

DIFFERENCES IN MB89530/H/A SERIES PRODUCTS

Configuration of products

Table 1 Configuration of Products

| Product | MB89535A* ¹ | MB89537* ¹ MB89537C MB89537H* ¹ MB89537HC MB89537A* ¹ MB89537AC | MB89538* ¹ MB89538C MB89538H* ¹ MB89538HC MB89538A* ¹ MB89538AC | MB89P538 | MB89PV530 |
|-------------------|--------------------------------|---|---|---|--|
| Item | | | | | |
| Classification | Mass production (mask ROM) | | | OTP | EVA |
| ROM Size | 16K x 8 bits (internal ROM) | 32K x 8 bits(Internal ROM) | 48K x 8 bits(internal ROM) | 48K x 8 bits (internal ROM; can be written to using EPROM writer) | 48K x 8 bits(external ROM)* ² |
| RAM Size | 512 x 8 bits | 1K x 8 bits | 2K x 8 bits | | |
| Operating Voltage | 2.2 V to 5.5 V* ³ | | | 2.7 V to 5.5 V | |

*1: The MB89535A, MB89537/H/A, and MB89538/H/A do not have I²C.

*2: MBM27C512 is used as an external ROM.

*3: This depends on the operating frequency.

Table 2 Specifications

| Item | Specifications |
|----------------------------|--|
| I ² C Interface | 1-ch conforming to the System Management Bus (revision 1.0) from Intel and the I²C specifications from Phillips A 2-wire protocol is used to communicate with other devices. The MB89535A, MB89537/H/A, and MB89538/H/A do not have I ² C. |

■ Differences in products, and precautions in selecting products

Table 3 Correspondence between Packages and Products

| Product Package | MB89535A | MB89537/C MB89537H/C MB89537A/C | MB89538/C MB89538H/C MB89538A/C | MB89P538 | MB89PV530 |
|-----------------|----------|---------------------------------------|---------------------------------------|----------|-----------|
| DIP-64P-M01 | ○ | ○ | ○ | ○ | x |
| FPT-64P-M03 | ○ | ○ | ○ | x | x |
| FPT-64P-M06 | ○ | ○ | ○ | ○ | x |
| FPT-64P-M09 | ○ | ○ | ○ | ○ | x |
| MDP-64C-P02 | x | x | x | x | ○ |
| MQP-64C-P01 | x | x | x | x | ○ |

○: Can be used

x: Cannot be used

■ Pin description

Table 4 Pin Descriptions

| Pin No. | | | Pin Name | Function | | |
|--------------------|-----------------|-----------------|----------|----------------|--------------------------------------|---|
| SH-DIP*1 MDIP*2 | QFP*3 MQFP*4 | SQFP*5 QFP*6 | | | | |
| 57 | 50 | 49 | C | 5-V Product | MB89537H/C MB89538H/C | Capacity pin for power stabilization Connect an external ceramic capacitor of about 0.1 μF |
| | | | C | | MB89P538 | Fix this pin to Vcc. (The voltage-lowering circuit stabilization time is obtained.) |
| | | | NC | | MB89PV530 | NC Pin |
| | | | NC | 3-V Product | MB89537/C MB89538/C | NC Pin |
| | | | C | | MB89P538 | Fix this pin to Vss. (The voltage-lowering circuit stabilization time is not obtained.) |
| | | | NC | | MB89PV530 | NC Pin |
| | | | NC | Product with A | MB89535A MB89537A/C MB89538A/C | NC Pin |
| | | | C | | MB89P538 | Fix this pin to Vss. (The voltage-lowering circuit stabilization time is not obtained.) |
| | | | NC | | MB89PV530 | NC Pin |

*1: DIP-64P-M01 *2: DIP-64C-P02 *3: FPT-64P-M06

*4: MQP-64C-P01 5: FPT-64P-M03 *6: FPT-64P-M09

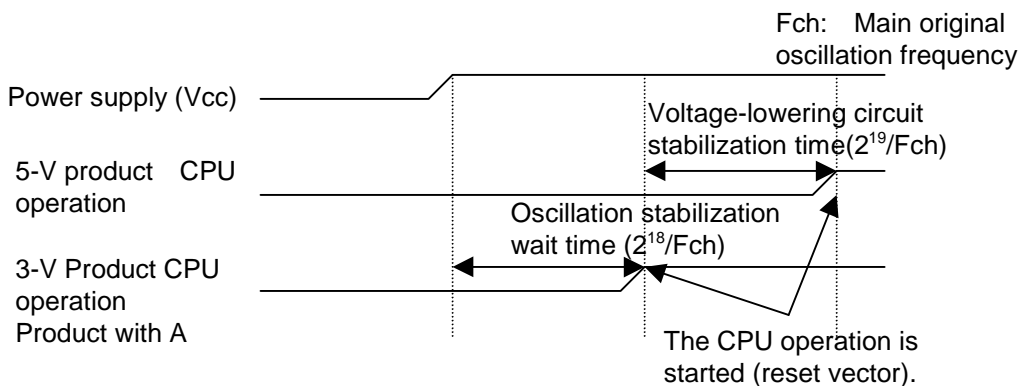
■ Precautions in handling devices

- Details of processing NC pins and C pins of the MB89530/H/A series
The MB89530/H/A series includes the following products:

| | MASK | OTP | EVA |
|----------------|--------------------------------------|----------|-----------|
| 5-V Product | MB89537H/C MB89538H/C | MB89P538 | MB89PV530 |
| 3-V Product | MB89537/C MB89538/C | | |
| Product with A | MB89535A MB89537A/C MB89538A/C | | |

The resources are the same for these three different types of products, but the electrical characteristics (refer to each **electrical characteristics**) and the operation sequence after power-on are partially different.

The operation sequence after power-on for each product type is shown below:



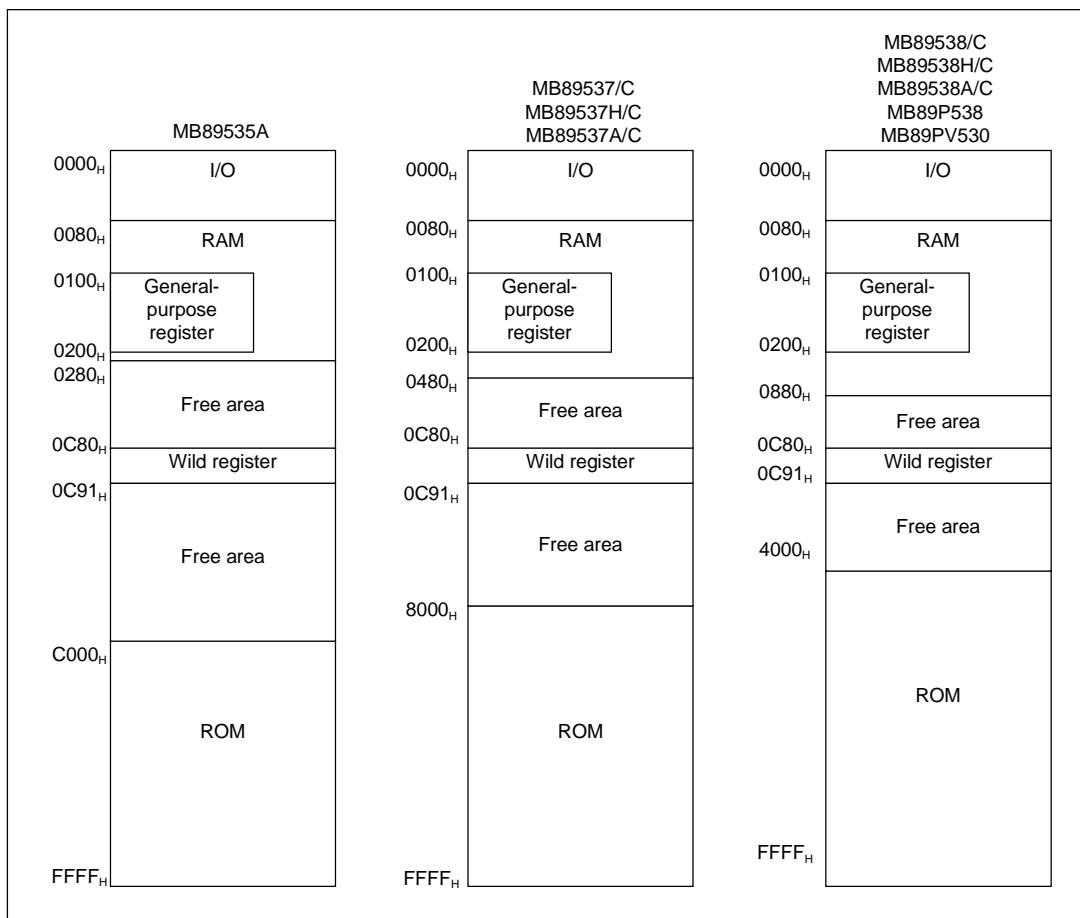
However, for OTP and EVA, the corresponding product shown in the above table is used as those types of products.

Consequently, the operation sequence after power-on for OTP is designed to become the same as that for the relevant mask product through the C-pin processing.

The C-pin processing for each product is shown below:

| | | C-pin Processing |
|----------------|--------------------------------------|---|
| 5-V Product | MB89537H/C MB89538H/C | Connect a 0.1- μ F capacitor. |
| | MB89P538 | Fix the pin to Vcc. (The voltage-lowering circuit stabilization time is obtained.) |
| | MB89PV530 | NC Pin Since a tool is used, there is no need to adjust the voltage-lowering circuit stabilization time. |
| 3-V Product | MB89537/C MB89538/C | NC Pin |
| | MB89P538 | Fix the pin to Vss. (The voltage-lowering circuit stabilization time is not obtained.) |
| | MB89PV530 | NC Pin Since a tool is used, there is no need to adjust the voltage-lowering circuit stabilization time. |
| Product with A | MB89535A MB89537A/C MB89538A/C | NC Pin |
| | MB89P538 | Fix the pin to Vss. (The voltage-lowering circuit stabilization time is not obtained.) |
| | MB89PV530 | NC Pin Since a tool is used, there is no need to adjust the voltage-lowering circuit stabilization time. |

■ Memory map



■ Precautions when using A/D converter

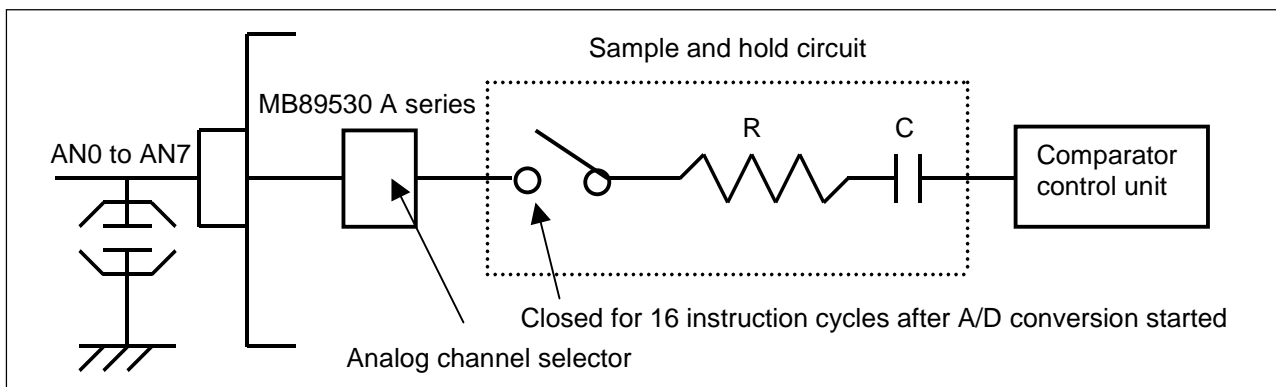


Fig. 1 Equivalent Circuit for Analog Input

The R and C values of the sample-and-hold circuit are shown below:

- MB89530 A series □ MB89535A □ MB89537A/C □ MB89538A/C □
 $R = 2.2 \text{ k}\Omega$ (max.)
 $C = 45 \text{ pF}$ (max.)