ARM Core
ARM9E-S (AT170)
Errata Notice

This document contains all errata known at the date of issue in Rev.2 ARM9E-S product releases up to and including revision.r2p1. Refer to the Errata Summary Table on page 7 for information about which of the errata affect each revision.

Proprietary notice

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General suggestion for additions and improvements are also welcome.

Contents

Introduction

Scope

This document describes errata categorised by level of severity. Each description includes:

- a unique defect tracking identifier
- the current status of the defect
- where the implementation deviates from the specification and the conditions under which erroneous behavior occurs
- the implications of the erratum with respect to typical applications
- the application and limitations of a 'work-around' where possible

Categorisation of Errata

Errata recorded in this document are split into three levels of severity:

Category 1 Behavior that is impossible to work around and that severely restricts the use of the product in all, or the majority of applications, rendering the device unusable.

Category 2 Behavior that contravenes the specified behavior and that might limit or severely impair the intended use of specified features, but does not render the product unusable in all or the majority of applications.

Category 3 Behavior that was not the originally intended behavior but should not cause any problems in applications.

Change Control

22 Jul 2004: Changes in Document v1.0

Page	Status	ID	Cat	Summary
9	New	326713	Cat 2	Real monitor breakpoint missed in Thumb state

Errata Summary Table

The errata associated with this product affect product versions as below.

A cell shown thus **X** indicates that the defect affects the revision shown at the top of that column.

ID	Cat	Summary of Erratum	r2p0	r2p1
326713	Cat 2	Real monitor breakpoint missed in Thumb state	X	

Errata - Category 1

There are no Errata in this Category.

Errata - Category 2

326713: Real monitor breakpoint missed in Thumb state

Status

Affects: product AT170_ARM9E-S.

Fault status: Cat 2, Present in: r2p0, Open. New in this Errata document.

Description

Under certain circumstances, a breakpoint on a Thumb instruction is not taken if Monitor mode debug is enabled.

In Monitor mode debug, if the core is configured for 32 bit Thumb instruction fetches, and a breakpoint is set on an odd half word address, the breakpoint is not taken if the instruction at the preceding even half word address is stalled due to an interlock.

Conditions

1. Debug is enabled (DBGEN is HIGH and Debug control register bit[5] is LOW)
2. 32-bit fetches in Thumb state are enabled (CFGTHUMB32 is HIGH)
3. Monitor mode debug is enabled (Debug control register bit[4] is HIGH)
4. A breakpoint is set on an odd halfword address (Address bit[1] = 1)
5. The instruction at the preceding even half word address is stalled due to an interlock

An example code sequence that causes this behavior is:

```
ADD R2, #4    ; Address = 0x100
LDR R0, [R1]  ; Address = 0x102
ADD R0, #1    ; Address = 0x104, Interlock due to data dependency on LDR
STR R0, [R2]  ; Address = 0x106, Breakpoint address
```

Implications

This errata only affects Monitor mode debug operations. The normal function of the core is not affected.

Workaround

To workaround this errata, use the BKPT instruction instead of setting breakpoints.

Errata - Category 3

There are no Errata in this Category.