

## Microsemi Corporation: CN17036

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November 6, 2017

Customer Notification No: CN17036

Customer Advisory Notice (CAN)

Change Classification: Minor

### Subject

Libero Software Updates For SmartFusion2 and IGLOO2

### Summary

This document describes three Customer Advisory Notices (CAN) for all SmartFusion2 and IGLOO2 devices. A summary and the action required can be found in the table below.

Notification	Description	Action required
CAN 17036.1	Vref Output Enable Tie-off	Open your project using Libero SoC v11.8 SP2, and update Vref pin assignment if the DRC check flags your design.
CAN 17036.2	I/O Output Data and Output Enable Inversion	Open your project, and recompile your design using Libero SoC v11.8 SP2 if the DRC check flags your design.
CAN 17036.3	Bitstream Corruption with "S" Devices	Regenerate the bitstream using Libero SoC v11.8 SP3. (Available CQ1 2018)

## CAN 17036.1 Vref Output Enable Tie-Off

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### Reason for Change

In the device I/O configuration, the Output Enable (OE) of the I/O pair where Vref is assigned to the P-side was incorrectly tied to '0', resulting in high-Z state on any output assigned to the corresponding N-side.

If **ALL** of the following conditions exist in your design, the output assigned to the N-side of the PN pin pair will be set to high-Z.

- Vref is used on MSIO or MSIOD bank **and**
- Vref is assigned to the P-side of a PN I/O pair **and**
- The N-side of the same PN pin pair is a user OUTPUT, BIBUF or TRIBUFF

### Description of Change

Libero SoC v11.8 SP2 will enforce a new DRC rule that will prevent the above condition.

### Application Impact

The affected output assigned to the N-side of the PN pin pair is in a high-Z state. This is a time zero failure.

### Action Required

Open your existing project in Libero SoC v11.8 SP2. If the above condition is detected when opening your project, it will be flagged by the following message:

"Your design '...' contains an IO configuration which is not legal. An output is placed on the N side of a differential IO, where the P side is a VREF pin. You must change the affected IO's using the IO Editor or a PDC constraint."

Resolve the error by either moving the Vref assignment to another pin on the I/O bank, or by moving the output assigned to the N-side.

### Products Affected by this Change

See Appendix A.

## CAN 17036.2 I/O Output Data and Output Enable Inversion

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### Reason for Change

I/O Output Data and Output Enable Inversion occurs during Automatic I/O Register Combining with Libero SoC v11.8 SP1. This reverses the polarity of the inputs to OUTBUF/BIBUF/TRIBUFF cells. This is a time zero failure and can be detected in post-layout simulation. Only designs created in Libero SoC v11.8 SP1 are affected. The polarity is changed on the output data and output enable path of an I/O (OUTBUF, BIBUF, or TRIBUFF). This occurs when the FPGA fabric flip-flop driving the output data or output enable port is automatically combined into the I/O output flip-flop or output enable (OE) flip-flop (also called out\_reg and en\_reg respectively). This incorrect inversion does not occur on I/O registers that were combined manually via user-specified I/O register constraints. Output delay constraints in the Layout SDC (i.e., set\_output\_delay), which are applied to the output port during layout, will enable Automatic I/O Register Combining under certain conditions:

- Register output to I/O buffer fanout is 1.
- No user-specified (manual) constraints to preserve the fabric flip-flops (i.e., set\_preserve).
- No user-specified (manual) constraints to combine the output and output enable flip-flops into their respective I/O registers (i.e., set\_ioff).

### Description of Change

Libero SoC v11.8 SP2 will fix the bug introduced in Libero SoC v11.8 SP1. When opening a project, a DRC check will inform you of any changes required with the following message:

"Your design '...' contains IO-Register combinations which need to be updated. Please re-run Place and Route."

### Application Impact

This is a time zero failure. Outputs and the output enable path that previously had been working properly will be inverted from their desired state.

### Action Required

Recompile your design using Libero SoC v11.8 SP2 if the DRC check flags your design.

### Products Affected by this Change

See Appendix A.

## CAN 17036.3 Bitstream Corruption with "S" Devices

### Reason for Change

An already programmed SmartFusion2 or IGLOO2 "S" device that uses the embedded DRBG, AES, or ECC point multiplication system service in the application could corrupt a bitstream coming from the JTAG or dedicated system controller SPI port. Only programming over the JTAG port or the dedicated system controller SPI port exhibit this behavior. Auto-Update, In-Application-Programming, and Programming recovery modes over SPI\_0 are not affected.

### Description of Change

A change to the bitstream format and algorithm will be implemented in Libero SoC v11.8 SP3. A short dummy FPGA bitstream component that places the FPGA fabric in verify mode before bitstream programming has been added and prevents the collision. This will increase the programming time by 2-3 seconds.

Device Density	Programming Time (sec)	Additional Verify Step Impact (sec)	% Overhead	Final Programming Time (sec)
005	22	2-3	14%	25
010	28	2-3	11%	31
025	51	2-3	6%	54
050	66	2-3	5%	69
060	77	2-3	4%	80
090	113	2-3	3%	116
150	155	2-3	2%	158

### Application Impact

Although the probability is very low, the device being programmed may become unresponsive if programming with a new bitstream other than the one that is currently running in the FPGA fabric. If an identical bitstream is used to program the device to the one actually running on the device no adverse affects occur.

### Action Required

Users must regenerate the bitstream using Libero SoC v11.8 SP3, which will be available for download in CQ1 of 2018. A temporary workaround exists pending availability of Libero SoC v11.8 SP3. Please contact technical support for the workaround at [soc\\_tech@microsemi.com](mailto:soc_tech@microsemi.com).

### Products Affected by this Change

See Appendix A. Only those devices with an "S" in the part number from Appendix A are affected. For example, M2S010TS-FG484 is affected not the M2S010T-FG484.

## Appendix A

### List of SmartFusion2 and IGLOO2 Part Numbers

SmartFusion2		IGLOO2	
Leaded Part	Lead-Free Parts	Leaded Part	Lead-Free Parts
M2S005-TQ144	M2S005-TQG144	M2GL005-TQ144	M2GL005-TQG144
M2S010-TQ144	M2S010-TQG144	M2GL010-TQ144	M2GL010-TQG144
M2S005-VF256	M2S005-VFG256	M2GL005-VF256	M2GL005-VFG256
M2S010-VF256	M2S010-VFG256	M2GL010-VF256	M2GL010-VFG256
M2S025-VF256	M2S025-VFG256	M2GL025-VF256	M2GL025-VFG256
M2S025-FCS325	M2S025-FCSG325	M2GL025-FCS325	M2GL025-FCSG325
M2S050-FCS325	M2S050-FCSG325	M2GL050-FCS325	M2GL050-FCSG325
M2S060-FCS325	M2S060-FCSG325	M2GL060-FCS325	M2GL060-FCSG325
M2S090-FCS325	M2S090-FCSG325	M2GL090-FCS325	M2GL090-FCSG325
M2S005-VF400	M2S005-VFG400	M2GL005-VF400	M2GL005-VFG400
M2S010-VF400	M2S010-VFG400	M2GL010-VF400	M2GL010-VFG400
M2S025-VF400	M2S025-VFG400	M2GL025-VF400	M2GL025-VFG400
M2S050-VF400	M2S050-VFG400	M2GL050-VF400	M2GL050-VFG400
M2S060-VF400	M2S060-VFG400	M2GL060-VF400	M2GL060-VFG400
M2S150-FCV484	M2S150-FCVG484	M2GL150-FCV484	M2GL150-FCVG484
M2S005-FG484	M2S005-FGG484	M2GL005-FG484	M2GL005-FGG484
M2S010-FG484	M2S010-FGG484	M2GL010-FG484	M2GL010-FGG484
M2S025-FG484	M2S025-FGG484	M2GL025-FG484	M2GL025-FGG484
M2S050-FG484	M2S050-FGG484	M2GL050-FG484	M2GL050-FGG484
M2S060-FG484	M2S060-FGG484	M2GL060-FG484	M2GL060-FGG484
M2S090-FG484	M2S090-FGG484	M2GL090-FG484	M2GL090-FGG484
M2S150-FCS536	M2S150-FCSG536	M2GL150-FCS536	M2GL150-FCSG536
M2S060-FG676	M2S060-FGG676	M2GL060-FG676	M2GL060-FGG676
M2S090-FG676	M2S090-FGG676	M2GL090-FG676	M2GL090-FGG676
M2S050-FG896	M2S050-FGG896	M2GL050-FG896	M2GL050-FGG896
M2S150-FC1152	M2S150-FCG1152	M2GL150-FC1152	M2GL150-FCG1152
M2S010T-VF256	M2S010T-VFG256	M2GL010T-VF256	M2GL010T-VFG256
M2S025T-VF256	M2S025T-VFG256	M2GL025T-VF256	M2GL025T-VFG256
M2S025T-FCS325	M2S025T-FCSG325	M2GL025T-FCS325	M2GL025T-FCSG325
M2S050T-FCS325	M2S050T-FCSG325	M2GL050T-FCS325	M2GL050T-FCSG325
M2S060T-FCS325	M2S060T-FCSG325	M2GL060T-FCS325	M2GL060T-FCSG325
M2S090T-FCS325	M2S090T-FCSG325	M2GL090T-FCS325	M2GL090T-FCSG325
M2S010T-VF400	M2S010T-VFG400	M2GL010T-VF400	M2GL010T-VFG400
M2S025T-VF400	M2S025T-VFG400	M2GL025T-VF400	M2GL025T-VFG400

M2S050T-VF400	M2S050T-VFG400	M2GL050T-VF400	M2GL050T-VFG400
M2S060T-VF400	M2S060T-VFG400	M2GL060T-VF400	M2GL060T-VFG400
M2S150T-FCV484	M2S150T-FCVG484	M2GL150T-FCV484	M2GL150T-FCVG484
M2S010T-FG484	M2S010T-FGG484	M2GL010T-FG484	M2GL010T-FGG484
M2S025T-FG484	M2S025T-FGG484	M2GL025T-FG484	M2GL025T-FGG484
M2S050T-FG484	M2S050T-FGG484	M2GL050T-FG484	M2GL050T-FGG484
M2S060T-FG484	M2S060T-FGG484	M2GL060T-FG484	M2GL060T-FGG484
M2S090T-FG484	M2S090T-FGG484	M2GL090T-FG484	M2GL090T-FGG484
M2S150T-FCS536	M2S150T-FCSG536	M2GL150T-FCS536	M2GL150T-FCSG536
M2S060T-FG676	M2S060T-FGG676	M2GL060T-FG676	M2GL060T-FGG676
M2S090T-FG676	M2S090T-FGG676	M2GL090T-FG676	M2GL090T-FGG676
M2S050T-FG896	M2S050T-FGG896	M2GL050T-FG896	M2GL050T-FGG896
M2S150T-FC1152	M2S150T-FCG1152	M2GL150T-FC1152	M2GL150T-FCG1152
M2S005S-TQ144	M2S005S-TQG144	M2GL005S-TQ144	M2GL005S-TQG144
M2S010S-TQ144	M2S010S-TQG144	M2GL010S-TQ144	M2GL010S-TQG144
M2S005S-VF256	M2S005S-VFG256	M2GL005S-VF256	M2GL005S-VFG256
M2S005S-VF400	M2S005S-VFG400	M2GL005S-VF400	M2GL005S-VFG400
M2S005S-FG484	M2S005S-FGG484	M2GL005S-FG484	M2GL005S-FGG484
M2S010TS-VF256	M2S010TS-VFG256	M2GL010TS-VF256	M2GL010TS-VFG256
M2S025TS-VF256	M2S025TS-VFG256	M2GL025TS-VF256	M2GL025TS-VFG256
M2S025TS-FCS325	M2S025TS-FCSG325	M2GL025TS-FCS325	M2GL025TS-FCSG325
M2S050TS-FCS325	M2S050TS-FCSG325	M2GL050TS-FCS325	M2GL050TS-FCSG325
M2S060TS-FCS325	M2S060TS-FCSG325	M2GL060TS-FCS325	M2GL060TS-FCSG325
M2S090TS-FCS325	M2S090TS-FCSG325	M2GL090TS-FCS325	M2GL090TS-FCSG325
M2S010TS-VF400	M2S010TS-VFG400	M2GL010TS-VF400	M2GL010TS-VFG400
M2S025TS-VF400	M2S025TS-VFG400	M2GL025TS-VF400	M2GL025TS-VFG400
M2S050TS-VF400	M2S050TS-VFG400	M2GL050TS-VF400	M2GL050TS-VFG400
M2S060TS-VF400	M2S060TS-VFG400	M2GL060TS-VF400	M2GL060TS-VFG400
M2S150TS-FCV484	M2S150TS-FCVG484	M2GL150TS-FCV484	M2GL150TS-FCVG484
M2S010TS-FG484	M2S010TS-FGG484	M2GL010TS-FG484	M2GL010TS-FGG484
M2S025TS-FG484	M2S025TS-FGG484	M2GL025TS-FG484	M2GL025TS-FGG484
M2S050TS-FG484	M2S050TS-FGG484	M2GL050TS-FG484	M2GL050TS-FGG484
M2S060TS-FG484	M2S060TS-FGG484	M2GL060TS-FG484	M2GL060TS-FGG484
M2S090TS-FG484	M2S090TS-FGG484	M2GL090TS-FG484	M2GL090TS-FGG484
M2S150TS-FCS536	M2S150TS-FCSG536	M2GL150TS-FCS536	M2GL150TS-FCSG536
M2S060TS-FG676	M2S060TS-FGG676	M2GL060TS-FG676	M2GL060TS-FGG676
M2S090TS-FG676	M2S090TS-FGG676	M2GL090TS-FG676	M2GL090TS-FGG676
M2S050TS-FG896	M2S050TS-FGG896	M2GL050TS-FG896	M2GL050TS-FGG896
M2S150TS-FC1152	M2S150TS-FCG1152	M2GL150TS-FC1152	M2GL150TS-FCG1152
M2S005S-1TQ144	M2S005S-1TQG144	M2GL005S-1TQ144	M2GL005S-1TQG144
M2S010S-1TQ144	M2S010S-1TQG144	M2GL010S-1TQ144	M2GL010S-1TQG144

M2S005-1VF256	M2S005-1VFG256	M2GL005-1VF256	M2GL005-1VFG256
M2S010-1VF256	M2S010-1VFG256	M2GL010-1VF256	M2GL010-1VFG256
M2S025-1VF256	M2S025-1VFG256	M2GL025-1VF256	M2GL025-1VFG256
M2S025-1FCS325	M2S025-1FCSG325	M2GL025-1FCS325	M2GL025-1FCSG325
M2S050-1FCS325	M2S050-1FCSG325	M2GL050-1FCS325	M2GL050-1FCSG325
M2S060-1FCS325	M2S060-1FCSG325	M2GL060-1FCS325	M2GL060-1FCSG325
M2S090-1FCS325	M2S090-1FCSG325	M2GL090-1FCS325	M2GL090-1FCSG325
M2S005-1VF400	M2S005-1VFG400	M2GL005-1VF400	M2GL005-1VFG400
M2S010-1VF400	M2S010-1VFG400	M2GL010-1VF400	M2GL010-1VFG400
M2S025-1VF400	M2S025-1VFG400	M2GL025-1VF400	M2GL025-1VFG400
M2S050-1VF400	M2S050-1VFG400	M2GL050-1VF400	M2GL050-1VFG400
M2S060-1VF400	M2S060-1VFG400	M2GL060-1VF400	M2GL060-1VFG400
M2S150-1FCV484	M2S150-1FCVG484	M2GL150-1FCV484	M2GL150-1FCVG484
M2S005-1FG484	M2S005-1FGG484	M2GL005-1FG484	M2GL005-1FGG484
M2S010-1FG484	M2S010-1FGG484	M2GL010-1FG484	M2GL010-1FGG484
M2S025-1FG484	M2S025-1FGG484	M2GL025-1FG484	M2GL025-1FGG484
M2S050-1FG484	M2S050-1FGG484	M2GL050-1FG484	M2GL050-1FGG484
M2S060-1FG484	M2S060-1FGG484	M2GL060-1FG484	M2GL060-1FGG484
M2S090-1FG484	M2S090-1FGG484	M2GL090-1FG484	M2GL090-1FGG484
M2S150-1FCS536	M2S150-1FCSG536	M2GL150-1FCS536	M2GL150-1FCSG536
M2S060-1FG676	M2S060-1FGG676	M2GL060-1FG676	M2GL060-1FGG676
M2S090-1FG676	M2S090-1FGG676	M2GL090-1FG676	M2GL090-1FGG676
M2S050-1FG896	M2S050-1FGG896	M2GL050-1FG896	M2GL050-1FGG896
M2S150-1FC1152	M2S150-1FCG1152	M2GL150-1FC1152	M2GL150-1FCG1152
M2S010T-1VF256	M2S010T-1VFG256	M2GL010T-1VF256	M2GL010T-1VFG256
M2S025T-1VF256	M2S025T-1VFG256	M2GL025T-1VF256	M2GL025T-1VFG256
M2S025T-1FCS325	M2S025T-1FCSG325	M2GL025T-1FCS325	M2GL025T-1FCSG325
M2S050T-1FCS325	M2S050T-1FCSG325	M2GL050T-1FCS325	M2GL050T-1FCSG325
M2S060T-1FCS325	M2S060T-1FCSG325	M2GL060T-1FCS325	M2GL060T-1FCSG325
M2S090T-1FCS325	M2S090T-1FCSG325	M2GL090T-1FCS325	M2GL090T-1FCSG325
M2S010T-1VF400	M2S010T-1VFG400	M2GL010T-1VF400	M2GL010T-1VFG400
M2S025T-1VF400	M2S025T-1VFG400	M2GL025T-1VF400	M2GL025T-1VFG400
M2S050T-1VF400	M2S050T-1VFG400	M2GL050T-1VF400	M2GL050T-1VFG400
M2S060T-1VF400	M2S060T-1VFG400	M2GL060T-1VF400	M2GL060T-1VFG400
M2S150T-1FCV484	M2S150T-1FCVG484	M2GL150T-1FCV484	M2GL150T-1FCVG484
M2S010T-1FG484	M2S010T-1FGG484	M2GL010T-1FG484	M2GL010T-1FGG484
M2S025T-1FG484	M2S025T-1FGG484	M2GL025T-1FG484	M2GL025T-1FGG484
M2S050T-1FG484	M2S050T-1FGG484	M2GL050T-1FG484	M2GL050T-1FGG484
M2S060T-1FG484	M2S060T-1FGG484	M2GL060T-1FG484	M2GL060T-1FGG484
M2S090T-1FG484	M2S090T-1FGG484	M2GL090T-1FG484	M2GL090T-1FGG484
M2S150T-1FCS536	M2S150T-1FCSG536	M2GL150T-1FCS536	M2GL150T-1FCSG536

M2S060T-1FG676	M2S060T-1FGG676	M2GL060T-1FG676	M2GL060T-1FGG676
M2S090T-1FG676	M2S090T-1FGG676	M2GL090T-1FG676	M2GL090T-1FGG676
M2S050T-1FG896	M2S050T-1FGG896	M2GL050T-1FG896	M2GL050T-1FGG896
M2S150T-1FC1152	M2S150T-1FCG1152	M2GL150T-1FC1152	M2GL150T-1FCG1152
M2S005S-1TQ144	M2S005S-1TQG144	M2GL005S-1TQ144	M2GL005S-1TQG144
M2S010S-1TQ144	M2S010S-1TQG144	M2GL010S-1TQ144	M2GL010S-1TQG144
M2S005S-1VF256	M2S005S-1VFG256	M2GL005S-1VF256	M2GL005S-1VFG256
M2S005S-1VF400	M2S005S-1VFG400	M2GL005S-1VF400	M2GL005S-1VFG400
M2S005S-1FG484	M2S005S-1FGG484	M2GL005S-1FG484	M2GL005S-1FGG484
M2S010TS-1VF256	M2S010TS-1VFG256	M2GL010TS-1VF256	M2GL010TS-1VFG256
M2S025TS-1VF256	M2S025TS-1VFG256	M2GL025TS-1VF256	M2GL025TS-1VFG256
M2S025TS-1FCS325	M2S025TS-1FCSG325	M2GL025TS-1FCS325	M2GL025TS-1FCSG325
M2S050TS-1FCS325	M2S050TS-1FCSG325	M2GL050TS-1FCS325	M2GL050TS-1FCSG325
M2S060TS-1FCS325	M2S060TS-1FCSG325	M2GL060TS-1FCS325	M2GL060TS-1FCSG325
M2S090TS-1FCS325	M2S090TS-1FCSG325	M2GL090TS-1FCS325	M2GL090TS-1FCSG325
M2S010TS-1VF400	M2S010TS-1VFG400	M2GL010TS-1VF400	M2GL010TS-1VFG400
M2S025TS-1VF400	M2S025TS-1VFG400	M2GL025TS-1VF400	M2GL025TS-1VFG400
M2S050TS-1VF400	M2S050TS-1VFG400	M2GL050TS-1VF400	M2GL050TS-1VFG400
M2S060TS-1VF400	M2S060TS-1VFG400	M2GL060TS-1VF400	M2GL060TS-1VFG400
M2S150TS-1FCV484	M2S150TS-1FCVG484	M2GL150TS-1FCV484	M2GL150TS-1FCVG484
M2S010TS-1FG484	M2S010TS-1FGG484	M2GL010TS-1FG484	M2GL010TS-1FGG484
M2S025TS-1FG484	M2S025TS-1FGG484	M2GL025TS-1FG484	M2GL025TS-1FGG484
M2S050TS-1FG484	M2S050TS-1FGG484	M2GL050TS-1FG484	M2GL050TS-1FGG484
M2S060TS-1FG484	M2S060TS-1FGG484	M2GL060TS-1FG484	M2GL060TS-1FGG484
M2S090TS-1FG484	M2S090TS-1FGG484	M2GL090TS-1FG484	M2GL090TS-1FGG484
M2S150TS-1FCS536	M2S150TS-1FCSG536	M2GL150TS-1FCS536	M2GL150TS-1FCSG536
M2S060TS-1FG676	M2S060TS-1FGG676	M2GL060TS-1FG676	M2GL060TS-1FGG676
M2S090TS-1FG676	M2S090TS-1FGG676	M2GL090TS-1FG676	M2GL090TS-1FGG676
M2S050TS-1FG896	M2S050TS-1FGG896	M2GL050TS-1FG896	M2GL050TS-1FGG896
M2S150TS-1FC1152	M2S150TS-1FCG1152	M2GL150TS-1FC1152	M2GL150TS-1FCG1152
M2S005-TQ144I	M2S005-TQG144I	M2GL005-TQ144I	M2GL005-TQG144I
M2S010-TQ144I	M2S010-TQG144I	M2GL010-TQ144I	M2GL010-TQG144I
M2S005-VF256I	M2S005-VFG256I	M2GL005-VF256I	M2GL005-VFG256I
M2S010-VF256I	M2S010-VFG256I	M2GL010-VF256I	M2GL010-VFG256I
M2S025-VF256I	M2S025-VFG256I	M2GL025-VF256I	M2GL025-VFG256I
M2S025-FCS325I	M2S025-FCSG325I	M2GL025-FCS325I	M2GL025-FCSG325I
M2S050-FCS325I	M2S050-FCSG325I	M2GL050-FCS325I	M2GL050-FCSG325I
M2S060-FCS325I	M2S060-FCSG325I	M2GL060-FCS325I	M2GL060-FCSG325I
M2S090-FCS325I	M2S090-FCSG325I	M2GL090-FCS325I	M2GL090-FCSG325I
M2S005-VF400I	M2S005-VFG400I	M2GL005-VF400I	M2GL005-VFG400I
M2S010-VF400I	M2S010-VFG400I	M2GL010-VF400I	M2GL010-VFG400I



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M2S050-VF400I	M2S050-VFG400I	M2GL050-VF400I	M2GL050-VFG400I
M2S060-VF400I	M2S060-VFG400I	M2GL060-VF400I	M2GL060-VFG400I
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M2GL060TS-1FGG676T2

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M2GL090TS-1FGG676T2

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## Contact Information

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If you have any questions, please contact Microsemi's SoC Technical Support at [soc\\_tech@microsemi.com](mailto:soc_tech@microsemi.com).

Regards,

Microsemi Corporation

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