

SmartDesign MSS

Embedded FlashROM (eFROM) Configuration

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Configuring Memory Regions

SmartFusion devices have 1,024 bits of on-chip nonvolatile flash memory called embedded flash read only memory (embedded FlashROM or eFROM). The eFROM can be read and written via the JTAG interface when performing external device programming. This embedded flash read only memory is directly accessible for reading during normal operation from user firmware running on the SmartFusion microcontroller subsystem (MSS).

In this document we describe in details how to configure the eFROM read only memory. For more details about the eFROM, please refer to the [Actel SmartFusion Microcontroller Subsystem User's Guide](#).

The Embedded FlashROM can be partitioned into regions and each region can be used for a specific purpose, like serial number storage, version number saving, etc.

The configurator enables you to create a region within a page, modify the region, and assign properties to that region (as shown in [Figure 1](#)). The regions you create can be of arbitrary widths (up to sixteen).

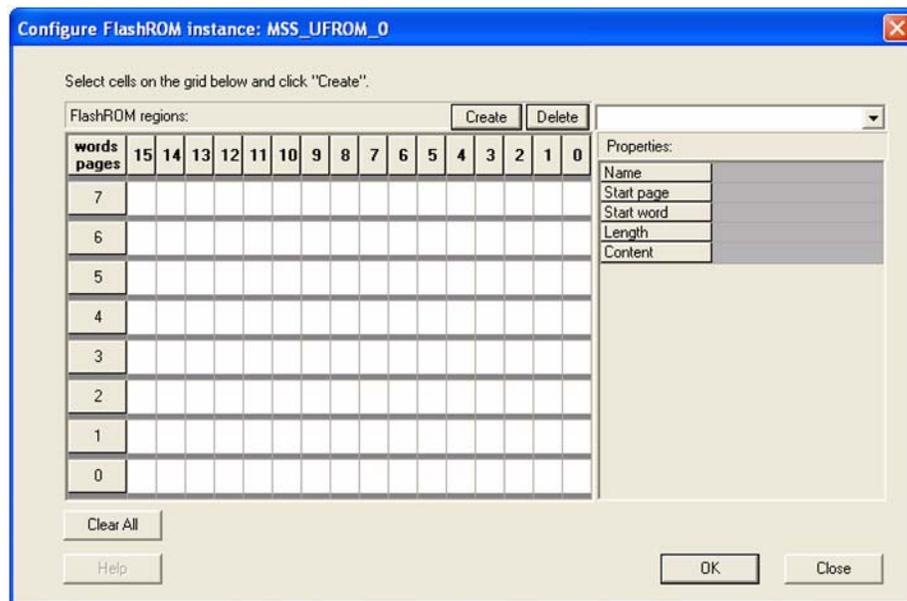


Figure 1 · MSS eFROM

Creating a Region

1. Click and drag the mouse to select words.
2. Click the **Create** button. The new region properties are displayed in the Properties grid.
3. Click in the **Properties** grid to modify region properties.
 - Start page, Start word, and Length are read-only.
 - You can specify whether the content in this region is Fixed (meaning what you enter here in the GUI is fixed), or Modifiable if you expect to change it the future.
 - The data you enter is validated as soon as you leave the Properties grid and select another region.

You may also right-click a word and choose **Create** from the shortcut menu, or select a word and press the **Insert** key on your keyboard. You can copy and paste regions in the configuration grid; to do so, right-click a word and choose **Copy**, then click an empty word, right-click, and choose **Paste**. The region will not be copied if the page does not have enough room. Try another page with more room.

Specifying Regions Data

To specify the data that goes into the memory region you just created, you must specify the Type of the content you are about to enter: Binary, Hexadecimal, Decimal, or Text (Character String). And finally, you must specify the actual data in the Value field.

For each region created in the Configuration Grid you can enter the following properties:

Content

- **Static** - Data entered manually when the core is configured and is not changeable. This option is useful when you have fixed data stored in this region that is required for the operation of the design in the FPGA. Key storage is one example.
- **Auto Inc** - Specify a starting number, a maximum number and the size of each step between. The starting value and maximum value can be modified in FlashPoint (from FlashPro).
- **Read from File** - Data is read from a content file into the selected region. A different content file may be selected in FlashPoint (from FlashPro).

State

- **Fixed** - Enables you to fix the data so that it cannot be changed during programming time. This option is useful when you have fixed data stored in this region that is required for the operation of the design in the FPGA. Key storage is one example.
- **Modifiable** - Select this option when the data in a particular region is expected to be static data (such as a version number, which remains the same for a long duration, but could conceivably change in the future). This option enables you to identify this region so that you need not come back and change the value every time you enter new data.

Type (Format)

Specify the data format of the region in the Value field. For example, if you choose DEC for the type then you can only type a decimal value into that field. Text enables you to enter any character string.

Value

This is the actual content that you want programmed into that FlashROM region.

Deleting a Region

1. Click to select a region in the Regions window.
2. Click the Delete button in the core generator, press the Delete key on the keyboard or right-click and choose Delete from the shortcut menu.

Saving a Configuration

Click the OK button. The configuration is saved in the MSS design database and can be modified by re-opening the MSS eFROM configurator.

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.



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