NEC

User's Manual

SE-17709

System Evaluation Board

Target Devices

μPD17704A
μPD17705A
μPD17707A
μPD17708A
μPD17709A
μPD17717
μPD17718
μPD17719

Document No. U10663EJ4V0UM00 (4th edition)
Date Published September 2001 N CP(K)

[MEMO]

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J01.2

Major Revisions in This Edition

Page	Description
Throughout	Addition of descriptions on the following products • μPD17704A • μPD17705A • μPD17707A • μPD17708A • μPD17709A

The mark ★ shows major revised points.

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CHAPTER 1 GENERAL

★ The SE-17709 is a system evaluation board (SE board) for the 4-bit single-chip microcontrollers μPD17704A, 17705A, 17707A, 17708A, 17709A, 17717, 17718, and 17719.

This SE board is used for debugging mounted to an in-circuit emulator common to 17K Series (IE-17K or IE-17K-ET). It can also be used in stand-alone mode for system evaluation.

★ To interface with the target system[Note], the μPD17704AGC-00×, or μPD17705AGC-00×, 17707AGC-00×, 17708AGC-00×, 17709AGC-00×, 17717GC-00×, 17718GC-00×, and 17719GC-00× (hereafter referred to as the "real chip") is used; therefore, the functions of the SE-17709 are equivalent to the device to be evaluated.

To connect the SE-17709 and the target system, an emulation probe (EP-17K80GC (sold separately)) and a conversion socket, the EV-9200GC-80, supplied as an accessory are necessary.

Note The system developed by the user to be evaluated.

★ **Table 1-1. Development Tools for SE-17709**

SE Board	Usage	Assembler (RA17K Assembler Package) Output File (Host Machine)	In-Circuit Emulator	Support Software[Note 3]	Emulation Probe	Target Device to Be Evaluated
SE-17709	When used with in-circuit emulator	ICE file[Note 1] (PC-9800 series / IBM PC/AT™)	IE-17K IE-17K-ET	*SIMPLEHOST™*	EP-17K80GC + EV-9200GC-80	μPD17704A, 17705A, 17707A, 17708A, 17709A, 17717, 17718, 17719
	When SE-17709 is used alone	PRO file[Note 2] (PC-9800 series / IBM PC/AT)	Unnecessary	Unnecessary		

Notes 1. ICE file: Output if -HOST option is specified on assembler and linker or -ICE option is specified on linker.

2. PRO file: Output if a linker option (-PROM) is specified when the source program is assembled.
For details on the ICE file and PRO file, refer to the **RA17K** or **LK17K User's Manual**.

3. *SIMPLEHOST* is software for the man-machine interface with the in-circuit emulator.
This software runs on Windows™ and allows debugging by operating the source lists, figures, and tables displayed on the CRT via a mouse.
For details, refer to the ***SIMPLEHOST* User's Manual**.
Although commercially available RS-232-C communication software other than *SIMPLEHOST* can also be used for interfacing, knowledge on baud rate settings and in-circuit emulator commands is required. For details, refer to the **IE-17K** or **IE-17K-ET User's Manual**.

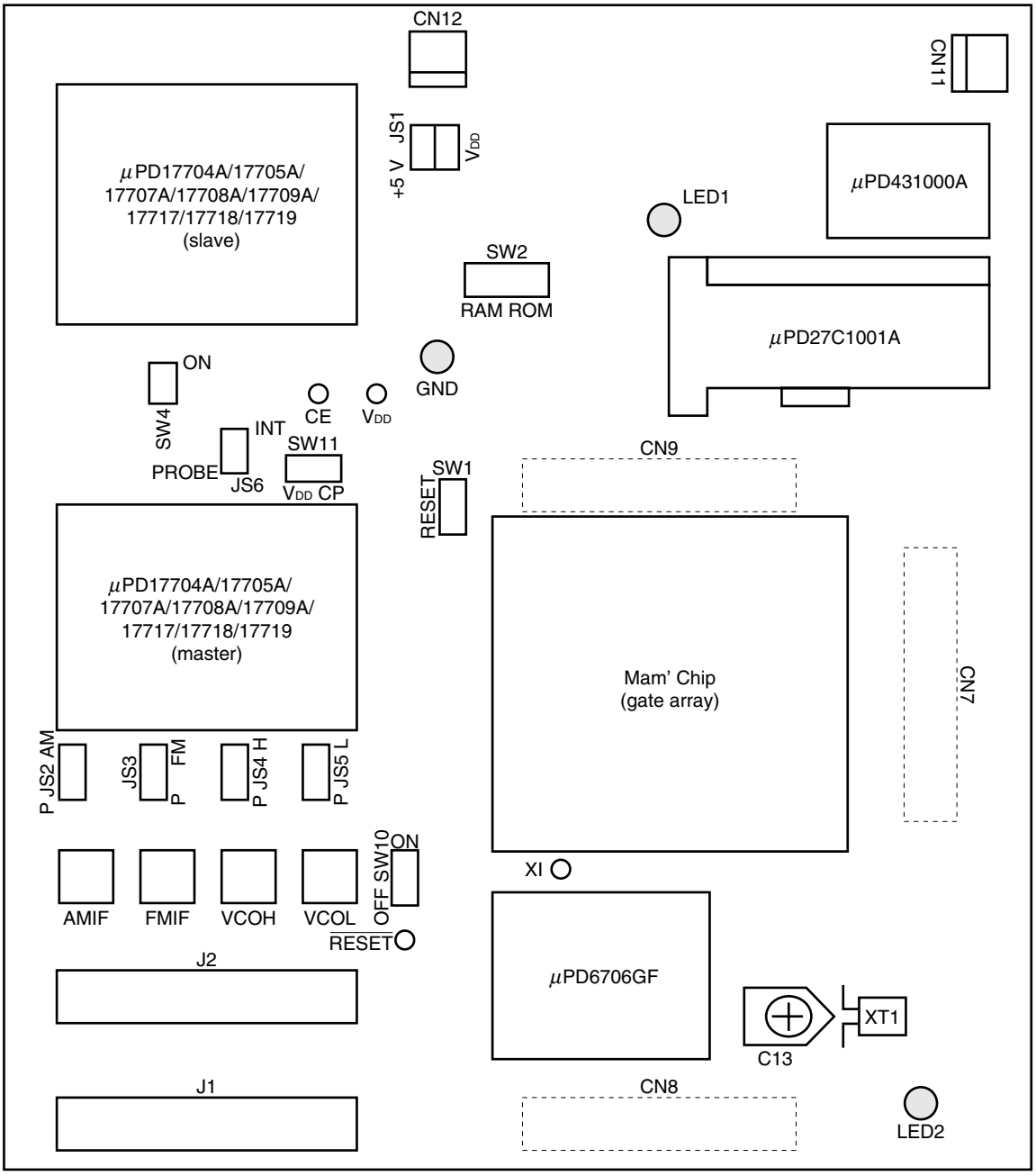
Caution When the SE-17709 is used alone, it does not operate with PROM files (.PRO) created by the AS17K.

CHAPTER 2 SPECIFICATIONS

The specifications of the SE-17709 are shown below:

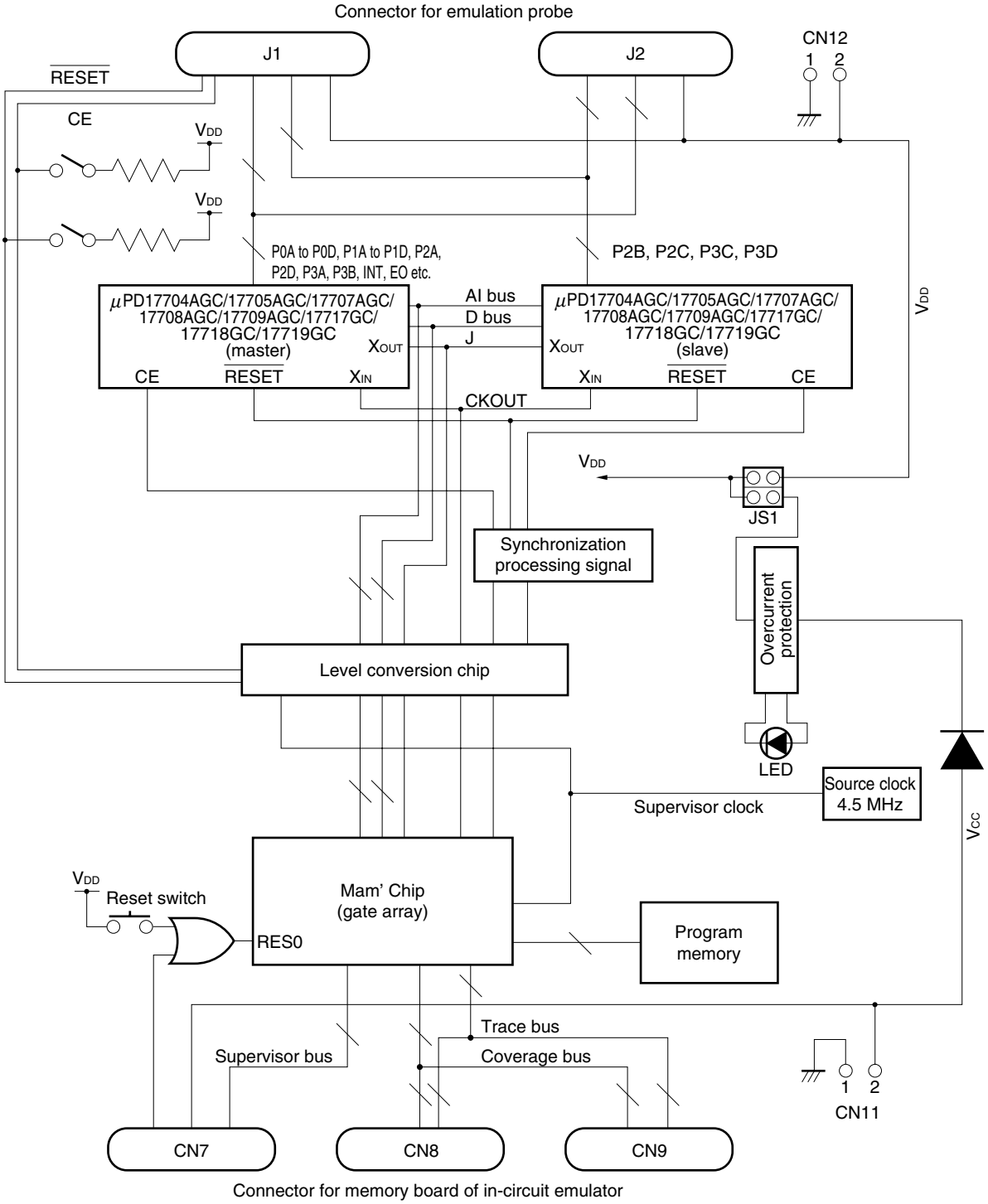
Part number:	SE-17709
Program memory:	• The μPD431000ACW mounted on board is used when the SE-17709 is used with an in-circuit emulator (IE-17K or IE-17K-ET). • When the SE-17709 alone is used, write program to the μPD27C1001AD and mount the memory in a socket (IC2) on the board.
Data memory:	The on-chip memory of the real chip is used.
Operating frequency:	4.5 MHz
Instruction cycle:	1.78 μs (at 4.5 MHz oscillation)
Operating temperature:	+10 to +40°C
Storage temperature:	–10 to +50°C (without condensation)
Power supply:	• For real chip (V_{DD}): +4.5 to +5.5 V Power is supplied from emulation probe (EP-17K80GC) or CN12 pin. • For SE-17709 (Vcc): +5 V ±5% Power is supplied from the in-circuit emulator when the SE-17709 is used with an in-circuit emulator. When the SE-17709 is used alone, supply power from the CN11 pin.
Current consumption:	150 mA (MAX.) (without load and with the μPD27C1001AD used as the program memory)
External dimensions:	150 × 175 × 33 mm

★ **Figure 2-1. SE-17709 Parts Layout**



CHAPTER 3 BLOCK DIAGRAM

★ **Figure 3-1. SE-17709 Block Diagram**



CHAPTER 4 HOW TO USE

4.1 Using Level Conversion Chip (μPD6706GF)

(1) Outline of level conversion chip

The level conversion chip is an IC that converts a voltage level of the target system (or SE board) into the voltage at which the SE board (or target system) operates if the operating voltages of the target system and SE board are different from each other ($V_{DD} \neq V_{CC}$, V_{CC} = +5 V). Therefore, this IC allows smooth signal transfer between the target system and SE board even when the operating voltages of the two are different.

(2) Using level conversion chip

The level conversion chip automatically operates when a voltage other than 5 V is applied between the V_{DD} and GND pins of the emulation probe (EP-17K80GC) or to the CN12 pin of the SE board with the jumper switch JS1, which selects the method of supplying power to the SE board, set to the V_{DD} side.

Remarks 1. V_{DD} is the supply voltage of the target system to be used. Power can be supplied from the target system to the real chip on the SE board from the CN12 pin or emulation probe. Consequently, debugging can be performed in an environment close to the actual environment.

2. V_{CC} is the voltage at which the SE board (except the real chip) operates. Always supply +5 V as V_{CC}. When the SE board is mounted on an in-circuit emulator, V_{CC} is automatically supplied from the in-circuit emulator. When the SE board is used alone, supply V_{CC} from the CN11 pin.

4.2 Supplying Power to SE Board

Two types of power supplies must be supplied to the SE board: V_{CC} and V_{DD}. V_{CC} is the power supply at which the SE board (except the real chip) operates. The real chip operates at V_{DD}.

Always supply +5 V as V_{CC}. As V_{DD}, supply a voltage in the range of the operating voltage of the real chip (+4.5 to +5.5 V).

(1) Jumper switch for selecting method of power supply to SE board (JS1)

Jumper switch JS1 selects whether the power supplied to the SE board (V_{CC} = +5 V), or the voltage supplied from the emulation probe or CN12 pin (V_{DD}) is supplied to the real chip.

Table 4-1 shows the function of JS1 when the SE board is mounted on an in-circuit emulator. Table 4-2 shows the function of JS1 when the SE board is used alone.

If the power supply of the target system is +5 V, set JS1 to the +5 V side.

When the SE board is mounted on an in-circuit emulator, +5 V is automatically supplied from the in-circuit emulator. When the SE board is used alone, +5 V is supplied from the CN11 pin. This has the advantage that supplying power is extremely easy.

If the power supply of the target system is other than +5 V while JS1 is set to the V_{DD} side, the voltage of the target system can be supplied to the real chip from the emulation probe or CN12 pin, so that evaluation can be performed in an environment close to the actual environment.

Caution Set the supply voltage to the real chip in the range of V_{DD} = +4.5 to +5.5 V.

Table 4-1. Function of JS1 When SE Board Is Mounted on In-Circuit Emulator

Type of Power / Setting of JS1	Power Supplied to Real Chip (V_{DD})	Power Supply to Operate SE Board (Except Real Chip) (V_{CC})
+5 V / JS1 / V_{DD}	+5 V is supplied from in-circuit emulator.	+5 V is supplied from in-circuit emulator.
+5 V / JS1 / V_{DD}	Power must be supplied from emulation probe or CN12 pin.	

Table 4-2. Function of JS1 When SE Board Is Used Alone

Type of Power / Setting of JS1	Power Supplied to Real Chip (V_{DD})	Power to Operate SE Board (Except Real Chip) (V_{CC})
+5 V / JS1 / V_{DD}	+5 V is supplied from CN11 pin.	+5 V is supplied from CN11 pin.
+5 V / JS1 / V_{DD}	Power must be supplied from emulation probe or CN12 pin.	

The shaded portions in the above figures indicate the selected switch positions.

(2) Power supply pins

The SE board has three pins through which power is supplied from external sources. The appropriate pin and power supply must be selected and used in accordance with the evaluation environment. Table 4-3 shows the functions of these pins.

Table 4-3. Power Supply Pins and Their Functions

Pin Name	Type of Power (Range of Supplied Voltage)	Function
CN11	Vcc (+5 V ±5%)	This pin is used to supply power when the SE board is used alone (except real chip). Always supply +5 V to this pin. Do not supply power through this pin when the SE board is mounted on in-circuit emulator.
CN12	V_{DD} (+4.5 to 5.5 V)	This pin supplies +4.5 to 5.5 V to the real chip.
Emulation probe (V_{DD} and GND pins)	V_{DD} (+4.5 to 5.5 V)	The function is equivalent to that of CN12 pin. The CN12 pin of the SE board is connected to the power supply pin of emulation probe.

Remark Pin 1 of the CN11 pin is GND, and pin 2 is the power supply pin. To supply power, use the power supply cable supplied as an accessory.

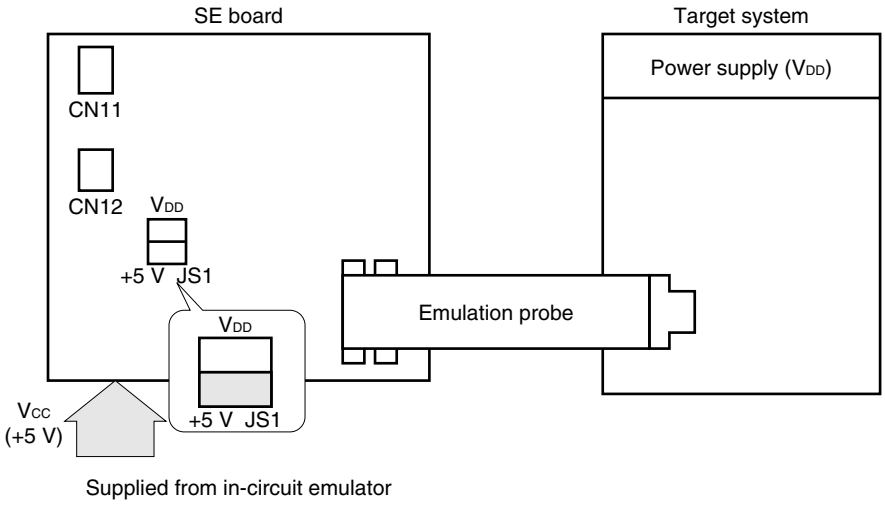
(3) Example of actual use

<1> When SE board is mounted on in-circuit emulator

(a) When SE board is mounted on in-circuit emulator with V_{DD} = +5 V, Vcc = +5 V

Set JS1 to the +5 V side. Vcc and V_{DD} are supplied from the in-circuit emulator.

Figure 4-1. When SE Board Is Mounted on In-Circuit Emulator with V_{DD} = +5 V, Vcc = +5 V



(b) When SE board is mounted on in-circuit emulator with $V_{DD} \neq$ +5 V, Vcc = +5 V

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

Figure 4-2. When SE Board Is Mounted on In-Circuit Emulator and V_{DD} (+4.5 to 5.5 V) Is Supplied from CN12 Pin

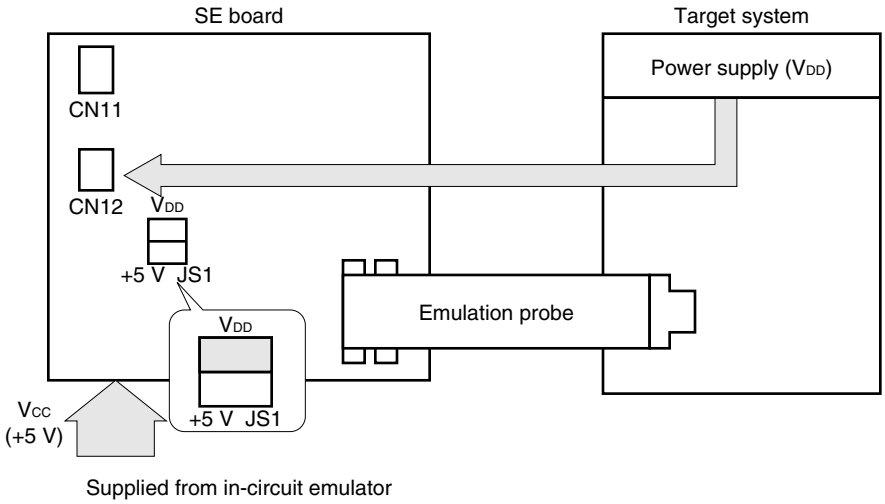
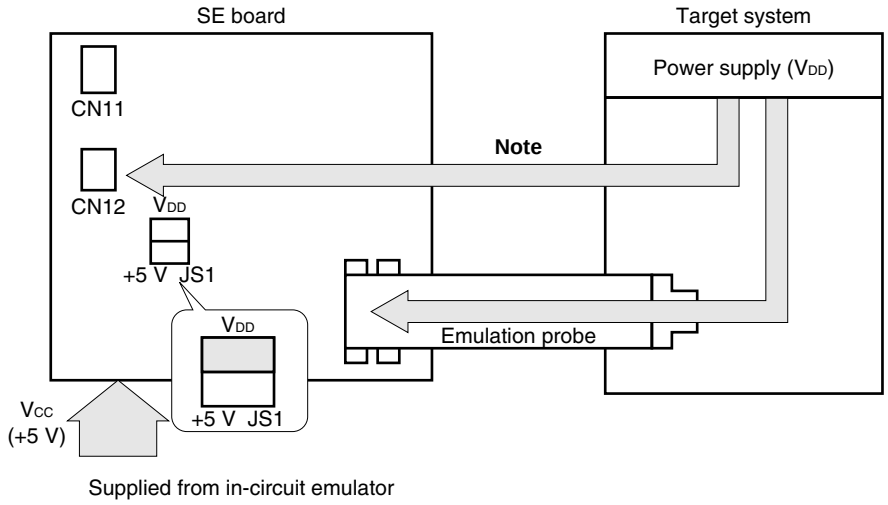


Figure 4-3. When SE Board Is Mounted on In-Circuit Emulator and V_{DD} (+4.5 to 5.5 V) Is Supplied from Emulation Probe



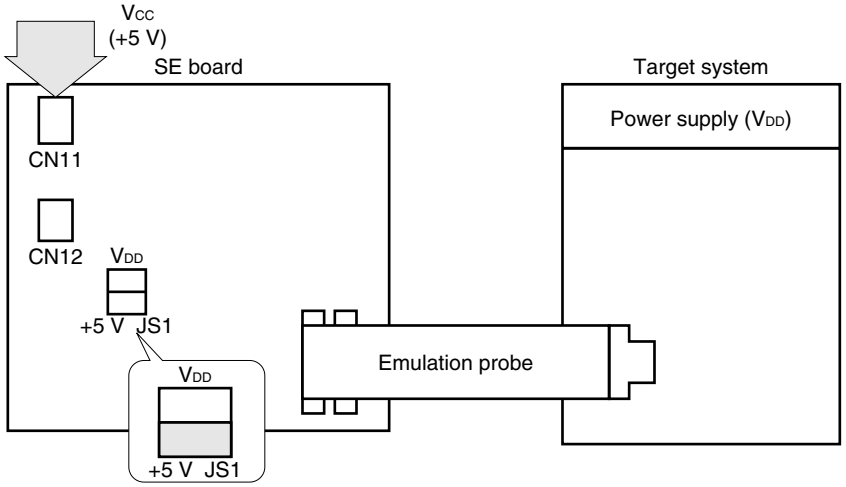
Note If additional voltage is supplied from the CN12 pin, be sure to supply the same voltage as supplied from the emulation probe.

<2> When SE board is used alone

(a) When SE board is used alone with V_{DD} = +5 V, Vcc = +5 V

Set JS1 to the +5 V side. Vcc and V_{DD} are supplied from the CN11 pin.

Figure 4-4. When SE Board Is Used Alone with V_{DD} = +5 V, Vcc = +5 V



(b) When SE board is used alone with $V_{DD} \neq$ +5 V, Vcc = +5 V

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

Figure 4-5. When SE Board Is Used Alone and V_{DD} Is Supplied from CN12 Pin

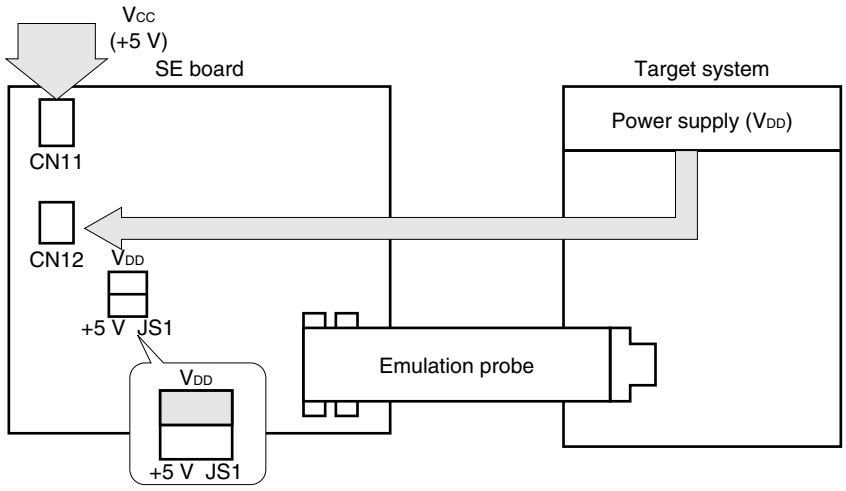
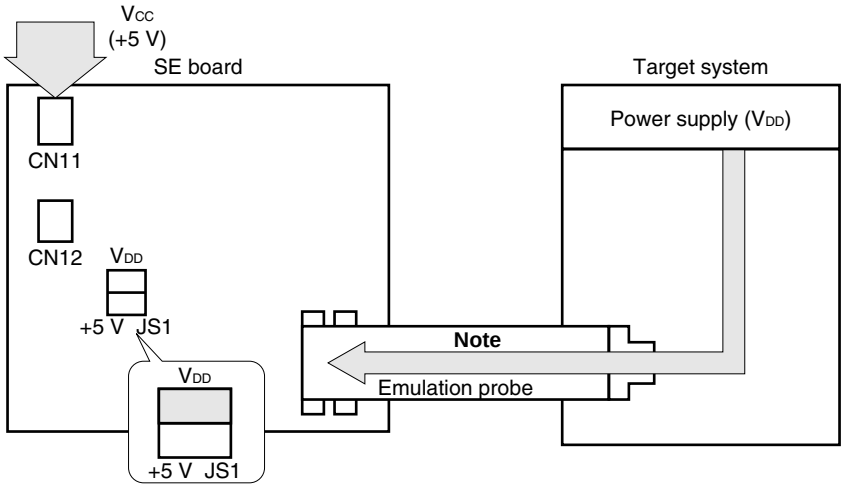


Figure 4-6. When SE Board Is Used Alone and V_{DD} Is Supplied from Emulation Probe



Note If the power supply voltage supplied from the emulation probe is low (less than +4.5 V), additional voltage should be supplied from the CN12 pin.

In this case, be sure to supply the same voltage as supplied from the emulation probe.

4.3 Setting of Other Switches

(1) SW1: Reset switch

SW1 is the reset switch used when the SE board is used alone.

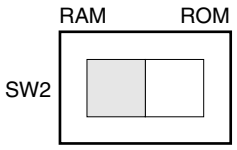
For details, refer to **4.5 Using SE Board Alone**.

(2) SW2: Slide switch selecting ROM/RAM

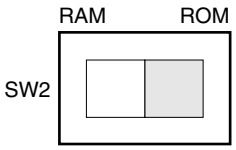
This switch selects the setting of the program memory to be used.

Figure 4-7. Setting of SW2

<1> When SE board is mounted on in-circuit emulator



<2> When SE board is used alone



The shaded portions in the above figures indicate the selected switch positions.

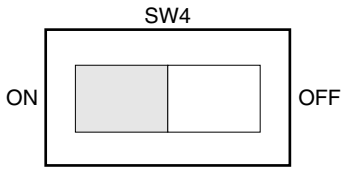
(3) SW4/SW10 pull-up select switch

These switches specify whether the CE pin/$\overline{\text{RESET}}$ pin of the real chip is pulled up or not.

When the SE-17709 is not connected to the target system, be sure to pull up the CE pin/$\overline{\text{RESET}}$ pin by setting these switches to the ON side.

Figure 4-8. Setting of SW4

<1> To pull up CE pin



<2> To not pull up CE pin

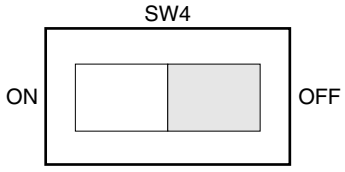
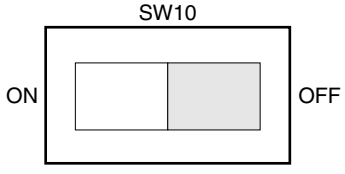


Figure 4-9. Setting of SW10

<1> To pull up $\overline{\text{RESET}}$ pin

<2> To not pull up $\overline{\text{RESET}}$ pin



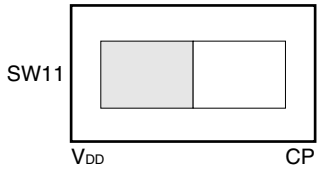
Remark The shaded portions in the above figures indicate the selected switch positions.

(4) SW11: Slide switch selecting CPU power supply

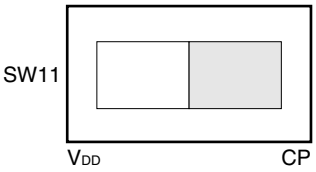
This switch selects whether the V_{DD} on the SE board is supplied or the capacitor on the SE board (0.01 μF) is connected to the CPU power supply (REG) pin of the real chip.

Figure 4-10. Setting of SW11

<1> If the V_{DD} on the SE board is supplied to the CPU power supply (REG) pin of the real chip



<2> If the capacitor on the SE board is connected to the CPU power supply (REG) pin of the real chip



Remark The shaded portions in the above figures indicate the selected switch positions.

(5) JS2/JS3: Jumper switch for selecting I/O mode of AMIFC/P1C1 and FMIFC/P1C0 pins

These switches select whether signals are input/output to/from the AMIFC/P1C1 and FMIFC/P1C0 pins of the real chip through a probe or a coaxial cable.

The AMIFC/P1C1 and FMIFC/P1C0 pins are I/O ports that can also be used for an IF counter function.

★ **Figure 4-11. Peripheral Circuit of JS2, JS3**

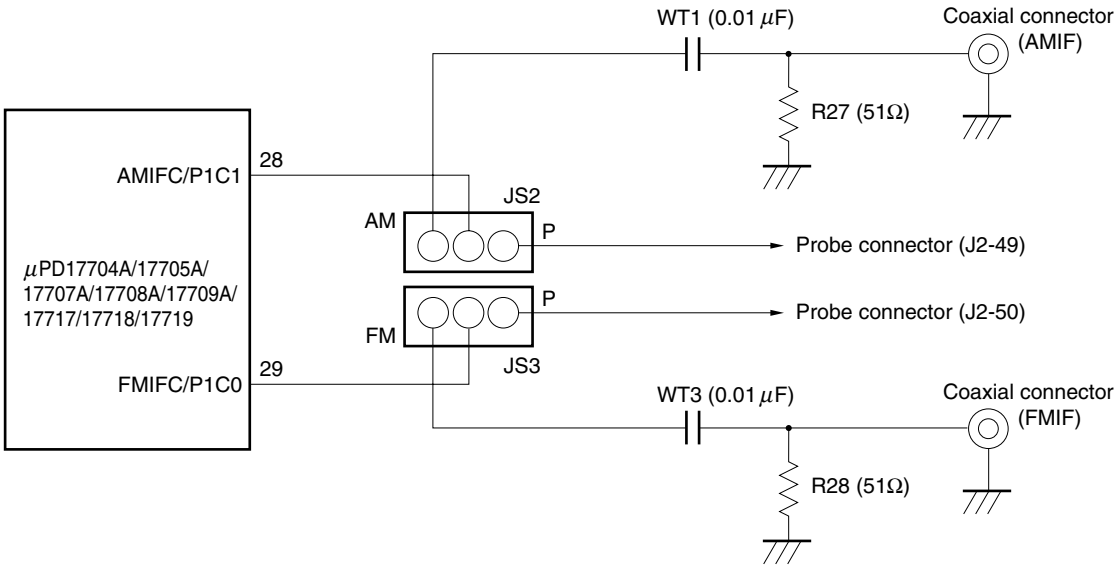
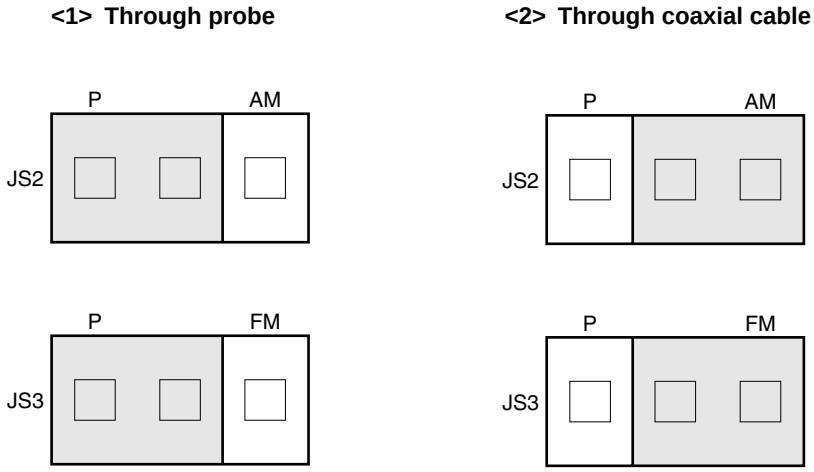


Figure 4-12. Setting of JS2, JS3



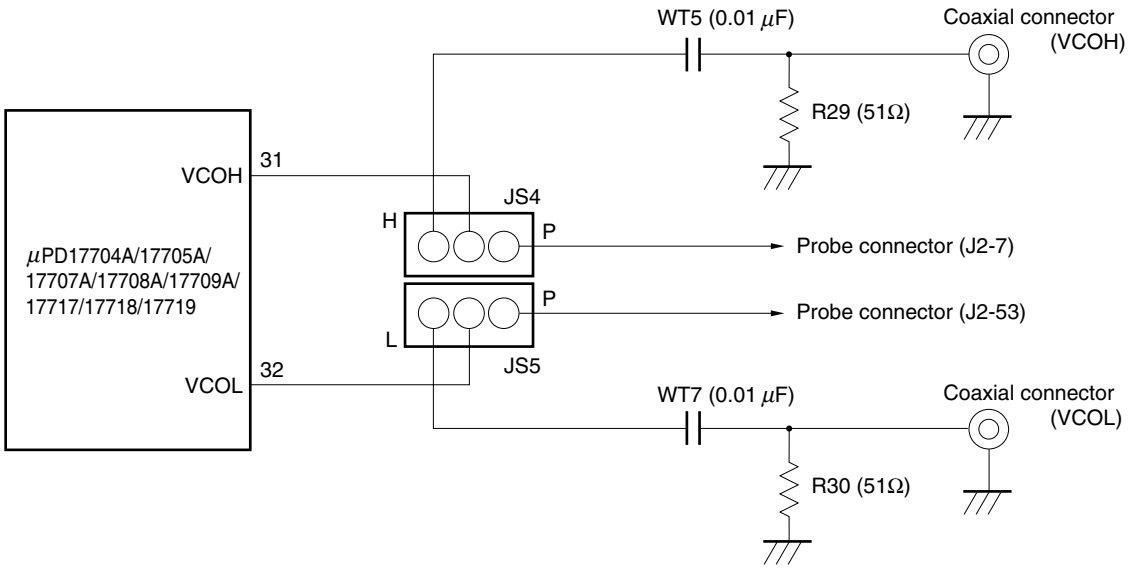
Remark The shaded portions in the above figures indicate the selected switch positions.

(6) JS4/JS5: Jumper switch for selecting input mode of VCOL and VCOH pins

These switches select whether signals are input to the VCOL and VCOH pins of the real chip through a probe or a coaxial cable.

The VCOL and VCOH pins are the input pins of PLL local oscillation signals.

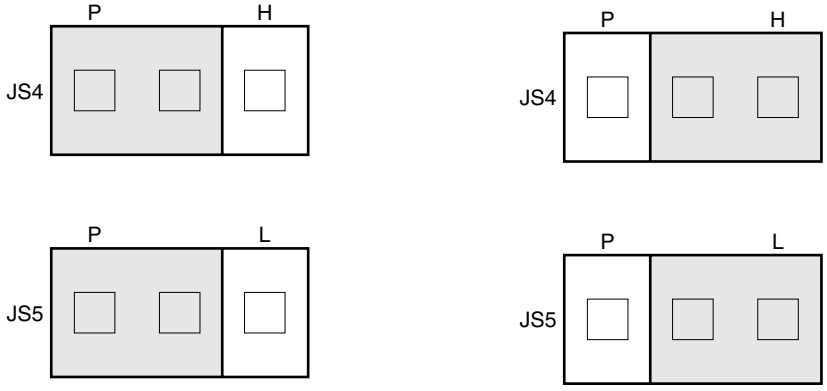
★ **Figure 4-13. Peripheral Circuit of JS4, JS5**



Remark If a signal is input to the VCO pin through a probe, the signal may not be correctly input due to influence from the wiring capacitance of the probe, etc. When evaluating PLL, it is recommended to input signals to the VCOL and VCOH pins through a coaxial cable.

Figure 4-14. Setting of JS4, JS5

<1> Signal input through probe **<2> Signal input through coaxial cable**



Remark The shaded portions in the above figures indicate the selected switch positions.

(7) JS6: Jumper switch for selecting CPU power supply (REG) of the real chip

This switch selects whether the CPU power supply (REG) pin of the real chip is connected to SW11 on the SE board or to the target system.

★ **Figure 4-15. Peripheral Circuit of JS6**

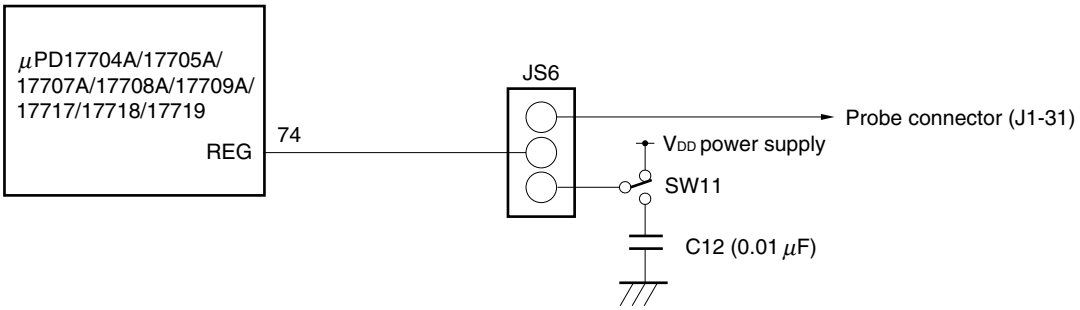
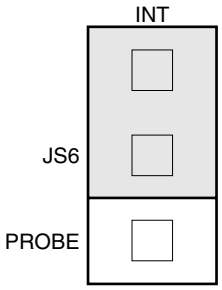
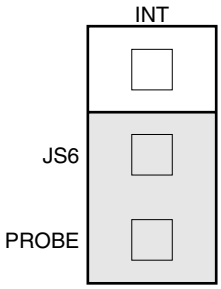


Figure 4-16. Setting of JS6

<1> To connect to SW11 on SE board



<2> To connect to target system



Remark The shaded portions in the above figures indicate the selected switch positions.

4.4 When SE Board Is Mounted on In-Circuit Emulator

The in-circuit emulator is connected to a host machine such as the PC-9800 series to debug the target system. For details on the operations of the in-circuit emulator, refer to the **IE-17K** or **IE-17K-ET User's Manual**.

(1) Mounting on and removing SE board from in-circuit emulator

Mount the SE-17709 on the in-circuit emulator as follows.

<1> Remove the exterior and interior lids from the in-circuit emulator.

<2> When the interior lid has been removed, a memory board is visible. Insert the connectors on the bottom of the SE-17709 (CN7, CN8, and CN9) into the three connectors on the memory board.

To remove the SE-17709 from the in-circuit emulator, lift the SE-17709 in the vertical direction.

Figure 4-17. Appearance of IE-17K (with Exterior Lid Removed)

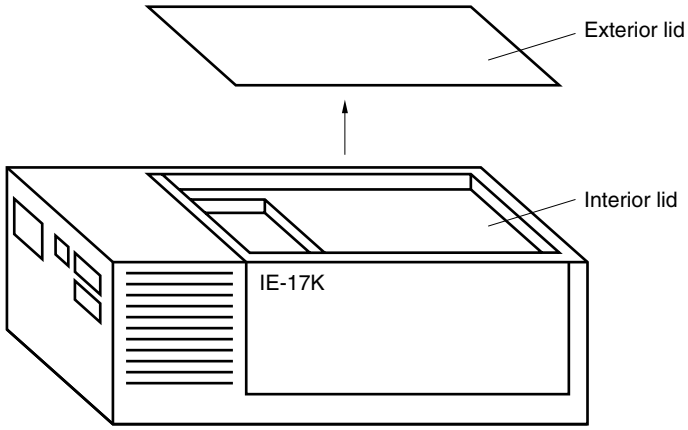
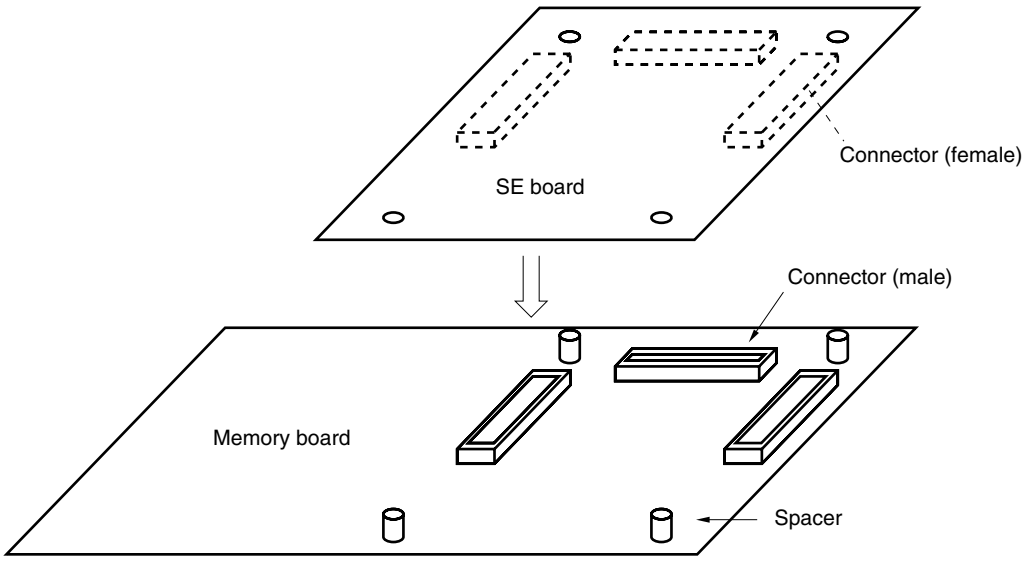


Figure 4-18. Mounting and Removing SE-17709



Next, connect the emulation probe (EP-17K80GC) to the connectors J1 and J2 on the SE-17709, to connect the target system.
Then attach the interior and exterior lids to the in-circuit emulator.

(2) Supplying power

After the SE-17709 has been mounted on the in-circuit emulator and before attaching the exterior and interior lids of the in-circuit emulator, turn on power to the in-circuit emulator and confirm that LED1 on the SE-17709 lights.
If LED1 does not light, the possible causes are as follows.

- The power cable of the in-circuit emulator is not connected.
- An overcurrent flows to the SE-17709 (about 500 mA or higher).
- The SE-17709 is not correctly mounted on the in-circuit emulator.

If LED1 does not light, turn off the power to the in-circuit emulator, and check to see if the SE-17709 is correctly mounted. If LED1 still does not light, the SE-17709 may be malfunctioning.

(3) Transferring ICE file to in-circuit emulator

The in-circuit emulator (IE-17K or IE-17K-ET) is connected to a host machine such as the PC-9800 series and used to debug the software and hardware of the target system. For details, refer to the **IE-17K** or **IE-17K-ET User's Manual**.

When using *SIMPLEHOST*, refer to the ***SIMPLEHOST* User's Manual**.

The procedure to confirm that the SE-17709 has been correctly mounted on the in-circuit emulator when commercially available RS-232-C communication software is used is described below.

When *SIMPLEHOST* is used, and if the SE-17709 has been correctly mounted, the message "LISTING" is displayed on the screen.

<1> Turn on the power to the in-circuit emulator. If the power is already being supplied, press the reset switch for restart. The prompt (@@@>) will then be displayed.

<2> Next, load the ICE file of the program created with the assembler (RA17K assembler package) or the ICE file output by using the ,.SP0 or ,.SP1 command to the in-circuit emulator by using the ,.LP0 or ,.LP1 command.

The in-circuit emulator will not operate until this ICE file has been loaded to it.

If the SE board is correctly connected to the in-circuit emulator at this time, a prompt (BRK>) will be displayed as shown in the following example.

Example When ICE file for the μPD17709 is loaded

```
OK
D17709
BRK>
```

If the above messages are not displayed, the possible causes are as follows.

- The real chip mounted on the SE-17709 does not correspond to the loaded ICE file.
- An SE board other than the SE-17709 is mounted on the in-circuit emulator.
- An ICE file other than that for the μPD17709 has been loaded.
- The SE-17709 is not completely connected to the in-circuit emulator.
- The $\overline{\text{RESET}}$ pin (SW10) is not pulled-up.

If the in-circuit emulator makes no response, take the following measures.

<1> The SE board may not be mounted correctly on the in-circuit emulator. Correctly mount the SE board.
<2> The target system and SE board may not be connected correctly with the emulation probe (EP-17K80GC). Check the connections again.
<3> If JS1 is set to the V_{DD} side, power may not be supplied to the real chip from the emulation probe or CN12 pin. Supply power from the emulation probe or CN12 pin to the real chip, or set JS1 to the +5 V side. If JS1 is set to the +5 V side, the in-circuit emulator supplies +5 V (refer to **4.2 Supplying Power to SE Board**).
<4> The reset circuit of the target system may not operate correctly. If this happens, the reset status of the SE board is not stable, and the in-circuit emulator cannot return a response.
In this case, turn on SW10, which selects pull up of the $\overline{\text{RESET}}$ pin, to start the in-circuit emulator again.
<5> Check the set baud rates of the in-circuit emulator and host machine. For the baud rate setting of the in-circuit emulator, refer to the **IE-17K** or **IE-17K-ET User's Manual**.

(4) Error messages and countermeasures

An error message is displayed if the correspondence between the real chip mounted on the in-circuit emulator and SE board, and the loaded ICE file is wrong.
Moreover, an SE board number is registered to the SE-17709 and a device number is registered to the real chip, so that debugging can be correctly executed.
Error messages that may be displayed and countermeasures to be taken if an error message is displayed are described next.

★ **Table 4-4. Device Number and SE Board Number**

Evaluation Device	Device Number	SE Board Number
μPD17704A	5F	55
μPD17705A	5E	55
μPD17707A	57	55
μPD17708A	56	55
μPD17709A	55	55
μPD17717	5D	55
μPD17718	5C	55
μPD17719	5B	55

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

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

3. The device number and SE board number are contained in the data in the ICE file to be loaded and are used by the in-circuit emulator to check the development environment when the ICE file is loaded.

For example, an ICE file assembled by using the device file for the μPD17709A contains the device number 55 and SE board number 55.

(a) Error message displayed and countermeasure when real chip mounted on SE-17709 does not correspond to loaded ICE file

[Error message]

?IDI INVALID DEVICE ID NUMBER [××-**]

Remark ×× indicates the device number of the real chip actually mounted, and ** indicates the device number contained in the loaded ICE file.

If this message has been output, check to see if the correct real chip is mounted on the SE board. If the real chip is wrong, turn off power to the in-circuit emulator, replace the real chip, and load the ICE file again. If a wrong device file was selected at assembly time, assemble the source file again by using the correct device file, and load the ICE file again.

(b) Error message displayed and countermeasure when SE board other than SE-17709 is mounted

[Error message]

?ISE INVALID SE BOARD NUMBER [##-VV]

Remark ## indicates the SE board number of the SE board actually mounted, and VV indicates the SE board number contained in the loaded ICE file.

(5) Cautions

<1> Turn on power to the in-circuit emulator and then to the target system.

<2> Do not use the reset switch (SW1) on the SE board.

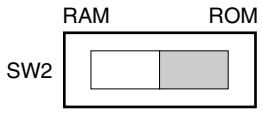
To reset the in-circuit emulator, use the reset switch of the in-circuit emulator.

4.5 Using SE Board Alone

(1) Setting of slide switch selecting ROM/RAM

Set the slide switch selecting ROM/RAM (SW2) to the ROM side as shown in Figure 4-19.

Figure 4-19. Setting of Slide Switch Selecting ROM/RAM



The shaded portion in the above figure indicates the selected switch position.

(2) Mounting PROM

When using the SE-17709 alone, mount a PROM (μPD27C1001AD) as a program memory.

Use a PROM that satisfies the following conditions.

- ROM size

  1 Mb: μPD27C1001AD-12, -15, -20, or equivalent

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

★ • PROM file (.PRO) for the μPD17704A, 17705A, 17707A, 17708A, 17709A, 17717, 17718, or 17719 output by the 17K Series assembler (RA17K assembler package)

Cautions 1. Do not write the ICE file (.ICE) that RA17K assembler package outputs to the in-circuit emulator. When the SE-17709 is used alone, the SE board does not operate with the ICE file.

2. The SE board does not operate with PROM files (.PRO) created by the AS17K.

★ **3. The last address of the program memory of the μPD17704A, 17705A, 17707A, 17708A, 17709A, 17717, 17718, and 17719 is as follows.**

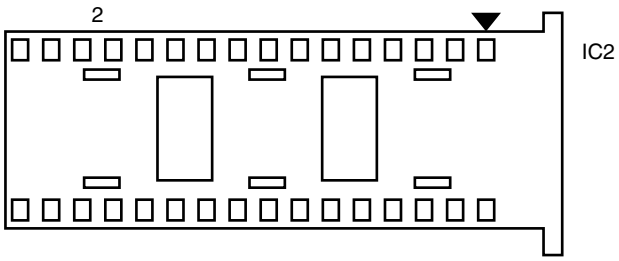
μPD17704A: 3FFFH
μPD17705A: 5FFFH
μPD17707A: 5FFFH
μPD17708A: 7FFFH
μPD17709A: 7FFFH
μPD17717: 5FFFH
μPD17718: 7FFFH
μPD17719: 7FFFH

Mount the PROM in a socket (IC2) on the SE board.

Notes on mounting PROM

- Mount the μPD27C1001AD (32-pin) so that pin 1 is aligned with the upside-down triangle below it.

Figure 4-20. PROM (IC2) Mounting Socket



(3) Supplying power

Be sure to supply +5 V ±5% (Vcc) to the CN11 pin of the SE-17709 from an external power source. For details, refer to **4.1 Using Level Conversion Chip (μPD6706GF)** and **4.2 Supplying Power to SE Board**.

When Vcc is correctly supplied, LED1 on the SE-17709 lights.

If LED1 does not light, the possible causes are as follows.

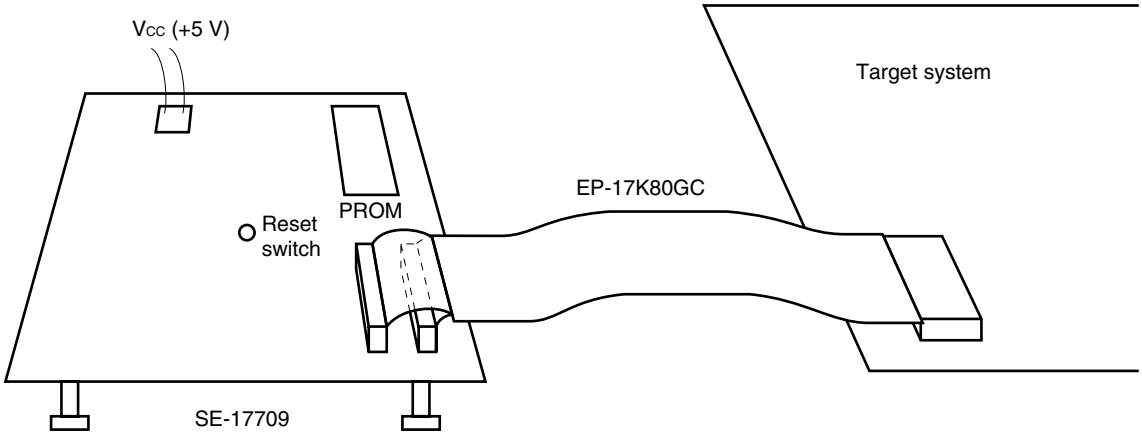
- Power is not being supplied.
- An overcurrent is flowing (about 500 mA or higher).

(4) Executing program

Connect the SE-17709 and the target system as illustrated in Figure 4-21. When the power to the target system is turned on, power is also supplied to the SE-17709, a power-on reset is effected, and the program written to the PROM is executed starting from address 0H.

When the reset switch on the SE-17709 is pressed, the SE board is forcibly reset, and the program written to the PROM is executed starting from address 0H, in the same manner as when a power-on reset is effected.

Figure 4-21. Example of Connection When SE-17709 Is Used Alone



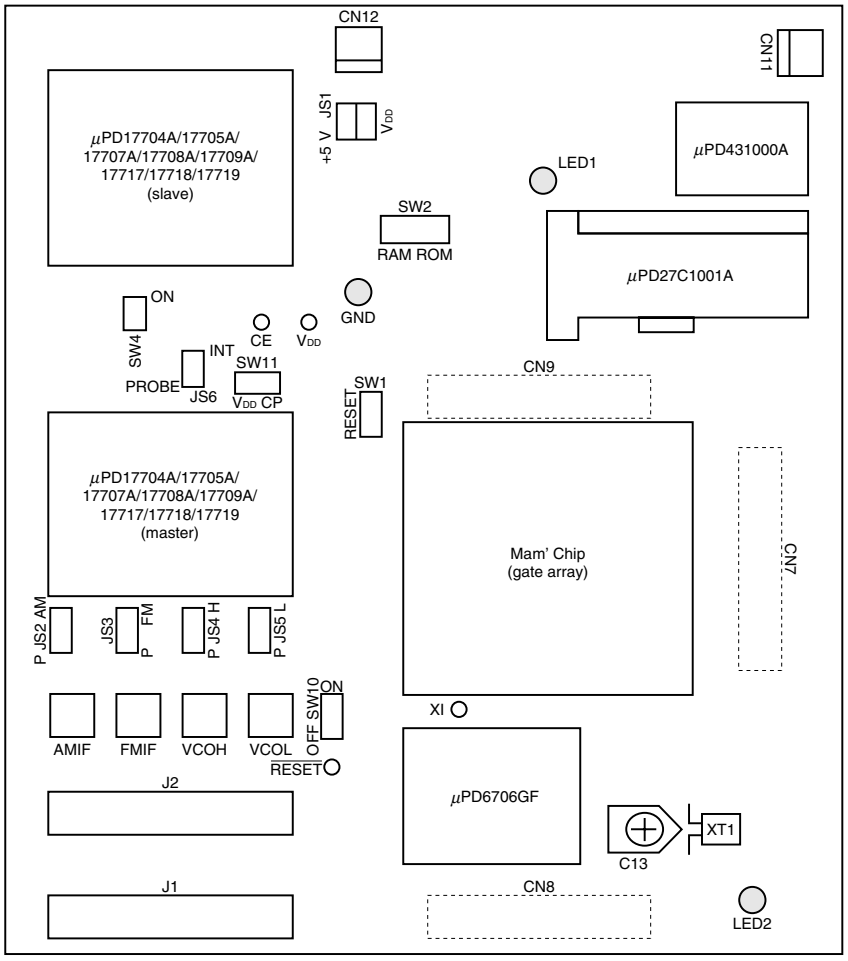
4.6 Monitor Pins and LEDs

The SE-17709 is provided with monitor pins that check the pin status of the real chip, and LEDs that indicate the operation status of the board. Table 4-5 lists the monitor pins and LEDs and their functions. Figure 4-22 shows the layout of the monitor pins and LEDs.

Table 4-5. Monitor Pins, LEDs, and Their Functions

Monitor Pin, LED		Function
Monitor pin	XI	To monitor CKOUT
	$\overline{\text{RESET}}$	To monitor $\overline{\text{RESET}}$
	CE	To monitor CE
	GND	GND
	V_{DD}	To monitor power supply V_{DD}
LED1		Lit: Power ON Extinguished: Power OFF

★ **Figure 4-22. Layout of Monitor Pins and LEDs**



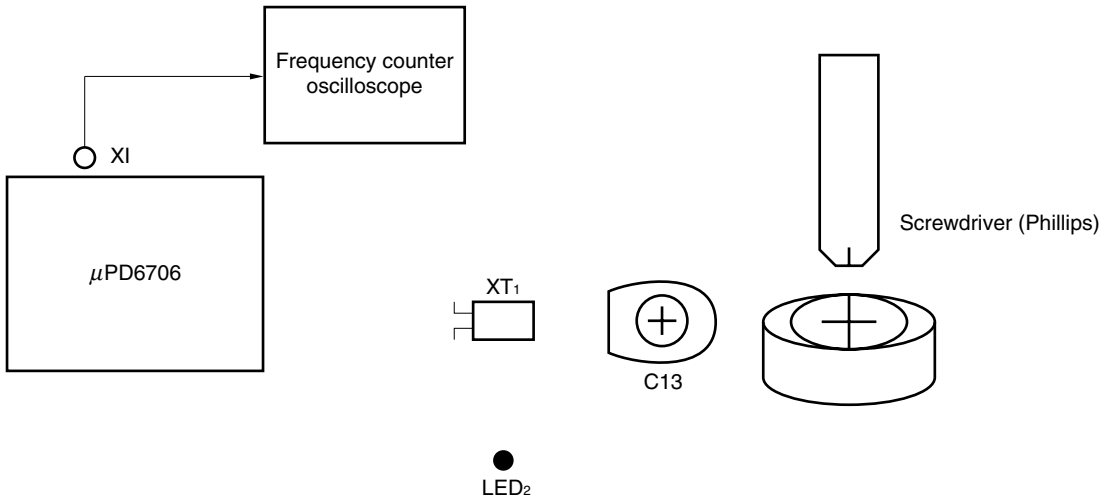
4.7 Fine-Tuning of Source Clock Oscillation Frequency (4.5 MHz)

The frequency of the source clock for the supervisor operation[Note] of the SE board is 4.5 MHz.

The clock (4.5 MHz) supplied to the real chip uses the source clock as is.

To fine-tune the source clock, use a trimmer capacitor (C13) as shown in Figure 4-23. To monitor the oscillated waveform and measure oscillation, use the monitor pin "XI".

Figure 4-23. Fine-Tuning of Source Clock

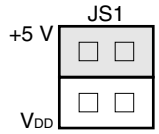
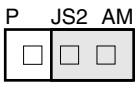
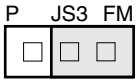
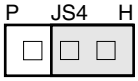
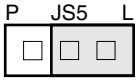
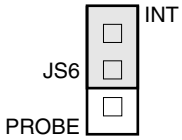


Note An operation to be executed on the in-circuit emulator when CLICE is used.

4.8 Setting of Jumper Switches and Slide Switches

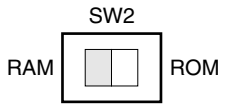
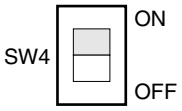
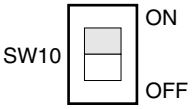
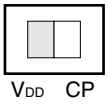
The jumper switches and slide switches of the SE-17709 are factory-set for shipment as indicated in Table 4-6. Confirm the setting of these switches before using them.

Table 4-6. Setting of Jumper Switches and Slide Switches (1/2)

Switch Number	Jumper Switch, Slide Switch	Set Conditions	Set Position
JS1		Refer to **4.1 Using Level Conversion Chip (μPD6706GF)** and **4.2 Supplying Power to SE Board**.	
JS2		If signal is input/output to/from P1C1/AMIF through coaxial cable	AM side
		If signal is input/output to/from P1C1/AMIF through probe	P side
JS3		If signal is input/output to/from P1C0/FMIF through coaxial cable	FM side
		If signal is input/output to/from P1C0/FMIF through probe	P side
JS4		If VCOH is input through coaxial cable	H side
		If VCOH is input through probe	P side
JS5		If VCOL is input through coaxial cable	L side
		If VCOL is input through probe	P side
JS6		If capacitor or VDD power supply on SE board is connected to pins connecting capacitors for CPU power supply (REG)	INT side
		If capacitor on target system is connected to pins connecting capacitors for CPU power supply (REG)	PROBE side

Remark The shaded portions in the above figures indicate the factory settings at shipment.

Table 4-6. Setting of Jumper Switches and Slide Switches (2/2)

Switch Number	Jumper Switch, Slide Switch	Set Conditions	Set Position
SW2		When SE board is mounted on in-circuit emulator (IE-17K) for evaluation	RAM side
		When SE-17709 is used alone for evaluation	ROM side
SW4		If CE pin on the target side is pulled up	ON side
		If CE pin on the target side is not pulled up	OFF side
SW10		If $\overline{\text{RESET}}$ pin on the target side is pulled up	ON side
		If $\overline{\text{RESET}}$ pin on the target side is not pulled up	OFF side
SW11		If V_{DD} power supply on SE board is connected to the INT side of JS6	V_{DD} side
		If V_{DD} power supply is connected to GND through capacitor (0.01 μF) on the INT side of JS6	CP side

Remark The shaded portions in the above figures indicate the factory settings at shipment.

CHAPTER 5 CONNECTOR PIN LIST

Table 5-1. Connector Pins of J1

J1 Pin Number	Pin Name (Pin Number of IC)	J1 Pin Number	Pin Name (Pin Number of IC)	J1 Pin Number	Pin Name (Pin Number of IC)
1	FCG1/P2A1 (15)	21	GND	41	P2B2 (44)
2	P0B2/$\overline{\text{SCK1}}$ (68)	22	P0A0/SO0 (66)	42	GND
3	GND	23	P0B1/SO1 (69)	43	P2B0 (46)
4	GND	24	GND	44	P3C3 (47)
5	P2C3 (55)	25	P0B0/SI1 (70)	45	GND
6	GND	26	P2D2 (71)	46	P3C2 (48)
7	P2C2 (56)	27	GND	47	P3C1 (49)
8	P2C1 (57)	28	P2D1 (72)	48	GND
9	GND	29	P2D0 (73)	49	P3C0 (50)
10	P2C0 (58)	30	GND	50	P3D3 (51)
11	P0C3 (59)	31	REG (74)	51	GND
12	GND	32	GND	52	P3D0 (54)
13	P0C2 (60)	33	GND	53	P0B3/SI0 (67)
14	P0C1 (61)	34	GND	54	GND
15	GND	35	GND	55	P3D2 (52)
16	P0C0 (62)	36	GND	56	P2B3 (43)
17	P0A3/SDA (63)	37	CE (78)	57	P3D1 (53)
18	GND	38	V_{DD}	58	P1D3 (37)
19	P0A2/SCL (64)	39	GND	59	P1D2 (38)
20	P0A1/$\overline{\text{SCK0}}$ (65)	40	$\overline{\text{RESET}}$ (80)	60	GND

Table 5-2. Connector Pins of J2

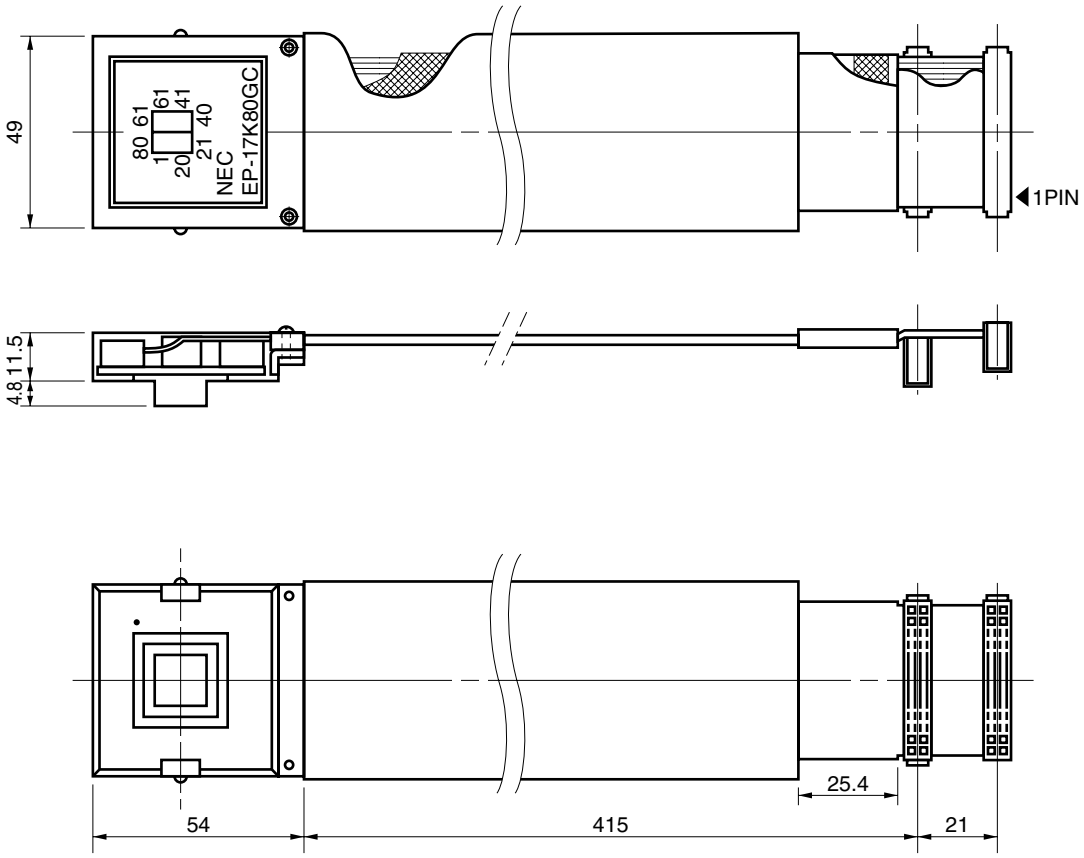
J2 Pin Number	Pin Name (Pin Number of IC)	J2 Pin Number	Pin Name (Pin Number of IC)	J2 Pin Number	Pin Name (Pin Number of IC)
1	P1D1/BEEP1 (39)	21	GND	41	AD2/P0D2 (23)
2	GND	22	P3B3 (10)	42	GND
3	GND	23	P3B2 (11)	43	AD1/P0D1 (24)
4	EO1 (35)	24	GND	44	AD0/P0D0 (25)
5	EO0 (34)	25	P3B1 (12)	45	GND
6	GND	26	P3B0 (13)	46	AD5/P1C3 (26)
7	VCOH (31)	27	GND	47	AD4/P1C2 (27)
8	INT2 (1)	28	P2A2 (14)	48	GND
9	GND	29	FCG0/P2A0 (16)	49	AMIFC/P1C1 (28)
10	INT4/P1A3 (2)	30	GND	50	FMIFC/P1C0 (29)
11	INT3/P1A2 (3)	31	P1B3 (17)	51	GND
12	GND	32	P1B2/PWM2 (18)	52	V_{DD}
13	P1A1 (4)	33	GND	53	VCOL (32)
14	TM0G/P1A0 (5)	34	P2B1 (45)	54	GND
15	GND	35	P1B1/PWM1 (19)	55	P1D0/BEEP0 (40)
16	P3A3 (6)	36	GND	56	GND
17	P3A2 (7)	37	P1B0/PWM0 (20)	57	GND
18	GND	38	GND	58	INT1 (41)
19	P3A1 (8)	39	GND	59	INT0 (42)
20	P3A0 (9)	40	AD3/P0D3 (22)	60	GND

CHAPTER 6 DRAWINGS OF PROBE AND CONVERSION SOCKET

6.1 Drawing of Probe

Product Name EP-17K80GC

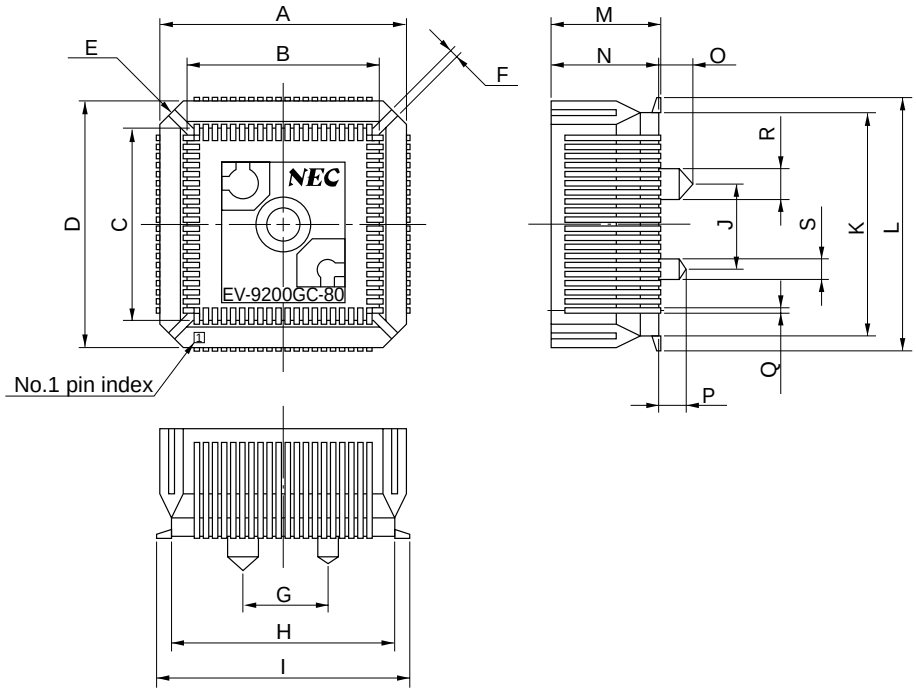
Figure 6-1. Drawing of Probe



Remark Unit: mm

6.2 Drawing of Conversion Socket (EV-9200GC-80)

Figure 6-2. Drawing of EV-9200GC-80



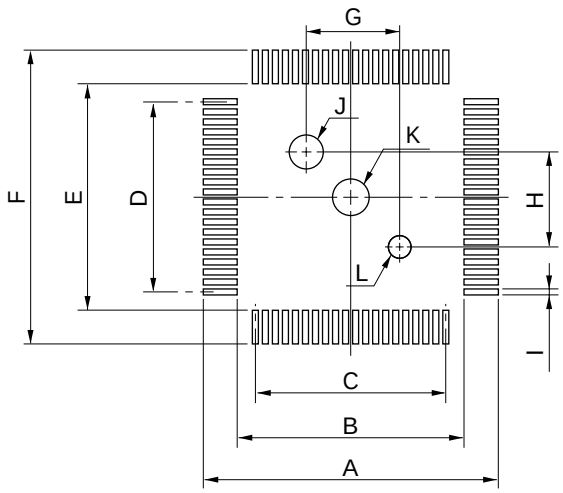
EV-9200GC-80-G0

ITEM	MILLIMETERS	INCHES
A	18.0	0.709
B	14.4	0.567
C	14.4	0.567
D	18.0	0.709
E	4-C 2.0	4-C 0.079
F	0.8	0.031
G	6.0	0.236
H	16.0	0.63
I	18.7	0.736
J	6.0	0.236
K	16.0	0.63
L	18.7	0.736
M	8.2	0.323
O	8.0	0.315
N	2.5	0.098
P	2.0	0.079
Q	0.35	0.014
R	ϕ2.3	ϕ0.091
S	ϕ1.5	ϕ0.059

Remark Unit: mm

6.3 Recommended Footprint

Figure 6-3. Recommended Footprint of EV-9200GC-80



EV-9200GC-80-P1

ITEM	MILLIMETERS	INCHES
A	19.7	0.776
B	15.0	0.591
C	$0.65\pm0.02\times19=12.35\pm0.05$	$0.026^{+0.001}_{-0.002}\times0.748=0.486^{+0.003}_{-0.002}$
D	$0.65\pm0.02\times19=12.35\pm0.05$	$0.026^{+0.001}_{-0.002}\times0.748=0.486^{+0.003}_{-0.002}$
E	15.0	0.591
F	19.7	0.776
G	6.0 ± 0.05	$0.236^{+0.003}_{-0.002}$
H	6.0 ± 0.05	$0.236^{+0.003}_{-0.002}$
I	0.35 ± 0.02	$0.014^{+0.001}_{-0.001}$
J	$\phi2.36\pm0.03$	$\phi0.093^{+0.001}_{-0.002}$
K	$\phi2.3$	$\phi0.091$
L	$\phi1.57\pm0.03$	$\phi0.062^{+0.001}_{-0.002}$

Caution **Some of the recommended dimensions of the mount pad for the conversion socket may differ from these of the mount pad for the target device. When mounting a device, also take the recommended dimensions of the mount pad for the target device into consideration when designing.**

Remark Unit: mm

[MEMO]

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