VOICE & SOUND LSI

S5U1V3F352T1100 Manual
(S1V3F352 Evaluation Board)

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Table of Contents

1.　Overview

S5U1V3F352T1100(S1V3F352 Evaluation Board) is an evaluation board for the Seiko Epson voice & sound LSI S1V3F352.

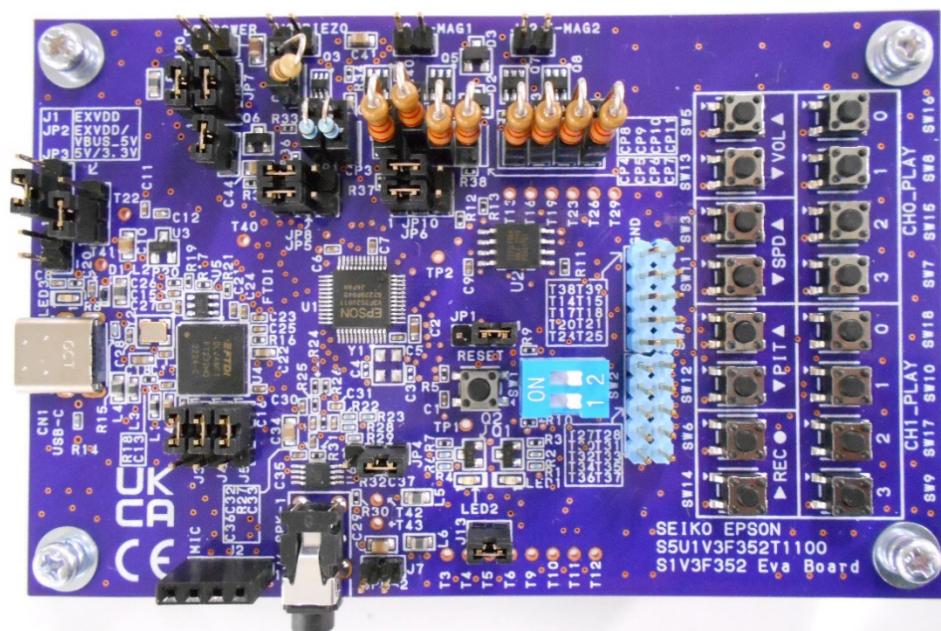Figure 1.1 shows the external view of S5U1V3F352T1100.

Figure 1.1 S5U1V3F352T1100 External View

2. Name and Function of Each Part

Table 2.1 lists the main parts on S5U1V3F352T1100. Also Figure 2.1 shows the layout of the parts on the board.

Table 2.1 Main Parts Description

Part Name	Part Number	Description	Remarks
S1V3F352	U1	Sound & voice LSI	
64Mbit/8Mbyte QSPI flash memory	U2	For storing a sound ROM data	
USB to Serial Converter	U4	For communication with PC （For writing sound data）	
USB Type-C connector	CN1	For power supply from USB-VBUS and for connecting PC	
Jumper for switching power	JP2	Switching USB-VBUS⇔External power	
Jumper for switching operating voltage	JP3	Switching 5V⇔3.3V	
Audio jack	J6	Audio jack	
Speaker connector	J7	For connecting speaker	
Microphone connector	J2	For connecting Microphone	
External power connector	J1	For connecting with an external power such as stabilized power supply.	＋input －GND
Reset switch	SW1	For reset hardware	
Dip switch for setting host interface	SW2	For setting host interface	
Tactile switch for control sound	SW3, SW4, SW5, SW6, SW7, SW8, SW9, SW10, SW11, SW12, SW13 SW14, SW15, SW16, SW17, SW18	For controlling sound in standalone	

Jumper for switching power

Jumper for switching operating voltage

External power connector

USB Type-C connector

USB to Serial Converter

Tactile switch for control sound

Microphone connector

Audio jack

Speaker connector

Reset switch

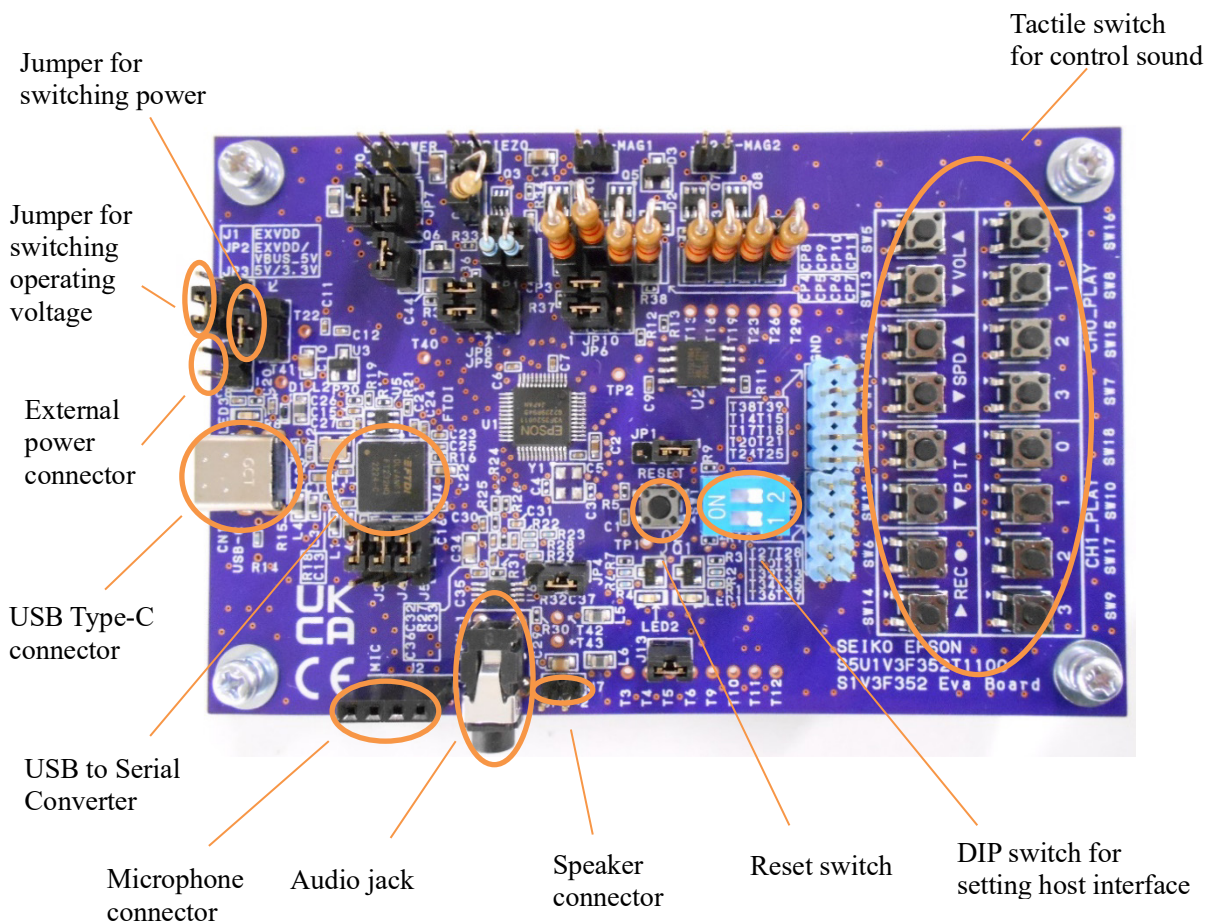DIP switch for setting host interface

Figure 2.1 Layout of Main Parts

3. Settings

3.1 Power Supply

The power supply can be selected from following two sources by JP2 jumper setting.

- VBUS(CN1)：Supplied from USB-VBUS to CN1
- EXVDD：Supplied from an external power to J1

Table 3.1.1 shows the jumper setting of power supply.

Table 3.1.1 Power Supply Switching

Power Supply	JP2 Settings	Remarks
VBUS(CN1)	1-2 Short	Connect Micro-USB to CN1
EXVDD	2-3 Short	Connect DC +5V to J1 (+ input, - GND)

Table 3.1.2 shows the jumper setting of operating voltage for S1V3F352.

Table 3.1.2 Operating Voltage Switching

Operating Voltage	JP3 Settings
5V	1-2 short
3.3V	2-3 short

表 3.1.3 Oscillation Circuit Switching

Oscillation Circuit	JP1 Setting
Internal oscillation	1-2 short
External oscillation (crystal / ceramic)	2-3 short

Note) The evaluation board does not mount an external oscillator. If you select external oscillation, please use it after mounting an external oscillator on the board.
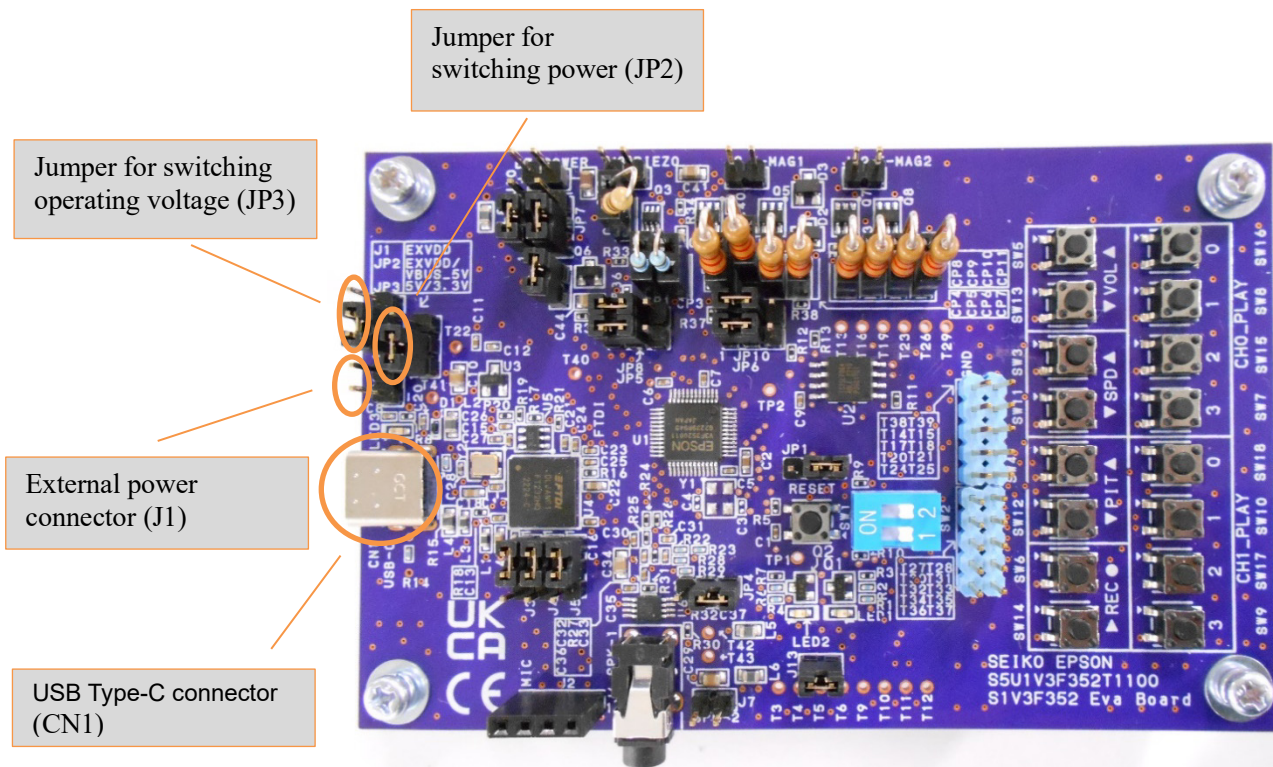
Jumper for
switching power (JP2)

Jumper for switching
operating voltage (JP3)

External power
connector (J1)

USB Type-C connector
(CN1)

Figure 3.1.1 Layout of parts for Power Supply

3.2 Audio device

S5U1V3F352T1100 can output and input sound by four types of audio devices.

- Played by speaker
- Recorded by Microphone

Table 3.2.1 shows the jumper settings and connection terminals for each device.

Table 3.2.1 Audio Device Settings

	Speaker	Microphone
JP4	1-2 short	-
JP5	Don't care	-
JP6	Don't care	-
JP7	Don't care	-
JP8	Don't care	-
JP9	Don't care	-
JP10	Don't care	-
J11	Open	-
External power connection	-	-
Device connection	J6, J7	J2

Note 1: Jumper settings should not be done during power is supplied. The parts mounted on the board such as amplifier may be damaged. Please switch the jumper with the power off.

Note 2) If you use J11 with short, transistors Q7 and Q8 may generate heat, so be sure to use J11 with open.
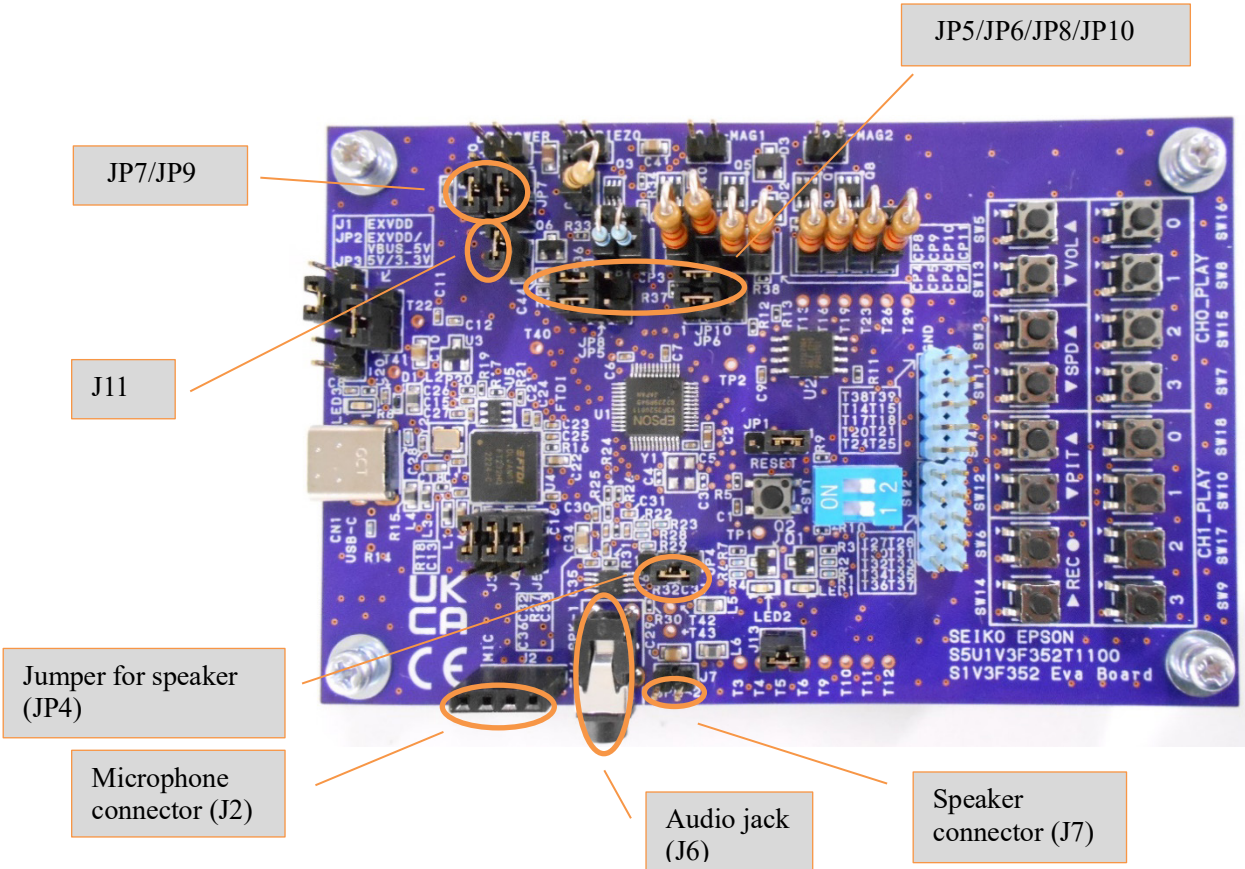
Figure 3.2.1 Layout of parts for setting audio devices

3.3   Host Interface

S5U1V3F352T1100 can be used with one of the following four host interfaces.

- SPI   For communication with PC / For communication with external host interface
- I2C   For communication with PC / For communication with external host interface
- UART   For communication with PC / For communication with external host interface
- Standalone   Controlled by Tactile switch

Table 3.3.1 shows the jumper settings of each host interface.

Table 3.3.1 Jumper Settings for Host Interface Switching

	J3	J4	J5	J13
For communication with PC	1-2 short	1-2 short	1-2 short	Don't care
For communication with external host interface	2-3 short	2-3 short	2-3 short	Short
Standalone	2-3 short	2-3 short	2-3 short	Short

Note: Please refer to "3.4 Through Hole" for communication with external host interface.

Jumper for switching host interface (J3/J4/J5/J13)
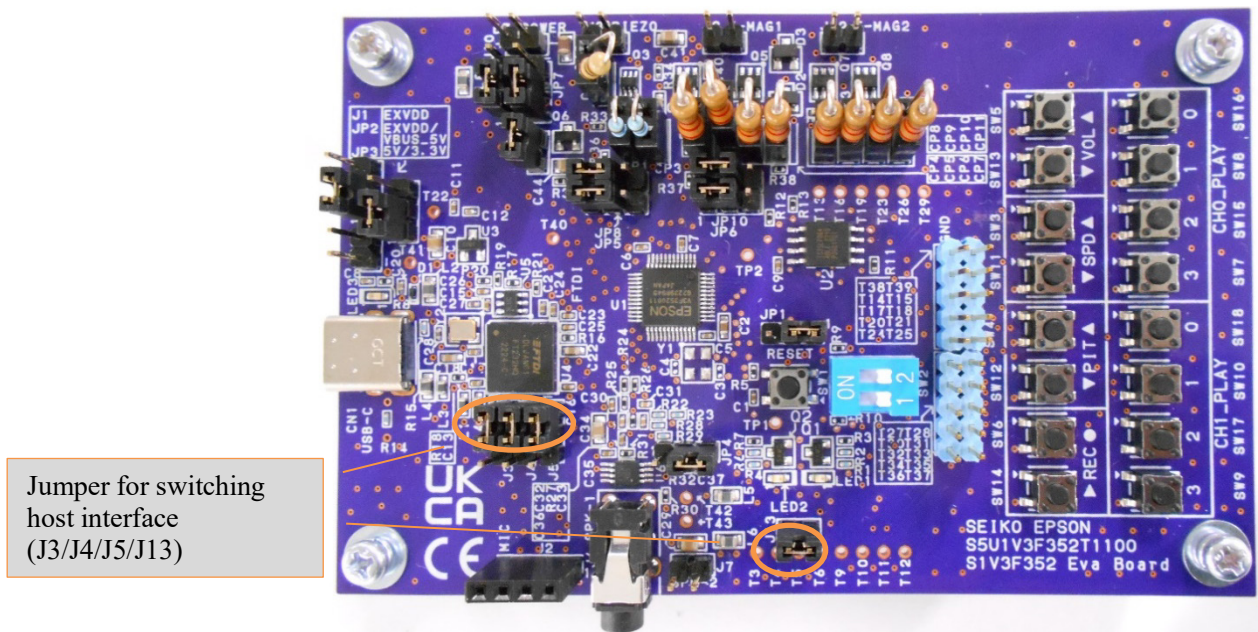
Figure 3.4.1 Layout of Jumper for setting Host interface

The host interface can be selected by controlling the DIP switch (SW2).

Table 3.3.2 shows the switch settings of SW2.

Table 3.3.2 DIP switch (SW2) settings

SW2	Host interface
ON 1 2	SPI
ON 1 2	UART
ON 1 2	I2C
ON 1 2	Standalone

S5U1V3F352T1100 can be controlled by Tactile switch (SW3 - SW18) when in Standalone.

Table 3.3.3 shows the Tactile switch (SW3 – SW18) setting.

Table 3.3.3 Tactile switch (SW3 – SW18) settings

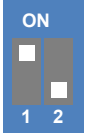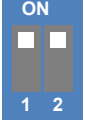| Switch name	Connecting IC pin name	Silk	Remarks
SW3	#SPEED_UP	SPD ▲	Speed up
SW4	#PITCH_UP	PIT ▲	Pitch Up
SW5	#VOLUME_UP	VOL ▲	Volume up
SW6	#SOUND_REC	REC ●	Record sound
SW7	SIS/RXD/SDA/#CH0_PLAY3	CH0_PLAY 3	Select CH0_PLAY3
SW8	SOS/TXD/-/#CH0_PLAY1	CH0_PLAY 1	Select CH0_PLAY1
SW9	#CH1_PLAY3	CH1_PLAY 3	Select CH1_PLAY3
SW10	#CH1_PLAY1	CH1_PLAY 1	Select CH1_PLAY1
SW11	#SPEED_DOWN	▼ SPD	Speed down
SW12	#PITCH_DOWN	▼ PIT	Pitch down
SW13	#VOLUME_DOWN	▼ VOL	Volume down
SW14	#REC_SOUND_PLAY	▶ REC	Play recorded sound
SW15	SCKS/-/SCL/#CH0_PLAY2	CH0_PLAY 2	Select CH0_PLAY2
SW16	#NSCSS/-/-/#CH0_PLAY0	CH0_PLAY 0	Select CH0_PLAY0
SW17	#CH1_PLAY2	CH1_PLAY 2	Select CH1_PLAY2
SW18	#CH1_PLAY0	CH1_PLAY 0	Select CH1_PLAY0

Note: For more information, please refer to "S1V3F351 / S1V3F352 technical manual".

Tactile switch for controlling sound. (Standalone)

DIP switch for setting host interface
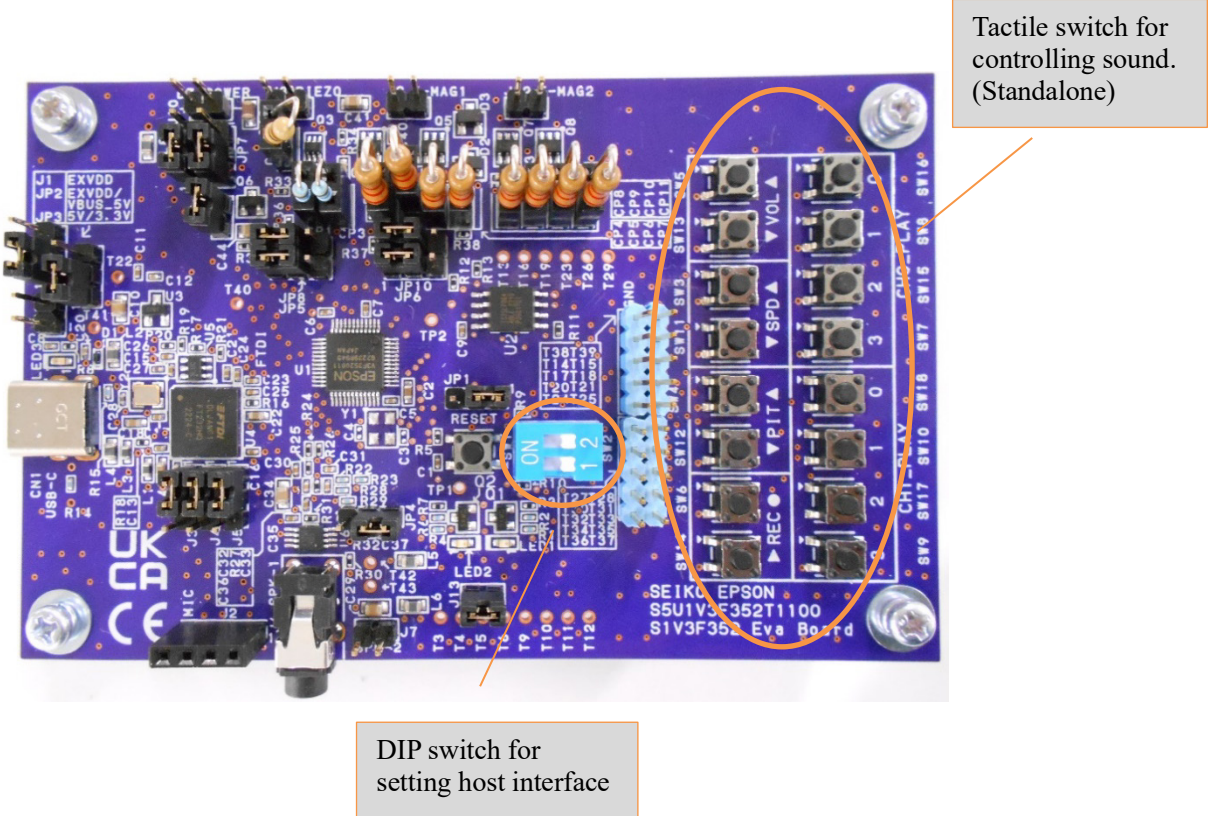
Figure 3.3.2 Layout of switch for setting host interface, and controlling sound

3.4   Through Hole

Table 3.4.1 shows the through holes for external host connections and external direct writing to QSPI flash memory.

Table 3.4.1 Through hole

Through hole name	Connecting IC pin name	Remarks
T3	#NSCSS/-/-/#CH0_PLAY0	For connecting with external host interface
T4	SOS/TXD/-/#CH0_PLAY1	
T5	SCKS/-/SCL/#CH0_PLAY2	
T6	SIS/RXD/SDA/#CH0_PLAY3	
T9	ERROR	
T10	STATUS	
T11	GND	
T12	VDD_3_3V_5V	
T13	QSPICLK	For connecting with QSPI flash memory
T16	QSDIO0	
T19	QSDIO1	
T23	QSDIO2	
T26	QSDIO3	
T29	#QSPISS	
T40	VDD_3.3V	

Through hole for connecting with QSPI flash memory

Through hole for connecting with external host interface
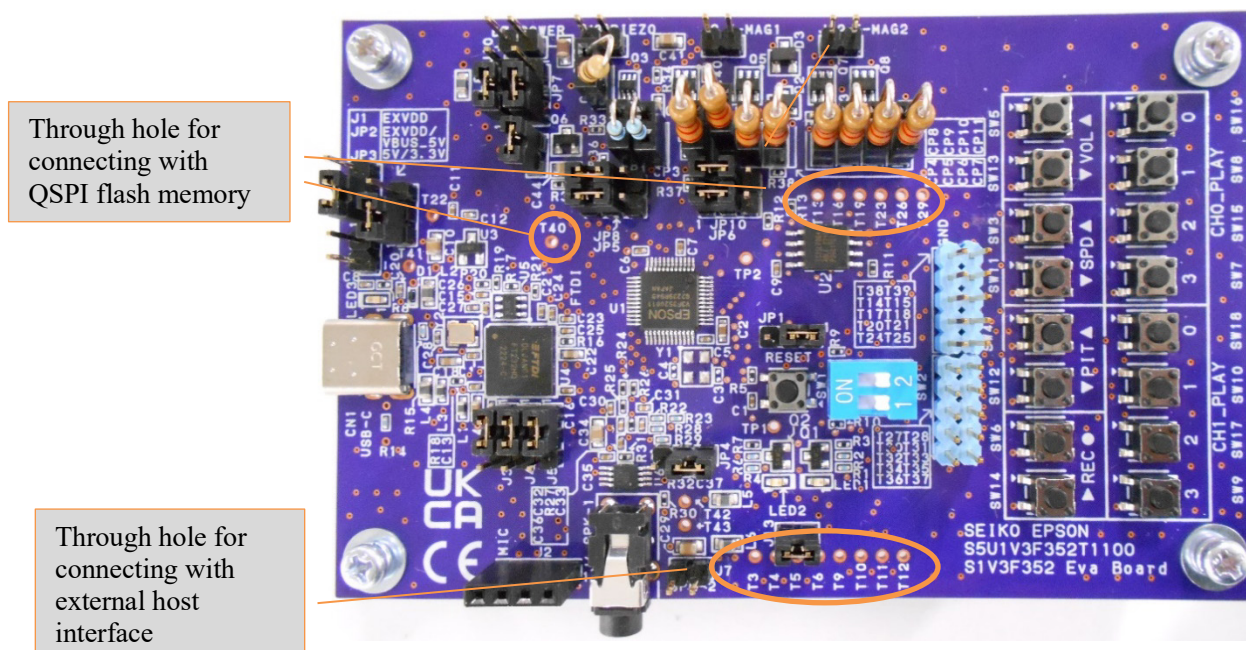
Figure 3.4.1 Layout of Through hole

Appendix A Circuit Diagrams

FTDI USB - SPI

CN1 — USB4085-GF-A — GCT Type-C

U4 — FT232HL

U5 — 93AA66BT-I/OT

Y2 — FA-238V (12MHz)

Title	S1V3F351/F352 SVT Board
Size A3	Document Number: <Doc>
Rev	<RevC
Date:	Wednesday, June 28, 2023	Sheet 2 of 4

Speaker Amplifier

Title	S1V3F351/F352 SVT Board		
Size A3	Document Number <Doc>		Rev <RevC
Date:	Wednesday, June 28, 2023	Sheet 3 of 4	

Buzzer Control

Piezo

PIEZO

E-magnetic(4pin control)

E-MAG1

Not used for S1V3F352

E-magnetic(2pin control)

E-MAG2

Title: S1V3F351/F352 SVT Board

Size	Document Number	Rev
A3	<Doc>	<RevC

Date: Wednesday, June 28, 2023   Sheet 4 of 4
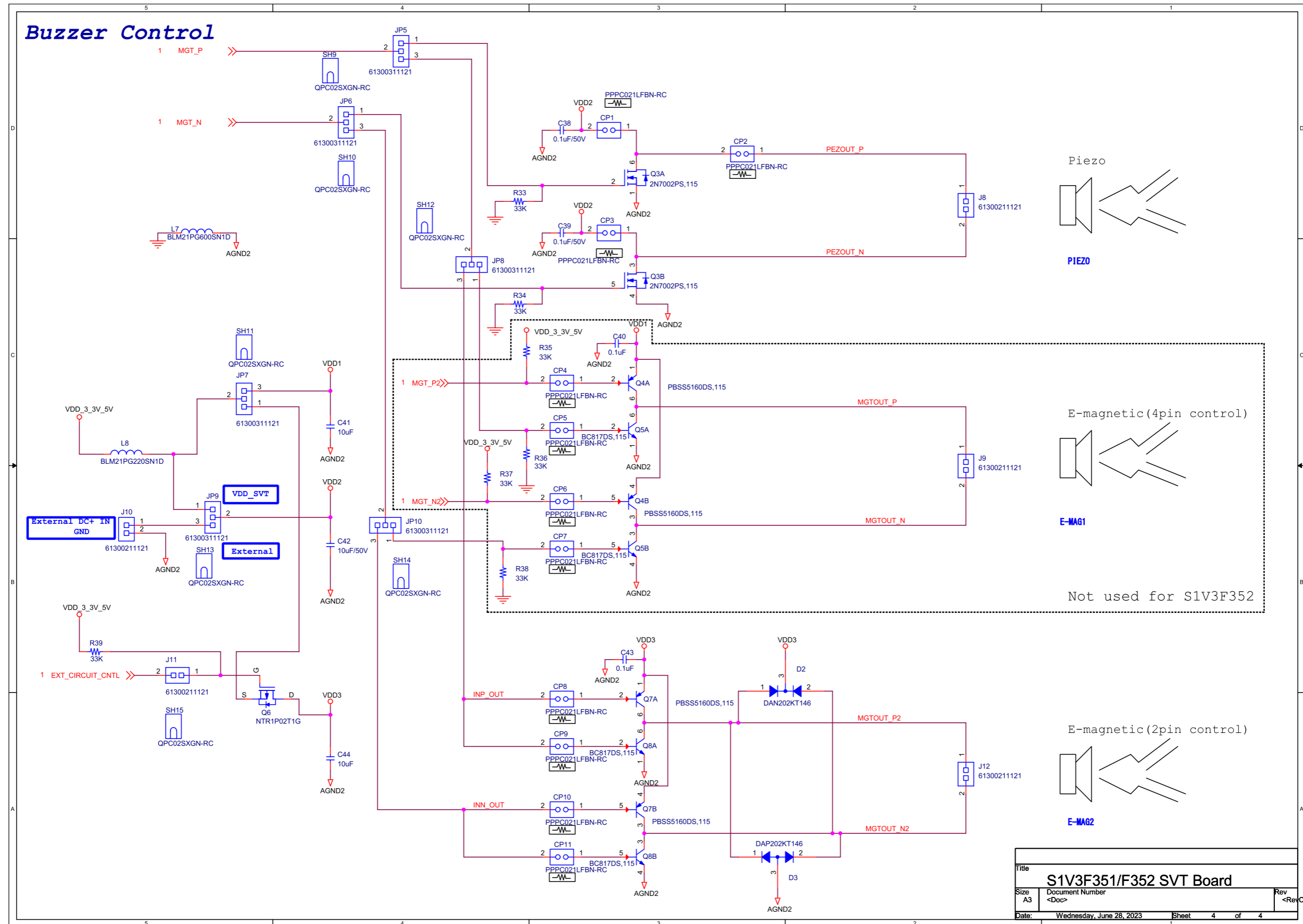
Appendix B Parts List

Note! Parts are subject to change without notice.

Item	Quantity	Reference	Part	Manufacture	Mount	Other comment
1	1	CN1	USB4085-GF-A	GCT		
2	7	CP1,CP2,CP3,CP8,CP9,CP10,CP11	PPPC021LFBN-RC	Sullins Connector Solutions		
3	16	C1,C6,C7,C9,C13,C15,C16,C17,C19,C21, C23,C24,C25,C26,C35,C43	0.1uF			
4	1	C2	3.3uF			
5	2	C27,C28	10pF			
6	5	C5,C8,C11,C12,C20	1uF			
7	5	C10,C29,C34,C41,C44	10uF			
8	3	C14,C18,C22	4.7uF			
9	4	C30,C31,C32,C33	39nF			
10	2	C36,C37	10nF			
11	2	C38,C39	0.1uF			
12	1	D1	DF2S5.6CT,L3F	TOSHIBA		
13	1	D2	DAN202KT146	Rohm Semiconductor		
14	1	D3	DAP202KT146	Rohm Semiconductor		
15	13	JP1,JP2,JP3,JP4,JP5,JP6,JP7,JP8,JP9, JP10,J3,J4,J5,	61300311121	Würth Elektronik		
16	7	J1,J7,J8,J10,J11,J12,J13	61300211121	Würth Elektronik		
17	1	J2	RS1-04-G	Adam Tech		
18	1	J6	ST-005-G	Switronic Industrial Corp.		
19	1	LED1	BR1111C-TR	STANLEY		
20	2	LED2,LED3	BG1111C-TR	STANLEY		
21	2	L1,L3	BLM18PG600SN1D	MURATA		
22	5	L2,L4,L5,L6,L7	BLM21PG600SN1D	MURATA		
23	1	L8	BLM21PG220SN1D	MURATA		
24	2	Q1,Q2	BSS123,215	Nexperia		
25	1	Q3	2N7002PS,115	Nexperia		
26	1	Q7	PBSS5160DS,115	Nexperia		
27	1	Q8	BC817DS,115	Nexperia		
28	2	R1,R4	1K			
29	2	R2,R6	100			
30	4	R3,R7,R13,R30	100K			
31	6	R5,R11,R16,R17,R19,R20	10K			
32	1	R8	820			
33	2	R9,R10	47K			
34	1	R12	10			
35	2	R14,R15	5.1K			
36	1	R18	12K			
37	1	R21	2K			
38	4	R22,R23,R28,R29	51K			
39	4	R24,R25,R26,R27	510			
40	2	R31,R32	200K			
41	3	R33,R34,R39	33K			
42	15	SH1,SH2,SH3,SH4,SH5,SH6,SH7,SH8, SH9,SH10,SH11,SH12,SH13,SH14,SH15	QPC02SXGN-RC	Sullins Connector Solutions		
43	17	SW1,SW3,SW4,SW5,SW6,SW7,SW8, SW9,SW10,SW11,SW12,SW13,SW14, SW15,SW16,SW17,SW18	PTS 647 SK38 SMTR2 LFS	C&K		
44	1	SW2	DS01-254-L-02BE	CUI Devices		
45	41	TP1,TP2,T3,T4,T5,T6,T9,T10,T11,T12, T13,T14,T15,T16,T17,T18,T19,T20,T21, T22,T23,T24,T25,T26,T27,T28,T29,T30, T31,T32,T33,T34,T35,T36,T37,T38,T39, T40,T41,T42,T43	TH			
46	1	U1	S1V3F352	EPSON		
47	1	U2	IS25LP064A-JBLE	Integrated Silicon Solution Inc		
48	1	U3	MCP1700T-3302E/TT	Microchip Technology		
49	1	U4	FT232HQ	Future Technology Devices International Ltd		
50	1	U5	93AA66BT-I/OT	Microchip Technology		
51	1	U6	IS31AP2005-SLS2-TR	Lumissil		
52	1	Y1	FA-238V (1 6 MHz)	EPSON	no mount	
53	1	Y2	FA-238V 12.0000MB-K3	EPSON		
54	2	C3,C4	10pF	MURATA	no mount	
55	2	CP1,CP3	180			
56	1	CP2	100			
57	4	CP8,CP9,CP10,CP11	2.2K			
58	1	C42	10uF/50V			
59	1	Q6	NTR1P02T1G	onsemi		

Revision History

Rev. No.	Date	Page	Category	Contents
Rev.1.0	2023/02/22	All	New	New establishment
Rev.1.1	2023/12/05	P.6.7	Modified	Modified Table 3.2.1 and Figure 3.2.1.
		P.14-18	Modified	Modified Circuit Diagrams and Parts List.
	2024/03/27	All	Deleted	Deleted buzzer related information.
		P.4	Added	Added Table 3.1.3.
		P.17	Modified	Modified Parts List

EPSON

America

Epson America, Inc.

Headquarter:
3131 Katella Ave.
Los Alamitos, CA 90720, USA
Phone: +1-800-463-7766

San Jose Office:
2860 Zanker Road Suite 204
San Jose, CA 95134, USA
Phone: +1-800-463-7766

Europe

Epson Europe Electronics GmbH
Riesstrasse 15, 80992 Munich,
Germany
Phone: +49-89-14005-0   FAX: +49-89-14005-110

Asia

Epson (China) Co., Ltd.
4th Floor, Tower 1 of China Central Place, 81 Jianguo Road, Chaoyang
District, Beijing 100025 China
Phone: +86-10-8522-1199   FAX: +86-10-8522-1120

Shanghai Branch
Room 601-603, Building A One East, No.325 East Longhua Road,
Shanghai 200023, China
Phone: +86-21-5330-4888   FAX: +86-21-5423-4677

Shenzhen Branch
Room 804-805, 8 Floor, Tower 2, Ali Center,No.3331
Keyuan South RD(Shenzhen bay), Nanshan District, Shenzhen
518054, China
Phone: +86-755-3299-0588   FAX: +86-755-3299-0560

Epson Taiwan Technology & Trading Ltd.
15F, No.100, Songren Rd, Sinyi Dist, Taipei City 110. Taiwan
Phone: +886-2-8786-6688

Epson Singapore Pte., Ltd.
438B Alexandra Road,
Block B Alexandra TechnoPark, #04-01/04, Singapore 119968
Phone: +65-6586-5500   FAX: +65-6271-7066

Epson Korea Co.,Ltd
10F Posco Tower Yeoksam, Teheranro 134 Gangnam-gu,
Seoul, 06235, Korea
Phone: +82-2-3420-6695

Seiko Epson Corp.
Sales & Marketing Division

MD Sales & Marketing Department
JR Shinjuku Miraina Tower, 4-1-6 Shinjuku,
Shinjuku-ku, Tokyo 160-8801, Japan