



Technical Note

TN_170

FT4222H Rev.C Technical Note

Version 1.0

Issue Date: 2015-10-05

The intention of this technical note is to give a detailed description of improvement of the FT4222H Revision C device. The current revision of the FT4222H series is **Revision C, released Sep 2016.**

Use of FTDI devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify and hold FTDI harmless from any and all damages, claims, suits or expense resulting from such use.

Future Technology Devices International Limited (FTDI)
Unit 1, 2 Seaward Place, Glasgow G41 1HH, United Kingdom
Tel.: +44 (0) 141 429 2777 Fax: + 44 (0) 141 429 2758
Web Site: <http://ftdichip.com>
Copyright © Future Technology Devices International Limited

Table of Contents

1 Introduction	2
1.1 SPI master performance improvement	2
2 FT4222H Series Package Markings	3
3 Contact Information	4
Appendix A – References	5
Document References	5
Acronyms and Abbreviations	5
Appendix B – List of Tables & Figures	6
List of Tables	6
List of Figures	6
Appendix C – Revision History	7

1 Introduction

The FT4222H is a Hi-Speed USB interface device which supports SPI and I2C communication protocol with configurable interfaces. The SPI interface can be configured in master mode with single, dual, or quad bits data width transfer or in slave mode with single bit data width transfer.

The rev C of the FT4222H largely improves SPI master throughput.

1.1 SPI master performance improvement

The FT4222H SPI master throughput is improved at revision C. For example, the throughput of SPI quad write is improved from 28.1Mbps to 53.8Mbps at 80MHz operation clock and 1/2 clock ratio.

SCK Freq. (Hz)		SCK = Operating Clock * the following ratio							
Operating Clock	Max Throughput can be expected	1/2	1/4	1/8	1/16	1/32	1/64	1/128	1/256
80MHz	28.1Mbps*	40M*	20M*	10M	5M	2.5M	1.25M	625K	312.5K
60MHz	20.5Mbps*	30M*	15M	7.5M	3.75M	1.875M	937.5K	468.75K	234.375K
48MHz	16.3Mbps*	24M*	12M	6M	3M	1.5M	750K	375K	187.5K
24MHz	8.0Mbps*	12M*	6M	3M	1.5M	750K	375K	187.5K	93.75K

Table 1 The rev.B SCK Operating Frequency in SPI Master Mode

SCK Freq. (Hz)		SCK = Operating Clock * the following ratio							
Operating Clock	Max Throughput can be expected	1/2	1/4	1/8	1/16	1/32	1/64	1/128	1/256
80MHz	53.8Mbps*	40M*	20M*	10M	5M	2.5M	1.25M	625K	312.5K
60MHz	39.7Mbps*	30M*	15M	7.5M	3.75M	1.875M	937.5K	468.75K	234.375K
48MHz	31.5Mbps*	24M*	12M	6M	3M	1.5M	750K	375K	187.5K
24MHz	15.8Mbps*	12M*	6M	3M	1.5M	750K	375K	187.5K	93.75K

Table 2 The rev.C SCK Operating Frequency in SPI Master Mode

*The max. throughput can be expected under the condition of quad mode transfers with a high operating frequency on SCK. It also depends on the USB bus transfer condition. For example, the max throughput that can be expected is up to 28.1Mbps when the operating clock is equal to 80MHz, SCK is set as 20MHz or 40MHz, the data bus is operating in quad mode and the USB bus is operating at hi-speed USB rates with sufficient bandwidth.

2 FT4222H Series Package Markings

The FT4222H is supplied in a RoHS compliant leadless VQFN-32 package. The package is lead (Pb) free, and uses a 'green' compound. The package is fully compliant with European Union directive 2002/95/EC. An example of the markings on the package is shown in the figures below.

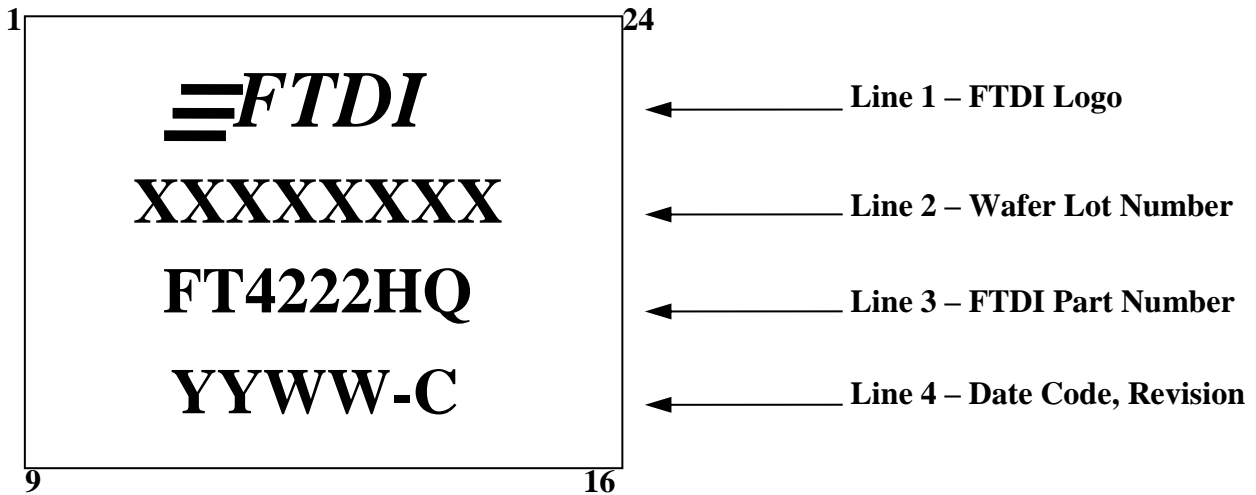


Figure 2.1 VQFN-32 Package Markings

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

The code **XXXXXXXXXX** is the manufacturing LOT code

3 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

Branch Office – Tigard, Oregon, USA

Future Technology Devices International Limited (USA)
7130 SW Fir Loop
Tigard, OR 97223-8160
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

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 8791 3570
Fax: +886 (0) 2 8791 3576

E-mail (Sales) tw.sales1@ftdichip.com
E-mail (Support) tw.support1@ftdichip.com
E-mail (General Enquiries) tw.admin1@ftdichip.com

Branch Office – Shanghai, China

Future Technology Devices International Limited (China)
Room 1103, No. 666 West Huaihai Road,
Shanghai, 200052
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.admin@ftdichip.com

Web Site

<http://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

System and equipment manufacturers and designers are responsible to ensure that their systems, and any Future Technology Devices International Ltd (FTDI) devices incorporated in their systems, meet all applicable safety, regulatory and system-level performance requirements. All application-related information in this document (including application descriptions, suggested FTDI devices and other materials) is provided for reference only. While FTDI has taken care to assure it is accurate, this information is subject to customer confirmation, and FTDI disclaims all liability for system designs and for any applications assistance provided by FTDI. Use of FTDI devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify and hold harmless FTDI from any and all damages, claims, suits or expense resulting from such use. This document is subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. Neither the whole nor any part of the information contained in, or the product described in this document, may be adapted or reproduced in any material or electronic form without the prior written consent of the copyright holder. Future Technology Devices International Ltd, Unit 1, 2 Seaward Place, Centurion Business Park, Glasgow G41 1HH, United Kingdom. Scotland Registered Company Number: SC136640

Appendix A – References

Document References

[DS_FT4222H](#)

Acronyms and Abbreviations

Terms	Description
CPU	Central Processing Unit
GPIO	General Purpose Input/output
I2C	Inter-Integrated Circuit
MISO	Master In Slave Out
MOSI	Master Out Slave In
PC	Personal Computer
SS	Slave Select
SCK	Serial Clock
SPI	Serial Peripheral Interface
USB	Universal Serial Bus
VQFN	Very Thin Quad Flat Non-Leaded Package

Appendix B – List of Tables & Figures

List of Tables

Table 1 The rev.B SCK Operating Frequency in SPI Master Mode	2
Table 2 The rev.C SCK Operating Frequency in SPI Master Mode	2

List of Figures

Figure 2.1 VQFN-32 Package Markings	3
---	---

Appendix C – Revision History

Document Title: TN_170 FT4222H Rev.C Technical Note
Document Reference No.: FT_001371
Clearance No.: FTDI# 512
Product Page: <http://www.ftdichip.com/Products/ICs/FT4222H.html>
Document Feedback: [Send Feedback](#)

Revision	Changes	Date
1.0	Initial Release	2016-10-05