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RENESAS

USER'S MANUAL

Phase-out/Discontinued

SE-17108

17K SERIES

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USER'S MANUAL

NEC

Phase-out/Discontinued

SE-17108

17K SERIES

CONTENTS

CHAPTER 1 INTRODUCTION

SE-17108 is a system evaluation board for 4-bit single chip microcontroller μPD17108 and μPD17108L*. SE-17108 can be used installed with the 17K series common incircuit emulator IE-17K, and also SE-17108 can be used alone.

μPD17108CS-00X or μPD17108LCS-00X (They will be called "the main chips" later on) is used as an interface with the target system. Therefore, the function of SE-17108 is the same as μPD17108CS or μPD17108LCS.

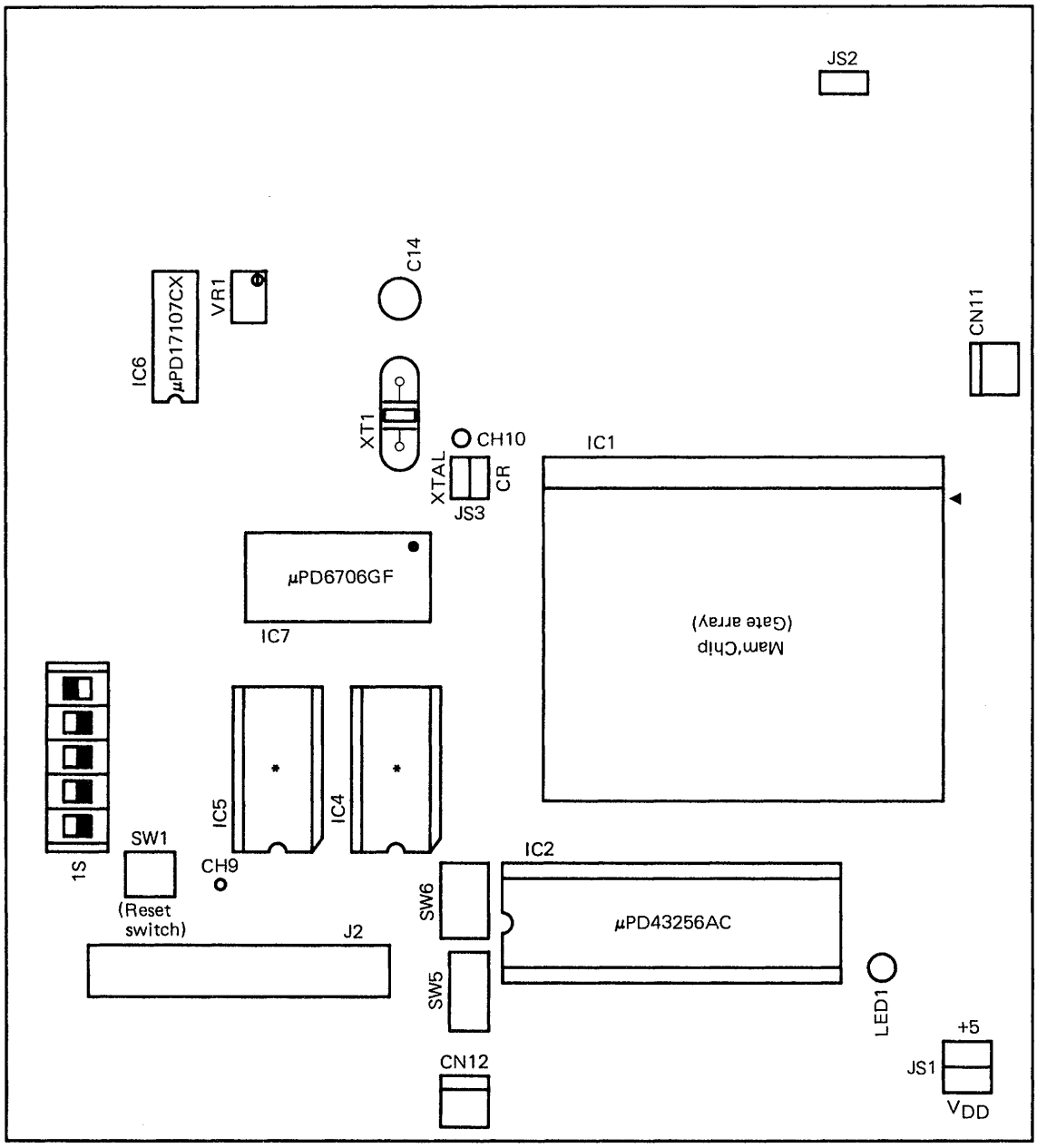
In case of connecting SE-17108 to the target system, use the option EP-17104CS (22 pin plastic SDIP probe for μPD17108CS and μPD17108LCS).

*** μPD17108LCS is low voltage operating product of μPD17108CS (Operating power voltage (V_{DD}) = +1.5 to 3.6 V).**

CHAPTER 2 SPECIFICATIONS

Model name	:	SE-17108
Program memory	:	• In case of using SE-17108 with IE-17K, use μPD43256AC • In case of using SE-17108 alone, mount μPD27C256AD or μPD27C512D in which program is written. • μPD43256AC is mounted as shipped.
Data memory	:	Use the RAM built in μPD17108CS or μPD17108LCS (16 words x 4 bits)
Operating frequency	:	• When evaluating μPD17108. . . . . .50 kHz to 1.2 MHz • When evaluating μPD17108L. . . . . .50 kHz to 250 kHz • Variable resister (VR1) is mounted so it is possible to adjust in the frequency range between 50 kHz and 1.2 MHz.
Instruction cycle	:	• 8 μs (As shipped, it is adjusted to 1 MHz by the oscillating circuit using μPD17107 and variable resister VR1.)
Operating temperature	:	+10 to +40 °C
Storage temperature	:	−10 to +50 °C (without condensation)
Power supply	:	• Power supply for the main chips (V_{DD}) μPD17108CS . . . . . .+2.5 to 6.0 V μPD17108LCS . . . . . .+1.5 to 3.6 V The power is supplied through the probe (EP-17104CS) or through CN12 on SE-17108. • Power supply for SE-17108 (V_{CC}) . . . . . .5 V±5 % When using SE-17108 installed with IE-17K, the power is supplied from IE-17K. When using SE-17108 alone, supply the power 5 V±5 % through CN11 on SE-17108.
Current consumption	:	200 mA (MAX.) (no load, using μPD27C256AD as a program memory)
Board dimensions	:	150 mm x 140 mm x 35 mm

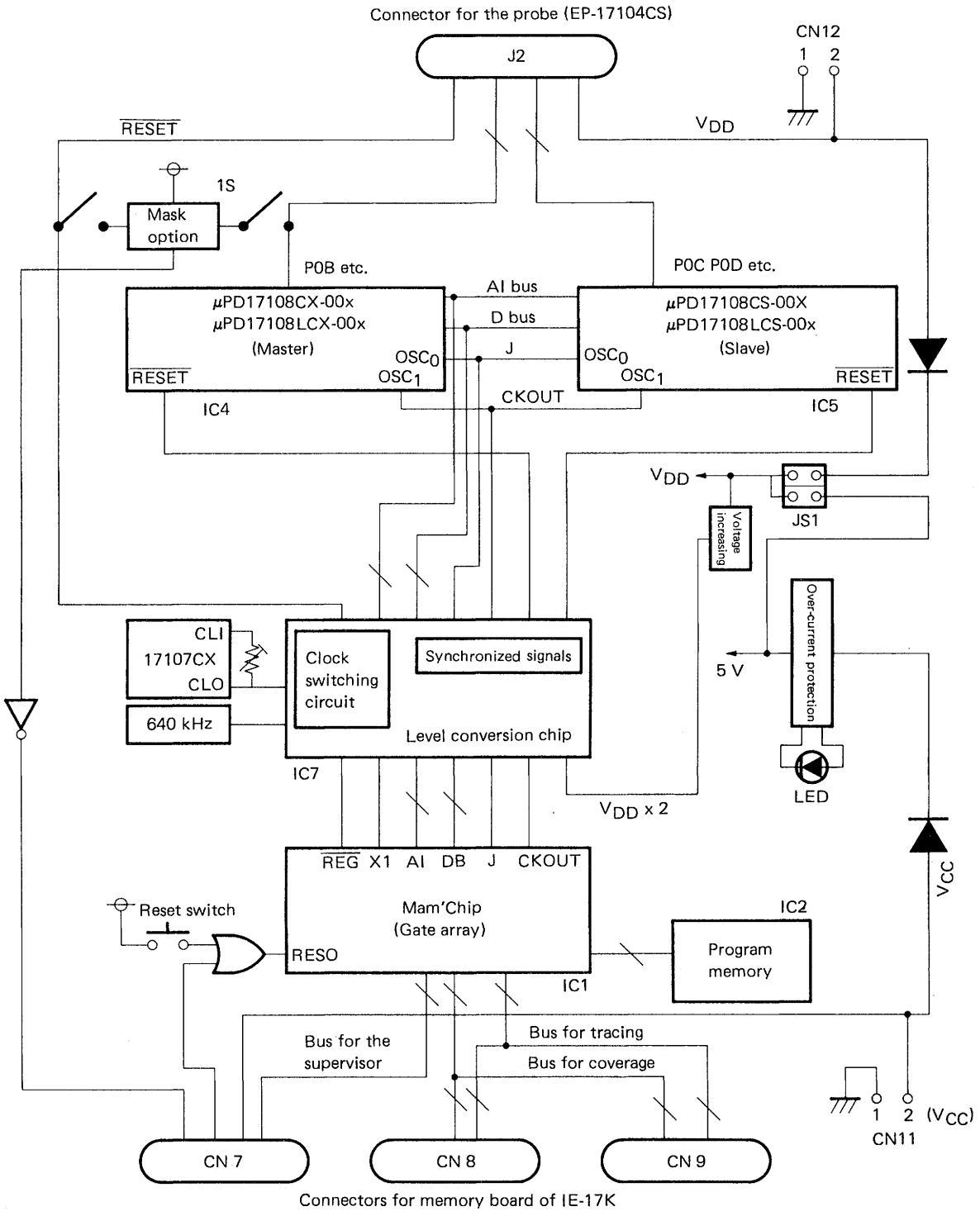
Fig. 2-1 SE-17108 Component layout



* Main chips
When evaluating μPD17108, mount μPD17108-00X.
When evaluating μPD17108L, mount μPD17108L-00X.

CHAPTER 3 BLOCK DIAGRAM

Fig. 3-1 Block diagram of SE-17108



CHAPTER 4 OPERATING PROCEDURES

4.1 SETTINGS OF SE BOARD IN EACH CASE OF USING μPD17108 AND μPD17108L

SE-17108 becomes the evaluating board for the main chip by mounting the corresponding main chips which shall be evaluated as IC4 and IC5.

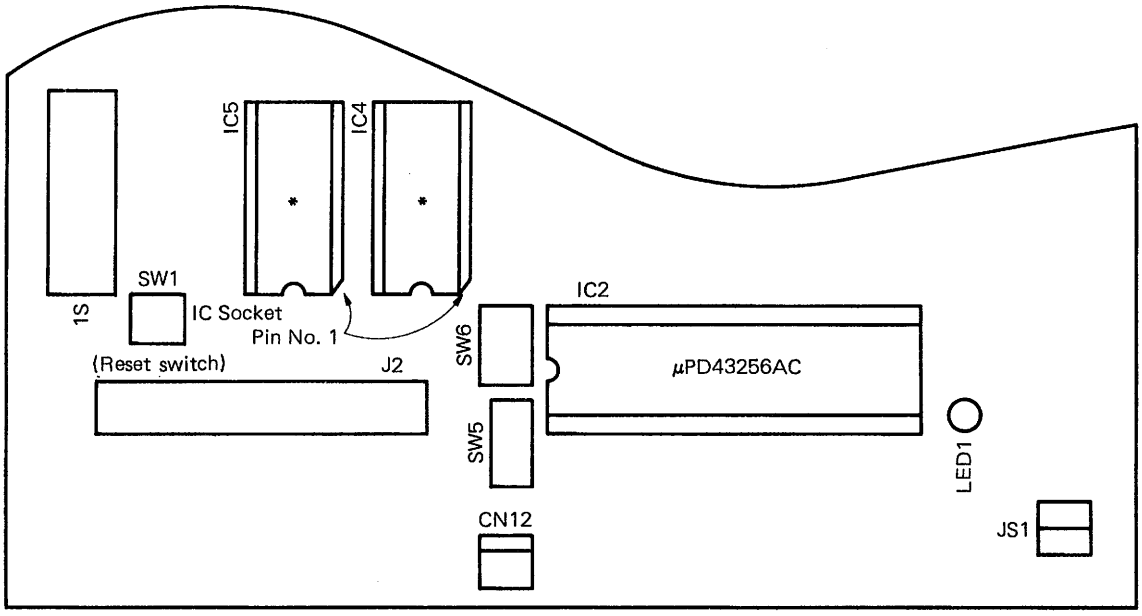
μPD17108CS and μPD17108CS are mounted as IC4 and IC5 respectively so SE-17108 is set to function as the evaluation board of μPD17108 as shipped. It is required to exchange the main chips when evaluating μPD17108L referring Table 4-1 and Fig. 4-1.

Table 4-1 The main chips to be evaluated and the corresponding main chips required to be mounted

The main chips / Chips to be evaluated	IC4	IC5
μPD17108	μPD17108CS-00X	μPD17108CS-00X
μPD17108L	μPD17108LCS-00X	μPD17108LCS-00X

: Settings as shipped.

Fig. 4-1 Example of mounting the main chips



* main chips

Notice In case of exchanging the main chips, turn off the power, pay attention to the orientation of pin No. 1 of the main chips and insert them.

4.2 HOW TO USE LEVEL CONVERSION CHIP (μPD6706GF)

(1) Outline of level conversion chip

The level conversion chip is an IC that converts the voltage level to another one each other when the operating voltages differ between your target system and the SE board ($V_{DD} \neq V_{CC}$, V_{CC} = +5 V). Therefore, the interface between them is made smoothly by the function of the level conversion chip even in case the operating voltages are not the same between the target system and the SE board.

Note 1. V_{DD} is the power supply voltage of your target system.
SE-17108 is capable of supplying the power from the target system to the main chip on the SE board through CN12 or the probe. Therefore you can debug in the environment very close to the actual one.

Note 2. V_{CC} is the power supply for operating SE board (exclusive of the main chip) and it is required to supply +5 V at any time. V_{CC} is supplied automatically from IE-17K when SE board is installed to IE-17K. In case of operating SE board alone, supply the power through CN11.

(2) How to use level conversion chip

- Set the jumper switch JS1 to V_{DD} side.
- When the voltage of other than +5 V is supplied through the probe or CN12, the level conversion chip automatically converts the level.

4.3 HOW TO SUPPLY THE POWER TO SE BOARD

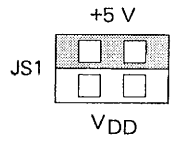
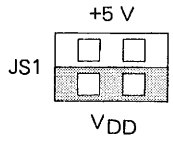
The SE board requires two ways of power to be supplied with. One is the power V_{CC} to operate the SE board (exclusive of the main chip), the other is V_{DD} to operate the main chip. It is necessary to supply +5 V with V_{CC} at any time and you can supply +2.5 to 6.0 V to μPD17108 or +1.5 to 3.6 V to μPD17108L which is in the operating voltage range of the main chip.

(1) Jumper switch JS1 for selecting the power supplying way to the SE board

Jumper switch JS1 has the function to select the power supplying ways whether the voltage which is supplied to the SE board (+5 V) shall be applied to the main chip or whether the voltage supplied through CN12 shall be applied to the main chip. Refer to the Table 4-1 and 4-2 for its function. When your target system's power supply is +5 V, by setting JS1 to +5 V side, you would have the advantage to supply the power very easily, i.e., in case of using the SE board alone, +5 V is supplied only through CN11, and in case of using it installed with IE-17K, +5 V is supplied automatically from IE-17K.
In addition, you have the advantage to be able to do evaluation in the environment very close to the actual one because your target system's power supply can be applied to the main chip through the probe or CN12 by setting JS1 to V_{DD} side, when the power of your target system is other than +5 V.

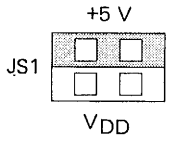
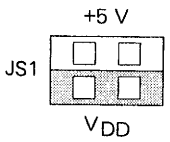
Notice When evaluating μPD17108, supply +2.5 to 6.0 V with V_{DD} of the main chips.
When evaluating μPD17108L, supply +1.5 to 3.6 V with V_{DD} of the main chips.
When evaluating μPD17108L, set JS1 to V_{DD} at any time and supply +1.5 to 3.6 V from the target system. If SE-17108 is operated with JS1 set to +5 V side, it may cause destructive damage to the main chips.

Table 4-1 The function of JS1 when the SE board is installed with IE-17K

Types of power / Settings of JS1	Power supplied with the main chip (V_{DD})	Power to operate SE board (exclusive of the main chip) (V_{CC})
	The +5 V power is supplied from IE-17K.	The +5 V power is supplied from IE-17K.
	It is necessary to supply the power through the probe or CN12.	

Notice When evaluating μPD17108L, set JS1 to V_{DD} at any time.

Table 4-2 The function of JS1 in case of using the SE board alone

Types of power / Settings of JS1	Power supplied with the main chip (V_{DD})	Power to operate SE board (exclusive of the main chip) (V_{CC})
	The +5 V power which is supplied through CN11 is applied.	Supply +5 V power through CN11
	It is necessary to supply the power through the probe or CN12.	

Notice When evaluating μPD17108L, set JS1 to V_{DD} at any time.

NOTE  indicates the selected position of the switch.

(2) Power supply terminals

This SE board has three power supply terminals and it is necessary to select the way according to the evaluation environment. The terminals and their functions are mentioned in Table 4-3.

Table 4-3 Power supply terminals and their functions

Terminals	Types of power (Voltage range to be supplied)	Functions
CN11	V_{CC} (+5 V±5 %)	Power supply terminal for operating SE board exclusive of the main chip in case of operating SE board alone. You need to supply +5 V at any time. In case of operating SE board installed with IE-17K it is not necessary to supply the power through CN11 since it is supplied from IE-17K automatically.
CN12	V_{DD} • When evaluating μPD17108 (+2.5 to 6.0 V) • When evaluating μPD17108L (+1.5 to 3.6 V)	Power supply terminal for applying power voltage in the operating voltage range of the main chip to the main chip in case your target system's power supply voltage (V_{CC}) is other than 5 V.
Probe (Terminal for V_{DD} and GND)	V_{DD} • When evaluating μPD17108 (+2.5 to 6.0 V) • When evaluating μPD17108L (+1.5 to 3.6 V)	The function is similar to CN12. Since in the SE board CN12 and the power pin of the probe is connected, supply the power through either one of them.

Note Regarding both CN11 and CN12 pin No. 1 is for GND and No. 2 is for the power. As for supplying the power we recommend you use the power supply cable attached for your convenience.

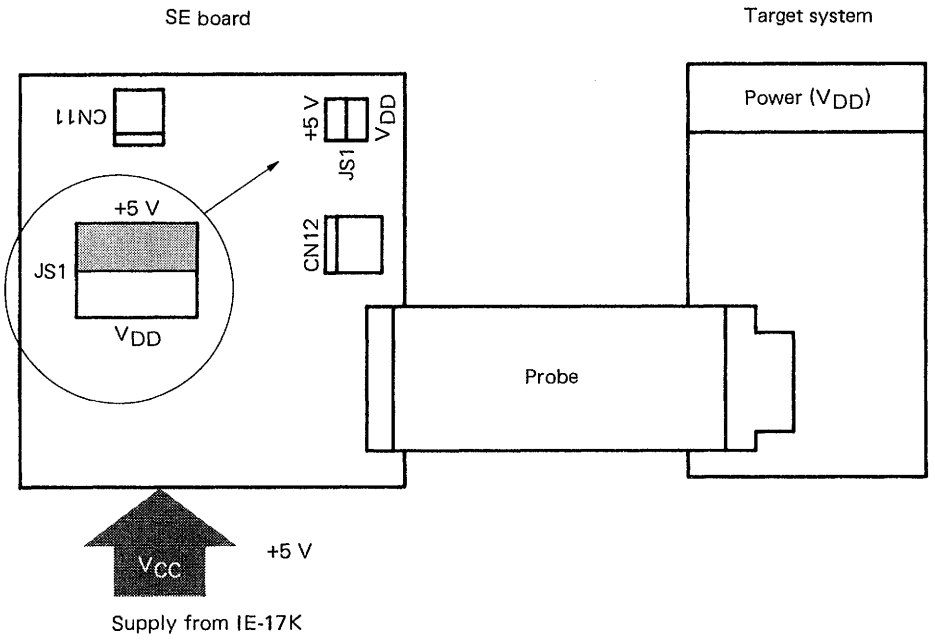
(3) Example of practical use

① In case of using the SE board installed in IE-17K.

(a) When being installed with IE-17K and using with V_{DD} = V_{CC} = +5 V

Set JS1 to +5 V side. V_{DD} and V_{CC} will be supplied from IE-17K so it not required to supply the power through CN11, CN12 nor the probe.

Fig. 4-2 Power supplying method when being installed with IE-17K and V_{DD} = V_{CC} = +5 V



(b) When being installed with IE-17K and using with $V_{DD} \neq V_{CC}$, V_{CC} = +5 V
Set JS1 to V_{DD} side, V_{CC} will be supplied from IE-17K. Supply V_{DD} through CN12 or the probe.

Fig. 4-3 Power supply method of V_{DD} through CN12 in case of being installed with IE-17K

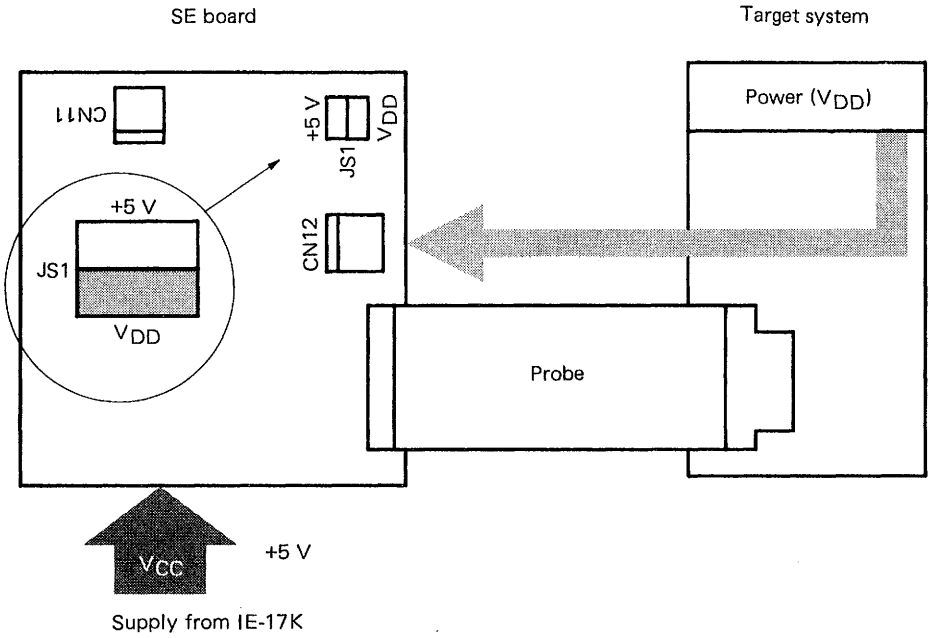
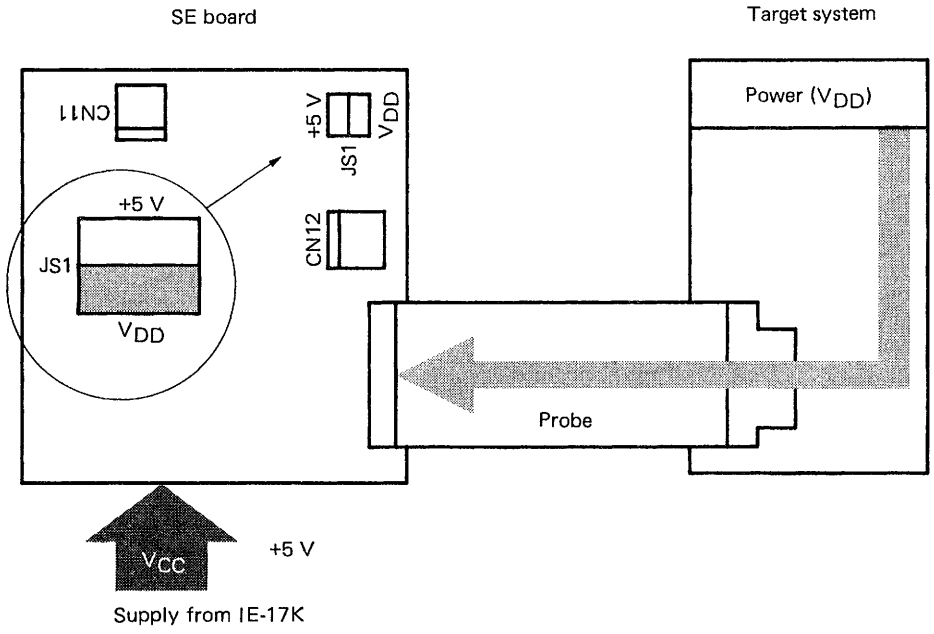


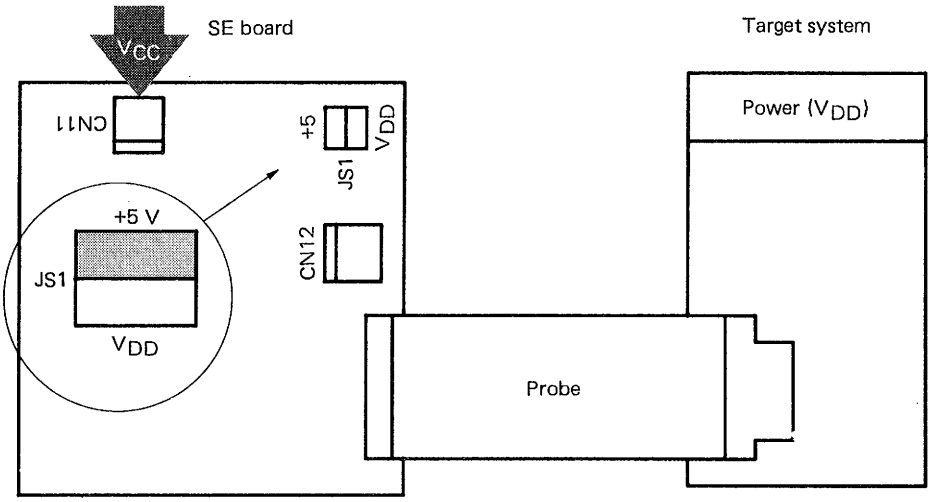
Fig. 4-4 Power supply method of V_{DD} through the probe in case of being installed with IE-17K



② In case of using the SE board alone

(a) When using the SE board alone and using with V_{DD} = V_{CC} = +5 V
Set JS1 to +5 V side. Supply the power V_{DD} and V_{CC} through CN11.

Fig. 4-5 Power supply method when using the SE board alone and V_{DD} = V_{CC} = +5 V



(b) When using the SE board alone and using with $V_{DD} \neq V_{CC} = +5$ V
Set JS1 to V_{DD} side. Supply V_{CC} through CN11, and V_{DD} through either CN12 or the probe.

Fig. 4-6 Power supply method of V_{DD} through CN12 in case of using the SE board alone

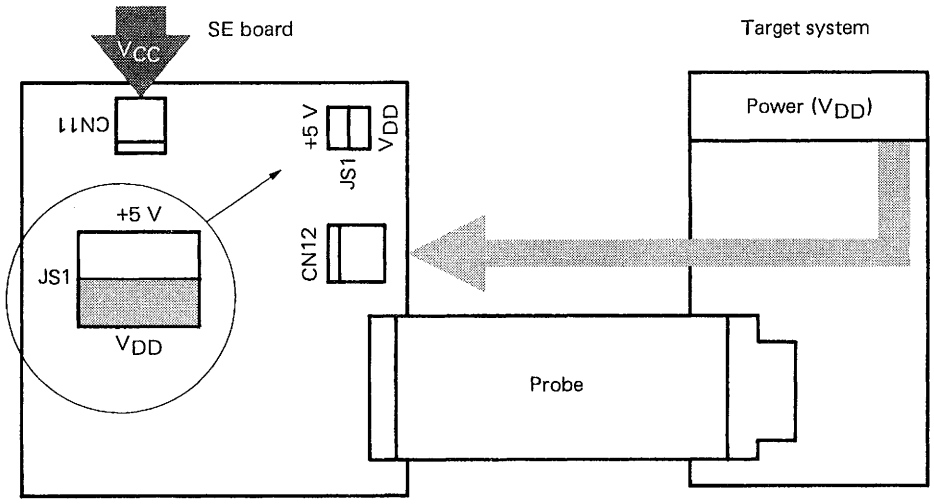
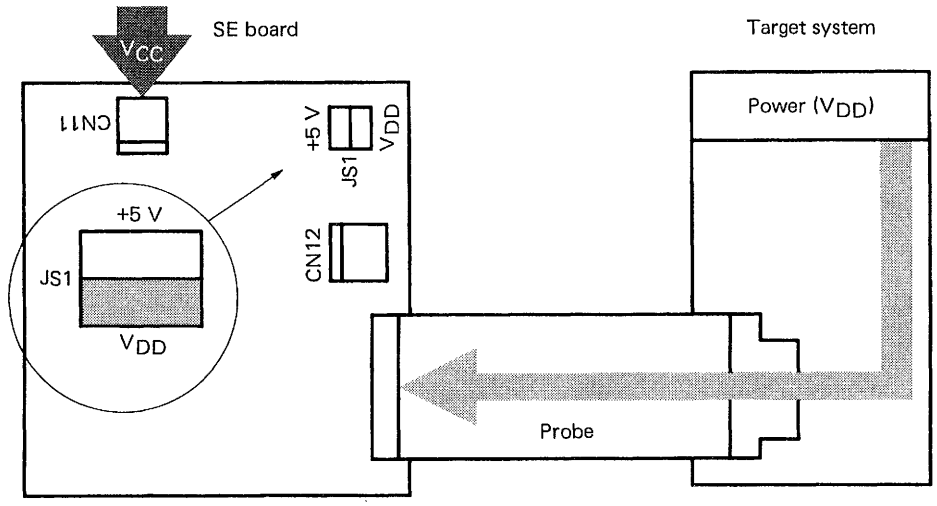


Fig. 4-7 Power supply method of V_{DD} through the probe in case of using the SE board alone



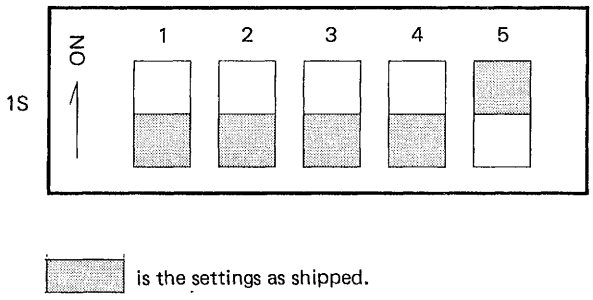
4.4 OPTION SWITCHES

SE-17108 is capable of setting mask options for each bit of each pin of $P0B_0$ to $P0B_3$ and $\overline{RESET}$ of μPD17108 and μPD17108L.

In the debugging environment of SE-17108, option switches (IS) are provided in order to reproduce the mask options seemingly which is described in the source program.

The appearance of option switches is as follows (refer to Fig. 2-1 as well). Set the option switches following Fig. 4-8 and Table 4-8.

Fig. 4-8 Option switches



is the settings as shipped.

Table 4-4 Option switch settings

Switch No.		Pin name	ON	OFF	Switch code
IS	1	$P0B_0$	pulled up	not pulled up	0000
	2	$P0B_1$	pulled up	not pulled up	0000
	3	$P0B_2$	pulled up	not pulled up	0000
	4	$P0B_3$	pulled up	not pulled up	0000
	5	$\overline{RESET}$	pulled up	not pulled up	0001

In case the information of mask options described in the source program is not equivalent to that of option switch settings. IE-17K outputs the following error message.

? IOS INVALID OPTION SWITCH AT XXXX
XXXX: switch code

Switch code shows the location of the option switch on the SE board whose settings is incorrect. Using the assembler (AS17K) of 17K series, the settings of mask options must be described in the source program. Just soon after the HEX file is loaded by .LPO command or .LP1 command, IE-17K examines if the settings of option switches on SE-17108 are equivalent to the settings declared by the program. Reconfirm the settings of option switches when the error message is displayed.

Caution In case SE-17108 is installed with IE-17K, operating without connection to the target system using the probe (EP-17104CS), the reset function may become unstable and cause malfunction unless the option switch for pulling up the $\overline{RESET}$ pin is set to ON side.

4.5 ADJUSTMENT OF OSCILLATING FREQUENCY

The operating frequency of SE-17108 can be altered to other than as shipped. When the oscillating frequency is set to 1 MHz ±20 ppm as shipped.

Table 4-5 Variable frequency range

Chips to be evaluated	Variable frequency range
μPD17108	50 kHz to 1.2 MHz
μPD17108L	50 kHz to 250 kHz

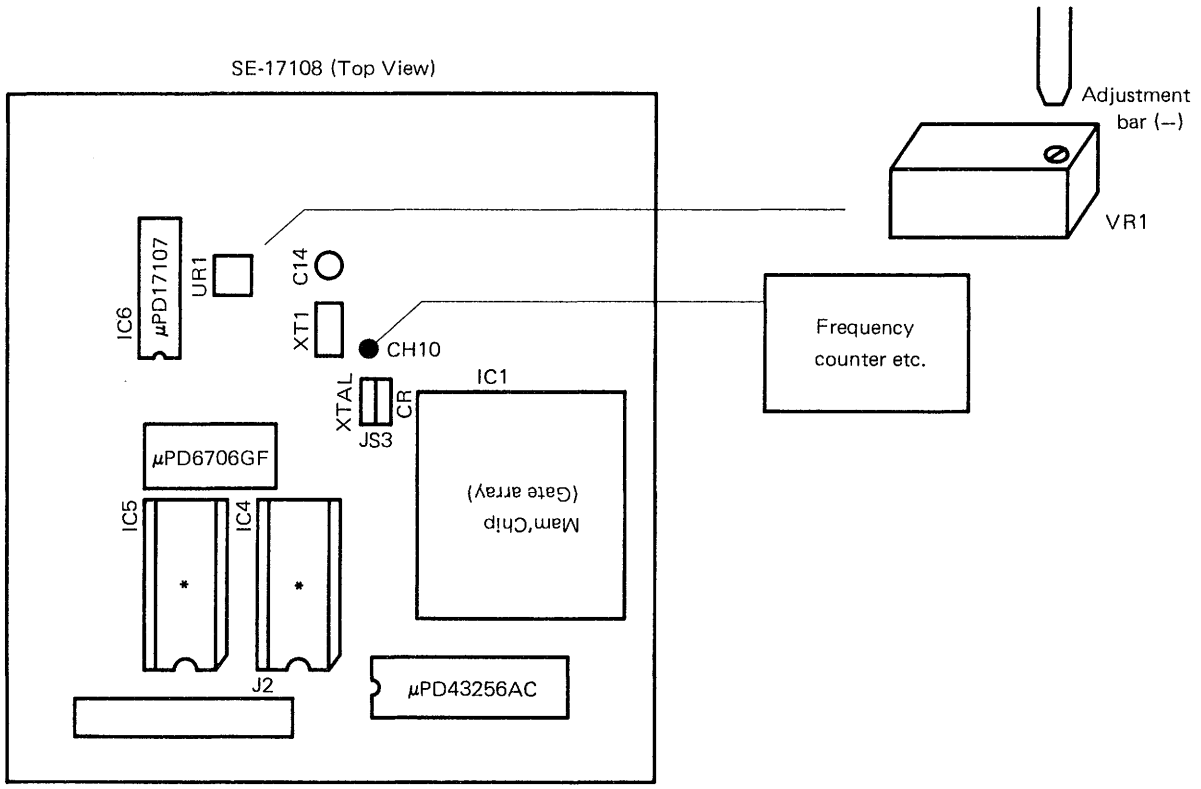
Frequency alteration method

The clock signal using CR oscillating circuit inside μPD17107 (for oscillation use only) is supplied with the main chips. This waveform is output to CH10 as well. When alteration of the oscillating frequency is performed, adjust the variable resister (VR1) watching the waveform output to CH10 using oscilloscopes etc.

As shown in Table 4-5, note that the alterable frequency range differs depending the products to be evaluated.

By setting JS3 to XTAL side, fixed 640 kHz frequency by ceramic oscillating unit is supplied to the main chips in emulation mode.

Fig. 4-9 Adjustment of the oscillating frequency



* Main chips

4.6 SETTINGS OF OTHER SWITCHES ETC.

(1) SWI RESET SWITCH

SW1 is the reset switch for the case of using SE-17108 alone. For detail, refer to **"4.8 HOW TO USE SE-17108 ALONE".**

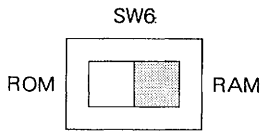
(2) SW5 27C256/27C512 SELECTION SWITCH

SW5 is the selection switch of program memory type for the case of using SE-17108 alone. For detail, refer to **"4.8 HOW TO USE SE-17108 ALONE".**

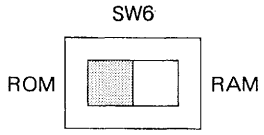
(3) SW6 ROM/RAM SELECTION SLIDE SWITCH

Fig. 4-10 Settings of the ROM/RAM selection slide switch

① In case of using SE-17108 installed with IE-17K



② In case of using SE-17108 alone



shows the selected switch position.

(4) JUMPER SWITCH JS2

Use the SE board with the jumper switch JS2 connected (it is connected as shipped).

(5) LED1 POWER LED

LED1 lights when the power is supplied correctly. For detail, refer to **"4.7 HOW TO USE SE-17108 WITH IE-17K"** and **"4.8 HOW TO USE SE-17108 ALONE".**

4.7 HOW TO USE SE-17108 WITH IE-17K

(1) Mounting a RAM

Mount the RAM (μPD43256AC) as a program memory. The RAM is mounted as shipped.

When using the RAM other than μPD43256AC, mount the RAM that accepts the following condition.

t_{ACC} < Instruction cycle time ÷ 4

t_{ACC}: Address setting → Data output delay time

μPD43256AC-10, 12 and 15 are available when clock frequency is 640 kHz.

(2) Installation and removal of SE-17108 into and from IE-17K

To install SE-17108 into IE-17K, firstly remove the external cover and the inside cover. Fig. 4-11 shows the external view of IE-17K after removing the external cover.

Removing the inside cover, the memory board can be seen. Three connectors are located on the memory board. SE-17108 can be installed into IE-17K by putting three connectors (CN7, 8 and 9) on SE-17108 into three connectors on IE-17K (See Fig. 4-12).

When installing SE-17108, push it down vertically and check if three connectors are connected firmly.

SE-17108 can be removed from IE-17K by lifting it up vertically (See Fig. 4-12).

Fig. 4-11 External View of IE-17K (after removing the external cover)

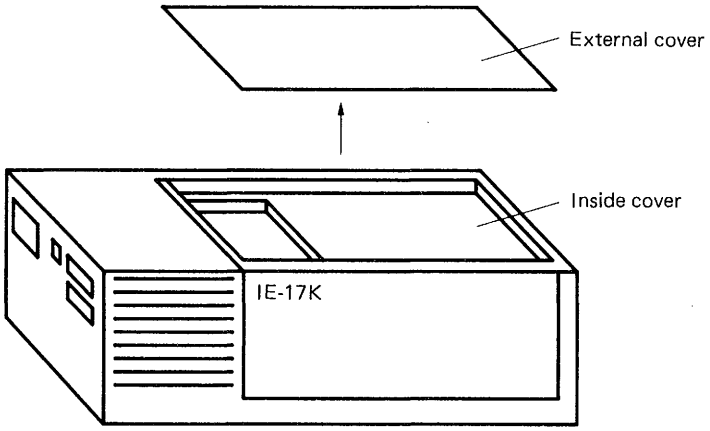
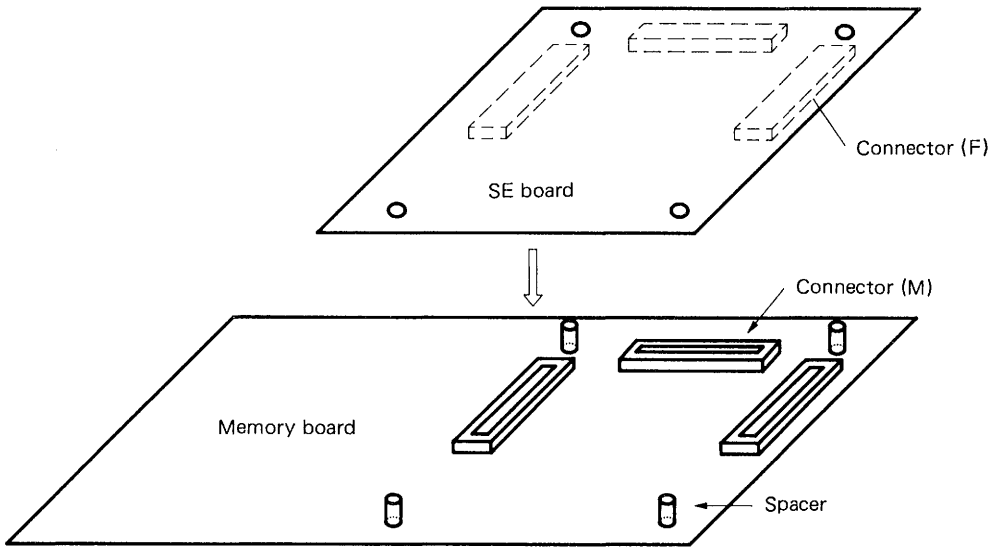


Fig. 4-12 Installation and removal of SE-17108



Next, connect the probe (EP-17104CS) to the connector J2 on SE-17108 in order to connect to the target system.

Finally, install the inside cover and the external cover.

(3) Supplying power

After installing SE-17108, turn on the power of IE-17K before installing the inside cover and the external cover. And check if the LED on SE-17108 lights.

In case the power voltage of target system is other than +5 V, you can apply voltage of your target system to the main chip on the SE board through CN12 or the probe. For further detail refer to **"4.2 HOW TO USE LEVEL CONVERSION CHIP (μPD6706GF)"** and **"4.3 HOW TO SUPPLY THE POWER TO SE BOARD".**

The LED does not light in the following cases.

- No connection of the IE-17K power cord
- Over-current in SE-17108 (about 500 mA and more)
- Incorrect installing of SE-17108

If the LED does not light, turn off the power of IE-17K and take out SE-17108 and then reinstall it. If it does not light yet, the trouble may exist.

(4) Loading HEX files to IE-17K

Connecting IE-17K to the host machine of PC-9800 series and so on, IE-17K can be used to debug the hardware and the software of the target system. With regard to the operation of IE-17K, refer to **"IE-17K USER'S MANUAL".**

The procedure to check if SE-17108 is correctly installed is described below.

By turning on the power or pressing the RESET switch of IE-17K when the power is already supplied, IE-17K is activated and displays a prompter (@@@>) which indicates the command is acceptable. Next, by .LP0 or .LP1 command load the HEX file (.HEX) of the μPD17108 or μPD17108L, program made by the assembler (AS17K) or the HEX file output by .SP0 or .SP1 command. IE-17K does not operate till the HEX file is loaded. If SE-17108 is correctly installed to IE-17K, the following messages are displayed and a prompter is "BRK>".

And then IE-17K becomes the in-circuit emulator for μPD17108 or μPD17108L.

Example When the HEX file for μPD17108 is loaded.

```
OK
D17108
BRK>
```

When the above messages are not displayed, the causes seem as follows.

- In case the loaded HEX file does not correspond with the main chip mounted on SE-17108.
- In case the SE board other than SE-17108 is installed.
- In case the HEX file of other than μPD17108 or μPD17108L is loaded.
- In case the settings of the option switches do not correspond with that declared in the program.
- In case the installation of SE-17108 with IE-17K is incomplete.

(5) Error messages and the corresponding trouble shooting method

IE-17K and SE-17108 has the function to display error messages in case the combination is incorrect between the mounted main chip and the loaded HEX file.

In addition, for the purpose of being able to do more reliable debugging, the SE board number is entered in SE-17108, device numbers are entered in each of μPD17108CS-00X and μPD17108LCS-00X.

The entry numbers, error messages and corresponding trouble shooting methods are described below.

Table 4-6 The device number and the SE board number

Devices to be evaluated	Device number	SE board number
μPD17108	12	12
μPD17108L	28	

Note 1. The device number is the entry number that each main chip has.

2. SE board number is the entry number that the SE board has. In SE-17108, number 12 is entered.

3. The device number and the SE board number are embedded in the data in the HEX file to be loaded. They are used when the HEX file is loaded for the purpose of checking the development environment by IE-17K.
For instance, in the HEX file assembled by using AS17108, the device number 12 and the SE board number 12 are embedded.

(a) The error message in case the main chip mounted on SE-17108 and the loaded HEX file does not match and the trouble shooting method.

Error message example

? IDI INVALID DEVICE ID NUMBER [XX-ΔΔ]

XX indicates the device number of the actually mounted main chip and ΔΔ is the device number embedded in the loaded HEX file.
When this error message is displayed, reconfirm the main chip on the SE board. In case incorrect main chip is mounted, turn off the power of IE-17K, exchange the main chip and reload the HEX file anew. In case the incorrect device file is chosen mistakenly when assembling, assemble the source file again using correct device file and reload this HEX file.

(b) Error message when SE board other than SE-17108 is installed and the HEX file of the device other than μPD17108 or μPD17108L is loaded, and the trouble shooting method.

Error message example

? ISE INVALID SE BOARD NUMBER [□□-▽▽]

□□ indicates the actually installed SE board and ▽▽ indicates the SE board number embedded in the loaded HEX file. The SE board number □□ is 12 for SE-17108, the SE board number ▽▽ is 12 in case the HEX file is loaded of μPD17108 and μPD17108L.
When this error message is displayed, reconfirm the SE board and the HEX file that you have loaded.

(c) The error message in case that the settings of option switches differ from the mask option information declared in the program and the trouble shooting method.

Error message example

? IOS INVALID OPTION SWITCH AT XXXX

XXX indicates the switch code of the option switch that does not agree with the setting declared by the program.
With regard to the trouble shooting when this error message is displayed, refer to **"4.4 OPTION SWITCHES".**

(d) No response from IE-17K

① Incomplete installation of SE-17108 can be thought. Install SE-17108 firmly and correctly again.
② Incorrect connection of the probe (EP-17104CS) between the target system and the SE board. Confirm all connecting points again.
③ It can be thought that the reset circuit in your target system is not functioning correctly. At this time the reset state in the SE board is unstable in some cases so IE-17K is unable to respond.
For the purpose of check if the state is the one mentioned above, there is a way that you firstly set the mask option switch 1S-5 ($\overline{\text{RESET}}$) ON and activate IE-17K again. At this time the above mentioned error message ?IOS INVALID OPTION SWITCH AT XXXX can be displayed but you can load the HEX file.
When the state is found to be the one mentioned above, correct your target system or your source program so all error messages will not be displayed without delay.

(6) CAUTION

- When turning on the power, turn on the power to IE-17K and then the target system.
- Never use the reset switch on SE-17108. When resetting IE-17K, use the reset switch on IE-17K.

4.8 HOW TO USE SE-17108 ALONE

(1) Mounting a ROM

When using SE-17108 alone, mount the PROM (μPD27C256AD or μPD27C512D) as a program memory.
Mount the PROM that accepts the following condition.

ROM size

256 K bit: μPD27C256AD-12, -15, -20 or their substitutes
512 K bit: μPD27C512D-12, -15, -20 or their substitutes

It is required to write whichever output file as below into the PROM as a program.

- PROM file (.PRO) for μPD17108 or μPD17108L made by the assembler (AS17K) for 17K series.
  Do not write the HEX file (.HEX) made by AS17K that is output to IE-17K into the PROM.
- File for the PROM made by .XS0 or .XS1 command of IE-17K.

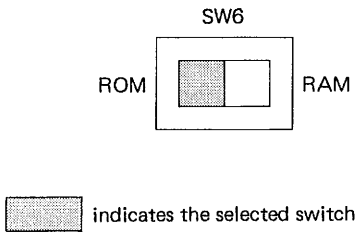
[Note for PROM writing]

The last program memory address of the μPD17108 and μPD17108L is 1FFH.

(2) Settings of ROM/RAM selection slide switch

Set the ROM/RAM selection slide switch SW6 to the ROM side as shown in Fig. 4-13.

Fig. 4-13 Settings of ROM/RAM selection switch

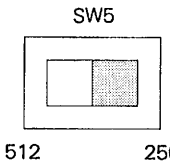


(3) Settings of 27C256/27C512 selection slide switch (SW5)

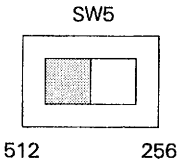
Set 27C256/27C512 selection switch (SW5) according to which ROM is to be used as a program memory μPD27C256AD or μPD27C512D as shown in Fig. 4-14.

Fig. 4-14 Settings of 27C256AD/27C512D selection switch SW5

(a) When using μPD27C256AD



(b) When using μPD27C512D



indicates the selected switch position.

(4) Supplying the power

Supply 5 V ±5 % (V_{CC}) through CN11 with SE-17108 from the external power supply in any case.

In case that the power voltage of your target system is that of other than +5 V, it is possible to apply the power voltage of the target system to the main chip on the SE board through CN12 or the probe. For detail, refer **"4.2 HOW TO USE LEVEL CONVERSION CHIP (μPD6706GF)"** and **"4.3 HOW TO SUPPLY THE POWER TO SE BOARD"**.

When the power is supplied normally, the LED on SE-17108 lights.

The LED does not light in the following cases.

- No supplying power to SE-17108
- Over-current in SE-17108 (approximately 500 mA or more)

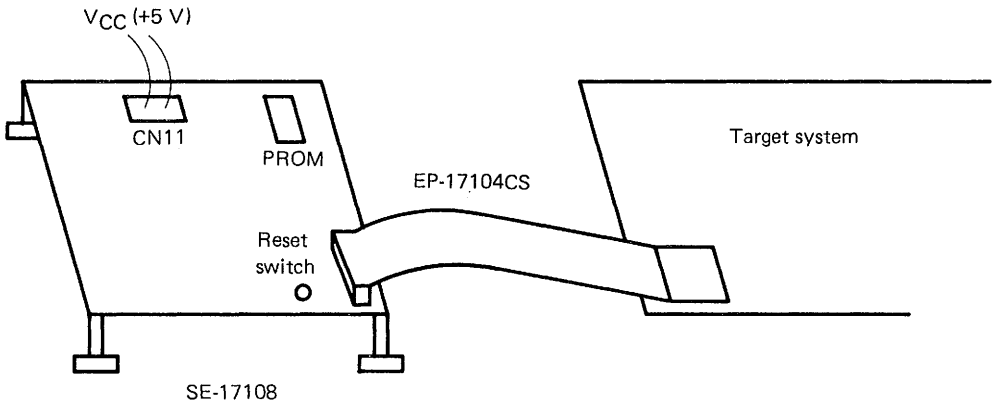
(5) Program executing

Connect the target system to SE-17108 as shown in Fig. 4-15.

Starting to supply the power to target system, the power is supplied to SE-17108 and the POWER-ON-RESET procedure is activated and the program written in the PROM is executed from the location 0.

By pressing the RESET switch on SE-17108, SE-17108 is reset forcely. As same as the POWER-ON-RESET procedure, the program written in the PROM is executed from the location 0.

Fig. 4-15 Example of connection of SE-17108 when using it alone



4.9 MONITOR PINS

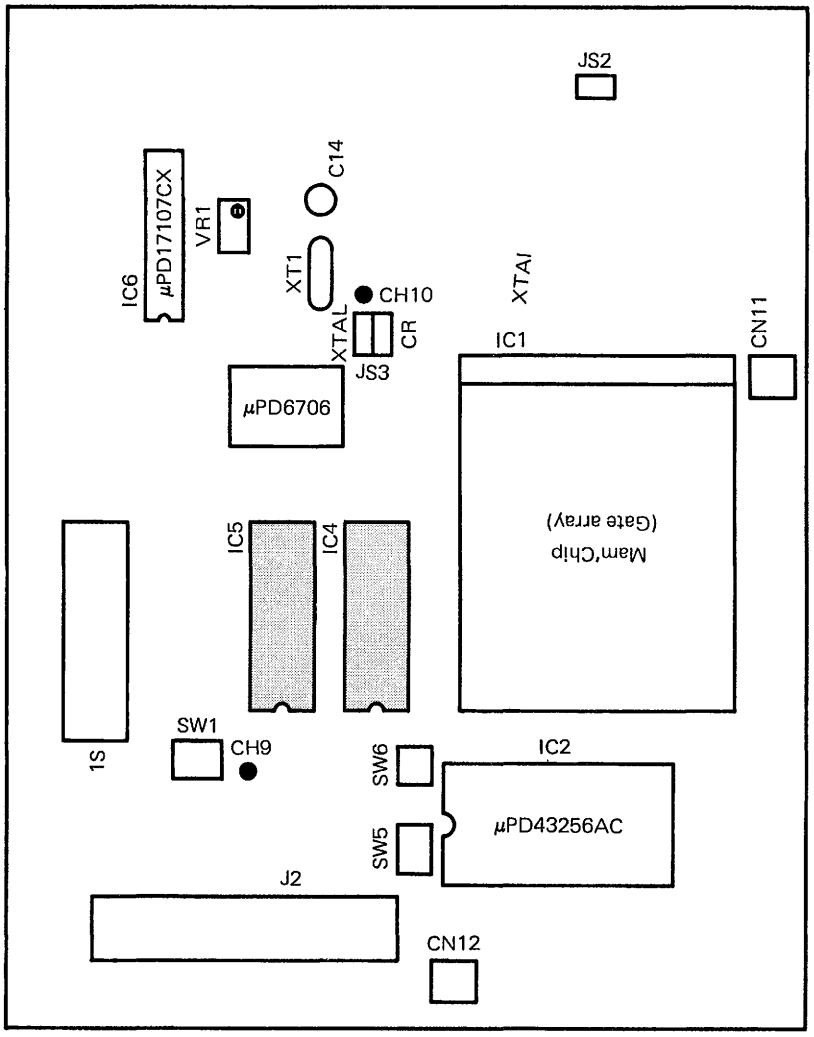
Monitor pins are provided on SE-17108 for the purpose of investigating the state of pins of the main chip. Monitor pin names and their functions are described in Table 4-7 and monitor pin location is shown in Fig. 4-16.

Table 4-7 Monitor pin names and their functions

Monitor pin name	Function
CH9	for monitoring $\overline{\text{RESET}}$ pin
CH10	for monitoring oscillating frequency of the main chip

Fig. 4-16 Monitor pins location

SE-17108 (Top View)



Main chips

4.10 SETTINGS OF JUMPER SWITCHES, SLIDE SWITCHES ETC.

When SE-17108 is shipped, the settings of IC2 (the program memory), the jumper switches, the slide switches, option switches and the variable resister are as below.

(1) Jumper switches and slide switches etc.

They are set as illustrated in Table 4-8. Confirm the setting conditions before using the system.

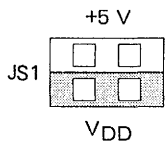
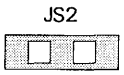
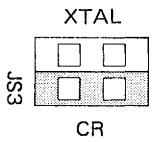
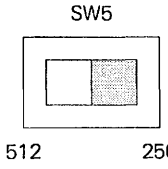
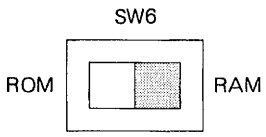
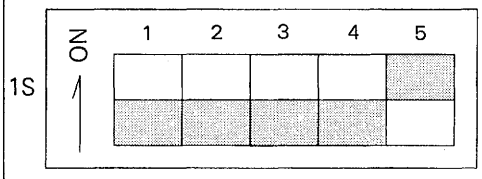
(2) Variable resister (VR1)

The variable resister VR1 is set to oscillate 1 MHz ±20 ppm as shiped.

(3) Program memory (IC2)

A RAM (μPD43256AC) is mounted.

Table 4-8 Settings of jumper switches and slide switches etc.

Switch No.	Jumper switches, slide switches	Setting conditions		Position
JS1		Refer to **"4.2 HOW TO USE LEVEL CONVERSION CHIP (μPD6706GF)"** and **"4.3 HOW TO SUPPLY THE POWER TO SE BOARD".**		
JS2		It is connected as shipped.		Do not remove.
JS3		When using the clock of 50 kHz to 1.2 MHz by CR oscillation.		CR side
		When using the clock of 640 kHz by ceramic oscillating unit.		XTAL side
SW5		When installed with IE-17K for evaluation		Either side of 256 or 512 is usable.
		When SE-17108 is used alone for evaluation	Using 27C256	256 side
			Using 27C512	512 side
SW6		When installed with IE-17K for evaluation.		RAM side
		When SE-17108 is used alone for evaluation. Note) Set SW5 as well.		ROM side
1S		Refer to **"4.4 OPTION SWITCHES".**		

is the settings as shipped.

CHAPTER 5 CONNECTOR PIN TABLES

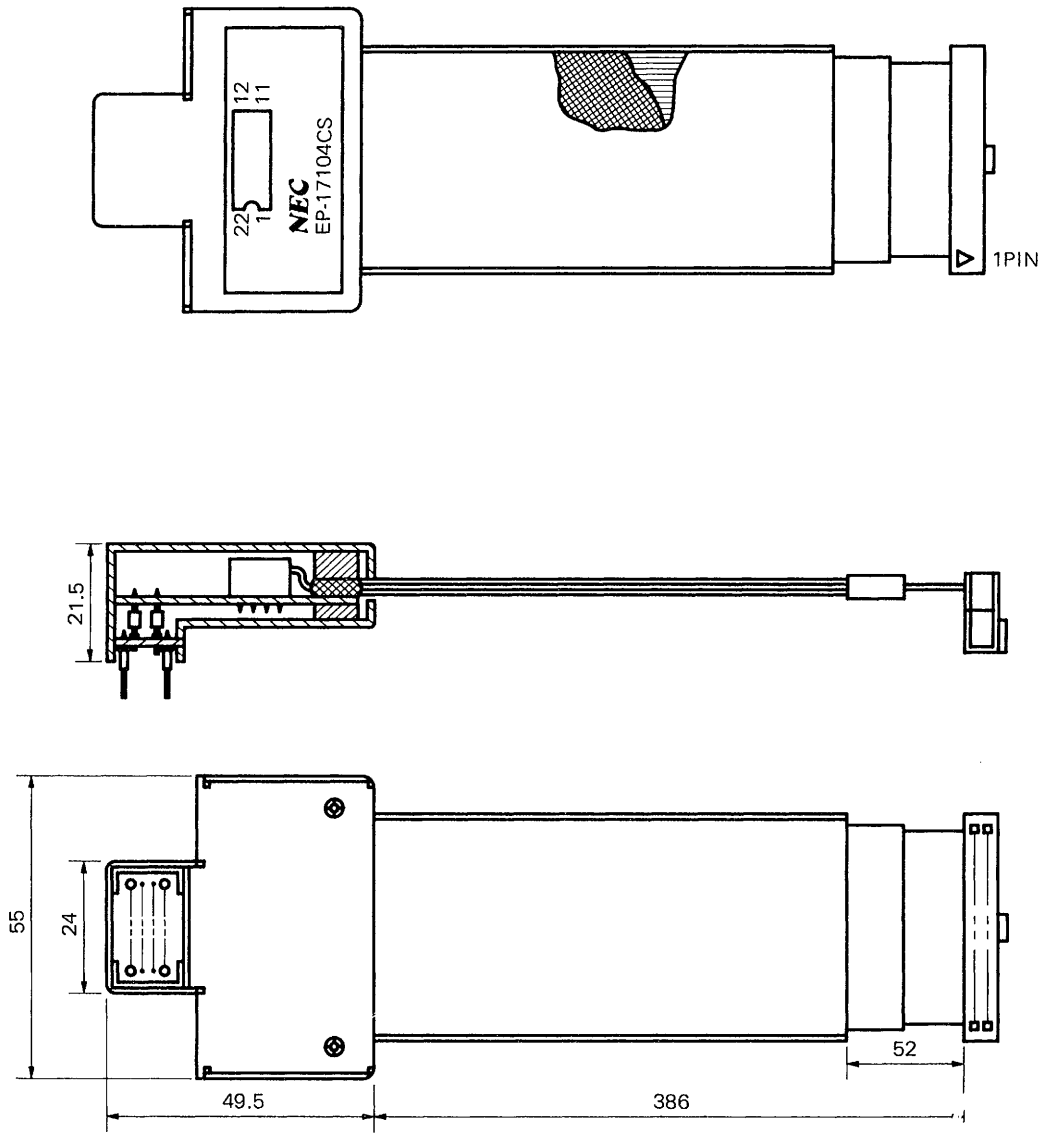
5.1 CONNECTOR (J2) FOR PROBE

J2 Pin No.	Pin name (Pin No. of IC)	J2 Pin No.	Pin name (Pin No. of IC)	J2 Pin No.	Pin name (Pin No. of IC)
1	GND	21	GND	41	GND
2	V_{DD} (22)	22	$P0D_2$ (17)	42	CLI
3	GND	23	GND	43	GND
4	$P0A_2$ (1)	24	$P0C_3$ (6)	44	GND
5	GND	25	GND	45	GND
6	$P0A_2$ (21)	26	$P0D_1$ (16)	46	GND
7	GND	27	GND	47	GND
8	N.C.	28	$P0B_0$ (7)	48	GND
9	GND	29	GND	49	GND
10	$P0A_1$ (20)	30	$P0D_0$ (15)	50	GND
11	GND	31	GND	51	GND
12	$P0C_0$ (3)	32	$P0B_1$ (8)	52	GND
13	GND	33	GND	53	GND
14	$P0A_0$ (19)	34	$\overline{RESET}$ (14)	54	GND
15	GND	35	GND	55	GND
16	$P0C_1$ (4)	36	$P0B_2$ (9)	56	GND
17	GND	37	GND	57	GND
18	$P0D_3$ (18)	38	CLO	58	GND
19	GND	39	GND	59	GND
20	$P0C_2$ (5)	40	$P0B_3$ (10)	60	GND

CHAPTER 6 EXTERNAL FORM OF PROBE (OPTION)

Model name: EP-17104CS

Fig. 6-1 External form of probe



Phase-out/Discontinued

NEC