DALLAS SEMICONDUCTOR /MAXIM

DS89C420
Ultra-High-Speed Flash Microcontroller

REVISION B4 ERRATA

The errata listed below describe situations where DS89C420 revision B4 components perform differently than expected or differently than described in the data sheet. Dallas Semiconductor intends to correct these errata in subsequent die revisions.

This errata sheet only applies to DS89C420 revision B4 components. Revision B4 components are branded on the topside of the package with a six-digit code in the form yywwB4, where yy and ww are two-digit numbers representing the year and workweek of manufacture, respectively. To obtain an errata sheet on another DS89C420 die revision, visit our website at **www.maxim-ic.com/errata**.

Note: Revision Ax and earlier DS89C420 devices were constructed with special silicon that required a unique parallel programming algorithm. Revision B4 and later use the standard parallel programming algorithm used by all other members of the ultra-high-speed flash microcontroller family. This transition will be transparent as the manufacturers of dedicated device programmers are the only users of the parallel programming interface. Any user who encounters difficulties programming new revision devices should contact their programmer manufacturer for a software update.

1. FLASH MEMORY CORRUPTION CAN OCCUR UNDER CERTAIN CIRCUMSTANCES

Description:
This device has exhibited symptoms of flash memory corruption during a power-on cycle. When this issue occurs, portions of the code memory and/or internal device configuration may be lost. Upon investigation, this may manifest itself as:

1) Erased/corrupted program memory, noticeable during program operation or when a verification function is performed using the internal ROM loader,

2) An incorrect device number, displayed in the internal ROM loader sign-on banner. For example, a DS89C420 may report itself to be a DS89C450 in the ROM sign-on banner.

3) Erasure of previously programmed lock bits.

In parts that are sensitive to this, the problem typically occurs at temperatures between 50°C and 70°C. The problem is also exacerbated by negative undershoot on V_{CC} during power-up, although there is no set of conditions under which this issue can be guaranteed not to occur.

Work Around:
Be sure that V_{CC} remains positive at all times, especially during power-up. If possible, hold the system temperature below 50°C or above 70°C. The use of the watchdog timer and an application software-based checksum routine can monitor the program memory space for changes and greatly increase system reliability.

Our investigation into this issue is ongoing. Please contact our technical support staff immediately at micro.support@dalsemi.com if you experience any problems associated with the flash memory of these microcontrollers.

REV: 040507

2. DS89C420 REVISION B4 AND LATER MUST USE DS89C430 PROGRAMMING ALGORITHM

Description:
DS89C420 revision B4 devices may not program properly using the parallel programming algorithm developed for DS89C420 revision Ax devices. This is because the DS89C420 uses the newer DS89C430/440/450 microcontroller core that employs a different parallel programming algorithm. This erratum does not apply to devices that are programmed using the in-system (serial) programming method.

Work Around:
Customers who use a commercial programmer to parallel program the DS89C420 can select DS89C430, DS89C440, or DS89C450 as the target device, ignoring any messages about device ID conflicts.

Parallel programmer manufacturers will need to make only minor changes to their software, offering the user two options:

DS89C420 (Revision A only)
DS89C420

"Revision A only" will use the established algorithm, i.e., the one contained in the DS89C420 data sheet. This can be instituted merely by renaming their existing DS89C420 algorithm to "DS89C420 (Revision A only)." The DS89C420 option (shown above with no qualification) should use the DS89C430/440/450 programming algorithm. Manufacturers can obtain more information on the DS89C430/440/450 programming algorithm from Dallas Semiconductor (micro.support@dalsemi.com).

3. LOCK BIT SECURITY LEVELS 1, 2, AND 3 DO NOT FUNCTION PROPERLY

Description:
Security levels 1, 2, and 3 do not function properly and may not prevent access to internal flash memory if external program memory is used.

Work Around:
Use security level 4 if internal flash memory protection is required.