OKI Semiconductor

This version: Feb. 1999

MSM9831 DEMO BOARD

MSM9831 Demonstration Board

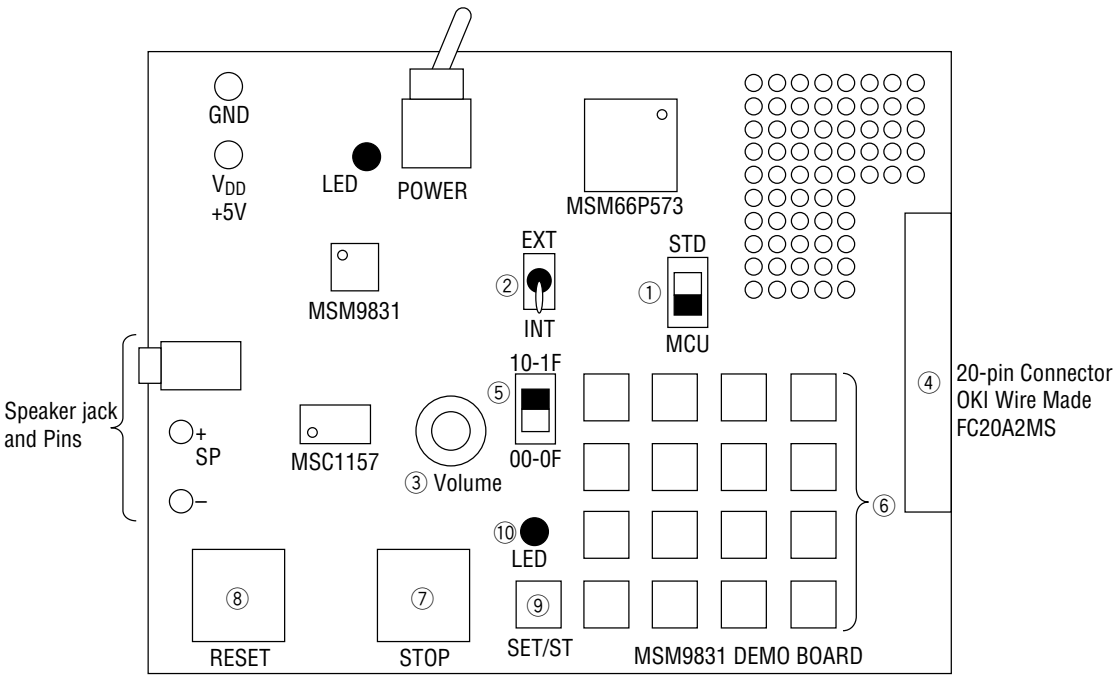
GENERAL DESCRIPTION

The MSM9831 Demonstration Board, controllable by the on-board Micro-Controller Unit, allows you to evaluate/demonstrate sound output from MSM9831 simply by connecting an external speaker to the board. The following two types are available:

Socket Type: Enables you to replace a sample LSI freely for your evaluation convenience.

MSM9831-105 Type: On-board pre-programmed MSM9831-105 containing the following generic phrases:
DTMF (Dial Tones)/Car Winker Sound

BOARD LAYOUT (TOP VIEW)



SETTING UP PARAMETERS

① STD (Stand-alone)/MCU (External MCU) Selector Switch
To use the board as a stand-alone device controllable by the on-board MCU (MSM66P573), set this switch to the STD side.
To control the board from an external MCU via 20-pin MCU interface, choose MCU.
When the external MCU is selected for controlling the board, functions of switches ⑤~⑨ are disabled.

② INTCK (Internal Clock)/EXTCK (External Clock) Selector Switch
To use the on-board oscillator (4.096 MHz) as the timing source, set this switch to the INTCK side. If you want to use the external clock signal input (e.g. Clock at other frequency than 4.096 MHz) via 20-pin connector, select EXTCK.

③ Volume Control for the Speaker Amplifier
Turn left for higher sound level or turn right for lower sound level.

④ 20-pin Connector
When an external MCU is used to control the board, input signals via this 20-pin connector. The following table shows pin-signal assignment for the connector.
Be sure to set the STD/MCU Selector switch to the MCU side, when you control the on-board MSM9831 by signals input this connector. You also need to switch the INTCK/EXTCK Selector to the EXT side if you use the clock signal input via the connector.

Connector Pin No.	Signal	Connector Pin No.	Signal
1	V_{DD}	11	$\overline{PI}$
2	V_{DD}	12	NC
3	V_{DD}	13	NC
4	XT	14	$\overline{PDWN}$
5	NC	15	$\overline{ST}$
6	NC	16	NC
7	NC	17	NC
8	NC	18	GND
9	NC	19	GND
10	NC	20	GND

Note: Leave this connector open when you use the on-board MCU to control the board.

⑤ Address Selector Switch
MSM9831 has 31 addressable phrases (i.e. 31 phrase addresses: 00001b~11111b).
This selector is to set up the MSB (Most Significant Bit), while the lower 4-bit address can be specified by using the Number Keypad ⑥.
To select an address between 01h and 0Fh, set this switch to the "00-0F" side.
To select an address between 10h and 1Fh, set this switch to the "10-1F" side.

⑥ Number Keypad (Phrase Starter)
By pushing one of 16 keys on the keypad you can start playback of the phrase corresponding to the key you selected. Each 0 to F key corresponds to the lower 4-bit address of phrases respectively.

⑦ Stop Switch
Push this switch whenever you want to stop on-going playback.

⑧ Reset Switch
Use this switch to reset the on-board MCU.

⑨ SET/ST Switch
This switch allows you to use special demonstration features of MSM9831-105.

PLAYING BACK

First, you need to reset the on-board MCU by pushing the Reset switch ⑧ after powering up the board. To start playback of a desired phrase, select the MSB (Most Significant Bit) of the phrase by using the Address Selector switch ⑤, and then specify lower 4-bit phrase address by pushing one of the keys on the Number Keypad ⑥. The board starts to playback the phrase defined by ⑤ and ⑥ in combination.
A later entry supercedes the earlier entry, in other words, if you enter any new phrase address during playback, the board stops playback of the current phrase to start playback the newly entered phrase.

STOPPING PLAYBACK

By pushing the Stop button ⑧ you can stop on-going playback and have the board return to ready status.

SPECIAL FEATURES (DEMONSTRATION FEATURES USED ONLY WITH MSM9831-105)

• DTMF Dial Tone Generator Function

(1) Switch the Address Selector ⑤ to the 10-1F side.
(2) Push the SET/ST button ⑨ to enter into Telephone Number Register mode (the LED ⑩ above the switch goes on).
(3) Enter a telephone number (up to 31 digits) you want to register using the Number Keypad ⑥. The following table shows key-data registered correspondences.

Number Key	Data Registered	Playback on Key Entry
1	1	いち (Japanese)
2	2	に (Japanese)
3	3	さん (Japanese)
4	4	よん (Japanese)
5	5	ご (Japanese)
6	6	ろく (Japanese)
7	7	なな (Japanese)
8	8	はち (Japanese)
9	9	きゅう (Japanese)
A	0	ぜろ (Japanese)
B	*	スター (Japanese)
C	#	シャープ (Japanese)

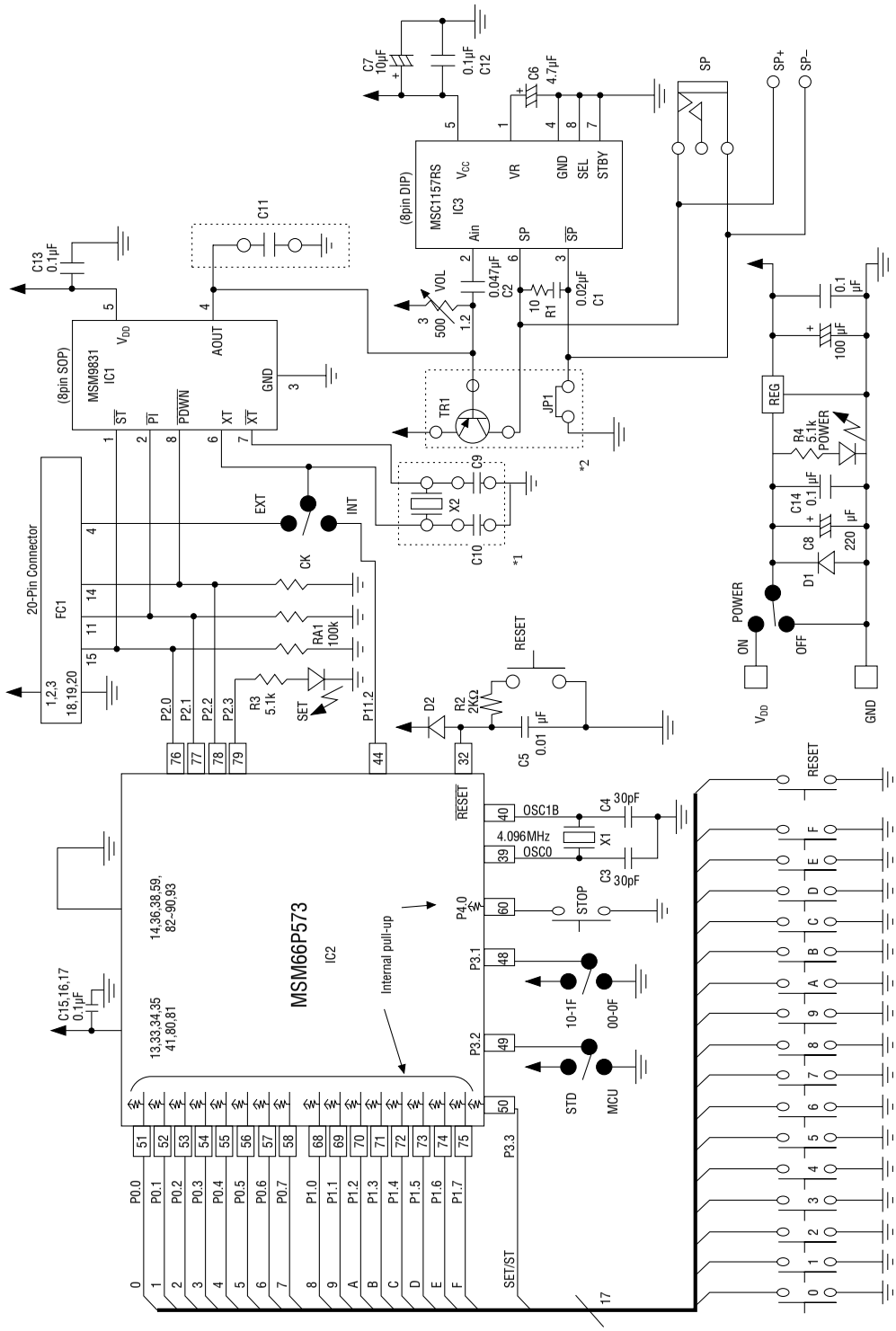
Note: You can register only one number combination at a time.

(4) Push the SET/ST button ⑨ again (the LED ⑩ goes off) to start playback of continuous DTMF tones that corresponds to the telephone number registered. Push the Stop button ⑦ to stop playback.

• Car Winker Sound Generator

(1) Select either one of two types of winker sound by using the Address Selector switch ⑤.
(2) Push the SET/ST button ⑨ to save your selection (the LED goes on).
(3) Push the SET/ST button ⑨ again to start playback (the LED goes off) of the selected winker sound. Push the Stop button ⑦ to stop playback.

CIRCUIT DIAGRAM



Circuits within dotted lines are used under different Conditions.

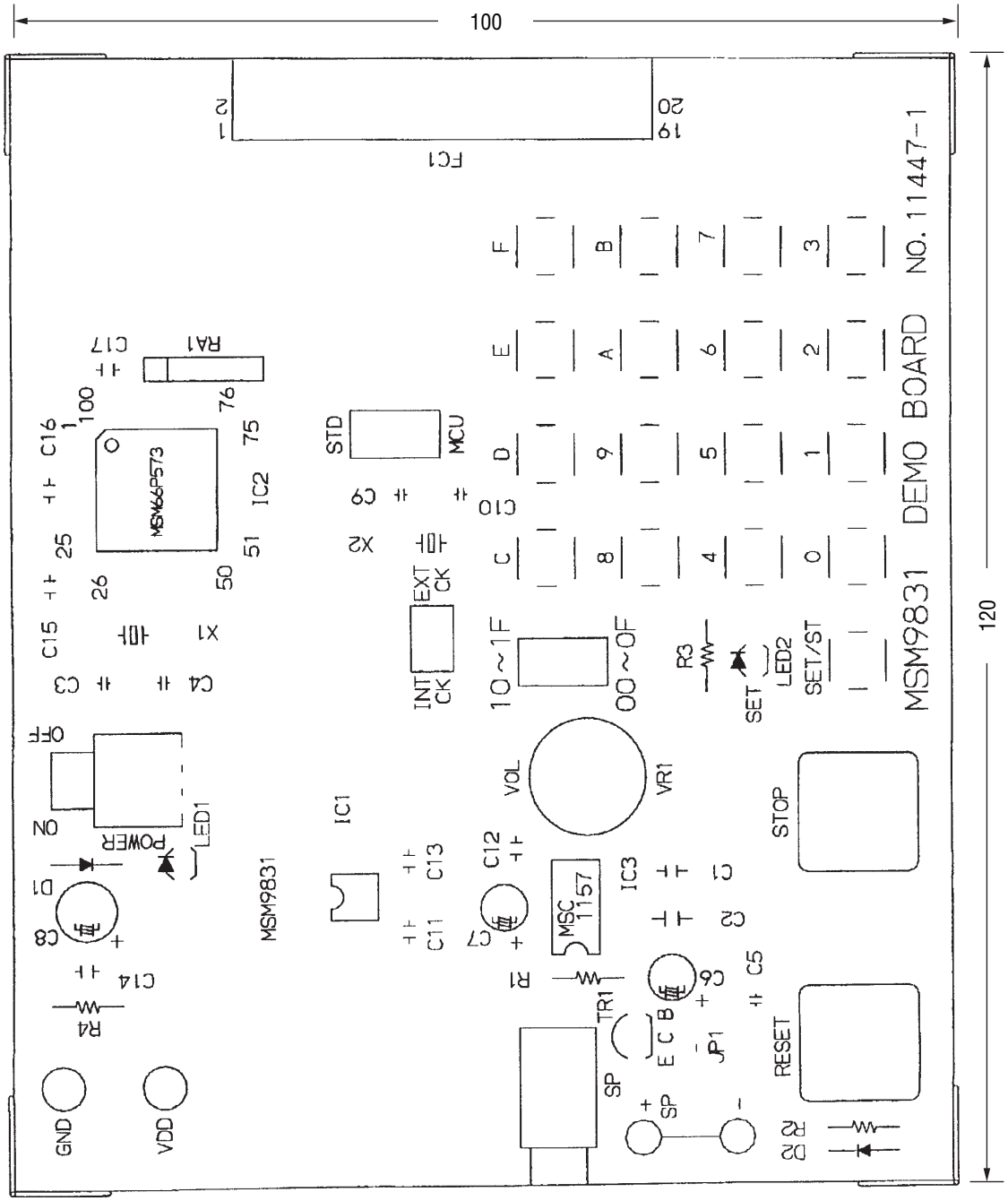
*1. A circuit that uses crystal for driving the MSM9831. Remove the EXT-INT switch when using crystal.

*2. A circuit for transistor-driven speaker use. Remove IC3, VOL, C1, C2, and R1 when using a speaker.

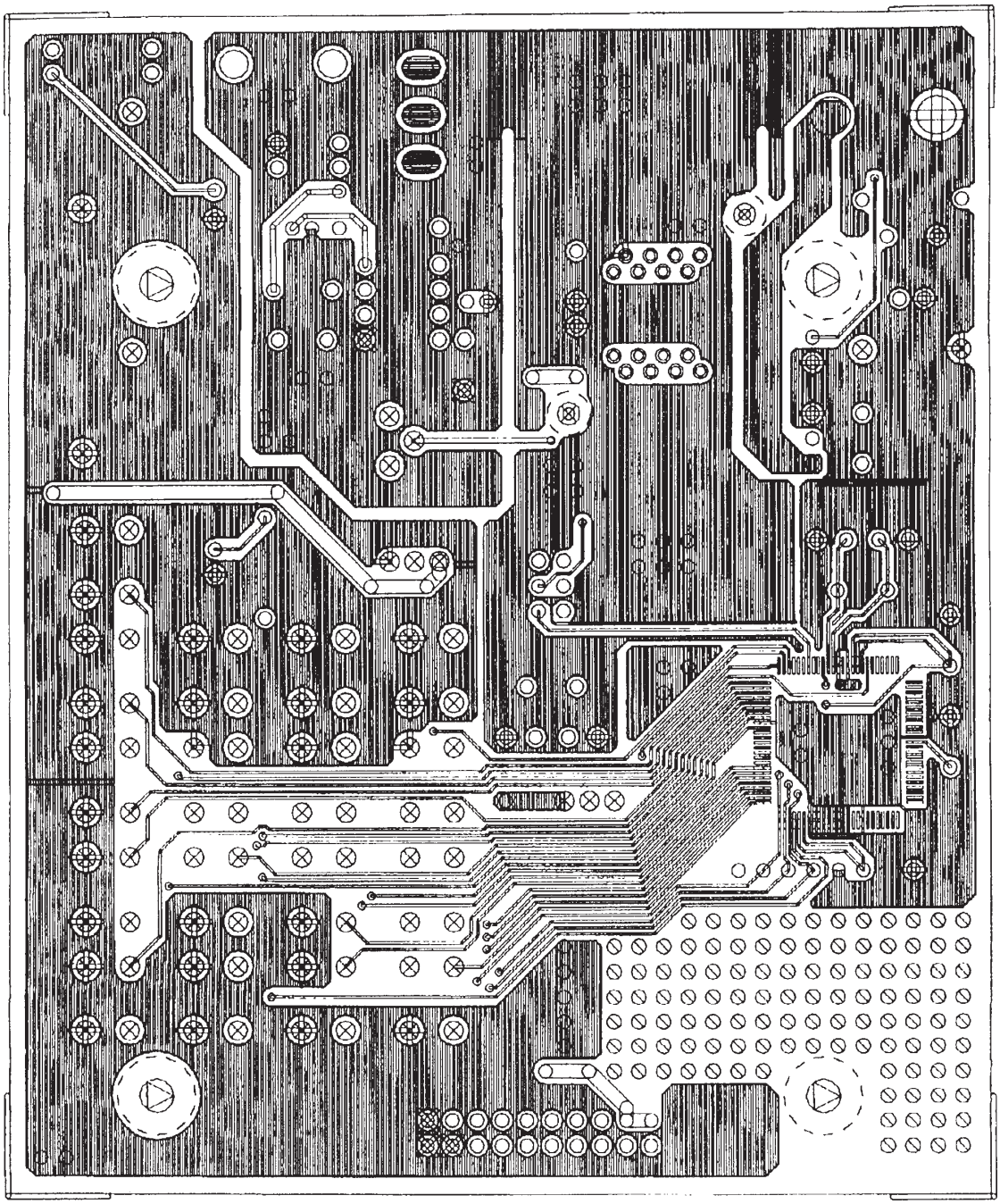
PATTERN LAYOUT

Silk Screen

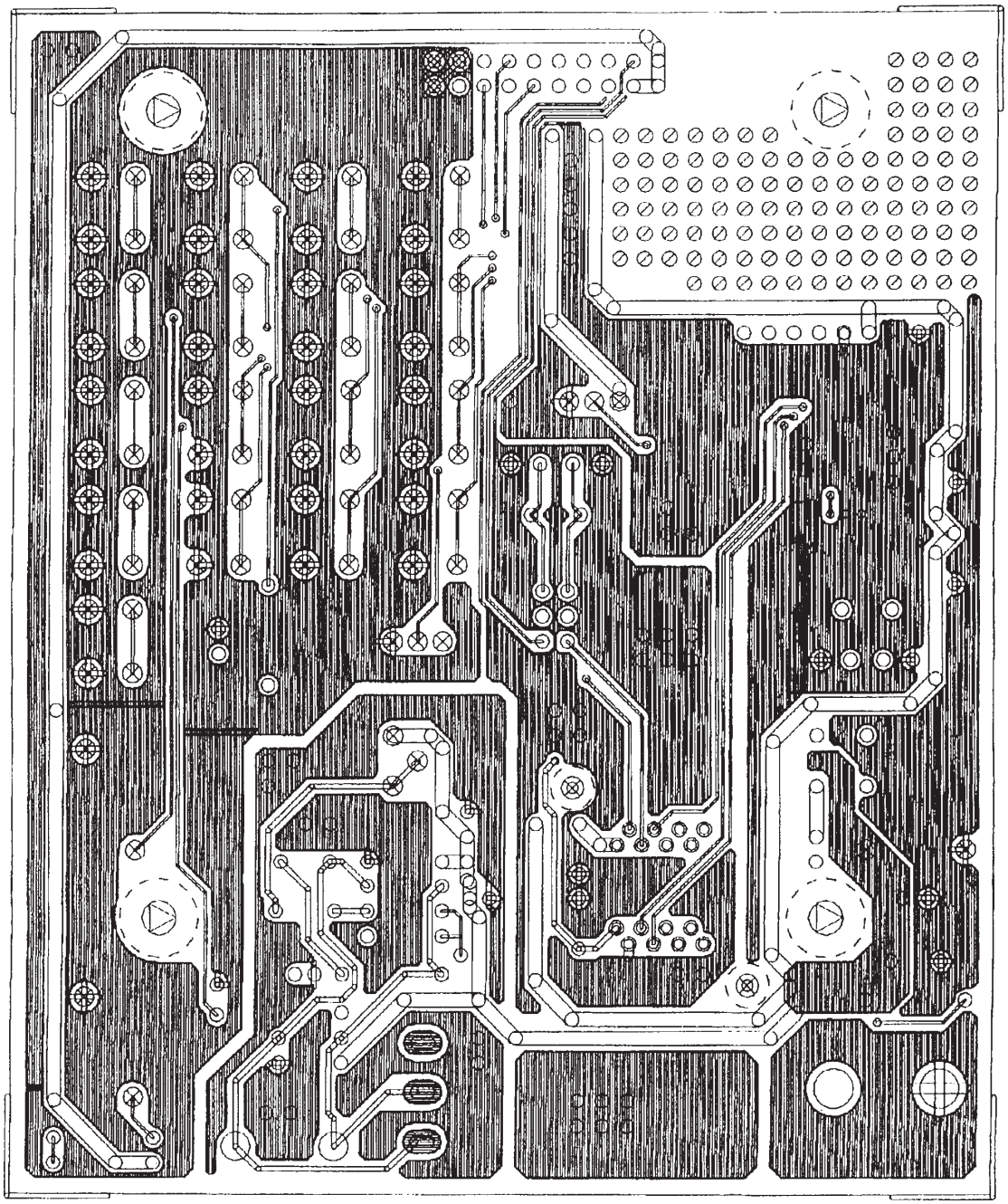
(Unit: mm)



Mounting Side



Solder Side



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Printed in Japan