



RDHA701FP10A8QK

**Neutron and Total Ionizing Dose Test
Report**

April 2009

International Rectifier currently does not have a DSCC approved Radiation Hardness Assurance Program for MIL-PRF-38534.

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INTRODUCTION

This test report covers the neutron fluence and ionizing radiation tests performed on the RDHA701FP10A8QK Octal Solid-State-Relay in a hermetic package. This report also covers the RDHA701FP10A8CK product by similarity as it utilizes the same active components but does not contain the additional input buffer and additional circuitry to control the switching times thus making it a less complex version of the device.

Neutron fluence and Total Ionizing Dose tests were performed to determine the effects displacement damage and ionizing radiation had on the device performance. On April 24, 2009, International Rectifier characterized this device for neutron radiation hardness and on April 27, 2009 International Rectifier characterized this device for ionizing radiation hardness at the University of Massachusetts, Nuclear Reactor Laboratory Facility using their Fast Neutron Irradiator and Gamma Cave facilities.

SUMMARY OF RESULTS

All of the test samples passed the post radiation test requirements for fluence levels up to $3.0E11$ n/cm² and 100K Rad(Si). The results show degradation in the device's propagation delays and rise time after exposure to neutron irradiation of $3.0E11$ n/cm². The total ionizing dose exposure on the samples had little to no effect on the device parameters.

TEST METHOD

The test methods used in the development of the Test Plan was MIL-STD-883, Methods 1017 Neutron Irradiation and 1019 Ionizing Radiation. These methods established the basic requirements for the performance and execution of the tests.

TEST PLAN

There were two samples (serial numbers 16 and 54) exposed to neutron irradiation in an un-biased state with all of the device leads shorted in conductive foam and contained in a conductive bag. Post radiation testing of the devices occurred after the decay of radioactivity of the devices reached an acceptable safe level determined by the facilities personnel. The rate of decay was dependent on the amount of exposure to neutrons and the package materials. The devices were contained in a 20 +/-10C environment to minimize the effects due to annealing. The devices were tested on April 24, 2009 for post exposure effects.

Upon completion of the Neutron exposure one device (16) was exposed to Total Ionizing Dose radiation under an "ON" biased condition and one device (54) was exposed to Total Ionizing Dose radiation under an "OFF" biased condition.

The Total Ionizing Dose exposure was performed on April 27, 2009

The Radiation Test Specification is included in Appendix B. The testing occurred in the following manner:

Test Plan Outline

1.0 Purpose

The purpose of this test is to characterize and establish displacement damage and total ionizing dose radiation effects for International Rectifier's octal solid state relay devices.

2.0 Test Responsibility

International Rectifier shall be responsible for conducting the tests, which shall be performed at the University of Massachusetts Research Reactor facility. International Rectifier shall be responsible for the final Test Report.

3.0 Test Facility

3.1 Nuclear Reactor

3.1.1 The University of Massachusetts Research Reactor shall be used to provide the necessary Neutron beam and energy. University of Massachusetts Research Reactor (UMRR) shall provide adequate dosimetry for verification of the neutron beam parameters.

3.1.2 The University of Massachusetts Research Reactor shall be used to provide the source for Gamma radiation. UMRR will also provide information on dose rate, total dose, irradiation test times and dosimetry for this evaluation.

3.2 Test Equipment

The necessary test equipment including interface board, cables, power supplies, measurement system, etc. shall be provided by International Rectifier.

3.3 Sample Size

Sample size shall be determined based on device type, characterization parameters. As a minimum, the sample size shall meet the requirements of Mil-STD-883, Method 1017 and Method 1019. Since the octal solid state relay product contains 8 equivalent circuits the sample size for this test is 2 devices and one device for a control sample. The samples used for the Neutron radiation exposure shall also be subjected to Total Ionizing Dose.

4.0 Test Device

4.1 The following device is planned for this characterization:

- a. RDHA701FP10A8QK

4.2 All devices shall be subjected to 160hrs of burn-in and verified for correct electrical performance prior to arrival at UMRR.

4.3 The device leads will be shorted in conductive foam and all parts shall be contained inside a conductive ESD bag during Neutron irradiation.

4.4 One device shall be biased in the "ON" state and one device shall be biased in the "OFF" state during the Total Ionizing Dose irradiation.

5.0 Test Method

5.1 MIL-STD-883, Method 1017 shall be used to establish procedure for all Neutron testing described herein.

5.2 MIL-STD-883, Method 1019 shall be used to establish procedure for all Total Ionizing Dose testing described herein.

6.0 Radiation Source

6.1 The nuclear reactor at Lowell, Mass is capable of providing fast neutron flux level $\geq 10^{11}$ n/cm² – s with relatively low thermal fluence and gamma irradiation. The Fast Neutron Irradiator (FNI) offers near uniform

spectrum over a large cross-sectional area (12" x 12" x 6"). The dosimetry system used to verify the radiation exposure was P-32, ASTM E-265.

6.2 The Gamma Cave is an irradiation room inside this facility having an equi-dimensional volume of 512 cubic feet. A wide range of dose rates, 1Gray (100 rad) per hour to 10,000 Gray (1 Mrad) per hour, is available with the CO⁶⁰ source. Several small ports penetrate one shielding wall to provide access for instrumentation cables.

7.0 Record Keeping

7.1 The Reactor facility shall provide dosimetry data for the Fast Neutron Irradiator. IR will be responsible for collecting and compiling the test data.

7.2 The Reactor facility shall provide dosimetry data for the CO⁶⁰. Each exposure run shall be cataloged with the appropriate lot number in order to maintain correlation to the appropriate data set. IR will be responsible for collecting and compiling the test data.

8.0 Test Procedure

International Rectifier shall control the following test procedure, based on Test Methods 1017 and 1019. The neutron fluence and total ionizing dose levels the product is exposed to shall be per this test plan.

The facility personnel shall be responsible for loading and moving the device container in the Fast Neutron Irradiator. They shall also be responsible for loading, unloading, and moving the Cobalt source for the Total Ionizing Dose exposures.

The Neutron fluence total exposure levels shall be 6E10 n/cm², 1E11 n/cm², and 3E11 n/cm².

Neutron Test Procedure - Table 1

Step	Description	Conditions
1	Pre test all devices prior to radiation exposure.	Per Table I
2	Place all devices in ESD safe bag all device pins are placed in conductive foam.	
3	Place devices into the shielded container	Unbiased
4	Lower the container into the irradiation chamber	Facilities personnel
5	Expose the devices to pre-determined level	6E10 n/cm ² exposure step
6	Remove devices at completion of exposure time	Facilities personnel
7	Allow devices to decay to safe level	Facilities personnel
8	Test devices - Read and Record data	Per Table II
9	If product fails catastrophic stop, select new samples and select a lower exposure step.	
9	Repeat steps 2 thru 9 for exposure level 2	4E10 n/cm ² exposure step
10	Repeat steps 2 thru 9 for exposure level 3	2E11 n/cm ² exposure step

Please note the Neutron exposure steps are considered cumulative.

The Total Ionizing Dose exposure levels shall be 25K, 50K, and 100K Rad(Si).

Total Ionizing Dose Test Procedure – Table 2

Step	Description	Conditions
1	Perform empty board continuity and leakage verification on radiation bias board.	
2	Load one device in the "ON" bias socket and one device in the "OFF" bias socket on the radiation bias board.	
3	Place radiation bias board in the test rack in the Gamma Cave.	
4	Turn on the bias power supplies and measure the signals at the DUT sites for proper levels.	VDD=5V, IN=5V, Vout =0V On Bias VDD=5V, IN=0V, Vout=80V Off Bias
5	Secure the chamber and expose the samples to the specified dose.	Facilities personnel 25K Rad(Si) exposure step
6	Remove devices at completion of exposure time	Facilities personnel
7	Test devices – Read and Record data – within 1 hour of removal from the chamber	
8	Repeat steps 2 thru 7 for exposure level 2 This exposure must start within 2 hours of the completion of the last exposure	25K Rad(Si) exposure step
9	Repeat steps 2 thru 7 for exposure level 2 This exposure must start within 2 hours of the completion of the last exposure	50K Rad(Si) exposure step
10	Place the "ON" bias sample back on the radiation bias board under the same bias for a minimum of 24 hours at 24C +/-6C. Place the "OFF" bias sample back on the radiation bias board under the same bias for a minimum of 24 hours at 24C +/-6C.	If the devices fail post exposure test they must be subject to extended room temperature anneal per Method 1019, 3.11
11	Test devices – Read and Record data – within 4 hours of removal of the bias	
12	Place the "ON" bias sample back on the radiation bias board under the same bias for 168 hours +/-12 hours at 100C +5/-0C. Place the "OFF" bias sample back on the radiation bias board under the same bias for a 168 hours +/-12 hours at 100C +5/-0C.	Subject the devices to MOS accelerated anneal per Method 1019, 3.12
13	Test devices – Read and Record data – within 4 hours of removal of the bias	

Please note the Total Ionizing Dose exposure steps are considered cumulative.

9.0 Test Report

The Test Report shall include the following information.

- a. Device type(s), serial numbers, wafer lot identification (per active component)
- b. Test dates
- c. Facility, source type
- d. Fluence
- e. Certificate of Exposure
- f. Bias conditions
- g. Comments and observations
- h. Pre and Post Electrical data
- i. Summary descriptive including graphs

TEST FACILITY

The University of Massachusetts, Lowell, Nuclear Research Reactor is a 1 Mega-Watt, Uranium²³⁵ enhanced core reactor. The Fast Neutron Irradiation (FNI) chamber (see Figure 1) is designed to give a fast flux level from 10^{10} to 10^{16} n/cm²-s with relatively low thermal fluence and gamma dose rates. It is also designed to provide a 1MeV equivalent flux over the effective range.

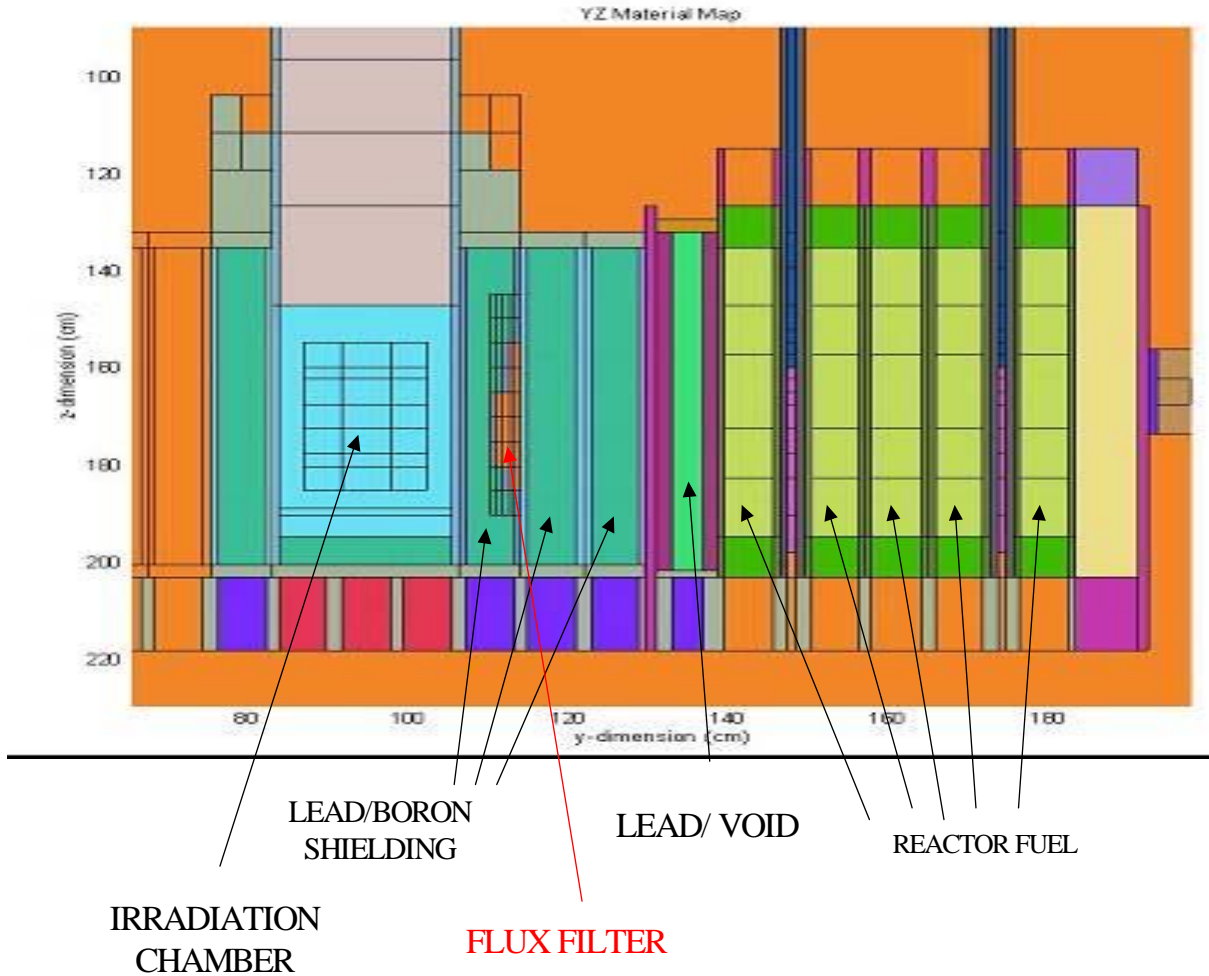


Figure 1

Test Results

The pre and post radiation test results are shown graphically in Figures 2 thru 13. As outlined in the Test Plan, two devices (serial number 16 and 54) were exposed to neutron and total ionizing dose radiation. The devices were tested after the completion of each radiation exposure. The average for each selected parameter's data result is displayed in the following graphs for the exposed parts and the unexposed part (control sample).

The neutron radiation exposure caused on average a 15% increase the turn on delay time, a 10% increase in the rise time, and a 12% decrease in the turn off delay time, but all parameters were within the post radiation limits for the device. The total ionizing dose exposure caused no significant changes in any parameters. There were no catastrophic failures for any device.

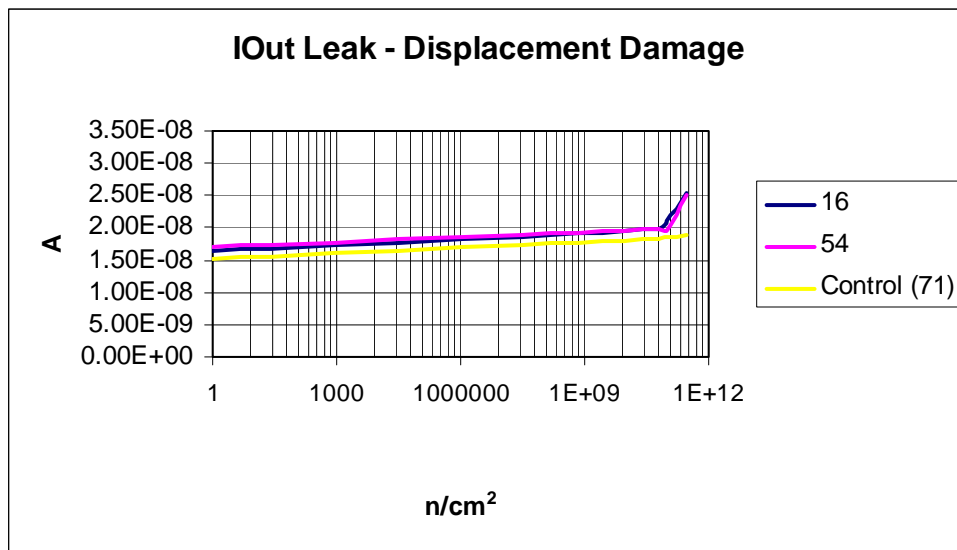


Figure 2

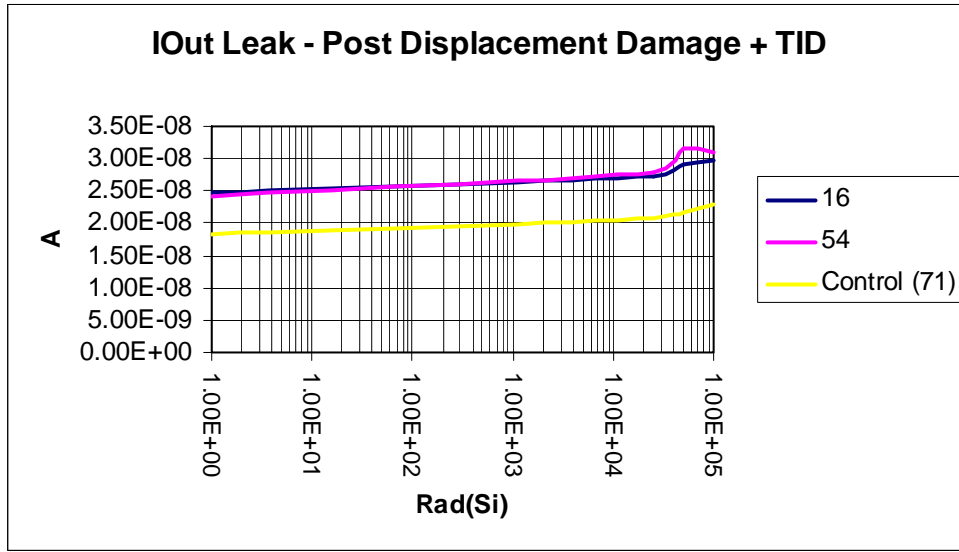


Figure 3

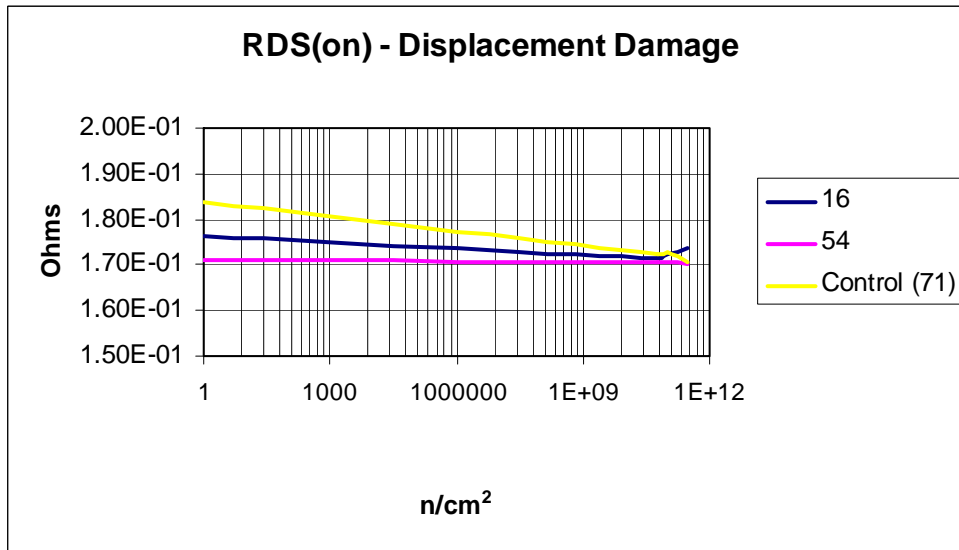


Figure 4

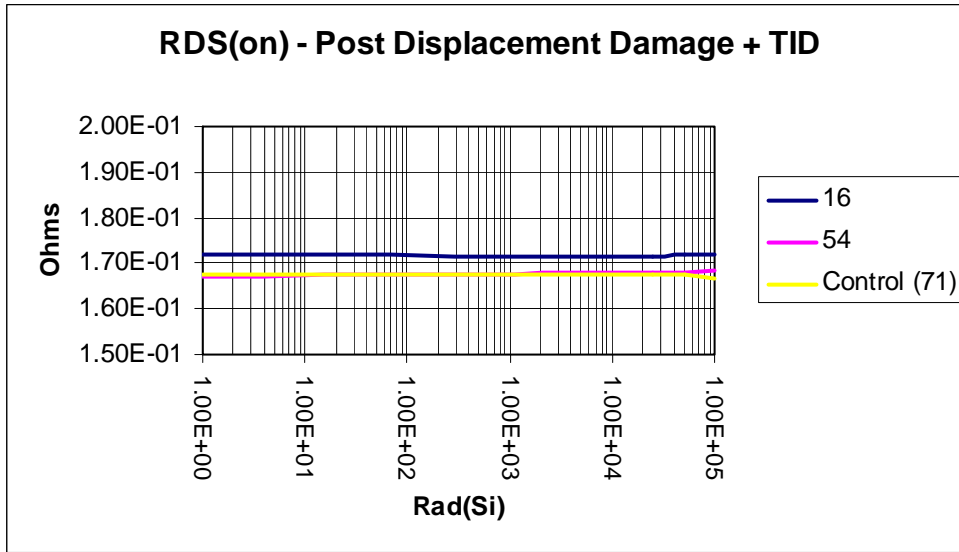


Figure 5

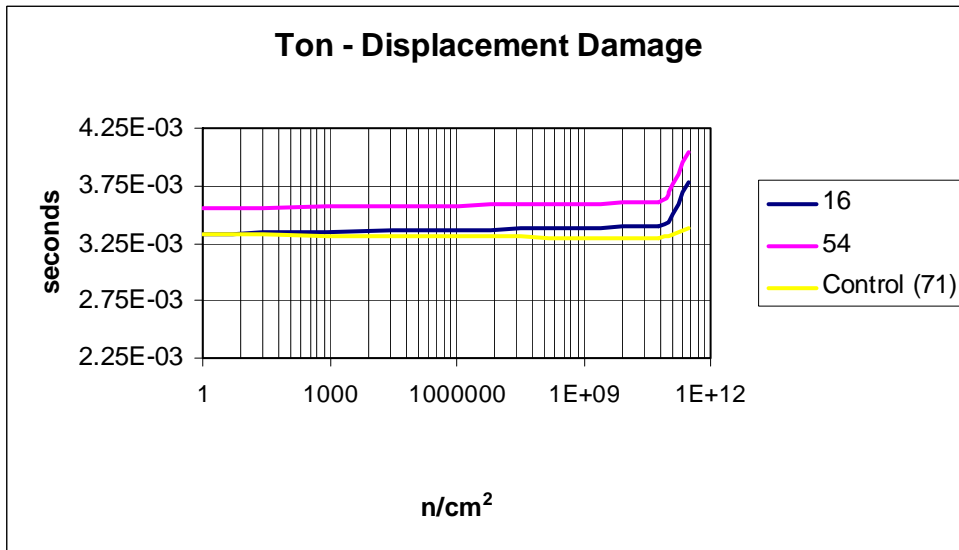


Figure 6

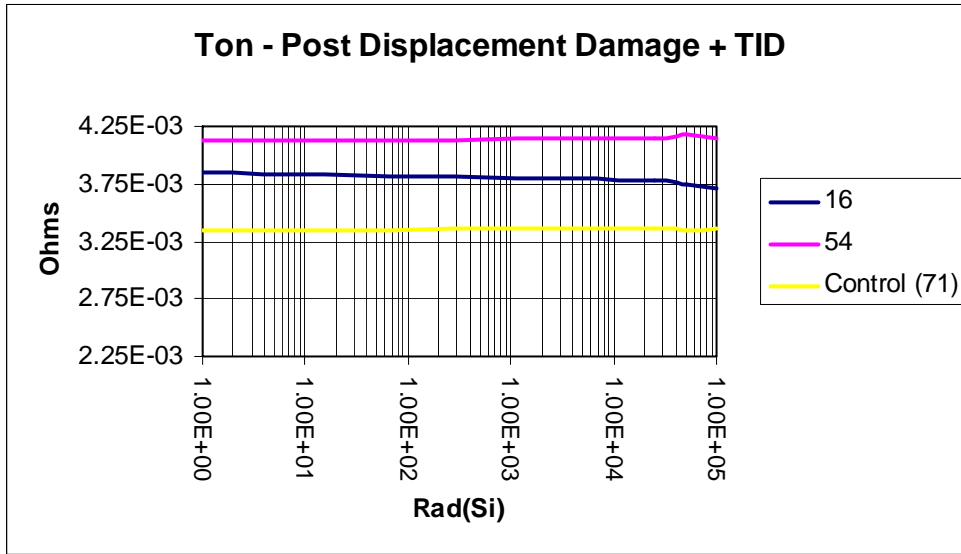


Figure 7

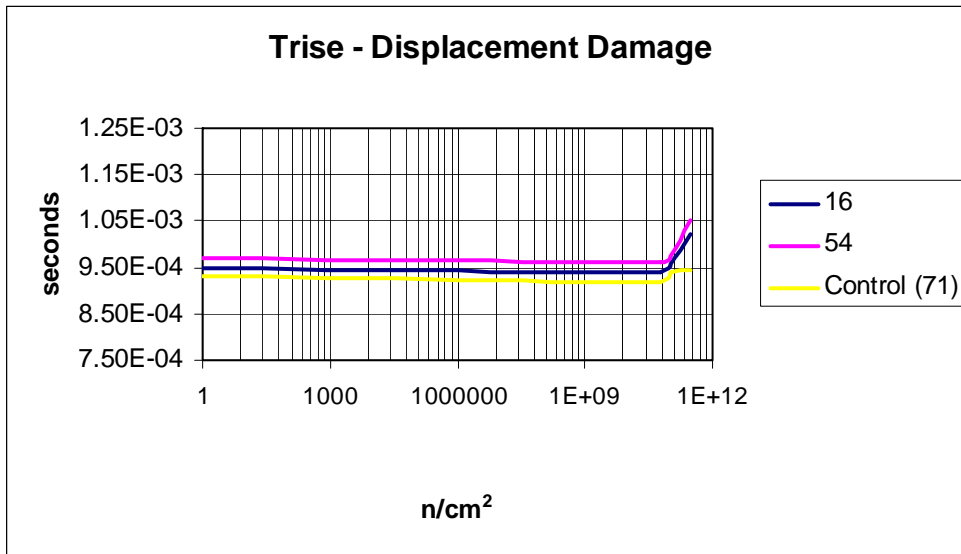


Figure 8

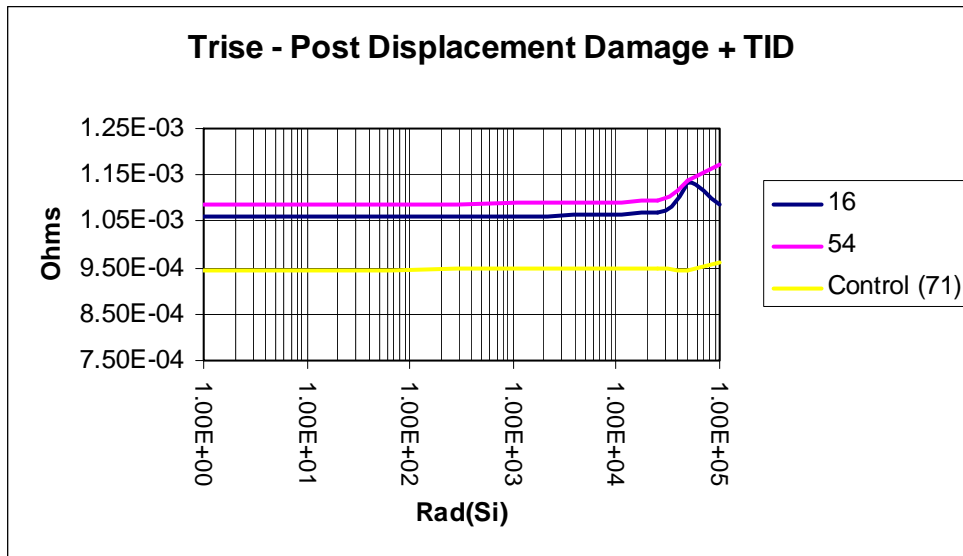


Figure 9

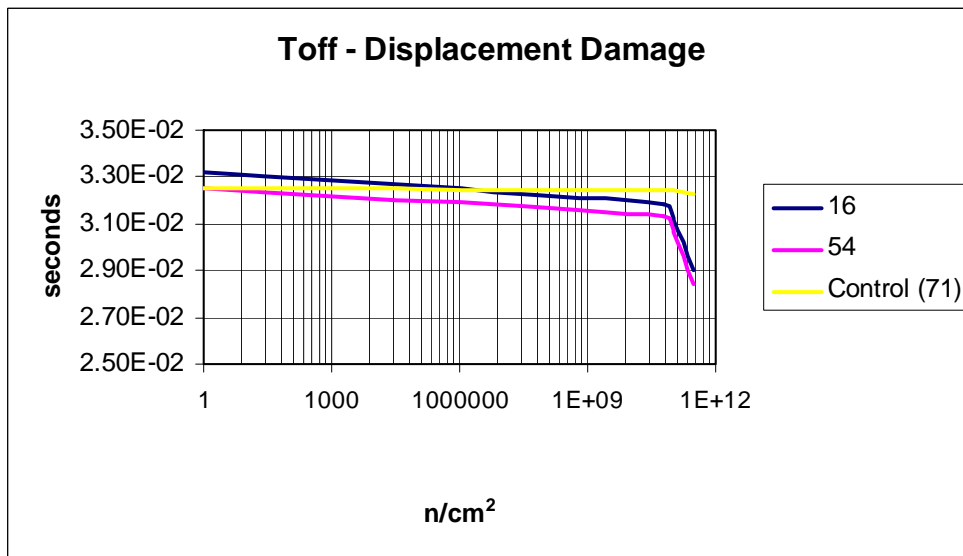


Figure 10

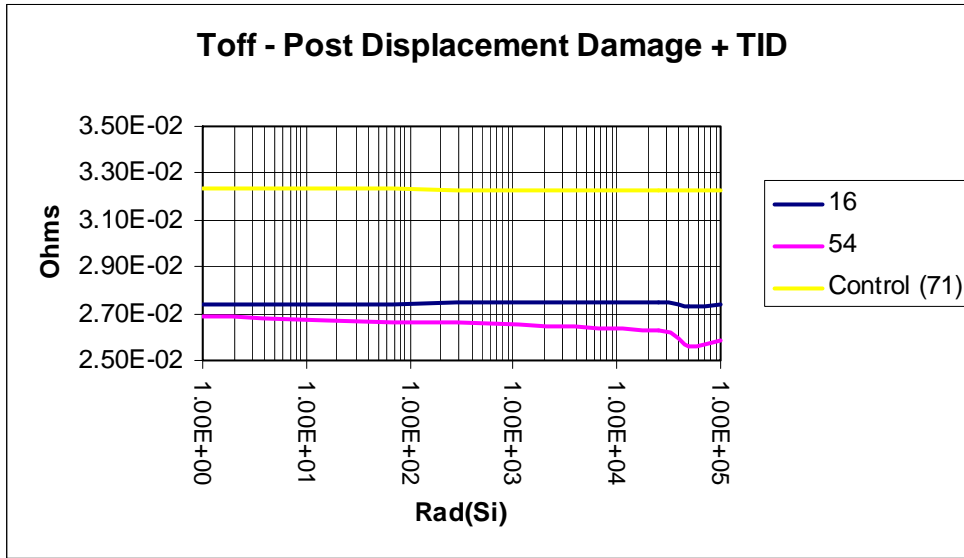


Figure 11

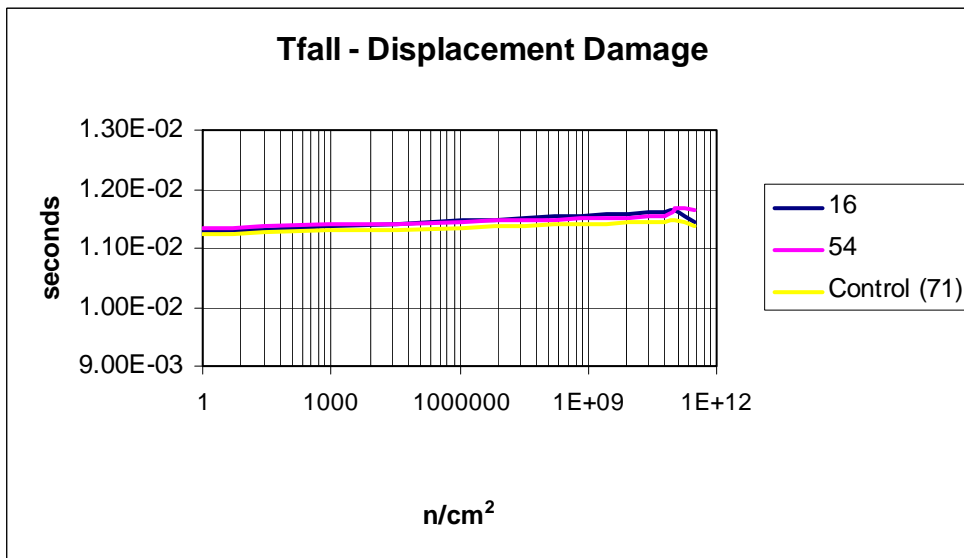


Figure 12

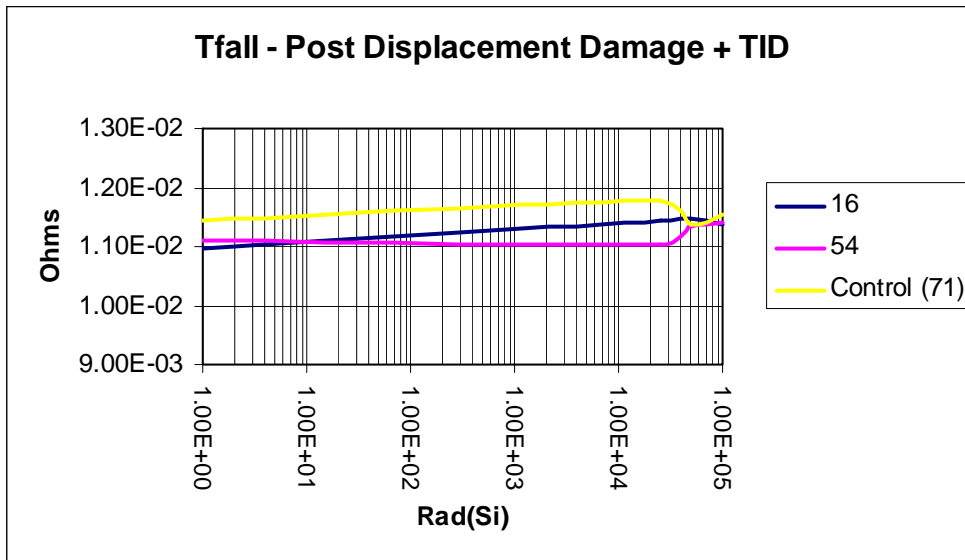


Figure 13

CONCLUSION

The radiation tests performed on the RDHA701FP10A8QK Octal Solid-State-Relay in a hermetic package demonstrate hardness to a combined neutron radiation exposure of $3.0E11$ n/cm² and total dose ionizing radiation exposure of 100K Rad(Si) with minimal effect on its overall performance and the results show it to meet all the post radiation test requirements.

By similarity, this report demonstrates that the RDHA701FP10A8CK meets the combined $3.0E11$ n/cm² and 100K Rad(Si) radiation hardness requirement as well.

Appendix A

Electrical Data

Since the RDHA701FP10A8QK has eight identical circuits in the 64 pin flat pack package, the test design subdivided the part into four identical tests. Each section of the circuit tested is labeled in the comment section of the test results below. For example serial 16, the table shows four sequential test, each section (1+2, 3+4, ect) then all tests associated with that section are in a column labeled 1 or 2 (IIHSS 1, IIHSS2 etc..). The only exception is IDin and IQin. These two test combined current measurement for the two section tested. The test limit was divided by four to reflect the test method.

Electrical Test Data (Pre-radiation)

RDHA701FP10A8QK
 PXI
 TESTER PRE-RADIATION
 Friday, April 24, 2009, 8:46 AM

Lot #: ER1388001

Serial #	Test Status	Comment	IDin (A)	IQin (A)	IIHSS 1 (A)	IIHSS 2 (A)	IINPEAK 1 (A)	IINPEAK 2 (A)	IILSS 1 (A)	IILSS 2 (A)	IO [leak] 1 (A)
		Max Limit	2.38E-02	1.50E-05	1.00E-06	1.00E-06	1.00E-03	1.00E-03	1.00E-06	1.00E-06	1.00E-05
		Min Limit	1.70E-02	0.00E+00	-1.00E-06	-1.00E-06	-1.00E-03	-1.00E-03	-1.00E-06	-1.00E-06	1.00E-10
		Comment	****	****	****	****	****	****	****	****	****
71	P	1+2 GS	2.00E-02	3.90E-06	1.44E-10	3.93E-10	2.44E-10	3.56E-10	-2.05E-10	-1.48E-10	1.53E-08
71	P	3+4 GS	1.99E-02	3.90E-06	1.97E-10	3.30E-10	2.98E-10	2.86E-10	-1.97E-10	-1.72E-10	1.52E-08
71	P	5+6 GS	2.02E-02	4.00E-06	8.18E-11	2.95E-10	2.22E-10	3.21E-10	-2.37E-10	-1.79E-10	1.54E-08
71	P	7+8 GS	2.01E-02	3.90E-06	4.29E-10	2.61E-10	2.41E-10	2.70E-10	-2.31E-10	-1.55E-10	1.55E-08
16	P	1+2	2.02E-02	4.00E-06	1.33E-10	3.08E-10	1.31E-10	2.39E-10	-2.89E-10	-1.34E-10	1.61E-08
16	P	3+4	2.00E-02	4.00E-06	1.52E-10	2.54E-10	2.22E-10	1.93E-10	-2.76E-10	-3.08E-10	1.62E-08
16	P	5+6	1.99E-02	4.00E-06	6.71E-11	2.39E-10	2.03E-10	2.24E-10	-2.52E-10	-2.43E-10	1.63E-08
16	P	7+8	2.01E-02	4.00E-06	5.40E-11	2.60E-10	1.64E-10	2.21E-10	-2.52E-10	-2.39E-10	1.65E-08
54	P	1+2	2.00E-02	4.00E-06	9.49E-11	2.11E-10	2.43E-10	2.68E-10	-2.64E-10	-2.03E-10	1.68E-08
54	P	3+4	2.02E-02	4.00E-06	4.09E-10	3.56E-10	5.24E-10	3.05E-10	-4.50E-10	-3.11E-10	1.67E-08
54	P	5+6	2.02E-02	4.00E-06	1.11E-10	2.97E-10	2.19E-10	2.37E-10	-2.84E-10	-2.62E-10	1.67E-08
54	P	7+8	2.01E-02	4.00E-06	7.17E-11	2.94E-10	2.30E-10	2.53E-10	-2.29E-10	-2.00E-10	1.84E-08

Electrical Test Data (Pre-radiation)

RDHA701FP10A8QK
 PXI
 TESTER **PRE-RADIATION**
 Friday, April 24, 2009, 8:46 AM

Lot #:	ER1388001												
Serial #	Test Status	Comment	IO [leak] 2 (A)	Rdson 1 (Ohm)	Rdson 2 (Ohm)	Ton 1 (S)	Trise 1 (S)	Ton 2 (S)	Trise 2 (S)	Toff 1 (S)	Tfall 1 (S)	Toff 2 (S)	Tfall 2 (S)
		Max Limit	1.00E-05	3.50E-01	3.50E-01	1.50E-02	3.00E-03	1.50E-02	3.00E-03	6.00E-02	1.50E-02	6.00E-02	1.50E-02
		Min Limit	1.00E-10	1.00E-02	1.00E-02	1.00E-04	5.00E-04	1.00E-04	5.00E-04	1.00E-04	1.00E-03	1.00E-04	1.00E-03
		****	****	****	****	****	****	****	****	****	****	****	****
71	P	1+2 GS	1.49E-08	1.84E-01	1.89E-01	3.40E-03	9.52E-04	4.20E-03	1.10E-03	3.19E-02	1.14E-02	3.15E-02	1.14E-02
71	P	3+4 GS	1.49E-08	1.83E-01	1.90E-01	2.90E-03	8.77E-04	3.40E-03	9.20E-04	3.23E-02	1.10E-02	3.35E-02	1.11E-02
71	P	5+6 GS	1.52E-08	1.80E-01	1.81E-01	2.60E-03	8.14E-04	2.90E-03	8.81E-04	3.35E-02	1.11E-02	3.31E-02	1.14E-02
71	P	7+8 GS	1.53E-08	1.79E-01	1.84E-01	3.60E-03	9.50E-04	3.60E-03	9.49E-04	3.19E-02	1.10E-02	3.27E-02	1.14E-02
16	P	1+2	1.58E-08	1.78E-01	1.79E-01	3.50E-03	9.78E-04	2.70E-03	8.56E-04	3.35E-02	1.13E-02	3.35E-02	1.12E-02
16	P	3+4	1.57E-08	1.77E-01	1.75E-01	3.20E-03	9.66E-04	4.10E-03	1.10E-03	3.27E-02	1.10E-02	3.33E-02	1.16E-02
16	P	5+6	1.60E-08	1.73E-01	1.76E-01	3.60E-03	1.00E-03	3.10E-03	8.87E-04	3.25E-02	1.12E-02	3.40E-02	1.14E-02
16	P	7+8	1.85E-08	1.77E-01	1.77E-01	3.30E-03	9.48E-04	3.10E-03	8.55E-04	3.30E-02	1.14E-02	3.32E-02	1.11E-02
54	P	1+2	1.62E-08	1.72E-01	1.67E-01	3.50E-03	9.52E-04	3.70E-03	1.00E-03	3.20E-02	1.11E-02	3.36E-02	1.16E-02
54	P	3+4	1.62E-08	1.66E-01	1.73E-01	2.70E-03	8.20E-04	4.30E-03	1.10E-03	3.34E-02	1.10E-02	3.24E-02	1.17E-02
54	P	5+6	1.66E-08	1.75E-01	1.73E-01	2.40E-03	7.64E-04	4.40E-03	1.10E-03	3.26E-02	1.10E-02	3.15E-02	1.15E-02
54	P	7+8	1.84E-08	1.68E-01	1.73E-01	4.40E-03	1.10E-03	3.00E-03	9.07E-04	3.20E-02	1.16E-02	3.30E-02	1.11E-02

Electrical Test Data (Post 6e10 n/cm² exposure)

RDHA701FP10A8QK
 PXI
 TESTER POST 6e10
 Friday, April 24, 2009, 10:38 AM

Lot #: ER1388001			IDin (A)	IQin (A)	IIHSS 1 (A)	IIHSS 2 (A)	IINPEAK 1 (A)	IINPEAK 2 (A)	IILSS 1 (A)	IILSS 2 (A)	IO [leak] 1 (A)
Serial #	Test Status	Max Limit	2.38E-02	1.50E-05	1.00E-06	1.00E-06	1.00E-03	1.00E-03	1.00E-06	1.00E-06	1.00E-05
		Min Limit	1.70E-02	0.00E+00	-1.00E-06	-1.00E-06	-1.00E-03	-1.00E-03	-1.00E-06	-1.00E-06	1.00E-10
	Comment		****	****	****	****	****	****	****	****	****
71	P	1+2	2.00E-02	3.80E-06	2.86E-10	5.49E-10	4.08E-10	5.70E-10	-1.72E-10	-6.72E-11	1.85E-08
71	P	3+4	2.00E-02	3.80E-06	3.02E-10	4.91E-10	3.86E-10	4.52E-10	-1.23E-10	-6.82E-11	1.84E-08
71	P	5+6	2.01E-02	3.90E-06	2.72E-10	5.36E-10	3.77E-10	5.07E-10	-1.26E-10	-7.93E-11	1.84E-08
71	P	7+8	2.02E-02	3.90E-06	3.32E-10	4.76E-10	4.64E-10	4.57E-10	-9.80E-11	-3.24E-11	1.87E-08
16	P	1+2	2.02E-02	3.90E-06	2.93E-10	5.33E-10	4.20E-10	5.25E-10	-7.88E-11	-1.97E-11	2.03E-08
16	P	3+4	2.01E-02	3.90E-06	3.11E-10	5.37E-10	4.41E-10	4.50E-10	-8.64E-11	-3.44E-11	2.00E-08
16	P	5+6	1.99E-02	3.90E-06	3.57E-10	5.50E-10	4.80E-10	4.85E-10	-6.17E-11	2.27E-11	2.00E-08
16	P	7+8	2.01E-02	3.90E-06	3.35E-10	5.62E-10	4.19E-10	4.90E-10	-4.40E-11	4.00E-12	2.03E-08
54	P	1+2	2.00E-02	3.90E-06	3.80E-10	5.48E-10	5.72E-10	4.93E-10	-7.53E-11	-6.22E-11	2.00E-08
54	P	3+4	2.02E-02	3.90E-06	1.70E-10	5.11E-10	2.12E-10	5.16E-10	-4.20E-11	-5.96E-11	1.99E-08
54	P	5+6	2.02E-02	3.90E-06	4.14E-10	5.35E-10	4.58E-10	4.94E-10	-8.64E-11	-3.44E-11	2.00E-08
54	P	7+8	2.01E-02	3.90E-06	3.00E-10	5.67E-10	4.04E-10	4.76E-10	-7.03E-11	-2.08E-11	2.01E-08

Electrical Test Data (Post 6e10 n/cm² exposure)

RDHA701FP10A8QK
 PXI
 TESTER POST 6e10
 Friday, April 24, 2009, 10:38 AM

Lot #: ER1388001

Serial #	Test Status	Comment	IO [leak] 2 (A)	Rdson 1 (Ohm)	Rdson 2 (Ohm)	Ton 1 (S)	Trise 1 (S)	Ton 2 (S)	Trise 2 (S)	Toff 1 (S)	Tfall 1 (S)	Toff 2 (S)	Tfall 2 (S)
		Max Limit	1.00E-05	3.50E-01	3.50E-01	1.50E-02	3.00E-03	1.50E-02	3.00E-03	6.00E-02	1.50E-02	6.00E-02	1.50E-02
		Min Limit	1.00E-10	1.00E-02	1.00E-02	1.00E-04	5.00E-04	1.00E-04	5.00E-04	1.00E-04	1.00E-03	1.00E-04	1.00E-03
		****	****	****	****	****	****	****	****	****	****	****	****
71	P	1+2	1.80E-08	1.71E-01	1.71E-01	3.40E-03	9.30E-04	4.00E-03	1.00E-03	3.17E-02	1.14E-02	3.14E-02	1.16E-02
71	P	3+4	1.80E-08	1.73E-01	1.75E-01	2.90E-03	8.54E-04	3.50E-03	9.55E-04	3.21E-02	1.12E-02	3.36E-02	1.14E-02
71	P	5+6	1.79E-08	1.76E-01	1.72E-01	2.60E-03	8.08E-04	2.90E-03	8.80E-04	3.34E-02	1.13E-02	3.30E-02	1.16E-02
71	P	7+8	1.81E-08	1.75E-01	1.68E-01	3.50E-03	9.57E-04	3.60E-03	9.58E-04	3.17E-02	1.15E-02	3.27E-02	1.16E-02
16	P	1+2	1.97E-08	1.70E-01	1.71E-01	3.50E-03	9.42E-04	2.80E-03	8.46E-04	3.22E-02	1.16E-02	3.22E-02	1.18E-02
16	P	3+4	1.96E-08	1.71E-01	1.68E-01	3.20E-03	9.01E-04	4.30E-03	1.10E-03	3.13E-02	1.12E-02	3.18E-02	1.18E-02
16	P	5+6	1.96E-08	1.72E-01	1.72E-01	3.70E-03	1.00E-03	3.20E-03	9.11E-04	3.11E-02	1.17E-02	3.25E-02	1.14E-02
16	P	7+8	1.96E-08	1.74E-01	1.73E-01	3.30E-03	9.35E-04	3.20E-03	8.72E-04	3.17E-02	1.18E-02	3.20E-02	1.16E-02
54	P	1+2	1.95E-08	1.70E-01	1.72E-01	3.60E-03	9.74E-04	3.70E-03	9.72E-04	3.07E-02	1.14E-02	3.23E-02	1.18E-02
54	P	3+4	1.94E-08	1.67E-01	1.68E-01	2.80E-03	8.32E-04	4.50E-03	1.10E-03	3.22E-02	1.13E-02	3.13E-02	1.18E-02
54	P	5+6	1.95E-08	1.74E-01	1.69E-01	2.50E-03	7.77E-04	4.50E-03	1.10E-03	3.15E-02	1.11E-02	3.03E-02	1.15E-02
54	P	7+8	1.96E-08	1.74E-01	1.72E-01	4.30E-03	1.10E-03	3.00E-03	8.51E-04	3.07E-02	1.16E-02	3.18E-02	1.19E-02

Electrical Test Data (Post 1e11 n/cm² exposure)

RDHA701FP10A8QK
 PXI
 TESTER POST 1e11
 Friday, April 24, 2009, 11:23 AM

Lot #: ER1388001

			IDin (A)	IQin (A)	IIHSS 1 (A)	IIHSS 2 (A)	IINPEAK 1 (A)	IINPEAK 2 (A)	IILSS 1 (A)	IILSS 2 (A)	IO [leak] 1 (A)
		Max Limit	2.38E-02	1.50E-05	1.00E-06	1.00E-06	1.00E-03	1.00E-03	1.00E-06	1.00E-06	1.00E-05
		Min Limit	1.70E-02	0.00E+00	-1.00E-06	-1.00E-06	-1.00E-03	-1.00E-03	-1.00E-06	-1.00E-06	1.00E-10
Serial #	Test Status	Comment	****	****	****	****	****	****	****	****	****
71	P	1+2	2.00E-02	3.80E-06	3.98E-10	6.28E-10	4.49E-10	5.66E-10	-7.93E-11	-2.38E-11	1.91E-08
71	P	3+4	2.00E-02	3.80E-06	3.47E-10	5.55E-10	4.75E-10	5.27E-10	-6.77E-11	-4.15E-11	1.89E-08
71	P	5+6	2.01E-02	3.80E-06	3.51E-10	5.53E-10	4.23E-10	4.86E-10	-9.65E-11	-2.68E-11	1.89E-08
71	P	7+8	2.02E-02	3.90E-06	3.17E-10	5.34E-10	4.01E-10	4.46E-10	-8.64E-11	-4.04E-11	1.91E-08
16	P	1+2	2.02E-02	3.90E-06	3.54E-10	5.77E-10	4.38E-10	5.32E-10	-7.10E-12	-4.15E-11	2.12E-08
16	P	3+4	2.01E-02	3.90E-06	3.88E-10	4.66E-10	4.42E-10	1.40E-10	-4.50E-11	-2.13E-10	2.12E-08
16	P	5+6	1.99E-02	3.90E-06	3.91E-10	6.00E-10	4.80E-10	5.49E-10	-5.91E-11	-2.60E-12	2.12E-08
16	P	7+8	2.01E-02	3.90E-06	3.51E-10	5.49E-10	4.72E-10	5.37E-10	-4.35E-11	1.46E-11	2.13E-08
54	P	1+2	2.00E-02	3.90E-06	3.29E-10	6.13E-10	4.73E-10	5.51E-10	-9.45E-11	-3.60E-12	1.29E-08
54	P	3+4	2.02E-02	3.90E-06	3.73E-10	6.12E-10	4.79E-10	5.43E-10	-9.80E-11	-1.60E-12	2.09E-08
54	P	5+6	2.02E-02	3.90E-06	4.29E-10	5.65E-10	4.98E-10	5.30E-10	-6.32E-11	-4.25E-11	2.09E-08
54	P	7+8	2.01E-02	3.90E-06	4.32E-10	5.87E-10	5.09E-10	5.45E-10	-6.07E-11	-2.60E-12	2.11E-08

Electrical Test Data (Post 1e11 n/cm² exposure)

RDHA701FP10A8QK
 PXI
 TESTER POST 1e11
 Friday, April 24, 2009, 11:23 AM

Lot #: ER1388001

Serial #	Test Status	Comment	IO [leak] 2 (A)	Rdson 1 (Ohm)	Rdson 2 (Ohm)	Ton 1 (S)	Trise 1 (S)	Ton 2 (S)	Trise 2 (S)	Toff 1 (S)	Tfall 1 (S)	Toff 2 (S)	Tfall 2 (S)
		Max Limit	1.00E-05	3.50E-01	3.50E-01	1.50E-02	3.00E-03	1.50E-02	3.00E-03	6.00E-02	1.50E-02	6.00E-02	1.50E-02
		Min Limit	1.00E-10	1.00E-02	1.00E-02	1.00E-04	5.00E-04	1.00E-04	5.00E-04	1.00E-04	1.00E-03	1.00E-04	1.00E-03
		Comment	****	****	****	****	****	****	****	****	****	****	****
71	P	1+2	1.86E-08	1.78E-01	1.83E-01	3.40E-03	9.61E-04	4.10E-03	1.10E-03	3.17E-02	1.15E-02	3.15E-02	1.14E-02
71	P	3+4	1.84E-08	1.72E-01	1.68E-01	2.90E-03	8.77E-04	3.50E-03	9.47E-04	3.21E-02	1.14E-02	3.35E-02	1.14E-02
71	P	5+6	1.85E-08	1.73E-01	1.69E-01	2.60E-03	8.33E-04	2.90E-03	8.56E-04	3.34E-02	1.14E-02	3.30E-02	1.18E-02
71	P	7+8	1.75E-08	1.72E-01	1.67E-01	3.50E-03	9.47E-04	3.60E-03	1.00E-03	3.17E-02	1.14E-02	3.26E-02	1.16E-02
16	P	1+2	2.08E-08	1.72E-01	1.67E-01	3.60E-03	1.00E-03	2.90E-03	8.89E-04	3.14E-02	1.13E-02	3.14E-02	1.18E-02
16	P	3+4	2.03E-08	1.67E-01	1.92E-01	3.40E-03	9.47E-04	4.30E-03	1.10E-03	3.07E-02	1.18E-02	3.10E-02	1.19E-02
16	P	5+6	2.08E-08	1.73E-01	1.73E-01	3.70E-03	1.00E-03	3.20E-03	8.92E-04	3.04E-02	1.17E-02	3.19E-02	1.17E-02
16	P	7+8	2.07E-08	1.70E-01	1.67E-01	3.30E-03	9.30E-04	3.10E-03	8.95E-04	3.09E-02	1.13E-02	3.13E-02	1.16E-02
54	P	1+2	2.04E-08	1.67E-01	1.71E-01	3.70E-03	1.00E-03	3.80E-03	9.55E-04	2.99E-02	1.18E-02	3.16E-02	1.18E-02
54	P	3+4	2.03E-08	1.70E-01	1.71E-01	2.80E-03	8.92E-04	4.60E-03	1.10E-03	3.16E-02	1.10E-02	3.08E-02	1.18E-02
54	P	5+6	2.02E-08	1.72E-01	1.73E-01	2.50E-03	7.96E-04	4.60E-03	1.10E-03	3.08E-02	1.22E-02	2.95E-02	1.18E-02
54	P	7+8	2.05E-08	1.71E-01	1.72E-01	4.40E-03	1.10E-03	3.10E-03	8.50E-04	2.99E-02	1.11E-02	3.10E-02	1.19E-02

Electrical Test Data (Post 3e11 n/cm² exposure)

RDHA701FP10A8QK
 PXI
 TESTER POST 3e11
 Friday, April 24, 2009, 12:07 PM

Lot #: ER1388001

			IDin (A)	IQin (A)	IIHSS 1 (A)	IIHSS 2 (A)	IINPEAK 1 (A)	IINPEAK 2 (A)	IILSS 1 (A)	IILSS 2 (A)	IO [leak] 1 (A)
		Max Limit	2.38E-02	1.50E-05	1.00E-06	1.00E-06	1.00E-03	1.00E-03	1.00E-06	1.00E-06	1.00E-05
		Min Limit	1.70E-02	0.00E+00	-1.00E-06	-1.00E-06	-1.00E-03	-1.00E-03	-1.00E-06	-1.00E-06	1.00E-10
Serial #	Test Status	Comment	****	****	****	****	****	****	****	****	****
71	P	1+2	2.00E-02	3.80E-06	3.66E-10	6.13E-10	4.55E-10	6.29E-10	-5.36E-11	-4.85E-11	1.92E-08
71	P	3+4	2.00E-02	3.80E-06	3.39E-10	5.45E-10	4.82E-10	5.06E-10	-6.62E-11	-6.32E-11	1.90E-08
71	P	5+6	2.02E-02	3.90E-06	3.35E-10	6.06E-10	4.25E-10	5.20E-10	-1.37E-10	-3.49E-11	1.87E-08
71	P	7+8	2.02E-02	3.90E-06	3.05E-10	5.83E-10	4.03E-10	4.46E-10	-9.95E-11	-1.27E-11	1.91E-08
16	P	1+2	2.02E-02	3.90E-06	4.54E-10	6.29E-10	5.56E-10	6.57E-10	-7.08E-11	-2.63E-11	2.56E-08
16	P	3+4	2.01E-02	4.00E-06	4.43E-10	5.58E-10	5.24E-10	5.72E-10	-7.43E-11	-1.17E-11	2.53E-08
16	P	5+6	1.99E-02	3.90E-06	3.93E-10	6.64E-10	5.70E-10	5.63E-10	-6.87E-11	1.66E-11	2.53E-08
16	P	7+8	2.01E-02	4.00E-06	4.00E-10	5.88E-10	5.73E-10	5.91E-10	-6.52E-11	-3.79E-11	2.55E-08
54	P	1+2	2.00E-02	3.90E-06	4.99E-10	6.42E-10	5.66E-10	5.90E-10	-5.36E-11	-5.11E-11	2.52E-08
54	P	3+4	2.02E-02	3.90E-06	4.23E-10	6.30E-10	5.00E-10	6.31E-10	-6.22E-11	-5.51E-11	2.51E-08
54	P	5+6	2.02E-02	4.00E-06	4.06E-10	6.82E-10	5.56E-10	6.47E-10	-4.45E-11	-3.03E-11	2.53E-08
54	P	7+8	2.01E-02	4.00E-06	4.10E-10	6.04E-10	5.55E-10	7.19E-10	-6.77E-11	-5.60E-12	2.53E-08

Electrical Test Data (Post 3e11 n/cm² exposure)

RDHA701FP10A8QK
 PXI
 TESTER POST 3e11
 Friday, April 24, 2009, 12:07 PM

Lot #:	ER1388001												
			IO [leak] 2 (A)	Rdson 1 (Ohm)	Rdson 2 (Ohm)	Ton 1 (S)	Trise 1 (S)	Ton 2 (S)	Trise 2 (S)	Toff 1 (S)	Tfall 1 (S)	Toff 2 (S)	Tfall 2 (S)
	Max Limit		1.00E-05	3.50E-01	3.50E-01	1.50E-02	3.00E-03	1.50E-02	3.00E-03	6.00E-02	1.50E-02	6.00E-02	1.50E-02
	Min Limit		1.00E-10	1.00E-02	1.00E-02	1.00E-04	5.00E-04	1.00E-04	5.00E-04	1.00E-04	1.00E-03	1.00E-04	1.00E-03
Serial #	Test Status	Comment	****	****	****	****	****	****	****	****	****	****	****
71	P	1+2	1.86E-08	1.67E-01	1.69E-01	3.50E-03	9.55E-04	4.20E-03	1.10E-03	3.15E-02	1.17E-02	3.13E-02	1.14E-02
71	P	3+4	1.85E-08	1.73E-01	1.71E-01	3.00E-03	8.72E-04	3.50E-03	9.31E-04	3.19E-02	1.11E-02	3.33E-02	1.13E-02
71	P	5+6	1.86E-08	1.72E-01	1.73E-01	2.70E-03	8.72E-04	2.90E-03	8.52E-04	3.31E-02	1.18E-02	3.29E-02	1.09E-02
71	P	7+8	1.86E-08	1.68E-01	1.74E-01	3.60E-03	9.99E-04	3.60E-03	9.70E-04	3.16E-02	1.16E-02	3.26E-02	1.13E-02
16	P	1+2	2.53E-08	1.66E-01	1.72E-01	3.90E-03	1.10E-03	3.10E-03	9.16E-04	2.93E-02	1.14E-02	2.93E-02	1.15E-02
16	P	3+4	2.49E-08	1.69E-01	1.98E-01	3.70E-03	1.00E-03	4.80E-03	1.20E-03	2.85E-02	1.12E-02	2.86E-02	1.08E-02
16	P	5+6	2.51E-08	1.73E-01	1.73E-01	4.20E-03	1.10E-03	3.60E-03	9.46E-04	2.81E-02	1.12E-02	2.99E-02	1.19E-02
16	P	7+8	2.50E-08	1.73E-01	1.66E-01	3.60E-03	9.73E-04	3.40E-03	9.24E-04	2.89E-02	1.15E-02	2.92E-02	1.20E-02
54	P	1+2	2.46E-08	1.68E-01	1.67E-01	4.00E-03	1.10E-03	4.20E-03	1.10E-03	2.77E-02	1.14E-02	2.93E-02	1.18E-02
54	P	3+4	2.47E-08	1.71E-01	1.73E-01	3.10E-03	8.56E-04	5.00E-03	1.20E-03	2.96E-02	1.17E-02	2.85E-02	1.14E-02
54	P	5+6	2.48E-08	1.73E-01	1.71E-01	2.70E-03	8.39E-04	5.10E-03	1.20E-03	2.88E-02	1.16E-02	2.72E-02	1.12E-02
54	P	7+8	2.48E-08	1.70E-01	1.70E-01	4.90E-03	1.20E-03	3.30E-03	9.17E-04	2.77E-02	1.15E-02	2.88E-02	1.25E-02

Electrical Test Data (Pre-Total Dose Irradiation exposure)

RDHA701FP10A8QK
 PXI
 TESTER OK data
 Monday, April 27, 2009, 10:42 AM

Lot #: er1388001

			IDin (A)	IQin (A)	IIHSS 1 (A)	IIHSS 2 (A)	IINPEAK 1 (A)	IINPEAK 2 (A)	IILSS 1 (A)	IILSS 2 (A)	IO [leak] 1 (A)
		Max Limit	2.38E-02	1.50E-05	1.00E-06	1.00E-06	1.00E-03	1.00E-03	1.00E-06	1.00E-06	1.00E-05
		Min Limit	1.70E-02	0.00E+00	-1.00E-06	-1.00E-06	-1.00E-03	-1.00E-03	-1.00E-06	-1.00E-06	1.00E-10
Serial #	Test Status	Comment	****	****	****	****	****	****	****	****	****
71	P	1+2	1.99E-02	4.10E-06	7.27E-11	3.41E-10	1.54E-10	3.30E-10	-3.34E-10	-2.76E-10	1.85E-08
71	P	3+4	1.99E-02	4.10E-06	9.14E-11	2.72E-10	1.91E-10	2.24E-10	-3.26E-10	-2.91E-10	1.84E-08
71	P	5+6	2.01E-02	4.10E-06	8.48E-11	3.18E-10	2.12E-10	2.64E-10	-3.25E-10	-2.61E-10	1.83E-08
71	P	7+8	2.01E-02	4.10E-06	6.86E-11	2.82E-10	2.01E-10	2.30E-10	-3.05E-10	-2.48E-10	1.84E-08
16	P	1+2	2.02E-02	4.10E-06	2.52E-10	3.97E-10	3.22E-10	4.09E-10	-3.43E-10	-2.71E-10	2.44E-08
16	P	3+4	2.00E-02	4.10E-06	2.05E-10	3.65E-10	3.30E-10	3.55E-10	-3.22E-10	-2.68E-10	2.44E-08
16	P	5+6	1.99E-02	4.10E-06	2.03E-10	4.10E-10	3.06E-10	4.10E-10	-3.00E-10	-2.88E-10	2.47E-08
16	P	7+8	2.01E-02	4.10E-06	1.79E-10	3.98E-10	3.39E-10	4.28E-10	-2.94E-10	-2.21E-10	2.61E-08
54	P	1+2	2.00E-02	4.10E-06	2.06E-10	3.66E-10	3.07E-10	3.58E-10	-3.57E-10	-2.97E-10	2.39E-08
54	P	3+4	2.01E-02	4.10E-06	1.53E-10	4.26E-10	2.59E-10	4.10E-10	-3.42E-10	-3.00E-10	2.40E-08
54	P	5+6	2.02E-02	4.10E-06	2.02E-10	4.30E-10	3.40E-10	3.95E-10	-3.47E-10	-2.71E-10	2.43E-08
54	P	7+8	2.00E-02	4.10E-06	2.23E-10	3.71E-10	3.34E-10	4.03E-10	-3.02E-10	-2.70E-10	2.53E-08

Electrical Test Data (Pre-Total Dose Irradiation exposure)

RDHA701FP10A8QK
 PXI
 TESTER OK data
 Monday, April 27, 2009, 10:42 AM

Lot #: er1388001

			IO [leak] 2 (A)	Rdson 1 (Ohm)	Rdson 2 (Ohm)	Ton 1 (S)	Trise 1 (S)	Ton 2 (S)	Trise 2 (S)	Toff 1 (S)	Tfall 1 (S)	Toff 2 (S)	Tfall 2 (S)
	Max Limit		1.00E-05	3.50E-01	3.50E-01	1.50E-02	3.00E-03	1.50E-02	3.00E-03	6.00E-02	1.50E-02	6.00E-02	1.50E-02
	Min Limit		1.00E-10	1.00E-02	1.00E-02	1.00E-04	5.00E-04	1.00E-04	5.00E-04	1.00E-04	1.00E-03	1.00E-04	1.00E-03
		Comment	****	****	****	****	****	****	****	****	****	****	****
Serial #	Test Status												
71	P	1+2	1.79E-08	1.66E-01	1.66E-01	3.40E-03	9.79E-04	4.20E-03	1.00E-03	3.18E-02	1.14E-02	3.14E-02	1.16E-02
71	P	3+4	1.80E-08	1.70E-01	1.61E-01	2.90E-03	9.29E-04	3.50E-03	1.00E-03	3.20E-02	1.15E-02	3.34E-02	1.13E-02
71	P	5+6	1.80E-08	1.72E-01	1.69E-01	2.60E-03	8.17E-04	2.90E-03	8.63E-04	3.34E-02	1.09E-02	3.29E-02	1.12E-02
71	P	7+8	1.82E-08	1.71E-01	1.65E-01	3.60E-03	1.00E-03	3.60E-03	9.81E-04	3.16E-02	1.24E-02	3.24E-02	1.12E-02
16	P	1+2	2.41E-08	1.71E-01	1.61E-01	3.90E-03	1.10E-03	3.20E-03	9.86E-04	2.78E-02	1.11E-02	2.78E-02	1.07E-02
16	P	3+4	2.41E-08	1.71E-01	1.93E-01	3.70E-03	1.00E-03	4.90E-03	1.30E-03	2.69E-02	1.05E-02	2.71E-02	1.10E-02
16	P	5+6	2.44E-08	1.73E-01	1.66E-01	4.30E-03	1.10E-03	3.60E-03	1.00E-03	2.67E-02	1.12E-02	2.81E-02	1.10E-02
16	P	7+8	2.63E-08	1.71E-01	1.69E-01	3.70E-03	1.00E-03	3.50E-03	1.00E-03	2.74E-02	1.09E-02	2.74E-02	1.14E-02
54	P	1+2	2.34E-08	1.67E-01	1.63E-01	4.10E-03	1.10E-03	4.30E-03	1.10E-03	2.64E-02	1.05E-02	2.77E-02	1.14E-02
54	P	3+4	2.36E-08	1.65E-01	1.68E-01	3.10E-03	9.57E-04	5.30E-03	1.30E-03	2.78E-02	1.13E-02	2.70E-02	1.11E-02
54	P	5+6	2.38E-08	1.73E-01	1.65E-01	2.70E-03	8.27E-04	5.20E-03	1.30E-03	2.70E-02	1.11E-02	2.58E-02	1.11E-02
54	P	7+8	2.55E-08	1.73E-01	1.63E-01	4.90E-03	1.10E-03	3.40E-03	1.00E-03	2.63E-02	1.07E-02	2.72E-02	1.16E-02

Electrical Test Data (Post 25K Total Dose Irradiation exposure)

RDHA701FP10A8QK
 PXI
 TESTER POST 25K
 Monday, April 27, 2009, 12:03 PM

Lot #: er1388001

			IDin (A)	IQin (A)	IHSS 1 (A)	IHSS 2 (A)	IINPEAK 1 (A)	IINPEAK 2 (A)	IILSS 1 (A)	IILSS 2 (A)	IO [leak] 1 (A)
		Max Limit	2.38E-02	1.50E-05	1.00E-06	1.00E-06	1.00E-03	1.00E-03	1.00E-06	1.00E-06	1.00E-05
		Min Limit	1.70E-02	0.00E+00	-1.00E-06	-1.00E-06	-1.00E-03	-1.00E-03	-1.00E-06	-1.00E-06	1.00E-10
Serial #	Test Status	Comment	****	****	****	****	****	****	****	****	****
71	P	1+2	2.00E-02	3.90E-06	3.55E-10	7.02E-10	4.94E-10	6.51E-10	-5.00E-11	-3.49E-11	2.10E-08
71	P	3+4	1.99E-02	3.90E-06	3.80E-10	6.40E-10	5.32E-10	5.69E-10	-9.60E-11	-4.60E-12	2.08E-08
71	P	5+6	2.01E-02	4.00E-06	4.24E-10	6.49E-10	4.77E-10	6.25E-10	-5.36E-11	-8.10E-12	2.09E-08
71	P	7+8	2.01E-02	4.00E-06	3.89E-10	6.94E-10	5.01E-10	5.48E-10	-1.72E-11	-8.60E-12	2.23E-08
16	P	1+2	2.02E-02	4.00E-06	5.23E-10	6.48E-10	6.21E-10	6.53E-10	-8.94E-11	-3.84E-11	2.71E-08
16	P	3+4	2.00E-02	4.00E-06	4.97E-10	6.48E-10	5.77E-10	6.13E-10	-1.29E-10	-4.35E-11	2.70E-08
16	P	5+6	1.99E-02	4.00E-06	2.41E-10	6.94E-10	6.40E-10	6.27E-10	-7.78E-11	-3.89E-11	2.71E-08
16	P	7+8	2.01E-02	4.00E-06	4.46E-10	6.67E-10	5.66E-10	6.61E-10	-9.85E-11	-4.70E-11	2.80E-08
54	P	1+2	2.00E-02	4.00E-06	4.94E-10	6.86E-10	6.06E-10	6.51E-10	-8.99E-11	-2.63E-11	2.74E-08
54	P	3+4	2.01E-02	4.00E-06	5.02E-10	7.04E-10	5.67E-10	7.21E-10	-1.02E-10	-3.49E-11	2.75E-08
54	P	5+6	2.02E-02	4.00E-06	4.99E-10	6.88E-10	6.32E-10	7.12E-10	-8.14E-11	-2.88E-11	2.77E-08
54	P	7+8	2.01E-02	4.00E-06	4.97E-10	7.04E-10	6.69E-10	7.16E-10	-8.34E-11	-3.39E-11	2.91E-08

Electrical Test Data (Post 25K Total Dose Irradiation exposure)

RDHA701FP10A8QK
 PXI
 TESTER **POST 25K**
 Monday, April 27, 2009, 12:03 PM

Lot #: er1388001

			IO [leak] 2 (A)	Rdson 1 (Ohm)	Rdson 2 (Ohm)	Ton 1 (S)	Trise 1 (S)	Ton 2 (S)	Trise 2 (S)	Toff 1 (S)	Tfall 1 (S)	Toff 2 (S)	Tfall 2 (S)
	Max Limit		1.00E-05	3.50E-01	3.50E-01	1.50E-02	3.00E-03	1.50E-02	3.00E-03	6.00E-02	1.50E-02	6.00E-02	1.50E-02
	Min Limit		1.00E-10	1.00E-02	1.00E-02	1.00E-04	5.00E-04	1.00E-04	5.00E-04	1.00E-04	1.00E-03	1.00E-04	1.00E-03
Serial #	Test Status	Comment	****	****	****	****	****	****	****	****	****	****	****
71	P	1+2	1.95E-08	1.70E-01	1.64E-01	3.40E-03	9.44E-04	4.20E-03	1.10E-03	3.15E-02	1.21E-02	3.13E-02	1.19E-02
71	P	3+4	2.03E-08	1.73E-01	1.68E-01	3.00E-03	8.92E-04	3.50E-03	9.79E-04	3.20E-02	1.17E-02	3.33E-02	1.17E-02
71	P	5+6	2.05E-08	1.70E-01	1.58E-01	2.70E-03	7.94E-04	2.90E-03	8.82E-04	3.31E-02	1.14E-02	3.28E-02	1.16E-02
71	P	7+8	2.15E-08	1.71E-01	1.68E-01	3.60E-03	1.00E-03	3.60E-03	9.95E-04	3.17E-02	1.18E-02	3.24E-02	1.20E-02
16	P	1+2	2.68E-08	1.71E-01	1.66E-01	3.90E-03	1.10E-03	3.10E-03	9.63E-04	2.80E-02	1.14E-02	2.77E-02	1.15E-02
16	P	3+4	2.66E-08	1.69E-01	1.94E-01	3.70E-03	1.00E-03	4.80E-03	1.30E-03	2.69E-02	1.14E-02	2.70E-02	1.17E-02
16	P	5+6	2.70E-08	1.71E-01	1.67E-01	4.20E-03	1.10E-03	3.50E-03	1.00E-03	2.68E-02	1.13E-02	2.83E-02	1.17E-02
16	P	7+8	2.91E-08	1.69E-01	1.67E-01	3.60E-03	1.10E-03	3.50E-03	9.98E-04	2.75E-02	1.11E-02	2.75E-02	1.13E-02
54	P	1+2	2.69E-08	1.66E-01	1.63E-01	4.00E-03	1.00E-03	4.30E-03	1.20E-03	2.56E-02	1.12E-02	2.74E-02	1.13E-02
54	P	3+4	2.71E-08	1.67E-01	1.63E-01	3.10E-03	9.52E-04	5.30E-03	1.30E-03	2.71E-02	1.06E-02	2.65E-02	1.12E-02
54	P	5+6	2.73E-08	1.71E-01	1.73E-01	2.80E-03	8.44E-04	5.20E-03	1.30E-03	2.64E-02	1.14E-02	2.52E-02	1.10E-02
54	P	7+8	3.07E-08	1.70E-01	1.70E-01	5.00E-03	1.20E-03	3.40E-03	9.75E-04	2.57E-02	1.12E-02	2.66E-02	1.05E-02

Electrical Test Data (Post 50K Total Dose Irradiation exposure)

RDHA701FP10A8QK
 PXI
 TESTER POST 50K
 Monday, April 27, 2009, 12:43 PM

Lot #: er1388001

			IDin (A)	IQin (A)	IHSS 1 (A)	IHSS 2 (A)	IINPEAK 1 (A)	IINPEAK 2 (A)	IILSS 1 (A)	IILSS 2 (A)	IO [leak] 1 (A)
		Max Limit	2.38E-02	1.50E-05	1.00E-06	1.00E-06	1.00E-03	1.00E-03	1.00E-06	1.00E-06	1.00E-05
		Min Limit	1.70E-02	0.00E+00	-1.00E-06	-1.00E-06	-1.00E-03	-1.00E-03	-1.00E-06	-1.00E-06	1.00E-10
Serial #	Test Status	Comment	****	****	****	****	****	****	****	****	****
71	P	1+2	2.00E-02	3.90E-06	4.37E-10	7.29E-10	5.32E-10	7.00E-10	6.00E-12	3.89E-11	2.14E-08
71	P	3+4	1.99E-02	3.90E-06	4.64E-10	6.77E-10	5.61E-10	6.12E-10	-4.20E-11	-3.03E-11	2.13E-08
71	P	5+6	2.01E-02	3.90E-06	4.03E-10	6.93E-10	4.91E-10	6.01E-10	-3.94E-11	-4.60E-12	2.14E-08
71	P	7+8	2.01E-02	4.00E-06	4.20E-10	6.45E-10	5.34E-10	5.69E-10	-5.40E-13	7.50E-12	2.13E-08
16	P	1+2	2.02E-02	4.00E-06	5.36E-10	7.23E-10	6.62E-10	6.88E-10	-6.87E-11	-3.14E-11	2.83E-08
16	P	3+4	2.01E-02	4.00E-06	5.24E-10	7.05E-10	6.01E-10	6.82E-10	-7.78E-11	-1.57E-11	2.84E-08
16	P	5+6	1.99E-02	4.00E-06	5.17E-10	6.69E-10	6.54E-10	7.25E-10	-1.02E-10	-1.82E-11	2.93E-08
16	P	7+8	2.01E-02	4.00E-06	4.94E-10	7.26E-10	5.87E-10	7.40E-10	-6.97E-11	-4.60E-12	2.88E-08
54	P	1+2	2.01E-02	3.90E-06	5.94E-10	7.71E-10	7.27E-10	7.99E-10	-4.75E-11	2.83E-11	3.30E-08
54	P	3+4	2.02E-02	3.90E-06	5.56E-10	7.75E-10	6.53E-10	7.67E-10	-6.01E-11	-7.53E-11	3.13E-08
54	P	5+6	2.02E-02	3.90E-06	5.27E-10	7.63E-10	6.33E-10	7.29E-10	-4.25E-11	-1.32E-11	3.06E-08
54	P	7+8	2.01E-02	3.90E-06	5.73E-10	7.16E-10	6.95E-10	7.35E-10	-3.49E-11	3.50E-12	3.02E-08

Electrical Test Data (Post 50K Total Dose Irradiation exposure)

RDHA701FP10A8QK
 PXI
 TESTER POST 50K
 Monday, April 27, 2009, 12:43 PM

Lot #: er1388001

			IO [leak] 2 (A)	Rdson 1 (Ohm)	Rdson 2 (Ohm)	Ton 1 (S)	Trise 1 (S)	Ton 2 (S)	Trise 2 (S)	Toff 1 (S)	Tfall 1 (S)	Toff 2 (S)	Tfall 2 (S)
	Max Limit		1.00E-05	3.50E-01	3.50E-01	1.50E-02	3.00E-03	1.50E-02	3.00E-03	6.00E-02	1.50E-02	6.00E-02	1.50E-02
	Min Limit		1.00E-10	1.00E-02	1.00E-02	1.00E-04	5.00E-04	1.00E-04	5.00E-04	1.00E-04	1.00E-03	1.00E-04	1.00E-03
	Test Status	Comment	****	****	****	****	****	****	****	****	****	****	****
Serial #													
71	P	1+2	2.09E-08	1.70E-01	1.64E-01	3.40E-03	9.26E-04	4.20E-03	1.10E-03	3.16E-02	1.18E-02	3.11E-02	1.07E-02
71	P	3+4	2.09E-08	1.71E-01	1.66E-01	2.90E-03	8.73E-04	3.50E-03	9.75E-04	3.21E-02	1.16E-02	3.33E-02	1.08E-02
71	P	5+6	2.09E-08	1.72E-01	1.64E-01	2.60E-03	7.95E-04	2.90E-03	8.99E-04	3.33E-02	1.10E-02	3.28E-02	1.20E-02
71	P	7+8	2.53E-08	1.65E-01	1.68E-01	3.60E-03	9.72E-04	3.60E-03	1.00E-03	3.16E-02	1.17E-02	3.25E-02	1.14E-02
16	P	1+2	2.81E-08	1.70E-01	1.70E-01	3.80E-03	1.10E-03	3.10E-03	9.71E-04	2.76E-02	1.14E-02	2.76E-02	1.14E-02
16	P	3+4	2.81E-08	1.72E-01	1.89E-01	3.60E-03	1.20E-03	4.70E-03	1.30E-03	2.67E-02	1.11E-02	2.70E-02	1.21E-02
16	P	5+6	2.83E-08	1.70E-01	1.69E-01	4.10E-03	1.20E-03	3.50E-03	1.10E-03	2.66E-02	1.14E-02	2.82E-02	1.13E-02
16	P	7+8	3.27E-08	1.72E-01	1.66E-01	3.60E-03	1.10E-03	3.50E-03	1.10E-03	2.72E-02	1.14E-02	2.75E-02	1.16E-02
54	P	1+2	3.19E-08	1.68E-01	1.66E-01	4.10E-03	1.10E-03	4.30E-03	1.10E-03	2.45E-02	1.09E-02	2.62E-02	1.16E-02
54	P	3+4	3.07E-08	1.72E-01	1.64E-01	3.20E-03	9.20E-04	5.30E-03	1.40E-03	2.64E-02	1.15E-02	2.58E-02	1.17E-02
54	P	5+6	3.00E-08	1.70E-01	1.64E-01	2.80E-03	8.82E-04	5.20E-03	1.40E-03	2.59E-02	1.12E-02	2.46E-02	1.14E-02
54	P	7+8	3.60E-08	1.69E-01	1.73E-01	5.20E-03	1.30E-03	3.40E-03	1.00E-03	2.51E-02	1.13E-02	2.60E-02	1.12E-02

Electrical Test Data (Post 100K Total Dose Irradiation exposure)

RDHA701FP10A8QK
 PXI
 TESTER POST 100K
 Monday, April 27, 2009, 1:05 PM

Lot #: er1388001

Serial #	Test Status	Comment	IDin (A)	IQin (A)	IIHSS 1 (A)	IIHSS 2 (A)	IINPEAK 1 (A)	IINPEAK 2 (A)	IILSS 1 (A)	IILSS 2 (A)	IO [leak] 1 (A)	
			Max Limit	2.38E-02	1.50E-05	1.00E-06	1.00E-06	1.00E-03	1.00E-03	1.00E-06	1.00E-06	1.00E-05
			Min Limit	1.70E-02	0.00E+00	-1.00E-06	-1.00E-06	-1.00E-03	-1.00E-03	-1.00E-06	-1.00E-06	1.00E-10
			****	****	****	****	****	****	****	****	****	
71	P	1+2	2.00E-02	3.90E-06	4.23E-10	7.68E-10	5.40E-10	7.03E-10	-2.93E-11	3.23E-11	2.19E-08	
71	P	3+4	1.99E-02	3.90E-06	4.19E-10	6.77E-10	5.49E-10	6.21E-10	-2.12E-11	-1.82E-11	2.17E-08	
71	P	5+6	2.01E-02	4.00E-06	4.31E-10	7.15E-10	5.19E-10	6.49E-10	-3.69E-11	2.67E-11	2.18E-08	
71	P	7+8	2.01E-02	3.90E-06	4.11E-10	6.68E-10	5.08E-10	5.86E-10	1.97E-11	5.00E-11	2.65E-08	
16	P	1+2	2.02E-02	3.90E-06	5.51E-10	7.23E-10	6.54E-10	6.99E-10	-7.48E-11	-4.10E-12	2.90E-08	
16	P	3+4	2.01E-02	4.00E-06	5.37E-10	7.06E-10	6.40E-10	6.59E-10	-4.80E-11	-2.38E-11	2.91E-08	
16	P	5+6	1.99E-02	3.90E-06	5.23E-10	6.94E-10	6.59E-10	6.94E-10	-6.17E-11	1.21E-11	2.94E-08	
16	P	7+8	2.01E-02	4.00E-06	5.05E-10	6.01E-10	6.38E-10	7.00E-10	-8.08E-11	-2.88E-11	2.96E-08	
54	P	1+2	2.00E-02	4.00E-06	6.04E-10	7.83E-10	7.11E-10	7.10E-10	-4.55E-11	3.18E-11	3.05E-08	
54	P	3+4	2.02E-02	4.00E-06	5.46E-10	7.79E-10	6.90E-10	8.00E-10	-6.82E-11	-9.60E-12	3.07E-08	
54	P	5+6	2.02E-02	4.00E-06	5.63E-10	8.00E-10	7.18E-10	7.86E-10	-3.59E-11	3.33E-11	3.08E-08	
54	P	7+8	2.01E-02	4.00E-06	6.20E-10	7.55E-10	7.74E-10	7.60E-10	-3.69E-11	2.50E-12	3.08E-08	

Electrical Test Data (Post 100K Total Dose Irradiation exposure)

RDHA701FP10A8QK
 PXI **POST**
 TESTER **100K**
 Monday, April 27, 2009, 1:05 PM

Lot #: er1388001

Serial #	Test Status	Comment	IO [leak] 2	Rdson 1	Rdson 2	Ton 1 (S)	Trise 1	Ton 2 (S)	Trise 2	Toff 1 (S)	Tfall 1	Toff 2 (S)	Tfall 2
			(A)	(Ohm)	(Ohm)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)
		Max Limit	1.00E-05	3.50E-01	3.50E-01	1.50E-02	3.00E-03	1.50E-02	3.00E-03	6.00E-02	1.50E-02	6.00E-02	1.50E-02
		Min Limit	1.00E-10	1.00E-02	1.00E-02	1.00E-04	5.00E-04	1.00E-04	5.00E-04	1.00E-04	1.00E-03	1.00E-04	1.00E-03
			****	****	****	****	****	****	****	****	****	****	****
71	P	1+2	2.12E-08	1.70E-01	1.63E-01	3.40E-03	1.00E-03	4.20E-03	1.10E-03	3.16E-02	1.21E-02	3.12E-02	1.25E-02
71	P	3+4	2.12E-08	1.66E-01	1.66E-01	3.00E-03	9.07E-04	3.50E-03	1.00E-03	3.21E-02	1.14E-02	3.32E-02	1.12E-02
71	P	5+6	2.13E-08	1.68E-01	1.65E-01	2.60E-03	8.09E-04	2.90E-03	9.13E-04	3.31E-02	1.12E-02	3.28E-02	1.12E-02
71	P	7+8	2.78E-08	1.69E-01	1.65E-01	3.70E-03	9.55E-04	3.60E-03	1.00E-03	3.16E-02	1.20E-02	3.24E-02	1.08E-02
16	P	1+2	2.88E-08	1.72E-01	1.67E-01	3.80E-03	1.10E-03	3.10E-03	9.81E-04	2.78E-02	1.10E-02	2.76E-02	1.18E-02
16	P	3+4	2.88E-08	1.68E-01	1.94E-01	3.60E-03	1.00E-03	4.70E-03	1.30E-03	2.69E-02	1.15E-02	2.71E-02	1.20E-02
16	P	5+6	2.91E-08	1.71E-01	1.69E-01	4.00E-03	1.10E-03	3.50E-03	1.10E-03	2.69E-02	1.13E-02	2.81E-02	1.09E-02
16	P	7+8	3.48E-08	1.71E-01	1.65E-01	3.60E-03	1.00E-03	3.40E-03	1.10E-03	2.74E-02	1.12E-02	2.74E-02	1.12E-02
54	P	1+2	2.99E-08	1.69E-01	1.66E-01	4.10E-03	1.10E-03	4.30E-03	1.20E-03	2.53E-02	1.15E-02	2.67E-02	1.14E-02
54	P	3+4	3.03E-08	1.70E-01	1.66E-01	3.10E-03	9.54E-04	5.20E-03	1.50E-03	2.67E-02	1.13E-02	2.62E-02	1.14E-02
54	P	5+6	3.03E-08	1.71E-01	1.69E-01	2.70E-03	8.32E-04	5.20E-03	1.40E-03	2.59E-02	1.13E-02	2.47E-02	1.10E-02
54	P	7+8	3.40E-08	1.68E-01	1.66E-01	5.20E-03	1.30E-03	3.40E-03	1.10E-03	2.51E-02	1.15E-02	2.59E-02	1.18E-02

Electrical Test Data (Post 100C Anneal)

RDHA701FP10A8QK
 PXI
 TESTER

Wednesday, May 06, 2009, 9:34 AM

POST 100C Anneal

Lot #: er1388001

			IDin (A)	IQin (A)	IIHSS 1 (A)	IIHSS 2 (A)	IINPEAK 1 (A)	IINPEAK 2 (A)	IILSS 1 (A)	IILSS 2 (A)	IO [leak] 1 (A)
		Max Limit	2.38E-02	1.50E-05	1.00E-06	1.00E-06	1.00E-03	1.00E-03	1.00E-06	1.00E-06	1.00E-05
		Min Limit	1.70E-02	0.00E+00	-1.00E-06	-1.00E-06	-1.00E-03	-1.00E-03	-1.00E-06	-1.00E-06	1.00E-10
Serial #	Test Status	Comment	****	****	****	****	****	****	****	****	****
71	P	CS 1+2	2.00E-02	3.90E-06	4.15E-10	6.88E-10	5.17E-10	6.84E-10	-4.80E-11	-2.10E-12	2.16E-08
71	P	CS 3+4	2.00E-02	3.90E-06	4.54E-10	6.61E-10	5.31E-10	6.13E-10	-2.73E-11	-2.23E-11	2.11E-08
71	P	CS 5+6	2.01E-02	3.90E-06	4.31E-10	6.88E-10	4.94E-10	6.05E-10	-5.21E-11	2.12E-11	2.17E-08
71	P	CS 7+8	2.02E-02	3.90E-06	4.65E-10	6.00E-10	4.94E-10	5.24E-10	-4.10E-12	-1.77E-11	2.13E-08
16	P	1+2	2.02E-02	3.90E-06	4.07E-10	6.83E-10	5.56E-10	5.81E-10	-8.29E-11	-5.05E-11	2.27E-08
16	P	3+4	2.01E-02	3.90E-06	5.17E-10	6.84E-10	5.48E-10	6.00E-10	-8.74E-11	-5.05E-11	2.25E-08
16	P	5+6	1.99E-02	3.90E-06	4.28E-10	6.82E-10	5.75E-10	6.16E-10	-7.28E-11	-1.57E-11	2.26E-08
16	P	7+8	2.01E-02	3.90E-06	5.52E-10	7.04E-10	6.27E-10	6.53E-10	-5.66E-11	-3.24E-11	2.22E-08
54	P	1+2	2.00E-02	3.90E-06	4.61E-10	6.73E-10	5.71E-10	5.79E-10	-9.45E-11	-6.77E-11	2.50E-08
54	P	3+4	2.02E-02	3.90E-06	4.27E-10	6.31E-10	5.36E-10	6.24E-10	-1.11E-10	-5.56E-11	2.46E-08
54	P	5+6	2.02E-02	3.90E-06	4.75E-10	6.37E-10	5.60E-10	5.70E-10	-7.63E-11	-4.25E-11	2.48E-08
54	P	7+8	2.01E-02	3.90E-06	4.62E-10	6.10E-10	5.85E-10	6.26E-10	-6.37E-11	-3.59E-11	2.47E-08

Electrical Test Data (Post 100C Anneal)

RDHA701FP10A8QK
 PXI
 TESTER

Wednesday, May 06, 2009, 9:34 AM POST 100C Anneal

Lot #: er1388001

Serial #	Test Status	Comment	IO [leak] 2 (A)	Rdson 1 (Ohm)	Rdson 2 (Ohm)	Ton 1 (S)	Trise 1 (S)	Ton 2 (S)	Trise 2 (S)	Toff 1 (S)	Tfall 1 (S)	Toff 2 (S)	Tfall 2 (S)
		Max Limit	1.00E-05	3.50E-01	3.50E-01	1.50E-02	3.00E-03	1.50E-02	3.00E-03	6.00E-02	1.50E-02	6.00E-02	1.50E-02
		Min Limit	1.00E-10	1.00E-02	1.00E-02	1.00E-04	5.00E-04	1.00E-04	5.00E-04	1.00E-04	1.00E-03	1.00E-04	1.00E-03
			****	****	****	****	****	****	****	****	****	****	****
71	P	CS 1+2	2.11E-08	1.61E-01	1.65E-01	3.40E-03	9.81E-04	4.20E-03	1.10E-03	3.17E-02	1.12E-02	3.14E-02	1.16E-02
71	P	CS 3+4	2.10E-08	1.65E-01	1.79E-01	2.90E-03	9.09E-04	3.50E-03	9.62E-04	3.20E-02	1.14E-02	3.33E-02	1.15E-02
71	P	CS 5+6	2.12E-08	1.73E-01	1.66E-01	2.60E-03	8.52E-04	2.90E-03	8.84E-04	3.32E-02	1.12E-02	3.28E-02	1.17E-02
71	P	CS 7+8	2.11E-08	1.65E-01	1.66E-01	3.60E-03	1.00E-03	3.60E-03	9.98E-04	3.15E-02	1.12E-02	3.26E-02	1.18E-02
16	P	1+2	2.22E-08	1.65E-01	1.64E-01	4.00E-03	1.10E-03	3.20E-03	9.71E-04	2.95E-02	1.16E-02	2.96E-02	1.18E-02
16	P	3+4	2.21E-08	1.67E-01	1.93E-01	3.70E-03	1.00E-03	4.90E-03	1.20E-03	2.85E-02	1.12E-02	2.88E-02	1.21E-02
16	P	5+6	2.21E-08	1.66E-01	1.57E-01	4.10E-03	1.10E-03	3.60E-03	1.00E-03	2.85E-02	1.18E-02	3.00E-02	1.19E-02
16	P	7+8	2.21E-08	1.58E-01	1.63E-01	3.70E-03	1.10E-03	3.50E-03	1.00E-03	2.92E-02	1.13E-02	2.93E-02	1.24E-02
54	P	1+2	2.43E-08	1.65E-01	1.62E-01	4.60E-03	1.10E-03	4.70E-03	1.10E-03	2.48E-02	1.12E-02	2.62E-02	1.17E-02
54	P	3+4	2.43E-08	1.76E-01	1.63E-01	3.50E-03	9.48E-04	5.60E-03	1.30E-03	2.65E-02	1.14E-02	2.56E-02	1.17E-02
54	P	5+6	2.43E-08	1.65E-01	1.53E-01	3.00E-03	8.79E-04	5.80E-03	1.30E-03	2.60E-02	1.11E-02	2.45E-02	1.18E-02
54	P	7+8	2.45E-08	1.64E-01	1.63E-01	5.50E-03	1.30E-03	3.80E-03	1.00E-03	2.49E-02	1.12E-02	2.58E-02	1.19E-02

Appendix B

Radiation Test Specification

Automatic Test		Tester: PXI-Rack						
Table 1: Pre Radiation Tests, 25C only								
Prog. Ref.	Test	Symbol	Test Conditions	Rad Level:	Notes	MIN	MAX	Units
A	Supply Current Low	IDin	Vdd=5V, two channels on	Pre Rad	1	1.70E-02	2.38E-02	A
A	Supply Current High	IQin	Vdd=5V, two channels off	Pre Rad	1	0.00E+00	1.50E-05	A
A	Input Current High	IIHSS1	VDD=5V, VIH=5.0V	Pre Rad	1	-1.00E-06	1.00E-06	A
A	Input Current High	IIHSS2	VDD=5V, VIH=5.0V	Pre Rad	1	-1.00E-06	1.00E-06	A
A	Input Current Peak	IINPEAK1	VDD=5.25V, VIH=5.25V	Pre Rad	1	-1.00E-03	1.00E-03	A
A	Input Current Peak	IINPEAK2	VDD=5.25V, VIH=5.25V	Pre Rad	1	-1.00E-03	1.00E-03	A
A	Input Current Low	IILSS1	VDD=5.0V, VIL=0.80V	Pre Rad	1	-1.00E-06	1.00E-06	A
A	Input Current Low	IILSS2	VDD=5.0V, VIL=0.80V	Pre Rad	1	-1.00E-06	1.00E-06	A
A	Leakage Current Off	IO [leak] 1	VDD=5.0V, Vin =0.8V, Vout=100V	Pre Rad	1	1.00E-10	1.00E-05	A
A	Leakage Current Off	IO [leak] 2	VDD=5.0V, Vin =0.8V, Vout=100V	Pre Rad	1	1.00E-10	1.00E-05	A
A	Drain to Source Resistance	Rdson 1	VDD=5.0V, Iin =10mA, Iout=1A	Pre Rad	1	1.00E-02	3.50E-01	Ohm
A	Drain to Source Resistance	Rdson 2	VDD=5.0V, Iin =10mA, Iout=1A	Pre Rad	1	1.00E-02	3.50E-01	Ohm
A	Time On	Ton 1	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Pre Rad	1	1.00E-04	1.50E-02	S
A	Time Rise	Trise1	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Pre Rad	1	5.00E-04	3.00E-03	S
A	Time On	Ton 2	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Pre Rad	1	1.00E-04	1.50E-02	S
A	Time Rise	Trise2	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Pre Rad	1	5.00E-04	3.00E-03	S
A	Time Off	Toff 1	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Pre Rad	1	1.00E-04	6.00E-02	S
A	Time Fall	TFall1	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Pre Rad	1	1.00E-03	1.50E-02	S
A	Time Off	Toff 2	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Pre Rad	1	1.00E-04	6.00E-02	S
A	Time Fall	TFall12	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Pre Rad	1	1.00E-03	1.50E-02	S

1. Only two out of the eight circuits are tested at one time.

Automatic Test		Tester: PXI-Rack						
Table 1: Post Radiation Tests, 25C only								
Prog. Ref.	Test	Symbol	Test Conditions	Rad Level:	Notes	MIN	MAX	Units
A	Supply Current Low	IDin	Vdd=5V, two channels on	Post Rad	1	1.70E-02	2.38E-02	A
A	Supply Current High	IQin	Vdd=5V, two channels off	Post Rad	1	0.00E+00	1.50E-05	A
A	Input Current High	IIHSS1	VDD=5V, VIH=5.0V	Post Rad	1	-1.00E-06	1.00E-06	A
A	Input Current High	IIHSS2	VDD=5V, VIH=5.0V	Post Rad	1	-1.00E-06	1.00E-06	A
A	Input Current Peak	IINPEAK1	VDD=5.25V, VIH=5.25V	Post Rad	1	-1.00E-03	1.00E-03	A
A	Input Current Peak	IINPEAK2	VDD=5.25V, VIH=5.25V	Post Rad	1	-1.00E-03	1.00E-03	A
A	Input Current Low	IILSS1	VDD=5.0V, VIL=0.80V	Post Rad	1	-1.00E-06	1.00E-06	A
A	Input Current Low	IILSS2	VDD=5.0V, VIL=0.80V	Post Rad	1	-1.00E-06	1.00E-06	A
A	Leakage Current Off	IO [leak] 1	VDD=5.0V, Vin =0.8V, Vout=100V	Post Rad	1	1.00E-10	1.00E-05	A
A	Leakage Current Off	IO [leak] 2	VDD=5.0V, Vin =0.8V, Vout=100V	Post Rad	1	1.00E-10	1.00E-05	A
A	Drain to Source Resistance	Rdson 1	VDD=5.0V, Iin =10mA, Iout=1A	Post Rad	1	1.00E-02	3.50E-01	Ohm
A	Drain to Source Resistance	Rdson 2	VDD=5.0V, Iin =10mA, Iout=1A	Post Rad	1	1.00E-02	3.50E-01	Ohm
A	Time On	Ton 1	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Post Rad	1	1.00E-04	1.50E-02	S
A	Time Rise	Trise1	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Post Rad	1	5.00E-04	3.00E-03	S
A	Time On	Ton 2	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Post Rad	1	1.00E-04	1.50E-02	S
A	Time Rise	Trise2	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Post Rad	1	5.00E-04	3.00E-03	S
A	Time Off	Toff 1	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Post Rad	1	1.00E-04	6.00E-02	S
A	Time Fall	TFall1	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Post Rad	1	1.00E-03	1.50E-02	S
A	Time Off	Toff 2	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Post Rad	1	1.00E-04	6.00E-02	S
A	Time Fall	TFall12	VDD=5.0V, RCL=41ohm/100uF. Vbus=28V, Vin =4.5V	Post Rad	1	1.00E-03	1.50E-02	S

1. Only two out of the eight circuits are tested at one time.

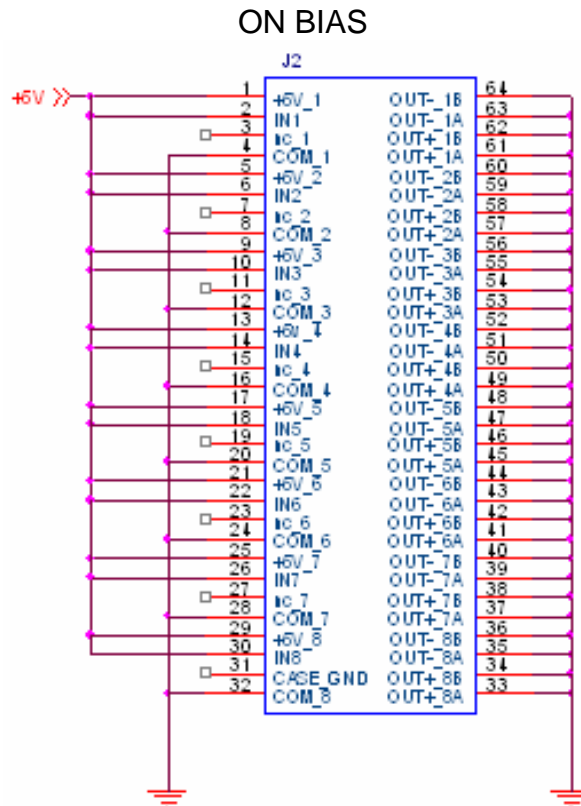
Fast Neutron Irradiator Facility @ UMass, Lowell	
Bias Conditions	All pins shorted in conductive foam. Parts inside an ESD conductive bag.
Fluence Step Profile	6.0E+10, 4.0E+10, 2.0E+11
Equivalent Fluence	1MeV (neutrons/cm ²)
Test Temperature	20C +/-10C
Test Procedure	T030061G

2. Performed on two samples.

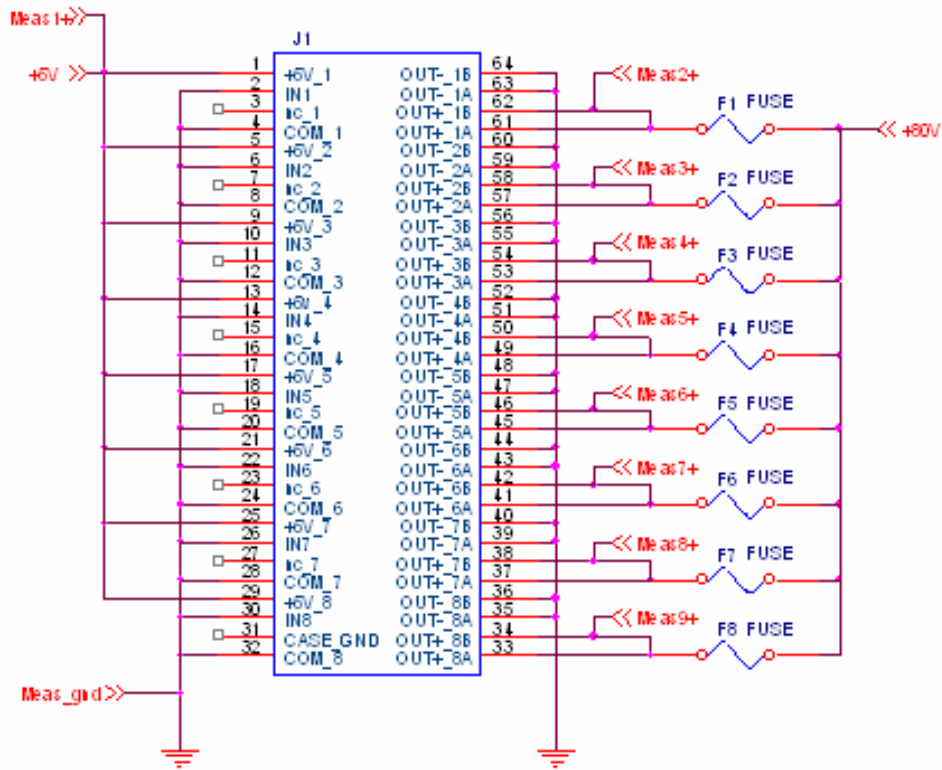
3. All handling guidelines for neutron irradiated product outlined in T030061G must be followed for this multiple exposure test. Fluence steps are considered cumulative.

Total Dose Radiation Requirements ⁴		
High Dose Rate ⁴		
Bias Conditions	VDD=5V, IN=5V, Vout =0V On Bias	VDD=5V, IN=0V, Vout=80V Off Bias
Dose Step Profile	25K, 25K, 50K	25K, 25K, 50K
Dose Rate Range	50 to 300 Rad(Si)/Sec	50 to 300 Rad(Si)/Sec
Board Number	08-073-TF	08-073-TF
Program Card Number	N/A	N/A
Chamber	Gamma Cave	Gamma Cave
Test Temperature	25C +/-5C	25C +/-5C

4. Performed on the same samples that are exposed to Neutron radiation within 24 hours of the Neutron exposure.



OFF BIAS



Appendix C

Neutron Test Set Up

Neutron Irradiation Set Up

1. Devices are placed into the aluminum / boron container.
2. The container is then lowered into the irradiation chamber.
3. At the completion of the run time, remove container from the radiation chamber.
4. Allow devices to decay (radioactive) to an acceptable safe level before testing.
5. Repeat process as required.

