Manuals+ — User Manuals Simplified.

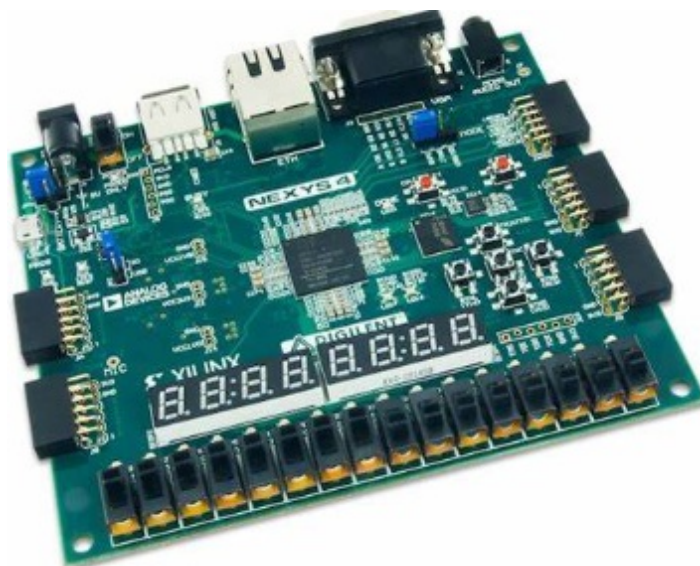# Actel SmartFusion2 MSS Fabric Interface Controller User Guide

Contents

Actel SmartFusion2 MSS Fabric Interface Controller

SmartDesign MSS External Memory Controller (EMC)

The SmartDesign MSS External Memory Controller (EMC) provides a seamless interface to external memories, supporting asynchronous memories and synchronous SRAM memory types. It has two chip select options, each addressing 64MB of address space that can be configured independently using the EMC Configurator tool.

Configuration Options

The following configuration options are available for the EMC:

- Invert Read/Write Signal Polarity
- Read Latency for First Access (HCLK cycles)
- Read Latency for Remaining Accesses (HCLK cycles)
- Write Latency (HCLK cycles)
- Use Alternate Chip Selection
- Pipeline Synchronous Read Cycle
- Pipeline Synchronous Write Cycle
- Inter Device Latency (HCLK cycles)
- Read data latency, next access
- Write data latency Chip select falling edge
- Write enable/byte enable
- Pipeline read
- Pipeline write
- Inter device delay

Usage Instructions

To configure the SmartDesign MSS External Memory Controller, use the EMC Configurator tool. The tool allows you to configure each chip select region independently.

Refer to the Actel SmartFusion Microcontroller Subsystem User's Guide for complete details on configuring the EMC.

Contacting Support

If you encounter any issues or have questions, contact Actel Customer Technical Support Center. Actel Technical Support is available through the Actel website.

Trademarks

Configuration Options

- The EMC provides a seamless interface to external memories. It supports asynchronous memories and synchronous SRAM memory types.
- For complete details please refer to the Actel SmartFusion Microcontroller Subsystem User's Guide.
- The EMC Configurator helps you configure the SmartFusion MSS External Memory Controller.

Connectivity Options

- The EMC provides 2 chip select, each addressing 64MB of address space. The EMC configurator provides two regions (chip select 0 and 1) that can be configured independently.
- In this document, we provide a mapping between the EMC configurator's labels and the EMC register bits as defined in the Actel SmartFusion Microcontroller Subsystem User's Guide.

Table 1-1 · Configurator Labels and EMC Register Bits

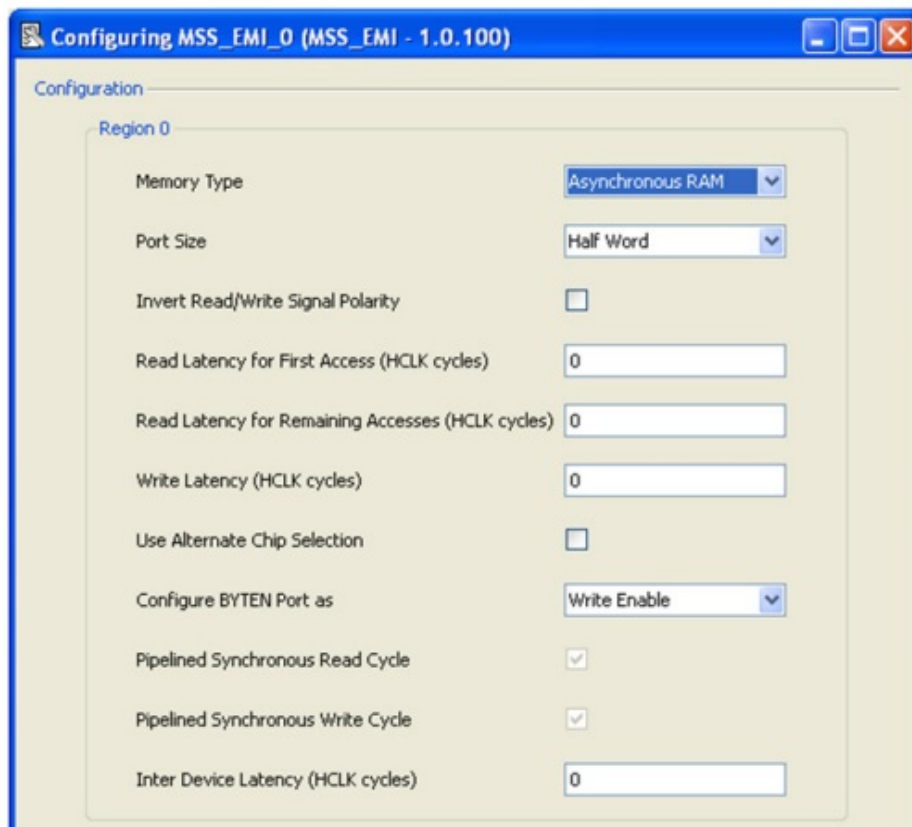| Configurator Parameter Label	Handbook Description
Memory Type: • Asynchronous RAM • Synchronous RAM • NOR flash • None	External Memory Type: • Asynchronous /PSRAM memory • Synchronous memory • NOR flash memory • No memory assigned
Port Size: • Byte • Half Word	Port Size: • 8-bit EMD data bus • 16-bit EMD data bus
Invert Read/Write Signal Polarity	Read/Write polarity
Read Latency for First Access (HCLK cycles)	Read data latency, first access
Read Latency for Remaining Accesses (HCLK cycles)	Read data latency, next access
Write Latency (HCLK cycles)	Write data latency
Use Alternate Chip Selection	Chip select falling edge
Configure BYTEN port as: • Write Enable • Byte Enable	Write enable/byte enable
Pipeline Synchronous Read Cycle	Pipeline read
Pipeline Synchronous Write Cycle	Pipeline write
Inter Device Latency (HCLK cycles)	Inter device delay

Figure 1-1 · Region 0 Configuration Screen

Part Description

Table 2-1 · EMC Port Description

Port Name	Port Group	Direction	PAD?	Description
AB[25:0]	PADs	Out	Yes	Address bus
DB[N-1:0]	PADs	Inout	Yes	Bidirectional data bus. N is 8 or 16 based on the port size selection of the two EMC regions
BYTEN[1:0]	PADs	Out	Yes	Byte lane signals (BYTE_EN[1:0] in datasheet)
CS1_N	PADs	Out	Yes	Chip select 1
CS0_N	PADs	Out	Yes	Chip select 0
OEN1_N	PADs	Out	Yes	Output enable 1 (OE1_N in datasheet)
OEN0_N	PADs	Out	Yes	Output enable 0 (OE0_N in datasheet)
RW_N	PADs	Out	Yes	Read/write
CLK	PADs	Out	Yes	Clock

Notes:

- PAD ports are automatically promoted to top throughout the design hierarchy.
- Non-PAD ports must be promoted manually to the top level from the MSS configurator canvas to be available as the next level of 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**) 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, 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:

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.

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Phone

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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**.

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Documents / Resources

SmartDesign MSS External Memory Controller (EMC) Configuration Actel	**Actel SmartFusion2 MSS Fabric Interface Controller** [pdf] User Guide SmartFusion2 MSS Fabric Interface Controller

References

- 🔺 **FPGAs and PLDs | Microchip Technology**
- 🌐 **actel.com.cn**
- 🔺 **FPGAs and PLDs | Microchip Technology**
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