Future Technology Devices International Ltd.

TN_142 FT120 Errata Technical Note

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Version 2.0

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The intention of this errata technical note is to give a detailed description of known functional or electrical issues with the FTDI FT120 device.
The current revision of the FT120 is **revision C, released April 2013.**

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1 FT120 Revision

FT120 part numbers are listed in **Table 1.** The letter at the end of date code identifies the device revision.

The current revision of the FT120 is **revision C, released May 2013.** At the time of releasing this Technical Note there are no known issues with this silicon revision.

Part Number	Package
FT120Q	28 pin QFN
FT120T	28 pin TSSOP

Table 1 FT120 Part Numbers

This errata technical note covers the revisions of FT120 listed in **Table 2**.

Revision	Notes
A	First device revision. Never sold publicly.
B	Second device revision. Launched May 2012
C	Third device revision. Launched April 2013

Table 2 FT120 Revisions

2 Errata History Table – Functional Errata

Functional Errata	Short description	Errata occurs in device revision
GL_N pin issue	Pin GL_N remains active when FT120 enters suspend state or USB cable is removed	B
SUSPEND pin issue	SUSPEND pin not active when bit Clock Running of Set Mode command is set to '1' and FT120 enters suspend state	B
CLKOUT pin issue	CLKOUT pin not switch to suspend clock when bit Clock Running of Set Mode command is set to '1' and bit No Suspend Clock is set to '0' and FT120 enters suspend state	B
Interrupt for endpoint index 4 and 5 missing	In non-DMA mode, interrupt will not be generated when bits 6 and 7 of DMA Configuration Register (Set Mode command) are not set	B
INT_N and GL_N pins issue	The INT_N and GL_N pins are not open drain	B

Table 3 Functional Errata

2.1 Errata History Table – Electrical and Timing Specification Deviations.

Deviations	Short description	Errata occurs in device revision
-	No known issues	-

Table 4 Electrical and Timing Errata

3 Functional Errata of FT120

3.1 Revision B

3.1.1 GL_N issue

Introduction:

The FT120 has a dedicated GL_N output pin (open-drain). The function of GL_N pin is to indicate the USB traffic while USB session is on-going. The GL_N can be used to drive a LED which will blink during USB transactions.

Issue:

When FT120 is configured and then goes to suspend state, the GL_N pin shall become non-active but it remains active. This may cause suspend current at high level if GL_N is used to drive a LED.

For self-powered application, when FT120 is configured and then the USB cable is un-plugged, the GL_N pin shall become non-active but it remains active. This may cause confusion to end user if GL_N is used to drive a LED.

Workaround:

There are a few possible workarounds:

1) Do not use GL_N pin to drive a LED, or choose a small current LED;
2) Use SUSPEND pin to gate the GL_N;
3) Use the Vbus sensing circuit to gate the GL_N (for self-powered application only).

Package specific:

The effected packages are listed in Table 5.

Package	Applicable (Yes/No)
FT120Q	Yes
FT120T	Yes

Table 5

3.1.2 SUSPEND pin not asserted while Clock Running bit is '1'

Introduction:

The FT120 has a dedicated SUSPEND output pin (open-drain). When USB bus is suspended (bus idle for more than 3ms), the SUSPEND pin shall be floating (pull HIGH by external pull-up resistor) to indicate suspend condition.

Issue:

When the Clock Running bit of the Set Mode command is set to '1' and FT120 enters USB suspend the SUSPEND pin shall be floating but it remains driving LOW. This may cause issue for systems where the SUSPEND pin is used for power management circuits and/or indication to the microcontroller that the USB is in suspend state. For systems where the SUSPEND pin is not used, this issue has no impact.

Workaround:

Firmware workaround solutions exist depending on specific application:

Solution 1: This solution is applicable for applications where the SUSPEND pin is used for indication to the microcontroller that the USB is in suspend state. When the Clock Running bit is set to '1', FT120 clock remains active and the parallel bus remains functional in suspend state. FT120 will generate interrupt to indicate the USB enters suspend state. The microcontroller can use the suspend interrupt rather than use the SUSPEND pin to detect the suspend event. To resume the USB bus, the microcontroller can issue Send Resume command to FT120 without driving LOW to the SUSPEND pin.

Solution 2: This solution is applicable for applications where the SUSPEND pin is used to control the power management circuits. Firmware can be modified to set the Clock Running bit of Set Mode command to be '0'. The SUSPEND pin will function per normal under this configuration.

Package specific:

The effected packages are listed in Table 6.

Package	Applicable (Yes/No)
FT120Q	Yes
FT120T	Yes

Table 6

3.1.3 CLKOUT does not output suspend clock

Introduction:

The FT120 has a dedicated CLKOUT output pin. During USB suspend the CLKOUT pin shall switch to the 30kHz suspend clock when the No Suspend Clock bit of the Set Mode command is set to '0', and the Clock Running bit of the Set Mode command is set to '1'. This will help to reduce the supply current of the microcontroller if it uses the CLKOUT signal as the clock source.

Issue:

When the No Suspend Clock bit of the Set Mode command is set to '0' and the Clock Running bit of the Set Mode command is set to '1' and FT120 enters USB suspend, the CLKOUT output will not switch to the 30kHz suspend clock. This may cause the system suspend current to reach a relatively high level. For systems where the CLKOUT pin is not used, this issue has no impact.

Workaround:

Firmware can be modified to set the Clock Running bit of Set Mode command to be '0'. Under this configuration the CLKOUT will switch to 30 kHz suspend clock upon entering USB suspend state. To resume the USB bus, the firmware needs to wakeup FT120 by driving the SUSPEND pin to LOW, and then issue Send Resume command to FT120.

Package specific:

The effected packages are listed in Table 7.

Package	Applicable (Yes/No)
FT120Q	Yes
FT120T	Yes

Table 7

3.1.4 Interrupts not generated for endpoint index 4 and 5

Introduction:

Bit 6 and 7 of the Set DMA command is used to enable/disable the interrupts for endpoint index 4 and 5 when DMA mode is enabled. For non-DMA mode, these two bits shall have no impact on interrupt generating over endpoint index 4 and 5.

Issue:

For non-DMA mode, FT120 will not generate interrupts for endpoint index 4 and 5 if bit 6 and 7 of the Set DMA command is set to '0'.

Workaround:

Set bit 6(Endpoint Index 4 Interrupt Enable) and bit 7(Endpoint Index 5 Interrupt Enable) of the Set DMA command to '1' for non-DMA mode, if these endpoints are enabled.

Package specific:

The effected packages are listed in Table 8

Package	Applicable (Yes/No)
FT120Q	Yes
FT120T	Yes

Table 8

3.1.5 INT_N and GL_N pins issue

Introduction:

Pins INT_N and the GL_N are not set as open-drain.

Issue:

Both the INT_N and the GL_N pins are configured as active driver. They should be configured as open-drain as per specification.

Workaround:

No known workaround.

Package specific:

The effected packages are listed in Table 8

Package	Applicable (Yes/No)
FT120Q	Yes
FT120T	Yes

Table 9

3.2 Revision C

No known issues at revision C

4 Electrical and Timing specification deviations of FT120

4.1 Revision B

No known issues at revision B

4.2 Revision C

No known issues at revision C

5 FT120 Package Markings

FT120 is available in a RoHS Compliant RoHS Compliant package, 28 pin QFN and 28 pin TSSOP. An example of the markings on the package is shown in Figure 1 and Figure 2.

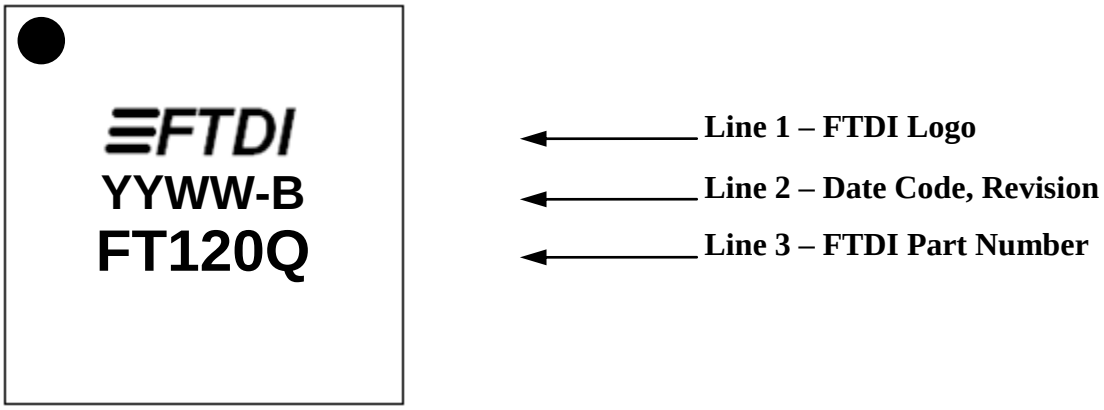

Figure 1 Package Markings – FT120Q

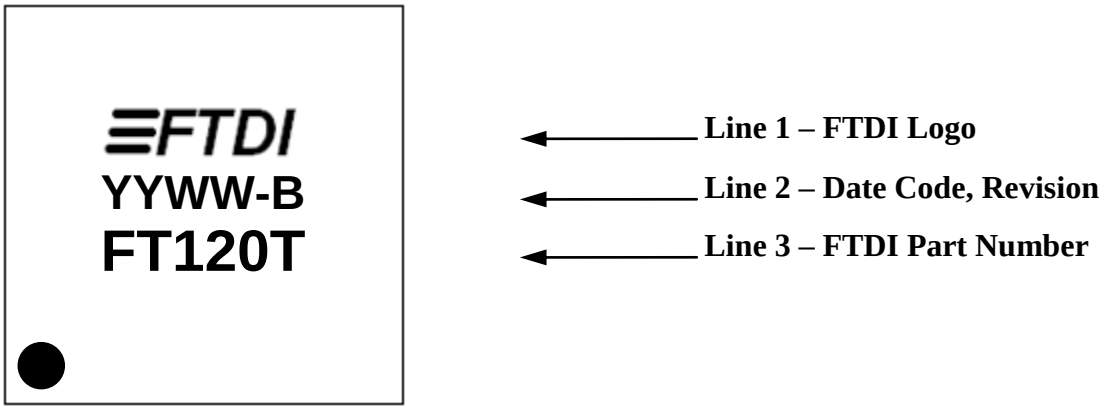

Figure 2 Package Markings – FT120T

The date code format is **YYWW** where WW = 2 digit week number, YY = 2 digit year number. This is followed by the revision number.

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Appendix C – Revision History

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