

SmartDesign MSS

SPI Configuration

Actel Corporation, Mountain View, CA 94043

© 2010 Actel Corporation. All rights reserved.

Printed in the United States of America

Part Number: 5-02-00239-1

Release: June 2010

No part of this document may be copied or reproduced in any form or by any means without prior written consent of Actel.

Actel makes no warranties with respect to this documentation and disclaims any implied warranties of merchantability or fitness for a particular purpose. Information in this document is subject to change without notice. Actel assumes no responsibility for any errors that may appear in this document.

This document contains confidential proprietary information that is not to be disclosed to any unauthorized person without prior written consent of Actel Corporation.

Trademarks

Actel and the Actel logo are registered trademarks of Actel Corporation.

Adobe and Acrobat Reader are registered trademarks of Adobe Systems, Inc.

All other products or brand names mentioned are trademarks or registered trademarks of their respective holders.

Table of Contents

Configuration Options	5
Port Description	6
A Product Support	7
Actel Customer Technical Support Center	7
Actel Technical Support	7
Website	7
Contacting the Customer Technical Support Center	7

Configuration Options

The SmartFusion Microcontroller Subsystem (MSS) provides two SPI hard peripherals (APB_0 and APB_1 sub busses) with optional FPGA fabric slave select ports extension.

The actual behavior of each SPI instance must be defined at the application level using the SmartFusion MSS SPI Driver provided by Actel.

In this document, we describe how you can enable the MSS SPI instances and access the fabric slave select ports. For more details about the MSS SPI hard peripherals, please refer to the [Actel SmartFusion Microcontroller Subsystem User's Guide](#).

Enabling/Disabling SPI Instances - On the MSS Canvas, you need to enable (default) or disable each SPI instance based on whether it is being used in your current application ([Figure 1](#)). Disabled SPI instances are held in reset (lowest power state) after the Actel system boot code is executed.

Enabled SPI instances external ports - MSS I/Os - are also automatically configured by the Actel system boot code. Note that MSS I/Os allocated to a SPI instance are available to connect to MSS GPIOs if that SPI instance is disabled. Refer to the [MSS GPIO configurator handbook](#) for more details.

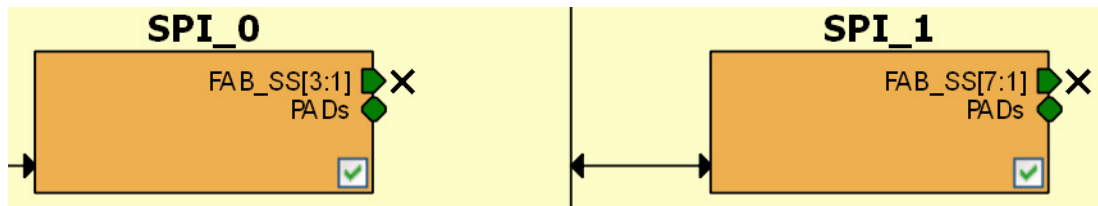


Figure 1 · MSS SPI

Fabric Slave Select Extension - You may drive up to 3 slave select signals for SPI_0 and 7 for SPI_1 into the FPGA fabric ([Figure 2](#)); to do this you need to select the number of slaves needed by your application from the MSS SPI configurator on the MSS SPI instance(s) used in your application. The FAB_SS port is automatically promoted to the top level of the MSS Configurator Canvas so that it is available at the next level of hierarchy where it can be 'sliced' as individual slave select signals.

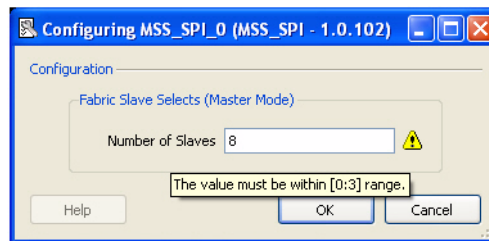


Figure 2 · MSS SPI Configuration Options

Port Description

Table 1 · MSS SPI Port Description

Port Name	Port Group	Direction	PAD?	Description
DI	PADs	IN	Yes	Shift data in (master or slave)
DO	PADs	OUT	Yes	Serial data out (generated by SPI as master)
CLK	PADs	INOUT	Yes	Shift clock out (generated by SPI as master)
SS	PADs	INOUT	Yes	External dedicated slave select port (generated by SPI as master)
FAB_SS[n:1]		OUT	No	Optional routed slave select ports (generated by SPI as master)

Note: PAD ports are automatically promoted to top throughout the design hierarchy.

Product Support

Actel backs its products with various support services including Customer Service, a Customer Technical Support Center, a web site, an FTP site, electronic mail, and worldwide sales offices. This appendix contains information about contacting Actel and using these support services.

Customer Service

Contact Customer Service for non-technical product support, such as product pricing, product upgrades, update information, order status, and authorization.

From Northeast and North Central U.S.A., call **650.318.4480**

From Southeast and Southwest U.S.A., call **650.318.4480**

From South Central U.S.A., call **650.318.4434**

From Northwest U.S.A., call **650.318.4434**

From Canada, call **650.318.4480**

From Europe, call **650.318.4252** or **+44 (0) 1276 401 500**

From Japan, call **650.318.4743**

From the rest of the world, call **650.318.4743**

Fax, from anywhere in the world **650.318.8044**

Actel Customer Technical Support Center

Actel staffs its Customer Technical Support Center with highly skilled engineers who can help answer your hardware, software, and design questions. The Customer Technical Support Center spends a great deal of time creating application notes and answers to FAQs. So, before you contact us, please visit our online resources. It is very likely we have already answered your questions.

Actel Technical Support

Visit the [Actel Customer Support website \(www.actel.com/support/search/default.aspx\)](http://www.actel.com/support/search/default.aspx) for more information and support. Many answers available on the searchable web resource include diagrams, illustrations, and links to other resources on the Actel web site.

Website

You can browse a variety of technical and non-technical information on Actel's [home page](http://www.actel.com), at www.actel.com.

Contacting the Customer Technical Support Center

Highly skilled engineers staff the Technical Support Center from 7:00 A.M. to 6:00 P.M., Pacific Time, Monday through Friday. Several ways of contacting the Center follow:

Email

You can communicate your technical questions to our email address and receive answers back by email, fax, or phone. Also, if you have design problems, you can email your design files to receive assistance. We constantly monitor the email account throughout the day. When sending your request to us, please be sure to include your full name, company name, and your contact information for efficient processing of your request.

The technical support email address is tech@actel.com.

Phone

Our Technical Support Center answers all calls. The center retrieves information, such as your name, company name, phone number and your question, and then issues a case number. The Center then forwards the information to a queue where the first available application engineer receives the data and returns your call. The phone hours are from 7:00 A.M. to 6:00 P.M., Pacific Time, Monday through Friday. The Technical Support numbers are:

650.318.4460

800.262.1060

Customers needing assistance outside the US time zones can either contact technical support via email (tech@actel.com) or contact a local sales office. [Sales office listings](#) can be found at www.actel.com/company/contact/default.aspx.



Actel is the leader in low-power and mixed-signal FPGAs and offers the most comprehensive portfolio of system and power management solutions. Power Matters. Learn more at www.actel.com.

Actel Corporation • 2061 Stierlin Court • Mountain View, CA 94043 • USA

Phone 650.318.4200 • Fax 650.318.4600 • Customer Service: 650.318.1010 • Customer Applications Center: 800.262.1060

Actel Europe Ltd. • River Court, Meadows Business Park • Station Approach, Blackwater • Camberley Surrey GU17 9AB • United Kingdom

Phone +44 (0) 1276 609 300 • Fax +44 (0) 1276 607 540

Actel Japan • EXOS Ebisu Building 4F • 1-24-14 Ebisu Shibuya-ku • Tokyo 150 • Japan

Phone +81.03.3445.7671 • Fax +81.03.3445.7668 • <http://jp.actel.com>

Actel Hong Kong • Room 2107, China Resources Building • 26 Harbour Road • Wanchai • Hong Kong

Phone +852 2185 6460 • Fax +852 2185 6488 • www.actel.com.cn