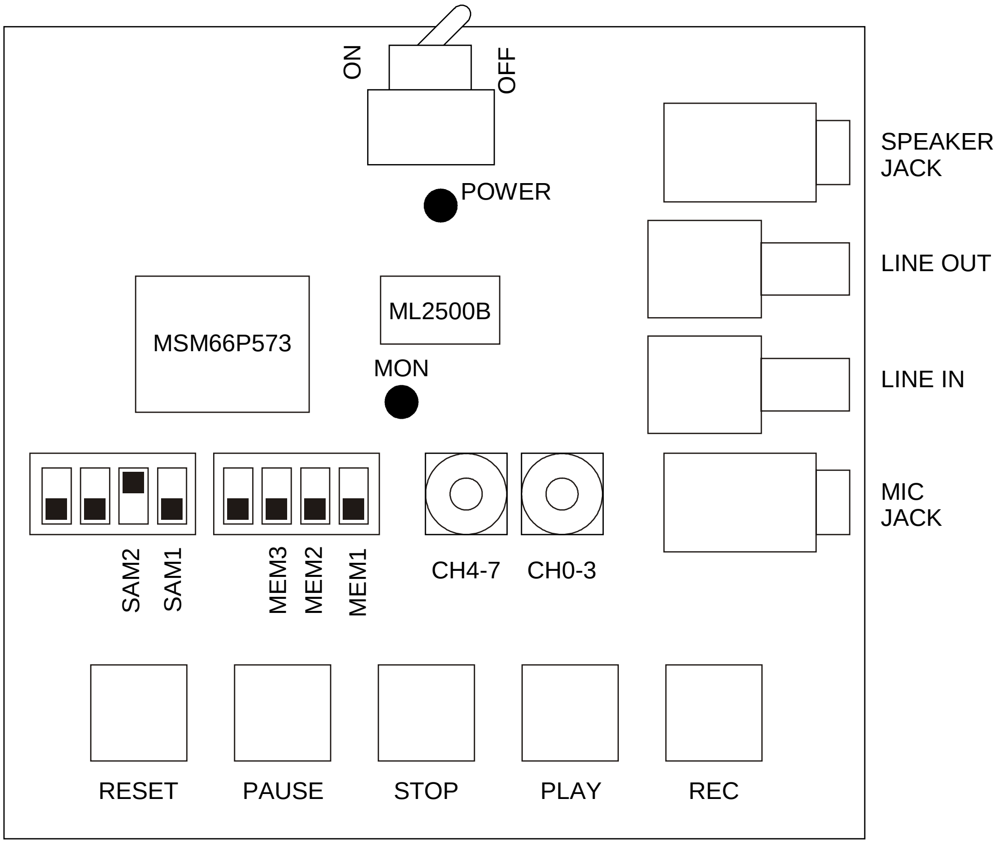
FEXL2500B-01

OKI Semiconductor This version: Feb. 2001

ML2500B DEMO BOARD

ML2500B Demonstration Board

1. BOARD DESIGN



2. SETTING UP RECORDING PARAMETERS

You can setup parameters for recording by using two HEX switches and two DIP switches.

2.1 Select a sampling frequency with SAM2 and SAM1 DIP switches.

SAM2	SAM1	Sampling Frequency
OFF	OFF	4.0 kHz
OFF	ON	5.3 kHz
ON	OFF	6.4 kHz

2.2 Select the number of channels and the maximum memory space to be allocated per channel by using MEM3, MEM2, MEM1 DIP switches.

MEM3	MEM2	MEM1	Number of Channels	Channel *1	Max. Memory Space/Channel *2	
OFF	OFF	OFF	1	01h	1M bit	[160s]
OFF	OFF	ON	2	01h to 02h	508,800 bits	[79.5s]
OFF	ON	OFF	4	01h to 04h	252,800 bits	[39.5s]
OFF	ON	ON	8	01h to 08h	124,800 bits	[19.5s]
ON	OFF	OFF	16	01h to 10h	60,800 bits	[9.5s]
ON	OFF	ON	20	01h to 14h	48,000 bits	[7.5s]
ON	ON	OFF	40	01h to 28h	22,400 bits	[3.5s]
ON	ON	ON	80	01h to 50h	9,600 bits	[1.5s]

*1 Indicates valid HEX value(s) on HEX SW(s) (CH4-7, CH0-3).
*2 [ ] indicates recording time at 6.4 kHz sampling rate.

2.3 Select a channel to be recorded by setting the corresponding HEX value with HEX switch(es). By doing this you can determine recording phrase. MEM switches setup determines valid channel(s). You cannot record or playback when you select an invalid channel.

3. RECORDING

3.1 Push the Power Switch on to power up the board, and LED (POWER) goes on.

3.2 Reset the board by pushing the RESET button.

3.3 Set up parameters as required according to "2. Setting Up Recording Parameters" earlier in this document.

3.4 Push the REC button and start recording through a microphone. The (MON) LED keeps on while in recording operation.

3.5 Recording stops automatically when pre-defined max. memory space for the session has been used out. To stop recording before the end of the session, push the STOP button.

4. PLAYING BACK

4.1 To start playback, push the PLAY button. During playback, the LED (MON) keeps on.

4.2 Playback automatically stops when the end of recorded phrase has been reached. To stop playback before the end of the session, use the STOP button.

5. PAUSING RECORD/PLAYBACK

5.1 Pushing the PAUSE button while recording or playing back suspends the ongoing operation.

5.2 The suspended operation can be resumed by pushing the PAUSE button again.

6. CONTROLLING ADDRESS

To control ML2500B recording and playback operation, you need to know two addresses for each phrase, the Start Address and the Stop Address.

6.1 Usable Memory Space per Channel

To find out usable memory space per channel, divide the total memory capacity (1M-bit Cell) by the number of channels. However, when more than 1 channel are used, you have to allocate the last 1-sector memory space (3200 bits) of each channel's memory space to dummy recording space.
In other words, usable memory space per channel is:
when 1 channel only is used........................ Memory space per channel = 1M/number of channel
when more than 1 channel are used .... Memory space pre channel = 1M/number of channels –3200

6.2 Controlling the Start Address

When n channels are used, each memory space, an equally divided portion by n, is assigned in sequential order from the starting of memory to CH1, CH2, …, CHn.
Therefore, the Start Address of CHm can be calculated by the following formula:
Externally Addressable Address = 1M (Whole Addressable Address)/200 (Word Line) = 5120 = 1400h
CHm Start Address = (1400h/n) * (m – 1)
However, the actual address input by using the STADR or SPADR command has to be adjusted as in the following table because no address higher than 27h is available (Address Skip).

Caluculated address	ML2500B Input Address	Selected Array
0000 0001 ⋮ 04FF	0000 0001 ⋮ 04FF	Array 1
0500 0501 ⋮ 09FF	0800 0801 ⋮ 0CFF	Array 2
0A00 0A01 ⋮ 0EFF	1000 1001 ⋮ 14FF	Array 3
0F00 0F01 ⋮ 13FF	1800 1801 ⋮ 1CFF	Array 4

In short, the following co-relationship exists between the calculated address and the actual input address:
Where calculated address is 0000 to 04FF (When Array 1 selected); ML2500B Input Address = Calculated address
Where calculated address is 0500 to 09FF (When Array 2 selected); ML2500B Input Address = Calculated address + 0300h
Where calculated address is 0A00 to 0EFF (When Array 3 selected); ML2500B Input Address = Calculated address + 0600h
Where calculated address is 0F00 to 13FF (When Array 4 selected); ML2500B Input Address = Calculated address + 0900h

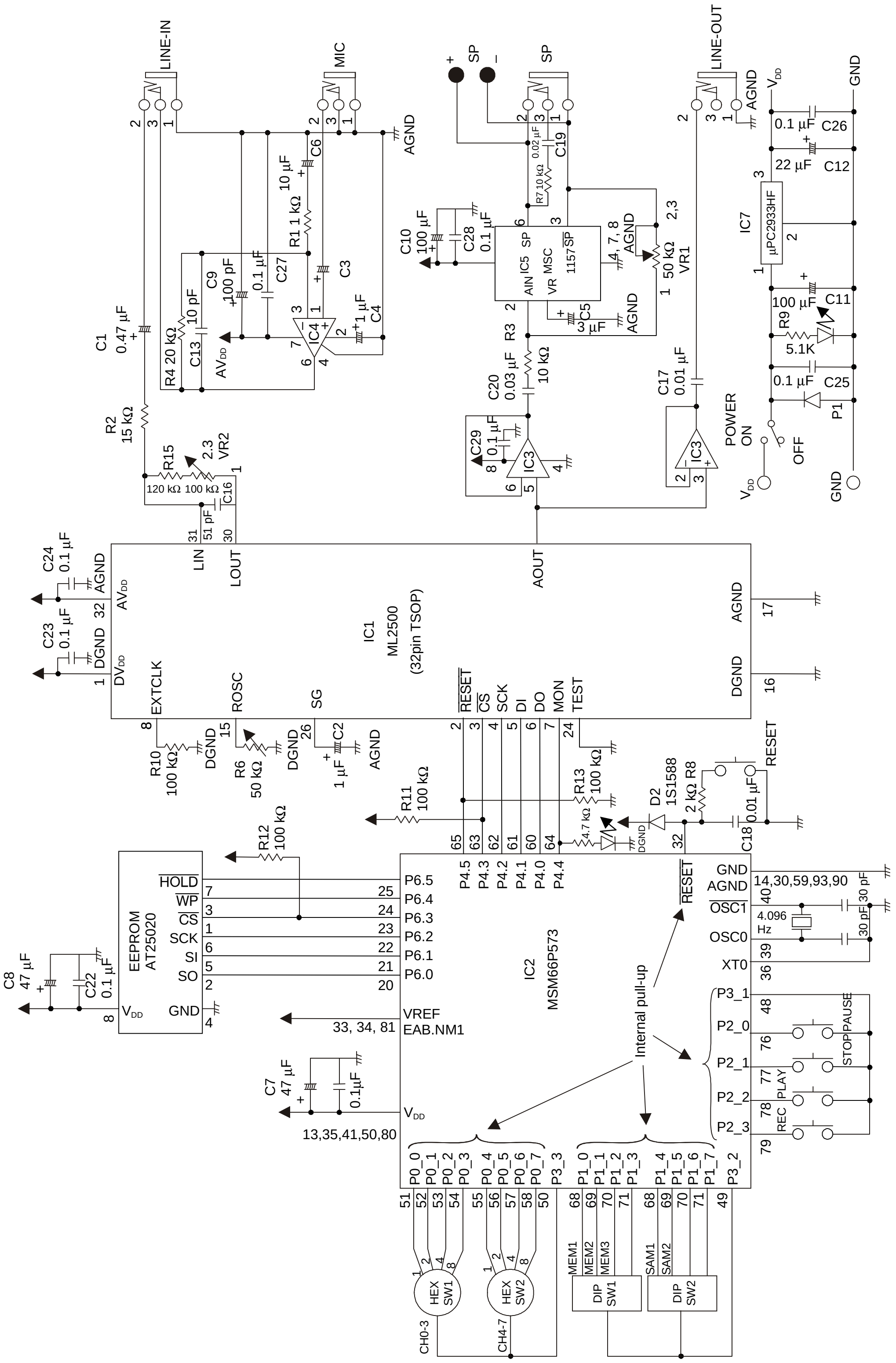
6.3 Calculating the Stop Address

(For recording)
The Stop Address can be calculated in the same manner as with the Start Address.
when 1 channel only is used........................ Channel 1 Stop Address = 13FFh
when more than 1 channel are used .... Channel m Stop Address = (1400h/n) * m – 0011h

As the last sector of each channel is used as dummy recording space, you need to specify the Stop Address at the address 1 sector before the last address.
The actual input address by the STADR command can be found out in the list appeared earlier in this document.

(For Playback)
The Stop Address can be obtained by running the RDADR command after each recording session. The address obtained has to be stored in the external Flash memory.

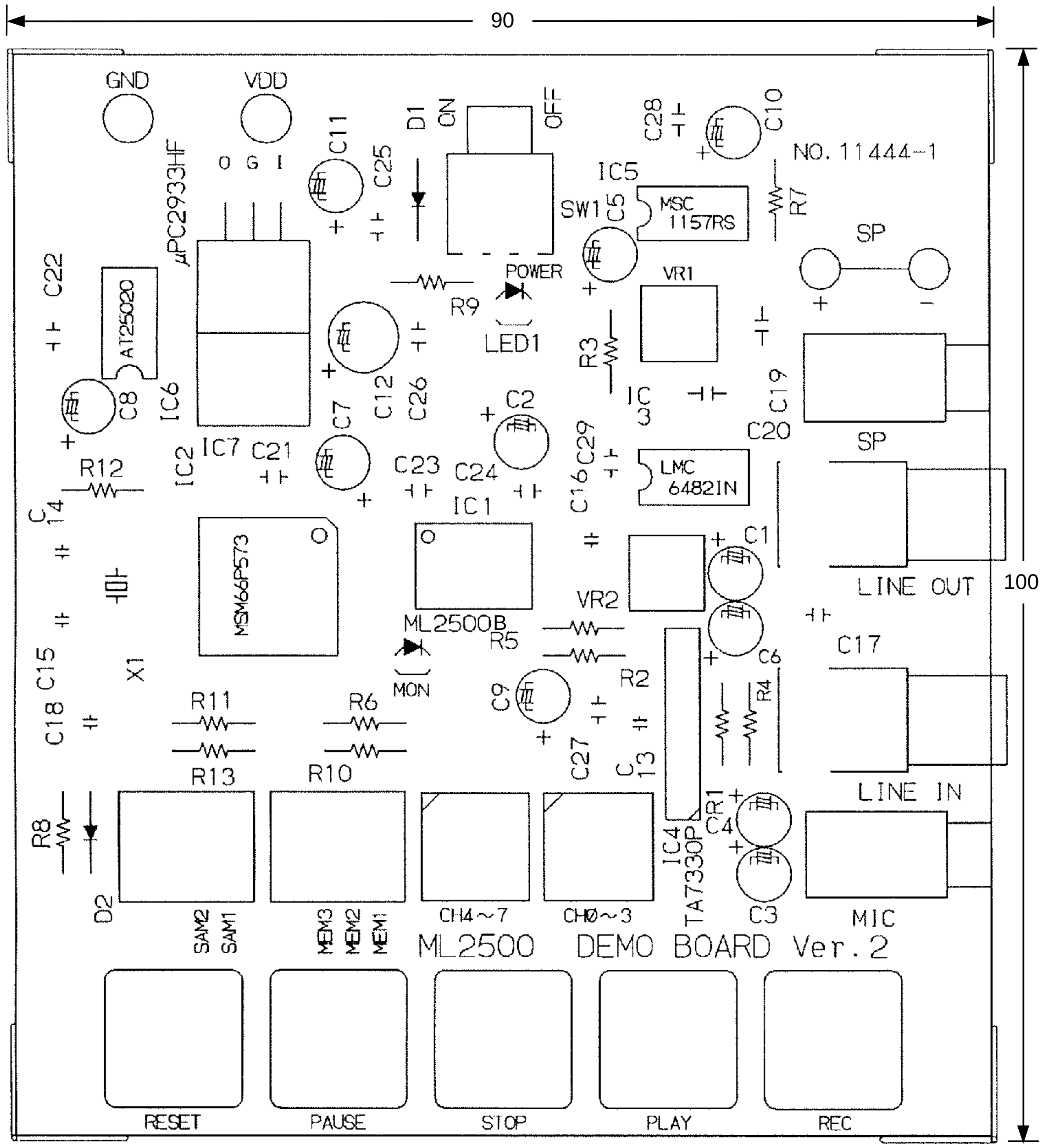
7. CIRCUIT DIAGRAM



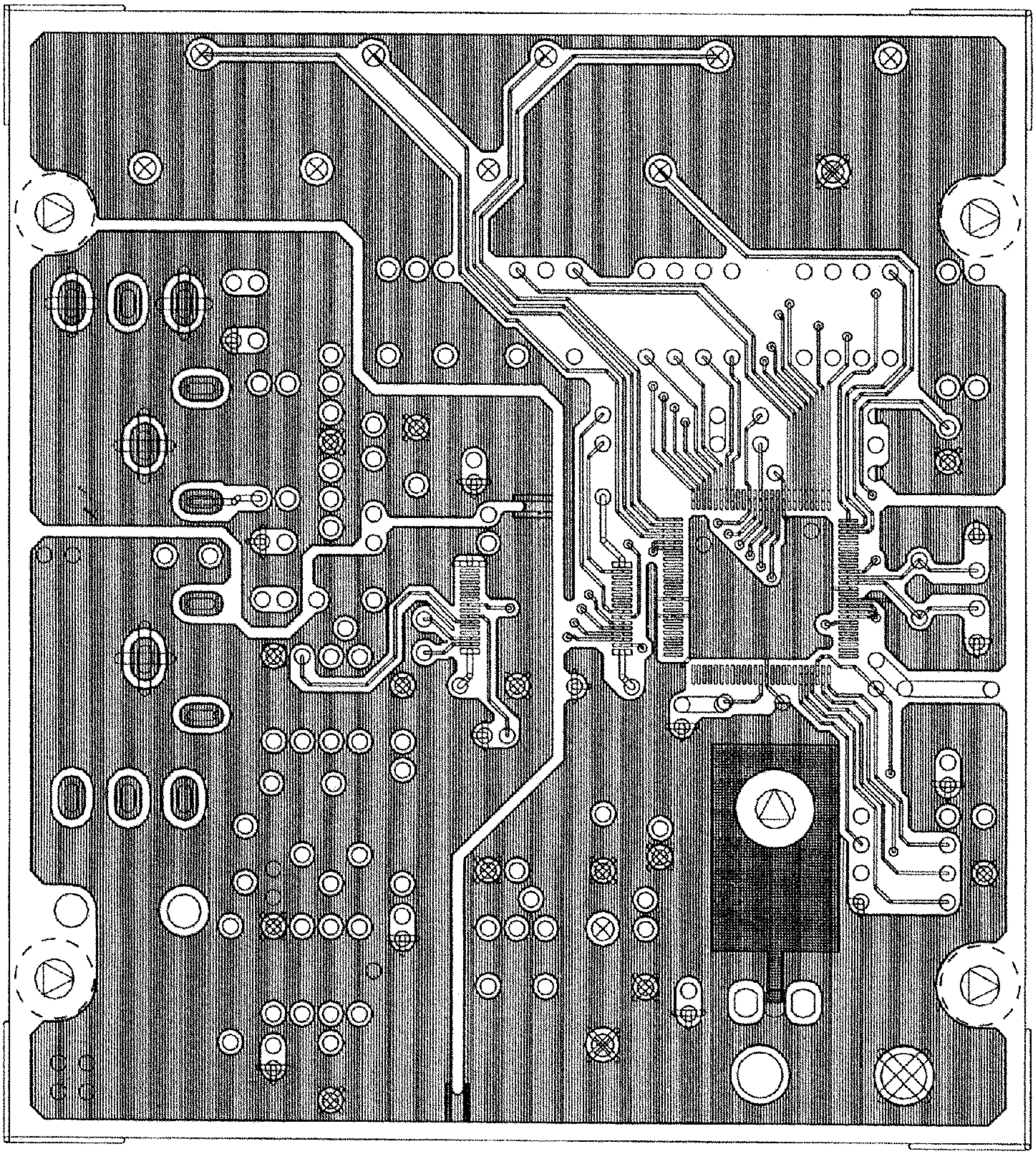
8. PATTERN LAYOUT

8-1. Silk Screen

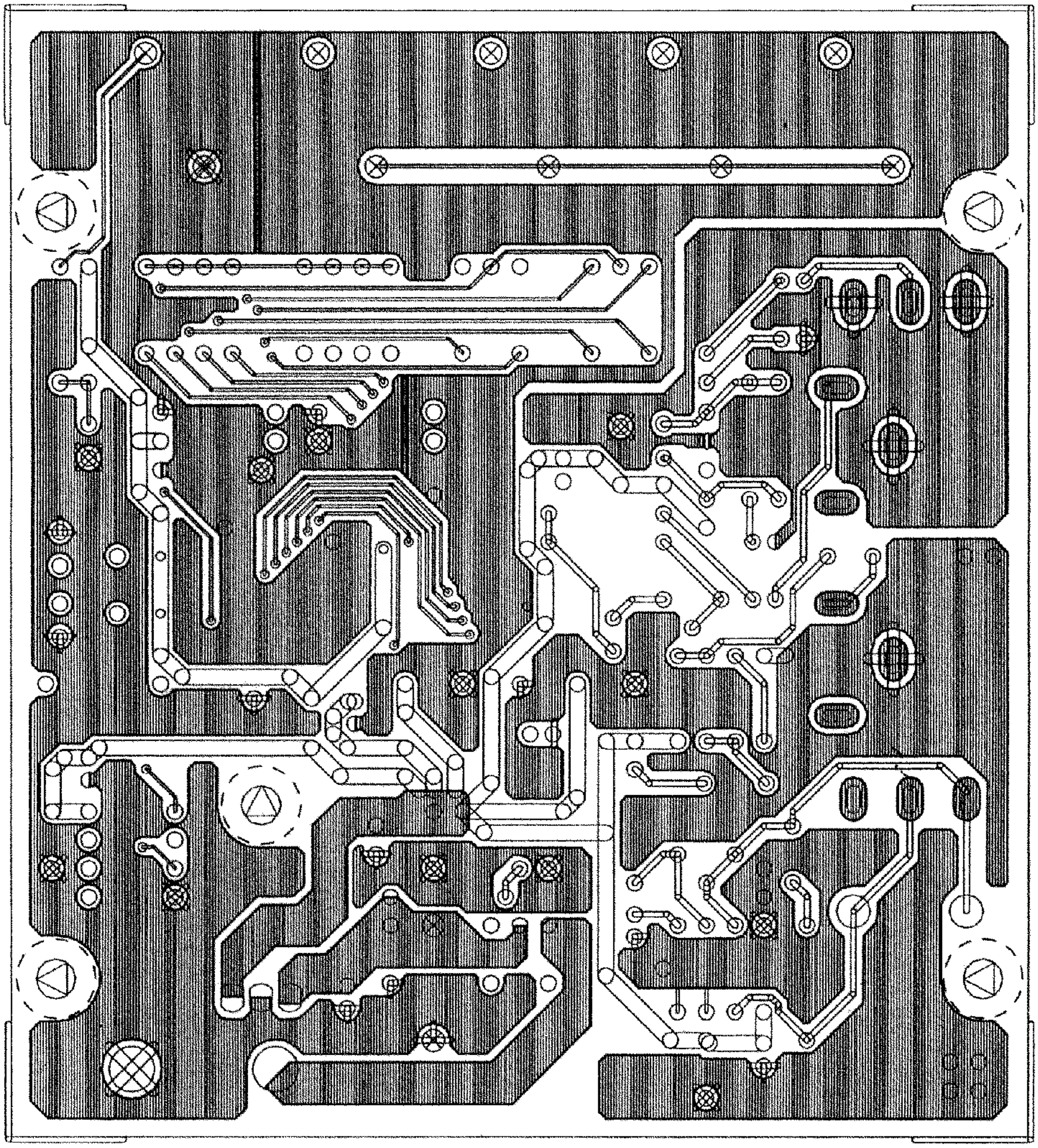
(Unit: mm)



8-2. Mounting Side



8-3. Solder Side



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