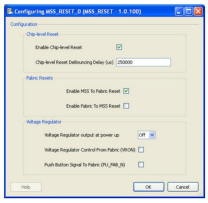


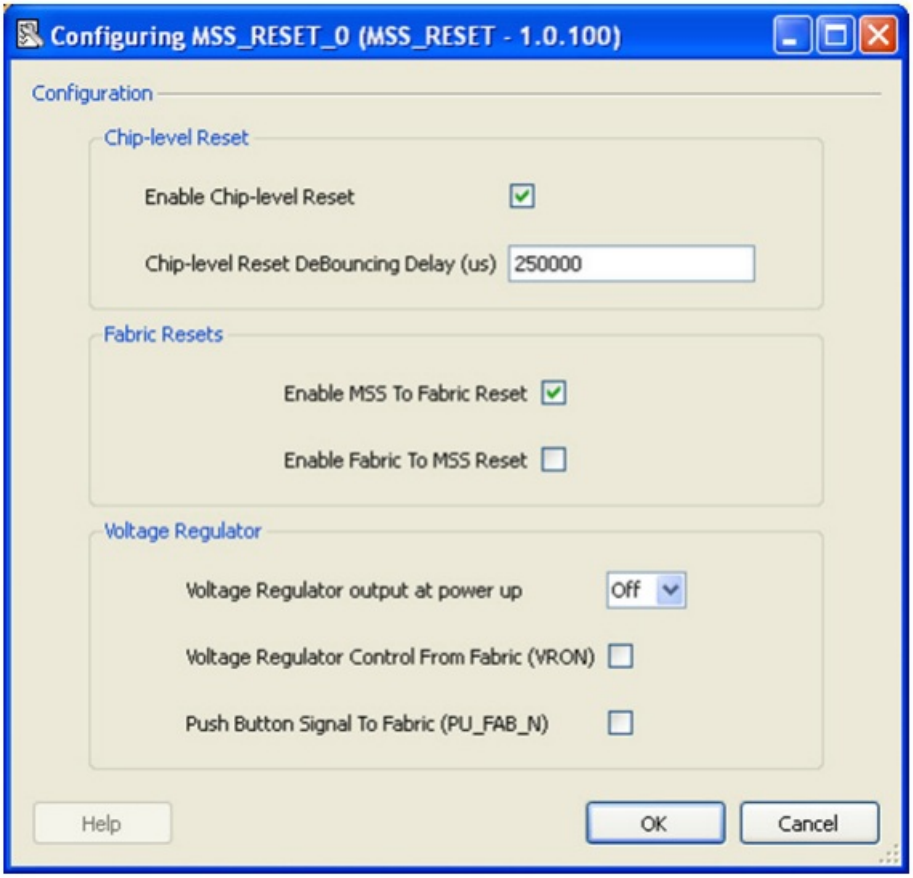
# Actel SmartDesign MSS Reset Management Configuration User Guide



Contents



## Actel SmartDesign MSS Reset Management Configuration




## Product Information

The SmartDesign MSS Reset Management Configuration is a reset controller that manages the on-chip reset resources of the Actel SmartFusion microcontroller subsystem. It provides options to expose user-level chip reset signals and manage the voltage regulator. For complete details on usage, please refer to the Actel SmartFusion Microcontroller Subsystem User's Guide.

## Configuration Options

- Chip-level Reset
- Fabric Resets
- Voltage Regulator
- Push Button Signal to Fabric (PU_FAB_N): If you want to drive the external signal PU_N into the fabric, use this option to expose the PU_FAB_N signal which is derived from the external port PU_N.

## Product Usage Instructions

- When using the SmartDesign MSS Reset Management Configuration, it is important to refer to the Actel SmartFusion Microcontroller Subsystem User's Guide for complete details on usage. However, here are some general usage instructions:
    1. Select the appropriate configuration option based on your requirements.
    2. Follow the instructions provided in the user guide to properly manage the on-chip reset resources.
    3. If utilizing the Push Button Signal to Fabric option, expose the PU_FAB_N signal which is derived from the external port PU_N.
    4. If managing the voltage regulator, select the appropriate option based on your requirements.

- If you require any non-technical product support, such as pricing or order status, contact Actel Customer Service using the phone numbers or fax provided in Appendix A of the user manual. For technical support, contact Actel Customer Technical Support Center through their website or phone numbers provided in the user manual.

## ABOUT COMPANY


- Actel Corporation, Mountain View, CA 94043



- Printed in the United States of America
- Part Number: 5-02-00223-0
- Release: July 2010



### Trademarks



## Configuration Options

- The reset controller manages the SmartFusion™ on-chip reset resources. For complete details please refer to the Actel SmartFusion Microcontroller Subsystem User’s Guide.
- The Reset Management Configurator provides options to expose user-level chip reset signals. It also provides you with options on how to use the voltage regulator.

### Chip-level Reset

- Enabling chip-level reset (MSS_RESET_N): MSS_RESET_N can be used as an external reset and can also be used as a system level reset under control of the ARM® Cortex™-M3. You can enable the MSS_RESET_N signal in this configurator. The MSS_RESET_N signal is then available to be used in the design. The PADRESETENABLE bit in the SOFT_RST_CR register will automatically be set by the Actel System Boot. Note that, in the current software, the MSS_RESET_N is modeled as an external input signal only (Figure 1-1).
- Chip-level reset de-bouncing delay: The direction of MSS_RESET_N will change during the execution of the Actel System Boot when chip-level reset is enabled. MSS_RESET_N is an output asserted low after power-on reset. The Actel System Boot will reconfigure MSS_RESET_N to become a reset input signal when chip-level

reset is enabled. The reset de-bouncing delay is the delay between reconfiguring MSS_RESET_N as an input and enabling that input to reset the SmartFusion. This delay may be required to allow for bouncing of the external reset signal or to allow an external reset control chip to hold the external reset asserted for a time after SmartFusion has stopped driving MSS_RESET_N.

**Fabric Resets**

- Enabling MSS to Fabric reset (M2F_RESET_N): The M2F_RESET_N reset signal is fed to the FPGA fabric. M2F_RESET_N asserts asynchronously and negates synchronously to FCLK. You can enable the M2F_RESET_N signal in this configurator. The MSS_RESET_N signal is then available to be used in the design.
- Enabling Fabric to MSS reset (F2M_RESET_N): When asserted from FPGA fabric (and if F2MRESETENABLE is asserted in SOFT_RST_CR) the F2M_RESET_N signal causes the RCOSC and the MSS_RESET outputs of the reset controller to assert as described in the Actel SmartFusion Microcontroller Subsystem User's Guide. You can enable the F2M_RESET_N signal in this configurator. The F2M_RESET_N signal is then available to be used in the design.
- The F2MRESETENABLE bit in the SOFT_RST_CR register will automatically be set by the Actel System Boot.

**Voltage Regulator**

- Voltage Regulator output at power up: If the SmartFusion device 1.5V VCC power supply is generated from the SmartFusion Voltage Regulator output, you can control whether the output is automatically turned ON after the device comes out of reset (PoR). It is important to note that to obtain the ON behavior the design must go through the Placeand-Route as that particular configuration is programmed using flash cells. You must program the FlashPro data file (FDB) that contains the fabric programming data.
- Voltage Regulator Control from Fabric (VRON): The VR may be powered off under firmware control, or by using the FPGAVRON (VRON port in the MSS configurator) signal from the FPGA fabric. Note that the FPGAVRON signal is qualified by the FPGAVRONENABLE bit (must be equal to 1) in the VRPSM_CR. A low-to-high-to-low transition commands the VR to turn off.

**Configuration Options**

6 SmartDesign MSS Reset Management Configuration Push Button Signal to Fabric (PU_FAB_N): If you want to drive the external signal PU_N into the fabric, use this option to expose the PU_FAB_N signal which is derived from the external port PU_N.

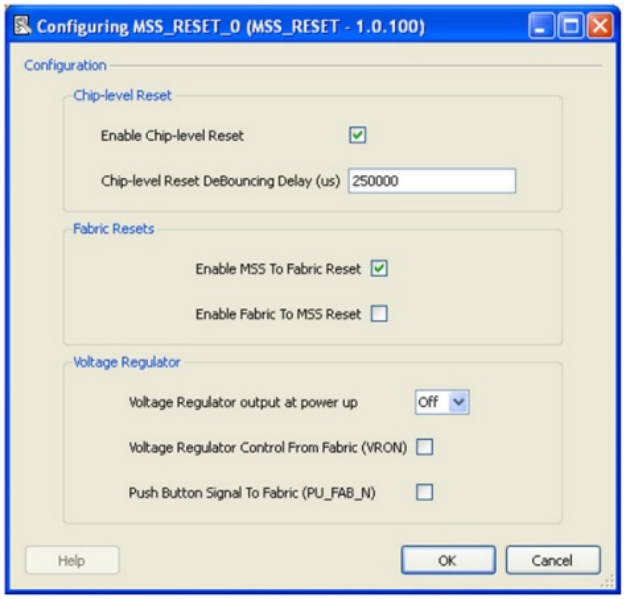



Figure 1-1 · MSS Reset Management Configuration

## 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:

**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**.

## CONTACT LIST

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  - Hong Kong
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  - **Fax** +852 2185 6488
  - www.actel.com.cn

## Documents / Resources

| | |
|---|---|
|  | Actel SmartDesign MSS Reset Management Configuration [pdf] User Guide<br>SmartDesign MSS Reset Management Configuration, SmartDesign MSS, Reset Management Configuration, Management Configuration |

## References

- FPGAs and PLDs | Microchip Technology
- actel.com.cn
- FPGAs and PLDs | Microchip Technology
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