



January 9, 2009

PCN Number: 0815

PCN Change Level: Minor

Subject: Fusion Device AT-Pin Temperature Measurement Accuracy Fix

Dear Customer,

This notification is to inform you of a potential AT pin temperature accuracy issue in certain date codes of Actel's Fusion® mixed-signal FPGA devices, and describes how to differentiate Fusion devices that are not subject to this accuracy issue by date code or using an ordering an order code variant, which is a new offering.

Description

As a result of Actel's continuous quality improvement efforts, an issue was identified in a small fraction (fewer than 1%) of Actel Fusion AFS090, AFS250, AFS600, and AFS1500 mixed-signal FPGA devices, where AT pins in a single analog quad exhibit atypical temperature measurement variation of more than ±3°C. Root cause of the failure mechanism was identified and a corrective action was detailed and completed. More rigorous testing was implemented, and as a result, all Fusion devices shipping from Actel today are free of this potential temperature measurement error.

Fusion device date codes, which indicate devices that are not subject to the temperature error, are shown below in Table 1.

Table 1. Date Codes for Fusion Mixed-Signal FPGA

Device	Date Code Meeting Typical ±3°C Specification
AFS090	≥0848
AFS250	≥0847
AFS600	≥0839
AFS1500	≥0847

Devices Not Subject To AT Pin Measurement Error

These date codes are marked on Fusion devices as shown in Figure 1. Devices with these date codes or greater are fully compliant with Fusion specifications, and customers can identify these devices by the date codes marked on each individual device.

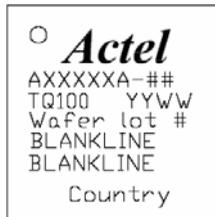


Figure 1. Typical Date Code Marking Location



As shown in Figure 1, the date code is printed on the top of Fusion device packages as a four-digit number in the form YYWW, where YY is the last two digits of the year and WW is the work week in which the device was completed. For example, the date code shown in Table 1 for AFS1500 is 0847, indicating 2008 workweek 47.

Customers using Fusion devices with date codes less than those shown in Table 1 and using AT pins in their design for temperature measurement, may choose to contact Actel to arrange replacement of these devices with devices not subject to this potential error.

Actel is also offering a means of differentiating devices within $\pm 3^{\circ}\text{C}$ AT accuracy specification by a new order code. Devices marked with an X297 number have been tested by the revised testing protocols and are within specification regardless of the date code marked on the devices. Thus, customers who previously ordered AFS090-QN108 may order AFS090-QN108X297; customers who previously ordered AFS600-FGG256 may order AFS600-FGG256X297; customers who previously ordered M1AFS1500-2FGG484 may order M1AFS1500-2FGG484X297, and so on.

Recommendation

Customers not using Fusion device AT pins for temperature measurements do not need to take action.

Customers using Fusion device AT pins for temperature measurements with devices marked with date codes equal to or greater than the date codes specified in Table 1 do not need to take action.

Customers using Fusion device AT pins for temperature measurements with devices marked with date codes less than those specified in Table 1, and have verified that the devices meet typical accuracy of $\pm 3^{\circ}\text{C}$, do not need to take action.

As noted above, customers with Fusion devices marked with date codes less than those specified in Table 1, who are using AT pins for temperature measurement in their design, may choose to contact Actel to organize replacement of these devices.

Customers who want to order devices that are not subject to this issue without regard to date code may order X297 marked parts as described above.

If you have any questions, please contact Actel's Application Technical Support at tech@actel.com.

Regards,
Actel Corporation