**FEBL9831-02**

OKI Semiconductor

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# MSM9831 EVA Board

**Pre-Production ROM Evaluation Board**

## GENERAL DESCRIPTION

The MSM9831 EVA Board is a pre-production EPROM evaluation board that enables a user to evaluate user's sound data created with OKI Analyzing/Editing Tool (AR204) for the use with the MSM9831 commercial product. The board simulates the functions and performance of the MSM9831.

## FEATURES

- 4 different-size EPROMs are supported: 512 Kbit/1 Mbit/2 Mbit/4 Mbit.
- Regulated power supply and battery power supply can be used as a power source.
- Board operating voltage range: 4.5 to 5.5 V
- Oscillation clock frequency with ceramic oscillator: 4.096 MHz

## NOTICE

The operation/performance of the board is not fully identical to those of commercial products. For details, refer to Page 9 of this document.

## BOARD LAYOUT (TOP VIEW)

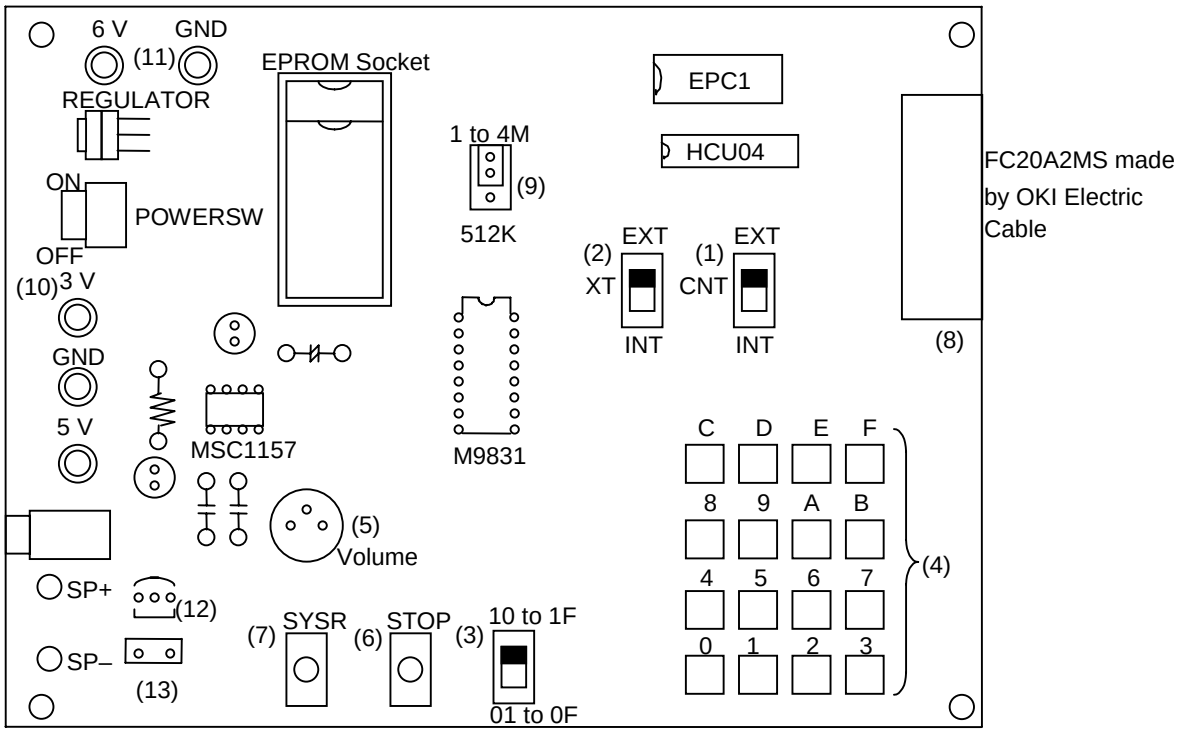



**Figure 1**

## SETTING

**1. CNT (EXT/INT) selector shown in Figure 1 (1)**

The board can be controlled, just as a commercial device, either in the external MCU (Microcontroller Unit) interface mode or internal controller mode.

INT : Use a 20-pin connector when an external MCU is used to control the board.

EXT : In the external mode, all switches other than the XT selector are ignored.

**2. XT (EXT/INT) selector shown in Figure 1 (2)**

INT : When this selector is on the internal side, an on-board ceramic oscillator (4.096 MHz) can be used.

EXT : When this selector is on the external side, the external clock via pin 4 of the 20-pin connector can be used.

**3. Phrase address (01-0F/10-1F) selector shown in Figure 1 (3)**
This selector shows upper phrase addresses.
01-0F: When this selector is on "01 to 0F" side, addresses 01h to 0Fh are selected.
10-1F: When this selector is on "10 to 1F" side, addresses 10h to 1Fh are selected.

**4. 0 to F keys shown in Figure 1 (4)**
Phrase start keys. Pushing any of 0 to F keys triggers the playback of the phrase corresponding to the address number between 0 and F. The 0 to F keys correspond to lower 4 bits of the address bits.

**5. Output level controller shown in Figure 1 (5)**
Volume level controller.
Turning the switch to the right increases the volume.
Turning the switch to the left decreases the volume.

**6. STOP switch shown in Figure 1 (6)**
This switch is used to stop playback.

**7. SYSR switch shown in Figure 1 (7)**
This switch is used to reset the system.

**8. 20-pin connector shown in Figure 1 (8)**
This connector is used when an external MCU (Microcontroller Unit) is used to control the board. The following table explains the connector pins.

| Pin No. | Signal |
|---|---|
| 1 | $V_{DD}$ |
| 2 | $V_{DD}$ |
| 3 | $V_{DD}$ |
| 4 | XT |
| 5 | NC |
| 6 | NC |
| 7 | NC |
| 8 | NC |
| 9 | NC |
| 10 | NC |

| Pin No. | Signal |
|---|---|
| 11 | $\overline{PI}$ |
| 12 | NC |
| 13 | NC |
| 14 | $\overline{PDWN}$ |
| 15 | $\overline{ST}$ |
| 16 | NC |
| 17 | NC |
| 18 | GND |
| 19 | GND |
| 20 | GND |

**9. EPROM size select jumper switch shown in Figure 1 (9)**

The following table shows the selector positions to select the EPROM size.

| EPROM Size | 1 to 4M/512K Select Jumper |
|---|---|
| 4 Mbit | 1 to 4M side |
| 2 Mbit | 1 to 4M side |
| 1 Mbit | 1 to 4M side |
| 512 Kbit | 512K side |

**10. Regulated power supply shown in Figure 1 (10)**

When this board is used at 5 V, a regulated power supply has to be connected to the 5 V power supply pin and GND pin. In particular when it is used at 3 V, cut two parts of printed patterns as shown in the solder side pattern layout. Then connect power supplies to 5 V and 3 V power supply pins, so that the MSM9831 is active at 3 V.

Note:

The OKI factory doesn't set a power supply pin of 3 V on the board. Please set it by yourself.

**11. Battery power supply shown in Figure 1 (11)**

When using a battery power supply, the plus side is connected to the 6 V power supply pin, and the minus side is connected to the GND pin, so that the MSM9831 is active at 5 V.

Note:

Don't apply a voltage to the regulated power supply pins.

## PLAYBACK (CNT: INT SIDE)

After power is turned on, press the SYSR switch (7) to initialize the board.
Then select "01 to 0F" or "10 to 1F" (3) to set the upper address, and press one of "0 to F" keys (4) to start playback.
When pressing the STOP switch (6), the playback stops.
If you press the "0 to F" keys (4) during the playback, the playback stops immediately and the phrase address you have specified starts the playback.

## SYSTEM RESET(CNT: EXT SIDE)

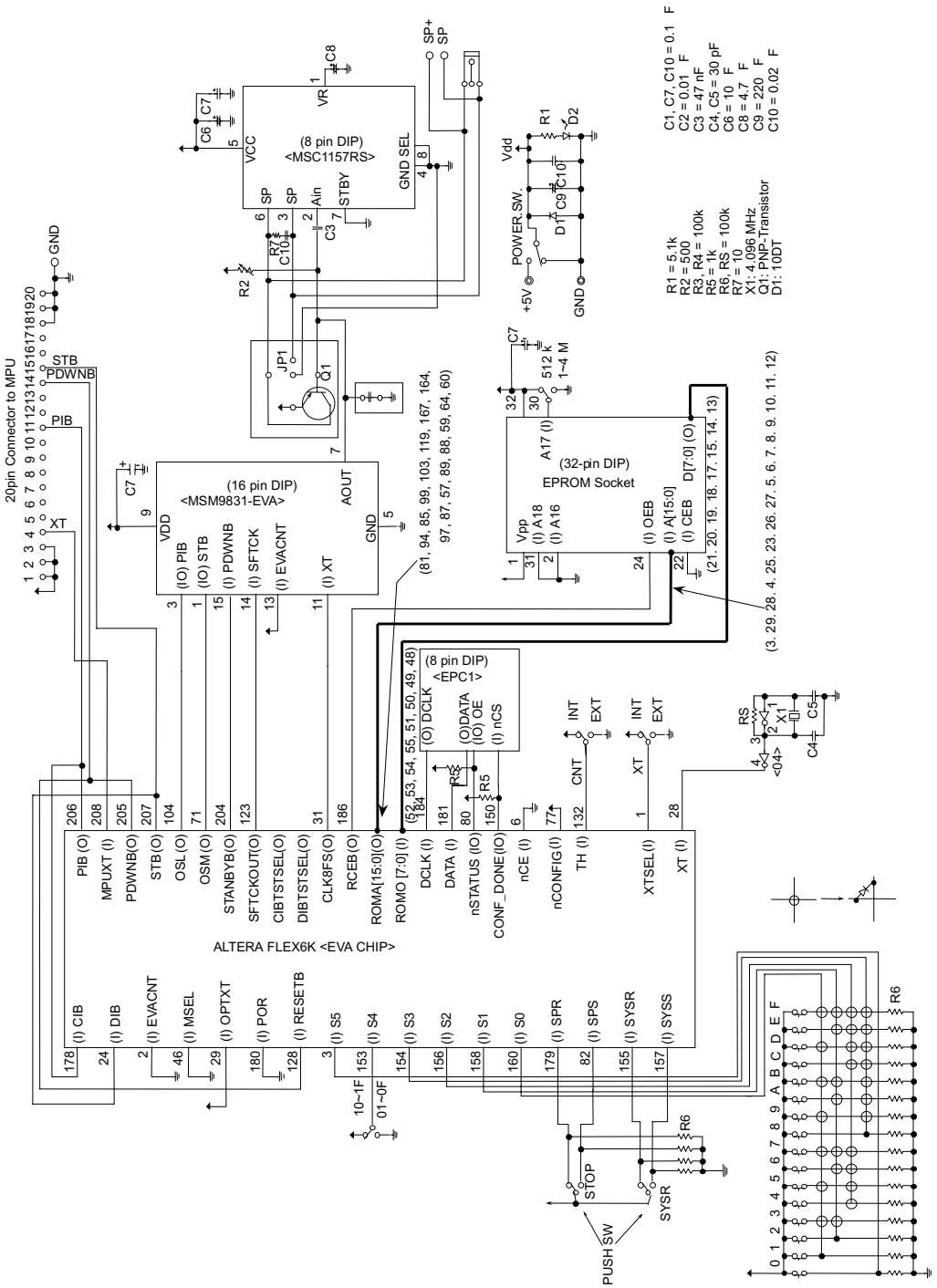
After power is turned on, be sure to perform a system reset.
In the external MCU (Microcontroller Unit) interface mode, refer to the data sheet for details.
In the internal controller mode, press the SYSR switch (7) to perform a system reset.

## CHANGE FROM DYNAMIC AMPLIFIER OUTPUT TO TRANSISTOR OUTPUT

First, attach a transistor on the board shown in Figure 1 (12) by yourself.
Second, attach a jumper switch on the board shown in Figure 1 (13) and short-circuit it.
Then remove the MSC1157 from the board.

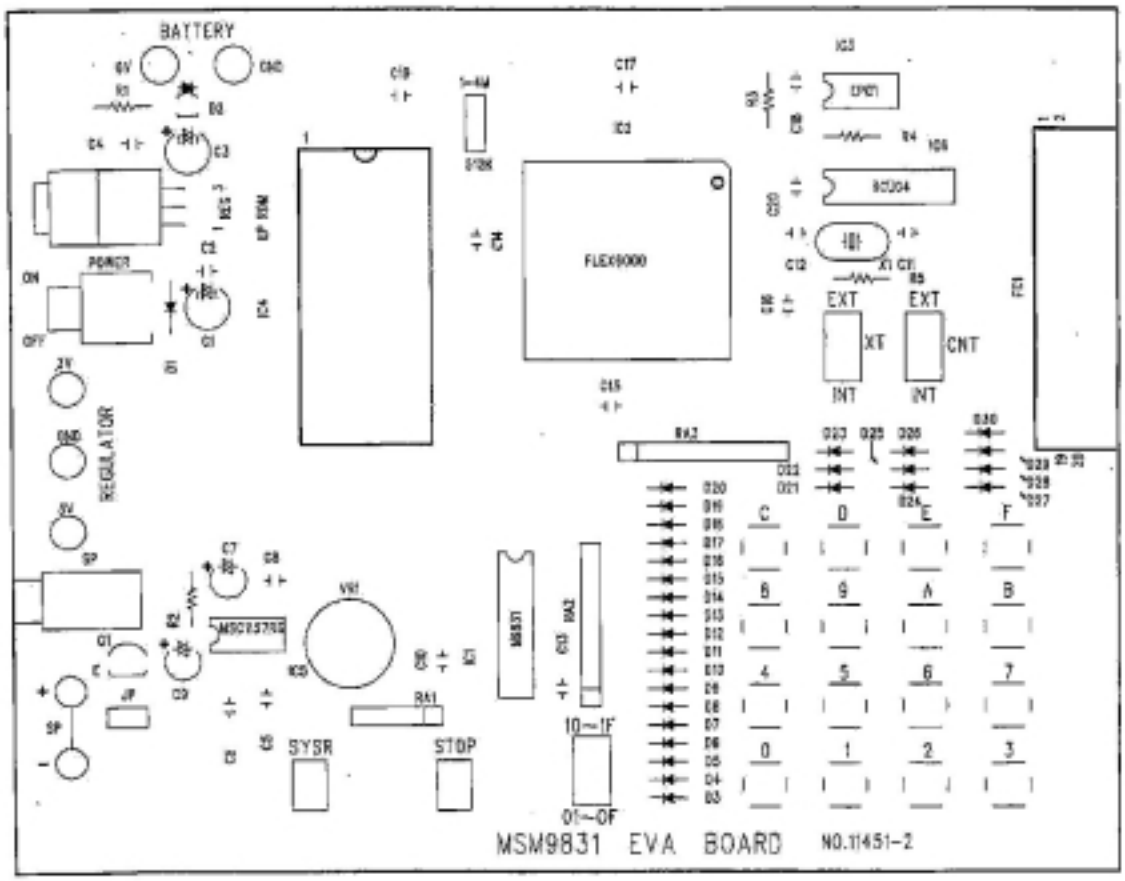
Note:
The OKI factory doesn't set a transistor and jumper switch on the board.

## CIRCUIT DIAGRAM

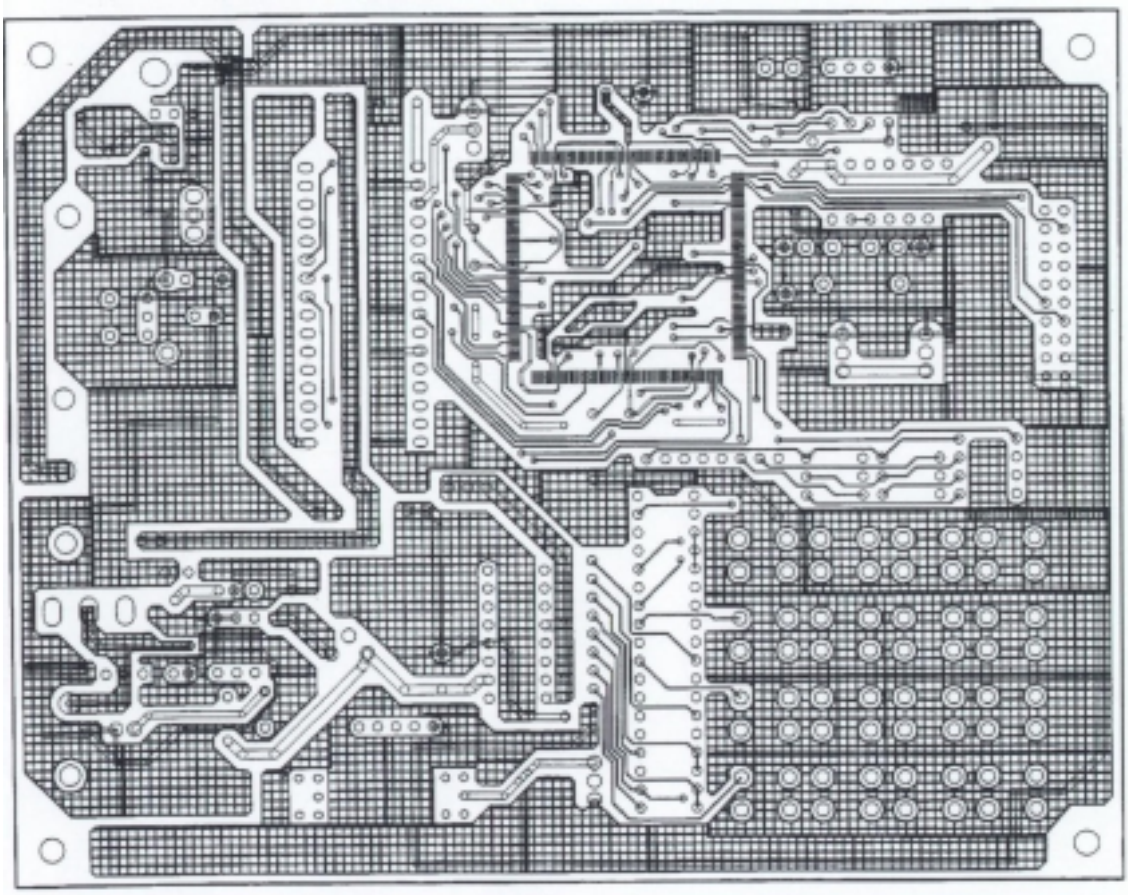


## EVA BOARD PATTERN LAYOUT

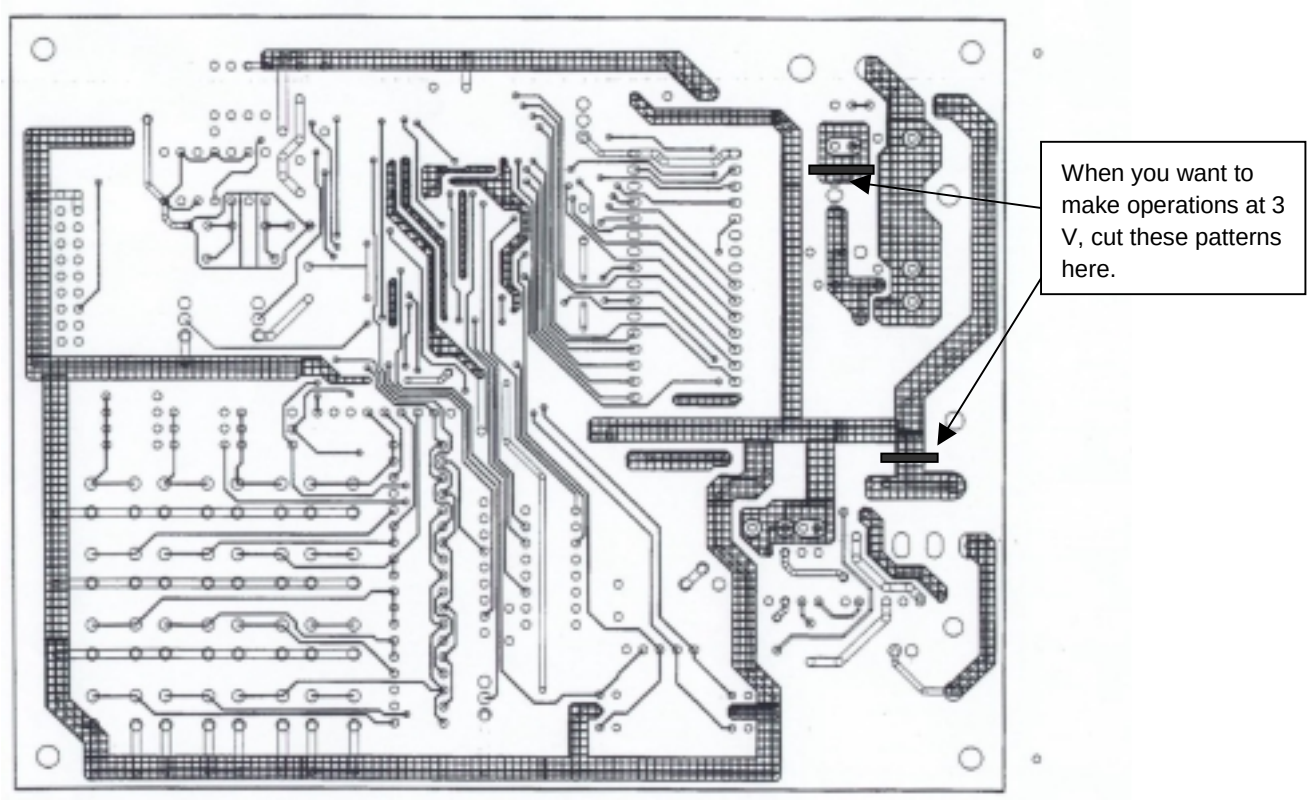
**Silk Screen**



**Mounting Side**



**Solder Side**


When you want to make operations at 3 V, cut these patterns here.

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