CMOS 16-BIT SINGLE CHIP MICROCONTROLLER

S5U1C17F57T Manual

(Software Evaluation Tool for S1C17F57)

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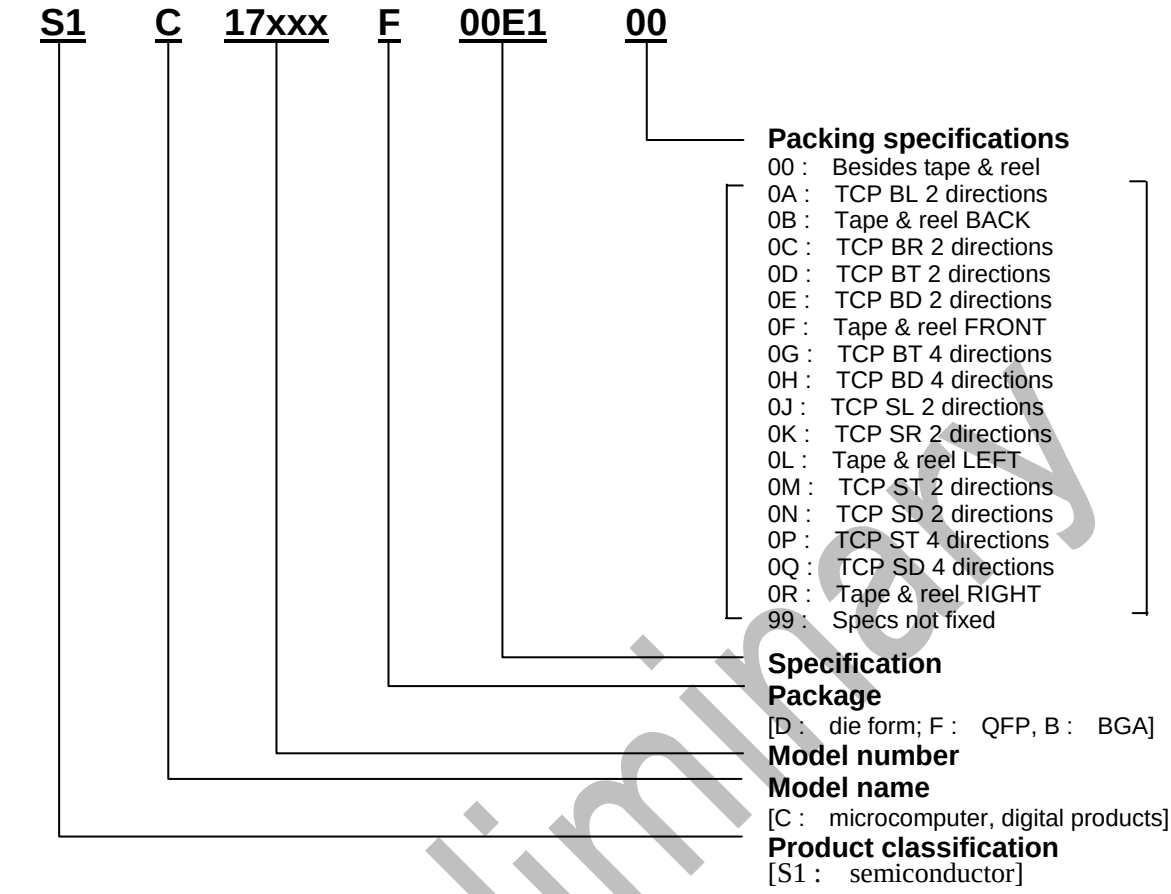
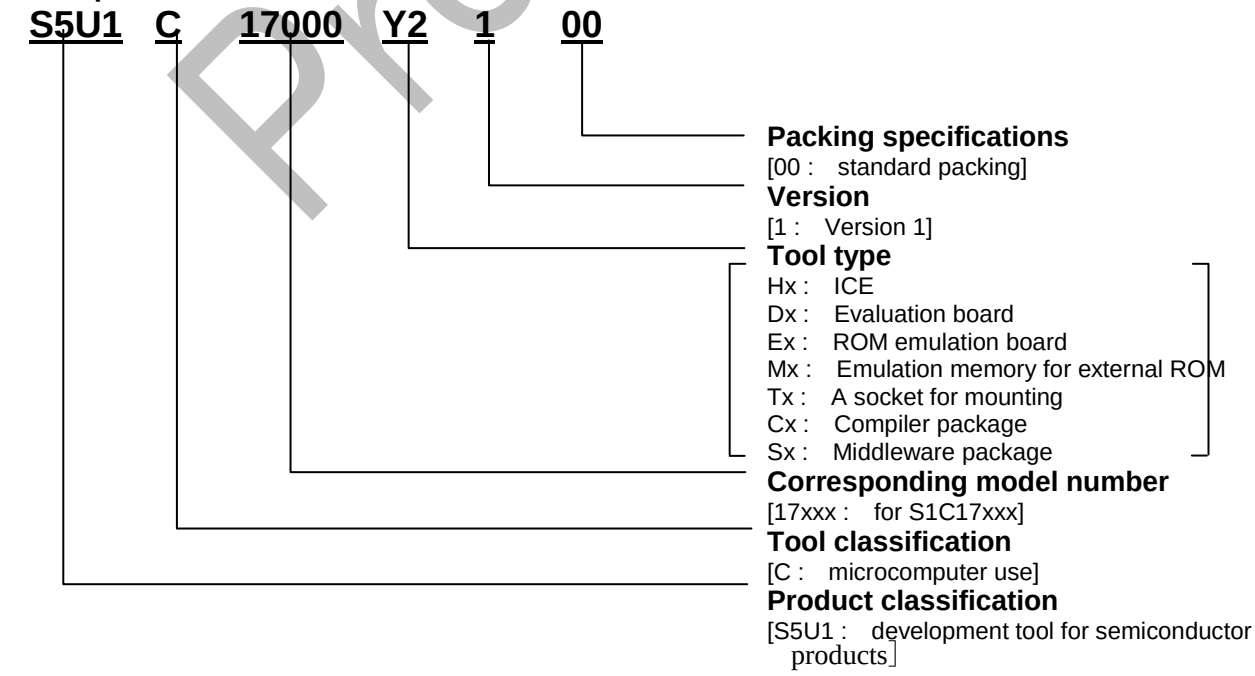
Configuration of product number

Devices



Development tools



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1. Overview

S5U1C17F57T1 and S5U1C17F57T2 (SVT17F57: Software eValuation Tool for S1C17F57) are the evaluation and development support board for S1C17F57 single chip microcontroller made by Seiko Epson.
It is composed of CPU board and peripheral board, the CPU board has built-in IC socket, the extension connectors, and the debugging connectors, etc. for S1C17F57, the peripheral board has built-in EPD (Electrophoretic Display), EPD connection connectors, pads, enhancing EPD driver (S1D14F51), the buzzer, and the key switch, etc. in S5U1C17F57T1. As a result, the EPD drive display, buzzer drive, and the switch can be input.
As for S5U1C17F57T2, it is composed only of CPU board used for S5U1C17F57T1, and various applications are possible with extension connectors.

1) CPU	S1C17F57 (QFP15-128)
2) Input power voltage	External power supply (DC3.0V)
	Coin battery (CR2032 : 3.0V)
3)CPU clock	OSC1 : 32.768kHz crystal oscillator
	OSC3 : 4.000MHz crystal oscillator
4) Built-in devices	
CPU board :	IC socket for S1C17F57 (Built-in S1C17F57)
	Crystal oscillator
	Reset switch
	Extension connector
	Pilot LED
	USB interface connector
	Function switching jumpers
Peripheral board :	Enhancing EPD driver (S1D14F51)
	EPD connection connectors, connectors pads
	Key switches
	Buzzer
	Power switch
	Function switching jumpers

*1 SVT17F57 is a generic name of S5U1C17F57T1 and S5U1C17F57T2. It becomes another sale, and confirms the model name, please when you buy it respectively.
*2 S5U1C17F57T1 is a package where CPU board and peripheral board make a set. Moreover, S5U1C17F57T2 is a package only of CPU board.
*3 Because the coin battery folder is mounted on the peripheral board, the coin battery cannot be used with S5U1C17F57T2.
*4 S1D14F51 is not mounted in prototype board.

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1. Overview

1.1 Usage Method

The software debugging and the evaluation environment of S1C17F57 can be constructed with the following procedures.

- Single CPU board or CPU board is connected with the peripheral board and use it

<Software debugging >
(1)CPU board connector CN2-1(J5) and CN2-2(J6) of SVT17F57 are connected with for target connection 4 pin connector and the Flash writing power supply 4pin connector for emulator respectively by using the cable bundled to S5U1C17001 H2 (emulator).
(2)VDD power supply selection jumper switch (JP14) of CPU board is installed in the “EXT” side.
(3)VPP power supply selection jumper switch (JP12) of CPU board is installed in the “ICD” side.
(4)Jumper switch JP1, JP2, JP3, and JP17 of CPU board are short, and JP13, JP18, and JP19 open. Moreover, JP23 of the peripheral board opens when the peripheral board is connected.
(5)Supply the power by the stabilized power supply device to CPU board power supply connector CN3 (J8) or the emulator is supplied. Please make the power supply voltage within the range of S1C17F57 of the operation power supply voltage.
(6)The emulator is connected with PC by using the USB cable bundled to the emulator.

Please set to become a voltage input from the target the selection of the DSIO signal level of the emulator (dip switch SW4 and 5).

<The free run by the external source operates >
(1)VDD power supply selection jumper switch (JP14) of CPU board is installed in the “EXT” side.
(2)Jumper switch JP1, JP2, JP3, and JP17 of CPU board are short, and JP13, JP18, and JP19 open. Moreover, JP23 of the board in the peripheral board opens when the peripheral board is connected.
(3)It supplies power to CPU board power supply connector CN3 (J8) by using the stabilizing supply device. Please make the power supply voltage within the range of S1C17F57 of the operation power supply.

<The free run operates with the coin battery (The set of CPU board and peripheral board is used)>
(1)VDD power supply selection jumper switch (JP14) of CPU board is completely detached.
(2)Jumper switch JP1, JP2, and JP3 of CPU board are short, JP13, JP17, JP18, and JP19 open, and JP23 of the peripheral board is connected with the “BATT” side.
(3)The coin battery is installed in the battery folder mounted on the peripheral board.
(4)Power on/off switch (SW2) of the peripheral board is turning on.

<The free run by the USB bus power operates >
(1)VDD power supply selection jumper switch (JP14) of CPU board is installed in the “USB” side.
(2)Jumper switch JP1, JP2, and JP3 of CPU board are short, and JP13, JP17, JP18, and JP19 open. Moreover, JP23 of the peripheral board opens when the peripheral board is connected.
(3)CPU board is connected with PC by using the USB cable (mini plug).[*1] Moreover, the operation power supply voltage of S1C17F57 is fixed by 3.3V.
(4)Please install the USB driver of Silicon Laboratories for CP2102 according to the direction of PC.

[*1] Please prepare the USB cable by the customer.

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Table 1.1 Jumper setting list in each mode

Board	Number of jumper switch	Software debugging	Free run by external power	Free run by coin battery	Free run by USB bus Power
CPU	JP1-JP3	ON	ON	ON	ON
	JP4-JP11	-	-	-	-
	JP12	ICD	-	-	-
	JP13	OPEN	OPEN	OPEN	OPEN
	JP14	EXT	EXT	OPEN	USB
	JP15-16	-	-	-	-
	JP17	ON	ON	OPEN	OPEN
	JP18-19	OPEN	OPEN	OPEN	OPEN
Peripheral	JP1-22	-	-	-	-
	JP23	OPEN	OPEN	BATT	OPEN
	JP24-29	-	-	-	-

ON: Connect jumper switch, OPEN: remove jumper switch, SHORT: Short by solder,
- : No care, OTHERS: The jumper switch is connected with this name side.

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2. Name and Function of Individual Component

2.1 Name of Individual Component

The function and the name of each part are as follows.

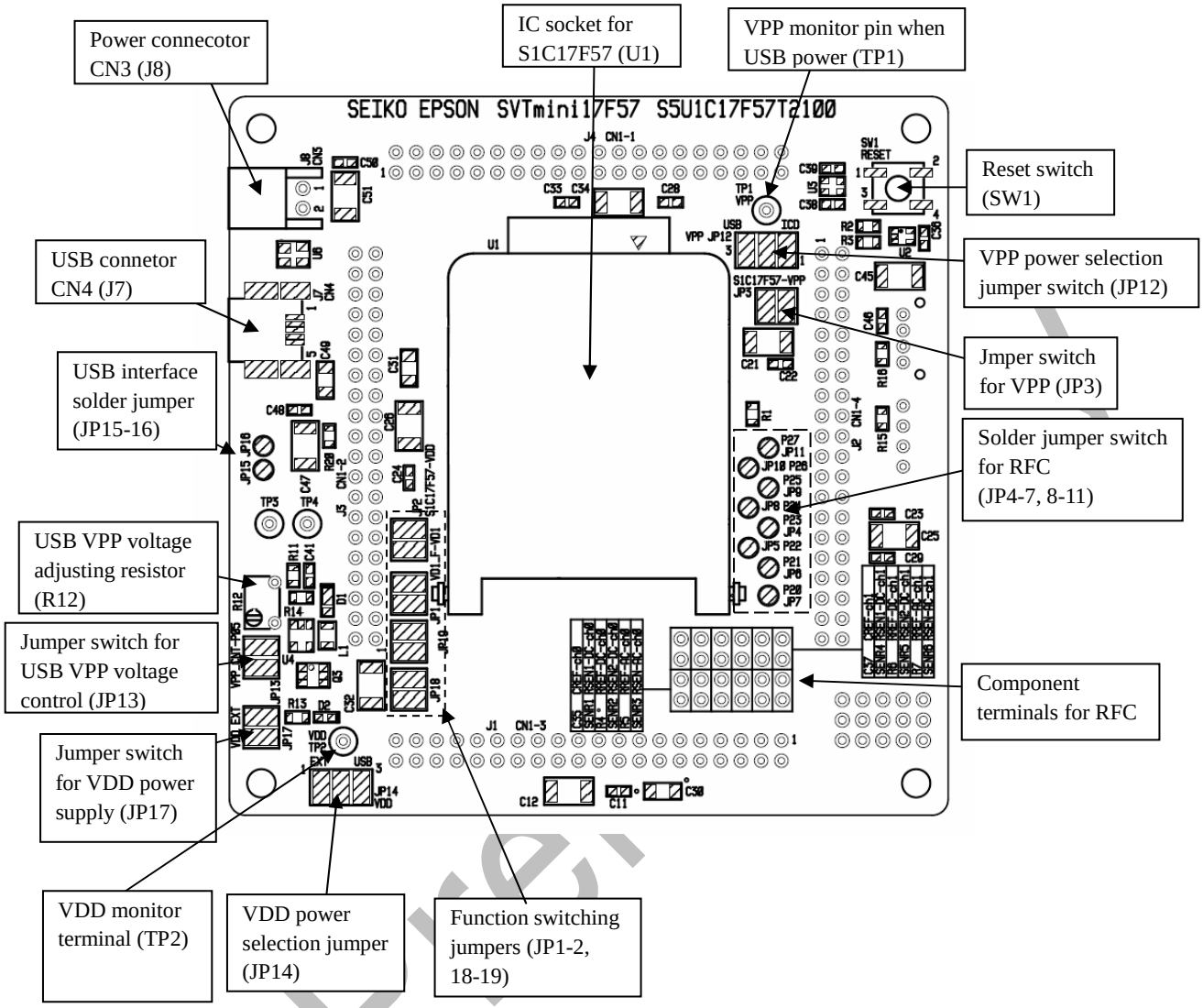

Figure 2.1 Name of S5U1C17F57T1 CPU board surface each part

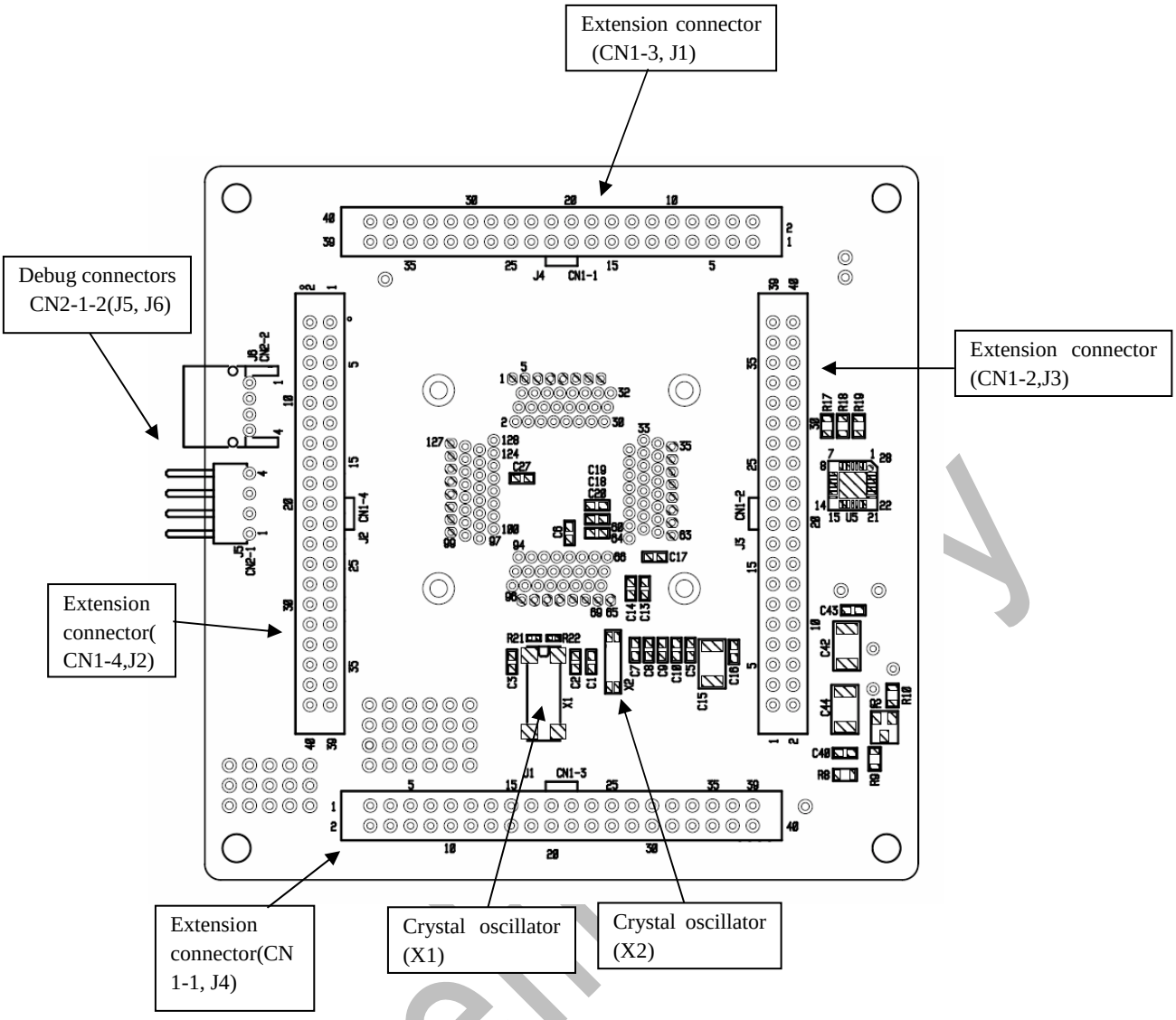

Figure2.2 Name of the S5U1C17F57T1 CPU board back each part

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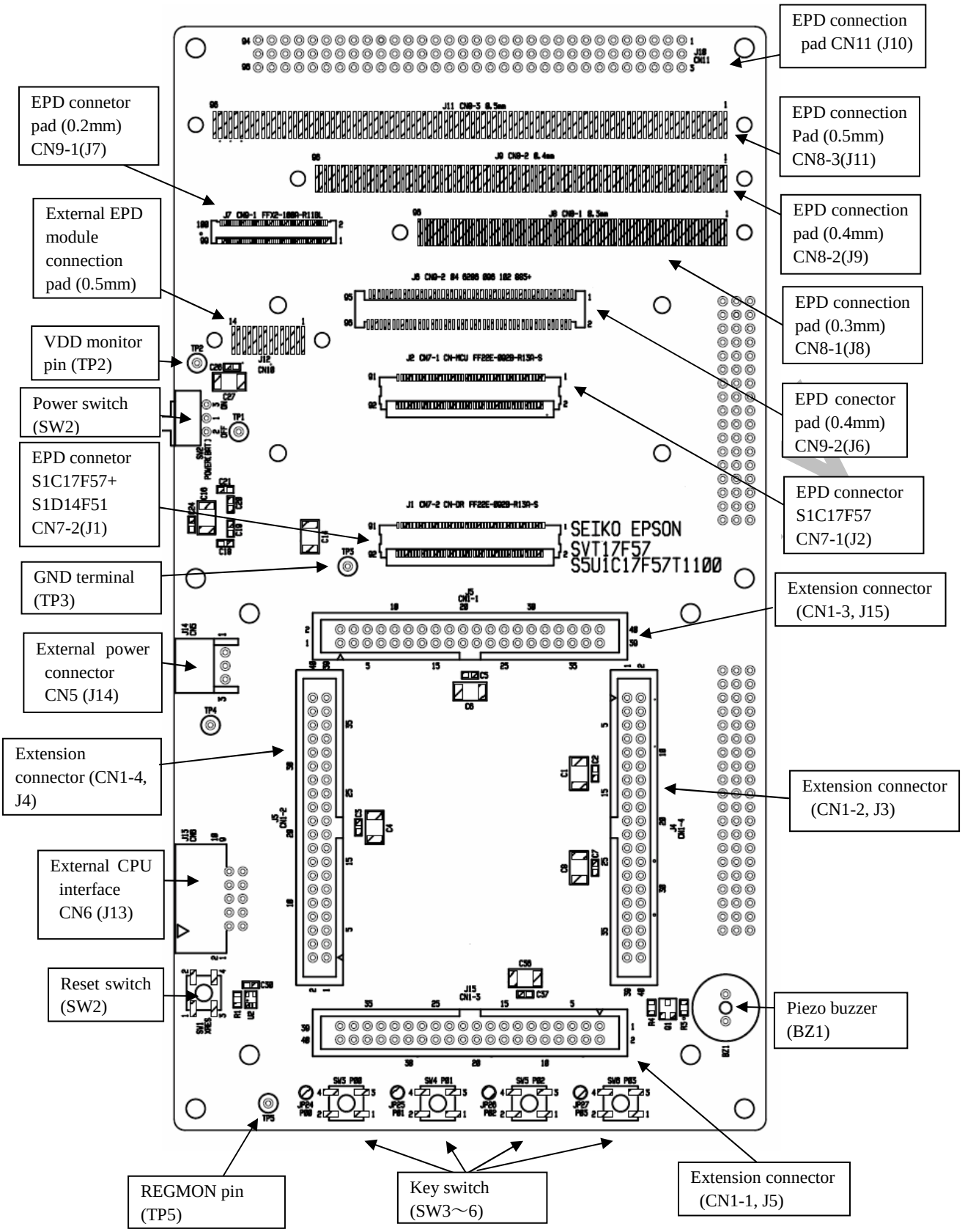

Figure 2.3 Name of S5U1C17F57T1 Peripheral board surface each part

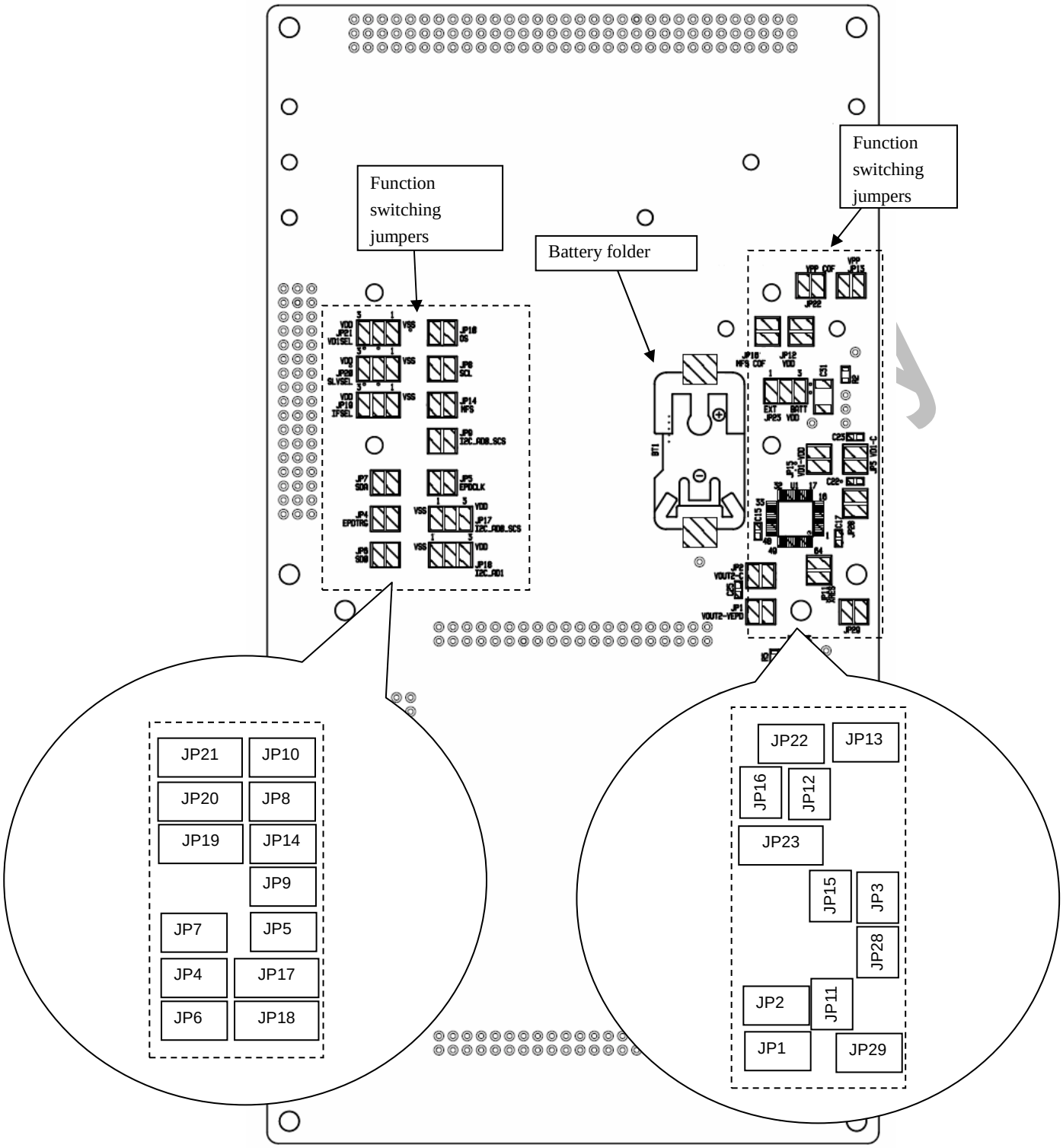

Figure 2.4 Name of the S5U1C17F57T1 CPU board back each part

2.2 Functions of Individual Component

2.2.1 Jumper switch functions

Table 2.2.1 List of Functions of the Jumpers on CPU Board

Jumper name	Jumper type	Function	Settings when shipped	Selectable function
JP1 (VD1_F-VD1)	pin	Connection of VD1_F and VD1 terminals of S1C17F57.	short	open
JP2 (S1C17F57-VDD)	pin	Connection of VDD power and VDD terminals of S1C17F57.	short	open
JP3 (S1C17F57-VPP)	pin	Connection of VPP power and VPP terminals of S1C17F57.	short	open
JP4～JP7	solder	Selection of terminals P20-P23 use of S1C17F57. short : General I/O open : Connecting terminal for RFC components	short	open
JP8～JP11	solder	Selection of terminals P24-P27 use of S1C17F57. short : General I/O open : Connecting terminal for RFC components	short	open
JP12(VPP)	pin	Selection of flash memory writing power for S1C17F57. 1(ICD) : From external power connector CN2-2(J6) 3(USB) : From boosted power of USB VBUS	1(ICD)	3(USB)
JP13 (VPP_CNT-P05)	pin	USB power booster enable. short : Enable USB power booster open : Disable USB power booster	open	short
JP14(VDD)	pin	Selection of VDD power for S1C17F57. 1(EXT) : From external power connetor CN3(J8) 3(USB) : From USB VBUS power Disconnect this jumper switch when in the battery power mode.	1(EXT)	3(USB) open
JP15	solder	Connection of between CP2102 and S1C17F57 for SIN signal.	short[*1] open[*2]	open[*1] short[*2]
JP16	solder	Connection of between CP2102 and S1C17F57 for SOUT signal.	short[*1] open[*2]	open[*1] short[*2]
JP17 (VDD_EXT)	pin	Power supply from external power connector CN3(J8). short : Supply open : No supply	short	open
JP18	pin	Connection of VE1, VE2 terminals of S1C17F57.	open	short
JP19	pin	Connection of VE2, VDD terminals of S1C17F57.	open	short

[*1] In case of S5U1C17F57T1100.
[*2] In case of S5U1C17F57T2100.

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Table 2.2.2 List of Functions of the Jumpers on peripheral Board

Jumper name	Jumper type	Function	Settings when shipped	Selectable function
JP1(VOUT2-VEPD)	pin	Connection of VEPD power supply is generated from S1C17F57 and VOUT2 terminal of S1D14F51.	short	open
JP2(VOUT2-C)	pin	Connection of VOUT2 terminal of S1D14F51 and capacitor (C25).	open	short
JP3(VD1-C)	Pin	Connection of VD1 terminal of S1D14F51 and capacitor (C23).	short	open
JP4(EPDTRG)	Pin	Connection of EPDTRG terminal of S1D14F51 and EPDTRG terminal of S1C17F57.	short	open
JP5(EPDCLK)	pin	Connection of EPDCLK terminal of S1D14F51 and EPDCLK terminal of S1C17F57.	short	open
JP6(SDO)	pin	Connection of SDO terminal of S1D14F51 and SDI terminal of S1C17F57.	short	open
JP7(SDA)	pin	Connection of SDA terminal of S1D14F51 and SDO terminal of S1C17F57.	short	open
JP8(SPICLK)	pin	Connection of SCL terminal of S1D14F51 and SPICLK terminal of S1C17F57.	short	open
JP9(I2C_AD0_SCS)	pin	Connection of I2C_AD0_SCS terminal of S1D14F51 and #SPISS terminal of S1C17F57.	short	open
JP10(OS)	pin	Connection of OS terminal of S1D14F51 and P04 terminal of S1C17F57.	open	short
JP11(XRES)	pin	Connection of reset signal to XRES terminal of S1D14D51.	short	open
JP12(VDD)	pin	Connection of VDD power and VDD terminal of S1C14F51.	short	open
JP13(VPP)	pin	Connection of VPP power and VPP terminal of S1D14F51.	open	short
JP14(MFS)	pin	Connection of MFS terminal of S1D14F51and #SPISS terminal of S1C17F57.	open	short
JP15(VD1-VDD)	pin	Connection of VD1 terminal of S1D14F51and VDD power.	open	short
JP16(MFS)	pin	Connection of MFS for external EPD module pad.	open	short
JP17(I2C_AD0_SCS)	pin	Input to I2C_AD0_SCS terminal of S1D14F51.	open	1(VSS) 3(VDD)
JP18(I2C_AD1)	pin	Input to I2C_AD1_SCS terminal of S1D14F51.	open	1(VSS) 3(VDD)
JP19(IFSEL)	pin	Input to IFSEL terminal of S1D14F51.	open	1(VSS) 3(VDD)
JP20(SLVSEL)	pin	Input to SLVSEL terminal of S1D14F51.	open	1(VSS) 3(VDD)
JP21(VD1SEL)	pin	Input to VD1SEL terminal of S1D14F51.	open	1(VSS) 3(VDD)
JP22(VPP)	pin	Connection of VPP for external EPD module connetor pad CN10(J12).	open	short

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JP23(VDD)	pin	Selection of VDD power 1(BATT) : External power connector CN5(J14) 3(EXT) : Coin battery	3(BATT)	1(EXT)
JP24-27	solder	Connection of P00-P03 port and key switch.	short	open
JP28	pin	Connection of VOUT1 terminal of S1D14F51 and capacitor (C22).	open	short
JP29	pin	Connection of VOUT1 terminal of S1D14F51 and VE2 of S1D14F51.	short	open

2.2.2 Functions of Each Portion

Table2.2.3 List of Components and Functions of Each Portion CPU board

Component Name	Location	Function
IC socket	U1	Mounting S1C17F57
Connector	CN1-1〜4 (J4,J3,J1,J2)	Peripheral board (external) interface
Connector	CN2-1〜2 (J5,J6)	Debug interface (for connection to S5U1C17001H2)
Connector	CN3(J8)	VDD power connector
Connector	CN4(J7)	USB connector
LED	D2	Turn on the light LED when supply external VDD
Switch	SW1	System reset
Monitor pin	TP1(VPP)	Monitor pin of VPP when boost up the USB VBUS power for VPP
Monitor pin	TP2(VDD)	Monitor terminal for VDD power
Monitor pin	TP3,TP4	Monitor terminal for serial interface
Capacitor	CREF(C35)	Reference capacity (DC bias, channel0)
Sensor	RSEN1(SENR1)	Measuring resistive sensor1 (DC bias channel0)
Resistor	RREF(R4)	Reference resistor (DC bias, channel0)
Sensor	RSEN2(SENR2)	Measuring resistive sensor2 (DC bias, channel0)
Resistor	RREF(R5)	Reference resistor (AC bias, channel0)
Measuring resistive sensor	RSEN(SENR3)	Measuring resistive sensor (AC bias, channel0)
Capacitor	CREF(C37)	Reference capacity (DC bias, channel1)
Sensor	RSEN1(SENR4)	Measuring resistive sensor 1 (DC bias, channel1)
Resistor	RREF(R6)	Reference resistor (DC bias, channel1)
Sensor	RSEN2(SENR5)	Measuring resistive sensor2 (DC bias, channel1)
Resistor	RREF(R7)	Reference resistor (AC bias, channle1)
Measuring resistive sensor	RSEN(SENR6)	Measuring resistive sensor (AC bias, channel1)

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Table2.2.4 List of Components and Functions of Each Portion peripheral board

Component Name	Location	Function
IC	U1	S1D14F51
Connector	CN1-1～4(J5, J3,J15,J4)	Interface for S1C17F57
Connector	CN5(J14)	External power supply connector for peripheral board stand alone mode (When the peripheral board is connected the CPU board, supply from connector CN3 on the CPU board.
Connector	CN6(J13)	External CPU interface
Connector	CN7-1～2 (J2,J1)	EPD panel connector (0.3mm pitch, cross located pad)
Connector pad	CN8-1～3 (J8,J9,J11)	EPD panel connection pad (0.3mm, 0.4mm, 0.5mm pitch, straight located pad)
Connector pad	CN9-1～2 (J7,J6)	EPD panel connector pad (0.2mm, 0.4mm pitch, cross located pad)
Connector pad	CN10(J12)	External EPD module connector pad (0.5mm pitch)
Through hole	CN11(J10)	External EPD panel connection hole (2.54mm pitch)
Switch	SW1	System reset input
Switch	SW2	Battery power switch
Switch	SW3～SW6	P00-P03 port input
Monitor terminal	TP1	VDD power (Battery)
Monitor terminal	TP2	VDD power (Selected power)
Monitor terminal	TP3	GND
Monitor terminal	TP4	VDD (External power)
Monitor pin	TP5	P00 (REGMON) Monitor pin
Buzzer	BZ1	Piezoelectric buzzer
Battery folder	BT1	For coin battery (In case of build-in a coin battery in the battery folder, do not supply power from CN3, CN5 connectors. Moreover, when operating with the battery, only the free run operation is possible. The debugging operation is impossible.

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3. Block Diagram

The block diagram of S5U1C17F57T1 is as follows.

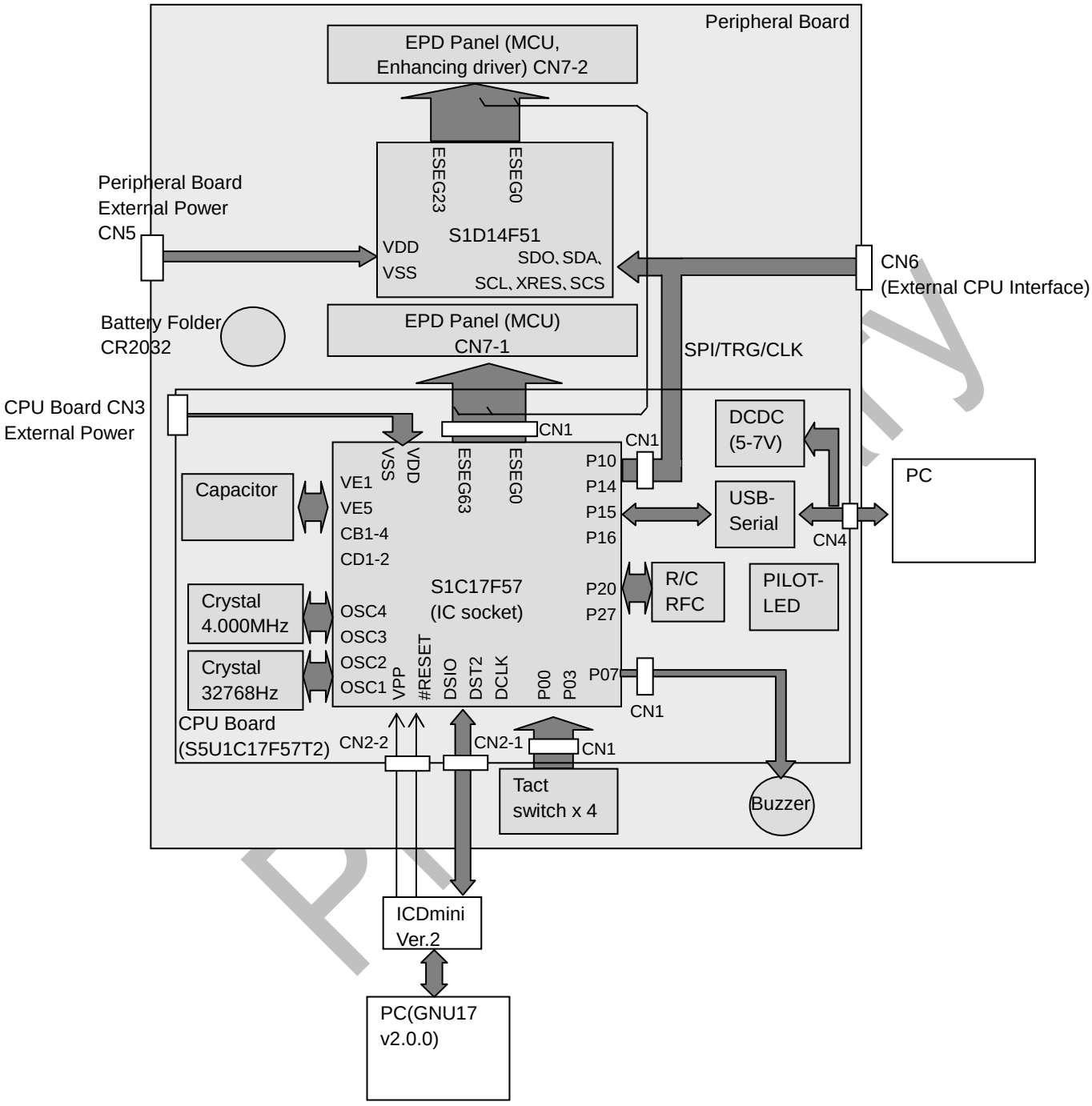

Figure 3.1 Block Diagram of S5U1C17F57T1

4. Connector

4.1 CPU Board Connector

4.1.1 CPU Board interface Connector (CN1-1~CN1-4)

Table 4.1 CPU Board Interface Connector (CN1-1) Pin Assignment Table

No.	Name	I/O	Function	No.	Name	I/O	Function
1	VSS	-	Power terminal(-)	21	ESEG23	O	EPD segment output terminal
2	VSS	-	Power terminal(-)	22	ESEG22	O	EPD segment output terminal
3	ESEG39	O	EPD segment output terminal	23	ESEG21	O	EPD segment output terminal
4	ESEG38	O	EPD segment output terminal	24	ESEG20	O	EPD segment output terminal
5	ESEG37	O	EPD segment output terminal	25	ESEG19	O	EPD segment output terminal
6	ESEG36	O	EPD segment output terminal	26	VDD	-	Power terminal(+)
7	ESEG35	O	EPD segment output terminal	27	VDD	-	Power terminal(+)
8	ESEG34	O	EPD segment output terminal	28	ESEG18	O	EPD segment output terminal
9	ESEG33	O	EPD segment output terminal	29	ESEG17	O	EPD segment output terminal
10	ESEG32	O	EPD segment output terminal	30	ESEG16	O	EPD segment output terminal
11	ESEG31	O	EPD segment output terminal	31	ESEG15	O	EPD segment output terminal
12	ESEG30	O	EPD segment output terminal	32	ESEG14	O	EPD segment output terminal
13	VDD	-	Power terminal(+)	33	ESEG13	O	EPD segment output terminal
14	VDD	-	Power terminal(+)	34	ESEG12	O	EPD segment output terminal
15	ESEG29	O	EPD segment output terminal	35	ESEG11	O	EPD segment output terminal
16	ESEG28	O	EPD segment output terminal	36	ESEG10	O	EPD segment output terminal
17	ESEG27	O	EPD segment output terminal	37	ESEG9	O	EPD segment output terminal
18	ESEG26	O	EPD segment output terminal	38	ESEG8	O	EPD segment output terminal
19	ESEG25	O	EPD segment output terminal	39	VSS	-	Power terminal(-)
20	ESEG24	O	EPD segment output terminal	40	VSS	-	Power terminal(-)

Table 4.2 LCD Board Interface Connector (CN1-2) Pin Assignment Table

No.	Name	I/O	Function	No.	Name	I/O	Function
1	VSS	-	Power terminal(-)	21	ESEG55	O	EPD segment output terminal
2	VSS	-	Power terminal(-)	22	ESEG54	O	EPD segment output terminal
3	#RESET_PER	I	Initial reset input	23	ESEG53	O	EPD segment output terminal
4	NC	-	No connection	24	ESEG52	O	EPD segment output terminal
5	NC	-	No connection	25	ESEG51	O	EPD segment output terminal
6	VE2	-	VE2 power for EPD	26	VDD	-	Power terminal(+)
7	VEPD	-	EPD power	27	VDD	-	Power terminal(+)
8	ETP1	O	EPD top plain output	28	ESEG50	O	EPD segment output terminal
9	EBP1	O	EPD back plain output	29	ESEG49	O	EPD segment output terminal
10	NC	-	No connection	30	ESEG48	O	EPD segment output terminal
11	ESEG63	O	EPD segment output terminal	31	ESEG47	O	EPD segment output terminal
12	ESEG62	O	EPD segment output terminal	32	ESEG46	O	EPD segment output terminal
13	VDD	-	Power terminal(+)	33	ESEG45	O	EPD segment output terminal
14	VDD	-	Power terminal(+)	34	ESEG44	O	EPD segment output terminal
15	ESEG61	O	EPD segment output terminal	35	ESEG43	O	EPD segment output terminal
16	ESEG60	O	EPD segment output terminal	36	ESEG42	O	EPD segment output terminal
17	ESEG59	O	EPD segment output terminal	37	ESEG41	O	EPD segment output terminal
18	ESEG58	O	EPD segment output terminal	38	ESEG40	O	EPD segment output terminal
19	ESEG57	O	EPD segment output terminal	39	VSS	-	Power terminal(-)
20	ESEG56	O	EPD segment output terminal	40	VSS	-	Power terminal(-)

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4. Connector

Table 4.3 CPU Board Interface Connector (CN1-3) Pin Assignment Table

No.	Name	I/O	Function	No.	Name	I/O	Function
1	VSS	-	Power terminal(-)	21	P10	I/O	P10/SPICLK
2	VSS	-	Power terminal(-)	22	VSS	-	Power terminal(-)
3	NC	-	No connection	23	P07	I/O	P07/BZ
4	P20	I/O	P20/SDAS/SENB0/BZ	24	VSS	-	Power terminal(-)
5	VSS	-	Power terminal(-)	25	P06	I/O	P06/TOUTB1/CAPB1/#BZ
6	P17	I/O	P17/#BFR/EPDCLK	26	VDD	-	Power terminal(+)
7	VSS	-	Power terminal(-)	27	VDD	-	Power terminal(+)
8	P16	I/O	P16/SOUT/SCLM	28	P05	I/O	P05/TOUTA1/CAPA1
9	VSS	-	Power terminal(-)	29	VSS	-	Power terminal(-)
10	P15	I/O	P15/SIN/SDAM	30	P04	I/O	P04/EXCL1
11	VSS	-	Power terminal(-)	31	VSS	-	Power terminal(-)
12	P14	I/O	P14/SCLK/EPDTRG	32	P03	I/O	P03/TOUTB0/CAPB0
13	VDD	-	Power terminal(+)	33	VSS	-	Power terminal(-)
14	VDD	-	Power terminal(+)	34	P02	I/O	P02/TOUTA0/CAPA0
15	P13	I/O	P13/#SPISS/FOUTA	35	VSS	-	Power terminal(-)
16	VSS	-	Power terminal(-)	36	P01	I/O	P01/EXCL0
17	P12	I/O	P12/SDI/SCLS	37	VSS	-	Power terminal(-)
18	VSS	-	Power terminal(-)	38	P00	I/O	P00/RFCLKO/REGMON
19	P11	I/O	P11/SDO/SDAS	39	VSS	-	Power terminal(-)
20	VSS	-	Power terminal(-)	40	VSS	-	Power terminal(-)

Table 4.4 CPU Board Interface Connector (CN1-4) Pin Assignment Table

No.	Name	I/O	Function	No.	Name	I/O	Function
1	VSS	-	Power terminal(-)	21	DST2	I/O	DST2/P33
2	VSS	-	Power terminal(-)	22	VSS	-	Power terminal(-)
3	ESEG7	O	EPD segment output terminal	23	DSIO	I/O	DSIO/P32
4	ESEG6	O	EPD segment output terminal	24	VSS	-	Power terminal(-)
5	ESEG5	O	EPD segment output terminal	25	P31	I/O	P31/EPDCLK
6	ESEG4	O	EPD segment output terminal	26	VDD	-	Power terminal(+)
7	ESEG3	O	EPD segment output terminal	27	VDD	-	Power terminal(+)
8	ESEG2	O	EPD segment output terminal	28	P30	I/O	P30/FOUTB/#SPISS
9	ESEG1	O	EPD segment output terminal	29	P27	I/O	P27/SENB1
10	ESEG0	O	EPD segment output terminal	30	P26	I/O	P26/SENA1
11	EBP0	O	EPD back plain output	31	P25	I/O	P25/REF1
12	ETP0	O	EPD top plain output	32	P24	I/O	P24/RFIN1
13	VPP	-	Flash memory programming Power terminal	33	VSS	-	Power terminal(-)
14	VPP	-	Flash memory programming Power terminal	34	P23	I/O	P23/SCLM/RFIN0
15	NC	-	No connection	35	VSS	-	Power terminal(-)
16	TEST0	I	Test input terminal	36	P22	I/O	P22/SDAM/REF0
17	#RESET	O	Initial reset output	37	VSS	-	Power terminal(-)
18	VSS	-	Power terminal(-)	38	P21	I/O	P21/SCLS/SENA0/#BZ
19	DCLK	I/O	DCLK/P34	39	VSS	-	Power terminal(-)
20	VSS	-	Power terminal(-)	40	VSS	-	Power terminal(-)

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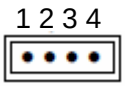
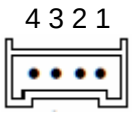
4.1.2 Debug Interface Connector (CN2-1~CN2-2)

Table 4.5 CPU Board Debug Interface (CN2-1) Pin Assignment Table



No.	Name	I/O	Function
1	DCLK	O	Clock signal for debug
2	GND	-	Power terminal(-)
3	DSIO	I/O	Serial interface I/O for debug
4	DST2	O	Debug status signal

Table 4.6 CPU Board Interface Connector (CN2-2) Pin Assignment Table



No.	Name	I/O	Function
1	FLASH VCC	O	Flash memory programming power Input
2	GND	-	Power(-)
3	TARGET RST	I/O	Reset signal input
4	TARGET VDD	O	Target voltage output

4.1.3 Power Connector (CN3)

Table 4.7 CPU Board Power Connector (CN3) Pin Assignment table

No.	Name	I/O	Function
1	VDD	-	Power(+)
2	GND	-	Power(-)

4.1.4 USB Connector (CN4)

Table 4.8 CPU Board USB Connector (CN4) Pin Assignment Table

No.	Name	I/O	Function
1	VBUS	-	Power(+5V)
2	D-	I/O	D-
3	D+	I/O	D+
4	USBGND	-	GND

4.2 Peripheral Board Connector

4.2.1 Power Connector (CN5)

Table 4.9 Peripheral Board Power Connector (CN5) Pin Assignment Table

No.	Name	I/O	Function
1	VDD	-	Power(+)
2	GND	-	Power(-)
3	VPP	-	Flash memory programming power input

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4.2.2 General CPU Interface Connector (CN6)

Table 4.10 General CPU Interface Connector (CN6) Pin Assignment Table

No.	Name	I/O	Function	No.	Name	I/O	Function
1	SDI	I/O	Data I/O terminal for SPI Interface	6	XRES	O	Initial reset terminal for S1D14F51
2	SDO	O	Data output terminal for SPI interface	7	VDD	-	Power(+)
3	VSS	-	Power(-)	8	NC	-	No connection
4	SCL	O	Clock output terminal for SPI interface	9	NC	-	No connection
5	SCS	O	Chip select terminal for SPI interface	10	NC	-	No connection

4.2.2 EPD Panel Interface Connector (CN7-1)

Table 4.11 EPD Interface Connector (CN7-1) Pin Assignment Table

No.	Name	I/O	Function	No.	Name	I/O	Function
1	CN92	O	ETP0(MCU)	47	CN46	O	ESEG20(MCU)
2	CN91	O	EBP0(MCU)	48	CN45	O	ESEG21(MCU)
3	CN90	-	NC	49	CN44	O	ESEG22(MCU)
4	CN89	-	NC	50	CN43	O	ESEG23(MCU)
5	CN88	-	NC	51	CN42	O	ESEG24(MCU)
6	CN87	-	NC	52	CN41	O	ESEG25(MCU)
7	CN86	-	NC	53	CN40	O	ESEG26(MCU)
8	CN85	-	NC	54	CN39	O	ESEG27(MCU)
9	CN84	-	NC	55	CN38	O	ESEG28(MCU)
10	CN83	-	NC	56	CN37	O	ESEG29(MCU)
11	CN82	-	NC	57	CN36	O	ESEG30(MCU)
12	CN81	-	NC	58	CN35	O	ESEG31(MCU)
13	CN80	-	NC	59	CN34	O	ESEG32(MCU)
14	CN79	-	NC	60	CN33	O	ESEG33(MCU)
15	CN78	-	NC	61	CN32	O	ESEG34(MCU)
16	CN77	-	NC	62	CN31	O	ESEG35(MCU)
17	CN76	-	NC	63	CN30	O	ESEG36(MCU)
18	CN75	-	NC	64	CN29	O	ESEG37(MCU)
19	CN74	-	NC	65	CN28	O	ESEG38(MCU)
20	CN73	-	NC	66	CN27	O	ESEG39(MCU)
21	CN72	-	NC	67	CN26	O	ESEG40(MCU)
22	CN71	-	NC	68	CN25	O	ESEG41(MCU)
23	CN70	-	NC	69	CN24	O	ESEG42(MCU)
24	CN69	-	NC	70	CN23	O	ESEG43(MCU)
25	CN68	-	NC	71	CN22	O	ESEG44(MCU)
26	CN67	-	NC	72	CN21	O	ESEG45(MCU)
27	CN66	O	ESEG0(MCU)	73	CN20	O	ESEG46(MCU)
28	CN65	O	ESEG1(MCU)	74	CN19	O	ESEG47(MCU)
29	CN64	O	ESEG2(MCU)	75	CN18	O	ESEG48(MCU)
30	CN63	O	ESEG3(MCU)	76	CN17	O	ESEG49(MCU)
31	CN62	O	ESEG4(MCU)	77	CN16	O	ESEG50(MCU)
32	CN61	O	ESEG5(MCU)	78	CN15	O	ESEG51(MCU)
33	CN60	O	ESEG6(MCU)	79	CN14	O	ESEG52(MCU)
34	CN59	O	ESEG7(MCU)	80	CN13	O	ESEG53(MCU)
35	CN58	O	ESEG8(MCU)	81	CN12	O	ESEG54(MCU)

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36	CN57	O	ESEG9(MCU)	82	CN11	O	ESEG55(MCU)
37	CN56	O	ESEG10(MCU)	83	CN10	O	ESEG56(MCU)
38	CN55	O	ESEG11(MCU)	84	CN9	O	ESEG57(MCU)
39	CN54	O	ESEG12(MCU)	85	CN8	O	ESEG58(MCU)
40	CN53	O	ESEG13(MCU)	86	CN7	O	ESEG59(MCU)
41	CN52	O	ESEG14(MCU)	87	CN6	O	ESEG60(MCU)
42	CN51	O	ESEG15(MCU)	88	CN5	O	ESEG61(MCU)
43	CN50	O	ESEG16(MCU)	89	CN4	O	ESEG62(MCU)
44	CN49	O	ESEG17(MCU)	90	CN3	O	ESEG63(MCU)
45	CN48	O	ESEG18(MCU)	91	CN2	O	EBP1(MCU)
46	CN47	O	ESEG19(MCU)	92	CN1	O	ETP1(MCU)

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4.2.3 EPD Panel Interface Connector (CN7-2)

Table 4.12 EPD Interface Connector (CN7-2) Pin Assignment

No.	Name	I/O	Function	No.	Name	I/O	Function
1	CN92	O	ETP(Driver)	47	CN46	O	ESEG44(MCU)
2	CN91	O	EBP(Driver)	48	CN45	O	ESEG45(MCU)
3	CN90	O	ESEG0(MCU)	49	CN44	O	ESEG46(MCU)
4	CN89	O	ESEG1(MCU)	50	CN43	O	ESEG47(MCU)
5	CN88	O	ESEG2(MCU)	51	CN42	O	ESEG48(MCU)
6	CN87	O	ESEG3(MCU)	52	CN41	O	ESEG49(MCU)
7	CN86	O	ESEG4(MCU)	53	CN40	O	ESEG50(MCU)
8	CN85	O	ESEG5(MCU)	54	CN39	O	ESEG51(MCU)
9	CN84	O	ESEG6(MCU)	55	CN38	O	ESEG52(MCU)
10	CN83	O	ESEG7(MCU)	56	CN37	O	ESEG53(MCU)
11	CN82	O	ESEG8(MCU)	57	CN36	O	ESEG54(MCU)
12	CN81	O	ESEG9(MCU)	58	CN35	O	ESEG55(MCU)
13	CN80	O	ESEG10(MCU)	59	CN34	O	ESEG56(MCU)
14	CN79	O	ESEG11(MCU)	60	CN33	O	ESEG57(MCU)
15	CN78	O	ESEG12(MCU)	61	CN32	O	ESEG58(MCU)
16	CN77	O	ESEG13(MCU)	62	CN31	O	ESEG59(MCU)
17	CN76	O	ESEG14(MCU)	63	CN30	O	ESEG60(MCU)
18	CN75	O	ESEG15(MCU)	64	CN29	O	ESEG61(MCU)
19	CN74	O	ESEG16(MCU)	65	CN28	O	ESEG62(MCU)
20	CN73	O	ESEG17(MCU)	66	CN27	O	ESEG63(MCU)
21	CN72	O	ESEG18(MCU)	67	CN26	O	ESEG0(Driver)
22	CN71	O	ESEG19(MCU)	68	CN25	O	ESEG1(Driver)
23	CN70	O	ESEG20(MCU)	69	CN24	O	ESEG2(Driver)
24	CN69	O	ESEG21(MCU)	70	CN23	O	ESEG3(Driver)
25	CN68	O	ESEG22(MCU)	71	CN22	O	ESEG4(Driver)
26	CN67	O	ESEG23(MCU)	72	CN21	O	ESEG5(Driver)
27	CN66	O	ESEG24(MCU)	73	CN20	O	ESEG6(Driver)
28	CN65	O	ESEG25(MCU)	74	CN19	O	ESEG7(Driver)
29	CN64	O	ESEG26(MCU)	75	CN18	O	ESEG8(Driver)
30	CN63	O	ESEG27(MCU)	76	CN17	O	ESEG9(Driver)
31	CN62	O	ESEG28(MCU)	77	CN16	O	ESEG10(Driver)
32	CN61	O	ESEG29(MCU)	78	CN15	O	ESEG11(Driver)
33	CN60	O	ESEG30(MCU)	79	CN14	O	ESEG12(Driver)
34	CN59	O	ESEG31(MCU)	80	CN13	O	ESEG13(Driver)
35	CN58	O	ESEG32(MCU)	81	CN12	O	ESEG14(Driver)
36	CN57	O	ESEG33(MCU)	82	CN11	O	ESEG15(Driver)
37	CN56	O	ESEG34(MCU)	83	CN10	O	ESEG16(Driver)
38	CN55	O	ESEG35(MCU)	84	CN9	O	ESEG17(Driver)
39	CN54	O	ESEG36(MCU)	85	CN8	O	ESEG18(Driver)
40	CN53	O	ESEG37(MCU)	86	CN7	O	ESEG19(Driver)
41	CN52	O	ESEG38(MCU)	87	CN6	O	ESEG20(Driver)
42	CN51	O	ESEG39(MCU)	88	CN5	O	ESEG21(Driver)
43	CN50	O	ESEG40(MCU)	89	CN4	O	ESEG22(Driver)
44	CN49	O	ESEG41(MCU)	90	CN3	O	ESEG23(Driver)
45	CN48	O	ESEG42(MCU)	91	CN2	O	EBP(Driver)
46	CN47	O	ESEG43(MCU)	92	CN1	O	ETP(Driver)

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4.2.4 EPD Panel Interface Connector pad (CN8-1~3)

Table 4.13 EPD Interface Connector Pad (CN8-1~3) Pin Assignment Table

No.	Name	I/O	Function	No.	Name	I/O	Function
1	CN96	O	ETP(Driver)	49	CN48	O	ESEG18(MCU)
2	CN95	O	EBP(Driver)	50	CN47	O	ESEG19(MCU)
3	CN94	O	ESEG0(Driver)	51	CN46	O	ESEG20(MCU)
4	CN93	O	ESEG1(Driver)	52	CN45	O	ESEG21(MCU)
5	CN92	O	ESEG2(Driver)	53	CN44	O	ESEG22(MCU)
6	CN91	O	ESEG3(Driver)	54	CN43	O	ESEG23(MCU)
7	CN90	O	ESEG4(Driver)	55	CN42	O	ESEG24(MCU)
8	CN89	O	ESEG5(Driver)	56	CN41	O	ESEG25(MCU)
9	CN88	O	ESEG6(Driver)	57	CN40	O	ESEG26(MCU)
10	CN87	O	ESEG7(Driver)	58	CN39	O	ESEG27(MCU)
11	CN86	O	ESEG8(Driver)	59	CN38	O	ESEG28(MCU)
12	CN85	O	ESEG9(Driver)	60	CN37	O	ESEG29(MCU)
13	CN84	O	ESEG10(Driver)	61	CN36	O	ESEG30(MCU)
14	CN83	O	ESEG11(Driver)	62	CN35	O	ESEG31(MCU)
15	CN82	O	ESEG12(Driver)	63	CN34	O	ESEG32(MCU)
16	CN81	O	ESEG13(Driver)	64	CN33	O	ESEG33(MCU)
17	CN80	O	ESEG14(Driver)	65	CN32	O	ESEG34(MCU)
18	CN79	O	ESEG15(Driver)	66	CN31	O	ESEG35(MCU)
19	CN78	O	ESEG16(Driver)	67	CN30	O	ESEG36(MCU)
20	CN77	O	ESEG17(Driver)	68	CN29	O	ESEG37(MCU)
21	CN76	O	ESEG18(Driver)	69	CN28	O	ESEG38(MCU)
22	CN75	O	ESEG19(Driver)	70	CN27	O	ESEG39(MCU)
23	CN74	O	ESEG20(Driver)	71	CN26	O	ESEG40(MCU)
24	CN73	O	ESEG21(Driver)	72	CN25	O	ESEG41(MCU)
25	CN72	O	ESEG22(Driver)	73	CN24	O	ESEG42(MCU)
26	CN71	O	ESEG23(Driver)	74	CN23	O	ESEG43(MCU)
27	CN70	O	EBP(Driver)	75	CN22	O	ESEG44(MCU)
28	CN69	O	ETP(Driver)	76	CN21	O	ESEG45(MCU)
29	CN68	O	ETP0(MCU)	77	CN20	O	ESEG46(MCU)
30	CN67	O	EBP0(MCU)	78	CN19	O	ESEG47(MCU)
31	CN66	O	ESEG0(MCU)	79	CN18	O	ESEG48(MCU)
32	CN65	O	ESEG1(MCU)	80	CN17	O	ESEG49(MCU)
33	CN64	O	ESEG2(MCU)	81	CN16	O	ESEG50(MCU)
34	CN63	O	ESEG3(MCU)	82	CN15	O	ESEG51(MCU)
35	CN62	O	ESEG4(MCU)	83	CN14	O	ESEG52(MCU)
36	CN61	O	ESEG5(MCU)	84	CN13	O	ESEG53(MCU)
37	CN60	O	ESEG6(MCU)	85	CN12	O	ESEG54(MCU)
38	CN59	O	ESEG7(MCU)	86	CN11	O	ESEG55(MCU)
39	CN58	O	ESEG8(MCU)	87	CN10	O	ESEG56(MCU)
40	CN57	O	ESEG9(MCU)	88	CN9	O	ESEG57(MCU)
41	CN56	O	ESEG10(MCU)	89	CN8	O	ESEG58(MCU)
42	CN55	O	ESEG11(MCU)	90	CN7	O	ESEG59(MCU)
43	CN54	O	ESEG12(MCU)	91	CN6	O	ESEG60(MCU)
44	CN53	O	ESEG13(MCU)	92	CN5	O	ESEG61(MCU)
45	CN52	O	ESEG14(MCU)	93	CN4	O	ESEG62(MCU)
46	CN51	O	ESEG15(MCU)	94	CN3	O	ESEG63(MCU)
47	CN50	O	ESEG16(MCU)	95	CN2	O	EBP1(MCU)
48	CN49	O	ESEG17(MCU)	96	CN1	O	ETP1(MCU)

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4.2.5 EPD Panel Interface Connector Pad (CN9-1)

Table 4.14 EPD Interface Connector Pad (CN9-1) Pin Assignment Table

No.	Name	I/O	Function	No.	Name	I/O	Function
1	NC	-		51	CN50	O	ESEG16(MCU)
2	NC	-		52	CN49	O	ESEG17(MCU)
3	NC	-		53	CN48	O	ESEG18(MCU)
4	NC	-		54	CN47	O	ESEG19(MCU)
5	CN96	O	ETP(Driver)	55	CN46	O	ESEG20(MCU)
6	CN95	O	EBP(Driver)	56	CN45	O	ESEG21(MCU)
7	CN94	O	ESEG0(Driver)	57	CN44	O	ESEG22(MCU)
8	CN93	O	ESEG1(Driver)	58	CN43	O	ESEG23(MCU)
9	CN92	O	ESEG2(Driver)	59	CN42	O	ESEG24(MCU)
10	CN91	O	ESEG3(Driver)	60	CN41	O	ESEG25(MCU)
11	CN90	O	ESEG4(Driver)	61	CN40	O	ESEG26(MCU)
12	CN89	O	ESEG5(Driver)	62	CN39	O	ESEG27(MCU)
13	CN88	O	ESEG6(Driver)	63	CN38	O	ESEG28(MCU)
14	CN87	O	ESEG7(Driver)	64	CN37	O	ESEG29(MCU)
15	CN86	O	ESEG8(Driver)	65	CN36	O	ESEG30(MCU)
16	CN85	O	ESEG9(Driver)	66	CN35	O	ESEG31(MCU)
17	CN84	O	ESEG10(Driver)	67	CN34	O	ESEG32(MCU)
18	CN83	O	ESEG11(Driver)	68	CN33	O	ESEG33(MCU)
19	CN82	O	ESEG12(Driver)	69	CN32	O	ESEG34(MCU)
20	CN81	O	ESEG13(Driver)	70	CN31	O	ESEG35(MCU)
21	CN80	O	ESEG14(Driver)	71	CN30	O	ESEG36(MCU)
22	CN79	O	ESEG15(Driver)	72	CN29	O	ESEG37(MCU)
23	CN78	O	ESEG16(Driver)	73	CN28	O	ESEG38(MCU)
24	CN77	O	ESEG17(Driver)	74	CN27	O	ESEG39(MCU)
25	CN76	O	ESEG18(Driver)	75	CN26	O	ESEG40(MCU)
26	CN75	O	ESEG19(Driver)	76	CN25	O	ESEG41(MCU)
27	CN74	O	ESEG20(Driver)	77	CN24	O	ESEG42(MCU)
28	CN73	O	ESEG21(Driver)	78	CN23	O	ESEG43(MCU)
29	CN72	O	ESEG22(Driver)	79	CN22	O	ESEG44(MCU)
30	CN71	O	ESEG23(Driver)	80	CN21	O	ESEG45(MCU)
31	CN70	O	EBP(Driver)	81	CN20	O	ESEG46(MCU)
32	CN69	O	ETP(Driver)	82	CN19	O	ESEG47(MCU)
33	CN68	O	ETP0(MCU)	83	CN18	O	ESEG48(MCU)
34	CN67	O	EBP0(MCU)	84	CN17	O	ESEG49(MCU)
35	CN66	O	ESEG0(MCU)	85	CN16	O	ESEG50(MCU)
36	CN65	O	ESEG1(MCU)	86	CN15	O	ESEG51(MCU)
37	CN64	O	ESEG2(MCU)	87	CN14	O	ESEG52(MCU)
38	CN63	O	ESEG3(MCU)	88	CN13	O	ESEG53(MCU)
39	CN62	O	ESEG4(MCU)	89	CN12	O	ESEG54(MCU)
40	CN61	O	ESEG5(MCU)	90	CN11	O	ESEG55(MCU)
41	CN60	O	ESEG6(MCU)	91	CN10	O	ESEG56(MCU)
42	CN59	O	ESEG7(MCU)	92	CN9	O	ESEG57(MCU)
43	CN58	O	ESEG8(MCU)	93	CN8	O	ESEG58(MCU)
44	CN57	O	ESEG9(MCU)	94	CN7	O	ESEG59(MCU)
45	CN56	O	ESEG10(MCU)	95	CN6	O	ESEG60(MCU)
46	CN55	O	ESEG11(MCU)	96	CN5	O	ESEG61(MCU)
47	CN54	O	ESEG12(MCU)	97	CN4	O	ESEG62(MCU)
48	CN53	O	ESEG13(MCU)	98	CN3	O	ESEG63(MCU)
49	CN52	O	ESEG14(MCU)	99	CN2	O	EBP1(MCU)
50	CN51	O	ESEG15(MCU)	100	CN1	O	ETP1(MCU)

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4.2.6 EPD Panel Interface Connector Pad (CN9-2)

Table 4.15 EPD Interface Connector pad (CN9-2) Pin Assignment Table

No.	Name	I/O	Function	No.	Name	I/O	Function
1	CN92	O	ETP(Driver)	47	CN46	O	ESEG44(MCU)
2	CN91	O	EBP(Driver)	48	CN45	O	ESEG45(MCU)
3	CN90	O	ESEG0(MCU)	49	CN44	O	ESEG46(MCU)
4	CN89	O	ESEG1(MCU)	50	CN43	O	ESEG47(MCU)
5	CN88	O	ESEG2(MCU)	51	CN42	O	ESEG48(MCU)
6	CN87	O	ESEG3(MCU)	52	CN41	O	ESEG49(MCU)
7	CN86	O	ESEG4(MCU)	53	CN40	O	ESEG50(MCU)
8	CN85	O	ESEG5(MCU)	54	CN39	O	ESEG51(MCU)
9	CN84	O	ESEG6(MCU)	55	CN38	O	ESEG52(MCU)
10	CN83	O	ESEG7(MCU)	56	CN37	O	ESEG53(MCU)
11	CN82	O	ESEG8(MCU)	57	CN36	O	ESEG54(MCU)
12	CN81	O	ESEG9(MCU)	58	CN35	O	ESEG55(MCU)
13	CN80	O	ESEG10(MCU)	59	CN34	O	ESEG56(MCU)
14	CN79	O	ESEG11(MCU)	60	CN33	O	ESEG57(MCU)
15	CN78	O	ESEG12(MCU)	61	CN32	O	ESEG58(MCU)
16	CN77	O	ESEG13(MCU)	62	CN31	O	ESEG59(MCU)
17	CN76	O	ESEG14(MCU)	63	CN30	O	ESEG60(MCU)
18	CN75	O	ESEG15(MCU)	64	CN29	O	ESEG61(MCU)
19	CN74	O	ESEG16(MCU)	65	CN28	O	ESEG62(MCU)
20	CN73	O	ESEG17(MCU)	66	CN27	O	ESEG63(MCU)
21	CN72	O	ESEG18(MCU)	67	CN26	O	ESEG0(Driver)
22	CN71	O	ESEG19(MCU)	68	CN25	O	ESEG1(Driver)
23	CN70	O	ESEG20(MCU)	69	CN24	O	ESEG2(Driver)
24	CN69	O	ESEG21(MCU)	70	CN23	O	ESEG3(Driver)
25	CN68	O	ESEG22(MCU)	71	CN22	O	ESEG4(Driver)
26	CN67	O	ESEG23(MCU)	72	CN21	O	ESEG5(Driver)
27	CN66	O	ESEG24(MCU)	73	CN20	O	ESEG6(Driver)
28	CN65	O	ESEG25(MCU)	74	CN19	O	ESEG7(Driver)
29	CN64	O	ESEG26(MCU)	75	CN18	O	ESEG8(Driver)
30	CN63	O	ESEG27(MCU)	76	CN17	O	ESEG9(Driver)
31	CN62	O	ESEG28(MCU)	77	CN16	O	ESEG10(Driver)
32	CN61	O	ESEG29(MCU)	78	CN15	O	ESEG11(Driver)
33	CN60	O	ESEG30(MCU)	79	CN14	O	ESEG12(Driver)
34	CN59	O	ESEG31(MCU)	80	CN13	O	ESEG13(Driver)
35	CN58	O	ESEG32(MCU)	81	CN12	O	ESEG14(Driver)
36	CN57	O	ESEG33(MCU)	82	CN11	O	ESEG15(Driver)
37	CN56	O	ESEG34(MCU)	83	CN10	O	ESEG16(Driver)
38	CN55	O	ESEG35(MCU)	84	CN9	O	ESEG17(Driver)
39	CN54	O	ESEG36(MCU)	85	CN8	O	ESEG18(Driver)
40	CN53	O	ESEG37(MCU)	86	CN7	O	ESEG19(Driver)
41	CN52	O	ESEG38(MCU)	87	CN6	O	ESEG20(Driver)
42	CN51	O	ESEG39(MCU)	88	CN5	O	ESEG21(Driver)
43	CN50	O	ESEG40(MCU)	89	CN4	O	ESEG22(Driver)
44	CN49	O	ESEG41(MCU)	90	CN3	O	ESEG23(Driver)
45	CN48	O	ESEG42(MCU)	91	CN2	O	EBP(Driver)
46	CN47	O	ESEG43(MCU)	92	CN1	O	ETP(Driver)

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4.2.7 EPD Module Interface Connector Pad (CN10)

Table 4.16 EPD Module Interface Connector Pad (CN10) Pin assignment Table

No.	Name	I/O	Function	No.	Name	I/O	Function
1	SDO	O	Data output terminal for SPI interface	8	VSS	-	電源(-)
2	SDA	I	Data input terminal for SPI Interface	9	MFC	I	Clock input terminal for Flash memory control
3	VSS	-	Power(-)	10	MFS	I	Chip select terminal for Flash memory control
4	SCL	I	Serial clock input terminal for SPI interface	11	OS	I	Clock input terminal for Flash memory control
5	SCS	I	Chip select terminal for SPI Interface	12	XRES	O	Initial reset output terminal
6	MFDO	O	Serial data output terminal for Flash memory control	13	VDD	-	Power(+)
7	MFDI	I	Serial data input terminal for Flash memory control	14	VPP	-	Flash memory programming power

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