



Dear customer

ROHM Co., Ltd. ("ROHM"), on the 1st day of April, 2024,
has absorbed into merger with 100%-owned subsidiary of LAPIS Technology Co., Ltd.

Therefore, all references to "LAPIS Technology Co., Ltd.", "LAPIS Technology"
and/or "LAPIS" in this document shall be replaced with "ROHM Co., Ltd."

Furthermore, there are no changes to the documents relating to our products other than
the company name, the company trademark, logo, etc.

Thank you for your understanding.

ROHM Co., Ltd.
April 1, 2024

Dear customer

LAPIS Semiconductor Co., Ltd. ("LAPIS Semiconductor"), on the 1st day of October, 2020, implemented the incorporation-type company split (shinsetsu-bunkatsu) in which LAPIS established a new company, LAPIS Technology Co., Ltd. ("LAPIS Technology") and LAPIS Technology succeeded LAPIS Semiconductor's LSI business.

Therefore, all references to "LAPIS Semiconductor Co., Ltd.", "LAPIS Semiconductor" and/or "LAPIS" in this document shall be replaced with "LAPIS Technology Co., Ltd."

Furthermore, there are no changes to the documents relating to our products other than the company name, the company trademark, logo, etc.

Thank you for your understanding.

LAPIS Technology Co., Ltd.
October 1, 2020

ML22420 Reference Board User's Manual

NOTICE

1. The information contained herein can change without notice owing to product and/or technical improvements. Before using the product, please make sure that the information being referred to is up-to-date.
2. The outline of action and examples for application circuits described herein have been chosen as an explanation for the standard action and performance of the product. When planning to use the product, please ensure that the external conditions are reflected in the actual circuit, assembly, and program designs.
3. When designing your product, please use our product below the specified maximum ratings and within the specified operating ranges including, but not limited to, operating voltage, power dissipation, and operating temperature.
4. LAPIS SEMICONDUCTOR CO., LTD. assumes no responsibility or liability whatsoever for any failure or unusual or unexpected operation resulting from misuse, neglect, improper installation, repair, alteration or accident, improper handling, or unusual physical or electrical stress including, but not limited to, exposure to parameters beyond the specified maximum ratings or operation outside the specified operating range.
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Such applications include, but are not limited to, traffic and automotive equipment, safety devices, aerospace equipment, nuclear power control, medical equipment, and life-support systems.
7. Certain products in this document may need government approval before they can be exported to particular countries. The purchaser assumes the responsibility of determining the legality of export of these products and will take appropriate and necessary steps at their own expense for these.
8. No part of the contents contained herein may be reprinted or reproduced without our prior permission.

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1 . Overview

This is the instruction manual for ML22420 Reference Board

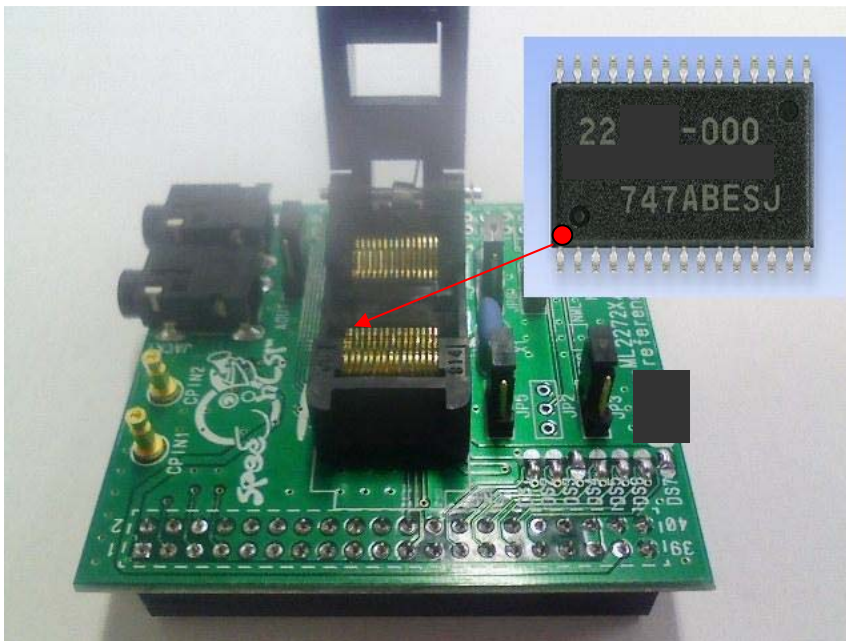
ML22420 Reference Board supports following functions in combination with Sound Device Control Board.

1. Voice Playback by ML22420.
2. Writing voice data into external ROM on ML22420 reference board.

2 . Operating Suggestions

It is the operating suggestions for ML22420 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. Supply voltage must be 3.0V – 3.6V for this board, due to the range for external flash ROM.
4. LAPIS SEMICONDUCTOR 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 Jumper Pin Setting

① AMP

Jumper Pin No.	SPAMP	AOUT
JP1	Fixed on the right side	Fixed on the left side

② Playback/Write

Jumper Pin No.	Playback	Write / Verify
JP2	Fixed on the right side	Fixed on the left side
JP3	Fixed on the right side	Fixed on the left side
JP4	Fixed on the right side	Fixed on the left side
JP5	Fixed on the right side	Fixed on the left side
JP6	Fixed on the right side	

3.2 Circuit Diagram

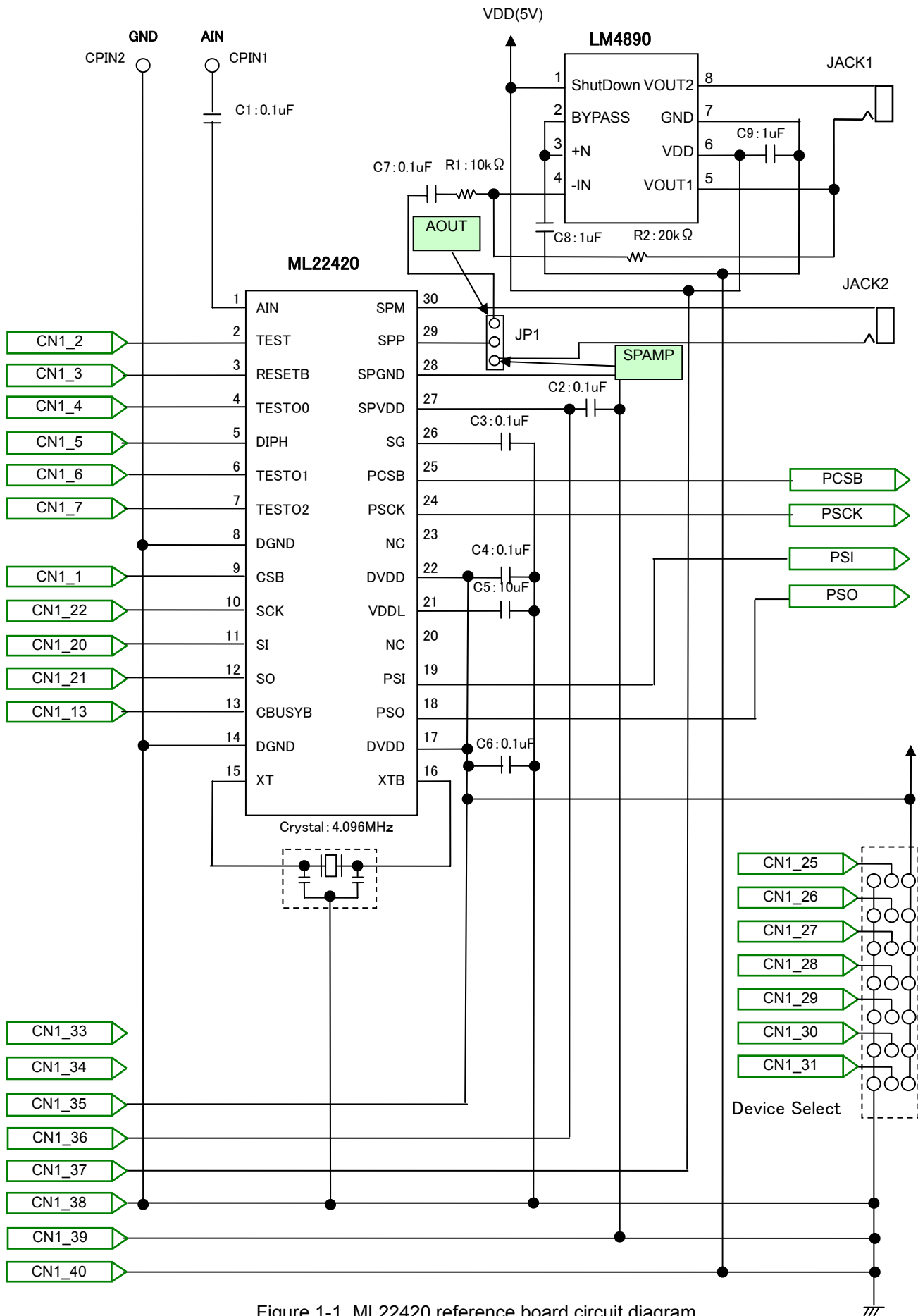


Figure 1-1, ML22420 reference board circuit diagram

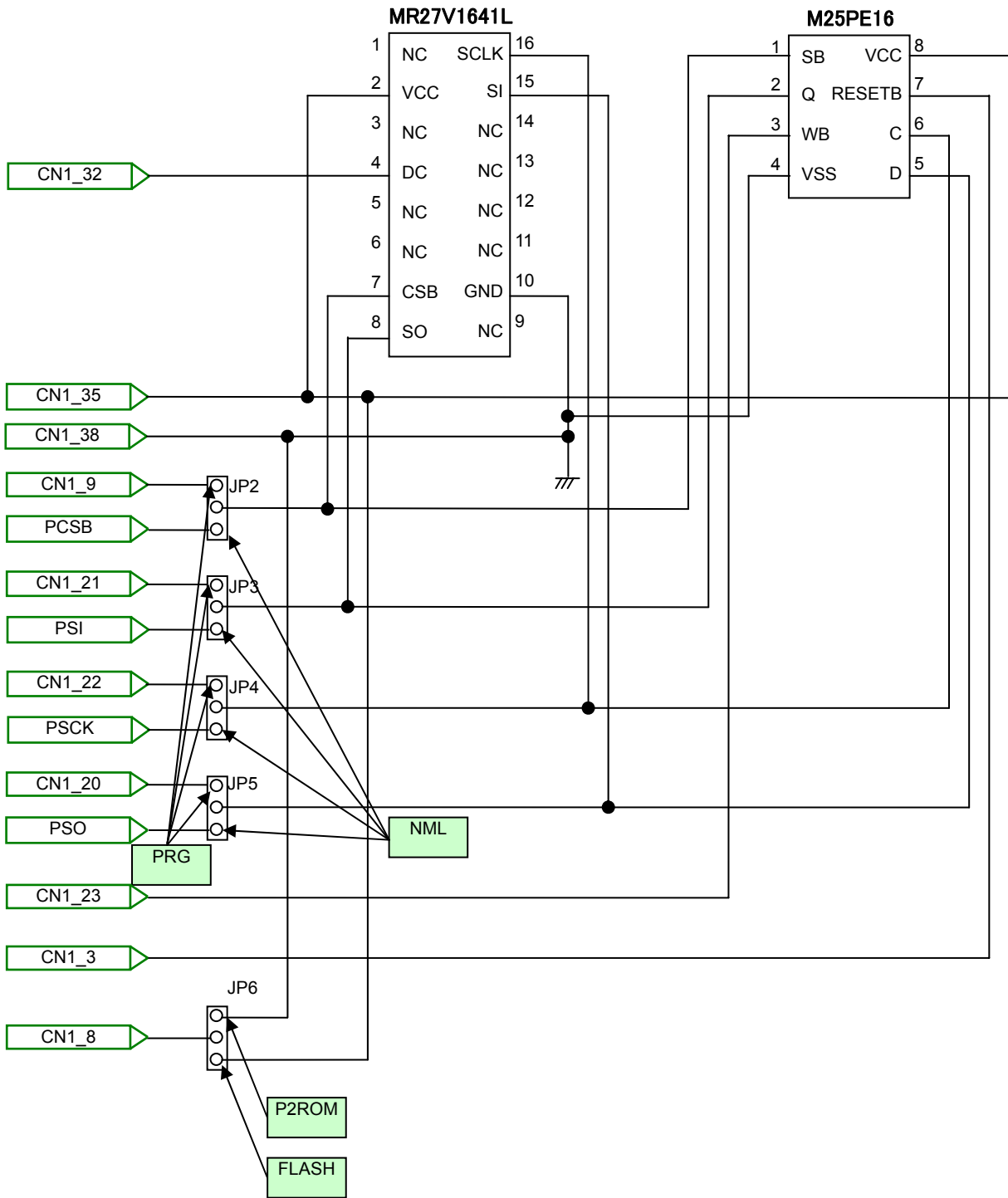


Figure 1-2, ML22420 reference board circuit diagram

3.3 Rough PCB layout

ML22420 reference board rough layout is described on figure 2.

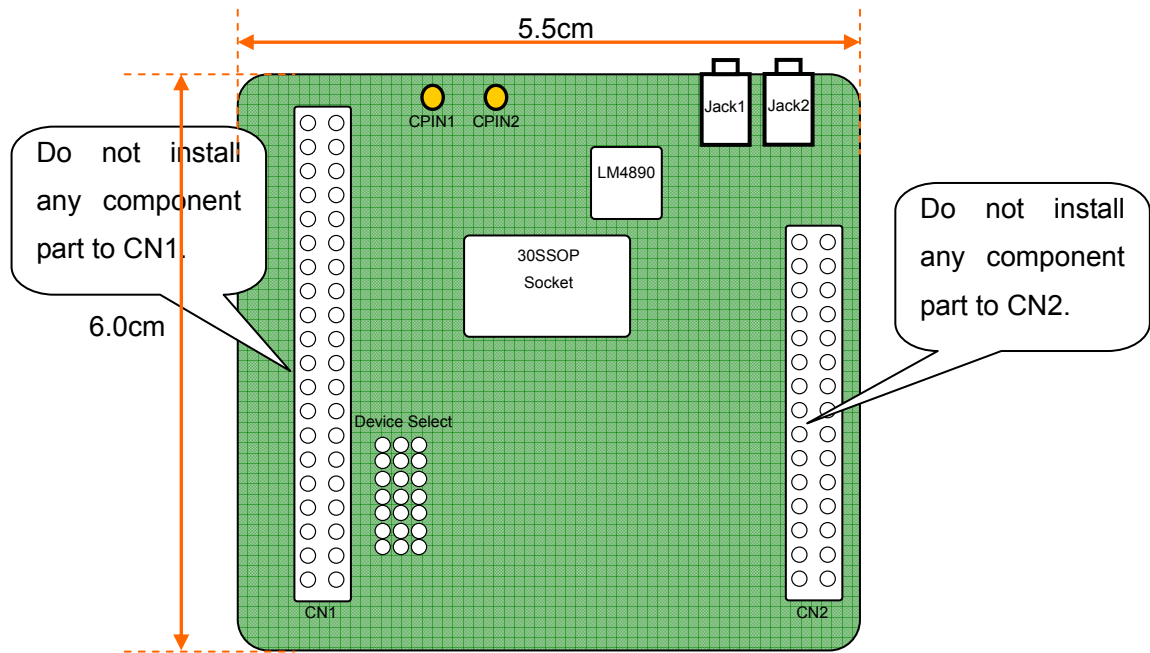
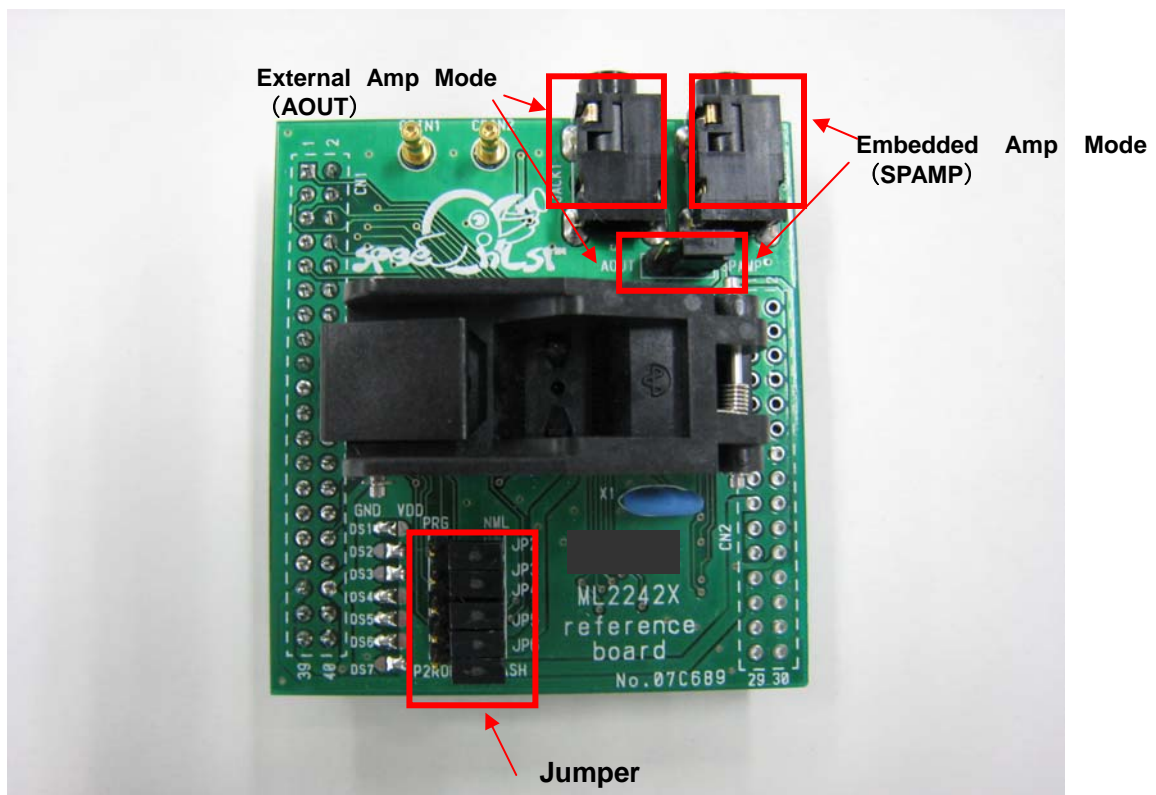


Figure2, ML22420 reference board rough layout



3.4 CN1 connector pin connections

CN1 Pin No		Connect To	LSI Pin No	LSI Pin Name
1	I/O	ML22420	9	CSB
2	I/O	ML22420	2	TEST
3	I/O	ML22420 M25PE16	3 7	RESETB
4	I/O	ML22420	4	TESTO0
5	I/O	ML22420	5	DIPH
6	I/O	ML22420	6	TESTO1
7	I/O	ML22420	7	TESTO2
8	I/O	JP6	—	—
9	I/O	JP2	—	—
10	I/O	—	—	—
11	I/O	—	—	—
12	I/O	—	—	—
13	I/O	ML22420	13	CBUSYB
14	I/O	—	—	—
15	I/O	—	—	—
16	I/O	—	—	—
17	I/O	—	—	—
18	I/O	—	—	—
19	I/O	—	—	—
20	I/O	ML22420 JP5	11 —	SI —
21	I/O	ML22420 JP3	12 —	SO —
22	I/O	ML22420 JP4	10 —	SCK —
23	I/O	M25PE16	3	WB
24	I/O	—	—	—
25	Board Select	GND	—	—
26	Board Select	VDD	—	—
27	Board Select	VDD	—	—
28	Board Select	GND	—	—
29	Board Select	GND	—	—
30	Board Select	GND	—	—
31	Board Select	VDD	—	—
32	VPP	MR27V1641L	4	DC
33	VDD()	—	—	—
34	VDD(3V)	—	—	—
35	VDD(Variable)	ML22420 MR27V1641L ML25PE16	17,22 2 8	DVDD VCC VCC
36	VDD(3V)	ML22420	27	SPVDD
37	VDD(5V)	LM4890	1,6	ShutDown、VDD
38	GND	ML22420 MR27V1641L M25PE16	8,14 10 4	DGND GND VSS
39	GND	ML22420	28	SPGND
40	GND	LM4890	7	GND

3.5 CN2 connector pin connections

CN2 Pin No	Connect To	LSI Pin No	LSI Pin Name
1	ML22420	1	AIN
2	ML22420	2	TEST
3	ML22420	3	RESETB
4	ML22420	4	TESTO0
5	ML22420	5	DIPH
6	ML22420	6	TESTO1
7	ML22420	7	TESTO2
8	ML22420	8	DGND
9	ML22420	9	CSB
10	ML22420	10	SCK
11	ML22420	11	SI
12	ML22420	12	SO
13	ML22420	13	CBUSYB
14	ML22420	14	DGND
15	ML22420	15	XT
16	ML22420	16	XTB
17	ML22420	17	DVDD
18	ML22420	18	PSO
19	ML22420	19	PSI
20	ML22420	20	NC
21	ML22420	21	VDDL
22	ML22420	22	DVDD
23	ML22420	23	NC
24	ML22420	24	PSCK
25	ML22420	25	PCSB
26	ML22420	26	SG
27	ML22420	27	SPVDD
28	ML22420	28	SPGND
29	ML22420	29	SPP
30	ML22420	30	SPM

Revision History

Revision.	Date	Page		Description
		Previous Edition	Current Edition	
3.03	July.15.2009	—	—	
4	Aug.06.2009	1	1	Change the LSI Name : ML2242X > L22420
		1	1	Change Notice Number : NOTICE1-9 -> NOTICE1-8
		6	6	Add Figure Number: Figure1-1
		7	7	Add Figure Number:Figure1-2
		8	8	Change Figure Number : Figure 5 -> Figure 2
		9	9	CH1 Pin 3 : Change the connect to M25PE16 LSI Pin No 7 CH1 Pin24 Change the connect to – Fixed condition is specified CN1 Pin No 25-31 : Change the text (Board Select -> Device Select) Fixed condition is specified
5	Feb.02.2011	3	3	Add to operating suggestions

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Issue Date: February 02, 2011
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