ZFx86 Specification Changes

This application note describes the differences in specifications between the ZFx86BGA388 devices produced for ZF Micro Solutions by National Semiconductor and the new devices available as of June 1, 2006 produced for ZF Micro Solutions by IBM Microelectronics.

DEVICE MARKING

NSC produced devices had the following marking: 3100-0200-01 B1 or 3100-0200-01 A5
IBM produced devices have the following marking: 3100-0200-03 C0

CPU PERFORMANCE

Initial units of the IBM produced devices will be available at 100 MHz CPU clock speeds.
(NSC produced versions were: Industrial temp 100MHz; Commercial temp 128MHz)

VOLTAGE

NOTE: IF YOU WILL BE TESTING AND USING THE ZFx86 PRODUCED AFTER JUNE 1, 2006 ON A PRE-EXISTING DESIGN DESIGNED FOR EARLIER ZFx86 VERSIONS, THE CORE VOLTAGE MUST BE CHANGED TO THE SETTINGS SHOWN BELOW!

The Vdd-Core voltage specification is expected to be:
Minimum   2.15V
Nominal   2.20V
Maximum   2.25V

(NSC produced versions were also dual voltage devices: 3.3V I/O, 2.25V core voltage at 100MHz and 2.7V core voltage at 128MHz)

MECHANICAL / ENVIRONMENTAL

Commercial Temperature - Up to 100MHz (0C to +70C case temperature)
Industrial Temperature - Up to 100Hz (-40C to +85C case temperature)
Package: 388-pin Plastic Ball Grid Array, 35mm x 35mm, fully RoHS compliant
(NSC produced versions were non RoHS compliant)

SOFTWARE

An updated version of the ZTAG .bin file for loading the Phoenix BIOS is required for applications using AMD Flash however there is no change to the BIOS, just this loader module. Please contact support@zfmicro.com with "NEW Z-TAG" in the subject line and you will be sent the new file.
Note: When you flash the BIOS using the dongle there are two software components inside of the dongle; the loader program and the BIOS image. You will now use a new version of the loader program but the same BIOS image.

USB INTERFACE LIMITATIONS:

Post June 2006 silicon is exhibiting problems with the USB interface. When connecting full speed (12Mbs) devices such as flash memory drives the connection between the ZFx86 and the external device exhibits failures or intermittent operation and is unreliable. ZF is working to determine the root cause of the problem but it appears that there is currently no reliable workaround. A silicon revision is planned that should correct this but a schedule for the introduction of the next version has not yet been determined. Low speed (1.5Mbs) HID devices (keyboard, mouse) appear to work correctly. See ZF-EN-0003 for additional information.

Z-TAG INTERFACE LIMITATIONS

The implementation of the Z-TAG interface on some ZFx86 processors does not perform reliably when the 'accelerator' feature is utilized. The accelerator allows the CPU to input data from Z-TAG devices (like ZF Micro's dongle-I or dongle-II) with minimum CPU intervention, resulting in greater throughput. On some current ZFx86 processors, using the accelerator may result in corrupted data transmission.

Non-accelerated Z-TAG data input, however, presents no such problem on current ZFx86 processors. ZF Micro is updating and augmenting its Z-TAG software to utilize non-accelerated Z-TAG input only. Certain facilities in the BIOS Update ROM (BUR) and Z-Fix monitor will also require work-around procedures and/or new software utilities. Please contact ZF Micro support in order to obtain the new software, or for more detailed information on the current Z-TAG implementation.

Note: ZFx86 processors are available with the Z-Tag feature fully functional. Contact factory for availability. ZFx86 chips with limited Z-Tag functionality carry an "NZ" marking.