

# Unexpected Operation After an Illegal Command Is Issued to a Protected Area of HCS08 Flash

## 1 Problem Description

A subtle problem was discovered in the Flash memory of HCS08 MCUs. The problem is related to the block protection mechanism when invalid command codes are performed. This issue does not affect normal operation of the module when program and erase operations are performed correctly.

When a command is initiated to a protected area of Flash, and that command is not one of the valid command codes, the ACCERR flag is set but the PVIOL flag does not set as expected. This prevents the internal protection violation condition from being cleared after the invalid command. After clearing the ACCERR flag, the next attempt to issue a new valid command to an unprotected area of Flash will result in the PVIOL flag being set unexpectedly, and the new command will not be performed.

## 2 Workaround

If you use only valid command codes, this issue does not arise. You should write your application program so it checks for both ACCERR and PVIOL errors. If any error is detected, ensure the original command was valid and did not attempt to access a protected location. If the location was a protected address, correct the problem and repeat the command to a valid unprotected Flash location. In the case where PVIOL is set, ensure that the command did not include a write to a protected address. If the address was unprotected, the PVIOL error flag could be left over from a previous illegal command code. Clear the PVIOL error flag and re-issue the command.

### 3 Mask Sets Affected

- MC9S08AC16 — 0M89E
- MC9S08AW60 — 0L16X, 0M75B, 1M75B, 3M75B, 5M75B
- PC9S08GT16A — 2M70C
- MC9S08JR12 — 0L95Y
- PC9S08LC60 — 0M78B
- MC9S08QD4 — 0M1SD
- MC9S08QG8/4 — 0M77B, 1M77B, 2M77B, 3M77B
- MC9S08RA16 — 0M46E
- MC9S08RT16 — 0M14A

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