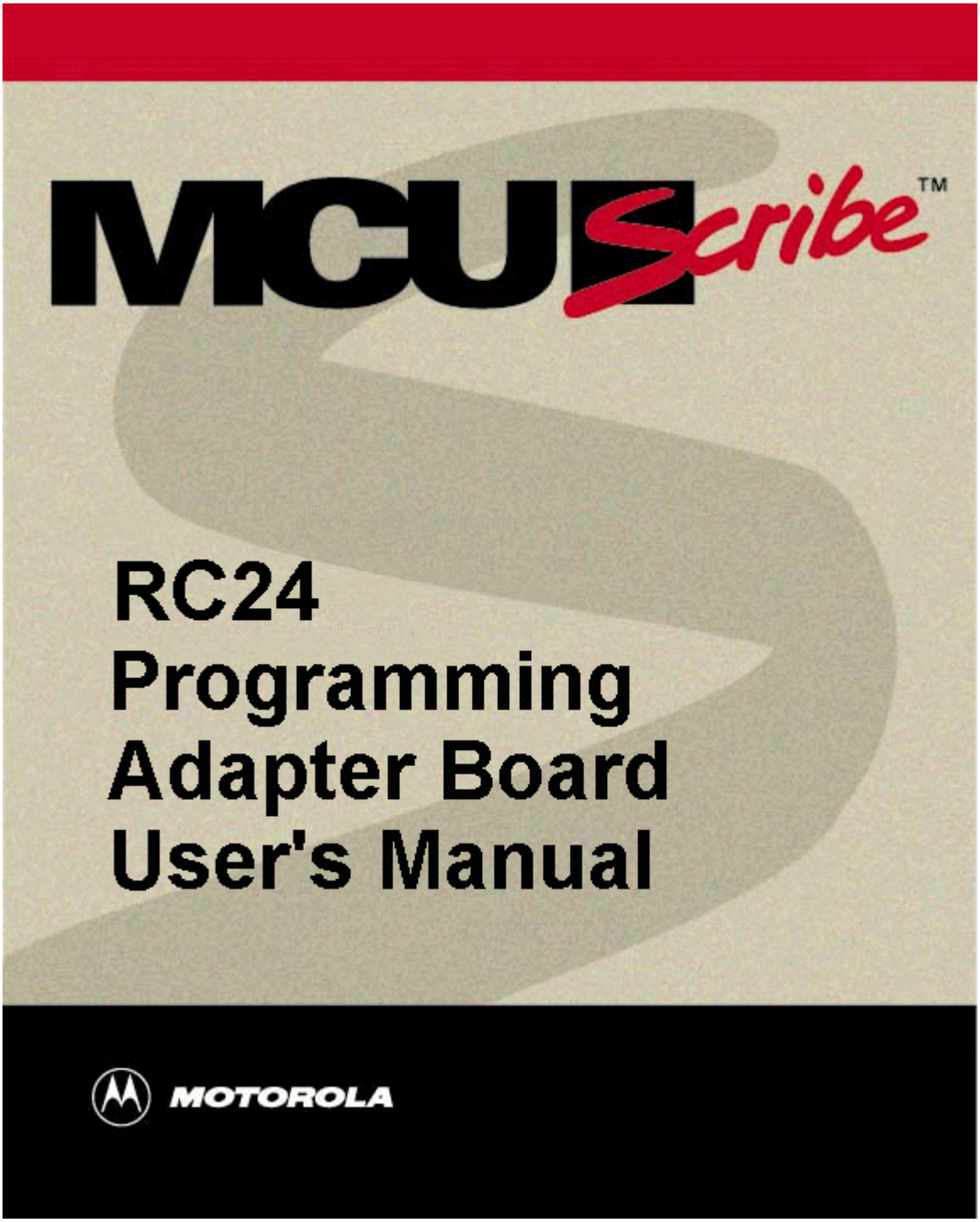
M68RC24PABUM/D



Freescale Semiconductor, Inc.

Document
M68RC24PABUM/D

Date
April 1999

Motorola reserves the right to make changes without further notice to any products herein to improve reliability, function, or design. Motorola does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part.

Motorola and the Motorola logo are registered trademarks of Motorola Inc. MCUscribe is a trademark of Motorola Inc. All other trademarks are the property of their respective holders.

Motorola Inc. is an Equal Opportunity/Affirmative Action Employer.

© MOTOROLA, INC., 1999; All Rights Reserved

Motorola

6501 William Cannon Drive West
Austin, Texas 78735 USA

Freescale Semiconductor, Inc.

Contents

1 Getting Started

1.1 .... Installing the MCUscribe Application and Personality Files..... 1-1

1.1.1 .....Files Included with MCUscribe Software 1-2

1.2 .... Disconnecting Power Before Handling Components..... 1-3

1.3 .... Inserting a Programming Adapter Board 1-3

1.4 .... Inserting an SOIC MCU Device 1-4

1.5 .... Inserting an PDIP MCU Device..... 1-5

2 Using the RC24 Programming Adapter Board

2.1 .... Device and Mask Set Information..... 2-2

2.2 .... RC24 MCU Memory Configuration 2-3

2.3 .... Special Warnings 2-5

3 Support

3.1 .... Opening Additional Online Documentation 3-1

3.2 .... Contacting Customer Support..... 3-2

Freescale Semiconductor, Inc.

For More Information On This Product,
Go to: www.freescale.com

Freescale Semiconductor, Inc.

For More Information On This Product,
Go to: www.freescale.com

1 Getting Started

What does this manual cover?

This manual is a quick introduction to The M68PA08RC24P16 programming adapter boards (PABs).

This chapter explains how to install the MCUscribe software, RC24 PABs, and MC68HC908RC24 MCU. Other chapters have notes about using MC68HC908RC24 MCUs with the MCUscribe application, and tell you how to get additional information and technical support.

1.1 Installing the MCUscribe Application and Personality Files

The RC24 programming adapter board comes with the latest version of the MCUscribe application (for Windows NT and Windows 95). First, install the software:

Insert the first MCUscribe diskette into your floppy drive, and enter **`a:\setup.exe`** in the Windows **Run** dialog box. The installation setup program opens.

Follow the instructions to install the software in a folder of your choice. The installation program places all the MCUscribe files in one folder. (Using a single folder expedites selection of the MCU and S-record files, so that you can start programming more quickly.)

Freescale Semiconductor, Inc.

For More Information On This Product,
Go to: www.freescale.com

1.1.1 Files Included with MCUscribe Software

The MCUscribe setup program installs these files on your system:

- **MCUscribe.exe** — Windows executable file for the MCUscribe application, which is the interface you use to communicate with the SPGMR08, and to program MCU memory.
- **.mmp** files **—** The personality files that supply the SPGMR08 with MCU configuration and memory map information. The personality file for the RC24 MCU is ***9RC24.mmp*.**
- **MCUscribe.hlp** and **MCUscribe.cnt** — Online help for the MCUscribe application.
- **MCUscribe.pdf** — *Serial Programmer for HC08 User' s Manual*. Instructions for using the MCUscribe application (help information presented in an Adobe Acrobat PDF user's manual).
- **QStart08.pdf** — *SPGMR08 QuickStart Guide*. A streamlined PDF guide to setting up SPGMR08 hardware and software.
- **PABRC24.pdf** — *RC24 Programming Adapter Board User' s Manual*, an Acrobat PDF version of specific instructions for setting up and using the RC24 PAB. The software may also include user's manuals for other programming adapter boards.
- **readme.txt** — Release notes in ASCII format (text from ***QStart08.pdf***)

For tips on opening online support documents, see page 17.

Freescale Semiconductor, Inc.

For More Information On This Product,
Go to: www.freescale.com

1.2 Disconnecting Power Before Handling Components

If power is disconnected, you can insert or remove MCUs and programming adapter boards freely. However, if you are in an MCUscribe session, make sure the yellow Socket Power light is off before you handle the MCU or switch out the programming adapter board. MCUs can be damaged by power surges during installation.

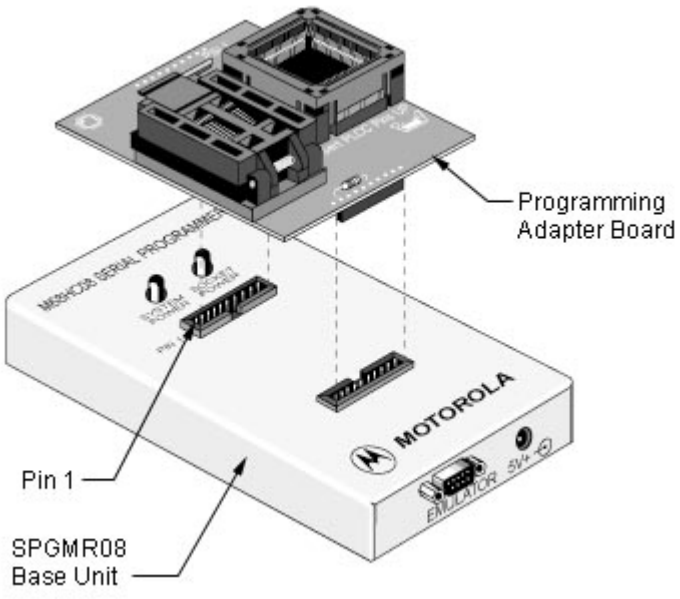
If the Socket Power light is on, click the **Power Off** button in the MCUscribe Control Panel. Socket power is disconnected, and the yellow Socket Power light goes off.

1.3 Inserting a Programming Adapter Board

To use the RC24 PAB, plug it onto the SPGMR08 base unit. The PAB works when installed in either direction on the base unit. That is, the Pin 1 base unit connector can accept either connector of the adapter board. The illustration below shows a programming adapter board about to be plugged onto the base unit.

Note:

The programming adapter board shown here is not an RC24 PAB. (All PABs are installed in a similar way.)



Freescale Semiconductor, Inc.

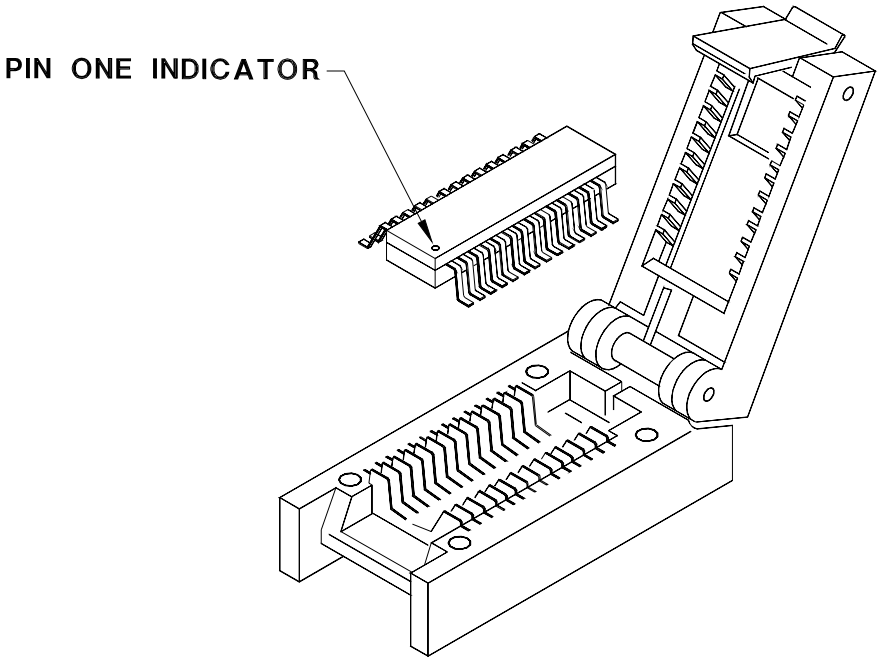
For More Information On This Product,
Go to: www.freescale.com

1.4 Inserting an SOIC MCU Device

The illustration below shows a small outline integrated circuit (SOIC) socket with an MCU ready to be inserted. To insert an SOIC MCU:

1. Open the socket case by lifting the latch.
2. Insert the MCU, matching the MCU's Pin 1 with the socket's Pin 1. The MCU's marked corner identifies Pin 1's location. An orientation key printed on the board shows the MCU and socket Pin 1 alignment.

   Note: Be careful to avoid bending the pins. Motorola recommends that you use a vacuum pen or other appropriate tool to handle MCUs.
3. Push the socket lid down gently until it snaps shut.



Freescale Semiconductor, Inc.

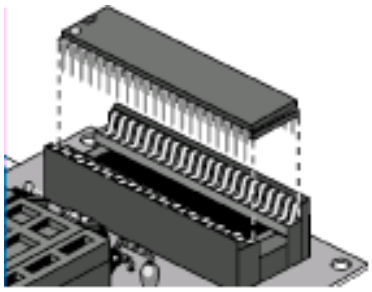
For More Information On This Product,
Go to: www.freescale.com

1.5 Inserting a PDIP MCU Device

The illustration below shows a shrink dual in-line (PDIP) socket with an MCU ready to be inserted. To insert an PDIP MCU:

Insert the MCU, matching the MCU's Pin 1 with the socket's Pin 1. The MCU's marked corner identifies Pin 1's location. A **1** printed on the board identifies the socket's Pin 1.

Note: Be careful to avoid bending the pins. Motorola recommends that you use a vacuum pen or other appropriate tool to handle MCUs.



Freescale Semiconductor, Inc.

For More Information On This Product,
Go to: www.freescale.com

Freescale Semiconductor, Inc.

For More Information On This Product,
Go to: www.freescale.com

2 Using the RC24 Programming Adapter Board

The RC24 programming adapter board enables the SPGMR08 to program Flash EEPROM memory ranges of M68HC908RC24P16 (RC24) MCUs in 16-pin SOIC or ZIF (DIP) package configurations. This chapter has specific information about using the RC24 programming adapter board.

Freescale Semiconductor, Inc.

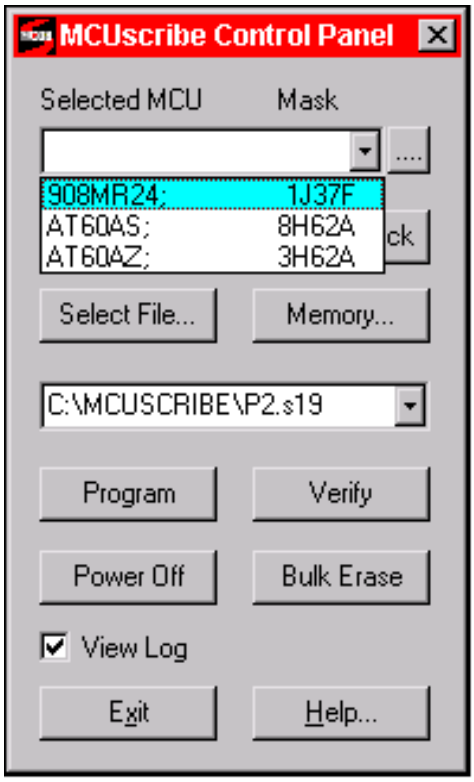
For More Information On This Product,
Go to: www.freescale.com

2.1 Device and Mask Set Information

Device	Mask set	Personality file	Selected MCU / Mask choice
MC68HC908RC24	1J68F	9RC24.mmp	908RC24; 1J68F

The table above shows the device and mask set supported by the RC24 PAB, with these types of corresponding information:

- **Personality file** — The file that supplies configuration and memory map data for programming the MCU and mask set. To program a particular mask set, the corresponding personality file must be installed on the host system.
- **Selected MCU/Mask choice** — The choice you make to begin working with the RC24 MCU in an MCUscribe session. You must select an MCU in the MCUscribe Control Panel before you can begin programming. (The Control Panel and selection list is shown in the illustration below.)

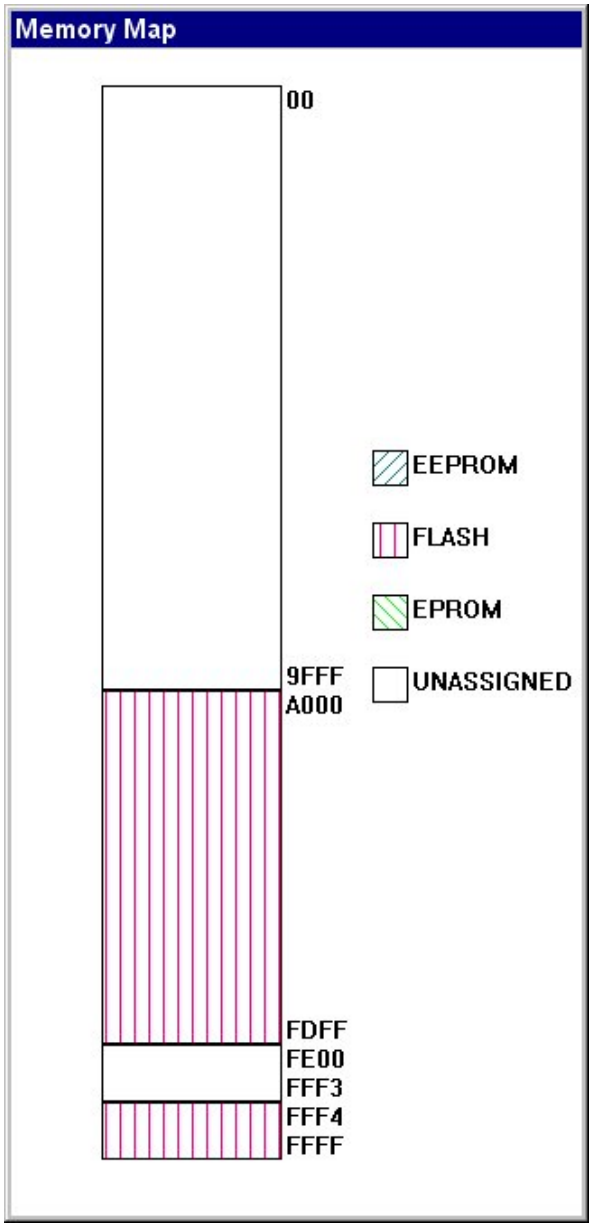


Freescale Semiconductor, Inc.

For More Information On This Product,
Go to: www.freescale.com

2.2 RC24 MCU Memory Configuration

The RC24 MCU has 24 KB of programmable Flash EEPROM memory, 12 bytes of user-definable vector addresses, and a block protect register. The MCUscribe RC24 Memory Map status box (shown below) displays the location of the Flash EEPROM memory arrays.



Freescale Semiconductor, Inc.

For More Information On This Product,
Go to: www.freescale.com

2.3 Special Warnings

The following special warnings apply to the RC24 programming adapter board:

- **Inadvertent Flash EEPROM erasure:** If you program Flash EEPROM memory with a sequence of S-record files, you may find that each new programming command erases already-programmed Flash EEPROM arrays.

  Recommendation: To avoid force-erasing Flash EEPROM memory arrays, clear the Flash EEPROM force-erase option:

  Click the **Setup** button in the Control Panel. The Setup dialog opens. Select the **MCU Programming** tab. If the **Erase flash before write** check box is checked, click it to clear the check mark. With the option cleared, a programming command does not erase already-programmed Flash EEPROM arrays.

- **Device orientation**: You can damage any MCU by inserting it with an incorrect pin orientation, then attempting to program the MCU.

  Recommendation: As with all MCUs, make sure you insert the MCU so that its pin 1 matches the socket's pin 1.

- **Electrostatic discharge**: Electrostatic discharge can damage the programming adapter board and MCUs.

  Recommendation: Observe standard grounding precautions to avoid electrostatic buildup when you handle the programming adapter board and MCUs.

Freescale Semiconductor, Inc.

For More Information On This Product,
Go to: www.freescale.com

3 Support

This chapter explains how to open information resources online, and how to contact customer support.

3.1 Opening Additional Online Documentation

Acrobat-format documents

The MCUscribe application comes with a user's manual and other documents in Acrobat PDF format. If you have the Acrobat Reader, you can open PDF-format documents by double-clicking the file name in Windows Explorer. To open the *Serial Programmer for HC08 User' s Manual*, you can also double-click the manual icon in the MCUscribe program group.

Online help

Open MCUscribe help directly from the desktop, or from within the application. (Make sure you have installed the **MCUscribe.hlp** file and the **MCUscribe.cnt** files in the same folder.) You can use any of these methods to open MCUscribe help:

- Double-click the help icon in the MCUscribe program group.
- Double-click the **MCUscribe.hlp** file in Windows Explorer, if *.hlp* files are associated with *Winhlp32.exe.*
- Click the **Help** button in the MCUscribe application, or press **F1**.

Freescale Semiconductor, Inc.

For More Information On This Product,
Go to: www.freescale.com

3.2 Contacting Customer Support

For technical support, contact the Motorola Customer Focus Center by telephone or fax at the numbers below.

Telephone: 1-800-521-6274

Telephone support hours are Monday through Friday, 9:00 a.m. to 5:00 p.m. (CST).

FAX:(602) 302-8157

Freescale Semiconductor, Inc.

For More Information On This Product,
Go to: www.freescale.com