

## Suitable for wearable and industrial control devices ARM® microcontroller with LCD driver S1C31W Series

### General

The S1C31W series is 32-bit MCU with an ARM® Cortex®-M0+ processor included that features low-power operation. It integrates LCD driver (max. 2,560-dot) and a lot of serial interface circuits.

### Large capacity memory

Large capacity memory corresponding to market trend of multi functionality is integrated on a single chip. It is possible to store and operate user programs that size is increasing by complicated software design.

### Built-in high resolution LCD driver

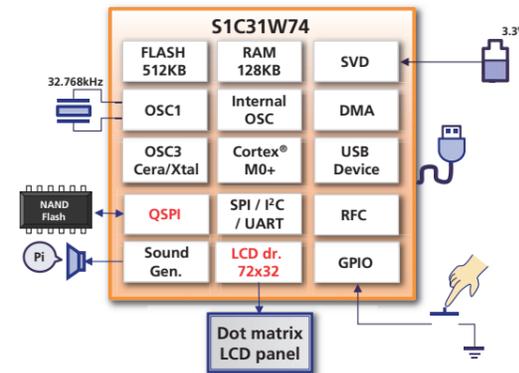
S1C31W series can drive dot-matrix or 7-segment LCD by built-in LCD driver. It equips internal constant voltage circuit that has been cultivated over the Epson traditional products, and can maintain display quality that is not affected by the remaining battery level. The contrast can be adjusted by software. It offers optimum and flexible design for user's product development.

### Wide variety of interface

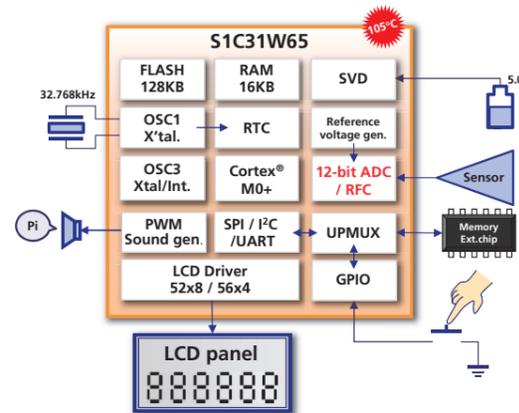
In addition to UART, SPI and I<sup>2</sup>C, it supports Quad-SPI (QSPI) which can communicate with external serial flash memory at high speed. An R/F converter for temperature and humidity measurement, USB FS 2.0 device controller, Universal port multiplexers that increase board layout design flexibility are also supported.

\* It depends on the product which interface is supported.

### Application example: Sport watch



### Application example: Industrial control device



### S1C31W Series Products overview

Products	Display LCD Driver seg×com	Operation clock			Supply current				Power supply Supply voltage [V]	Memory			I/O I/O port	Timer				SIO				Analog			Reset		Others		Form of delivery			
		High-speed [Hz] (Max.)	Low-speed [Hz] (Typ.)	Built-in oscillator [Hz] (Typ.)	Sleep [μA] (Typ.)	Halt [μA] (Typ.)	mode0 Operating [μA] (Typ.)	mode1 Operating [μA] (Typ.)		Flash ROM [Byte]	Display RAM [Byte]	RAM [Byte]		16-bit timer	16-bit PWM timer	Watchdog timer	Real-time clock	UART	SPI	Quad SPI	I <sup>2</sup> C	Remote controller transmission and reception	R/F converter (24-bit)	A/D converter (12-bit)	SVD	POR	BOR	Sound generator	USB	Special function	Package	Chip
S1C31W65	52 x 8 56 x 4	33M	32.768k	32k/1M/2M/ 8M/12M/16M/ 24M/32M	TBD	TBD	TBD	TBD	1.8 to 5.5	128K	112	16K	64	8	3 x 4	1	1	2	2	-	2	1	1	7	1	○	○	1	-	DMA	TQFP14-100	-
S1C31W73	96 x 16 88 x 24 80 x 32	33M	32.768k	32k/1M/2M/ 8M/12M/16M/ 24M/32M	TBD	TBD	TBD	TBD	1.8 to 5.5	384K	768	32K	73	8	2 x 4	1	1	2	2	1	2	1	1	7	1	○	○	1	1	DMA	QFP21-216	○
S1C31W74	88 x 16 80 x 24 72 x 32	21M	32.768k	1M/2M/8M/ 12M/16M/20M	0.4	1.7	250	150	1.8 to 3.6	512K	704	128K	71	4	2 x 2	1	1	2	1	1	1	1	-	2	○	○	1	1	-	VFBGA8H-181	○	

----- : Under development

### S1C31D Series Products overview

Products	Display Display controller	Operation clock			Supply current				Power supply Supply voltage [V]	Memory		I/O I/O port	Timer				SIO				Analog			Reset		Others		Form of delivery			
		High-speed [Hz] (Max.)	Low-speed [Hz] (Typ.)	Built-in oscillator [Hz] (Typ.)	Sleep [μA] (Typ.)	Halt [μA] (Typ.)	mode0 Operating [μA] (Typ.)	mode1 Operating [μA] (Typ.)		Flash ROM [Byte]	RAM [Byte]		16-bit timer	16-bit PWM timer	Watchdog timer	Real-time clock	UART	SPI	Quad SPI	I <sup>2</sup> C	Remote controller transmission and reception	R/F converter (24-bit)	A/D converter (12-bit)	SVD	POR	BOR	Sound generator	USB	Special function	Package	Chip
S1C31D01	MDC	21M	32.768k	32k/1M/2M/ 8M/12M/16M/20M	0.46	1.7	250	155	1.8 to 5.5	256K	96K	57	8	2 x 6	1	1	3	2	1	2	1	-	7	1	○	○	1	1	DMA	WCSP96 TQFP14-80 VFBGA5H-81	○
S1C31D50 / 51	-	16M	32.768k	32k/4M/8M/16M	0.46	1.8	250	155	1.8 to 5.5	192K	8K	39 55 71 91	8	2 x 4	1	1	3	3	1	3	1	1	5 7 8 8	1	○	○	-	-	DMA Sound HW	TQFP12-48 QFP13-64 TQFP14-80 QFP15-100	-

## Suitable for battery-driven wearable products ARM® microcontroller with a memory display controller "S1C31D01"

### General

The S1C31D01 is a 32-bit MCU with an ARM® Cortex®-M0+ processor included that features low-power operation. It integrates a lot of serial interface circuit, a memory display controller, and a voltage booster.

### Memory Display Controller (MDC)

MDC supports several panel interfaces for each memory display. It includes graphics hardware acceleration functions such as rotation of frame buffer image to panel, Image/bitmap copy with scaling/rotation/horizontal and vertical shearing/alpha-blending\*, Line/Rectangle/Ellipse/Arc drawing with filled and unfilled.

It can contribute to reduce software load by dedicated hardware.

### Power booster circuit

The S1C31D01 generates supply voltages for memory display (VMDH/VMDL) with programmable power booster circuit. It is possible to reduce external components.

### Small size package

Wafer level Chip Size Package (WCSP) is supported as same size with chip. It is suitable for various applications which have limited mounting area on the print circuit board.

### Lineup

Epson prepares CPU-less dedicated memory display controller "S1D13C00" for the customers who already have Host CPU. It supports same features with S1C31D01 about graphic acceleration function and power booster circuit. There is a variety of products that can be selected according to your system.

### Examples of Graphic Acceleration

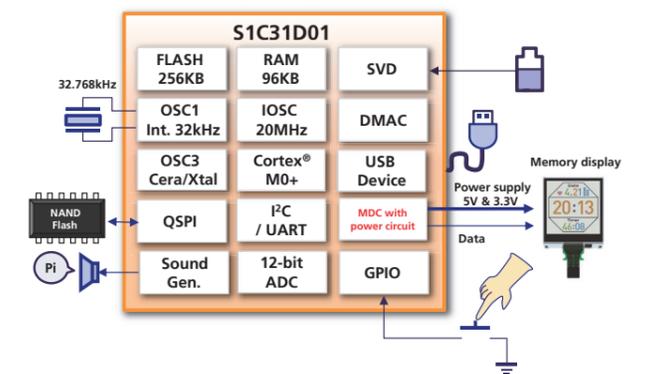
#### Drawing Engine



#### Image / Bitmap copy



### Application Example: Sport watch



\* Alpha-blending: supported at 6-bit color only.

## World realized by low power consumption of the S1C17W Series

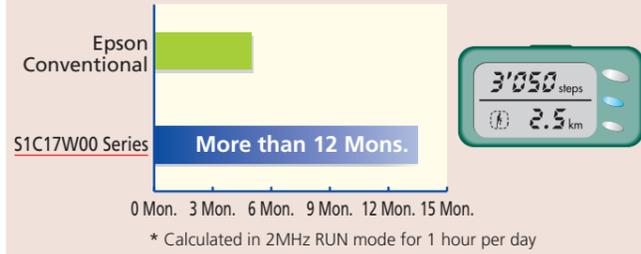
### Case of Digital Watch

Conditions: Continuous LCD watch display using LR44 battery (1.5 V)



### Case of Pedometer

Conditions: LCD display and acceleration sensing for several hours per day using the CR2032 battery (3V)



## S1C17W Series Products overview

Products	Display	Operation clock			Supply current				Power supply	Memory		I/O port	Timer				SIO				Analog				Others		Form of delivery		
		LCD Driver segxcom	High-speed [Hz] (Max.)	Low-speed [Hz] (Typ.)	Built-in oscillator [Hz] (Typ.)	Sleep [μA] (Typ.)	Halt [μA] (Typ.)	32kHz Operating [μA] (Typ.)		1MHz Operating [μA] (Typ.)	Supply voltage [V]		Flash ROM [Byte]	RAM [Byte]	I/O port *8	16-bit timer	16-bit PWM timer	Watchdog timer	Real-time clock	UART	SPI	QSPI	I <sup>2</sup> C	Remote controller transmission and reception	R/F converter (24-bit)	A/D converter (12-bit)	SVD *4	Sound generator	Multiple r/Divider
S1C17W00 series W00 group		[Ultra Low Power] This is an ultra-low power consumption 16-bit MCU compatible to low voltage operations from 1.2V, even with built-in flash memory. This product is equipped with a built-in RTC, stopwatch, high-performance PWM, external bus I/F and improved analog functions, combined with the powerful											The embedded highly efficient DC-DC converter generates an internal constant voltage, to drive an IC with a low power consumption operation beyond 4-bit MCUs. processing capacity of the 16-bit CPU, suitable for battery driven applications.																
S1C17W03	-	4.2M	32.768k	250k/384k/500k/700k/1M/2M/4M	0.15	0.3	4	250	1.2 to *1 3.6	16K *3	2K	35/24	4	2 x 2	1	1	2	2	-	1	1	2 <sup>*5</sup> <sub>1</sub>	6/5	1	1	1	-	TQFP12-48	○
S1C17W04	-	4.2M	32.768k	250k/384k/500k/700k/1M/2M/4M	0.15	0.3	4	250	1.2 to *1 3.6	32K *3	2K	35/24	4	2 x 2	1	1	2	2	-	1	1	2 <sup>*5</sup> <sub>1</sub>	6/5	1	1	1	-	TQFP12-48	○
S1C17W00 series W10/W20/W30 group		[Ultra Low Power] This is an ultra-low power consumption 16-bit MCU compatible to low voltage operations from 1.2V, even with built-in flash memory. LCD driver, high-performance PWM and improved analog functions, combined with the powerful processing capacity of the 16-bit CPU, suitable for battery											The embedded highly efficient DC-DC converter generates an internal constant voltage, to drive an IC with a low power consumption operation beyond 4-bit MCUs. This product is equipped with a built-in RTC, driven applications that require a LCD and clock function.																
S1C17W12	26 x 4 18 x 4	4.2M	32.768k	32k/250k/384k/500k/700k/1M/2M/4M	0.15	0.3	2	140	1.2 to *1 3.6	48K *3	2K	32/26	3	2 x 2	1	1	2	1	-	1	1	2 <sub>5</sub>	-	1	1	1	LED pin x 2	-	○
S1C17W13	26 x 4 18 x 4 20 x 4 *7	4.2M	32.768k	32k/250k/384k/500k/700k/1M/2M/4M	0.15	0.3	2	140	1.2 to *1 3.6	48K *3	2K	32/26	3	2 x 2	1	1	2	1	-	1	1	2 <sub>5</sub>	-	1	1	1	LED pin x 2	QFP13-64	○
S1C17W14	54 x 4 50 x 8	4.2M	32.768k	250k/384k/500k/700k/1M/2M/4M	0.15	0.3	3	200	1.2 to *1 3.6	48K *3	4K	33	3	2 x 2	1	1	2	2	-	1	1	1	-	1	1	1	-	QFP15-100	○
S1C17W15	34 x 4 30 x 8 32 x 4 28 x 8 24 x 4 20 x 8	4.2M	32.768k	500k/700k/1M/2M/4M	0.15	0.3	4	250	1.2 to *1 3.6	64K *3	4K	36/33/28	3	2 x 2	1	1	2	1	-	1	-	4 <sub>5</sub>	-	1	1	1	-	QFP15-100	○
S1C17W16	60 x 4 56 x 8	4.2M	32.768k	250k/384k/500k/700k/1M/2M/4M	0.15	0.3	3	200	1.2 to *1 3.6	64K *3	8K	40	5	2 x 2	1	1	2	3	-	1	1	2 <sub>5</sub>	4	1	1	1	-	TQFP15-128	○
S1C17W18	48 x 4 44 x 8 32 x 4 28 x 8 24 x 4 20 x 8	4.2M	32.768k	250k/384k/500k/700k/1M/2M/4M	0.15	0.5	4	140	1.2 to *1 3.6	128K (*3)	8K	68/59/49	4	3 x 2	1	1	2	2	-	1	1	2 <sub>5</sub>	7	1	1	1	Temperature sensor	TQFP15-128	○
S1C17W22	72 x 4/8 64 x 16 56 x 24	4.2M	32.768k	500k/700k/1M/2M/4M	0.15	0.3	4	250	1.2 to *1 3.6	64K *3	4K	42	2	2 x 2	1	1	1	1	-	1	1	2 <sub>5</sub>	-	1	1	1	-	TQFP15-128	○
S1C17W23	72 x 4/8 64 x 16 56 x 24	4.2M	32.768k	500k/700k/1M/2M/4M	0.15	0.3	4	250	1.2 to *1 3.6	96K *3	8K	42	4	3 x 2	1	1	2	2	-	1	1	2 <sub>5</sub>	6	1	1	1	-	TQFP15-128	○
S1C17W34	80 x 16 64 x 32	4.2M	32.768k	250k/384k/500k/700k/1M/2M/4M	0.15	0.4	3	150	1.2 to *2, *6 3.6	128K (*3)	12K	53	4	3 x 2	1	3	2	2	-	1	1	2 <sub>5</sub>	7	1	1	1	Temperature sensor	QFP21-176	○
S1C17W35	80 x 16 64 x 32	4.2M	32.768k	250k/384k/500k/700k/1M/2M/4M	0.15	0.4	3	150	1.2 to *2, *6 3.6	256K (*3)	12K	53	4	3 x 2	1	3	2	2	-	1	1	2 <sub>5</sub>	7	1	1	1	Temperature sensor	QFP21-176	○
S1C17W36	80 x 16 64 x 32	4.2M	32.768k	250k/384k/500k/700k/1M/2M/4M	0.15	0.4	3	150	1.2 to *2, *6 3.6	384K (*3)	16K	53	4	3 x 2	1	3	2	2	-	1	1	2 <sub>5</sub>	7	1	1	1	Temperature sensor	QFP21-176	○

\*1: During erasing / programming in flash memory (V<sub>DD</sub>): 1.8V to 3.6V

\*2: During operations LCD (V<sub>DD</sub>): 2.5V to 3.6V

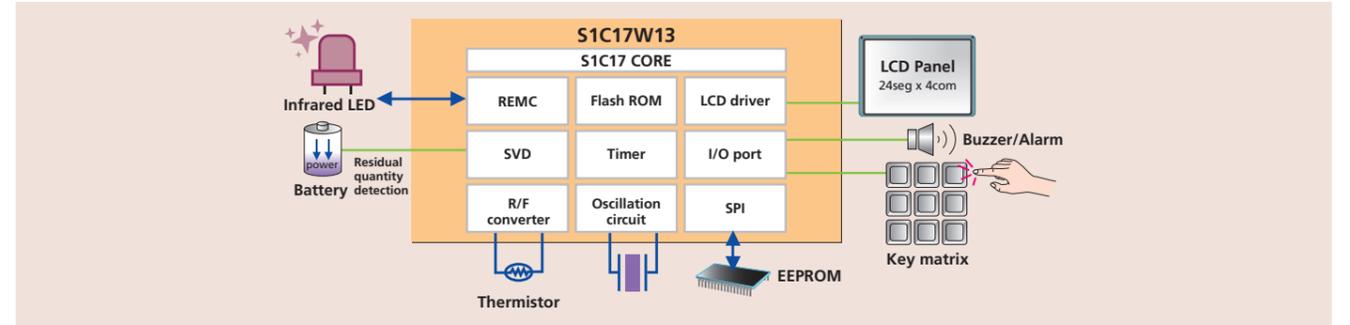
\*3: During erasing / programming voltage in flash memory (V<sub>PP</sub>): The external applying of 7.5V / 7.5V (Typ.) is needed. (\*3) can be rewritten even with internal power supply.

\*4: SVD is an abbreviation for Supply Voltage Detector.

\*5: Independent operation for each channel.

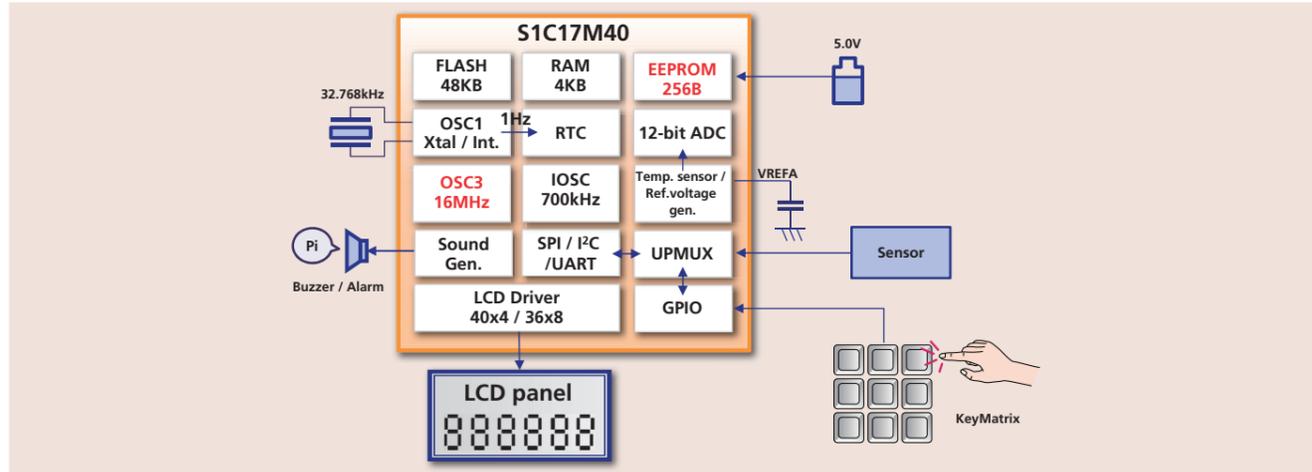
## S1C17W Series Application examples

### Example of an application using the S1C17W13: Remote controller



### ■ S1C17M Series Application examples

Example of an application using the S1C17M40: FA/Industrial control device



### ■ S1C17M Series Products overview

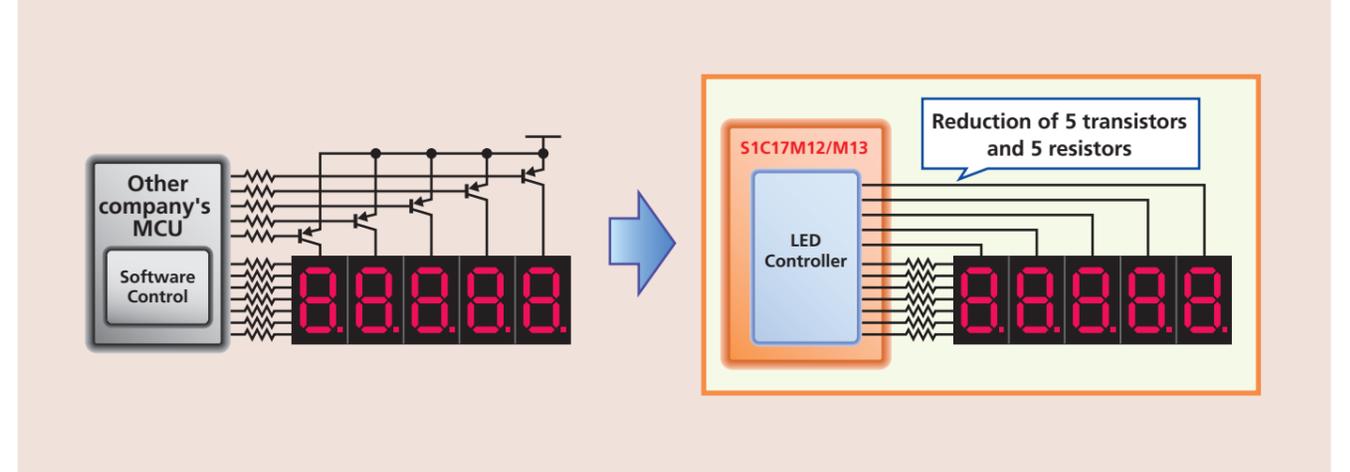
Products	Display		Operation clock			Supply current				Power supply	Memory			I/O port	Timer				SIO				Analog			Reset		Others			Form of delivery		
	LCD Driver segxcom	Display controller	High-speed [Hz] (Max.)	Low-speed [Hz] (Typ.)	Built-in oscillator [Hz] (Typ.)	Sleep [μA] (Typ.)	Halt [μA] (Typ.)	32kHz Operating [μA] (Typ.)	1MHz Operating [μA] (Typ.)	Supply voltage [V]	Flash ROM [Byte]	EEPROM [Byte]	RAM [Byte]		16-bit timer	16-bit PWM timer	Watchdog timer	Real-time clock	UART	SPI	Quad SPI	I <sup>2</sup> C	Remote controller transmission and reception	R/F converter (24-bit)	A/D converter (12-bit)	SVD <sup>*4</sup>	POR	BOR	Sound generator	Multiple r/Divider	Special function	Package	Chip
S1C17M00 series																																	
It is an application specialized series. It is a 16-bit MCU with Flash memory compatible with high processing while achieving low power consumption, supporting power supply voltages from 1.8 V to 5.5 V.																																	
S1C17M01	32 x 4 28 x 8	-	16.3M	32.768k	7.37M	0.35	0.8	12.5	210	1.8 to 5.5 <sup>*1</sup>	32K <sup>*3</sup>	-	4K	19	5	-	1	1	1	2	-	1	-	1	-	1	○	-	-	AMRC	TQFP13-64	○	
S1C17M10	88 x 8 80 x 16	-	16M	32.768k	32k/ 4M/8M/ 12M/16M	0.16	0.6	4	145	1.8 to 5.5 <sup>*2</sup>	64K <sup>(*)3</sup>	-	4K	33	5	1 x 2	1	1	1	-	1	-	-	1	○	-	-	1	SMCIF	TQFP15-128	○		
S1C17M12	-	LED controller 8x5	16.8M	-	4M/8M/ 12M/16M	0.35	40	-	150	1.8 to 5.5 <sup>*2</sup>	16K <sup>*3</sup>	-	2K	39	4	1 x 2	1	-	1	2	-	1	-	-	1	○	○	-	1	High current port x 5	TQFP12-48	○	
S1C17M13	-	LED controller 8x5	16.8M	-	4M/8M/ 12M/16M	0.35	40	-	150	1.8 to 5.5 <sup>*2</sup>	16K <sup>*3</sup>	-	2K	39	4	1 x 2	1	-	1	2	-	1	-	8	1	○	○	-	1	High current port x 5	TQFP12-48	○	
S1C17M20	-	-	21M	-	32k/700k/ 12M/16M/20M	0.36	1.5 0.7	5.5 5	160	1.8 to 5.5 <sup>*2</sup>	16K <sup>(*)3</sup>	-	2K	18 24	4	2 x 2	1	1	2	2	-	1	1	-	4 6	1	○	○	1	1	-	SQFN4-24 SQFN5-32	-
S1C17M21	-	-	21M	32.768k	32k/700k/ 12M/16M/20M	0.36	0.7	5	160	1.8 to 5.5 <sup>*2</sup>	16K <sup>(*)3</sup>	-	2K	24	4	2 x 2	1	1	2	2	-	1	1	-	6	1	○	○	1	1	-	TQFP12-32	-
S1C17M22	-	-	21M	32.768k	32k/700k/ 12M/16M/20M	0.36	0.7	5	160	1.8 to 5.5 <sup>*2</sup>	16K <sup>(*)3</sup>	-	2K	40	4	2 x 2	1	1	2	2	-	1	1	2	8	1	○	○	1	1	-	TQFP12-48	-
S1C17M23	-	-	21M	-	32k/700k/ 12M/16M/20M	0.36	1.5 0.7	5.5 5	160	1.8 to 5.5 <sup>*2</sup>	32K <sup>(*)3</sup>	-	2K	18 24	4	2 x 2	1	1	2	2	-	1	1	-	4 6	1	○	○	1	1	-	SQFN4-24 SQFN5-32	-
S1C17M24	-	-	21M	32.768k	32k/700k/ 12M/16M/20M	0.36	0.7	5	160	1.8 to 5.5 <sup>*2</sup>	32K <sup>(*)3</sup>	-	2K	24	4	2 x 2	1	1	2	2	-	1	1	-	6	1	○	○	1	1	-	TQFP12-32	-
S1C17M25	-	-	21M	32.768k	32k/700k/ 12M/16M/20M	0.36	0.7	5	160	1.8 to 5.5 <sup>*2</sup>	32K <sup>(*)3</sup>	-	2K	40	4	2 x 2	1	1	2	2	-	1	1	2	8	1	○	○	1	1	-	TQFP12-48	-
S1C17M30	26 x 4 22 x 8 <sup>*6</sup>	-	16.8M	32.768k	32k/700k/ 12M/16M	0.2	0.7	5	160	1.8 to 5.5 <sup>*2</sup>	48K <sup>(*)3</sup>	256 <sup>*8</sup>	4K	38	4	3 x 2	1	1	2	2	-	1	1	2	2	1	○	○	1	1	-	TQFP12-48	-
S1C17M31	26 x 4 22 x 8	-	16.8M	-	32k/700k/ 12M/16M	0.2	1.4	5.5	160	1.8 to 5.5 <sup>*2</sup>	48K <sup>(*)3</sup>	256 <sup>*8</sup>	4K	38	4	3 x 2	1	1	2	2	-	1	1	2	2	1	○	○	1	1	-	TQFP12-48	-
S1C17M32	42 x 4 38 x 8 <sup>*6</sup>	-	16.8M	32.768k	32k/700k/ 12M/16M	0.2	0.7	5	160	1.8 to 5.5 <sup>*2</sup>	64K <sup>(*)3</sup>	256 <sup>*8</sup>	4K	54	4	3 x 2	1	1	2	2	-	1	1	2	2	1	○	○	1	1	-	TQFP13-64	-
S1C17M33	50 x 4 46 x 8	-	16.8M	32.768k	32k/700k/ 12M/16M	0.2	0.7	5	160	1.8 to 5.5 <sup>*2</sup>	96K <sup>(*)3</sup>	32 to 512 <sup>*8</sup>	4K	66	4	3 x 2	1	1	2	2	-	1	1	2	5	1	○	○	1	1	-	TQFP14-80	○
S1C17M34	37 x 4 33 x 8	-	16.8M	32.768k	32k/700k/ 12M/16M	0.2	0.7	5	160	1.8 to 5.5 <sup>*2</sup>	64K <sup>(*)3</sup>	256 <sup>*8</sup>	4K	52	4	3 x 2	1	1	2	2	-	1	1	2	5	1	○	○	1	1	-	TQFP13-64	-
S1C17M40	40 x 4 36 x 8	-	16.8M	32.768k	32k/700k/ 16M	0.25	0.7	5	-	1.8 to 5.5 <sup>*1</sup>	48K	256	2K	55	4	3 x 2	1	1	3	2	-	1	1	-	4	1	○	○	1	1	-	QFP13-64	-
	28 x 4 24 x 8	-	16.8M	-	32k/700k/ 16M	0.25	1.4	5.5	-	1.8 to 5.5 <sup>*1</sup>	48K	256	2K	41	4	3 x 2	1	1	3	2	-	1	1	-	3	1	○	○	1	1	-	TQFP12-48	-

\*1: During erasing / programming in flash memory /EEPROM programming (V<sub>DD</sub>): V<sub>PP</sub>=2.2V to 5.5V  
\*2: During erasing / programming in flash memory (V<sub>DD</sub>): 2.7V to 5.5 V, 2.4V to 5.5V during the external applying V<sub>PP</sub>=7.5V / 7.5V (Typ.)

\*3: During erasing / programming voltage in flash memory (V<sub>PP</sub>): The external applying of 7.5V / 7.5V (Typ.) is needed. (\*3) can be rewritten even with internal power supply.

### ■ S1C17M Series Function introduction

Example of 7 seg LED lighting up using the S1C17M12/M13



\*4: SVD is an abbreviation for Supply Voltage Detector.  
\*5: Output dedicated port 1 included.  
\*6: External voltage application mode only. to 5.5V

\*7: (MR sensor controller) Operation (V<sub>DD</sub>): 2.0V to 5.5V  
\*8: Flash area is used.  
\*9: During erasing / programming in flash memory (V<sub>DD</sub>): 2.4V to 5.5V

## ■ S1C17 Long-running Series

Products	Display LCD Driver segxcom	Operation clock			Supply current				Power supply Supply voltage [V]	Memory			I/O port I/O port	Timer							SIO				Analog			Others			Form of delivery								
		High-speed [Hz] (Max.)	Low-speed [Hz] (Typ.)	Built-in oscillator [Hz] (Typ.)	Sleep [μA] (Typ.)	Halt [μA] (Typ.)	32kHz Operating [μA] (Typ.)	1MHz Operating [μA] (Typ.)		Flash ROM [Byte]	Mask ROM [Byte]	RAM [Byte]		8-bit timer	16-bit timer	16-bit PWM timer	Stopwatch	Watchdog timer	Clock	Real-time clock	UART	SPI	I <sup>2</sup> C master	I <sup>2</sup> C slave	Remote controller transmission and reception	Rf converter (24-bit)	A/D converter (10-bit)	SVD *5	Sound generator	Multiplier/Divider	Special function	Package	Chip						
S1C17100/600 series		[Low Power] This is a 16-bit MCU with improved processing capacity and development environment, while maintaining low power consumption equivalent to this product is equipped with a built-in segment LCD driver, power circuit, clock function and various I/F, suitable for watches, clocks, remote controllers and											Epson's 4/8-bit MCUs. healthcare devices.																										
S1C17153	32 x 4	–	32.768k	500k/1M/2M	0.13	0.42	4	160	2.0 to 3.6	–	16K	2K	12	1	–	1	–	1	1	1	1	1	1	1	1	1	–	–	–	–	–	1	1	1	–	–	–		
S1C17121	40 x 4 36 x 8	4.2M	32.768k	2.7M	0.15	0.9	7	250	1.8 to 3.6	–	32K	2K	36	3	3	1	1	1	1	–	2	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	
S1C17651	20 x 4	4.2M	32.768k	32k/500k/1M/2M	0.09	0.42	10	350	2.0 to 3.6	16K <sub>+3</sub>	–	2K	12	1	–	1	–	1	1	1	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	
S1C17653	32 x 4	4.2M	32.768k	32k/500k/1M/2M	0.09	0.42	10	350	2.0 to 3.6	16K <sub>+3</sub>	–	2K	12	1	–	1	–	1	1	1	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	
S1C17656	32 x 4	–	32.768k	500k/1M/2M/4M	0.13	0.5	7.3	280	1.8 to 3.6	24K <sub>+4</sub>	–	2K	20	1	–	1	–	1	1	1	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	
S1C17611	12 x 4 8 x 8	8.2M	32.768k	2.7M	0.6	2.0	12	400	1.8 to 3.6 <sub>+1</sub>	32K <sub>+6</sub>	–	2K	19	2	3	2	1	1	1	–	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	
S1C17601	20 x 4 16 x 8	8.2M	32.768k	2.7M	0.6	2.0	12	340	1.8 to 3.6 <sub>+1</sub>	32K <sub>+6</sub>	–	2K	24	2	3	2	1	1	1	–	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	
S1C17621	40 x 4 36 x 8	8.2M	32.768k	2.7M	0.75	2.5	15	410	1.8 to 3.6 <sub>+1</sub>	32K <sub>+6</sub>	–	2K	36	3	3	1	1	1	1	–	2	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	
S1C17602	40 x 4 36 x 8	8.2M	32.768k	2.7M	0.75	2.5	15	410	1.8 to 3.6 <sub>+1</sub>	64K <sub>+6</sub>	–	4K	36	3	3	1	1	1	1	–	2	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	
S1C17622	56 x 4 52 x 8	8.2M	32.768k	2.7M	0.75	2.3	14	400	1.8 to 3.6 <sub>+1</sub>	64K <sub>+6</sub>	–	4K	47	3	3	1	1	1	1	–	2	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	
S1C17604	40 x 4 36 x 8	8.2M	32.768k	2.7M	0.75	2.3	14	400	1.8 to 3.6 <sub>+1</sub>	128K <sub>+6</sub>	–	8K	36	3	3	3	1	1	1	1	2	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	
S1C17624	56 x 4 52 x 8	8.2M	32.768k	2.7M	0.75	2.3	14	400	1.8 to 3.6 <sub>+1</sub>	128K <sub>+6</sub>	–	8K	47	3	3	3	1	1	1	1	2	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	
S1C17500 series		[Low Power] This is a 16-bit MCU with built-in flash memory, which realizes high-speed processing at low power consumption. This product is equipped with various											features, such as a general-purpose I/O port, A/D converter input and serial I/F, and is suitable for controlling various sensor built-in devices, including household appliances.																										
S1C17564	–	24M	32.768k	2M to 12M	0.8	2.7	16	450	2.0 to 5.5	128K <sub>+3</sub>	–	16K	40	–	5	4	1	1	1	–	2	3	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–
S1C17589	–	16.8M	32.768k	4M/8M/12M/16M	0.2	0.6	9	280	1.8 to 5.5	128K <sub>+4</sub>	–	16K	88 68 52	–	6	4 x 6	–	1	–	1	3	2	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	
S1C17700 series		It is an application specialized series. It is a 16-bit MCU with Flash memory compatible with high processing while achieving low power consumption, supporting power supply voltages from 1.8 V to 5.5 V.																																					
S1C17711	64 x 16 56 x 24	8.2M	32.768k	2.7M	1.0	2.0	12	400	1.8 to 3.6 <sub>+1</sub>	64K <sub>+6</sub>	–	4K	29	–	4	4	1	1	1	–	1	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	
S1C17702	88 x 16 72 x 32	8.2M	32.768k	2.7M	1.0	2.5	16	450	1.8 to 3.6 <sub>+1</sub>	128K <sub>+6</sub>	–	12K	28	3	3	2	1	1	1	–	1	1	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	
S1C17703	120 x 16/24/32 60 x 64	8.2M	32.768k	2.7M	1.0	2.5	15	450	1.8 to 3.6 <sub>+2</sub>	256K <sub>+6</sub>	–	12K	34	–	5	4	1	1	1	–	2	3	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	
S1C17705	128 x 16/24/32 64 x 64	8.2M	32.768k	2.7M	1.2	2.7	18	550	1.8 to 3.6 <sub>+2</sub>	512K <sub>+6</sub>	–	12K	35	–	5	4	1	1	1	–	2	3	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	
S1C17800 series		[High Performance] This 16-bit MCU realized advanced processing equivalent to 32-bit. The built-in LCD controller provides maximum VGA monochrome displays. This product is equipped with abundant built-in I/F, such as USB, various serial interfaces											and A/D converters, suitable for operation panel control of white home appliances and various products, with improved user interface utilizing displays, music, sound, touch panels and etc.																										
S1C17801	LCD Controllers	48M	32.768k	–	1.4 <sub>+10</sub>	12	–	6000	3.0 to 3.6	128K <sub>+6</sub>	–	4K	99	6	2	1	–	1	–	1 <sub>+11</sub>	1	2	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	
S1C17803	LCD Controllers	33M	32.768k	–	1.3 <sub>+10</sub>	5	–	6500	2.7 to 5.5	128K <sub>+6</sub>	–	16K	97 69	4	1	2	–	1	–	1 <sub>+11</sub>	1	2 <sup>**12</sup>	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	
S1C17900 series		[Application-specific type] Incorporating low power consumption, DSP has made it possible to achieve advanced signal processing, which was difficult for conventional This series can be used for a variety of sensor-mounted applications, together with a rich array of serial interfaces and analog-to-digital converters.											battery-driven devices to perform, with extremely low power consumption.																										
S1C17965	–	24M	32.768k	2M/4M/8M/12M	1.0	2.9	15	400	2.0 to 3.6	128K <sub>+4</sub>	–	16K	24	–	5	4	1	1	1	–	2	3	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–		

\*1: During erasing / programming in flash memory (V<sub>DD</sub>): 2.7V to 3.6 V  
 \*2: During erasing / programming in flash memory (V<sub>DD</sub>): 2.5V to 3.6 V  
 \*3: During programming voltage in flash memory (V<sub>PP</sub>): The external applying of 7.5V / 7.0V (Typ.) is needed.  
 \*4: During erasing / programming voltage in flash memory (V<sub>PP</sub>): The external applying of 7.5V / 7.5V (Typ.) is needed.  
 \*5: SVD is an abbreviation for Supply Voltage Detector.  
 \*6: This product uses SuperFlash® technology licensed from SST UK Ltd.  
 \*7: AI pad, Au bump  
 \*8: Including Input port and Output port.  
 \*9: Resolution: 12-bit  
 \*10: Unmounted OSC1  
 \*11: The battery backed up operation is supported.  
 \*12: Universal serial interface (Any of UART, SPI and I<sup>2</sup>C functions can be selected.)  
 \*13: Low power DSP

Products	Display EPD Driver seg (TP/BP)	Operation clock			Supply current				Power supply Supply voltage [V]	Memory			I/O port I/O port	Timer							SIO				Analog			Others			Form of delivery						
		High-speed [Hz] (Max.)	Low-speed [Hz] (Typ.)	Built-in oscillator [Hz] (Typ.)	Sleep [μA] (Typ.)	RTC [μA] (Typ.)	32kHz Operating [μA] (Typ.)	1MHz operating [μA] (Typ.)		Flash ROM [Byte]	EEPROM [Byte]	RAM [Byte]		8-bit timer	16-bit timer	16bit-PWM timer	Stopwatch	Watchdog timer	Clock	Real-time clock	UART	SPI	I <sup>2</sup> C master	I <sup>2</sup> C slave	Remote controller transmission and reception	Rf converter (24-bit)	A/D converter	SVD*1	Multiplier/Divider	Temperature detection circuit	Package	Chip					
S1C17F50 series		[Medium and small segment EPD] The product also includes embedded features such as a real-time clock, theoretical regulation, a driver capable of wringing the maximum maximize the characteristics of an e-paper display with a single chip.											performance from segmented EPDs, and a temperature sensor. As a result, the device does not simply drive the display, but also corrects temperature effects that could harm display quality making it possible to																								
S1C17F57	64 (2TP/2BP)	4.2M	32.768k	32k/500k/1M/2M	0.10	0.21	12	410	2.0 to 3.6	32K <sup>**2</sup>	–	2K	29	2	–	2	1	1	1	1	1	1	1	1	1	1	1	–	–	–	–	–	–	–	–	–	–
S1C17F63	42 (1TP/1BP)	16.8M	32.768k	500k/700k/1M/2M/4M/8M/16M	0.45	0.11	5	305	1.8 to 5.5	32K <sup>**2</sup>	256	2K	17	–	4	2 x 2	–	1	–	1	1	2	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–

\*1: SVD is an abbreviation for Supply Voltage Detector.  
 \*2: During erasing / programming voltage in flash memory (V<sub>PP</sub>): The external applying of 7.0V / 7.5V (Typ.) is needed.  
 \*3: AI pad, Au bump  
 \*4: Including Input port and Output port.