



June 12, 2009

PCN Number: 0905

PCN Change Level: Major

Subject: Notification regarding several changes in the RTAX-S/SL datasheet

Dear Customer,

Actel has made modifications to the RTAX-S/SL datasheet to include the latest information on devices, operating conditions, timing characteristics, and packages. This new version (v5.4) of the datasheet is now available on Actel's website at http://www.actel.com/documents/RTAXS_DS.pdf.

The changes are summarized below.

1. Device-Specific Changes

- a. RTAX250S/SL-CGA/LGA 624 package addition: Actel has added this new device package combination with 232 user I/Os available and B, E and EV flow processing. It is pin compatible with higher density devices in the same package with some exceptions. Please refer to "Package Pin Assignments" chapter of the datasheet for details.
- b. RTAX4000SL: The latest addition to the low-power RTAX-SL family is the RTAX4000SL device, which is now available in CGA/LGA 1272 and CQFP352 packages.
- c. RTAX4000S/SL: A new speed grade has been added to the RTAX4000S/SL family. Originally the devices were offered in STD (Standard) speed grade; now -1 (10% faster than Standard) speed grade is also offered.

2. DC Operating Changes

- a. Absolute Maximum Junction Temperature (T_J) Ratings: The absolute maximum junction temperature ratings for all RTAX-S/SL devices has changed from 125°C to 135°C, thereby providing an additional 10°C buffer for designs. Important to note is that the recommended operating junction temperature remains unchanged at 125°C.
- b. 5 V Tolerance: Clarifications have been added regarding 5 V tolerance of RTAX-S/SL devices. Two I/O standards now support 5 V tolerance: 3.3 V PCI and 3.3 V LVTTL. In both cases, the clamp diode has to be enabled to allow 5 V tolerance. By default the clamp diode is enabled for PCI mode. To enable 5 V tolerance for 3.3 V LVTTL standard the clamp diode needs to be enabled using settings in Designer. Details can be found in the datasheet in the "5 V Tolerance" section. Note there is an additional 350 mV margin now provided on V_{IN} , which changed from 3.75 V to 4.1 V.
- c. Improved Standby Current Numbers: New data has been added to these tables (Table 2-4, Table 2-5) to enable calculations of power dissipation. Table 2-4 now includes the addition of RTAX4000S and RTAX4000SL numbers. New data for the RTAX-SL in Table 2-5 shows substantial (up to 40%) improvements on I_{CCA} measured at 25°C.

3. Package Related Changes

- a. CGA/LGA 624: Package pin assignments for RTAX250S/SL are now included in the datasheet. Also included is a table that showcases the compatibility chart between the various density devices for this package for ease of design. This information can be found under the "Package Pin Assignment" section.
- b. CQ352 package: A compatibility chart showcasing differences between various densities of the RTAX-S/SL family, ranging from RTAX250S/SL to RTAX4000S/SL for the CQ352 package, is now included under the "Package Pin Assignment" section.
- c. Thermal Characteristics: New data θ_{ja} and θ_{jc} for the RTAX4000S/SL packages and RTAX250S/SL-CG624 is now available in the "Thermal Characteristics" section.

4. I/O Related Changes

- a. 3.3 V LVTTTL: Due to yield limitations on the RTAX250S/SL-CQ352 (only), V_{OL} limits have changed from 400 mV to 500 mV across the full military temperature range. All other device and package combinations meet the advised 400 mV specification per JEDEC standard.
- b. GTL+: Due to yield limitations on the RTAXS/SL devices, V_{OL} limits have changed from 600 mV to 700 mV for hot temperature of 125°C only. Specifications for room (25°C) and cold (-55°C) temperature remain unchanged at 600 mV specification.
- c. Weak Pull-Up and Pull-Down: Table 2-19, which lists the resistance values of weak pull-up and weak pull-down resistors, has been updated to reflect accurate device information and can be found in "I/O Standard Electrical Specifications" under the I/O specifications section.
- d. Bank-Wide Delays: A 5-bit programmable input delay element is associated with every I/O, the value of which is set on a bank-wide basis. How-to information is now included in the datasheet and data for every device, package and speed grade combination is available in the software, giving users the flexibility to maximize performance. Please refer to "Customizing the I/O" in the I/O specifications section for more details.

In summary, several changes, modifications, and updates have been added to the latest v5.4 version of the RTAX-S/SL datasheet. Customers are advised to refer the datasheet for the latest changes.

All existing RTAX-S/SL devices, which have already shipped and those that will ship to customers within 90 days of this PCN release date, will comply with current datasheet (v5.3 and prior). Devices tested with the new limits outlined in 4a and 4b above may begin to ship 90 days after the PCN date.

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

Regards,
Actel Corporation