ML22Q374/ML22Q394 SSOP16 Reference Board User's Manual

LAPIS Technology Co.,Ltd.

1 . Overview

This is the instruction manual for ML22Q374/ML22Q394 SSOP16 Reference Board.

ML22Q374/ML22Q394 SSOP16 Reference Board supports following functions in combination with Sound Device Control Board.

1. Voice Playback by ML22Q374/ML22Q394.
2. Writing voice data into ML22Q374/ML22Q394.

    Please notice that the LSI written by this reference board can be used only as a prototype.

    It is not guaranteed as a mass-produced quality.

2 . Operating Suggestions

It is the operating suggestions for ML22Q374/ML22Q394 SSOP16 Reference Board.

1. Please do not supply a power to sound device control board, when the reference board is being mounted on it.

2. Please do not supply a power to sound device control board, when the LSIs are being mounted in the socket on the reference board. Then please confirm the aspect of the LSIs. The pin no.1 of LSIs must be placed at left near side of the socket.

3. LAPIS Technology will not provide any support for this board, but the board can be exchanged with a new product only when it has an initial failure.
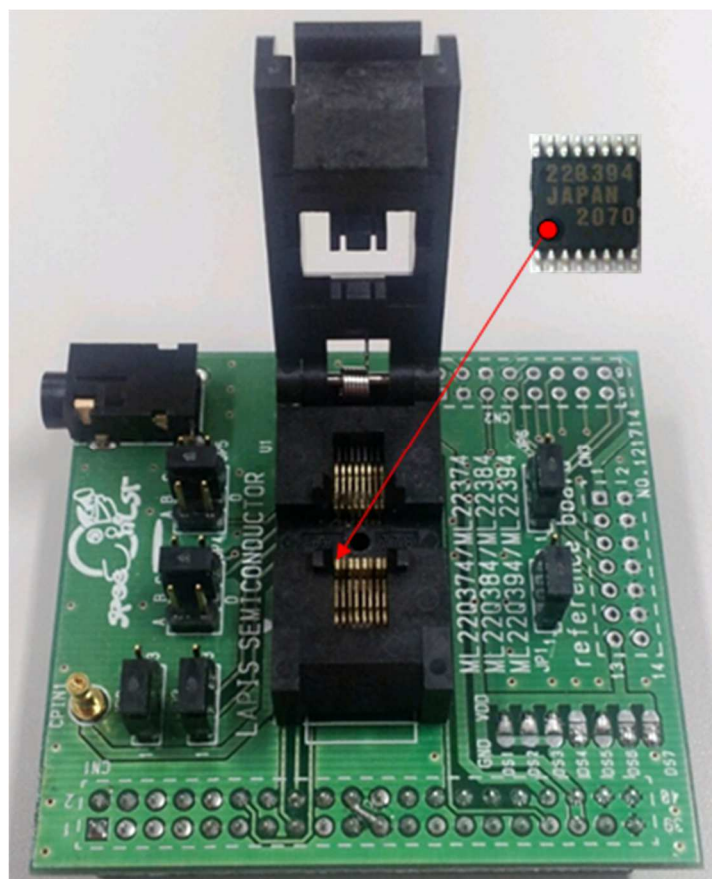
3 . Reference Board

3.1 Circuit Diagram

3.1.1 Circuit Diagram for ML22Q374
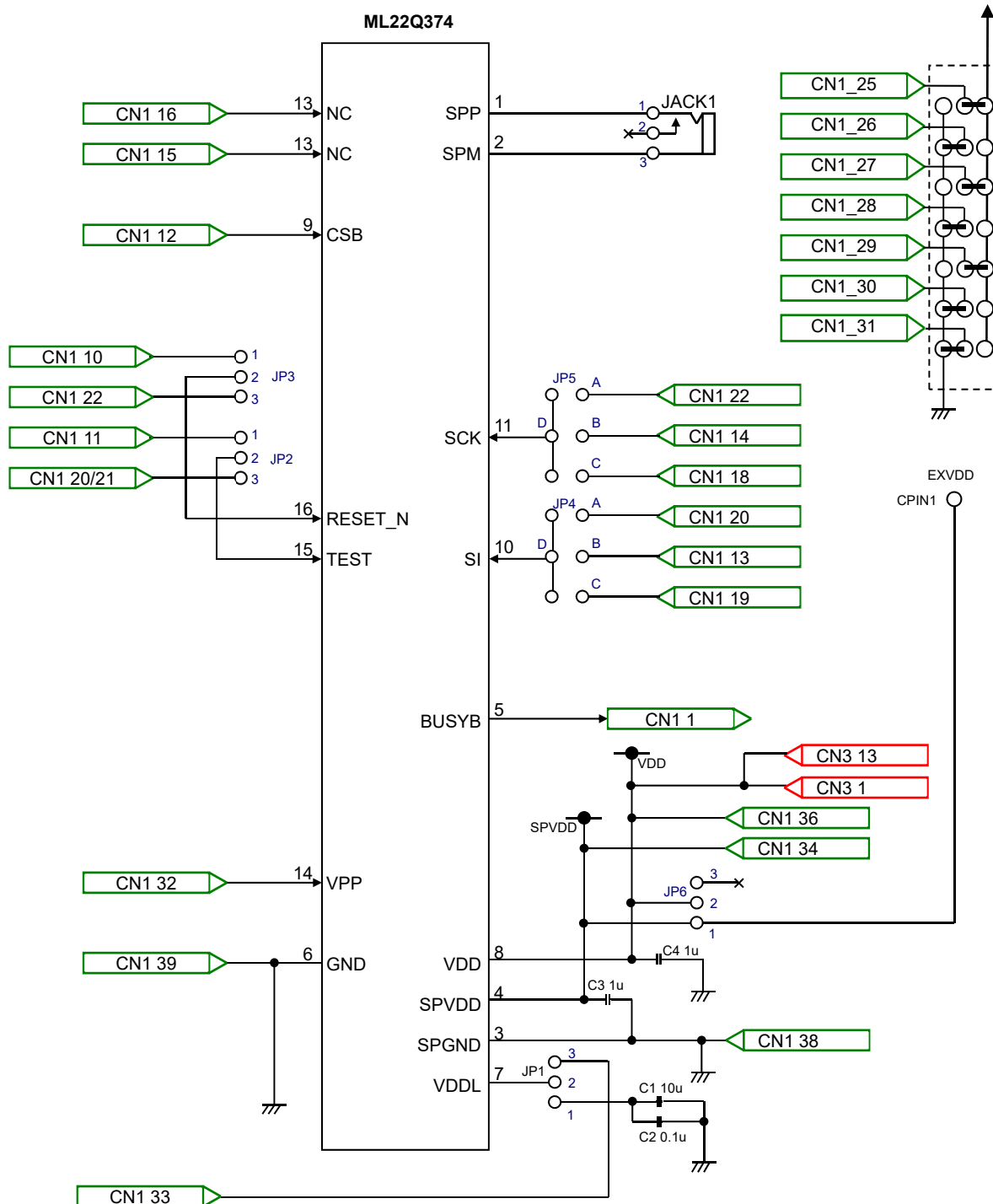
3.1.2 Circuit Diagram for ML22Q394
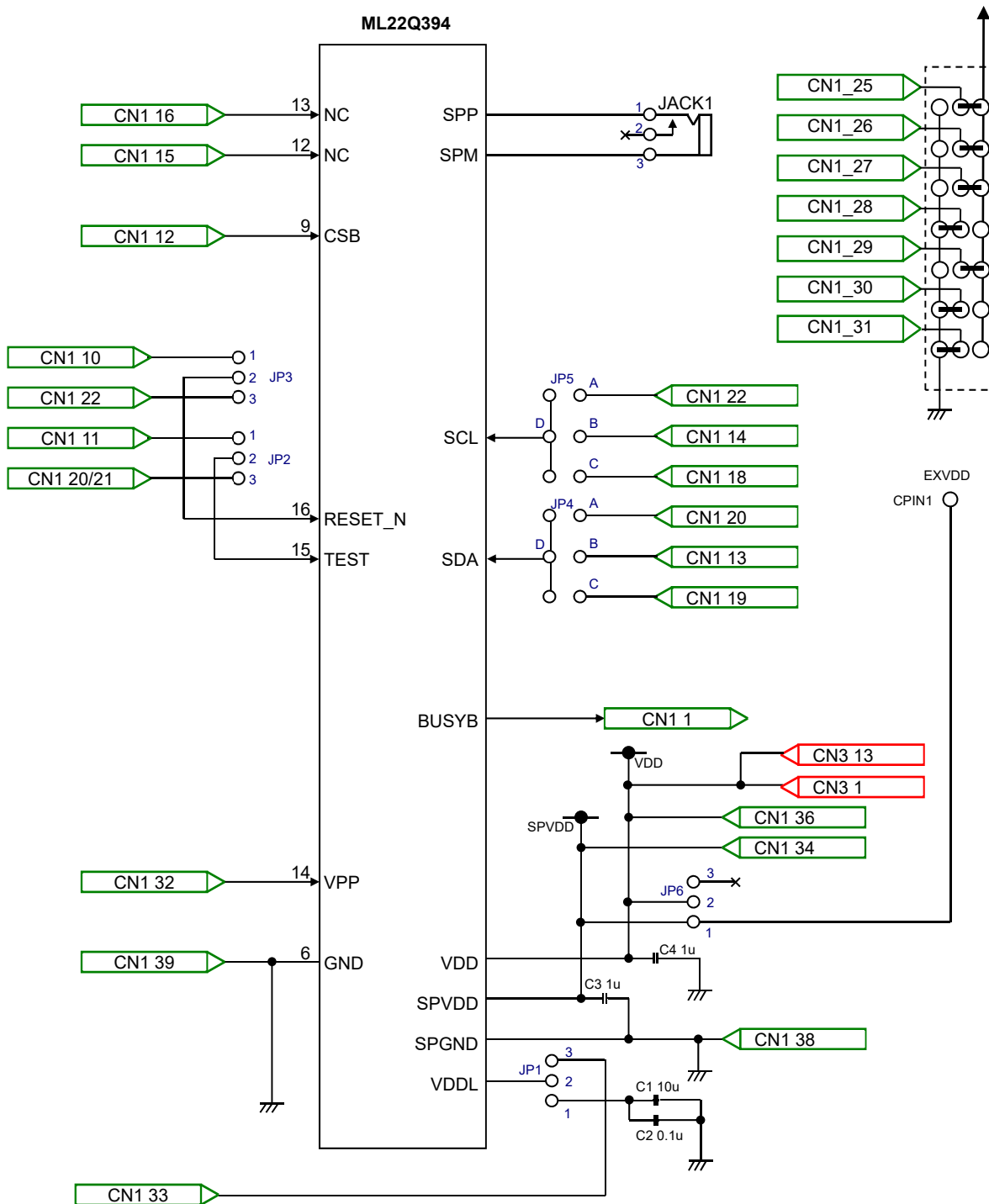
3.2 Rough PCB layout

ML22Q374/ML22Q394 SSOP16 Reference Board rough layout is described.
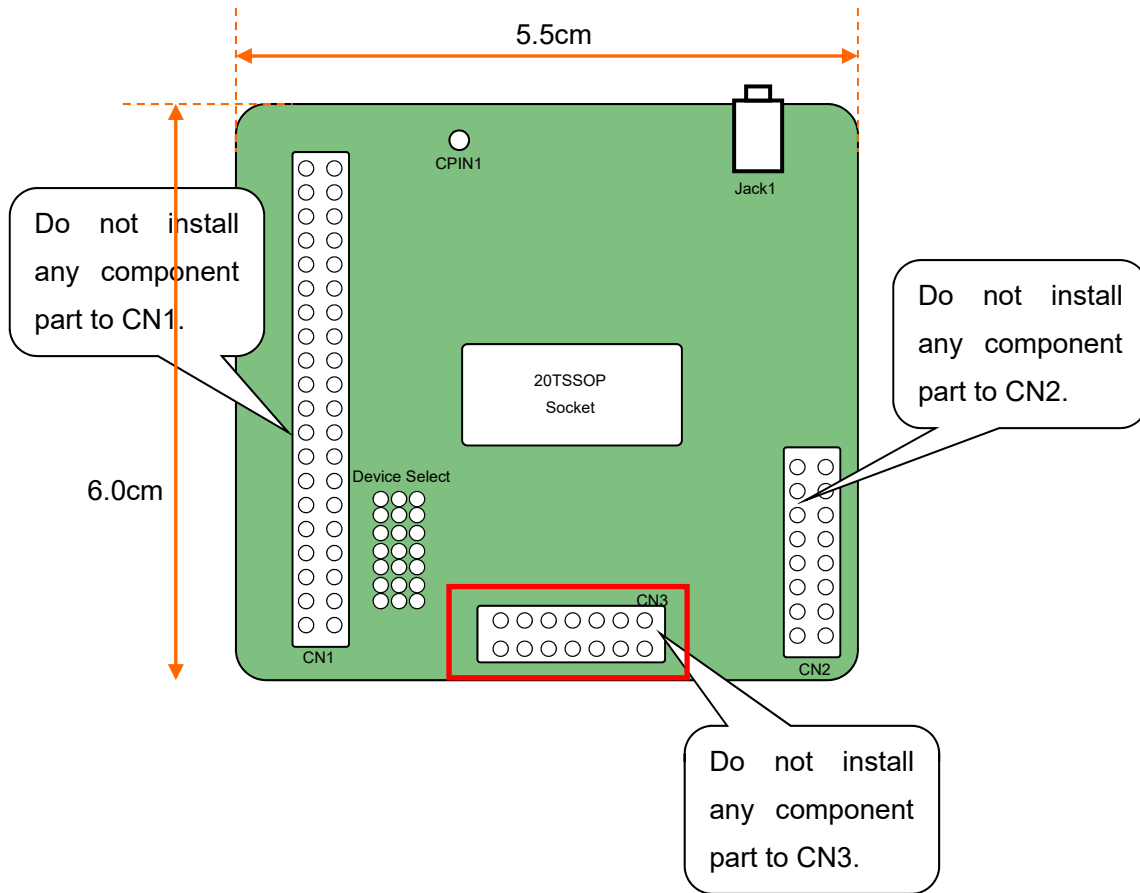
3.3 CN1 connector specification

This is connector for connecting to ML22Q374/ML22Q394 control signal lines. It has two rows 40 pins.
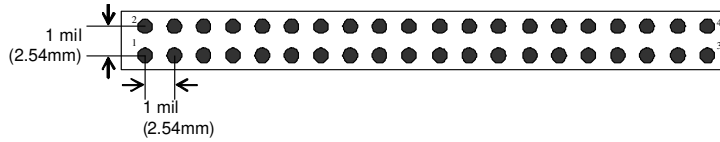
3.4 CN1 connector pin connections

CN1 Pin No		ML22Q374			ML22Q394		
		Connect LSI	LSI Pin No	LSI Pin Name	Connect LSI	LSI Pin No	LSI Pin Name
1	I/O	ML22Q374	5	BUSYB	ML22Q394	5	BUSYB
2	I/O	—	—	---NC---	—	—	---NC---
3	I/O	—	—	---NC---	—	—	---NC---
4	I/O	—	—	---NC---	—	—	---NC---
5	I/O	—	—	---NC---	—	—	---NC---
6	I/O	—	—	---NC---	—	—	---NC---
7	I/O	—	—	---NC---	—	—	---NC---
8	I/O	—	—	---NC---	—	—	---NC---
9	I/O	—	—	---NC---	—	—	---NC---
10	I/O	JP3-1	20	RESET_N	JP3-1	20	RESET_N
11	I/O	JP2-1	19	TEST	JP2-1	19	TEST
12	I/O	ML22Q374	13	CSB	ML22Q394	13	CSB
13	I/O	JP4-B	14	SI	JP4-B	14	SDA
14	I/O	JP5-B	15	SCK	JP5-B	15	SCL
15	I/O	ML22Q374	16	NC	ML22Q394	16	NC
16	I/O	ML22Q374	17	NC	ML22Q394	17	NC
17	I/O	—	—	---NC---	—	—	---NC---
18	I/O	JP5-C	15	SCK	JP5-C	15	SCL
19	I/O	JP4-C	14	SI	JP4-C	14	SDA
20	I/O	JP4-A	14	SI	JP4-A	14	SDA
		JP2-3	19	TEST	JP2-3	19	TEST

CN1 Pin No		ML22Q374			ML22Q394		
		Connect LSI	LSI Pin No	LSI Pin Name	Connect LSI	LSI Pin No	LSI Pin Name
21	I/O	JP4-A	14	JP4-A	JP4-A	14	SDA
		JP2-3	19	JP2-3	JP2-3	19	TEST
22	I/O	JP5-A	15	JP5-A	JP5-A	15	SCL
		JP3-3	20	JP3-3	JP3-3	20	RESET_N
23	I/O	—	—	—	—	—	---NC---
24	I/O	—	—	—	—	—	---NC---
25	Board Select	VDD	—	VDD	VDD	—	—
26	Board Select	GND	—	GND	VDD	—	—
27	Board Select	VDD	—	VDD	VDD	—	—
28	Board Select	GND	—	GND	GND	—	—
29	Board Select	VDD	—	VDD	VDD	—	—
30	Board Select	GND	—	GND	GND	—	—
31	Board Select	GND	—	GND	GND	—	—
32	VPP	ML22Q374	18	ML22Q374	ML22Q394	18	VPP
33	VDD	JP1-3	7	JP1-3	JP1-3	7	VDDL
34	VDD	ML22Q374	4	ML22Q374	ML22Q394	4	SPVDD
35	VDD	ML22Q374	8	ML22Q374	ML22Q394	8	VDD
36	VDD	ML22Q374	8	ML22Q374	ML22Q394	8	VDD
37	VDD( )	—	—	—	—	—	---NC---
38	GND	ML22Q374	3	ML22Q374	ML22Q394	3	SPGND
39	GND	ML22Q374	6	ML22Q374	ML22Q394	6	GND
40	GND	ML22Q374	6	ML22Q374	ML22Q394	6	GND

3.5 CN2 connector specification

CN2 is connecting to all ML22Q374/ML22Q394 terminals. It has two rows 16 pins.
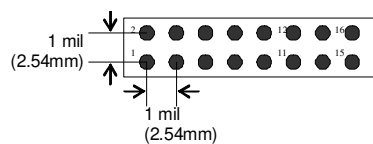
3.6 CN2 connector pin connections

CN2 Pin No	LSI Pin No	LSI Pin Name (ML22Q374)	LSI Pin Name (ML22Q394)
1	1	SPP	SPP
2	2	SPM	SPM
3	3	SPGND	SPGND
4	4	SPVDD	SPVDD
5	5	BUSYB	BUSYB
6	6	GND	GND
7	7	VDDL	VDDL
8	8	VDD	VDD
9	13	CSB	CSB
10	14	SI	SDA
11	15	SCK	SCL
12	16	NC	NC
13	17	NC	NC
14	18	VPP	VPP
15	19	TEST	TEST
16	20	RESET_N	RESET_N

3.7   CN3 connector specification

CN3 is connecting to all ML22Q374/ML22Q394 terminals. It has two rows 14 pins.
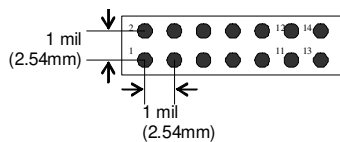
3.8   CN3 connector pin connections

CN3 Pin No	LSI Pin No	LSI Pin Name (ML22Q374)	LSI Pin Name (ML22Q394)
1	8 JP6-2	VDD	VDD
2 4 6 8 10 12	6 3	GND SPGND	GND SPGND
3	18	VPP	VPP
5	20	RESET_N	RESET_N
7	19	TEST	TEST
9	7	VDDL	VDDL
11	NC	-	-
13	8 JP6-2	VDD	VDD
14	NC	-	-

3.9 Jumper specifications

ML22Q374
ML22Q394

JP1

1 — To Capacitor（C1,C2）

VDDL 7 2

3

CN1_11

ML22Q374
ML22Q394

JP2

1

TEST 15 2

3

CN1_20/21

CN1_10

ML22Q374
ML22Q394

JP3

1

RESET_N 16 2

3

CN1_22
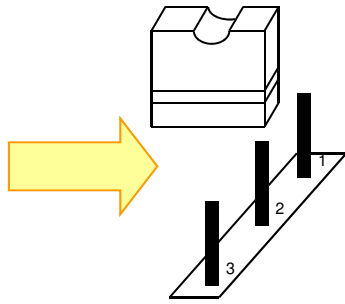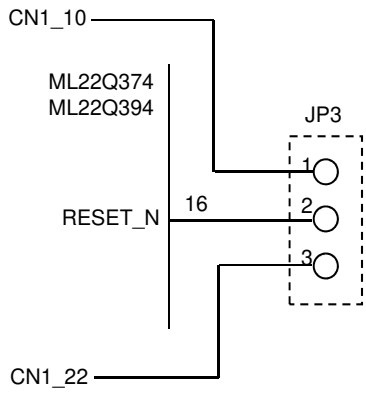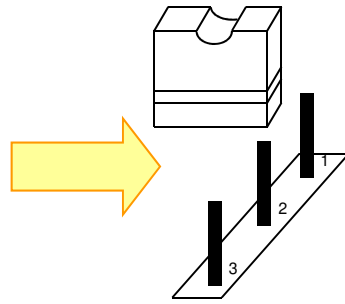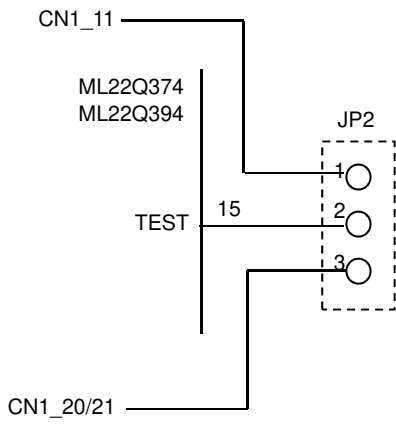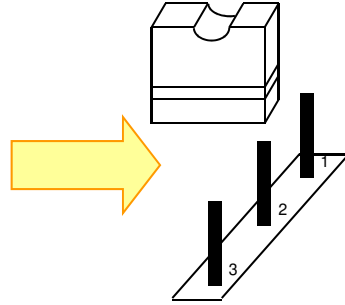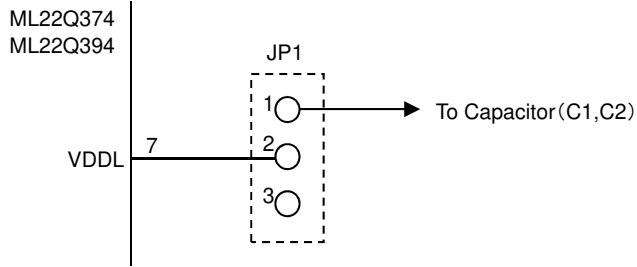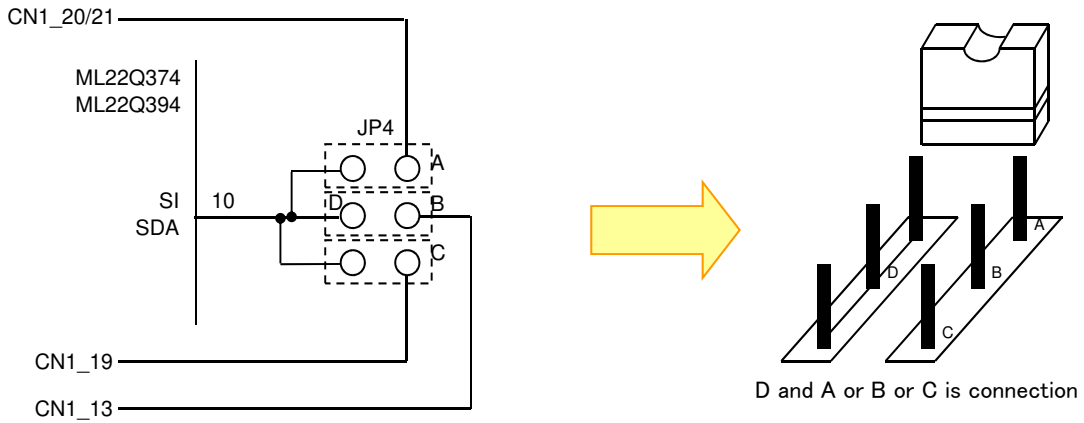
JP4 settings depend on the connected board. For jumper setting, refer to ②Device Select in 3.10. Jumper Pin Setting.
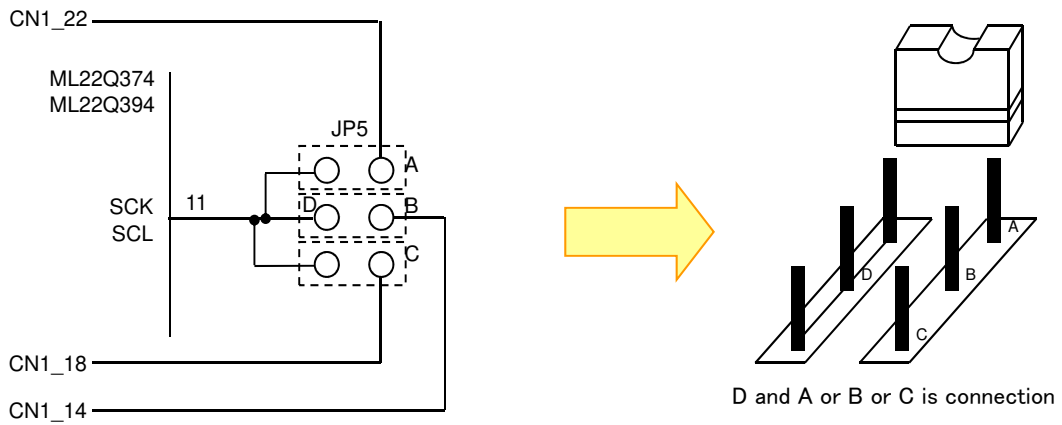
JP5 settings depend on the connected board. For jumper setting, refer to ②Device Select in 3.10. Jumper Pin Setting.

3.10 Jumper Pin Setting

①Playback/Write

Jumper Pin No.	Playback	Write / Verify
JP1	Fixed on the left side	Fixed on the right side
JP2	Fixed on the left side	Fixed on the right side
JP3	Fixed on the left side	Fixed on the right side
JP6	Fixed on the left side	Fixed on the left side

②Device Select

This is the jumper setting when connecting to SDCB2.

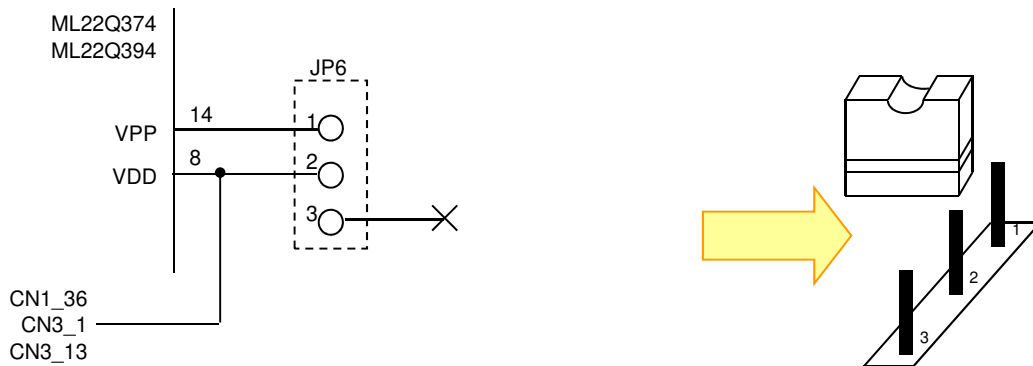| Jumper Pin No.	ML22Q374	ML22Q394
JP4	Fixed on the Apin and Dpin	Fixed on the Bpin and Dpin
JP5	Fixed on the Apin and Dpin	Fixed on the Bpin and Dpin

This is the jumper setting when connecting to SDCB3.

Jumper Pin No.	ML22Q374	ML22Q394
JP4	Fixed on the Apin and Dpin	Fixed on the Cpin and Dpin
JP5	Fixed on the Apin and Dpin	Fixed on the Cpin and Dpin

※Fixed on the left side　　：Jumper 1pin = 2pin
※Fixed on the right side　　：Jumper 2pin = 3pin

Revision History

Revision NO.	Date	Page		Description
		Previous Edition	Current Edition	
1	2013/01/08	-	-	First edition
2	2020/11/04	-	-	Removed the description of ML22374, ML22Q384, ML22384, ML22394.
		1	1	Change the description of the Notes.
				Company name changed to Lapis Technology Co., Ltd.
		6	6	3.1.2 Circuit Diagram for ML22Q384/ML22384 Removed term.
		13	13	Added explanation that JP4 has different settings depending on the board to be connected.
				Added explanation that JP5 has different settings depending on the board to be connected.
		14	14	Added jumper settings when connecting SDCB3.

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ML22Q374/ML22Q394

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