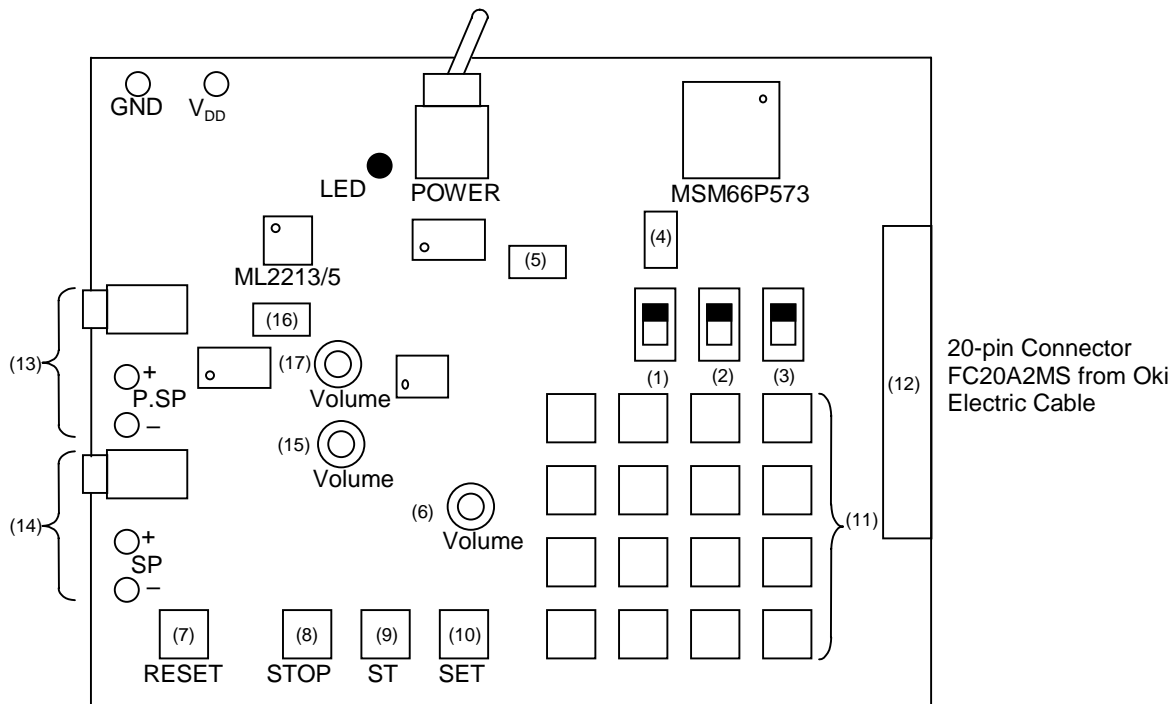**OKI** Semiconductor

ML2210 Family Demo Board

Demonstration Board for ML2210 Family

BOARD LAYOUT

SETTING THE BOARD

(1) Standalone/MCU Interface Selector
Push this switch to the STD side when you use the board with the on-board MCU (MSM66P573) in standalone mode, push it to the MCU side when you control the board with an external MCU in MCU interface mode.

(2), (3) MCU Clock Selectors
These selectors are used to select a clock frequency for the CLK input to the ML2213 from the on-board MCU. Set both of these selectors to "H".

(4) Clock Source Selector Jumper
Set this jumper to the EXT side when you make the CLK input to the ML2213 from an external source via the 20-pin connector. Set the jumper to the MCU side when the CLK input comes from the on-board MCU, or to the INT side if you use a ceramic oscillator as a timing source for CLK input.
(For demonstration use, set this jumper to the INT side.)

(5) BUSYB/NAR Selector

(6) Dynamic Speaker Amplifier Volume Control
Turn the control clockwise to increase the sound level, and counterclockwise to decrease the sound level.

(7) RESET Button
To reset the system, push down this button.

(8) STOP Button
To stop playing during playback, push down this button.

(9) Start (ST) Button
To start playing the selected phrase, push down this button.

(10) SET Button
To enter the selected phrase address, push down this button.

(11) Phrase Address Selector Pad
You can select a phrase address between 00 and FF by using this pad.

(12) 20-pin Connector
If you control the board with an external MCU via the MCU interface, you can input control signals through this 20-pin connector. The following table shows Pin Layout of the connector.

Connector Pin	Symbol	Connector Pin	Symbol
1	V_{DD}	11	NC
2	V_{DD}	12	SI
3	V_{DD}	13	NC
4	SD	14	RESETB
5	NC	15	NC
6	XT	16	CSB
7	NC	17	BUSYB/NAR
8	NC	18	NC
9	NC	19	GND
10	NC	20	GND

(13) Pins used to connect Piezo-speaker

(14) Pins used to connect Dynamic speaker
(15) Piezo-speaker Volume Control
Turn the control clockwise to increase the sound level, and counterclockwise to decrease the sound level.
(16) Vref Selector (for ML2215 only)
Set the jumper to the VREF side when you use Vref-function, or to the MAX side if you do not use Vref.
(17) Vref Volume Control (for ML2215 only)
Turn the control counterclockwise to increase the sound level, and clockwise to decrease the sound level.

SELECTING AND PLAYING A PHRASE

To start playing, enter a phrase address using the Phrase Address Selector Pad (11) first, then push down the SET button (10) and the ST button (9) in sequence.
To stop playing, push down the STOP button (8).

The phrase address selected with the SET button remains unchanged until you reset the address using the RESET button (7).
To replay the same phrase, push the ST button again.
You can select and play multiple phrases continuously by repeating "Enter a phrase address and push down SET + ST" procedure.

OKI Semiconductor   **ML2210 Family Demo Board**

(Operation Example)

If you want to play the phrase at address "A3", push

          $\boxed{\text{A}}$ + $\boxed{\text{3}}$ + $\boxed{\text{SET}}$ + $\boxed{\text{ST}}$

And, if you push

          $\boxed{\text{B}}$ + $\boxed{\text{4}}$ + $\boxed{\text{SET}}$ + $\boxed{\text{ST}}$
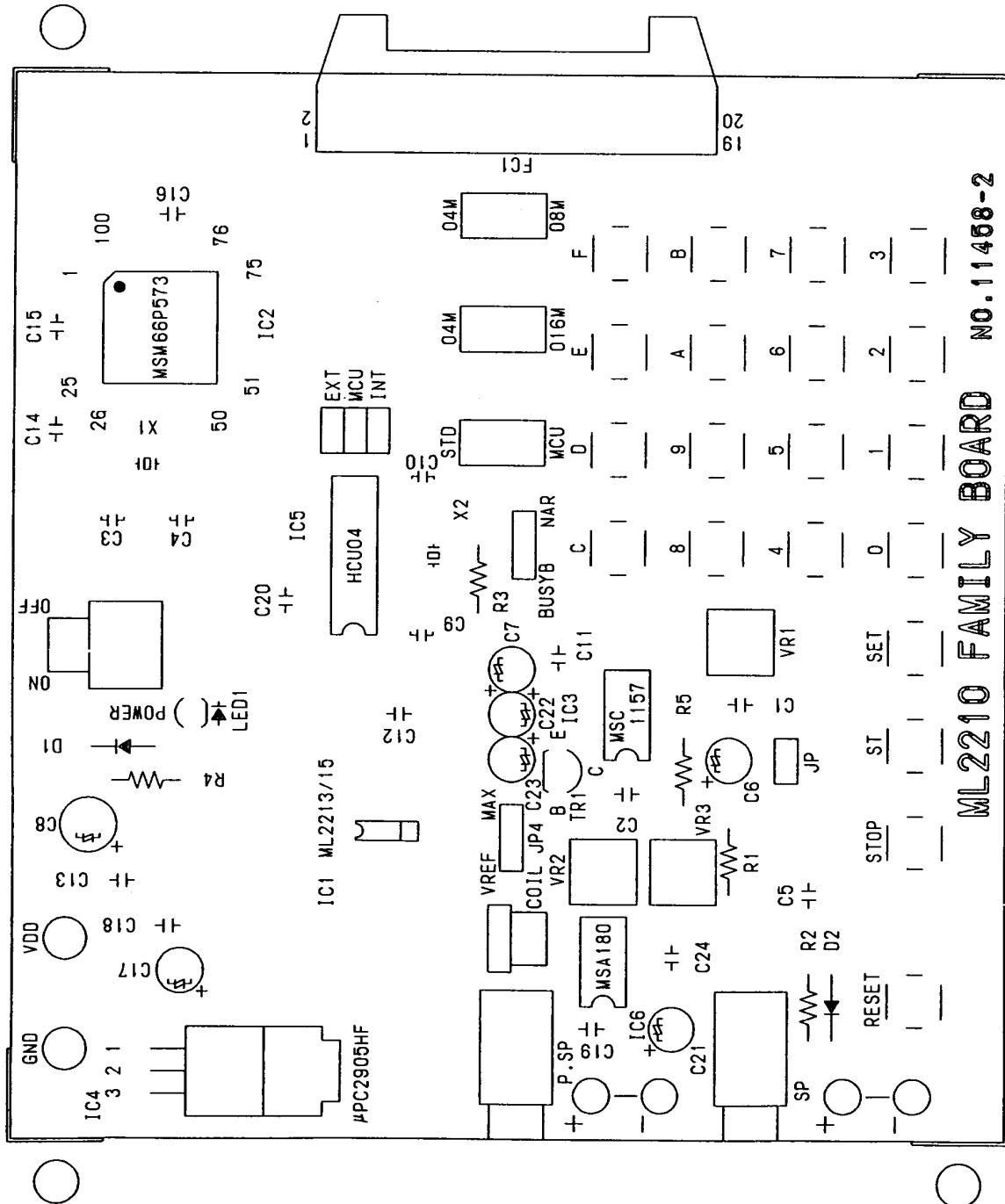
right after the first sequence, the board plays the phrase at address "B4" in succession after playing the phrase at address "A3".
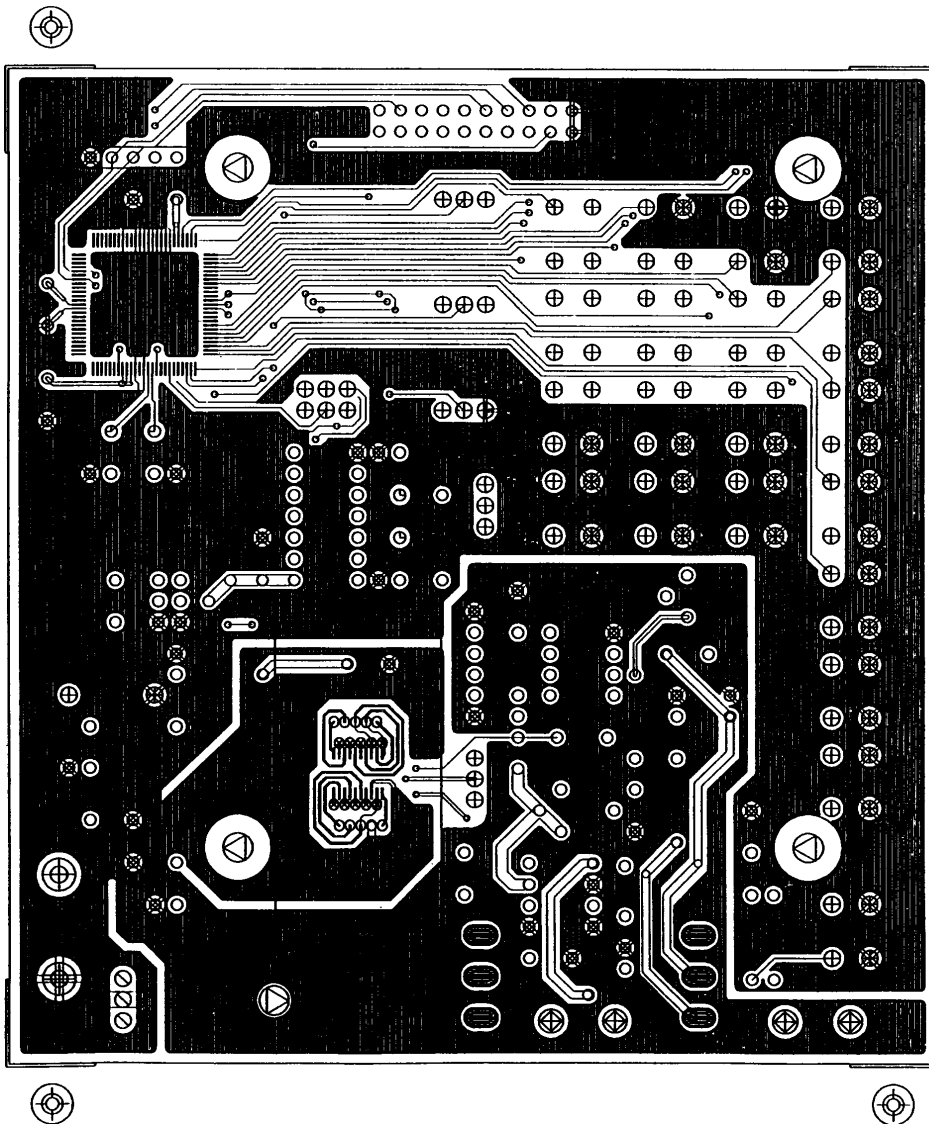
CIRCUIT DIAGRAM
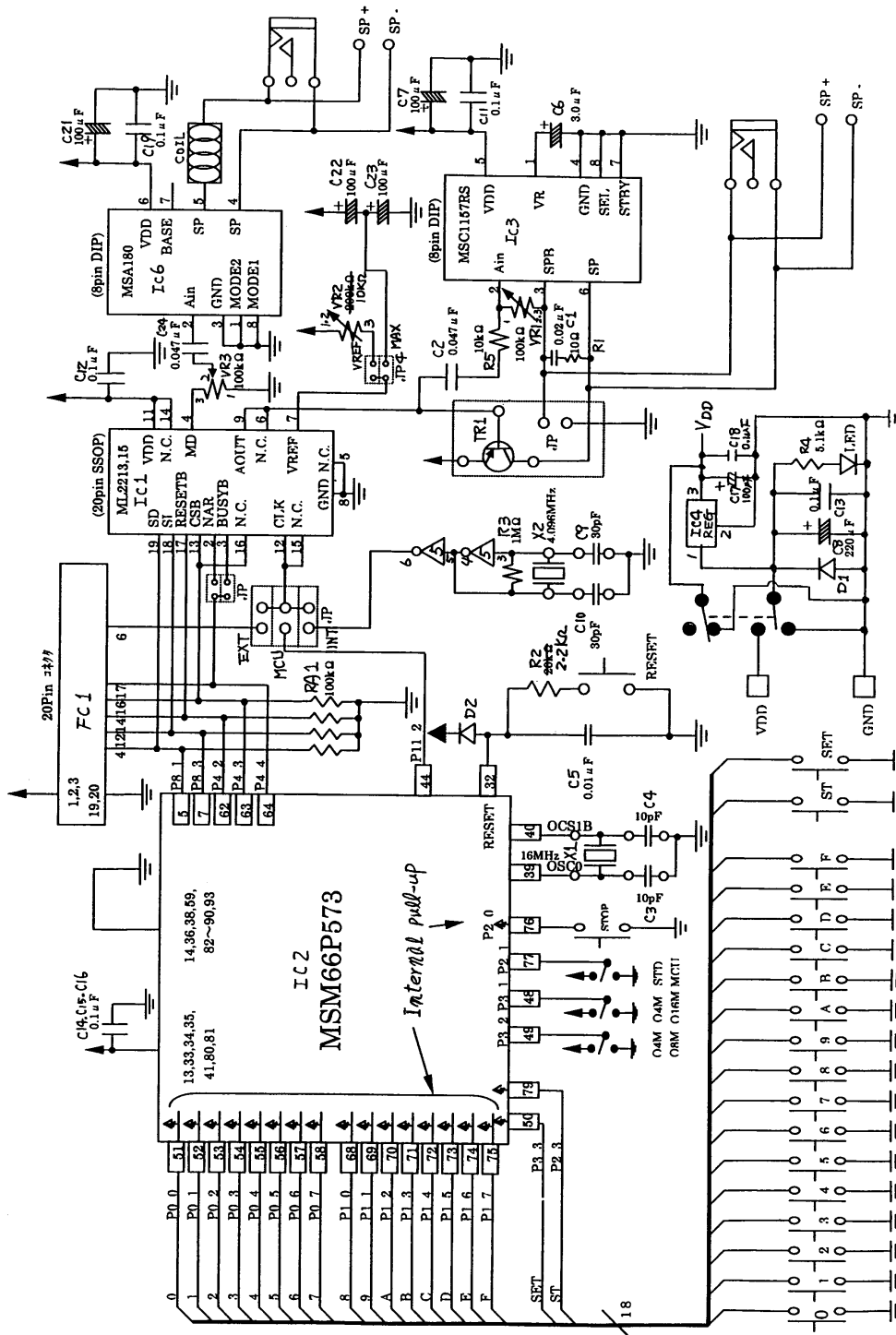
PATTERN LAYOUT

Silk Screen

OKI Semiconductor   **ML2210 Family Demo Board**

Mounting Side

NO.11458-2 S=2/1	CAD/CAM

SYMBOL	HOLE	ROUND
1	φ0.1 TH	GUIDE
2	φ0.5 TH	φ0.8
3	φ0.8 TH	φ1.4
4	φ0.7 TH	φ1.1X1.15
5	φ0.8 TH	φ1.1X1.3
6	φ0.9 TH	φ1.5
7	φ1.0 TH	φ2.0
8	φ1.2 TH	φ2.0
9	φ1.2X2.5 TH	φ2.4X4.0
10	φ1.6 TH	φ3.0
11	φ1.6 TH	φ4.0
12	φ3.5 NTH	

SYMBOL		
1	BUHIN MEN HANDA MEN	0.25 mm
2	BUHIN MEN HANDA MEN	0.3mm
3	BUHIN MEN HANDA MEN	0.5mm
4	BUHIN MEN HANDA MEN	1.0mm
5	BUHIN MEN HANDA MEN	1.4mm
6	BUHIN MEN HANDA MEN	2.0mm

OKI Semiconductor   **ML2210 Family Demo Board**

Solder Side

NO.11458-2	S=2/1	CAD/CAM

SYMBOL	HOLE	ROUND		
1	φ0.1 TH	GUIDE	⌖	
2	φ0.5 TH	φ0.8	○	
3	φ0.8 TH	φ1.4	◎	
4	φ0.7 TH	φ1.1X1.15	⊗	
5	φ0.8 TH	φ1.1X1.3	○	
6	φ0.9 TH	φ1.5	⊖	
7	φ1.0 TH	φ2.0	⊕	
8	φ1.2 TH	φ2.0	⊘	
9	φ1.2X2.5 TH	φ2.4X4.0	⬭	
10	φ1.6 TH	φ3.0	⊕	
11	φ1.6 TH	φ4.0	⊕	
12	φ3.5 NTH		◒	

SYMBOL			
1	BUHIN MEN / HANDA MEN	0.25 mm	
2	BUHIN MEN / HANDA MEN	0.3 mm	
3	BUHIN MEN / HANDA MEN	0.5 mm	
4	BUHIN MEN / HANDA MEN	1.0 mm	
5	BUHIN MEN / HANDA MEN	1.4 mm	
6	BUHIN MEN / HANDA MEN	2.0 mm	

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