



September 9, 2010

CN Number: 1010

CN Level: Major

Subject: RT ProASIC3 Single Event Latch-Up

Dear Customer,

This letter is to advise you that in recent radiation tests, RT ProASIC<sup>®</sup>3 devices have been observed to exhibit single event latch-ups (SELs). Previous tests using commercial ProASIC3 devices, which did not use the enhanced I/Os of the RT ProASIC3 device, had not detected single-event latch-ups. Consequently, previous Actel marketing documents had stated no SEL events were observed in tests up to linear energy transfer (LET) levels of 96 MeV.cm<sup>2</sup>/mg. SEL events detected in testing were not destructive, for more information refer to the report [http://www.actel.com/documents/RT3P\\_SEL\\_Rpt.pdf](http://www.actel.com/documents/RT3P_SEL_Rpt.pdf)

The SEL phenomena have been observed at LET levels of 86.9 MeV.cm<sup>2</sup>/mg and higher, at room temperature and at an operating temperature of 125°C, in tests at Texas A&M University. The SEL events were observed only at high I/O voltage levels (VCCI = 3.3 V) and not at lower levels (VCCI = 2.5 V or lower). A Weibull extrapolation indicated that the onset threshold for SEL is 68 MeV.cm<sup>2</sup>/mg for worst case conditions. Calculations of orbital latch-up rates indicate extremely low error rates in LEO orbit

- RT3PE3000L: Less than 3e<sup>-10</sup> SEL/FPGA/day
- RT3PE600L: Less than 2e<sup>-12</sup> SEL/FPGA/day

Please note that this issue relates only to the RT ProASIC3 FPGAs, and does not affect any of Actel's other space-flight FPGAs. Refer to [Table 1](#) for a list of affected devices.

**Table 1. Affected Devices**

<b>RT3PE600L</b>	<b>RT3PE3000L</b>	
RT3PE600L-1CG484B	RT3PE3000L-1CG484B	RT3PE3000L-CG896B
RT3PE600L-1CQ256B	RT3PE3000L-1CG896B	RT3PE3000L-CQ256B
RT3PE600L-1LG484B	RT3PE3000L-1CQ256B	RT3PE3000L-LG484B
RT3PE600L-CG484B	RT3PE3000L-1LG484B	RT3PE3000L-LG896B
RT3PE600L-CQ256B	RT3PE3000L-1LG896B	
RT3PE600L-LG484B	RT3PE3000L-CG484B	



Thank you for your consideration in this matter. If you have any questions, please do not hesitate to contact Actel's ITAR Technical support at <http://www.actel.com/mycases> or [tech\\_itar@actel.com](mailto:tech_itar@actel.com).

Regards,

Actel Corporation