



January 25, 2013

PCN Number: 1301

PCN Change Level: Major

Subject: Changes in maximum DDR frequency for input and output propagation delays, temperature monitor accuracy for AFS250 and analog reference voltage capacitor recommendations for the Fusion family

Dear Customer,

The following changes have been made in the *Fusion Family of Mixed Signal FPGAs* datasheet:

1. Maximum DDR frequencies for input and output propagation delays for Microsemi's Fusion devices have been rectified due to an inadvertent error in the datasheet. All Fusion devices are affected for speed grade -2, grade -1 and Std., for parameters FDDRIMAX and FDDOMAX.

Modified values for FDDRIMAX and FDDOMAX are given in Table 1 and Table 2.

Table 1 • Input (FDDRIMAX)

Previous		New	
-1	Std.	-1	Std.
1,048	1,232	1,232	1,084

Table 2 • Output (FDDOMAX)

Previous		New	
-2	Std.	-2	Std.
1,048	1,404	1,404	1,048

Table 1 lists the affected Fusion parts.

2. Analog channel specifications for Microsemi's AFS250 devices have changed. Microsemi made the change to improve analog channel yield to increase product availability. The offset specifications for the external and internal temperature monitors have been changed according to Table 3 on page 2. The offsets apply to the



entire temperature range being monitored. Offset and gain are part of the temperature monitor's accuracy parameters; the gain is unchanged.

If a design uses the temperature monitor, CalibIP within the SmartGen Analog System Builder must be used in order for the design to have a 0°C offset. Microsemi believes there is no impact if you are using CalibIP.

Modified values for uncalibrated offset are given in Table 3.

Table 3 • Uncalibrated and Calibrated offset

Device Prefix	Previous Uncalibrated Offset	New Uncalibrated Offset	Calibrated Offset
AFS250	5°C	11°C	0°C
M1AFS250			
P1AFS250			
U1AFS250			

Note: **When using SmartGen Analog System Builder, CalibIP is required to obtain a 0°C offset. For further details on CalibIP, refer to the “Temperature, Voltage, and Current Calibration in Fusion FPGAs” chapter of the Fusion FPGA Fabric User’s Guide.*

Table 2 lists the affected Fusion parts.

3. The datasheet has been updated with a recommendation for analog reference voltage (VAREF) circuitry. When connected to an external reference of 3.3 V, Microsemi recommends connecting the VAREF pin with a resistor of approximately 1 KOhm, to limit current, and placing a 10–100 nF capacitor between VAREF and GNDA.

Table 1 lists the affected Fusion parts.

These changes are reflected in Revision 4 of Microsemi’s *Fusion Family of Mixed Signal FPGAs* Datasheet: www.microsemi.com/soc/documents/Fusion_DS.pdf.

For any clarifications or questions, please contact Microsemi SoC Technical Support by email at soc_tech@microsemi.com.

Regards,

Microsemi SoC Products Group



Table 4 • Affected Parts for Max. DDR Frequency and Analog Reference Voltage Changes

Fusion Devices – AFS090		
AFS090-FG256	AFS090-1FG256I	AFS090-1QNG108I
AFS090-FGG256	AFS090-1FGG256I	AFS090-2QNG108I
AFS090-1FG256	AFS090-2FG256I	AFS090-QNG180
AFS090-1FGG256	AFS090-2FGG256I	AFS090-1QNG180
AFS090-2FG256	AFS090-QNG108	AFS090-2QNG180
AFS090-2FGG256	AFS090-1QNG108	AFS090-QNG180I
AFS090-FG256I	AFS090-2QNG108	AFS090-1QNG180I
AFS090-FGG256I	AFS090-QNG108I	AFS090-2QNG180I
Fusion Devices – AFS250		
AFS250-FG256	AFS250-2FG256I	AFS250-1PQ208I
AFS250-FGG256	AFS250-2FGG256I	AFS250-1PQG208I
AFS250-1FG256	AFS250-PQ208	AFS250-2PQ208I
AFS250-1FGG256	AFS250-PQG208	AFS250-2PQG208I
AFS250-2FG256	AFS250-1PQ208	AFS250-QNG180
AFS250-2FGG256	AFS250-1PQG208	AFS250-1QNG180
AFS250-FG256I	AFS250-2PQ208	AFS250-2QNG180
AFS250-FGG256I	AFS250-2PQG208	AFS250-QNG180I
AFS250-1FG256I	AFS250-PQ208I	AFS250-1QNG180I
AFS250-1FGG256I	AFS250-PQG208I	AFS250-2QNG180I
Fusion Devices – AFS600		
AFS600-FG256	AFS600-1FGG256K	AFS600-1FG484K
AFS600-FGG256	AFS600-FG484	AFS600-1FGG484K
AFS600-1FG256	AFS600-FGG484	AFS600-PQ208
AFS600-1FGG256	AFS600-1FG484	AFS600-PQG208
AFS600-2FG256	AFS600-1FGG484	AFS600-1PQ208
AFS600-2FGG256	AFS600-2FG484	AFS600-1PQG208
AFS600-FG256I	AFS600-2FGG484	AFS600-2PQ208
AFS600-FGG256I	AFS600-FG484I	AFS600-2PQG208
AFS600-1FG256I	AFS600-FGG484I	AFS600-PQ208I
AFS600-1FGG256I	AFS600-1FG484I	AFS600-PQG208I



Table 4 • Affected Parts for Max. DDR Frequency and Analog Reference Voltage Changes

AFS600-2FG256I	AFS600-1FGG484I	AFS600-1PQ208I
AFS600-2FGG256I	AFS600-2FG484I	AFS600-1PQG208I
AFS600-FG256K	AFS600-2FGG484I	AFS600-2PQ208I
AFS600-FGG256K	AFS600-FG484K	AFS600-2PQG208I
AFS600-1FG256K	AFS600-FGG484K	
Fusion Devices – AFS1500		
AFS1500-FG256	AFS1500-1FGG256K	AFS1500-1FG484K
AFS1500-FGG256	AFS1500-FG484	AFS1500-1FGG484K
AFS1500-1FG256	AFS1500-FGG484	AFS1500-FG676
AFS1500-1FGG256	AFS1500-1FG484	AFS1500-FGG676
AFS1500-2FG256	AFS1500-1FGG484	AFS1500-1FG676
AFS1500-2FGG256	AFS1500-2FG484	AFS1500-1FGG676
AFS1500-FG256I	AFS1500-2FGG484	AFS1500-2FG676
AFS1500-FGG256I	AFS1500-FG484I	AFS1500-2FGG676
AFS1500-1FG256I	AFS1500-FGG484I	AFS1500-FG676I
AFS1500-1FGG256I	AFS1500-1FG484I	AFS1500-FGG676I
AFS1500-2FG256I	AFS1500-1FGG484I	AFS1500-1FG676I
AFS1500-2FGG256I	AFS1500-2FG484I	AFS1500-1FGG676I
AFS1500-FG256K	AFS1500-2FGG484I	AFS1500-2FG676I
AFS1500-FGG256K	AFS1500-FG484K	AFS1500-2FGG676I
AFS1500-1FG256K	AFS1500-FGG484K	AFS1500-1FG484K
ARM® Cortex™-M1 – M1AFS250		
M1AFS250-FG256	M1AFS250-2FG256I	M1AFS250-1PQ208I
M1AFS250-FGG256	M1AFS250-2FGG256I	M1AFS250-1PQG208I
M1AFS250-1FG256	M1AFS250-PQ208	M1AFS250-2PQ208I
M1AFS250-1FGG256	M1AFS250-PQG208	M1AFS250-2PQG208I
M1AFS250-2FG256	M1AFS250-1PQ208	M1AFS250-QNG180
M1AFS250-2FGG256	M1AFS250-1PQG208	M1AFS250-1QNG180
M1AFS250-FG256I	M1AFS250-2PQ208	M1AFS250-2QNG180
M1AFS250-FGG256I	M1AFS250-2PQG208	M1AFS250-QNG180I
M1AFS250-1FG256I	M1AFS250-PQ208I	M1AFS250-1QNG180I



Table 4 • Affected Parts for Max. DDR Frequency and Analog Reference Voltage Changes

M1AFS250-1FGG256I	M1AFS250-PQG208I	M1AFS250-2QNG180I
ARM Cortex-M1 – M1AFS600		
M1AFS600-FG256	M1AFS600-1FGG256K	M1AFS600-1FG484K
M1AFS600-FGG256	M1AFS600-FG484	M1AFS600-1FGG484K
M1AFS600-1FG256	M1AFS600-FGG484	M1AFS600-PQG208
M1AFS600-1FGG256	M1AFS600-1FG484	M1AFS600-PQG208
M1AFS600-2FG256	M1AFS600-1FGG484	M1AFS600-1PQG208
M1AFS600-2FGG256	M1AFS600-2FG484	M1AFS600-1PQG208
M1AFS600-FG256I	M1AFS600-2FGG484	M1AFS600-2PQG208
M1AFS600-FGG256I	M1AFS600-FG484I	M1AFS600-2PQG208
M1AFS600-1FG256I	M1AFS600-FGG484I	M1AFS600-PQG208I
M1AFS600-1FGG256I	M1AFS600-1FG484I	M1AFS600-PQG208I
M1AFS600-2FG256I	M1AFS600-1FGG484I	M1AFS600-1PQG208I
M1AFS600-2FGG256I	M1AFS600-2FG484I	M1AFS600-1PQG208I
M1AFS600-FG256K	M1AFS600-2FGG484I	M1AFS600-2PQG208I
M1AFS600-FGG256K	M1AFS600-FG484K	M1AFS600-2PQG208I
M1AFS600-1FG256K	M1AFS600-FGG484K	
ARM Cortex-M1 – M1AFS1500		
M1AFS1500-FG256	M1AFS1500-1FGG256K	M1AFS1500-1FG484K
M1AFS1500-FGG256	M1AFS1500-FG484	M1AFS1500-1FGG484K
M1AFS1500-1FG256	M1AFS1500-FGG484	M1AFS1500-FG676
M1AFS1500-1FGG256	M1AFS1500-1FG484	M1AFS1500-FGG676
M1AFS1500-2FG256	M1AFS1500-1FGG484	M1AFS1500-1FG676
M1AFS1500-2FGG256	M1AFS1500-2FG484	M1AFS1500-1FGG676
M1AFS1500-FG256I	M1AFS1500-2FGG484	M1AFS1500-2FG676
M1AFS1500-FGG256I	M1AFS1500-FG484I	M1AFS1500-2FGG676
M1AFS1500-1FG256I	M1AFS1500-FGG484I	M1AFS1500-FG676I
M1AFS1500-1FGG256I	M1AFS1500-1FG484I	M1AFS1500-FGG676I
M1AFS1500-2FG256I	M1AFS1500-1FGG484I	M1AFS1500-1FG676I
M1AFS1500-2FGG256I	M1AFS1500-2FG484I	M1AFS1500-1FGG676I
M1AFS1500-FG256K	M1AFS1500-2FGG484I	M1AFS1500-2FG676I



Table 4 • Affected Parts for Max. DDR Frequency and Analog Reference Voltage Changes

M1AFS1500-FGG256K	M1AFS1500-FG484K	M1AFS1500-2FGG676I
M1AFS1500-1FG256K	M1AFS1500-FGG484K	
ARM 7 Enabled – M7AFS600		
M7AFS600-FG256	M7AFS600-FG484	M7AFS600-PQ208
M7AFS600-FGG256	M7AFS600-FGG484	M7AFS600-PQG208
M7AFS600-1FG256	M7AFS600-1FG484	M7AFS600-1PQ208
M7AFS600-1FGG256	M7AFS600-1FGG484	M7AFS600-1PQG208
M7AFS600-2FG256	M7AFS600-2FG484	M7AFS600-2PQ208
M7AFS600-2FGG256	M7AFS600-2FGG484	M7AFS600-2PQG208
M7AFS600-FG256I	M7AFS600-FG484I	M7AFS600-PQ208I
M7AFS600-FGG256I	M7AFS600-FGG484I	M7AFS600-PQG208I
M7AFS600-1FG256I	M7AFS600-1FG484I	M7AFS600-1PQ208I
M7AFS600-1FGG256I	M7AFS600-1FGG484I	M7AFS600-1PQG208I
M7AFS600-2FG256I	M7AFS600-2FG484I	M7AFS600-2PQ208I
M7AFS600-2FGG256I	M7AFS600-2FGG484I	M7AFS600-2PQG208I
Fusion Pigeon Point Devices		
P1AFS600-2FG256	P1AFS600-2FGG256I	P1AFS1500-2FGG484
P1AFS600-2FGG256	P1AFS600-2FG484	P1AFS600-2FG484I
P1AFS600-2FG256I	P1AFS600-2FGG484	P1AFS600-2FGG484I
P1AFS1500-2FG256	P1AFS1500-2FGG256I	P1AFS1500-2FG484I
P1AFS1500-2FGG256	P1AFS1500-2FG484	P1AFS1500-2FGG484I
P1AFS1500-2FG256I		
Fusion MicroBlade Devices		
U1AFS250-FG256	U1AFS600-FG256	U1AFS1500-FG256
U1AFS250-FGG256	U1AFS600-FGG256	U1AFS1500-FGG256
U1AFS250-FG256I	U1AFS600-FG256I	U1AFS1500-FG256I
U1AFS250-FGG256I	U1AFS600-FGG256I	U1AFS1500-FGG256I



Table 5 • Affected Parts for AFS250, Uncalibrated Offset Change

Fusion Devices		
AFS250-FG256	AFS250-2FG256I	AFS250-1PQ208I
AFS250-FGG256	AFS250-2FGG256I	AFS250-1PQG208I
AFS250-1FG256	AFS250-PQ208	AFS250-2PQ208I
AFS250-1FGG256	AFS250-PQG208	AFS250-2PQG208I
AFS250-2FG256	AFS250-1PQ208	AFS250-QNG180
AFS250-2FGG256	AFS250-1PQG208	AFS250-1QNG180
AFS250-FG256I	AFS250-2PQ208	AFS250-2QNG180
AFS250-FGG256I	AFS250-2PQG208	AFS250-QNG180I
AFS250-1FG256I	AFS250-PQ208I	AFS250-1QNG180I
AFS250-1FGG256I	AFS250-PQG208I	AFS250-2QNG180I
ARM Cortex-M1 Enabled Fusion Devices		
M1AFS250-FG256	M1AFS250-2FG256I	M1AFS250-1PQ208I
M1AFS250-FGG256	M1AFS250-2FGG256I	M1AFS250-1PQG208I
M1AFS250-1FG256	M1AFS250-PQ208	M1AFS250-2PQ208I
M1AFS250-1FGG256	M1AFS250-PQG208	M1AFS250-2PQG208I
M1AFS250-2FG256	M1AFS250-1PQ208	M1AFS250-QNG180
M1AFS250-2FGG256	M1AFS250-1PQG208	M1AFS250-1QNG180
M1AFS250-FG256I	M1AFS250-2PQ208	M1AFS250-2QNG180
M1AFS250-FGG256I	M1AFS250-2PQG208	M1AFS250-QNG180I
M1AFS250-1FG256I	M1AFS250-PQ208I	M1AFS250-1QNG180I
M1AFS250-1FGG256I	M1AFS250-PQG208I	M1AFS250-2QNG180I
MicroBlade Devices		
U1AFS250-FG256	U1AFS250-FGG256	U1AFS250-FG256I
U1AFS250-FGG256I		