

# MOTOROLA SEMICONDUCTORS HONG KONG LIMITED

## A/P CSIC MCU DEVELOPMENT SYSTEMS

### M68HC705G1PGMR USER'S GUIDE (REV2.1)

#### 1. INTRODUCTION

This document contains information on the operation of M68HC705G1PGMR, a programmer board for programming MC68HC705G1 devices.

The on-chip EPROM feature of MC68HC705G1 MCU enables the user to emulate the MC68HC05G1 device. EPROM programming is facilitated through a program contained in the on-chip bootstrap ROM of the MC68HC705G1, and this program is invoked by using the programmer board described herein. Besides programming, verification between the contents of the MCU EPROM can also be performed with this board.

#### 2. PROGRAMMER BOARD OPERATION

Operating procedure for the M68HC705G1PGMR is described in this section. The M68HC705G1PGMR enables programming of the MCU internal EPROM or ROM areas directly from an external 27256 EPROM. The 27256 external EPROM should contain the data to be programmed. To perform programming the MC68HC705G1 MCU device and the target code 27256 EPROM should be inserted into the MCU socket and the EPROM socket on the programmer board respectively. There is a direct correspondence of addresses between the target MCU and the external EPROM, locations of the external EPROM not in the internal EPROM or ROM address range are omitted, as are locations containing the data \$FF, thus speeding up the programming operation. Bootstrap mode function of the MC68HC705G1 are selected via SW1. Placing SW2 from the off state to on state will enable the MCU to enter the selected bootstrap mode.

The procedure for invoking the bootstrap routine is as follows:

1. Place SW2 in OFF position.
2. Connect +5V, V<sub>pp</sub> (+12.5V) and GND to power connector P1.
3. Place the 27256 EPROM and MC68HC705G1 in the appropriate sockets.
4. Select the desire bootstrap routine via SW1.
5. Place switch SW2 to ON position to start the selected bootstrap function.
6. During programming/verification operation the LED D1 is illuminated to indicate normal operation. The result of the operation is finished and indicated by LED D2.

7. When the programming operation is completed place switch SW2 to OFF position.
8. Remove the MC68HC705G1 from the programming sockets.
9. Repeat step 3 to 8 to program additional MCUs.

Once the bootstrap mode is entered, mode switch setting of SW1 is scanned and the selected bootstrap routine will be executed accordingly, refer to the following table for mode selection.

1 = ON  
0 = OFF

SW1				Bootstrap Mode
1	2	3	4	
0	1	1	1	Program & Verify HC05
0	0	1	1	Verify HC05 Contents
0	1	0	1	EPROM Blank Check
1	0	0	1	Load Program to RAM and Execute

## 2.1 Program and Verify EPROM

This routine enables the contents of an external EPROM to be copied into the EPROM area of MC68HC705G1 device. The programming LED D1 will be illuminated while programming is in progress. When programming operation is completed, the verification routine is entered. If the contents of the MCU EPROM and external EPROM are the same, the verification LED D2 will be illuminated within 1 minute.

## 2.2 Verify EPROM Contents

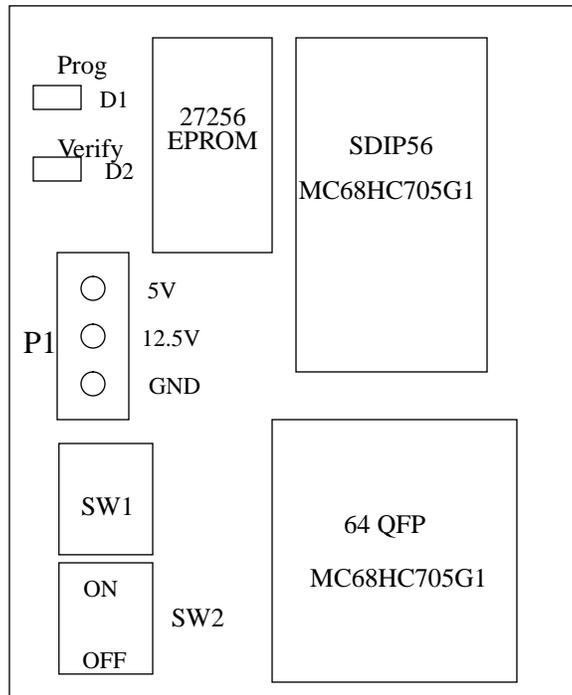
When this routine is executed the contents of the MCU EPROM are compared with those of the external EPROM. LED D1 & D2 will turn off to indicate verification is being performed. Upon completion of the verification routine (i.e. every location verified), the VERIFIED LED D2 is illuminated. If D2 does not illuminate within 1 minute, a discrepancy has been detected and the error address location will be placed on the external memory address bus.

## 2.3 EPROM Blank Check

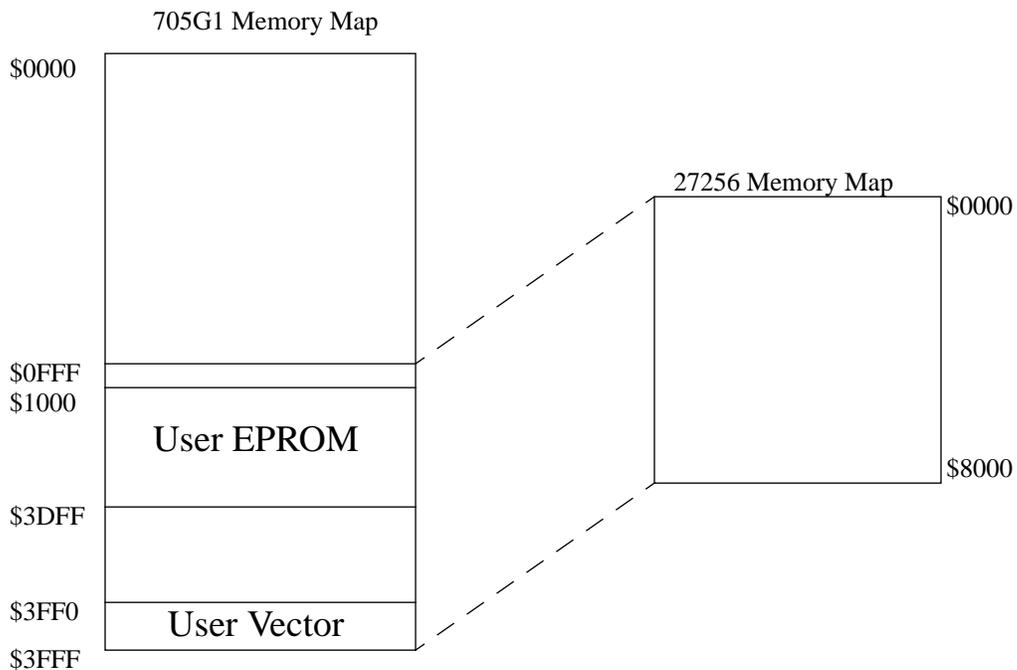
Entry of this mode will check if the M68HC705G1 is blank. If the device is blank, the verification LED will be illuminated.

## 2.4 Load Program and Execute

Entry of this mode will load the RAM of the G1 from external EPROM from \$50. And execution will be passed to \$50.



LAYOUT OF G1PGMR COMPONENTS



Mapping Between 705G1 and Programming EPROM 27256