



Microsemi SmartFusion2 MSS Single Error Correct Instruction Manual

[Home](#) » [Microsemi](#) » **Microsemi SmartFusion2 MSS Single Error Correct Instruction Manual** 

Contents

- [1 Microsemi SmartFusion2 MSS Single Error Correct](#)
- [2 Configuration Options](#)
- [3 Port Description](#)
- [4 Product Support](#)
- [5 Documents / Resources](#)
 - [5.1 References](#)
- [6 Related Posts](#)



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Introduction

In radiation prone environments, storage elements such as RAMs and FIFOs are susceptible to transient errors caused by heavy ions. Errors can be detected and corrected by employing error detection and correction (EDAC). The EDAC controllers implemented in SmartFusion2 support single error correction and double error detection (SEDED). Memories protected by EDAC within SmartFusion2 are the eSRAMs, the USB internal memory, the Ethernet MAC transmit and receive internal FIFOs, the controller area network (CAN) controller internal RAMs, the PCIe FIFOs and the external DDR memories.

The values entered in the configurator will be exported into the programming files for programming of the flash bits that control this functionality. The flash bits are loaded in the system registers at power up (or when the DEVRST_N external pad is asserted/de-asserted).

For complete details please refer to the Microsemi SmartFusion2 User's Guide.

To configure the PCIe core use the High Speed Serial Interface configurator. For the Fabric DDR Controller use the DDR Memory Controller configurator. Both configurators are available from the Libero IP Catalog.

Configuration Options

Expose EDAC_ERROR Bus – Use this option to expose the EDAC_ERROR bus signal to the FPGA fabric where it can be used by your design.

Enable EDAC – Use this option to enable the EDAC functionality for each of the following blocks: eSRAM0, eSRAM1, Cache, Ethernet MAC TX and RX RAMs, USB and CAN.

Enable EDAC Interrupt(s) – Use this option to enable the EDAC Interrupts for each of the following blocks: eSRAM0, eSRAM1, Cache, Ethernet MAC TX and RX RAMs, USB and CAN. You can choose to enable interrupts for 1-bit error, 2-bit error or both as shown in Figure 1-1.

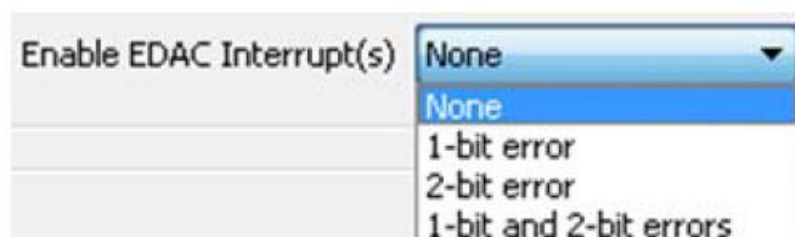


Figure 1-1 • Enable EDAC

Enable MDDR ECC Interrupts – Use this option to enable the MSS DDR (MDDR) ECC interrupts (Figure 1-2).

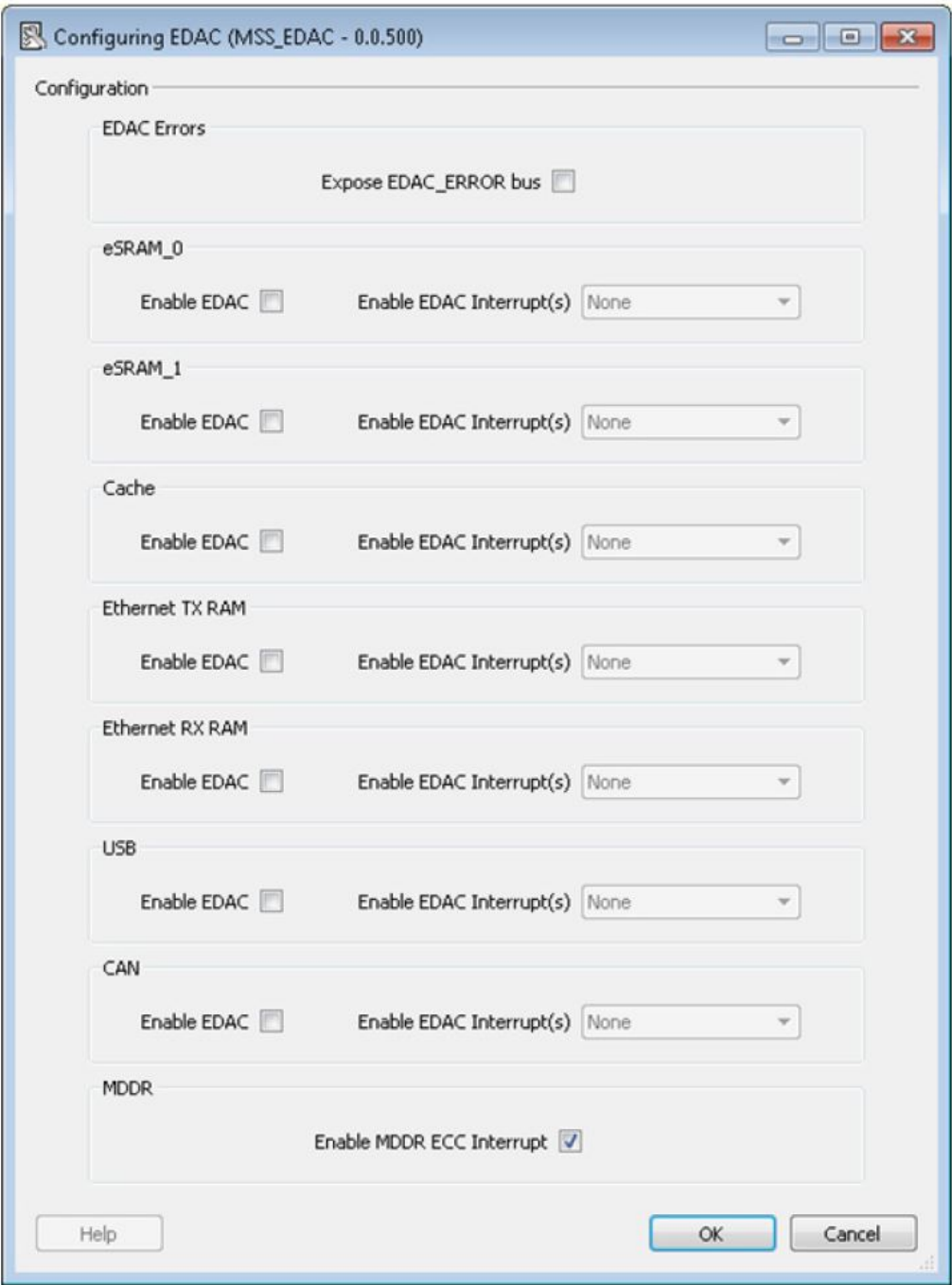


Figure 1-2 • MSS SECDDED Configurator

Port Description

Table 2-1 • Port Description

Port Name	Direction	PAD?	Description
EDAC_BUS[0]	Out	No	(ESRAM0_EDAC_1E & ESRAM0_EDAC_1E_EN) (ESRAM0_EDAC_2E & ESRAM0_EDAC_2E_EN)
EDAC_BUS[1]	Out	No	(ESRAM1_EDAC_1E & ESRAM1_EDAC_1E_EN) (ESRAM1_EDAC_2E & ESRAM1_EDAC_2E_EN)
EDAC_BUS[2]	Out	No	(CC_EDAC_1E & CC_EDAC_1E_EN) (CC_EDAC_2E & CC_EDAC_2E_EN)
EDAC_BUS[3]	Out	No	(USB_EDAC_1E & USB_EDAC_1E_EN) (USB_EDAC_2E & USB_EDAC_2E_EN)
EDAC_BUS[4]	Out	No	(CAN_EDAC_1E & CAN_EDAC_1E_EN) (CAN_EDAC_2E & CAN_EDAC_2E_EN)
EDAC_BUS[5]	Out	No	(MAC_TX_EDAC_1E & MAX_TX_EDAC_1E_EN) (MAC_TX_EDAC_2E & MAC_TX_EDAC_2E_EN)
EDAC_BUS[6]	Out	No	(MAC_RX_EDAC_1E & MAC_RX_EDAC_1E_EN) (MAC_RX_EDAC_2E & MAC_RX_EDAC_2E_EN)
EDAC_BUS[7]	Out	No	MDDR_ECC_INT & MDDR_ECC_INT_EN

Product Support

Microsemi SoC Products Group backs its products with various support services, including Customer Service, Customer Technical Support Center, a website, electronic mail, and worldwide sales offices. This appendix contains information about contacting Microsemi SoC Products Group 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 North America, call 800.262.1060
- From the rest of the world, call 650.318.4460
- Fax, from anywhere in the world, 408.643.6913

Customer Technical Support Center

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

Technical Support

Visit the Customer Support website (www.microsemi.com/soc/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 website.

Website

You can browse a variety of technical and non-technical information on the SoC home page, at www.microsemi.com/soc.

Contacting the Customer Technical Support Center

Highly skilled engineers staff the Technical Support Center. The Technical Support Center can be contacted by email or through the Microsemi SoC Products Group website.

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 soc_tech@microsemi.com.

My Cases

Microsemi SoC Products Group customers may submit and track technical cases online by going to My Cases.

Outside the U.S.

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

ITAR Technical Support

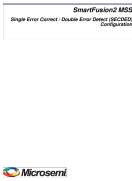
For technical support on RH and RT FPGAs that are regulated by International Traffic in Arms Regulations (ITAR), contact us via soc_tech_itar@microsemi.com. Alternatively, within My Cases, select Yes in the ITAR drop-down list. For a complete list of ITAR-regulated Microsemi FPGAs, visit the ITAR web page.

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Documents / Resources

	Microsemi SmartFusion2 MSS Single Error Correct [pdf] Instruction Manual SmartFusion2 MSS Single Error Correct, MSS Single Error Correct, Single Error Correct, Error Correct, Correct
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References

-  [Microsemi | Semiconductor & System Solutions | Power Matters](#)

-  [Libero® SoC Design Suite Versions 2023.1 to 12.0 | Microchip Technology](#)
-  [Libero® SoC Design Suite Versions 2023.1 to 12.0 | Microchip Technology](#)
-  [Libero® SoC Design Suite Versions 2022.3 to 12.0 | Microchip Technology](#)
-  [Libero® SoC Design Suite Versions 2023.1 to 12.0 | Microchip Technology](#)
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