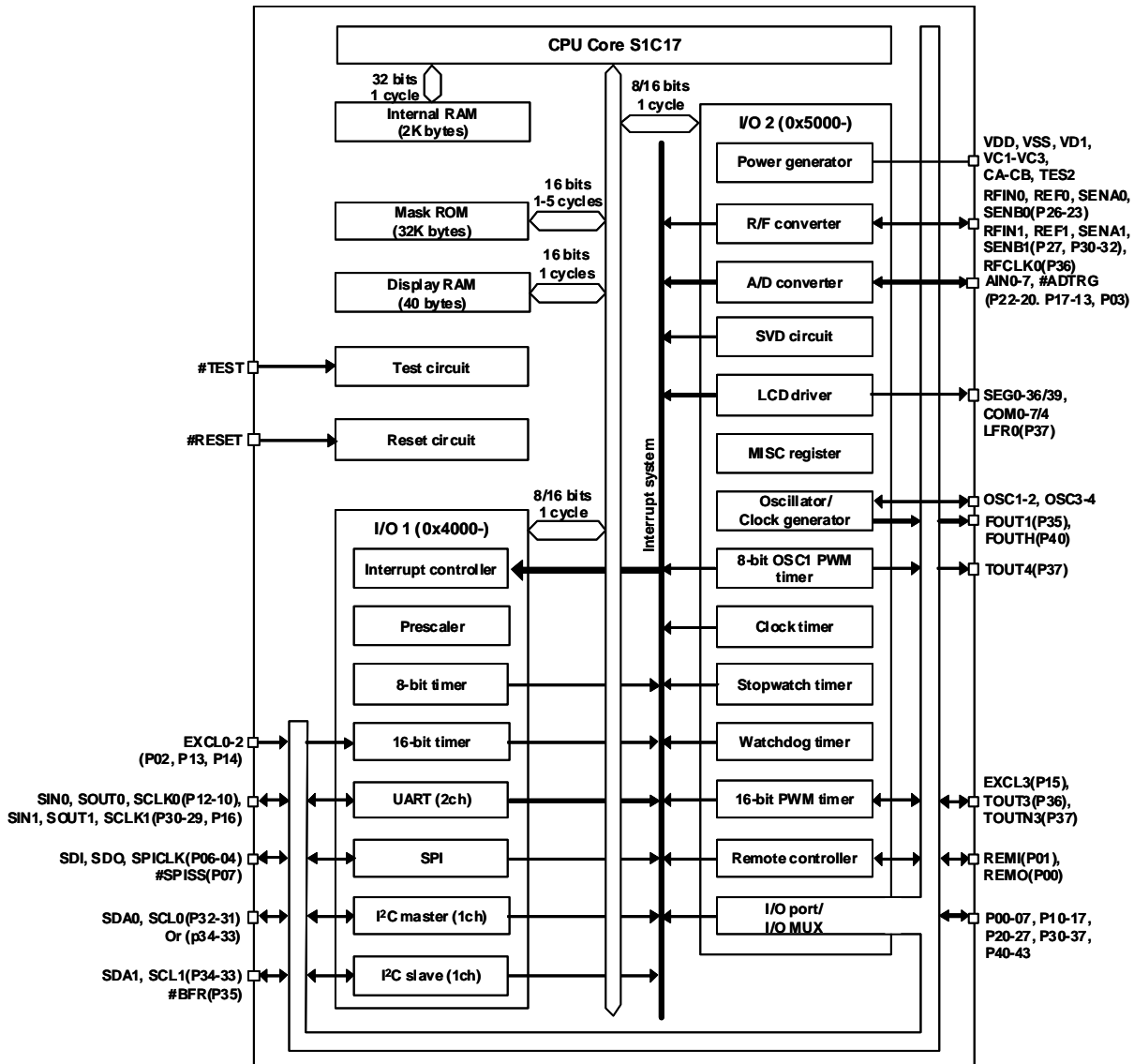
# S1C17121

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● Shipping form

OSC3=1MHz ceramic oscillator)  
TQFP14-100 12 mm x 12 mm body, 0.4 mm pitch  
VFPGA7H-144 7 mm x 7 mm, body, 0.5 mm pitch  
Chip

## ■ Block Diagram



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