International
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IRUH33PA13B20K

Single-Event Test Report

December 2005

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

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INTRODUCTION

On December 7, International Rectifier Corp. (IR) tested the IRHU33PA13B20K for Single Event Effects (SEE) hardness. The irradiation was performed at Texas A&M Cyclotron Test Facility. During the SEE testing, 9 devices were selected and arranged into three separate groups of three to determine the single event effects for the minimum, nominal, and maximum input voltages. While the devices were exposed to the selected ion beams, they were monitored for single event latch-ups (SEL) and single event transients (SET). The Krypton (Kr), Xenon (Xe), and Gold (Au) ion species were selected to qualify the SEE hardness of the product. The energy levels, Linear Energy Transfer (LET), and the Range of penetration for all ion particles chosen are defined in the table shown below.

Ion Species

Ions	Energy (MeV)	Angle (^{o})	Effective LET (MeV (mg/cm^2))	Range in Si (µ)
^{84}Kr	1032	0	27.8	134
^{129}Xe	1512	0	51.5	120
^{197}Au	2247	0	85.4	118

TEST PLAN

The complete Test Plan is included in Appendix B. In summary, the SEE testing was conducted while the devices were being monitored in situ. Each device selected was tested at least twice to monitor both positive and negative transients. All transients greater than 180mV were counted and recorded. All devices were grouped and tested based on 3 input voltages for qualification. Once devices were exposed to the specified ion particle, they were to be electrically tested at room temperature before proceeding to the next ion particle.

RESULTS

All devices were tested to a maximum LET of 85.4 MeV and did not have any occurrence of single event latch-up (SEL) over the entire input voltage range. The device can be considered latch-up immune up to 85 MeV over the entire input voltage range. During all SEE runs, none of the devices under exposure experienced any catastrophic event which would cause the part to be non functional.

The single event transient (SET) results show the part is sensitive to the amplitude of the input voltage. Device 53, 54, and 56 were initially tested with 7 volts input with a 1 amp load while exposed to a linear energy transfer (LET) of 27.8MeV using the krypton ion beam. At 7 volts input, each sample had positive transients occur during exposure. The input voltage was decreased and the device was retested until finding an input voltage where the device was SET immune. At the 27.8 MeV level device 53 was immune at 4 volts, device 54 was immune at 3.7 volts, and device 56 was immune at 4 volts. At the 51.5 MeV level device 53 was immune at 3.8 volts, device 54 was immune at 4 volts, and device 56 was immune at 3.8 volts. At the 85.4 MeV level device 53 was immune at 3.8 volts, device 54 was immune at 3.8 volts, and device 56 was immune at 3.8 volts.

The results show the parts to be SET immune for the nominal (3.3V) and minimum (2.9V) input voltages. The results did not show any negative transients greater than 180mV at any input voltage. There were 2 occurrences when negative transients were measured but they took place when the shutter closed on the beam line. These were considered erroneous measurements related to the action of closing the shutter.

When monitoring the transients, the oscilloscope in the test rack was set to detect and capture positive and negative transients for every run which would count in parallel with a frequency counter. The worst case bias for single-event transients was present when applying an input voltage set at 7 volts. The closer the input voltage got to 7 volts, the more susceptible the device was to SET. Below is a table containing all heavy ion results as well as the transient waveforms that were captured by the PXI test system.

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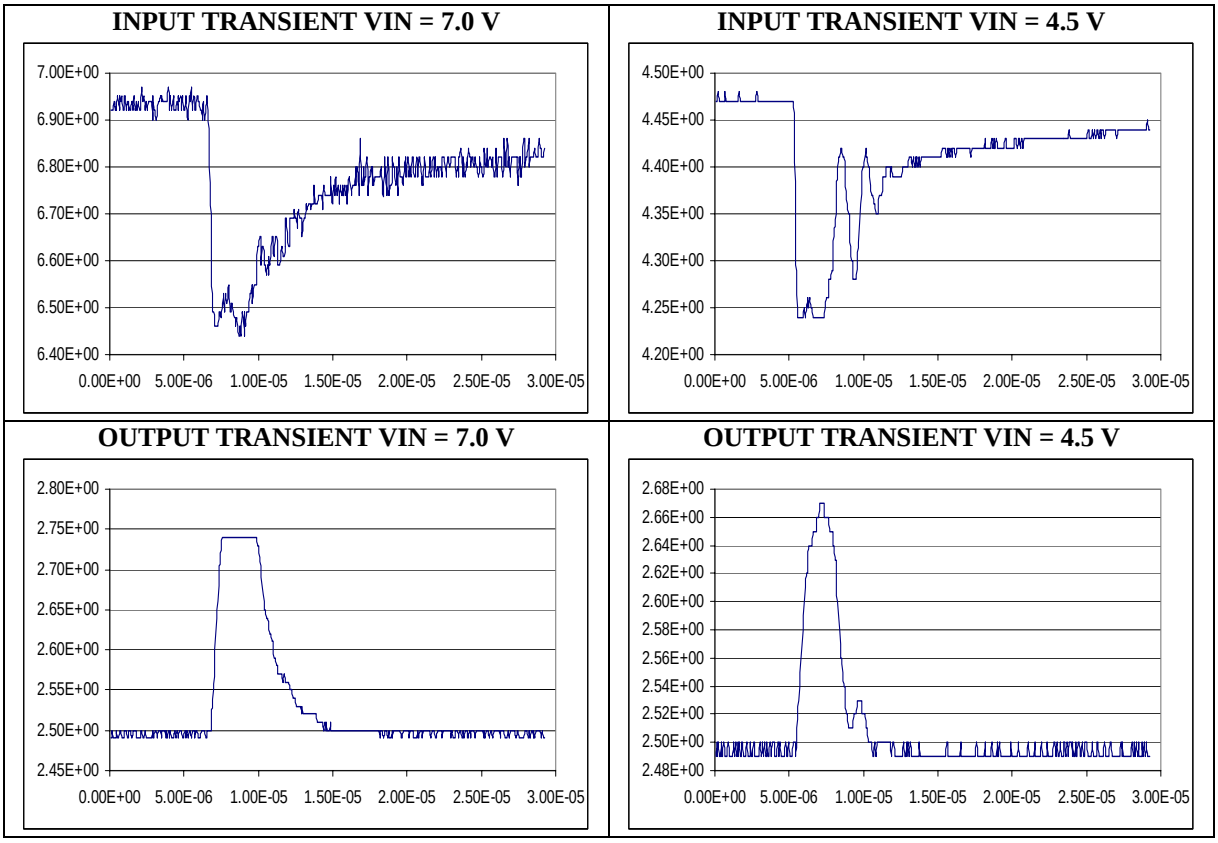
Heavy Ions Results

Serial #	Ion Species	Qualification Results
51	Kr	Device 51 showed immunity to transients up to 180mV with 2.9 volts input.
51	Xe	Device 51 showed immunity to transients up to 180mV with 2.9 volts input.
51	Au	Device 51 showed immunity to transients up to 180mV with 2.9 volts input.
53	Kr	Device 53 showed immunity to transients up to 180mV with 4.0 volts input.
53	Xe	Device 53 showed immunity to transients up to 180mV with 3.8 volts input.
53	Au	Device 53 showed immunity to transients up to 180mV with 3.8 volts input.
54	Kr	Device 54 showed immunity to transients up to 180mV with 3.72 volts input.
54	Xe	Device 54 showed immunity to transients up to 180mV with 4.0 volts input.
54	Au	Device 54 showed immunity to transients up to 180mV with 3.8 volts input.
56	Kr	Device 56 showed immunity to transients up to 180mV with 4.0 volts input.
56	Xe	Device 56 showed immunity to transients up to 180mV with 3.8 volts input.
56	Au	Device 56 showed immunity to transients up to 180mV with 3.8 volts input.
62	Kr	Device 62 showed immunity to transients up to 180mV with 4.0 volts input.
62	Xe	Device 62 showed immunity to transients up to 180mV with 3.3 volts input.
62	Au	Not tested at this ion species.
63	Kr	Device 63 showed immunity to transients up to 180mV with 3.3 volts input.
63	Xe	Device 63 showed immunity to transients up to 180mV with 3.3 volts input.
63	Au	Not tested at this ion species.
64	Kr	Device 64 showed immunity to transients up to 180mV with 2.9 volts input.
64	Xe	Device 64 showed immunity to transients up to 180mV with 2.9 volts input.
64	Au	Device 64 showed immunity to transients up to 180mV with 2.9 volts input.
83	Kr	Device 83 showed immunity to transients up to 180mV with 2.9 volts input.
83	Xe	Device 83 showed immunity to transients up to 180mV with 2.9 volts input.
83	Au	Not tested at this ion species.
84	Kr	14 negative transients occurred after beam was shutoff. These transients were induced by the beam shutter and not the beam bombarding the device. Device 84 showed immunity to transients up to 180mV with 3.3 volts input.
84	Xe	Device 84 showed immunity to transients up to 180mV with 3.3 volts input.
84	Au	Not tested at this ion species.

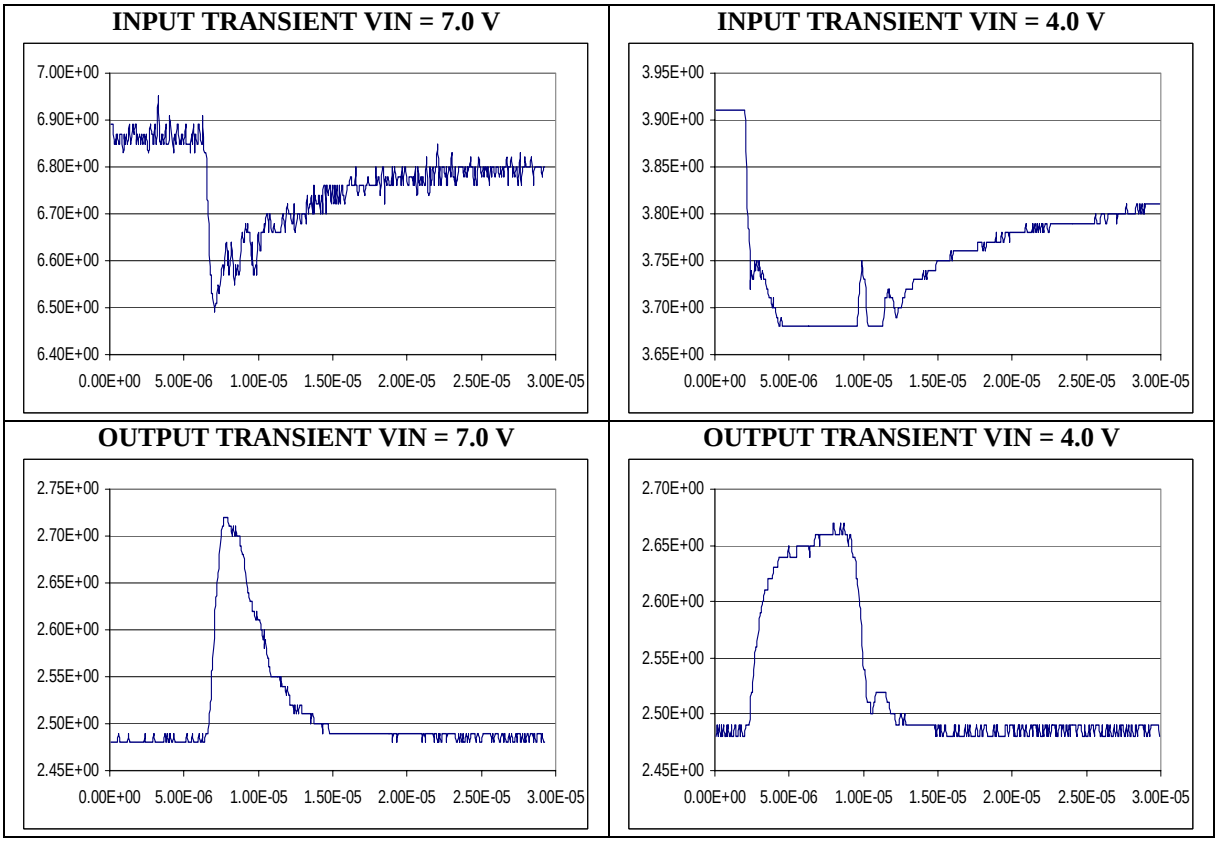
RUN #	ION SPECIES	LET	RANGE	S/N
1, 17	Kr	27.8MeV	134um	53



Note: Y axis is in “VOLTS”. X axis is in “SECONDS”.

Figure 1 – Typical Transient Waveforms for Device 53 @ 27.8 MeV

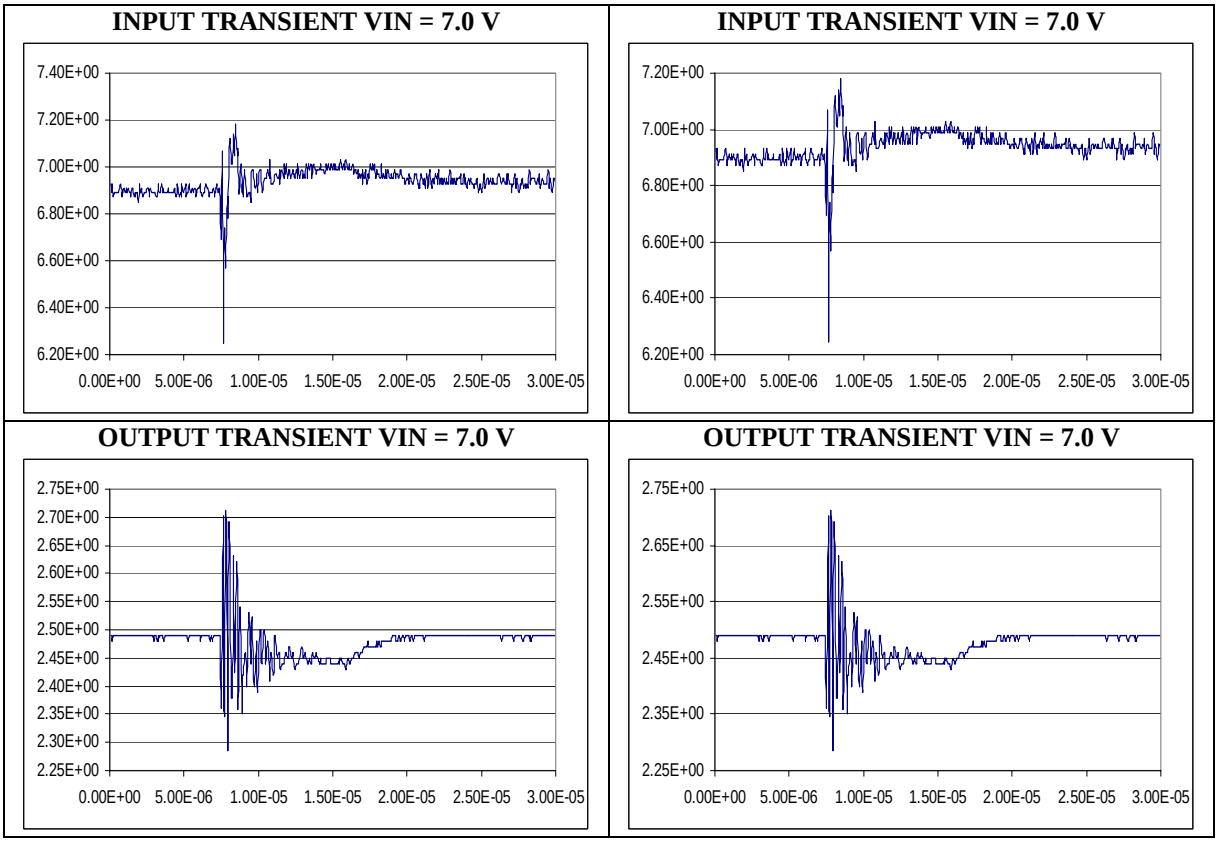
RUN #	ION SPECIES	LET	RANGE	S/N
5, 21	Kr	27.8MeV	134um	54



Note: Y axis is in “VOLTS”. X axis is in “SECONDS”.

Figure 2 – Typical Transient Waveforms for Device 54 @ 27.8 MeV

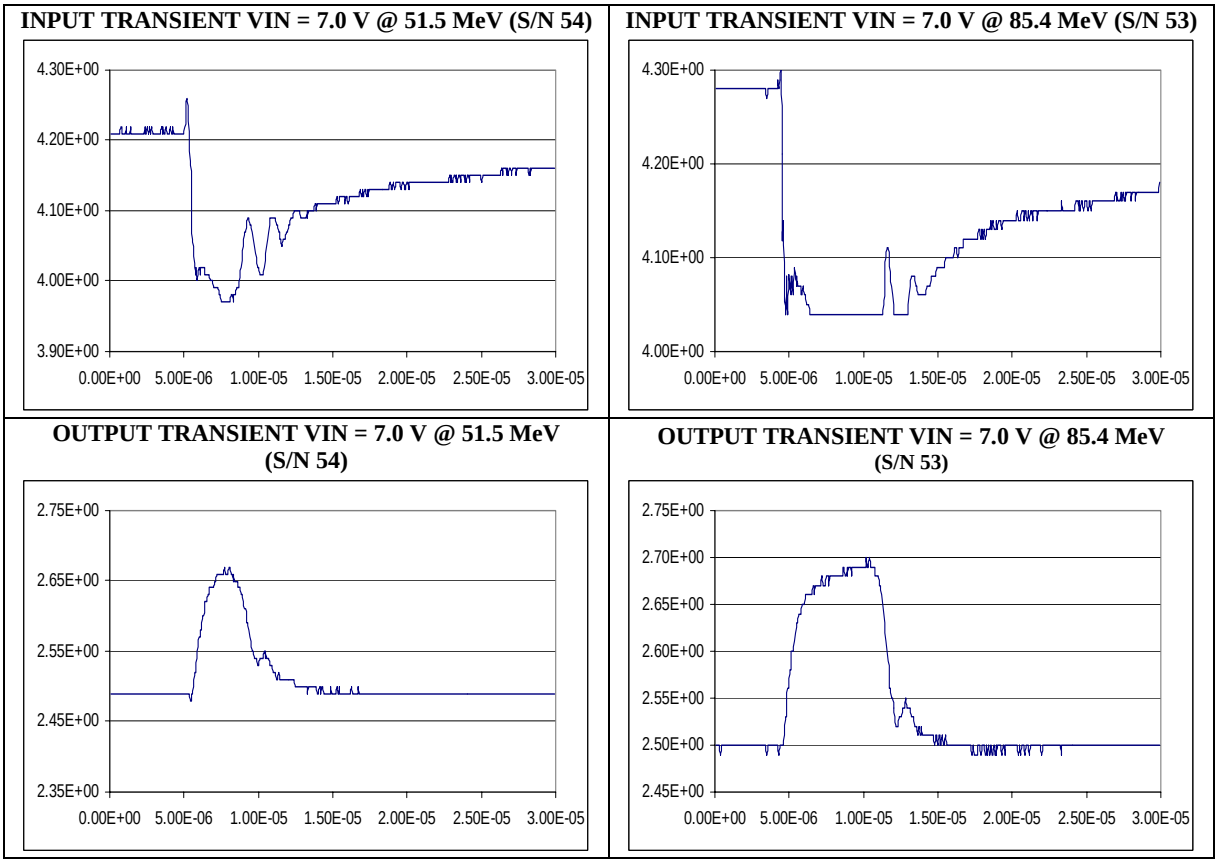
RUN #	ION SPECIES	LET	RANGE	S/N
3, 4	Kr	27.8MeV	134um	56



Note: Y axis is in “VOLTS”. X axis is in “SECONDS”.

Figure 3 – Typical Transient Waveforms for Device 56 @ 27.8 MeV

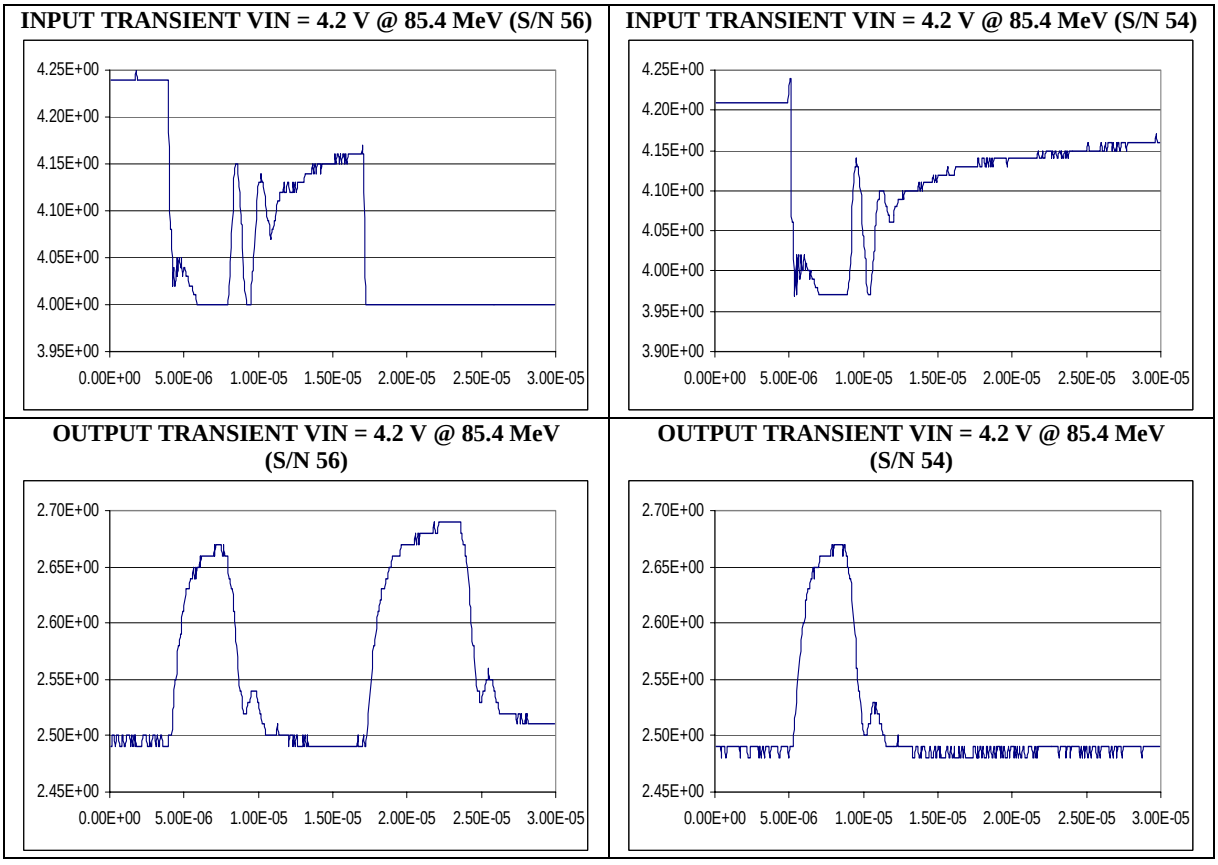
RUN #	ION SPECIES	LET	RANGE	S/N
73, 101	Xe, Au	51.5MeV/85.4MeV	120um/118um	54, 53



Note: Y axis is in “VOLTS”. X axis is in “SECONDS”.

Figure 4 – Typical Transient Waveforms for Devices 54, 53

RUN #	ION SPECIES	LET	RANGE	S/N
104, 107	Au	85.4 MeV	118um	56, 54



Note: Y axis is in “VOLTS”. X axis is in “SECONDS”.

Figure 4 – Typical Transient Waveforms for Devices 54, 53

SUMMARY

Nine devices of part number IRHU33PA13B20K, a positive adjustable hybrid regulator were evaluated for Single-Event Transients (SET) and Single-Event Latch Up (SEL) with heavy ions. International Rectifier conducted the SET and SEL tests on December 07, 2005 at Texas A&M University. Both the Input and Output of the device under test were monitored for voltage change, current change, and transients. The devices were exposed to Krypton, Xenon, and Gold ions in open-air with a heat sink applied to every device under test.

Data does not indicate any SEL event up to a LET of 85.4 MeV under a constant resistive load current.

Transients were captured and recorded at a period of ~30us / frame.
Post irradiation tests resulted in all devices passing their specification limits.

The minimum and nominal voltages were 2.9 volts and 3.3 volts which were regulating under a continuous 3 amp load. When determining the maximum input voltage, the output load was a continuous 1 amp load. Under this condition, 3.7 volts was the maximum input voltage that showed immunity to transients.

All devices were electrically tested and passed all specification limits after completing single event testing for each ion beam. Part number IRHU33PA13B20K is single-event latch up immune (SEL).

CONCLUSION

Part number IRHU33PA13B20K should be considered immune to single event latch-up for LET levels up to 85 MeV. The device should also be considered immune to single event transients greater than 200mV at input voltages of 3.7 volts or less for LET levels up to 85 MeV.

Appendix A

Electrical Data

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Electrical Test Data (Pre SEE)

TEST	Vout1	Vout2	Vout3	Vout4	Vout5	Line Reg	Load Reg	Vdrop	Current Limit	Ripple Rej.	Shdn Threshold	Vout @shdn	Ishdn*
Max Limit	2.625	2.625	2.625	2.625	2.625	12.5	147.6	0.4	10	200	1.6	0.1	----
Min Limit	2.375	2.375	2.375	2.375	2.375	-12.5	-147.6	0	3	65	1.0	-0.1	----
Serial #	(V)	(V)	(V)	(V)	(V)	(mV)	(mV)	(V)	(A)	(dB)	(V)	(mV)	(uA)
51	2.504	2.503	2.506	2.504	1.268	1.220	3.702	0.202	8.18	97.72	1.34	-0.728	0.147
53	2.500	2.499	2.504	2.500	1.266	-0.407	4.985	0.205	8.05	98.22	1.36	-0.685	0.146
54	2.491	2.490	2.493	2.490	1.261	0.000	2.890	0.194	8.23	98.22	1.34	-0.470	0.148
56	2.493	2.492	2.495	2.493	1.263	0.362	3.357	0.198	8.46	98.74	1.36	-1.649	0.149
62	2.500	2.499	2.501	2.500	1.267	-0.994	3.428	0.198	8.14	97.72	1.36	-0.858	0.147
63	2.489	2.488	2.491	2.490	1.259	-1.310	4.020	0.202	7.77	99.30	1.34	-1.260	0.150
64	2.492	2.489	2.492	2.490	1.260	-0.452	3.542	0.194	8.18	99.26	1.32	-1.074	0.147
83	2.497	2.496	2.498	2.497	1.263	-1.807	3.129	0.190	8.23	98.74	1.38	-1.002	0.149
84	2.497	2.497	2.499	2.498	1.265	-0.497	2.934	0.205	8.00	98.74	1.36	-1.304	0.147

Electrical Test Data (Post Kr)

TEST	Vout1	Vout2	Vout3	Vout4	Vout5	Line Reg	Load Reg	Vdrop	Current Limit	Ripple Rej.	Shdn Threshold	Vout @shdn	Ishdn*
Max Limit	2.625	2.625	2.625	2.625	2.625	12.5	147.6	0.4	10	200	1.6	0.1	----
Min Limit	2.375	2.375	2.375	2.375	2.375	-12.5	-147.6	0	3	40	1.0	-0.1	----
Serial #	(V)	(V)	(V)	(V)	(V)	(mV)	(mV)	(V)	(A)	(dB)	(V)	(mV)	(uA)
51	2.507	2.505	2.506	2.506	1.268	0.226	1.607	0.202	8.092	98.63	1.324	-0.692	0.148
53	2.505	2.503	2.505	2.503	1.267	-0.407	2.352	0.206	8.137	99.19	1.324	-1.123	0.148
54	2.494	2.493	2.494	2.493	1.263	-0.723	2.688	0.194	8.137	98.11	1.303	-0.203	0.147
56	2.498	2.496	2.500	2.498	1.265	-0.678	3.340	0.202	8.410	98.11	1.303	-0.951	0.149
62	2.503	2.503	2.504	2.503	1.267	-0.045	1.653	0.191	8.455	97.14	1.303	-1.267	0.146
63	2.493	2.492	2.492	2.493	1.263	-0.136	2.819	0.202	7.774	98.63	1.282	-0.836	0.147
64	2.494	2.493	2.495	2.493	1.263	-0.858	2.338	0.191	8.092	99.19	1.303	-0.620	0.147
83	2.501	2.501	2.502	2.501	1.265	-0.452	0.742	0.194	8.410	98.11	1.324	-1.008	0.148
84	2.502	2.500	2.502	2.501	1.266	1.084	1.077	0.198	8.455	98.11	1.324	-0.505	0.146

* Data collected for information purposes only parameter not specified for pre-radiation.

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Electrical Test Data (Post Xe)

TEST	Vout1	Vout2	Vout3	Vout4	Vout5	Line Reg	Load Reg	Vdrop	Current Limit	Ripple Rej.	Shdn Threshold	Vout @shdn	Ishdn*
Max Limit	2.625	2.625	2.625	2.625	2.625	12.5	147.6	0.4	10	200	1.6	0.1	----
Min Limit	2.375	2.375	2.375	2.375	2.375	-12.5	-147.6	0	3	40	1.0	-0.1	----
Serial #	(V)	(V)	(V)	(V)	(V)	(mV)	(mV)	(V)	(A)	(dB)	(V)	(mV)	(uA)
51	2.504	2.504	2.505	2.505	1.267	-0.949	1.395	0.204	8.252	99.18	1.311	-0.968	0.146
53	2.503	2.502	2.504	2.504	1.266	-2.349	2.026	0.212	8.206	98.67	1.311	-0.910	0.145
54	2.490	2.489	2.491	2.490	1.261	0.542	3.333	0.200	8.478	99.23	1.269	-1.255	0.146
56	2.495	2.495	2.496	2.496	1.263	0.316	1.858	0.204	8.796	98.62	1.311	-1.370	0.148
62	2.499	2.500	2.500	2.499	1.264	-0.768	4.124	0.200	8.297	98.62	1.311	-0.579	0.148
63	2.489	2.489	2.489	2.489	1.260	0.090	1.880	0.200	8.433	98.62	1.269	-1.327	0.150
64	2.489	2.489	2.491	2.489	1.260	-1.129	1.642	0.197	8.433	98.10	1.269	-0.896	0.145
83	2.497	2.496	2.498	2.498	1.264	0.090	2.004	0.200	8.478	97.60	1.331	-0.910	0.148
84	2.499	2.499	2.500	2.500	1.265	-0.045	3.276	0.204	8.342	98.10	1.331	-1.442	0.149

* Data collected for information purposes only parameter not specified for pre-radiation.

Electrical Test Data (Post Au)

TEST	Vout1	Vout2	Vout3	Vout4	Vout5	Line Reg	Load Reg	Vdrop	Current Limit	Ripple Rej.	Shdn Threshold	Vout @shdn	Ishdn*
Max Limit	2.625	2.625	2.625	2.625	2.625	12.5	147.6	0.4	10	200	1.6	0.1	----
Min Limit	2.375	2.375	2.375	2.375	2.375	-12.5	-147.6	0	3	40	1.0	-0.1	----
Serial #	(V)	(V)	(V)	(V)	(V)	(mV)	(mV)	(V)	(A)	(dB)	(V)	(mV)	(uA)
51	2.506	2.505	2.508	2.506	1.268	-1.445	2.532	0.202	8.125	99.24	1.327	-0.984	0.1497
53	2.506	2.505	2.506	2.506	1.268	0.858	3.766	0.210	8.125	98.15	1.327	-1.329	0.1466
54	2.494	2.493	2.495	2.494	1.263	-0.136	3.822	0.199	8.170	98.59	1.306	-1.515	0.1488
56	2.498	2.498	2.499	2.497	1.263	-0.406	3.266	0.202	8.398	98.15	1.327	-1.114	0.1477
62	2.502	2.502	2.503	2.501	1.265	-0.632	2.029	0.199	8.170	99.15	1.306	-1.529	0.1471
63	2.492	2.491	2.492	2.491	1.261	-0.677	3.754	0.195	8.307	99.24	1.285	-1.357	0.1517
64	2.492	2.491	2.493	2.491	1.263	-0.181	3.844	0.195	8.170	98.68	1.306	-1.415	0.1462
83	2.501	2.501	2.501	2.500	1.264	-1.716	2.948	0.202	8.443	98.15	1.348	-0.999	0.1507
84	2.502	2.501	2.502	2.501	1.265	-1.581	2.135	0.206	8.125	98.11	1.327	-1.114	0.1508

* Data collected for information purposes only parameter not specified for pre-radiation.

Eagle Test data @ 25 C

TEST	Vout1	Line Reg	Load Reg	Current Limit	Vdrop	Ripple Rej.	Shdn Threshold	Vout @shdn	Loop Stability	Loop Stability	Loop Stability	Loop Stability
Max Limit	2.625	12.5	147.6	10	0.4	200	1.6	0.1	15	16	16	17
Min Limit	2.375	-12.5	-147.6	3	0	60	1.0	-0.1	0	0	0	0
Serial #	(V)	(mV)	(mV)	(A)	(V)	(dB)	(V)	(mV)	(mV)	(mV)	(mV)	(mV)
51	2.513	-0.15	-2.38	5.2	0.259	81.3	1.36	6.3	1.36	1.7	1.53	1.53
53	2.512	-0.15	-2.7	5.4	0.254	78.8	1.36	1.2	1.19	1.19	1.19	1.87
54	2.5	-0.09	-1.68	5.7	0.238	81.4	1.33	4.1	0.85	1.36	1.19	1.7
56	2.504	-0.17	-2.64	5.8	0.247	81	1.34	4.2	1.36	1.36	1.36	1.7
62	2.507	-0.08	-2.13	5.4	0.242	79.3	1.35	3.9	1.19	1.36	1.36	1.7
63	2.498	-0.12	-2.66	5.7	0.247	82.8	1.32	2.5	1.02	1.36	1.53	2.04
64	2.498	-0.11	-2.28	5.6	0.234	80.4	1.33	6.4	1.36	1.36	1.36	2.04
83	2.506	-0.2	-2.59	5.6	0.236	80.1	1.36	1	1.36	1.19	1.87	1.53
84	2.508	-0.17	-2.58	5.6	0.253	78.1	1.36	6.3	1.02	1.53	1.53	1.7

Eagle Test data @ -55 C

TEST	Vout1	Line Reg	Load Reg	Current Limit	Vdrop	Ripple Rej.	Shdn Threshold	Vout @shdn	Loop Stability	Loop Stability	Loop Stability	Loop Stability
Max Limit	2.625	12.5	147.6	10	0.4	200	1.6	0.1	15	16	16	17
Min Limit	2.375	-12.5	-147.6	3	0	60	1.0	-0.1	0	0	0	0
Serial #	(V)	(mV)	(mV)	(A)	(V)	(dB)	(V)	(mV)	(mV)	(mV)	(mV)	(mV)
51	2.508	-0.05	-1.64	5.5	0.233	80.7	1.36	3.1	1.36	1.19	1.36	2.21
53	2.506	-0.02	-1.39	5.5	0.243	81	1.36	2.5	1.36	1.19	1.53	1.87
54	2.499	-0.34	-1.04	5.7	0.224	78.8	1.34	3.9	1.53	1.36	1.36	2.04
56	2.502	-0.09	-2.08	5.9	0.227	82	1.35	4.1	4.58	1.19	1.36	1.7
62	2.504	-0.03	-1.57	5.5	0.224	81.4	1.35	3.1	1.19	1.36	1.36	1.53
63	2.497	0.02	-1.45	5.6	0.22	83.6	1.33	0.2	1.53	1.53	1.53	1.53
64	2.497	-0.09	-1.51	5.8	0.224	81	1.33	5.6	1.36	1.19	1.19	2.04
83	2.502	0.09	-1.5	5.5	0.22	85	1.35	4.9	1.53	1.36	1.7	1.87
84	2.505	-0.19	-0.9	5.6	0.235	85	1.36	0	1.36	1.53	1.53	1.7

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Eagle Test data @ 125 C

TEST	Vout1	Line Reg	Load Reg	Current Limit	Vdrop	Ripple Rej.	Shdn Threshold	Vout @shdn	Loop Stability	Loop Stability	Loop Stability	Loop Stability
Max Limit	2.625	12.5	147.6	10	0.4	200	1.6	0.1	15	16	16	17
Min Limit	2.375	-12.5	-147.6	3	0	60	1.0	-0.1	0	0	0	0
Serial #	(V)	(mV)	(mV)	(A)	(V)	(dB)	(V)	(mV)	(mV)	(mV)	(mV)	(mV)
51	2.51	-0.22	-4.79	5.4	0.295	78.5	1.34	1.5	1.19	1.7	1.53	1.7
53	2.515	-0.25	-2.15	5.4	0.275	80.7	1.35	4.4	1.19	1.36	1.7	1.87
54	2.494	-0.11	-4.88	5.6	0.277	79.5	1.31	1.4	1.19	1.19	1.36	1.36
56	2.505	-0.08	-2.56	5.8	0.267	83.6	1.34	5.1	1.36	1.19	1.53	1.87
62	2.508	-0.25	-3.04	5.6	0.272	77	1.33	2	1.02	1.36	1.7	1.7
63	2.492	0.25	-19.19	5.6	0.299	80.1	1.34	0	1.53	1.02	1.36	1.7
64	2.492	-0.11	-6.68	5.8	0.288	80.1	1.31	0	1.53	1.19	1.36	1.53
83	2.502	-0.06	-6.59	5.8	0.285	80.7	1.34	0	1.02	1.36	1.36	2.21
84	2.508	-0.12	-3.71	5.6	0.274	77.8	1.35	2.2	0.85	1.53	1.7	1.36

Appendix B

Test Plan

Test Plan

1.0 Purpose

The purpose of this test is to qualify this product for single event latch-up and single event transients.

2.0 Test Responsibility

International Rectifier shall be responsible for conducting the tests, which shall be performed at Texas A&M's Cyclotron facility. International Rectifier shall be responsible for the final Test Report.

3.0 Test Facility

3.1 Accelerator

The Texas A&M Cyclotron shall be used to provide the necessary ion species and energy.

3.2 Test Equipment

The necessary test equipment including the test interface board, cables, power supplies, etc… shall be provided by IR. IR shall provide the equipment needed to handle the individual test devices.

4.0 Test Devices

4.1 The IRHU33PA13B20K devices are planned for SEE evaluation and all SEE test specifications should be referred to the T090104G.

4.2 All devices shall be built in their respective packages. Devices shall be properly packed in static-free containers.

4.3 All devices shall be verified for correct electrical performance (baseline) prior to SEE testing.

5.0 Test Method

Mil- PRF-38534 shall be used to establish procedure for all testing described herein.

6.0 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 and personnel names
c. Facility, source type
d. Schematic of test circuit
e. Insitu bias conditions
f. Comments and observations
g. Pre and Post Electrical data
h. Summary descriptive including graphs (if applicable)

7.0 Record Keeping

All single event exposure information shall be recorded on the data file and used to correlate data from different exposure levels. The TAMU facility shall provide a hardcopy and a softcopy summary of all exposure runs showing key parameters such as; LET and ion specie, flux rate, fluence level, time duration for exposure, and comments regarding the tests including observations or deviations from the plan.

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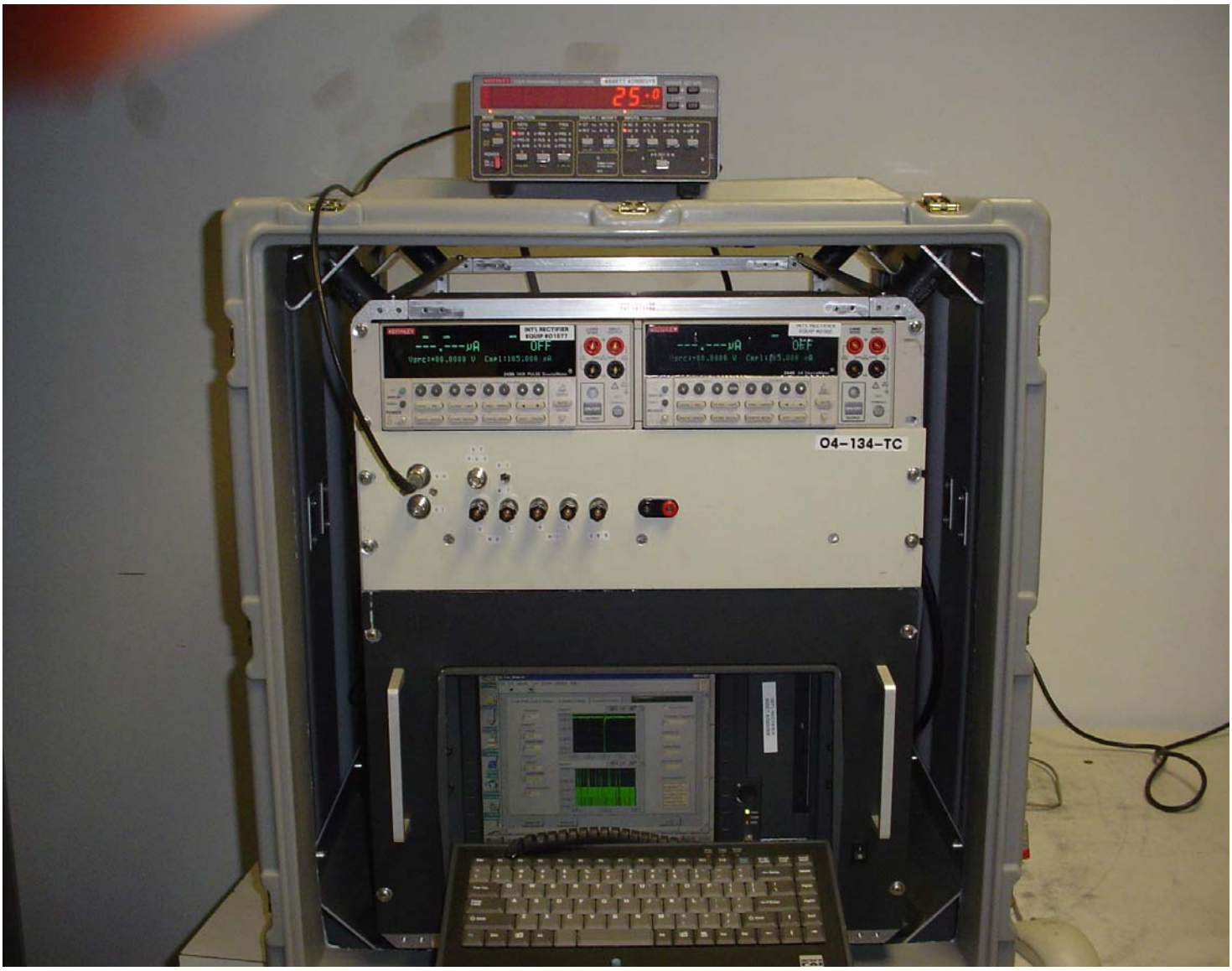
SEE Test Rack



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SEE DUT BOARD

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Appendix C

Test Procedure

Table 5: Single Event Effects Test Requirements [5]											
Test Information											
Bias Condition		1		2		3					
		Vin = 2.9V, Io = 3A		Vin = 3.3V, Io = 3A		Vin = 7.0V, Io = 1A					
Program Card Number		05-049-TA		05-049-TA		05-050-TA					
Board Number		05-001-TF									
Test Program		05-047-TS									
Test Console		04-134-TC									
Chamber		Air									
15A MeV Beams Texas A&M only											
Step	Ion Specie	LET (MeV)	Total Energy (MeV)	Range (um)	Avg Flux ions/cm^2/sec	Total Fluence ions/cm^2	Test Limits [6]		
							Min	Max	Units
1	Krypton ^{84}Kr	27.8	1032	134	1 e^4 min 2 e^6 max	1 e^6	2.375	2.625	V
							-200	200	mVpp
2	Xenon ^{129}Xe	51.5	1512	120	1 e^4 min 2 e^6 max	1 e^6	2.375	2.625	V
							-200	200	mVpp
3	Gold ^{197}Au	85.4	2247	118	1 e^4 min 2 e^6 max	1 e^6	2.375	2.625	V
							-200	200	mVpp

5. Performed during initial qualification of the device and retested only when specified by Quality Assurance due to a change per MIL-PRF-38534. The sample size for the hybrid qualification is 10 devices; 3 of the devices will be irradiated in circuit with the maximum input voltage applied at 1A load; 3 of the devices will be irradiated in circuit with the minimum input voltage applied at 3A load; 3 of the devices will be irradiated in circuit with the nominal input voltage applied at 3A load;1 device will not be irradiated and used as a control sample.

6. Each device is tested in-flux for output voltage tolerance and transients under the specified load per document T030062G and test program 05-047-TS. After the devices are subjected to a particular ion specie they are tested per the post irradiation specifications of table 2.

Table 6: SEE Parameters [7]											
Socket Number	Transient Positive Max (mV)	Transient Negative Max (mV)	Supply Volt Max (V)	Supply Volt Min (V)	Compliance Limit (A)	Supply Curr Max (A)	Supply Curr Min (A)	Vin Max (V)	Vin Min (V)	Vout Max (V)	Vout Min (V)
1	200	-200	8.0	7.7	5.0	1.1	0.9	7.2	6.8	2.625	2.375
2	200	-200	8.0	7.7	5.0	1.1	0.9	7.2	6.8	2.625	2.375
3	200	-200	8.0	7.7	5.0	1.1	0.9	7.2	6.8	2.625	2.375
7	200	-200	6.3	5.7	5.0	3.2	2.8	3.4	3.2	2.625	2.375
8	200	-200	6.3	5.7	5.0	3.2	2.8	3.4	3.2	2.625	2.375
9	200	-200	6.3	5.7	5.0	3.2	2.8	3.4	3.2	2.625	2.375
7	200	-200	6.0	5.3	5.0	3.2	2.8	2.8	3.0	2.625	2.375
8	200	-200	6.0	5.3	5.0	3.2	2.8	2.8	3.0	2.625	2.375
9	200	-200	6.0	5.3	5.0	3.2	2.8	2.8	3.0	2.625	2.375

7. Sockets 7, 8, and 9 are used for both the nominal and minimum input voltage tests. The supply voltage may need to be adjusted within the specified range in order to have the input voltage (Vin) meet the requirments listed in this table. The supply voltage may vary by socket position depending on the supply current. No other sockets are used for this product due to the size of the program card.

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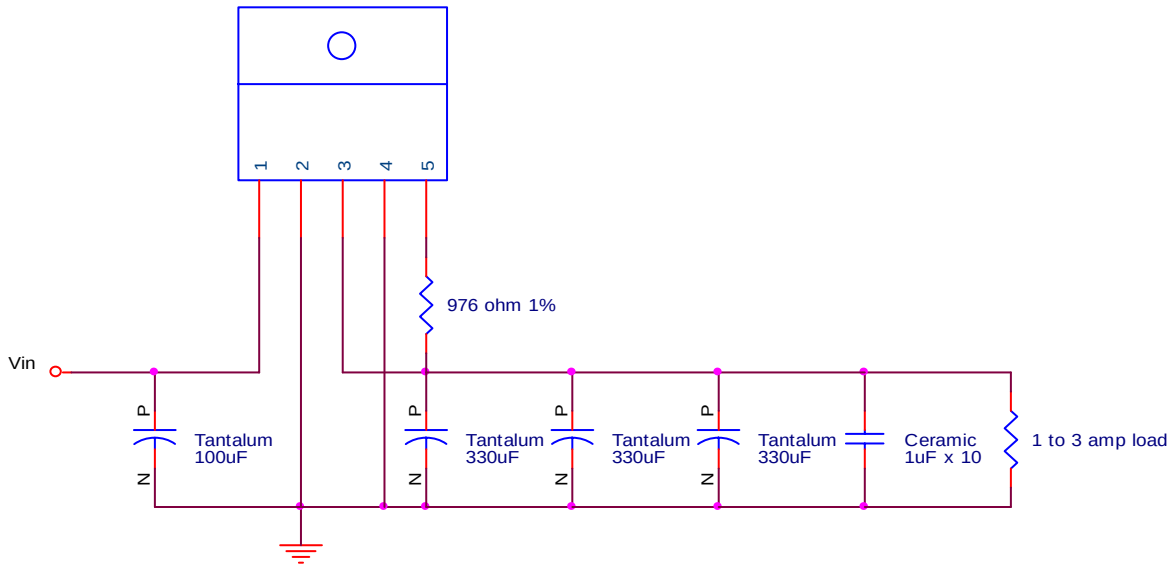
TEST CIRCUIT



Appendix D

Log Sheets

DATE : 12/06/05			OPERATORS : A. SANCHEZ, C. DICIENZO					FACILITY : TEXAS A&M					PAGE 1 OF 5	
RUN #	ION SPECIE	LET *MeV.cm²/mg*	ENERGY **MeV**	RANGE *μm*	AVG FLUX #/ *cm²/sec*	FLUENCE #/ *cm²*	ANGLE *deg*	BEAM D *cm*	START TEMP deg C	STOP TEMP deg C	PART #	S/N	SKT #	COMMENTS
1	Kr	27.8	1032	134	4.21E3	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	INVALID RUN
2	Kr	27.8	1032	134	1.32E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	INVALID RUN
3	Kr	27.8	1032	134	1.30E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Pos trig. 521 trans 7vin
4	Kr	27.8	1032	134	1.33E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Neg trig. 0 trans 7vin
5	Kr	27.8	1032	134	1.25E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	56	2	Pos trig. 434 trans 7vin
6	Kr	27.8	1032	134	1.42E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	56	2	Neg trig. 7 trans 7vin shutter error
7	Kr	27.8	1032	134	1.41E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	54	3	Pos trig. 467 trans 7vin
8	Kr	27.8	1032	134	1.28E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	54	3	Neg trig. 0 trans 7vin
9	Kr	27.8	1032	134	1.24E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	84	7	Pos trig. 0 trans 3.3vin
10	Kr	27.8	1032	134	1.04E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	84	7	Neg trig. 14 trans 3.3vin shutter error
11	Kr	27.8	1032	134	1.19E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	62	8	Pos trig. 0 trans 3.3vin
12	Kr	27.8	1032	134	1.28E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	62	8	Neg trig. 0 trans 3.3vin
13	Kr	27.8	1032	134	1.33E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	63	9	Pos trig. 0 trans 3.3vin
14	Kr	27.8	1032	134	1.40E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	63	9	Neg trig. 0 trans 3.3vin
15	Kr	27.8	1032	134	1.78E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Neg trig. 0 trans 5.5vin
16	Kr	27.8	1032	134	2.08E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Neg trig. 0 trans 6.5vin
17	Kr	27.8	1032	134	2.04E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Pos trig. 444 trans 5.5vin
18	Kr	27.8	1032	134	1.1E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Pos trig. 0 trans 3.3vin
19	Kr	27.8	1032	134	2.39E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Pos trig. 114 trans 4.5vin
20	Kr	27.8	1032	134	1.98E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Pos trig. 0 trans 4.0vin
21	Kr	27.8	1032	134	1.99E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Pos trig. 90 trans 4.25vin
22	Kr	27.8	1032	134	2.12E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	56	2	Pos trig. 0 trans 4.0vin
23	Kr	27.8	1032	134	1.52E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	54	3	Pos trig. 64 trans 4.0vin
24	Kr	27.8	1032	134	1.62E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	54	3	Pos trig. 0 trans 3.72vin
25	Kr	27.8	1032	134	1.77E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	83	7	Pos trig. 0 trans 2.9vin
26	Kr	27.8	1032	134	1.87E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	83	7	Neg trig. 0 trans 2.9vin
27	Kr	27.8	1032	134	1.99E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	51	8	Pos trig. 0 trans 2.9vin
28	Kr	27.8	1032	134	2.05E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	51	8	Neg trig. 0 trans 2.9vin
29	Kr	27.8	1032	134	1.02E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	64	9	Pos trig. 0 trans 2.9vin
30	Kr	27.8	1032	134	1.31E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	64	9	Neg trig. 0 trans 2.9vin

DATE : 12/06/05			OPERATORS : A. SANCHEZ, C. DICIENZO					FACILITY : TEXAS A&M					PAGE 2 OF 5	
RUN #	ION SPECIE	LET *MeV.cm²/mg*	ENERGY **MeV**	RANGE *μm*	AVG FLUX *#/ cm²/sec*	FLUENCE *#/ cm²*	ANGLE *deg*	BEAM D *cm*	START TEMP deg C	STOP TEMP deg C	PART #	S/N	SKT #	COMMENTS
31	Kr	27.8	1032	134	1.66E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1748	1	Pos trig. 1 trans 7vin erroneous
32	Kr	27.8	1032	134	1.96E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1748	1	Neg trig. 0 trans 7vin
33	Kr	27.8	1032	134	2.07E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1748	1	Pos trig. 0 trans 7vin
34	Kr	27.8	1032	134	2.10E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1756	2	Pos trig. 0 trans 7vin
35	Kr	27.8	1032	134	2.11E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1756	2	Neg trig. 0 trans 7vin
36	Kr	27.8	1032	134	2.20E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1758	3	Pos trig. 0 trans 7vin
37	Kr	27.8	1032	134	1.86E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1758	3	Neg trig. 0 trans 7vin
38	Kr	27.8	1032	134	2.05E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1764	7	Pos trig. 0 trans 3.3vin
39	Kr	27.8	1032	134	2.22E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1764	7	Neg trig. 0 trans 3.3vin
40	Kr	27.8	1032	134	2.24E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1705	8	Pos trig. 0 trans 3.3vin
41	Kr	27.8	1032	134	2.30E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1705	8	Neg trig. 0 trans 3.3vin
42	Kr	27.8	1032	134	2.22E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1671	9	Pos trig. 0 trans 3.3vin
43	Kr	27.8	1032	134	2.62E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1671	9	Neg trig. 0 trans 3.3vin
44	Kr	27.8	1032	134	1.72E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1690	7	Pos trig. 0 trans 2.9vin
45	Kr	27.8	1032	134	1.7E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1690	7	Neg trig. 0 trans 2.9vin
46	Kr	27.8	1032	134	1.65E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1785	8	Pos trig. 0 trans 2.9vin
47	Kr	27.8	1032	134	1.56E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1785	8	Neg trig. 0 trans 2.9vin
48	Kr	27.8	1032	134	1.57E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1790	9	Pos trig. 0 trans 2.9vin
49	Kr	27.8	1032	134	9.37E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1790	9	Neg trig. 0 trans 2.9vin
50	Xe	51.5	1512	120	6.95E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1748	1	Pos trig. 110 trans 7vin
51	Xe	51.5	1512	120	5.31E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1748	1	Pos trig. 0 trans 5.5vin
52	Xe	51.5	1512	120	5.70E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1748	1	Pos trig. 99 trans 6vin
53	Xe	51.5	1512	120	5.27E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1748	1	Neg trig. 0 trans 5.5vin
54	Xe	51.5	1512	120	3.85E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1756	2	Neg trig. 0 trans 5.5vin
55	Xe	51.5	1512	120	4.21E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1756	2	Pos trig. 4 trans 5.5vin
56	Xe	51.5	1512	120	3.60E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1756	2	Pos trig. 26 trans 5.25vin
57	Xe	51.5	1512	120	4.50E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1756	2	Pos trig. 60 trans 4.75vin
58	Xe	51.5	1512	120	5.33E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1756	2	Pos trig. 0 trans 4vin
59	Xe	51.5	1512	120	6.68E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1758	3	Pos trig. 10 trans 4vin
60	Xe	51.5	1512	120	1.0E5	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1758	3	Pos trig. 4 trans 3.6vin

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DATE : 12/06/05			OPERATORS : A. SANCHEZ, C. DICIENZO					FACILITY : TEXAS A&M					PAGE 3 OF 5	
RUN #	ION SPECIE	LET *MeV.cm²/mg*	ENERGY **MeV**	RANGE *µm*	AVG FLUX *#/ cm²/sec*	FLUENCE *#/ cm²*	ANGLE *deg*	BEAM D *cm*	START TEMP deg C	STOP TEMP deg C	PART #	S/N	SKT #	COMMENTS
61	Xe	51.5	1512	120	9.16E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1758	3	Neg trig. 0 trans 3.6vin
62	Xe	51.5	1512	120	1.0E5	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1690	7	Pos trig. 0 trans 2.9vin
63	Xe	51.5	1512	120	1.08E5	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1690	7	Neg trig. 0 trans 2.9vin
64	Xe	51.5	1512	120	1.0E5	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1785	8	Pos trig. 0 trans 2.9vin
65	Xe	51.5	1512	120	1.24E5	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1785	8	Neg trig. 0 trans 2.9vin
66	Xe	51.5	1512	120	1.3E5	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1790	9	INVALID RUN
67	Xe	51.5	1512	120	1.46E5	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1790	9	Pos trig. 0 trans 2.9vin
68	Xe	51.5	1512	120	1.4E5	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1790	9	Neg trig. 0 trans 2.9vin
69	Xe	51.5	1512	120	1.48E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Pos trig. 0 trans 3.5vin
70	Xe	51.5	1512	120	1.42E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Neg trig. 0 trans 3.5vin
71	Xe	51.5	1512	120	1.69E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	56	2	INVALID RUN
72	Xe	51.5	1512	120	1.41E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	56	2	Pos trig. 0 trans 3.5vin
73	Xe	51.5	1512	120	1.49E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	56	2	Neg trig. 0 trans 3.5vin
74	Xe	51.5	1512	120	1.47E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	54	3	Pos trig. 0 trans 3.5vin
75	Xe	51.5	1512	120	1.49E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	54	3	Neg trig. 0 trans 3.5vin
76	Xe	51.5	1512	120	1.49E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	54	3	Pos trig. 0 trans 4vin
77	Xe	51.5	1512	120	1.53E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	54	3	Pos trig. 451 trans 4.2vin
78	Xe	51.5	1512	120	1.45E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Pos trig. 0 trans 3.8vin
79	Xe	51.5	1512	120	1.19E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	56	2	Pos trig. 0 trans 3.8vin
80	Xe	51.5	1512	120	9.91E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1764	7	Pos trig. 0 trans 3.3vin
81	Xe	51.5	1512	120	8.68E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1764	7	Neg trig. 0 trans 3.3vin
82	Xe	51.5	1512	120	1.15E5	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1705	8	Pos trig. 0 trans 3.3vin
83	Xe	51.5	1512	120	1.14E5	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1705	8	Neg trig. 0 trans 3.3vin
84	Xe	51.5	1512	120	1.28E5	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1671	9	Pos trig. 0 trans 3.3vin
85	Xe	51.5	1512	120	1.37E5	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1671	9	Neg trig. 0 trans 3.3vin
86	Xe	51.5	1512	120	1.69E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	84	7	Pos trig. 0 trans 3.3vin
87	Xe	51.5	1512	120	1.67E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	84	7	Neg trig. 0 trans 3.3vin
88	Xe	51.5	1512	120	1.72E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	62	8	INVALID RUN
89	Xe	51.5	1512	120	2.04E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	62	8	Pos trig. 0 trans 3.3vin
90	Xe	51.5	1512	120	1.4E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	62	8	Neg trig. 0 trans 3.3vin

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DATE : 12/06/05			OPERATORS : A. SANCHEZ, C. DICIENZO					FACILITY : TEXAS A&M					PAGE 4 OF 5	
RUN #	ION SPECIE	LET *MeV.cm²/mg*	ENERGY **MeV**	RANGE *μm*	AVG FLUX *#/ cm²/sec*	FLUENCE *#/ cm²*	ANGLE *deg*	BEAM D *cm*	START TEMP deg C	STOP TEMP deg C	PART #	S/N	SKT #	COMMENTS
91	Xe	51.5	1512	120	1.42E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	63	9	Pos trig. 0 trans 3.3vin
92	Xe	51.5	1512	120	1.24E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	63	9	Neg trig. 0 trans 3.3vin
93	Xe	51.5	1512	120	1.67E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	83	7	Pos trig. 0 trans 2.9vin
94	Xe	51.5	1512	120	1.66E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	83	7	Neg trig. 0 trans 2.9vin
95	Xe	51.5	1512	120	2.02E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	51	8	Pos trig. 0 trans 2.9vin
96	Xe	51.5	1512	120	1.71E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	51	8	Neg trig. 0 trans 2.9vin
97	Xe	51.5	1512	120	2.31E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	64	9	Pos trig. 0 trans 2.9vin
98	Xe	51.5	1512	120	1.76E5	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	64	9	Neg trig. 0 trans 2.9vin
99	Au	85.4	2247	118	1.75E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	83	7	Pos trig. 0 trans 2.9vin
100	Au	85.4	2247	118	1.64E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	83	7	Neg trig. 0 trans 2.9vin
101	Au	85.4	2247	118	1.47E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	51	8	Pos trig. 0 trans 2.9vin
102	Au	85.4	2247	118	1.55E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	51	8	Neg trig. 0 trans 2.9vin
103	Au	85.4	2247	118	1.31E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	64	9	Pos trig. 0 trans 2.9vin
104	Au	85.4	2247	118	1.37E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	64	9	Neg trig. 0 trans 2.9vin
105	Au	85.4	2247	118	1.36E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Neg trig. 0 trans 7vin
106	Au	85.4	2247	118	1.42E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Pos trig. 171 trans 4.2vin
107	Au	85.4	2247	118	1.56E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	53	1	Pos trig. 0 trans 3.8vin
108	Au	85.4	2247	118	1.66E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	56	2	Neg trig. 0 trans 7vin
109	Au	85.4	2247	118	2.16E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	56	2	Pos trig. 158 trans 4.2vin
110	Au	85.4	2247	118	2.33E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	56	2	Pos trig. 0 trans 3.8vin
111	Au	85.4	2247	118	2.31E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	54	3	Neg trig. 0 trans 7vin
112	Au	85.4	2247	118	3.27E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	54	3	Pos trig. 254 trans 4.2vin
113	Au	85.4	2247	118	3.62E4	1.0E6	0	1.5	24C	24C	IRHU33PA13B20K	54	3	Pos trig. 0 trans 3.8vin
114	Au	85.4	2247	118	4.29E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1690	7	INVALID RUN
115	Au	85.4	2247	118	2.63E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1690	7	Pos trig. 0 trans 2.9vin
116	Au	85.4	2247	118	2.54E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1690	7	Neg trig. 0 trans 2.9vin
117	Au	85.4	2247	118	2.59E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1785	8	Pos trig. 0 trans 2.9vin
118	Au	85.4	2247	118	2.6E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1785	8	Neg trig. 0 trans 2.9vin
119	Au	85.4	2247	118	2.62E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1790	9	Pos trig. 0 trans 2.9vin
120	Au	85.4	2247	118	0	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1790	9	INVALID RUN

International
IOR Rectifier

DATE : 12/06/05			OPERATORS : A. SANCHEZ, C. DICIENZO					FACILITY : TEXAS A&M					PAGE 5 OF 5	
RUN #	ION SPECIE	LET *MeV.cm²/mg*	ENERGY **MeV**	RANGE *µm*	AVG FLUX *#/ cm²/sec*	FLUENCE *#/ cm²*	ANGLE *deg*	BEAM D *cm*	START TEMP deg C	STOP TEMP deg C	PART #	S/N	SKT #	COMMENTS
121	Au	85.4	2247	118	2.34E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1790	9	Neg trig. 0 trans 2.9vin
122	Au	85.4	2247	118	3.52E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1748	1	Neg trig. 0 trans 7vin
123	Au	85.4	2247	118	4.76E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1748	1	Pos trig. multi trans 4.3vin
124	Au	85.4	2247	118	5.07E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1748	1	Pos trig. multi trans 3.8vin
125	Au	85.4	2247	118	4.63E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1756	2	Neg trig. 0 trans 7vin
126	Au	85.4	2247	118	4.88E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1756	2	Pos trig. 0 trans 3.8vin
127	Au	85.4	2247	118	3.98E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1758	3	Neg trig. 0 trans 7vin
128	Au	85.4	2247	118	3.84E4	1.0E6	0	1.5	24C	24C	IRUH33P253B1M	1758	3	Pos trig. 0 trans 3.8vin