FEXL9841-02

OKI Semiconductor This version: Sep. 2000

MSM9841 DEMO Board

Voice ROM Demonstration Board for MSM9841/42

GENERAL DESCRIPTION

The MSM9841 Demo Board is designed to evaluate recording or playback operation and sound data, created by using OKI's Sound Analysis and Editing tool (AR203/204), for use with MSM9841and MSM9842.

FEATURES

- 4 Mbit EPROM can be used for Demo.
- 50-pins connector for an external MCU
- Available option boards for control the MSM9841 Demo Board

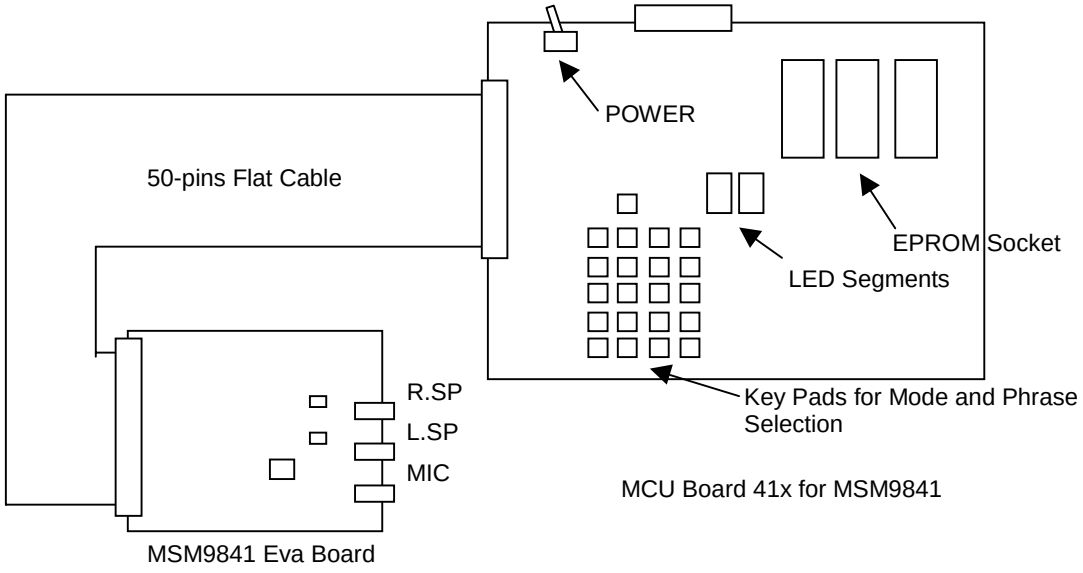
OPTION BOARD

- MCU Board 41A: The control board for using 16 bit MCU with AC100V power unit.
- MCU Board 41B: The control board for using 16 bit MCU with batteries unit.
- MCU Board 41C: The control board for using 16 bit MCU with AC240V power unit.

BOARD CONNECTION LAYOUT

1. With using MCU Board 41x (Top View)

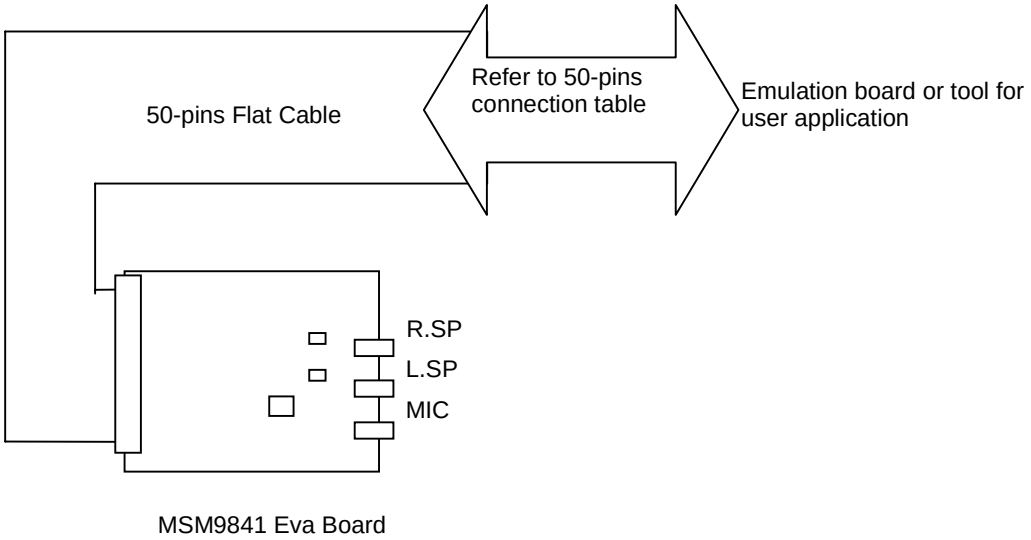
When you check sound quality of MSM9841 easily, the MCU board 41x helps to control the MSM9841 Eva Board.



2. Without using MCU Board 41x (Top View)

The 50-pins connector provides an interface for an external MCU control.

You can input/output control signal via 50-pins connector when you use an external MCU to control the MSM9841 Eva Board.



50-PIN CONNECTOR

The following table describes the pin connections.
For details of the pin description and control timing, refer to the datasheet for MSM9841.

MSM9841 Connector Pin Layout

Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name
1	V_{DD}	14	—	27	D12	40	IORB
2	V_{DD}	15	D6	28	VCK	41	MID
3	D0	16	—	29	D13	42	FUL
4	—	17	D7	30	DASD	43	EMP
5	D1	18	—	31	D14	44	RESETB
6	—	19	D8	32	SIOCK	45	BUSYB
7	D2	20	—	33	D15	46	CSB
8	—	21	D9	34	ADSD	47	—
9	D3	22	—	35	WRB	48	DREQL
10	—	23	D10	36	RDB	49	DACKL
11	D4	24	—	37	CH	50	GND
12	—	25	D11	38	D/C		
13	D5	26	—	39	IOWB		

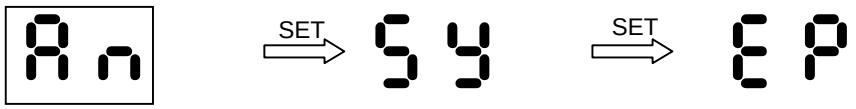
HOW TO USE THE MCU BOARD 41X WITH THE MSM9841 DEMO BOARD

Three operation modes are available, and these are changed by press “SET” key pad.

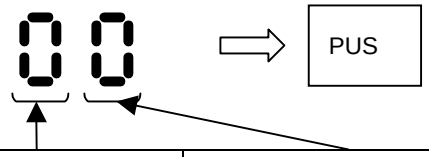
RECORDING MODE PLAYBACK MODE ROM PLAYBACK MODE

Recording Mode:

1. Press “SET” key pad several times to recording mode.
   Recording data is stored into Flash memory on the MCU board 41x.

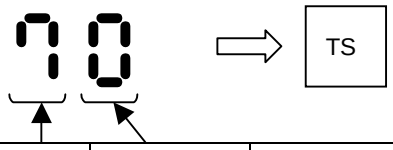


2. Set a start address and a stop address with 0 to F key, press “PUS” key pad.
   Address unit is 256 Kbit.



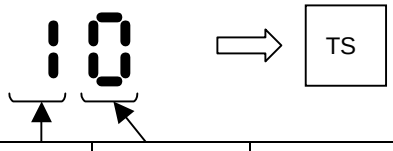
LED	START ADDRESS	STOP ADDRESS	At 4bit ADPCM and 8 kHz	At 4bit ADPCM and 6.4 kHz
0	0x00001	0x07FFF	8.1 sec	10.2 sec
1	0x08000	0x0FFFF	16.3 sec	20.4 sec
2	0x10000	0x17FFF	24.5 sec	30.6 sec
3	0x18000	0x1FFFF	32.7 sec	40.9 sec
4	0x20000	0x27FFF	40.9 sec	51.1 sec
5	0x28000	0x2FFFF	49.1 sec	61.4 sec
6	0x30000	0x37FFF	57.3 sec	71.6 sec
7	0x38000	0x3FFFF	65.5 sec	81.8 sec
8	0x40000	0x47FFF	73.7 sec	92.1 sec
9	0x48000	0x4FFFF	81.9 sec	102.3 sec
A	0x50000	0x57FFF	90.0 sec	112.6 sec
B	0x58000	0x5FFFF	98.2 sec	122.8 sec
C	0x60000	0x67FFF	106.4 sec	133.0 sec
D	0x68000	0x6FFFF	114.6 sec	143.3 sec
E	0x70000	0x77FFF	122.8 sec	153.5 sec
F	0x78000	0x7FFFF	131.0 sec	163.8 sec

3. Set some commands for MS9841, and press “TS” key pad.
   3.1 Algorithm



LED Upper	LED Lower	Algorithm	Remarks
7	0	4bitOkiADPCM2	Press “TS” key pad.
	1	5bitOkiADPCM2	
	2	6bitOkiADPCM2	
	3	7bitADPCM2	
	4	8bitOkiADPCM2	
	5	4bitOkiADPCM	
	6	8bitPCM	
	8	16bitPCM	

   3.2 Sampling Frequency

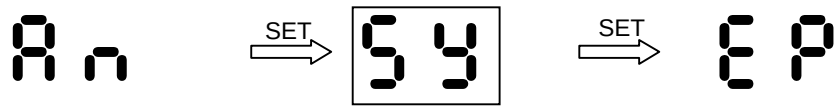


LED Upper	LED Lower	Sampling Frequency	Remarks
1	0	8 kHz	Press “TS” key pad.
	1	12.8 kHz	
	2	16.0 kHz	
	3	32.0 kHz	
	4	6.4 kHz	
	5	4.0 kHz	

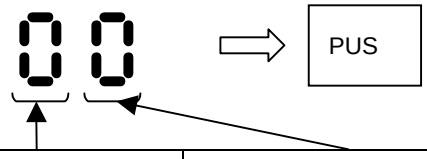
4. Press “ST” key pad, MSM9841 Demo board starts to record.

Playback Mode:

1. Press “SET” key pad several times to playback mode.
   Recording data is read and played from Flash memory on the MCU board 41x.



2. Set a start address and a stop address you want to play, press “PUS” key pad.



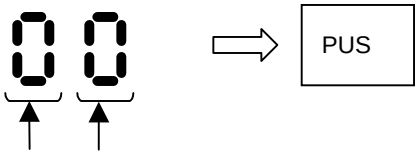
LED	START ADDRESS	STOP ADDRESS
0	0x00001	0x07FFF
1	0x08000	0x0FFFF
2	0x10000	0x17FFF
3	0x18000	0x1FFFF
4	0x20000	0x27FFF
5	0x28000	0x2FFFF
6	0x30000	0x37FFF
7	0x38000	0x3FFFF
8	0x40000	0x47FFF
9	0x48000	0x4FFFF
A	0x50000	0x57FFF
B	0x58000	0x5FFFF
C	0x60000	0x67FFF
D	0x68000	0x6FFFF
E	0x70000	0x77FFF
F	0x78000	0x7FFFF

3. Press “ST” key pad, MSM9841 Demo board starts to play.

ROM Playback Mode:

1. Press “SET” key pad several times to ROM playback mode.
   Fixed sound data is read and played from EPROM on the MCU board 41x.

2. Set a phrase number you want to play, press “PUS” key pad.



Phrase No.	Algorithm	Sampling Frequency	Time (sec)	Phrase
00	4bit ADPCM	6.4 kHz	8.5	All same music
01	4bit ADPCM2	6.4 kHz	8.5	
02	5bit ADPCM2	6.4 kHz	8.5	
03	6bit ADPCM2	6.4 kHz	8.5	
04	7bit ADPCM2	6.4 kHz	8.5	
05	8bit PCM	6.4 kHz	8.5	
06	8bit Non-Linear PCM	6.4 kHz	8.5	
07	16bit PCM	6.4 kHz	8.5	
10	4bit ADPCM	8.0 kHz	8.5	
11	4bit ADPCM2	8.0 kHz	8.5	
12	5bit ADPCM2	8.0 kHz	8.5	
13	6bit ADPCM2	8.0 kHz	8.5	
14	7bit ADPCM2	8.0 kHz	8.5	
15	8bit PCM	8.0 kHz	8.5	
16	8bit Non-Linear PCM	8.0 kHz	8.5	
17	16bit PCM	8.0 kHz	8.5	

4. Press “ST” key pad, MSM9841 Demo board starts to play.

ADDRESS MAP WITH USING FLASH MEMORY

Address		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000_0000	Phrase 0	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0010	Phrase 1	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0020	Phrase 2	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0030	Phrase 3	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0040	Phrase 4	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0050	Phrase 5	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0060	Phrase 6	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0070	Phrase 7	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0080	Phrase 8	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0090	Phrase 9	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_00A0	Phrase A	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_00B0	Phrase B	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_00C0	Phrase C	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_00D0	Phrase D	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_00E0	Phrase E	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_00F0	Phrase F	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0100	Sound Data	Sound Wave Data															
0007_FFFF																	

ADDRESS MAP WITH USING EPROM

Address		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000_0000	Phrase 0	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0010	Phrase 1	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0020	Phrase 2	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0030	Phrase 3	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0040	Phrase 4	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0050	Phrase 5	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0060	Phrase 6	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0070	Phrase 7	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0080	Phrase 8	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0090	Phrase 9	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0FE0	Phrase FE	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0FF0	Phrase FF	Start Address				Stop Address				Number of Commands	Command [1]-[7]						
0000_0100	Sound Data	Sound Wave Data															
000F_FFFF																	

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. Oki 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.

5. Neither indemnity against nor license of a third party's industrial and intellectual property right, etc. is granted by us in connection with the use of the product and/or the information and drawings contained herein. No responsibility is assumed by us for any infringement of a third party's right which may result from the use thereof.

6. The products listed in this document are intended for use in general electronics equipment for commercial applications (e.g., office automation, communication equipment, measurement equipment, consumer electronics, etc.). These products are not authorized for use in any system or application that requires special or enhanced quality and reliability characteristics nor in any system or application where the failure of such system or application may result in the loss or damage of property, or death or injury to humans.
   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.