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April 1st, 2010
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RENESAS

USER'S MANUAL

Phase-out/Discontinued

SE-17134

SYSTEM EVALUATION BOARD

TARGET DEVICES

μPD17134A
μPD17135A
μPD17136A
μPD17137A

Document No. U10777EJ3V0UM00 (3rd edition)
Date Published January 1996 P
Printed in Japan

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[MEMO]

CHAPTER 1 GENERAL

The SE-17134 is a system evaluation board (SE board) for 4-bit single-chip microcontroller the μPD17134A subseries. The models on which evaluation can be performed (target devices) are as follows:

- μPD17134A
- μPD17135A
- μPD17136A
- μPD17137A

The SE-17134 can be used mounted in an IE-17K or IE-17K-ET in-circuit emulator for use with the entire 17K series, or as a standalone unit.

As an actual chip (referred to below as “real chip”) is used for emulation, the functions of the SE-17134 are identical to those of the target device.

[SE-17134 real chips]
μPD17134ACT-00×
μPD17135ACT-00×
μPD17136ACT-00×
μPD17137ACT-00×

A separately available emulation probe is used when connecting the SE-17134 to the target system.

[Emulation probes] EP-17K28CT (for 28-pin shrink DIP)
EP-17K28GT (for 28-pin SOP)

[Conversion adapter] EV-9500GT-28 (used connected to EP-17K28GT)

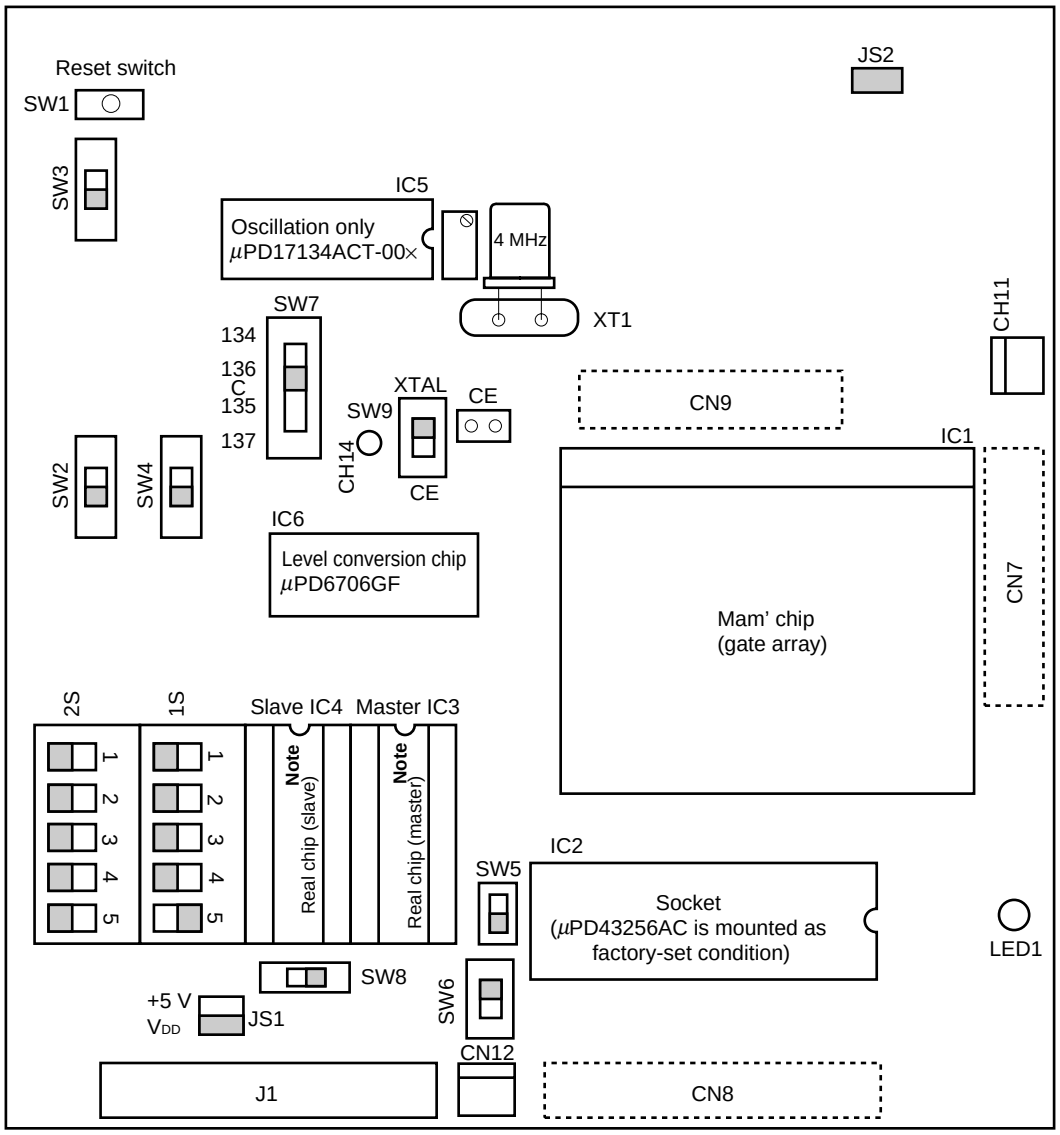
Phase-out/Discontinued

[MEMO]

CHAPTER 2 SPECIFICATIONS

Product Name	SE-17134
Program Memory	• When mounted in in-circuit emulator, the μPD43256AC mounted in the IC2 socket on the SE-17134 is used. • When the SE-17134 is used as a standalone unit, the program is written in the μPD27C256AD or μPD27C512D, and mounted in the IC2 socket on the SE-17134.
Data Memory	The memory incorporated in the real chip is used (112 × 4 bits).
Instruction Cycle	2 μs MIN. (8 MHz ceramic oscillation) 8 μs MIN. (2 MHz RC oscillation) 8 μs (2 MHz RC oscillation, factory setting)
Operating Frequency	4 MHz to 8 MHz with 4.5 to 5.5 V supply voltage (ceramic oscillation) 2 MHz to 4 MHz with 2.7 to 5.5 V supply voltage (ceramic oscillation) 400 kHz to 2 MHz with 2.7 to 5.5 V supply voltage (RC oscillation, factory setting)
Operating Temperature	+10 to +40 °C
Storage Temperature	–10 to +50 °C (no condensation)
Power Supply	• Real chip power supply (V_{DD}): +2.7 to +5.5 V Supplied from the emulation probe (EP-17K28CT or EP-17K28GT) or the CN12 pin. • SE board power supply (V_{CC}): +5 V ±5 % When mounted in an in-circuit emulator, power is supplied from the in-circuit emulator. When the SE-17134 is used as a standalone unit, power is supplied from the CN11 pin.
Consumption Current	150 mA (unloaded, using μPD27C256AD as program memory)
External Dimensions	150 × 148 × 35 mm

Figure 2-1. SE-17134 Parts Layout Diagram

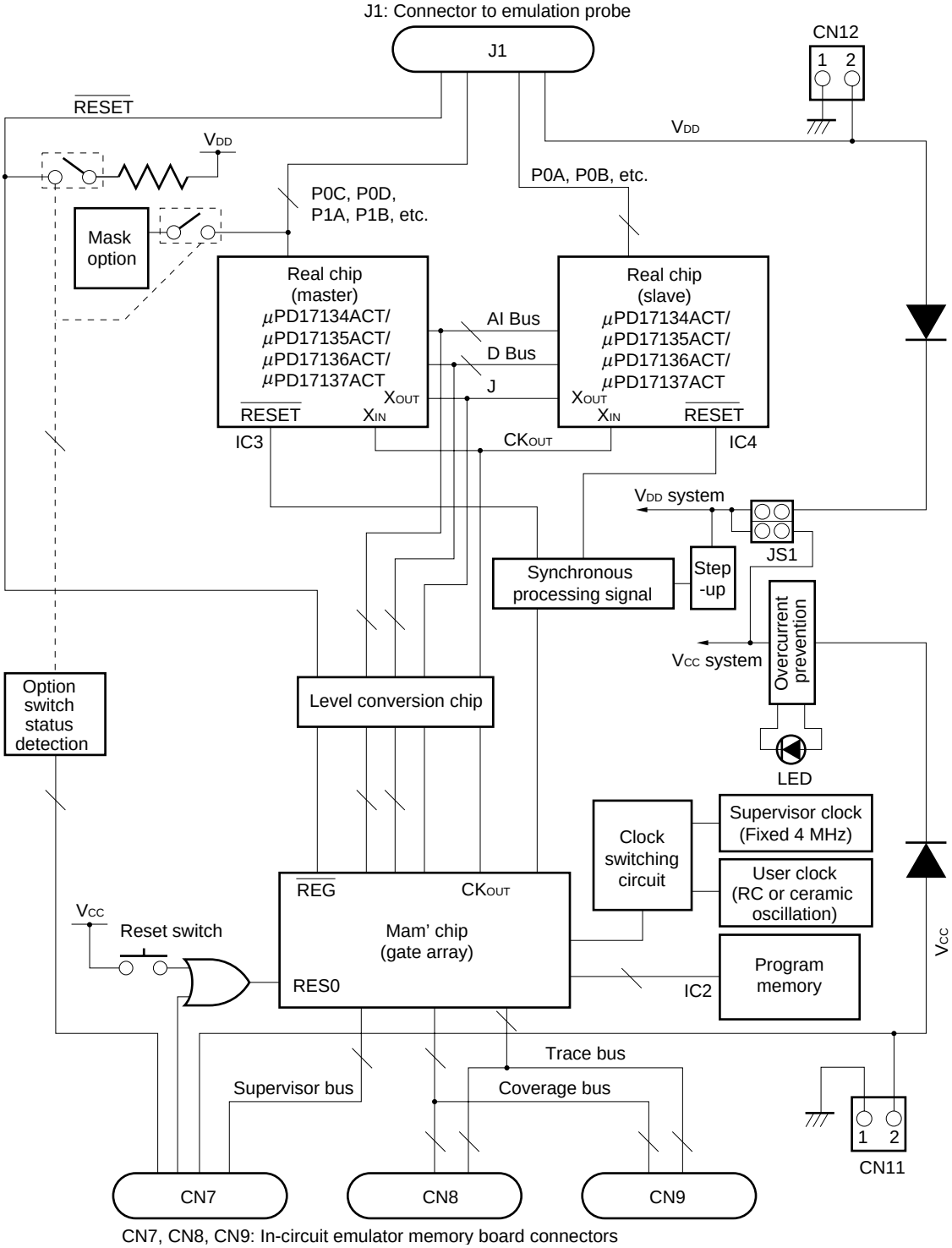


Remark Parts shown by dotted lines are mounted on the rear side.

Note When evaluating the μPD17134A, a μPD17134ACT-00× is mounted.
When evaluating the μPD17135A, a μPD17135ACT-00× is mounted.
When evaluating the μPD17136A, a μPD17136ACT-00× is mounted.
When evaluating the μPD17137A, a μPD17137ACT-00× is mounted.
When the unit is shipped, a μPD17136ACT-00× is mounted.

CHAPTER 3 BLOCK DIAGRAM

Figure 3-1. SE-17134 Block Diagram



[MEMO]

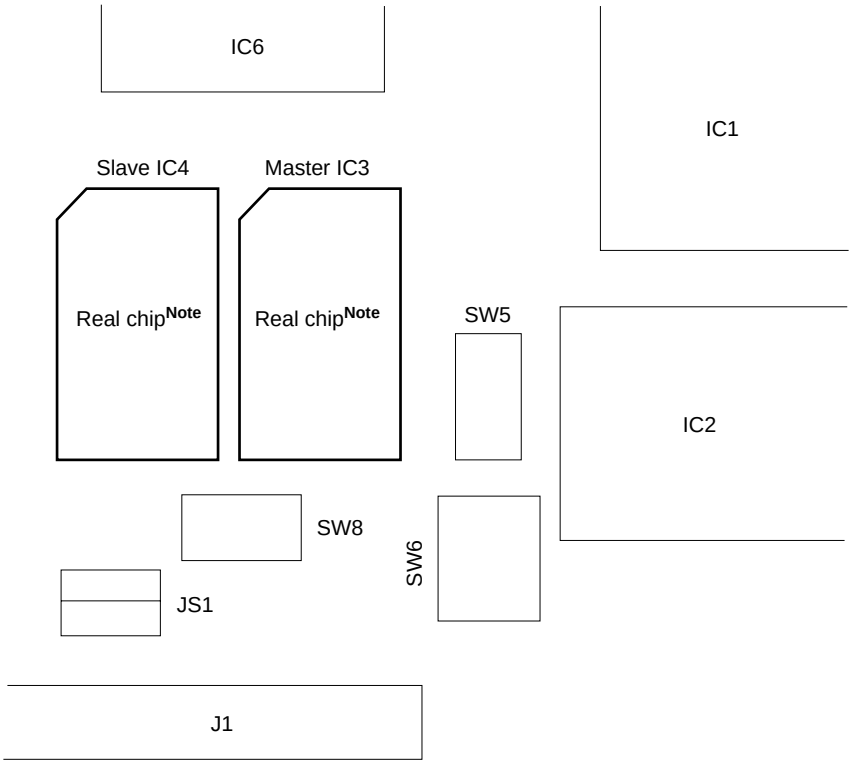
CHAPTER 4 SETTING OF EACH PART

4.1 Real Chip Mounting

When setting the SE-17134 as an evaluation board for the μPD17134A, 17135A, 17136A, or 17137A, two real chips with the same type name as the product to be evaluated must be mounted in the IC3 and IC4 sockets on the SE board.

When the SE-17134 is shipped, the μPD17136A is mounted.

Figure 4-1. Example of Real Chip Mounting



Note The following products are used as the real chips.

μPD17134ACT-00×
μPD17135ACT-00×
μPD17136ACT-00×
μPD17137ACT-00×

Caution When replacing the real chips, ensure that power is off, then insert the chips making sure that pin 1 is aligned with the angled corner of the socket.

4.2 Device Selection Switch (SW7)

After mounting the real chips, the device selection switch (SW7) is set to select the device to be emulated (target device).

Figure 4-2. Device Selection Switch

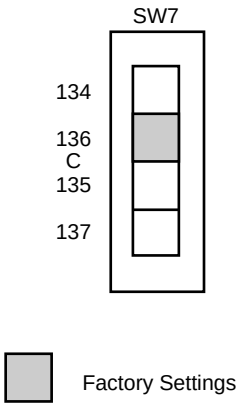


Table 4-1. Device Selection Switch Settings

Setting of SW7 / Item	134	135	136	137
Selected device	μPD17134A	μPD17135A	μPD17136A	μPD17137A
Program memory capacity	1 K steps × 16 bits		2 K steps × 16 bits	
System clock	RC oscillation	Ceramic oscillation	RC oscillation	Ceramic oscillation

4.3 Mounting ROM/RAM

Mount the ROM or RAM on the IC2 socket.
When mounting the SE board to an in-circuit emulator, use RAM (μPD43256A).
When the SE board alone is used, use ROM (μPD27C256A or μPD27C512).
As a factory-set condition, RAM (μPD43256AC) is mounted.

Figure 4-3. Example of Mounting ROM/RAM

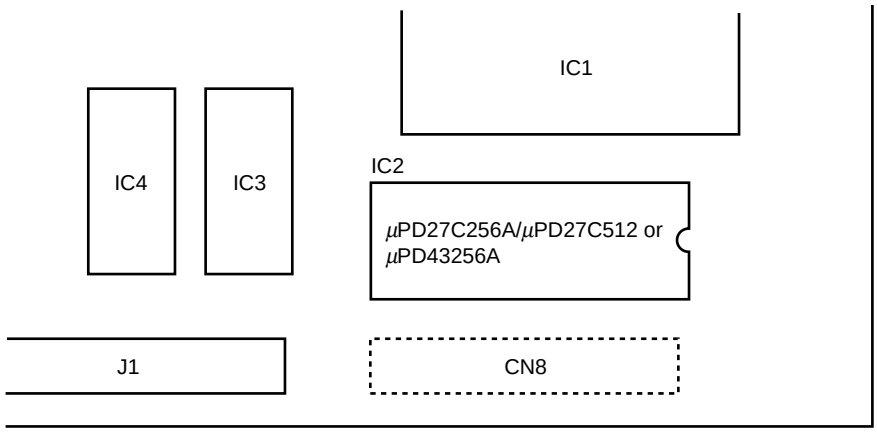


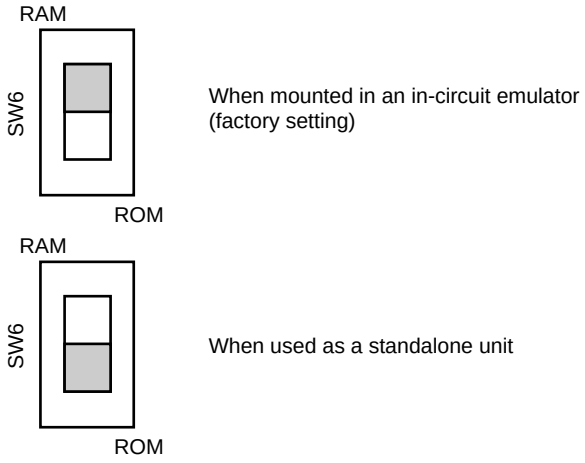
Table 4-2. Usable ROM/RAM

Item	Part Number
ROM	μPD27C256AD-12, -15, -20, or equivalent μPD27C512D-12, -15, -20, or equivalent
RAM	μPD43256AC-10, -12, -15, or equivalent

4.4 ROM/RAM Changeover Switch (SW6)

Switch used to select whether ROM or RAM is used as program memory.
When the SE board is mounted in an in-circuit emulator, this switch is set to the RAM side.
When the SE board is used as a standalone unit, this switch is set to the ROM side.

Figure 4-4. ROM/RAM Changeover Switch Setting

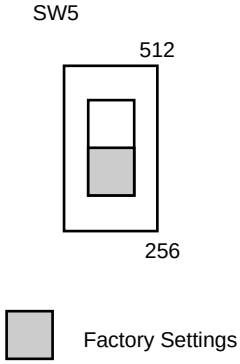


4.5 PROM Size Changeover Switch (SW5)

This switch is set according to the capacity of the PROM mounted on the socket (IC2) on the SE board when the SE board alone is used.

When the SE board is mounted to an in-circuit emulator, this switch can be set in any way because RAM is mounted on the socket (IC2).

Figure 4-5. Setting of ROM Size Changeover Switch



4.6 Option Switches (1S, 2S)

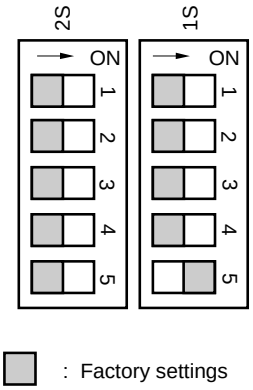
Mask options can be set bit-wise for the following pins of the μPD17134A, 17135A, 17136A and 17137A.

- $P0D_0$-$P0D_3$, $P1A_0$-$P1A_3$, $P1B_0$, $\overline{RESET}$

The SE-17134 is provided with option switches (1S, 2S) for pseudo-reproduction of mask options written in the source program.

The option switches are as shown in the figure below, and should be set as shown in Table 4-3.

Figure 4-6. Option Switches



: Factory settings

Table 4-3. Option Switch Setting

Switch No.	Pin Name	ON	OFF
1S-1	$P1A_0$	Pulled up	Not pulled up
1S-2	$P1A_1$	Pulled up	Not pulled up
1S-3	$P1A_2$	Pulled up	Not pulled up
1S-4	$P1A_3$	Pulled up	Not pulled up
1S-5	$\overline{RESET}$	Pulled up	Not pulled up
2S-1	$P0D_0$	Pulled up	Not pulled up
2S-2	$P0D_1$	Pulled up	Not pulled up
2S-3	$P0D_2$	Pulled up	Not pulled up
2S-4	$P0D_3$	Pulled up	Not pulled up
2S-5	$P1B_0$	Pulled up	Not pulled up

Caution When the SE board is used without being connected to the target system, the $\overline{RESET}$ pin pull-up option switch must be set to the ON position. If this switch is not set to the ON position, the SE board reset function will be unstable, and may not operate as expected.

4.7 Other Switches

(1) Reset switch (SW1)

The reset switch used when the SE board is used as a standalone unit.

See **5.2 USING THE SE BOARD AS A STANDALONE UNIT** for details.

(2) V_{ADC} select switch (SW8)

This switch selects whether A/D converter power (V_{ADC}) is supplied from an external source or V_{CC} (+5 V) of the SE board.

Figure 4-7. V_{ADC} Select Switch

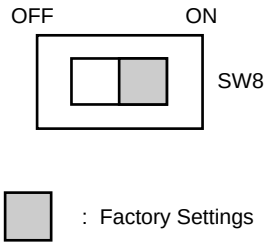
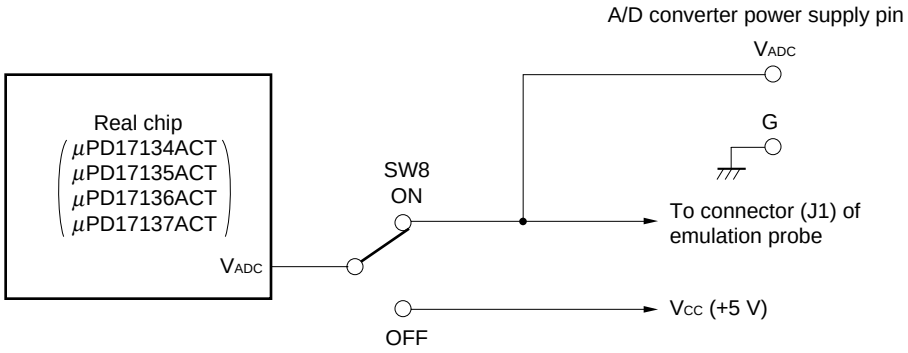


Table 4-4. Setting of V_{ADC} Select Switch

SW8	Supply of V_{ADC}
ON	Supplied from emulation probe or V_{ADC} pin provided near SW8
OFF	Supplied from V_{CC} (+5 V) of SE board. However, this setting can be made only when $V_{DD} = V_{CC}$ = +5 V.

Figure 4-8. Peripheral Circuit of SW8



(3) Jumper switch (JS2)

The jumper switch is connected as a factory-set condition. Do not change this setting.

(4) Level conversion chip select switches (SW2, SW3, SW4)

These switches are set in accordance with the supply voltage of the target system of the real chip. For the details of the level conversion chip, refer to **4.9 Level Conversion Chip**.

Figure 4-9. Level Conversion Chip Select Switch

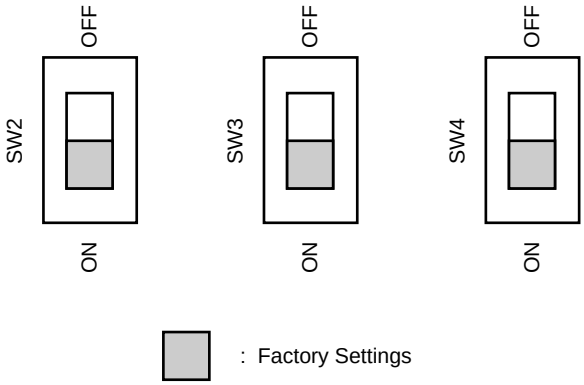


Table 4-5. Setting of Level Conversion Chip Select Switch

Supply Voltage of Target System (V_{DD})	SW2, SW3, SW4
V_{DD} = V_{CC} (supply voltage of SE board) = +5 V	All OFF
Others (V_{DD} = +2.7 to +5.5 V)	All ON

4.8 Operating Frequency

The operating frequency of the SE board equivalent to the system clock can be changed to suit the target system.

Table 4-6. Factory-Set Conditions and Possible Operating Frequency Range

Setting of SW7	Factory-Set Condition	Possible Operating Frequency Range
134	RC oscillation	400 kHz to 2 MHz
136	2 MHz	
135	Crystal oscillation on SE board	2 to 8 MHz
137	4 MHz	

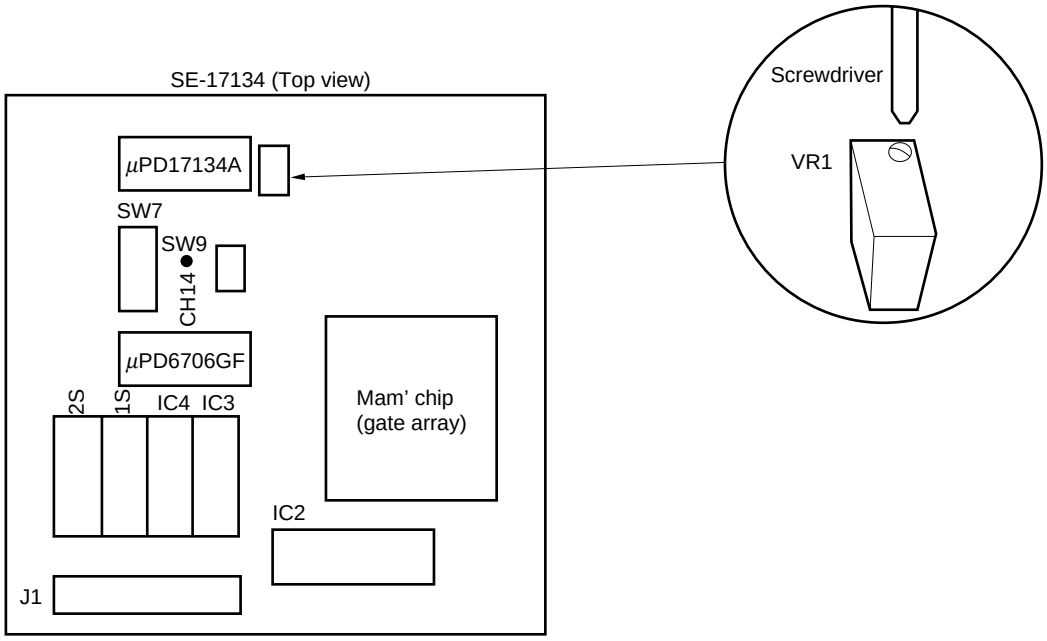
Caution Do not disconnect the crystal resonator (XT1, 4 MHz) on the SE board, regardless of the setting of the operating frequency.

(1) Changing operating frequency when evaluating μPD17134A or μPD17136A

When the device select switch (SW7) is set to “134” or “136”, the clock signal generated by the RC oscillation circuit of the μPD17134A (dedicated to oscillation) on the SE board is supplied to the real chip. The output waveform of this clock is also output to CH14.

To change the operating frequency, therefore, adjust the variable resistor (VR1) while observing the waveform output to CH14 with an oscilloscope.

Figure 4-10. Adjusting Operating Frequency of RC Oscillation Circuit



(2) Changing operating frequency when evaluating μPD17135A or μPD17137A

When the device select switch (SW7) is set to “135” or “137”, the fixed 4-MHz frequency supplied from XTAL (XT1) or the frequency signal generated by the ceramic resonator connected to the CE pin can be selected as the clock to be supplied to the real chip.

To change the operating frequency, follow the steps below.

<1> Solder a ceramic resonator of the desired frequency to the CE pin as shown in Figure 4-11.

<2> Set the resonator select switch (SW9) to the CE side.

Because the oscillation circuit shown in Figure 4-12 is provided around the CE pin, oscillation is generated just by connecting a resonator.

Figure 4-11. Connecting Ceramic Resonator to CE Pin

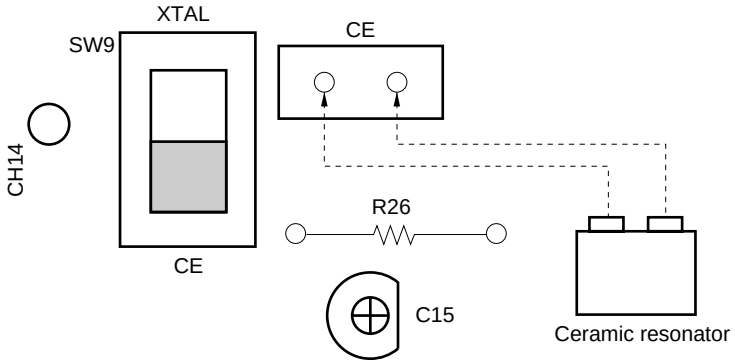
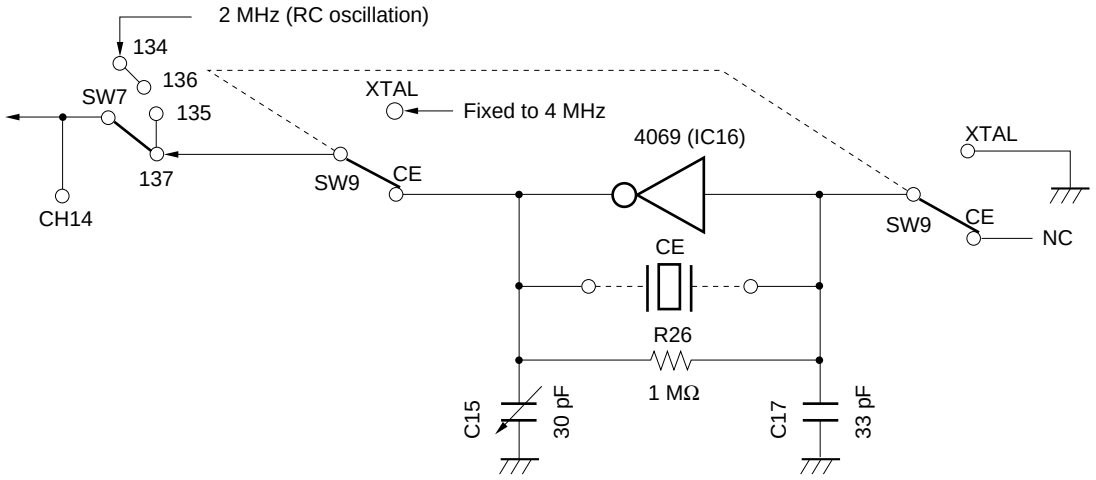


Figure 4-12. CE Pin Peripheral Circuit



4.9 Level Conversion Chip

The level conversion chip is an IC used to convert and unify the voltage levels between logic circuits that have different signal voltage levels, to enable signals to be exchanged.

Since SE-17134 has a level conversion chip (μPD6706GF) mounted on the board, signal exchange can be performed even when the target system supply voltage (V_{DD} = +2.7 to +5.5 V) and the SE board supply voltage (V_{CC} = +5 V) are different.

Remark Since parts of the SE board other than the real chips operate on V_{CC}, the real chips can be operated on either V_{CC} or V_{DD}.

4.10 SE Board Power Supplies

The SE board uses two power supplies, V_{CC} and V_{DD}. V_{CC} is the power supply for the SE board (except the real chips), and V_{DD} is the power supply for the real chips.

+5 V is supplied to V_{CC}, and V_{DD} is supplied with a voltage in the real chip operating range (+2.7 to +5.5 V) according to the target system.

A jumper switch (JS1) setting also allows V_{DD} to be supplied internally from V_{CC}.

(1) Real chip power supply selection jumper switch (JS1)

This switch is used to select whether the real chip power supply (V_{DD}) is provided from the emulation probe or connector (CN12), or is provided internally from the SE board power supply (V_{CC}) (only when V_{DD} = V_{CC} = +5 V).

Remark When the target system power supply is +5 V, V_{DD} wiring can be eliminated by setting JS1 to the internal supply side (+5 V side).

(2) Power supply pins

There are three power supply locations on the SE board:

- Connector CN11
- Connector CN12
- Emulation probe (V_{DD} pin, GND pin)

The power supply locations differ according to the evaluation environment as shown in Table 4-7.

Table 4-7. Power Supply Locations

Evaluation Environment / JS1/Power Supply Pin	Target System Power Supply Voltage (V_{DD})			
	When Mounted in In-Circuit Emulator		When Used as Standalone SE Board	
	+5 V ±5 %	+2.7 to +5.5 V	+5 V ±5 %	+2.7 to +5.5 V
JS1	Set to +5 V side (internal supply)	Set to V_{DD} side	Set to +5 V side (internal supply)	Set to V_{DD} side
CN11 (V_{CC})	Not connected	Not connected	Connected (V_{CC} supplied)	Connected (V_{CC} supplied)
CN12 (V_{DD})	Not connected	Power supplied from either CN12 or emulation probe (V_{DD} supplied)	Not connected	Power supplied from either CN12 or emulation probe (V_{DD} supplied)
Emulation probe (V_{DD})	Power supply not needed		Power supply not needed	

Remark On CN11 and CN12, pin 1 is GND and pin 2 is the power supply.

Caution When the target system is not connected, JS1 should be set to the +5 V side.

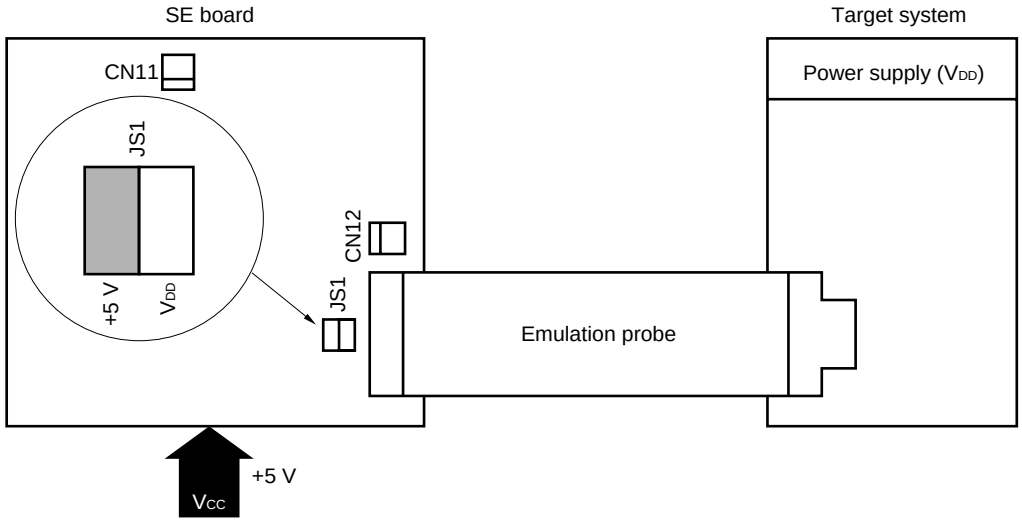
(3) Actual examples

(a) When mounted in in-circuit emulator

(i) When mounted in in-circuit emulator, and used with $V_{DD} = V_{CC} = +5$ V

JS1 is set to the +5 V side. V_{CC} and V_{DD} are supplied from the in-circuit emulator and power need not to be supplied from the CN11 and CN12 pins or the emulation probe.

Figure 4-13. Power Supply Method when SE Board is Mounted in In-Circuit Emulator with $V_{DD} = V_{CC} = +5$ V



(ii) When mounted in in-circuit emulator, and used with $V_{DD} \neq V_{CC}$, V_{CC} = +5 V

JS1 is set to the V_{DD} side. V_{CC} is supplied from the in-circuit emulator, and V_{DD} is supplied from the CN12 pin or the emulation probe.

Figure 4-14. Method of Supplying V_{DD} from CN12 when SE Board is Mounted in In-Circuit Emulator

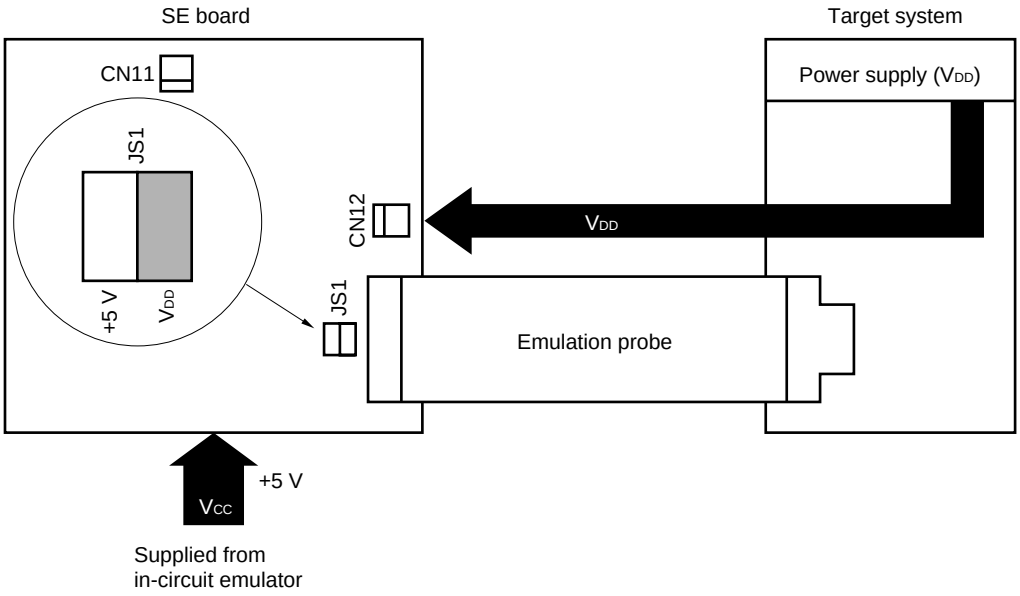
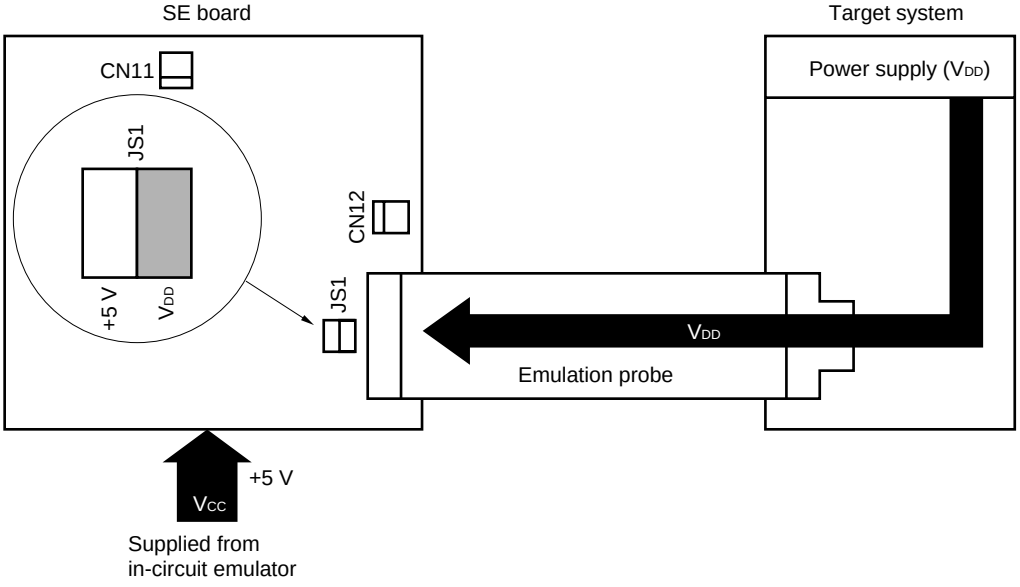


Figure 4-15. Method of Supplying V_{DD} from Emulation Probe when SE Board is Mounted in In-Circuit Emulator

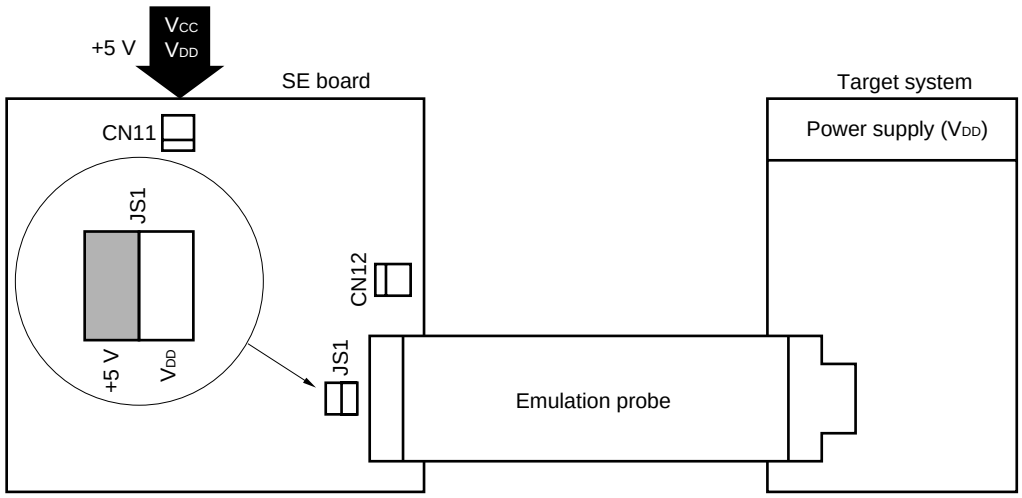


(b) When used as standalone SE board

(i) When used as standalone SE board, with V_{DD} = V_{CC} = +5 V

JS1 is set to the +5 V side. V_{CC} and V_{DD} are supplied from CN11.

Figure 4-16. Power Supply Method when Used as Standalone SE Board with V_{DD} = V_{CC} = +5 V



(ii) When used as standalone SE board, with $V_{DD} \neq V_{CC}$, V_{CC} = +5 V

JS1 is set to the V_{DD} side. V_{CC} is supplied from CN11, and V_{DD} is supplied from the CN12 pin or the emulation probe.

Figure 4-17. Method of Supplying V_{DD} from CN12 when SE Board is Used as Standalone Unit

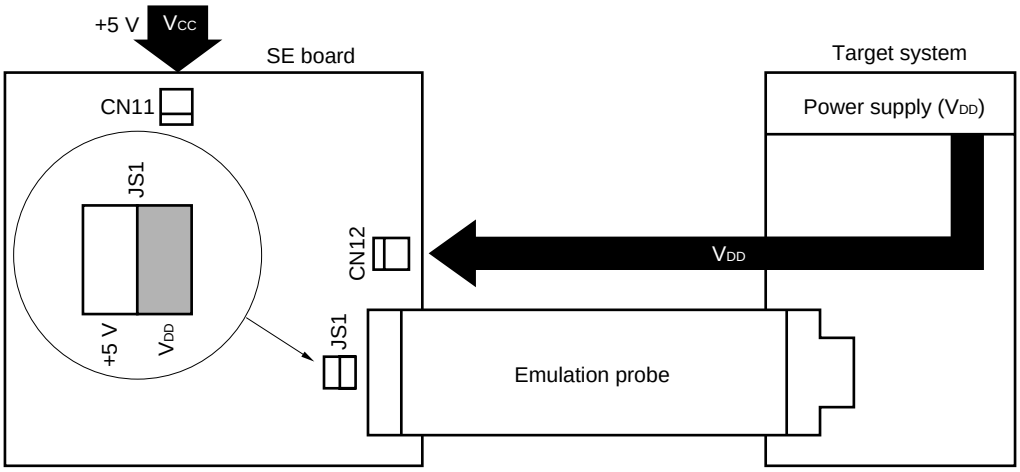
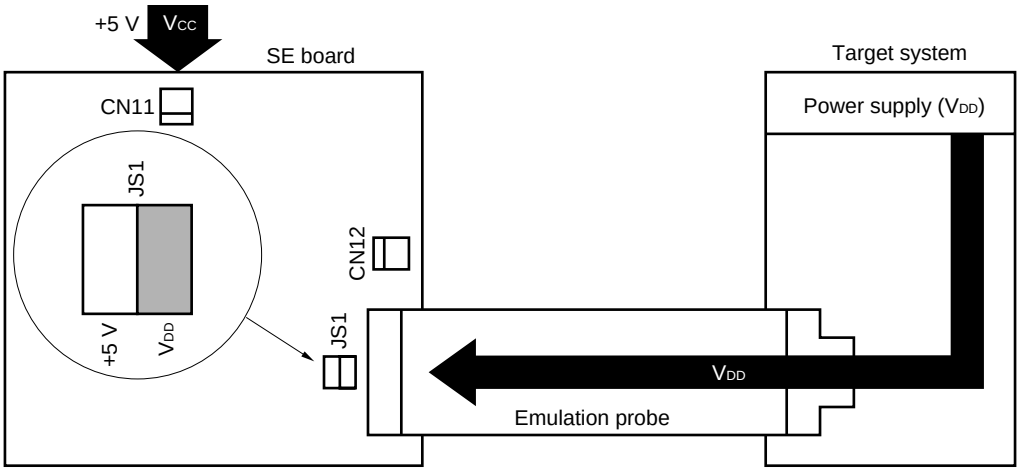


Figure 4-18. Method of Supplying V_{DD} from Emulation Probe when SE Board is Used as Standalone Unit



4.11 Factory Settings

The program memory (IC2), jumper switch, slide switch, and resonator of the SE-17134 are factory-set as follows:

(1) Program memory (IC2)

RAM (μPD43256AC) is mounted to the socket.

(2) Operating clock

<1> The variable resistor (VR1) is adjusted so that a 2-MHz clock signal is supplied when the device select switch (SW7) is set to “134” or “136”.

<2> The resonator select switch (SW9) is set so that a 4-MHz clock signal is supplied from the crystal resonator (XT1) when the device select switch (SW7) is set to “134” or “136”.

(3) Jumper switch and slide switch

The jumper switch and slide switch are set as the figures shown in Table 4-8. Before using these switches, confirm their set conditions.

Table 4-8. Factory-Set Conditions of Jumper and Slide Switches (1/2)

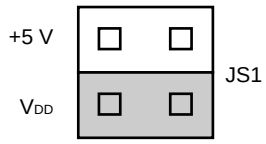
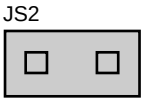
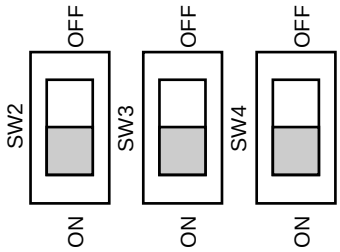
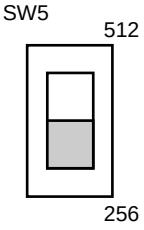
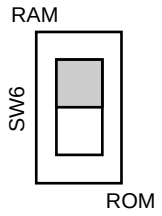
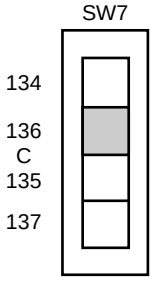
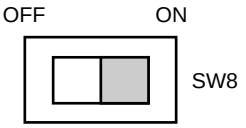
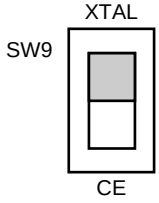
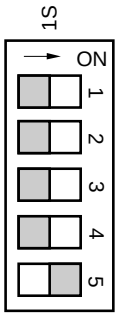
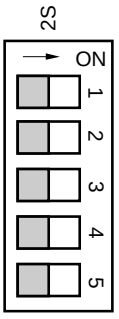
Switch No.	Jumper and Slide Switches	Set Conditions	Set Position
JS1		Refer to **4.9 Level Conversion Chip** and **4.10 SE Board Power Supplies**.	
JS2		Attached as factory-set condition	Do not remove.
SW2 SW3 SW4		When $V_{DD} \neq V_{CC}$ (V_{CC} = +5 V)	All ON (level conversion chip is used)
SW5		When using μPD27C256A	256 side

Table 4-8. Factory-Set Conditions of Jumper and Slide Switches (2/2)

Switch No.	Jumper and Slide Switches	Set Conditions	Set Position
SW6		When evaluating with SE board mounted to in-circuit emulator	RAM side
SW7		When evaluating μPD17136A	Position of 136
SW8		When V_{ADC} is supplied from emulation probe or V_{ADC} pin	ON side
SW9		Clock supplied from crystal resonator (4 MHz) is used as clock of real chip.	XTAL side
1S		Refer to **4.6 Option Switches (1S, 2S)**.	
2S			

CHAPTER 5 METHOD OF USE

5.1 Using SE Board Mounted in In-Circuit Emulator

Cautions
- **When powering on, the in-circuit emulator power should be turned on first, followed by the target system power.**
- **When powering off, the target system power should be turned off first, followed by the in-circuit emulator power.**
- **The reset switch on the SE-17134 must not be used when the SE-17134 is mounted in an in-circuit emulator. (The in-circuit emulator reset switch should be used.)**
- **Confirm that the RAM (μPD43256A) is mounted on the socket (IC2) on the SE-17134.**

(1) Mounting in in-circuit emulator

<1> First, remove the outer and inner covers of the in-circuit emulator (an external view is shown in Figure 5-1). When the the inner cover is removed, the memory board is exposed.

<2> There are three connectors on the top surface of the memory board. Insert the connectors on the reverse side of the SE board (CN7, CN8 and CN9) into these connectors (see **Figure 5-2**).

<3> This completes the procedure for mounting the SE board in the in-circuit emulator.
Next, tighten the four screws to secure the SE board.

Caution When inserting the SE board connectors, push them in vertically and ensure that all three connectors are firmly connected.

Remark To remove the SE board from the in-circuit emulator, remove the four screws and lift the SE board straight upward.

Figure 5-1. External View of IE-17K (With Outer Cover Removed)

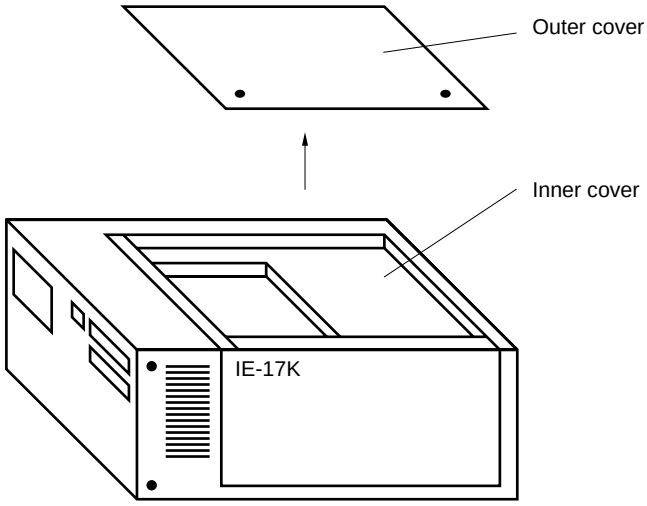
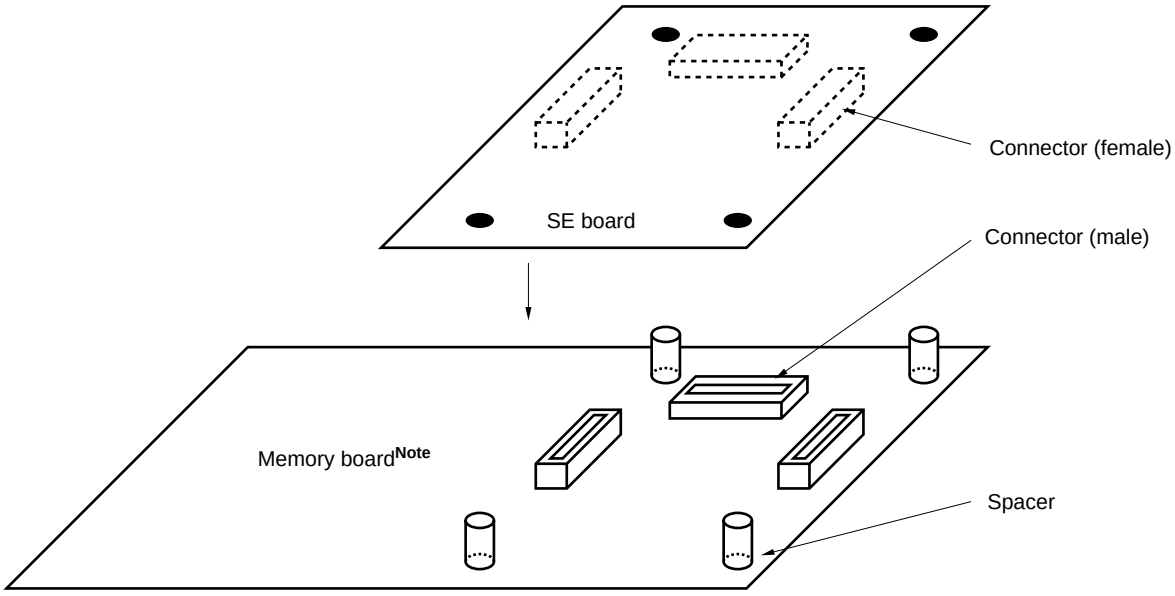


Figure 5-2. SE Board Mounting



Note The memory board is actually fixed inside the IE-17K.

(2) Power supply

Before replacing the inner and outer covers of the in-circuit emulator after mounting the SE-17134, turn on the in-circuit emulator power and check that LED1 on the SE-17134 lights.

If LED1 lights, fit the inner and outer covers.

If the target system power supply is not +5 V, the target system supply voltage (V_{DD}) must be applied to the real chips on the SE board from CN12 or the emulation probe.

See **4.10 SE Board Power Supplies** for details.

Remark If LED1 does not light, probable causes are as follows:

- The SE-17134 has not been mounted correctly.
- An overcurrent exceeding approximately 500 mA is flowing in the SE-17134 power supply.
- The in-circuit emulator power cable is not connected.

(3) Target system connection

With the power turned off, connect the SE board to the target system.

A separately available emulation probe is used for this connection.

If the SE board is to be used without connection of the target system, option switch 1S-5 should be set to ON.

(4) Confirmation of in-circuit emulator operation

The in-circuit emulator is connected to a host machine such as the PC-9801 series, and used for hardware and software debugging.

See the IE-17K or IE-17K-ET User's Manual for details of operating the in-circuit emulator.

The procedure for confirming that the SE-17134 is correctly mounted is shown here.

(a) Start the in-circuit emulator by turning on the power, or pressing the reset switch when the power is already on. (Do not use the reset switch on the SE board.)

When the in-circuit emulator starts normally, the prompt "@@@>" will be displayed, indicating that a command can be accepted.

```
UPD-17K SUPERVISOR [yyyy mm/dd]

READY!

CLICE VER. Vx.x (dd mmm 'yy)
COPYRIGHT (C) NEC CORPORATION 1990-1993

@@@>
```

(b) Next, use the .LP command to load the .ICE file of the program created by the assembler or the .ICE file output by the .SP command.
If the SE-17134 is correctly mounted in the in-circuit emulator, the following message will be displayed by the in-circuit emulator with the prompt “BRK>”.

```
@@@>.LP0$$
LOADING...OK
D17 ××××Note

BRK>
```

Note ×××× is 134A, 135A, 136A or 137A.

(c) The unit will now operate as a 17K series in-circuit emulator.

Remark If the above message is not displayed, the SE-17134 may not be properly installed, or one of the following cases may apply:

- The loaded .ICE file does not correspond to the real chips mounted on the SE-17134 (IDI error).
- An SE board other than an SE-17134 has been mounted (ISE error).
- An .ICE file other than one for the μPD17134A, 17135A, 17136A or 17137A has been loaded (ISE error).
- The option switch settings differ from those in the program (IOS error).

(5) Error messages and remedial action

The in-circuit emulator has a function that displays an error message if, for example, the combination of mounted real chips and loaded .ICE file is incorrect.

To get more details of the cause of the error, the device number, SE board number, switch code, etc., are displayed together with the message.

Table 5-1. Device Numbers and SE Board Number

Target Device	Device No.	SE Board No.
μPD17134A	30	20
μPD17135A	32	
μPD17136A	31	
μPD17137A	33	

Remarks 1. The device number is the real chip registration number.

2. The SE board number is the SE board registration number.

3. The device number and SE board number are also included in data in the .ICE file. The in-circuit emulator checks the development environment directly after the .ICE file is loaded.

Table 5-2. Switch Codes

Switch No.	Switch Function	Switch Code
1S-1	Use/non-use of $P1A_0$ pin mask option pull-up resistor	0002
1S-2	Use/non-use of $P1A_1$ pin mask option pull-up resistor	0002
1S-3	Use/non-use of $P1A_2$ pin mask option pull-up resistor	0002
1S-4	Use/non-use of $P1A_3$ pin mask option pull-up resistor	0002
1S-5	Use/non-use of $\overline{RESET}$ pin mask option pull-up resistor	0000
2S-1	Use/non-use of $P0D_0$ pin mask option pull-up resistor	0001
2S-2	Use/non-use of $P0D_1$ pin mask option pull-up resistor	0001
2S-3	Use/non-use of $P0D_2$ pin mask option pull-up resistor	0001
2S-4	Use/non-use of $P0D_3$ pin mask option pull-up resistor	0001
2S-5	Use/non-use of $P1B_0$ pin mask option pull-up resistor	0003

Remark The switch code indicates which switch is involved in the error.

(a) Error message: ? IDI INVALID DEVICE ID NUMBER [××-△△]

Cause : The real chips mounted on the SE-17134 and the loaded .ICE file do not correspond.
In this case, ×× indicates the device number of the real chips actually mounted, and △△ indicates the device number contained in the loaded .ICE file.

Action : If this error message is output, re-check the real chips mounted on the SE board.
If the wrong real chips have been mounted, turn the in-circuit emulator power off, replace the real chips, then start the .ICE file load over again.
If device file selection at assembly time is incorrect, reassemble the source file using the correct device file, and reload that .ICE file.

(b) Error message: ? ISE INVALID SE BOARD NUMBER [□□-▽▽]

Cause : An SE board other than the SE-17134 has been mounted, or an .ICE file other than one for the μPD17134A, 17135A, 17136A or 17137A has been loaded.
In this case, □□ indicates the SE board number of the SE board actually mounted, and ▽▽ indicates the SE board number in the loaded .ICE file.

Action : Re-check the SE board and the loaded .ICE file.

(c) Error message: ? IOS INVALID OPTION SWITCH AT ××××

Cause : The mask option information written in the source program and the settings of the option switches on the SE board do not match.
In this case, ×××× is the switch code which indicates the location of the option switch with a non-matching setting on the SE board.

Action : See **4.6 Option Switches (1S, 2S)**.

(d) If there is no response from the in-circuit emulator

Cause<1> : The RS-232-C settings do not match.
Action<1> : Re-check the RS-232-C settings of the in-circuit emulator and the host machine. See the in-circuit emulator User's Manual for the in-circuit emulator RS-232-C settings.

Cause<2> : The SE-17134 board is not properly mounted in the in-circuit emulator.
Action<2> : Install the SE-17134 properly in the in-circuit emulator.

Cause<3> : The target system and SE board are not correctly connected.
Action<3> : Check the connections again (emulation probe, power supply, etc.).

Cause<4> : V_{DD} is not being supplied to the real chips.
Action<4> : If JS1 is set to the V_{DD} side, it is possible that power is not being supplied to the real chips from the emulation probe or CN12 pin. Supply power from the emulation probe or the CN12 pin, or set JS1 to the +5 V side. See **4.10 SE Board Power Supplies**.

Cause<5> : There is an unstable state, such as an open reset pin.
Action<5> : In this case, the SE board reset circuit will be unstable, and the in-circuit emulator may be unable to send back a response.
It is possible to confirm whether this condition exists by checking whether the CH13 check pin voltage level is high. If a high level voltage is not being output, one solution is to set the $\overline{\text{RESET}}$ pin option switch (IS-5) to ON, and start up the in-circuit emulator again.
The error message "? IOS INVALID OPTION SWITCH AT xxxx" may be output at this time, but the .ICE file can still be loaded.
If reset pin instability is the cause of the problem, target system correction or program correction should be carried out.

5.2 Using SE Board as a Standalone Unit

Cautions

- **When powering on, the SE-17134 power should be turned on first, followed by the target system power.**
- **When powering off, the target system power should be turned off first, followed by the SE-17134 power.**

(1) PROM installation

When the SE-17134 is used as a standalone unit, PROM should be mounted in the IC2 socket on the SE board. 256 K-bit and 512 K-bit PROM can be used.

Table 5-3. PROM Used on SE-17134

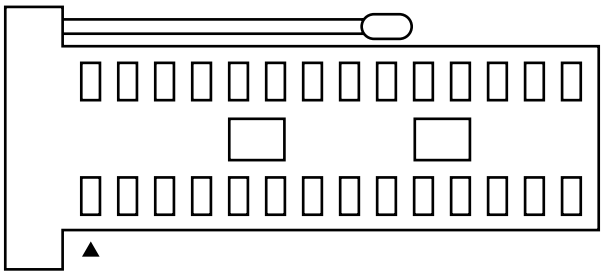
ROM Size	PROM (IC2) Type Name
256 K bits	μPD27C256AD-12, -15, -20 or equivalent
512 K bits	μPD27C512D-12, -15, -20 or equivalent

One of the following output files must be written in the PROM as a program.

- A target device PROM file (.PRO file) output by the 17K series assembler
- A file output for PROM use by means of the in-circuit emulator .XS0 or .XS1 command

Caution An .ICE file output by the assembler for an in-circuit emulator load cannot be used.

Figure 5-3. PROM Mounting Socket (IC2)



Note on ROM Creation

The final address of the program corresponding to each target device is as shown in Table 5-4. Please ensure that this address is not exceeded.

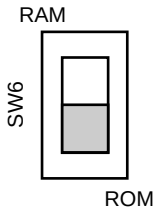
Table 5-4. Final Address of Program Memory

Target Device	Final Address
μPD17134A	03FFH
μPD17135A	03FFH
μPD17136A	07FFH
μPD17137A	07FFH

(2) ROM/RAM changeover switch (SW6) setting

Set the ROM/RAM changeover switch (SW6) to the ROM side as shown in Figure 5-4.

Figure 5-4. SW6 Setting when SE Board is Used as Standalone Unit

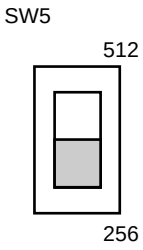


(3) Setting of PROM size select switch (SW5)

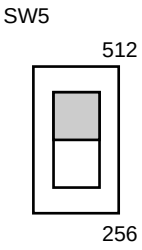
Set the PROM size select switch (SW5) according to the size of the PROM to be used.

Figure 5-5. Setting of PROM Size Select Switch

(a) With μPD27C256A



(b) With μPD27C512



(4) Power supply

When the SE-17134 is operated as a standalone unit, +5 V ±5 % (V_{CC}) must be supplied to the CN11 pin.
When V_{CC} is supplied, LED1 on the SE-17134 lights.
If the power supply of the target system is not +5 V, the target system supply voltage is supplied to the real chips on the SE board from CN12 or the emulation probe.
See **4.10 SE Board Power Supplies** for details.

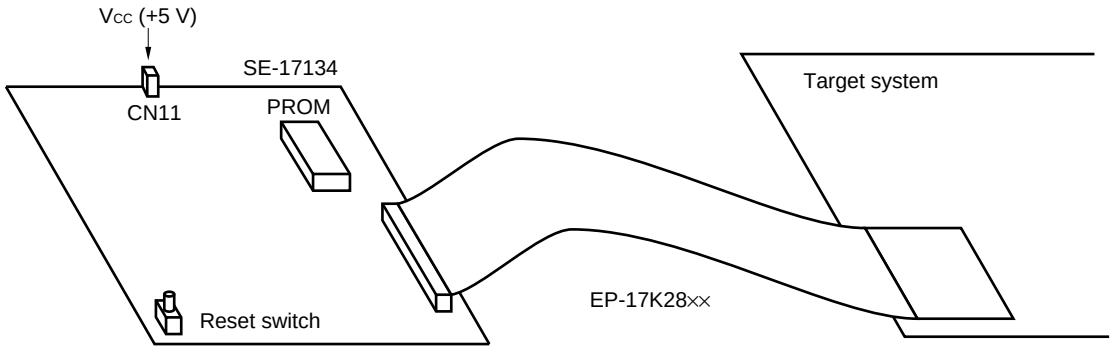
Remark If LED1 does not light, probable causes are as follows:

- Power is not being supplied.
- An overcurrent exceeding approximately 500 mA is flowing in the power supply.
  (The normal supply current in the unloaded state is around 150 mA.)

(5) Program execution

The SE-17134 and the target system are connected as shown in Figure 5-6.
When power is supplied to real chips on the SE board, the program written in the PROM is executed from address 0.
The program can also be re-executed from address 0 by pressing the reset switch on the SE board with the power on, to perform a forcible reset.

Figure 5-6. Example of Connection when SE-17134 is Used as Standalone Unit



5.3 Check Pins

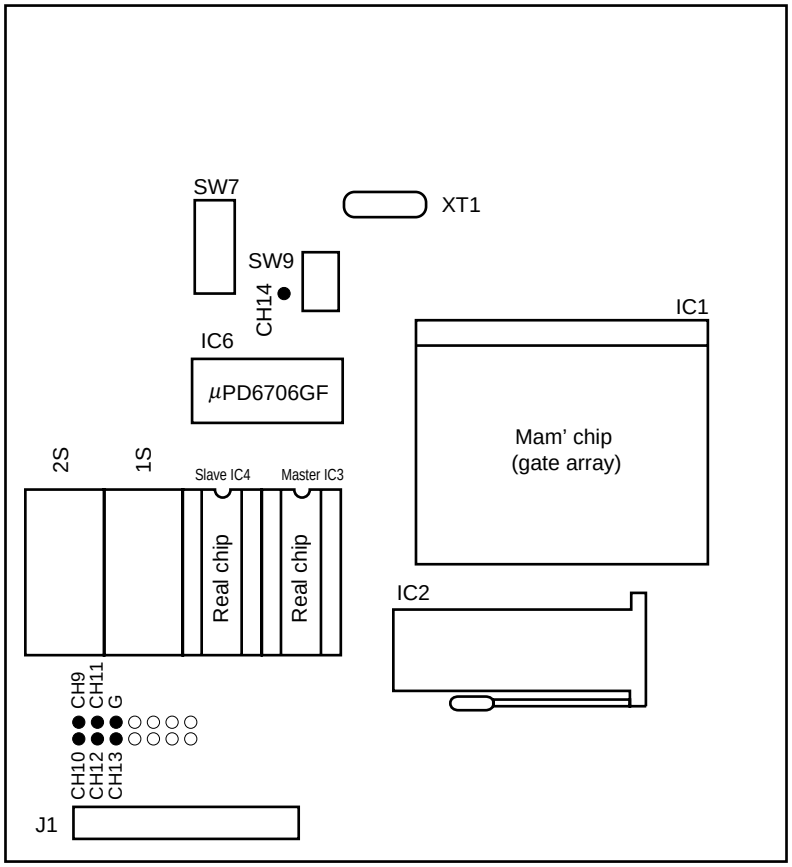
The SE-17134 is provided with check pins for checking the status of the real chips.

Table 5-5. Check Pin Names and Functions

Check Pin Name	Function
CH9	$P0C_0/ADC_0$ pin check
CH10	$P0C_1/ADC_1$ pin check
CH11	$P0C_2/ADC_2$ pin check
CH12	$P0C_3/ADC_3$ pin check
CH13	$\overline{RESET}$ pin check
CH14	User clock frequency check
G	GND

Figure 5-7. Check Pin Layout

SE-17134 (Top View)



[MEMO]

CHAPTER 6 CONNECTOR PIN TABLES

6.1 Emulation Probe Connector (J1)

J1 Pin No.	Pin Name (IC Pin No.)	J1 Pin No.	Pin Name (IC Pin No.)	J1 Pin No.	Pin Name (IC Pin No.)
1	GND	21	GND	41	GND
2	V_{DD} (28)	22	$P0D_2$/SI (23)	42	$P1A_3$ (18)
3	GND	23	GND	43	GND
4	V_{ADC} (1)	24	$P0B_3$ (6)	44	$P0A_2$ (11)
5	GND	25	GND	45	GND
6	NC	26	$P0D_3/\overline{TM0OUT}$ (22)	46	$P1B_0$ (17)
7	GND	27	GND	47	GND
8	$P0C_3/ADC_3$ (2)	28	$P0B_2$ (7)	48	$P0A_1$ (12)
9	GND	29	GND	49	GND
10	NC	30	$P1A_0$ (21)	50	$\overline{RESET}$ (16)
11	GND	31	GND	51	GND
12	$P0C_2/ADC_2$ (3)	32	$P0B_1$ (8)	52	$P0A_0$ (13)
13	GND	33	GND	53	GND
14	$P0D_0/\overline{SCK}$ (25)	34	$P1A_1$ (20)	54	INT (15)
15	GND	35	GND	55	GND
16	$P0C_1/ADC_1$ (4)	36	$P0B_0$ (9)	56	GND (14)
17	GND	37	GND	57	GND
18	$P0D_1$/SO (24)	38	$P1A_2$ (19)	58	NC
19	GND	39	GND	59	GND
20	$P0C_0/ADC_0$ (5)	40	$P0A_3$ (10)	60	NC

6.2 SE Board Power Supply Connector (CN11)

1	GND
2	V_{CC} (+5 V)

6.3 Real Chip Power Supply Connector

1	GND
2	V_{DD}

[MEMO]

CHAPTER 7 PACKAGE DRAWINGS OF EMULATION PROBE AND CONVERSION ADAPTER

7.1 Package Drawings of Emulation Probe (Optional)

Figure 7-1. Package Drawings of EP-17K28CT (Unit: mm)

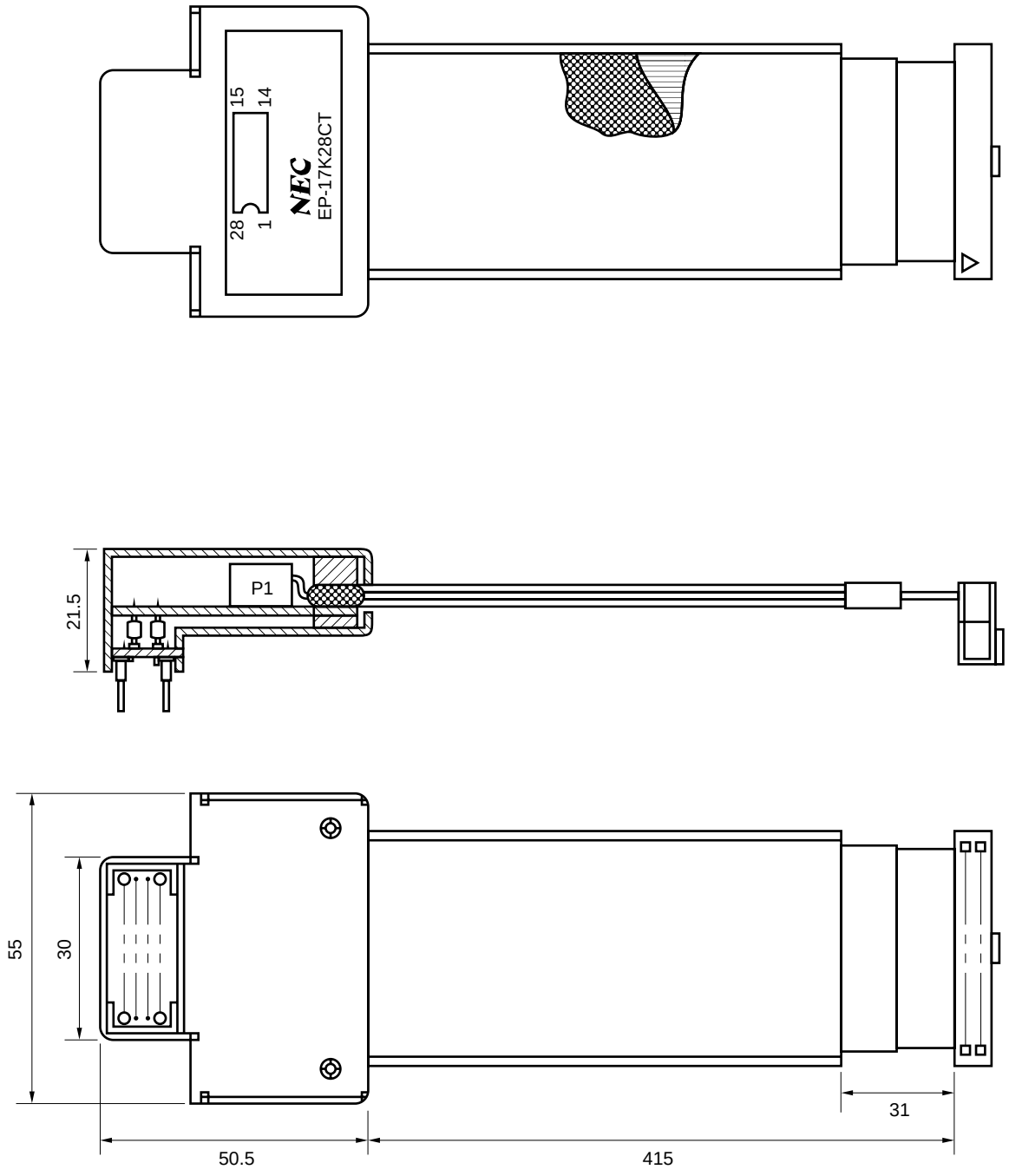


Figure 7-2. Package Drawings of EP-17K28GT (Cable Section) (Unit: mm)

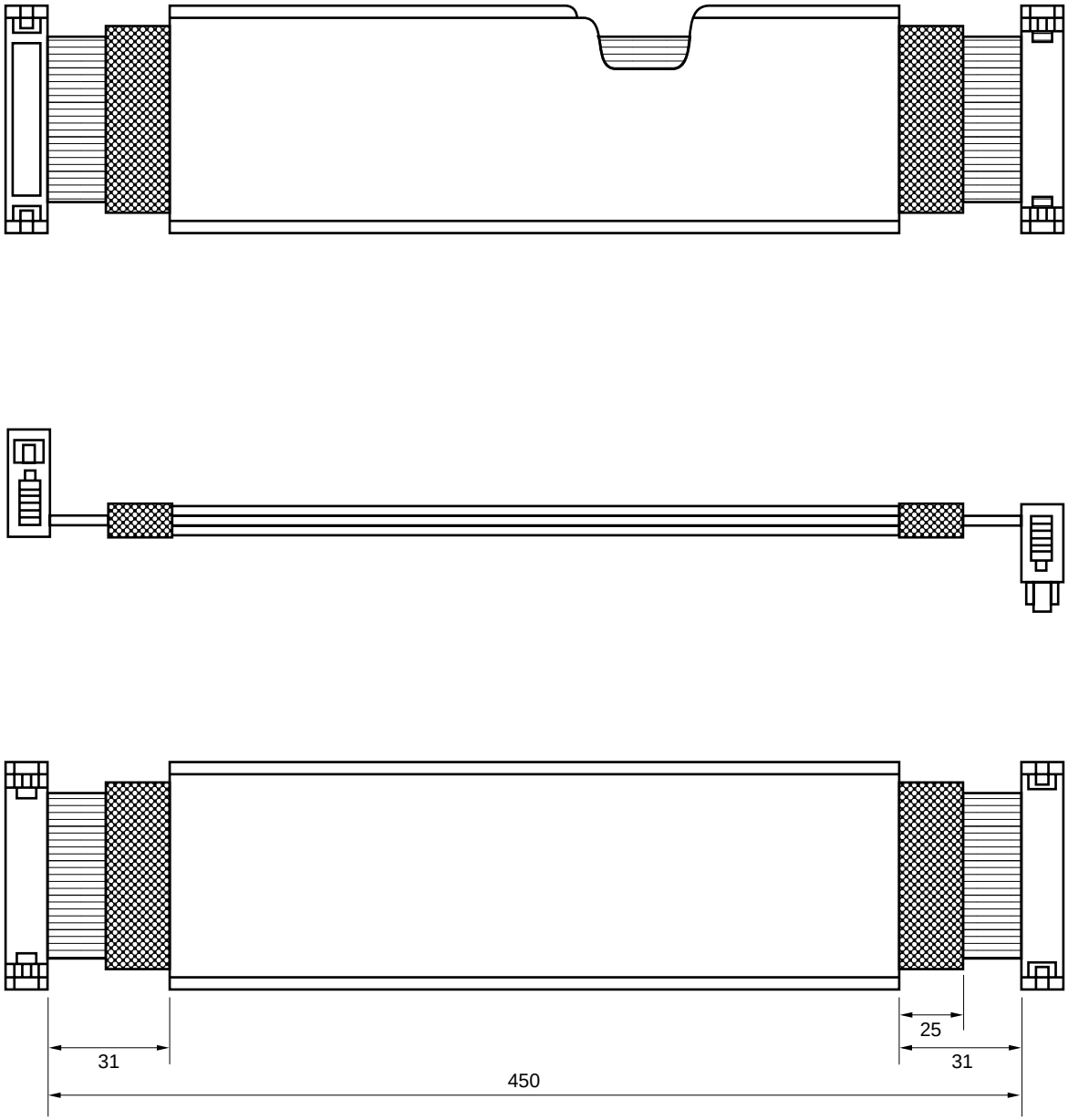
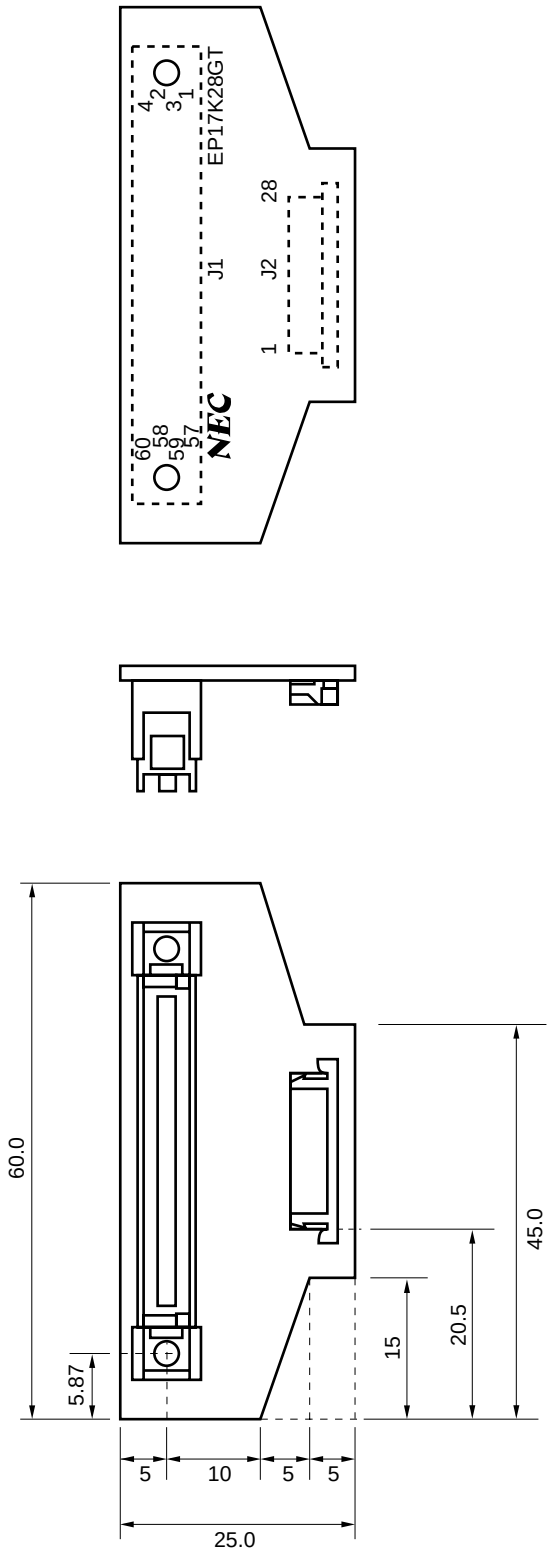


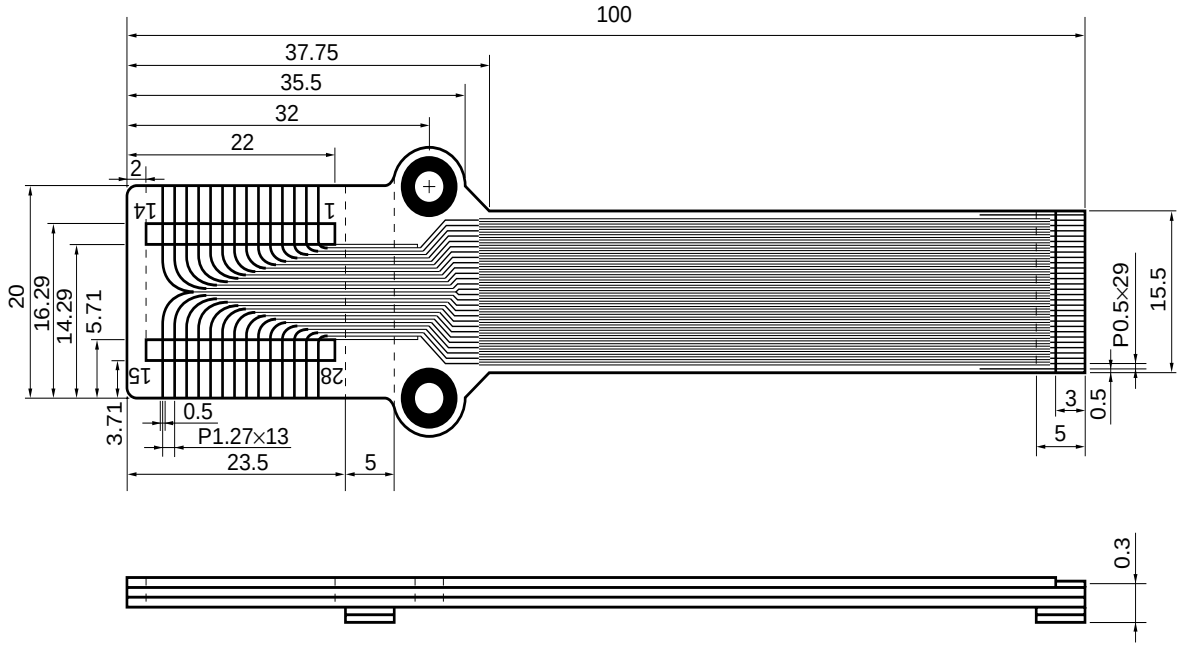
Figure 7-3. Package Drawings of EP-17K28GT (Connector Board) (Unit: mm)



7.2 Package Drawings of Conversion Adapter (Optional)

Product Name: EV-9500GT-28

Figure 7-4. Package Drawings of Conversion Adapter (Unit: mm)

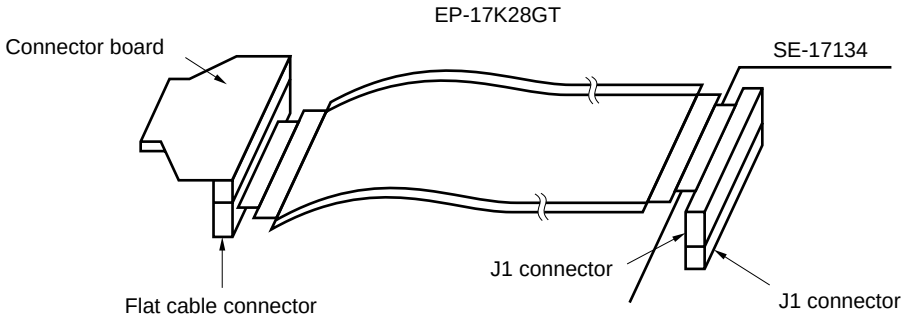


CHAPTER 8 NOTES ON USE OF EMULATION PROBE (EP-17K28GT)

When using the EP-17K28GT emulation probe to connect the SE-17134 to the target system, the following method should be used.

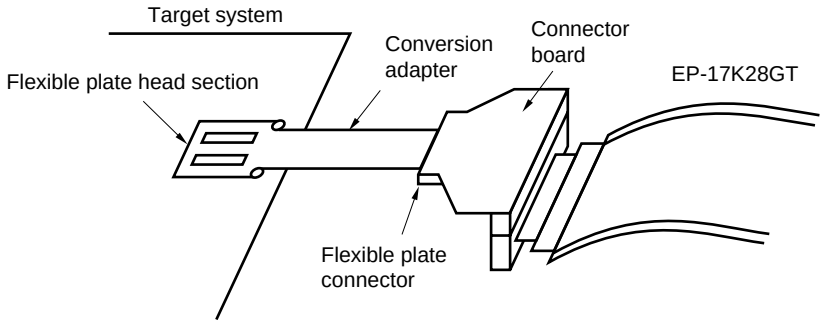
(1) Connecting EP-17K28GT to SE-17134

Connect the EP-17K28GT connector marked “J1” to the J1 connector on the SE-17134. The EP-17K28GT is shipped with a connector board and flat cable connected (detachable).



(2) Connecting EP-17K28GT to target system

Detach the connector board from the EP-17K28GT, then connect the conversion adapter (EV-9500GT-28) to the connector board, and solder the flexible plate head section of the conversion adapter to the target system. Finally, connect the connector board to the EP-17K28GT.



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