

# Migrating Single-Chip Applications from MC68HC711E9 to MC68HC711E20

## 1 Introduction

This engineering bulletin explains how existing users of the MC68HC711E9 could migrate to the MC68HC711E20.

Here are the items to consider when migrating from the MC68HC711E9 to the MC68HC711E20:

- Pin assignments and packages are identical.
- The register set has two differences (see [Section 2, “Differences in Registers”](#)).
- The memory maps are different but all code from the MC68HC711E9 will run on the MC68HC711E20 (see [Section 3, “Differences in Memory Maps”](#)). Customers may want to fill unused RAM and flash memory with illegal opcode if they are worried about code runaway.
- Electrical specifications are identical.

For complete information on the MC68HC711E9 and the MC68HC711E20, refer to *M68HC11 E Family Technical Data* (document number M68HC11E) available on the Freescale web site, Freescale.com.

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## 2 Differences in Registers

The SCI system in the MC68HC711E20 MCU has an enhanced SCI baud rate generator. A divide-by-39 stage has been added. It is enabled by an extra bit (SCP2) in the BAUD register. This increases the available baud rate selections.

PPROG is the combined EPROM/OTPROM and EEPROM programming register on all devices with EPROM/OTPROM except the MC68HC711E20. For the MC68HC711E20, there is a separate register for EPROM/OTPROM programming called the EPROG register.

## 3 Differences in Memory Maps

There are 256 more bytes of RAM in the MC68HC711E20. There is no conflict in single-chip mode: MC68HC711E9 code should port directly to the MC68HC711E20 device with no modification.

An EPROM programming algorithm change is required because of register changes. (The programmer vendor should provide an MC68HC711E20 algorithm.)

The MC68HC711E20 has a separate register (EPROG) to program EPROM.

**Table 1. Differences Between the Memories of the MC68HC711E9 and MC68HC711E20**

Memory Type	MC68HC711E9 Size	MC68HC711E9 Range	MC68HC711E20 Size	MC68HC711E20 Range
Boot ROM		BF00		BF00
RAM	512 B	0000–01FF	768 B	0000–02FF
EEPROM	512 B	B600–B7FF	512 B	B600–B7FF
EPROM	12 KB	D000–FFFF	20 KB	9000–AFFF D000–FFFF

### NOTE

Expanded mode operation may conflict with the extra 8K EPROM: internal memory from 0x9000–0xAFFF will conflict with external memory if decoded in this space.

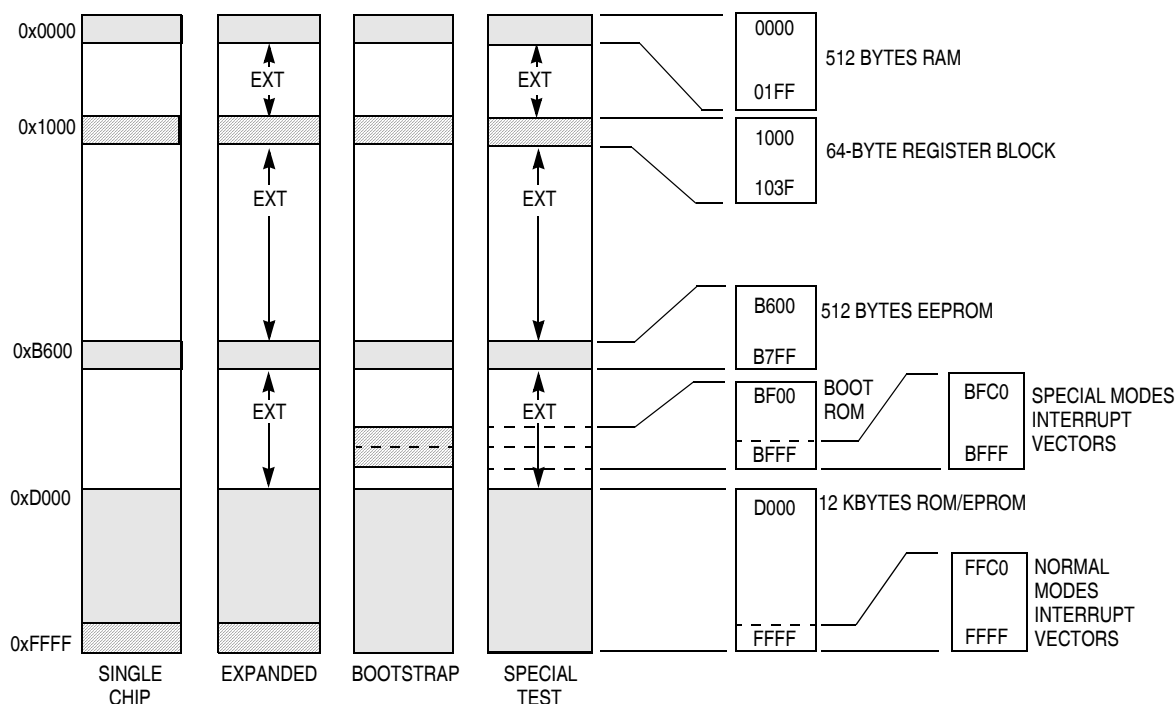
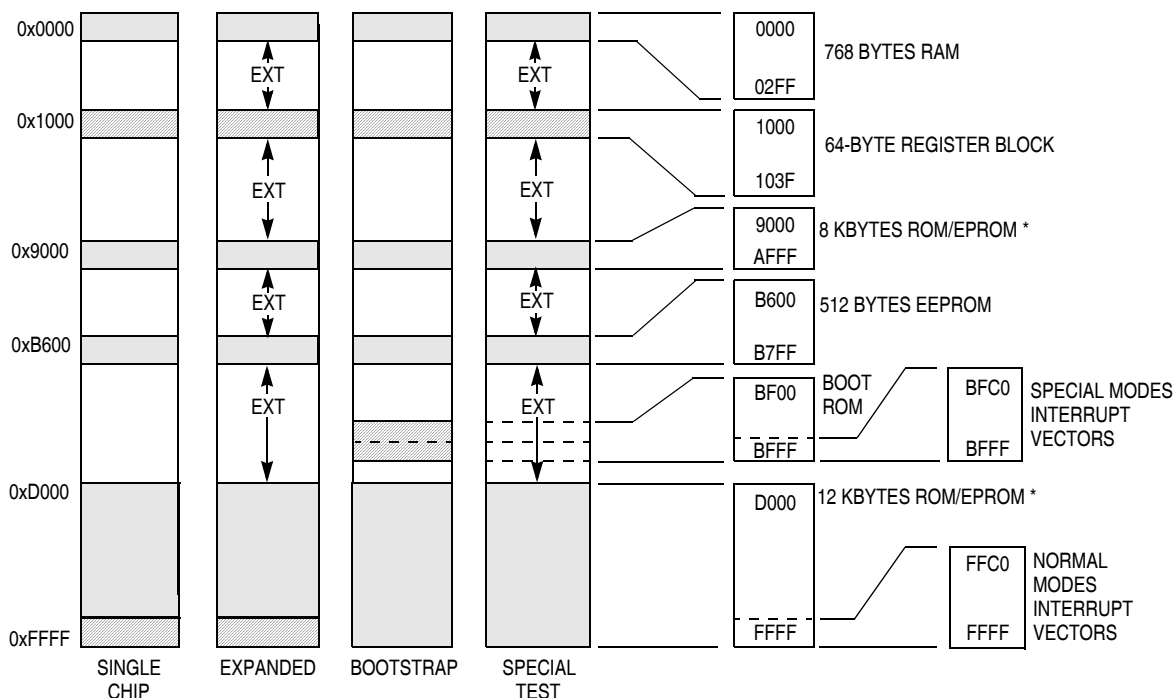


Figure 1. Memory Map for MC68HC711E9



\* 20 Kbytes ROM/EPROM are contained in two segments of 8 Kbytes and 12 Kbytes each.

Figure 2. Memory Map for MC68HC711E20

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