

Microsemi Corporation: CN18014

October 8, 2018

Customer Notification No: CN18014

Change Classification: Minor

Subject

Addendum to PCN1309 and PCN1309A – Synopsys Synplify Pro Software Bug Regarding Safe State Machine Recovery

Description

Microsemi and Synopsys have recently become aware of a scenario that can result in a state machine design not being implemented with logic circuits which force the state machine into a reset state if an illegal state is detected.

Description of the Problem

When a design is synthesized with the one-hot state machine encoding style and includes state machines with only two states, Synplify Pro may not recognize them as state machines. If the state machine is marked for “safe” implementation, and this bug affects the design, then the inferred extra logic that forces a reset during an illegal state condition will not be added. This problem can occur only when *all* of the following conditions are true.

- The design is synthesized with the “safe” encoding style for the state machine (the user has specified *syn_encoding=“safe”*).
- The state machine is instructed to use “onehot” encoding through the *Implementation Options > VHDL setting*.
- The state machine has only two states.
- The state machine does not have a *syn_state_machine=“true”* attribute.

Note: Specifying the encoding style through the *syn_encoding* attribute within the code, as in *syn_encoding=“safe,onehot”*, does not result in this bug (if the Implementation Options encoding is set to “default”).

Method of Identifying an Affected Design

You can verify whether this issue really affected your design by checking if all the following conditions are true for the Synplify project, where the design was synthesized:

- The design has “onehot” selected as the *Default Enum Encoding*.
- The state machine is marked to be implemented with the “safe” attribute.
- The state machine has only two possible states.
- The state machine does not have a *syn_state_machine=“true”* attribute.
- The .srr report does not have an ‘Encoding state machine X’ message.
- The safe state machine logic does not exist.

Action Required

There are four solutions to this problem:

1. Change the *Default Enum Encoding* to be “default” within the Implementation Options.
2. Add the *syn_state_machine=“true”* attribute to the state machine signal.
3. Modify the state machine to be implemented as a one-bit toggle flip-flop.
4. Use software version N-2018.03 or later.

Products Affected by this Change

See Appendix A.

Appendix A

Microsemi FPGA Family Names

PolarFire	RTAX-S, RTAX-DSP
SmartFusion2	RTSX-S, RTSX-SU
IGLOO2	Axcelerator
RTG4	eX
Fusion	SX, SX-A
SmartFusion	40MX
IGLOO, IGLOO/E, IGLOO Nano, IGLOO PLUS	42MX
ProASIC3, ProASIC3/E, ProASIC3 Nano, ProASIC3L	3200DX
ProASIC Plus	Act3
A500K	Act2
	Act1

Contact Information

If you have further questions about this subject, contact Microsemi's Technical Support at soc_tech@microsemi.com.

Regards,

Microsemi Corporation

Any projected dates in this PCN are based on the most current product information at the time this PCN is being issued, but they may change due to unforeseen circumstances. For the latest schedule and any other information, please contact your local Microsemi Sales Office, the factory contact shown above, or your local distributor. This Product/Process Change Notification is confidential and proprietary information of Microsemi and is intended only for distribution by Microsemi to its customers, for customers' use only. It must not be copied or provided to any third party without Microsemi's prior written consent.



Microsemi Headquarters

One Enterprise, Aliso Viejo,
CA 92656 USA

Within the USA: +1 (800) 713-4113

Outside the USA: +1 (949) 380-6100

Sales: +1 (949) 380-6136

Fax: +1 (949) 215-4996

Email: sales.support@microsemi.com

www.microsemi.com

© 2018 Microsemi. All rights reserved. Microsemi and the Microsemi logo are trademarks of Microsemi Corporation. All other trademarks and service marks are the property of their respective owners.

Microsemi makes no warranty, representation, or guarantee regarding the information contained herein or the suitability of its products and services for any particular purpose, nor does Microsemi assume any liability whatsoever arising out of the application or use of any product or circuit. The products sold hereunder and any other products sold by Microsemi have been subject to limited testing and should not be used in conjunction with mission-critical equipment or applications. Any performance specifications are believed to be reliable but are not verified, and Buyer must conduct and complete all performance and other testing of the products, alone and together with, or installed in, any end-products. Buyer shall not rely on any data and performance specifications or parameters provided by Microsemi. It is the Buyer's responsibility to independently determine suitability of any products and to test and verify the same. The information provided by Microsemi hereunder is provided "as is, where is" and with all faults, and the entire risk associated with such information is entirely with the Buyer. Microsemi does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other IP rights, whether with regard to such information itself or anything described by such information. Information provided in this document is proprietary to Microsemi, and Microsemi reserves the right to make any changes to the information in this document or to any products and services at any time without notice.

Microsemi, a wholly owned subsidiary of Microchip Technology Inc. (Nasdaq: MCHP), offers a comprehensive portfolio of semiconductor and system solutions for aerospace & defense, communications, data center and industrial markets. Products include high-performance and radiation-hardened analog mixed-signal integrated circuits, FPGAs, SoCs and ASICs; power management products; timing and synchronization devices and precise time solutions, setting the world's standard for time; voice processing devices; RF solutions; discrete components; enterprise storage and communication solutions; security technologies and scalable anti-tamper products; Ethernet solutions; Power-over-Ethernet ICs and midspans; as well as custom design capabilities and services. Microsemi is headquartered in Aliso Viejo, California, and has approximately 4,800 employees globally. Learn more at www.microsemi.com.

Microsemi Headquarters

One Enterprise, Aliso Viejo, CA 92656 USA

Within USA: +1 (800) 713-4113 Outside USA: +1 (949) 380-6100

Fax: +1 (949) 215-4996 Email: sales.support@microsemi.com www.microsemi.com

MSC-F-0003 Rev 3

Do not distribute outside of Microsemi without permission.

Page 3 of 3