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EB254

Setting the Programming Voltage on Modular Microcontrollers with FLASH EEPROM

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Introduction

The MC68F333 has two FLASH electrically erasable programmable read-only memory (EEPROM) modules:

- 16-Kbyte module
- 48-Kbyte module

By programming the FLASH EEPROM base address registers, the user can place the 16-K array on any 16-K boundary and the 48-K array in the lower 48-K of any 64-K boundary. Either module can be configured to generate the initial program counter and stack pointer value on system reset.

They can be individually configured to reside in supervisor or unrestricted address space, and they can also be programmed to reside in either program space or data space. If desired, the user can configure them to appear as a single memory block.

The FLASH EEPROM and its control bits are erasable and programmable under software control. Explicit directions for programming the FLASH EEPROM are given in the *MC68F333 Technical Summary*, Motorola document order number



MC68F333TS/D, and in Engineering Bulletin 255, *Modular Microcontroller FLASH EEPROM*, Motorola document order number EB255/D.

One point of confusion that sometimes arises concerns the state of the VFPE voltage, which is the external program/erase voltage on the VFPE pins.


In normal operation, this VFPE voltage is V_{DD} , or 5 volts. However, in program/erase mode, this voltage must be 12 volts. The transition between these two voltages must be continuous. The user cannot disconnect 5 volts from VFPE before applying the 12 volts or else the VFPE pin will be destroyed.

NOTE: *The user must never allow the voltage on the VFPE pins to fall below V_{DD} .*

There are two recommended ways to power-up:

1. Bring VFPE to 4.7 to 5 volts at the same time as V_{DD} and then bring VFPE to 12 volts.
2. Bring VFPE to 4.7 to 5 volts before powering V_{DD} and then bring VFPE to 12 volts.

See Figure 4 in Engineering Bulletin 255 for a circuit that can be safely used to switch between 5 volts and 12 volts.

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