

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 S1C17702 is a 16-bit MCU featuring high-speed low-power operations, compact dimensions, wide address space, and on-chip ICE. Based on an S1C17 CPU core, this product incorporates 128 KB of flash memory, 12 KB of RAM, a serial interface supporting sensors such as UART, SPI, and I2C to support high-bit rate and IrDA1.0, an 8-bit timer, 16-bit timer, PWM & capture timer, clock timer, stopwatch timer, watchdog timer, 28 general input/output ports, max. 72 segment x 32 common LCD driver and a power supply voltage booster circuit, power supply voltage detection circuit, 32 kHz and max. 8.2 MHz oscillator circuit, and internal 1.8 V voltage regulator.

It allows 8.2 MHz high-speed operation at an operating voltage of just 1.8 V, and executes single instructions using a single clock with 16-bit RISC processing. The product also incorporates a coprocessor for arithmetic functions for multiplication and product-sum operations.

The on-chip ICE function allows onboard programs/deletes of internal flash memory and program debugging and evaluations following connection of the three signal wires to the ICD Mini (S5U1C17702H).

The S1C17702 is ideal for applications (such as remote controllers and sports watches) requiring battery power and sensor interface and for LCD displays of up to 72 x 32 dots.

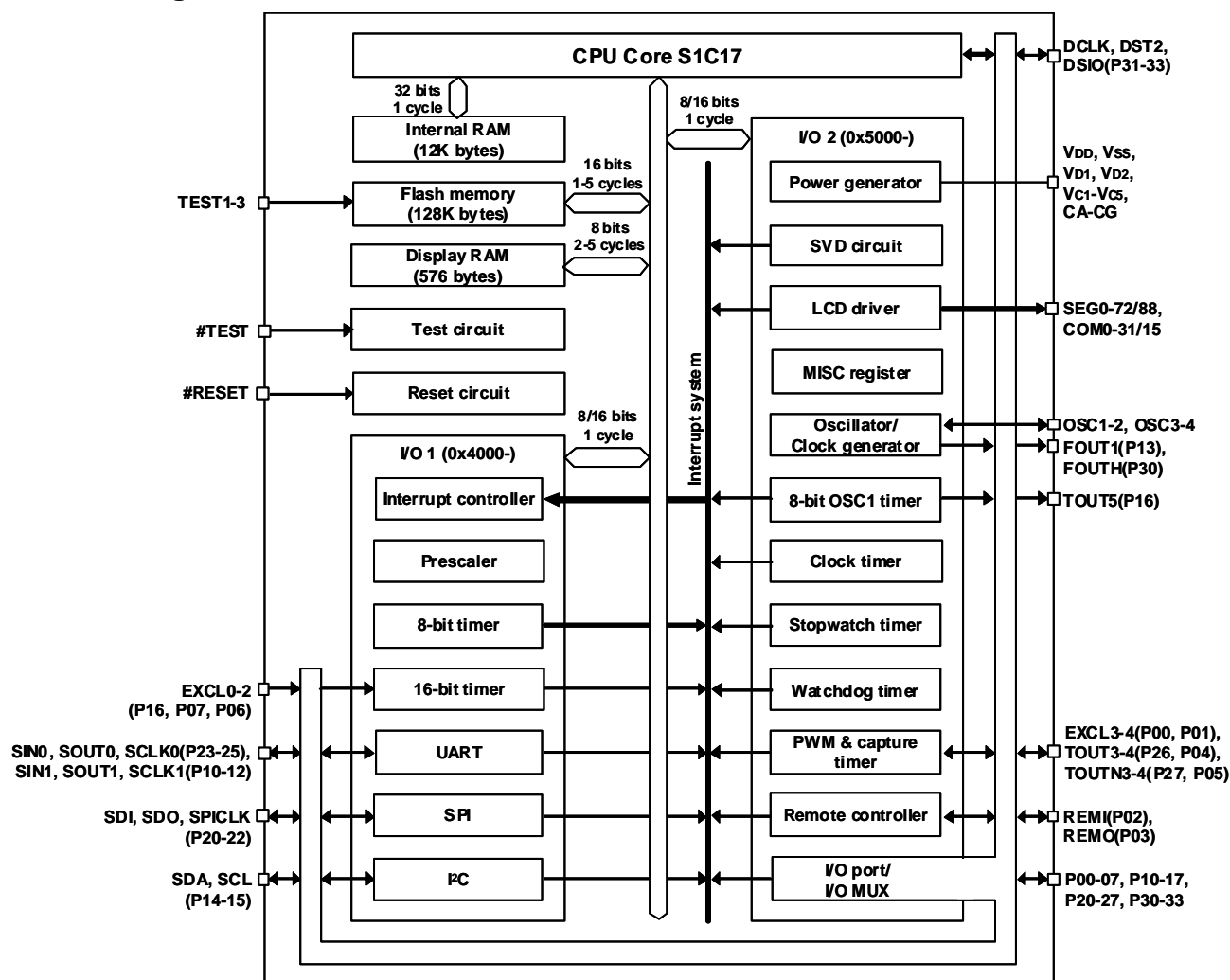
■ FEATURES

- | | |
|---------------------------|---|
| ● CPU | Epson original 16-bit RISC CPU core S1C17
16-bit x 16-bit + 32-bit product-sum processor
16-bit ÷ 16-bit divider |
| ● IOSC oscillator circuit | 2.7 MHz (typ) |
| ● OSC3 oscillator circuit | Crystal oscillator circuit or ceramic oscillator circuit, 8.2 MHz(max) |
| ● OSC1 oscillator circuit | Crystal oscillator circuit 32.768 kHz (typ) |
| ● Internal flash memory | 128 Kbytes (for both instructions and data)
Allows 1,000 overwrites (min)
Read/program protection function
Allows onboard rewriting with the ICD Mini (S5U1C17702H) debug tool and self-rewriting via software. |
| ● Internal RAM | 12 Kbytes |
| ● Internal display RAM | 576 bytes |
| ● Input/output port | Max. 28-bit general purpose input/output (shared with peripheral circuit input/output pins) |
| ● Serial interface | SPI (master/slave) 1ch.
I2C (master) 1ch.
UART (460,800 bps, IrDA1.0 compatible) 2ch.
Remote controller (REMC) 1ch. |
| ● Timer | 8-bit timer (T8F) 2ch.
16-bit timer (T16) 3ch.
PWM& capture timer (T16E) 2ch.
Clock timer (CT) 1ch.
Stopwatch timer (SWT) 1ch.
Watchdog timer (WDT) 1ch.
8-bit OSC1 timer (T8OSC1) 1ch. |
| ● LCD driver | 72 SEG x 32 COM or 88 SEG x 16 COM (1/5 bias)
Internal booster power supply circuit (16-step programmable contrast) |
| ● Supply voltage detector | 16-value programmable (1.7 V to 3.2 V) |
| ● Interrupt | Reset, NMI, Programmable interrupt x18 (8 levels) |
| ● Power supply voltage | 1.8 V to 3.6 V (for normal operations, internal regulator-based 1.8 V low-power operations)
2.7 V to 3.6 V (for flash erase/writing, internal 2.5 V operations)
Internal constant-voltage circuit (2-step programmable operating voltage) |
| ● Operating temperatures | -20°C to 70°C |

S1C17702

● Current consumption	SLEEP mode:	1.2 μ A typ. (OSC1 = OFF, IOSC = OFF, OSC3 = OFF)
	HALT mode:	2.7 μ A typ. (OSC1 = 32 kHz, IOSC = OFF, OSC3 = OFF, PCKEN = 0x0, LCD OFF)
		9.7 μ A typ. (OSC1 = 32 kHz, IOSC = OFF, OSC3 = OFF, PCKEN = 0x0, LCD ON (All on, contrast max.))
	When operating:	16 μ A typ. (OSC1 = 32 kHz, IOSC = OFF, OSC3 = OFF, LCD OFF) 450 μ A typ. (OSC1 = OFF, IOSC = OFF, OSC3 = 1 MHz ceramic oscillator)
● Shipping form	QFP21-176 pin package (26 mm x 26 mm, pin pitch: 0.5 mm)	
	VFBGA8H-181 package (8 mm x 8 mm, ball pitch: 0.5 mm)	
	Chip	

■ Block Diagram



NOTICE:

No part of this material may be reproduced or duplicated in any form or by any means without the written permission of Seiko Epson. Seiko Epson reserves the right to make changes to this material without notice. Seiko Epson does not assume any liability of any kind arising out of any inaccuracies contained in this material or due to its application or use in any product or circuit and, further, there is no representation that this material is applicable to products requiring high level reliability, such as, medical products. Moreover, no license to any intellectual property rights is granted by implication or otherwise, and there is no representation or warranty that anything made in accordance with this material will be free from any patent or copyright infringement of a third party. This material or portions thereof may contain technology or the subject relating to strategic products under the control of the Foreign Exchange and Foreign Trade Law of Japan and may require an export license from the Ministry of Economy, Trade and Industry or other approval from another government agency.

All brands or product names mentioned herein are trademarks and/or registered trademarks of their respective companies.

©Seiko Epson Corporation 2010, All rights reserved.

*This product uses SuperFlash® technology licensed by Silicon Storage Technology, Inc.

SEIKO EPSON CORPORATION

SEMICONDUCTOR OPERATIONS DIVISION

IC Sales Department

IC International Sales Group

421-8 Hino, Hino-shi, Tokyo 191-8501, JAPAN

Phone: +81-42-587-5814 FAX: +81-42-587-5117

■ Epson semiconductor website

http://www.epson.jp/device/semicon_e/

Document code: 411396701

First issue Oct, 2009

Revised Feb. 2010 in Japan

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Epson:

S1C17702F101100