The intention of this errata technical note is to give a detailed description of known functional or electrical issues with the FTDI FT2232H devices. The current revision of the FT2232H is revision C, released March 2010.
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1 FT2232H Revision

FT2232H part numbers are listed in Table 1. The letter at the end of date code identifies the device revision.

The current revision of the FT2232H is revision C, released March 2010. At the time of releasing this Technical Note there are one known issues with this silicon revision. A workaround is provided for this issue.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT2232HL</td>
<td>64 Pin LQFP</td>
</tr>
<tr>
<td>FT2232HQ</td>
<td>64 Pin QFN</td>
</tr>
</tbody>
</table>

Table 1 FT2232H Part Numbers

This errata technical note covers the revisions of FT2232H listed in Table 2.

<table>
<thead>
<tr>
<th>Revision</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>First device revision</td>
</tr>
<tr>
<td>B</td>
<td>Second device revision</td>
</tr>
<tr>
<td>C</td>
<td>Third device revision</td>
</tr>
</tbody>
</table>

Table 2 FT2232H Revisions
## 2 Errata History Table – Functional Problems

<table>
<thead>
<tr>
<th>Functional Problem</th>
<th>Short description</th>
<th>Errata occurs in device revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT2232H</td>
<td>Error reading EEPROM interface</td>
<td>A</td>
</tr>
<tr>
<td>FT2232H</td>
<td>Error reading internal FIFO in 245 Synchronous FIFO mode</td>
<td>A</td>
</tr>
<tr>
<td>FT2232H</td>
<td>3 Phase clocking in MPSSE mode incorrect</td>
<td>A</td>
</tr>
<tr>
<td>FT2232H</td>
<td>Wait on IO1 not functioning in CPU Emulation mode</td>
<td>A, B</td>
</tr>
<tr>
<td>FT2232H</td>
<td>Double bytes read in CPU Emulation mode</td>
<td>A, B, C</td>
</tr>
</tbody>
</table>

## 2.1 Errata History Table – Electrical and Timming Specification Deviations.

<table>
<thead>
<tr>
<th>Deviations</th>
<th>Short description</th>
<th>Errata occurs in device revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspend timer failure (USB Chapter 9 Compliance)</td>
<td>The USB specification requires a maximum time to suspend of 3.125ms. The device takes upto 4ms to suspend.</td>
<td>A, B</td>
</tr>
</tbody>
</table>
3 Functional Problems of FT2232H

3.1 Revision A

3.1.1 Error reading EEPROM Interface

Introduction:
The FT2232H uses an external EEPROM to store USB descriptors. These descriptors must be correctly read for the device to be properly identified and configured.

Problem:
There is an issue that under the right conditions the internal address counter can increment by 2 (incorrectly). This appears as though the data read from the EEPROM has missed a byte.

Workaround:
There are no known workarounds available. This issue is corrected at silicon revision B.

Package specific:
The effected packages are listed in Table 3.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT2232HL</td>
<td>Y</td>
</tr>
<tr>
<td>FT2232HQ</td>
<td>Y</td>
</tr>
</tbody>
</table>

Table 3

3.1.2 Error reading internal FIFO in 245 Synchronous FIFO mode

Introduction:
The FT2232H uses an internal FIFO to store received data from the synchronous FIFO interface. This FIFO is addressed one byte at a time.

Problem:
There is an issue that under the right conditions the internal address counter can increment by 2 (incorrectly). This appears as though the data read from the FIFO has missed a byte.

Workaround:
There are no known workarounds available. This issue is corrected at silicon revision B.
3.1.3 3 Phase clocking in MPSSE mode incorrect

Introduction:
The FT2232H introduced a new function to the MPSSE mode called 3 phase clocking to allow data to be clocked on both edges.

Problem:
3 Phase clocking was not being enabled.

Workaround:
There are no known workarounds available. This issue is corrected at silicon revision B.

Package specific:
The effected packages are listed in Table 4.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT2232HL</td>
<td>Y</td>
</tr>
<tr>
<td>FT2232HQ</td>
<td>Y</td>
</tr>
</tbody>
</table>

Table 4

3.2 Revision B

3.2.1 Wait on IO1 not functioning in CPU Emulation mode

Introduction:
The FT2232H has a "Wait On IO" feature in CPU mode to allow the processor to stop until the IO pin changes state.

Problem:
The Wait on IO is supposed to be routed to IO1. It is not.

Workaround:
There are no known workarounds available. This issue is corrected at silicon revision C.
Package specific:

The effected packages are listed in Table 3.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT2232HL</td>
<td>Y</td>
</tr>
<tr>
<td>FT2232HQ</td>
<td>Y</td>
</tr>
</tbody>
</table>

Table 6

### 3.3 Revision C

#### 3.3.1 Double bytes read in CPU Emulation mode

**Introduction:**

The FT2232H has a CPU Emulation mode for transferring data.

**Problem:**

When reading a byte of data in CPU emulation mode the data is repeated. That is each byte of data is returned twice.

**Workaround:**

Switch off the divide by 5 clock divisor to resolve this problem (Command $8A)

**Package specific:**

The effected packages are listed in Table 7.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT2232HL</td>
<td>Y</td>
</tr>
<tr>
<td>FT2232HQ</td>
<td>Y</td>
</tr>
</tbody>
</table>

Table 7
4 Electrical and Timing specification deviations of FT2232H

4.1 Revision A

4.1.1 Suspend Timer Failure

Introduction:
The FT2232H has the ability to be put into suspend by the host to conserve power usage.

Problem:
The USB specification chapter 9 compliance tests require the device to go into suspend within 3.125ms.
The device is taking upto 4ms to enter suspend state.

Workaround:
There are no known workarounds available. This issue is corrected at silicon revision C.

Package specific:
The effected packages are listed in Table 8.

<table>
<thead>
<tr>
<th>Package</th>
<th>Applicable (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT2232HL</td>
<td>Y</td>
</tr>
<tr>
<td>FT2232HQ</td>
<td>Y</td>
</tr>
</tbody>
</table>

Table 8
5 FT2232H Package Markings

FT2232H is available in a RoHS Compliant package, 64 pin LQFP and 64 pin QFN. An example of the markings on the package is shown in Figure 3-1.

Figure 5-1 Package Markings – FT2232HQ

Figure 5-2 Package Markings – FT2232HL
6 Contact Information

Head Office – Glasgow, UK

Future Technology Devices International Limited
Unit 1, 2 Seaward Place, Centurion Business Park
Glasgow G41 1HH
United Kingdom

Tel: +44 (0) 141 429 2777
Fax: +44 (0) 141 429 2758

E-mail (Sales) sales1@ftdichip.com
E-mail (Support) support1@ftdichip.com
E-mail (General Enquiries) admin1@ftdichip.com
Web Site URL http://www.ftdichip.com
Web Shop URL http://www.ftdichip.com

Branch Office – Taipei, Taiwan

Future Technology Devices International Limited (Taiwan)
2F, No 516, Sec. 1 NeiHu Road
Taipei 114
Taiwan, R.O.C.
Tel: +886 (0) 2 8797 1330
Fax: +886 (0) 2 8751 9737

E-mail (Sales) tw.sales1@ftdichip.com
E-mail (Support) tw.support1@ftdichip.com
E-mail (General Enquiries) tw.admin1@ftdichip.com
Web Site URL http://www.ftdichip.com

Branch Office – Hillsboro, Oregon, USA

Future Technology Devices International Limited (USA)
7235 NW Evergreen Parkway, Suite 600
Hillsboro, OR 97123-5803
USA
Tel: +1 (503) 547 0988
Fax: +1 (503) 547 0987

E-Mail (Sales) us.sales@ftdichip.com
E-Mail (Support) us.support@ftdichip.com
E-Mail (General Enquiries) us.admin@ftdichip.com
Web Site URL http://www.ftdichip.com

Branch Office – Shanghai, China

Future Technology Devices International Limited (China)
Room 408, 317 Xianxia Road,
ChangNing District,
ShangHai, China

Tel: +86 (21) 62351596
Fax: +86(21) 62351595

E-Mail (Sales): cn.sales@ftdichip.com
E-Mail (Support): cn.support@ftdichip.com
E-Mail (General Enquiries): cn.admin1@ftdichip.com
Web Site URL: http://www.ftdichip.com
Distributor and Sales Representatives
Please visit the Sales Network page of the FTDI Web site for the contact details of our distributor(s) and sales representative(s) in your country.

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Appendix C – Revision History

Version 1.0  First Release  05/11/2010