Total Ionizing Dose Radiation Testing of the
Microsemi AAHS298B 8-Channel High Side Driver

Date: 07/02/13

Summary: Total Ionizing Dose (TID) testing was performed on four AAHS298B parts. All parts sent for TID testing were found to be within the pre-irradiation electrical specification limits after being irradiated to a total dose of 100krad(Si) at a dose rate of 50rad(Si)/s and undergoing a post irradiation anneal of 72 hours.

TID Report: DMEA-2013-NRC-061

Report Date: 04/04/13

Test completion Date: 04/03/13

Test Lab: Defense Microelectronics Activity (DMEA) Science and Engineering Gamma Irradiation Test Facility, McClellan, CA 95652. Lab accredited by A2LA (certificate number: 1691.01.)

Customer: Microsemi Corporation

Part Type Tested: AAHS298B, 8-Channel High Side Driver, Part Package: 20 Pin Ceramic SOIC

Traceability Information: All parts serialized at assembly house.   Parts from wafer lot #E11975-3.

Quantity of Units: Four units were irradiated, S/Ns 207-210

Pre-Irradiation Burn-In: Performed at Microsemi AMSG as part of the standard flow.

Over-test and Post-Irradiation Anneal: No over-test. 72 hour extended post-irradiation anneal conducted.

Radiation Test Standard: MIL-STD-883H TM1019

Test Hardware and Software: Credence ASL-1000 Automated Tester, Entity ID: TMT5 (pre-irradiation), TMT8 (post-irradiation), TMT7 (after 72 hours anneal), tester calibration performed monthly, test board: AAHSS298B-Part_SN01, test program:AAHS298B_QA02

Facility and Radiation Source: J.L. Shepherd & Associates Model 81-22/484 self-contained irradiation facility, S/Ns 7125/50016. Gamma rays were created from two large Co-60 sources. The DUTs semiconductor chip plane was placed perpendicular to the incident beam of gamma rays. Dosimeters were calibrated by an ISO17025:2005 accredited lab.

Irradiation: 100krad(Si) at a dose rate of 50rad(Si)/s with a dose rate uniformity across target area of ± 3.6%. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k = 2$. After irradiation the devices were transported from DMEA to Microsemi in dry ice to minimize annealing prior to electrical testing.

Pass/Fail Criteria: Pass if irradiated part falls within part specification as well as the electrical test specification. Part Specification see: http://www.microsemi.com/existing-parts/parts/35#docs-specs Electrical Test Specification Ref: AAHS298B_Test.Plan_RevD-01-1.pdf.

Test Result: All parts pass post TID electrical testing at 100krad(Si) dose levels after a 72 hours post irradiation anneal. See Tables: 1 to 4 for details.

1.0. Overview and Background

The AAHS298B parts are primarily intended to be used in space applications. Due to increased levels of radiation in the space environment these devices require TID testing. The testing was conducted per MIL-STD-883G, Test Method 1019.7, Condition A. The total dose of 100krad(Si) was chosen because it represents a dose rate that is larger than a typical total dose received in space for a typical mission.

2.0. Radiation Test Apparatus

The AAHS298B parts were irradiated in DMEA's: J.L. Shepherd & Associates Model 81-22/484 self-contained irradiation chamber. The gamma rays were generated from two Co-60 sources. A Dose Enhancement Chamber (DEC) was used for all testing and dosimetry involved with this experiment.

3.0. Radiation Test Conditions
The four AAHS298B parts were loaded onto the AAHS298B_TID board. Each board held four parts. Vs was set at 50V, and the odd inputs (e.g CH1, CH3, etc.) were set to 2V as the "ON" condition. The even channels were grounded to determine if any radiation effects differed between the "ON" or "OFF" states.

4.0. Tested Parameters
During TID testing the following electrical parameters were measured pre- and post-irradiation:

ICC1	IN7 VIH	OUTPUT4 SAT
ICC2	IN7 VIL	OUTPUT5 SAT
ICC3	IN8 VIH	OUTPUT6 SAT
INPUT1 OFF CUR	IN8 VIL	OUTPUT7 SAT
INPUT2 OFF CUR	OUTPUT1 LEAKAGE	OUTPUT8 SAT
INPUT3 OFF CUR	OUTPUT2 LEAKAGE	OUTPUT1 SAT
INPUT4 OFF CUR	OUTPUT3 LEAKAGE	OUTPUT2 SAT
INPUT5 OFF CUR	OUTPUT4 LEAKAGE	OUTPUT3 SAT
INPUT6 OFF CUR	OUTPUT5 LEAKAGE	OUTPUT4 SAT
INPUT7 OFF CUR	OUTPUT6 LEAKAGE	OUTPUT5 SAT
INPUT8 OFF CUR	OUTPUT7 LEAKAGE	OUTPUT6 SAT
INPUT1 ON CUR	OUTPUT8 LEAKAGE	OUTPUT7 SAT
INPUT2 ON CUR	OUT1_LEAKAGE_VS	OUTPUT8 SAT
INPUT3 ON CUR	OUT2_LEAKAGE_VS	CH1 TURN ON
INPUT4 ON CUR	OUT3_LEAKAGE_VS	CH1 TURN OFF
INPUT5 ON CUR	OUT4_LEAKAGE_VS	CH1 RISE TIME
INPUT6 ON CUR	OUT5_LEAKAGE_VS	CH1 FALL TIME
INPUT7 ON CUR	OUT6_LEAKAGE_VS	CH2 TURN ON
INPUT8 ON CUR	OUT7_LEAKAGE_VS	CH2 TURN OFF
IN1 VIH	OUT8_LEAKAGE_VS	CH2 RISE TIME
IN1 VIL	OUTPUT1 SAT	CH2 FALL TIME
IN2 VIH	OUTPUT2 SAT	CH3 TURN ON
IN2 VIL	OUTPUT3 SAT	CH3 TURN OFF
IN3 VIH	OUTPUT4 SAT	CH3 RISE TIME
IN3 VIL	OUTPUT5 SAT	CH3 FALL TIME
IN4 VIH	OUTPUT6 SAT	CH4 TURN ON
IN4 VIL	OUTPUT7 SAT	CH4 TURN OFF
IN5 VIH	OUTPUT8 SAT	CH4 RISE TIME
IN5 VIL	OUTPUT1 SAT	CH4 FALL TIME
IN6 VIH	OUTPUT2 SAT	CH5 TURN ON
IN6 VIL	OUTPUT3 SAT	CH5 TURN OFF

CH5 RISE TIME	CLAMP5 LEAKAGE	CLAMP7 VF@700MA
CH5 FALL TIME	CLAMP6 LEAKAGE	CLAMP8 VF@700MA
CH6 TURN ON	CLAMP7 LEAKAGE	OUT1_OFF
CH6 TURN OFF	CLAMP8 LEAKAGE	OUT1_SAT_LOW_VS
CH6 RISE TIME	CLAMP1 VF@200MA	OUT2_OFF
CH6 FALL TIME	CLAMP2 VF@200MA	OUT2_SAT_LOW_VS
CH7 TURN ON	CLAMP3 VF@200MA	OUT3_OFF
CH7 TURN OFF	CLAMP4 VF@200MA	OUT3_SAT_LOW_VS
CH7 RISE TIME	CLAMP5 VF@200MA	OUT4_OFF
CH7 FALL TIME	CLAMP6 VF@200MA	OUT4_SAT_LOW_VS
CH8 TURN ON	CLAMP7 VF@200MA	OUT5_OFF
CH8 TURN OFF	CLAMP8 VF@200MA	OUT5_SAT_LOW_VS
CH8 RISE TIME	CLAMP1 VF@700MA	OUT6_OFF
CH8 FALL TIME	CLAMP2 VF@700MA	OUT6_SAT_LOW_VS
CLAMP1 LEAKAGE	CLAMP3 VF@700MA	OUT7_OFF
CLAMP2 LEAKAGE	CLAMP4 VF@200MA	OUT7_SAT_LOW_VS
CLAMP3 LEAKAGE	CLAMP5 VF@700MA	OUT8_OFF
CLAMP4 LEAKAGE	CLAMP6 VF@700MA	OUT8_SAT_LOW_VS

5.0. TID Test Results

Tables 1-4 summarize all tested electrical parameters before and after irradiation.

Table 1. SN 207 TID Results

Test Name	Unit	Min Limit	Max Limit	Pre-Irradiation Value	Post-Irradiation Value after 72 Hours Anneal	100krad(Si) [PASS/FAIL]
ICC1	uA	-0.15	19	0.1324	0.1544	PASS
ICC2	mA	0	24	4.7978	4.8308	PASS
ICC3	mA	0	24	5.7116	5.783	PASS
INPUT1 OFF CUR	uA	-9	9	-0.1136	-0.0651	PASS
INPUT2 OFF CUR	uA	-9	9	-0.0882	-0.1052	PASS
INPUT3 OFF CUR	uA	-9	9	-0.1091	-0.0634	PASS
INPUT4 OFF CUR	uA	-9	9	-0.1165	0.0566	PASS
INPUT5 OFF CUR	uA	-9	9	-0.1339	-0.1371	PASS
INPUT6 OFF CUR	uA	-9	9	-0.1059	-0.1046	PASS
INPUT7 OFF CUR	uA	-9	9	-0.1068	-0.1211	PASS
INPUT8 OFF CUR	uA	-9	9	-0.0668	-0.1096	PASS
INPUT1 ON CUR	uA	5	95	59.1634	59.3393	PASS
INPUT2 ON CUR	uA	5	95	58.6386	58.6838	PASS
INPUT3 ON CUR	uA	5	95	58.5627	58.7546	PASS
INPUT4 ON CUR	uA	5	95	58.7105	58.9377	PASS
INPUT5 ON CUR	uA	5	95	58.9562	59.1004	PASS
INPUT6 ON CUR	uA	5	95	58.9136	58.9759	PASS
INPUT7 ON CUR	uA	5	95	59.0876	59.2313	PASS
INPUT8 ON CUR	uA	5	95	59.3633	59.3956	PASS
IN1 VIH	V	0.825	2.4	1.45	1.475	PASS
IN1 VIL	V	0.825	2.4	1.425	1.45	PASS
IN2 VIH	V	0.825	2.4	1.45	1.45	PASS
IN2 VIL	V	0.825	2.4	1.425	1.4	PASS
IN3 VIH	V	0.825	2.4	1.45	1.475	PASS
IN3 VIL	V	0.825	2.4	1.425	1.45	PASS
IN4 VIH	V	0.825	2.4	1.45	1.45	PASS
IN4 VIL	V	0.825	2.4	1.425	1.4	PASS
IN5 VIH	V	0.825	2.4	1.45	1.475	PASS
IN5 VIL	V	0.825	2.4	1.425	1.45	PASS

IN6 VIH	V	0.825	2.4	1.45	1.45	PASS
IN6 VIL	V	0.825	2.4	1.425	1.4	PASS
IN7 VIH	V	0.825	2.4	1.45	1.475	PASS
IN7 VIL	V	0.825	2.4	1.425	1.45	PASS
IN8 VIH	V	0.825	2.4	1.45	1.425	PASS
IN8 VIL	V	0.825	2.4	1.425	1.4	PASS
OUTPUT1 LEAKAGE	uA	-40	40	-0.018	-0.0026	PASS
OUTPUT2 LEAKAGE	uA	-40	40	-0.0093	0.0014	PASS
OUTPUT3 LEAKAGE	uA	-40	40	-0.0075	0.0019	PASS
OUTPUT4 LEAKAGE	uA	-40	40	-0.0089	0.0018	PASS
OUTPUT5 LEAKAGE	uA	-40	40	-0.016	-0.0016	PASS
OUTPUT6 LEAKAGE	uA	-40	40	-0.0229	-0.003	PASS
OUTPUT7 LEAKAGE	uA	-40	40	-0.03	-0.0039	PASS
OUTPUT8 LEAKAGE	uA	-40	40	-0.0374	-0.0095	PASS
OUT1_LEAKAGE_VS	uA	-9	9	0.1335	0.0752	PASS
OUT2_LEAKAGE_VS	uA	-9	9	0.1401	0.0805	PASS
OUT3_LEAKAGE_VS	uA	-9	9	0.153	0.0867	PASS
OUT4_LEAKAGE_VS	uA	-9	9	0.1505	0.0841	PASS
OUT5_LEAKAGE_VS	uA	-9	9	0.1469	0.0885	PASS
OUT6_LEAKAGE_VS	uA	-9	9	0.1424	0.0785	PASS
OUT7_LEAKAGE_VS	uA	-9	9	0.1366	0.0781	PASS
OUT8_LEAKAGE_VS	uA	-9	9	0.0047	0.0074	PASS
OUTPUT1 SAT	V	0	2	1.6773	1.854	PASS
OUTPUT2 SAT	V	0	2	1.6766	1.9446	PASS
OUTPUT3 SAT	V	0	2	1.6727	1.853	PASS
OUTPUT4 SAT	V	0	2	1.6717	1.9365	PASS
OUTPUT5 SAT	V	0	2	1.6669	1.854	PASS
OUTPUT6 SAT	V	0	2	1.6685	1.9333	PASS
OUTPUT7 SAT	V	0	2	1.6701	1.863	PASS
OUTPUT8 SAT	V	0	2	1.6854	1.9484	PASS
OUTPUT1 SAT	V	0	2.1	1.8035	1.99	PASS
OUTPUT2 SAT	V	0	2.1	1.8009	2.1109	PASS
OUTPUT3 SAT	V	0	2.1	1.7954	1.9855	PASS
OUTPUT4 SAT	V	0	2.1	1.7919	2.0993	PASS
OUTPUT5 SAT	V	0	2.1	1.7922	1.9849	PASS
OUTPUT6 SAT	V	0	2.1	1.7922	2.0945	PASS
OUTPUT7 SAT	V	0	2.1	1.7935	1.9984	PASS
OUTPUT8 SAT	V	0	2.1	1.8136	2.1174	PASS
OUTPUT1 SAT	V	0	2.5	2.0301	2.2386	PASS
OUTPUT2 SAT	V	0	2.5	2.0236	2.4443	PASS
OUTPUT3 SAT	V	0	2.5	2.0162	2.2299	PASS
OUTPUT4 SAT	V	0	2.5	2.0087	2.4188	PASS
OUTPUT5 SAT	V	0	2.5	2.0084	2.2302	PASS
OUTPUT6 SAT	V	0	2.5	2.0068	2.4092	PASS
OUTPUT7 SAT	V	0	2.5	2.012	2.2492	PASS
OUTPUT8 SAT	V	0	2.5	2.0418	2.4507	PASS
CH1 TURN ON	uS	0	1	0.4161	0.5361	PASS
CH1 TURN OFF	uS	0	4	2.0657	1.3137	PASS
CH1 RISE TIME	uS	0	1	0.3912	0.3389	PASS
CH1 FALL TIME	uS	0	4	1.3425	0.9497	PASS
CH2 TURN ON	uS	0	1	0.3747	0.4456	PASS
CH2 TURN OFF	uS	0	4	1.9471	1.2581	PASS
CH2 RISE TIME	uS	0	1	0.3515	0.2184	PASS
CH2 FALL TIME	uS	0	4	1.1986	0.845	PASS
CH3 TURN ON	uS	0	1	0.3718	0.5999	PASS
CH3 TURN OFF	uS	0	4	1.9456	1.2523	PASS
CH3 RISE TIME	uS	0	1	0.3465	0.2765	PASS
CH3 FALL TIME	uS	0	4	1.1983	0.8859	PASS
CH4 TURN ON	uS	0	1	0.3717	0.4363	PASS

CH4 TURN OFF	uS	0	4	1.9442	1.2641	PASS
CH4 RISE TIME	uS	0	1	0.3443	0.2164	PASS
CH4 FALL TIME	uS	0	4	1.1944	0.8463	PASS
CH5 TURN ON	uS	0	1	0.3685	0.5953	PASS
CH5 TURN OFF	uS	0	4	1.9464	1.2448	PASS
CH5 RISE TIME	uS	0	1	0.3448	0.2617	PASS
CH5 FALL TIME	uS	0	4	1.1965	0.8752	PASS
CH6 TURN ON	uS	0	1	0.3705	0.4442	PASS
CH6 TURN OFF	uS	0	4	1.94	1.2593	PASS
CH6 RISE TIME	uS	0	1	0.3479	0.2178	PASS
CH6 FALL TIME	uS	0	4	1.19	0.8447	PASS
CH7 TURN ON	uS	0	1	0.3683	0.5936	PASS
CH7 TURN OFF	uS	0	4	1.94	1.2339	PASS
CH7 RISE TIME	uS	0	1	0.3468	0.253	PASS
CH7 FALL TIME	uS	0	4	1.1944	0.8663	PASS
CH8 TURN ON	uS	0	1	0.3653	0.4264	PASS
CH8 TURN OFF	uS	0	4	1.9442	1.2614	PASS
CH8 RISE TIME	uS	0	1	0.3402	0.2163	PASS
CH8 FALL TIME	uS	0	4	1.1934	0.8527	PASS
CLAMP1 LEAKAGE	uA	-40	40	0.0675	0.0376	PASS
CLAMP2 LEAKAGE	uA	-40	40	0.0629	0.0323	PASS
CLAMP3 LEAKAGE	uA	-40	40	0.0619	0.0299	PASS
CLAMP4 LEAKAGE	uA	-40	40	0.0619	0.0303	PASS
CLAMP5 LEAKAGE	uA	-40	40	0.0564	0.0272	PASS
CLAMP6 LEAKAGE	uA	-40	40	0.0561	0.0316	PASS
CLAMP7 LEAKAGE	uA	-40	40	0.0574	0.0272	PASS
CLAMP8 LEAKAGE	uA	-40	40	0.0767	0.0407	PASS
CLAMP1 VF@200MA	V	-2.4	0	-0.9629	-0.9435	PASS
CLAMP2 VF@200MA	V	-2.4	0	-0.9632	-0.9432	PASS
CLAMP3 VF@200MA	V	-2.4	0	-0.9641	-0.9436	PASS
CLAMP4 VF@200MA	V	-2.4	0	-0.964	-0.9438	PASS
CLAMP5 VF@200MA	V	-2.4	0	-0.9637	-0.9433	PASS
CLAMP6 VF@200MA	V	-2.4	0	-0.9638	-0.9431	PASS
CLAMP7 VF@200MA	V	-2.4	0	-0.9633	-0.9429	PASS
CLAMP8 VF@200MA	V	-2.4	0	-0.9678	-0.9466	PASS
CLAMP1 VF@700MA	V	-2.9	0	-1.2203	-1.2223	PASS
CLAMP2 VF@700MA	V	-2.9	0	-1.2225	-1.2243	PASS
CLAMP3 VF@700MA	V	-2.9	0	-1.2257	-1.2281	PASS
CLAMP4 VF@200MA	V	-2.9	0	-1.2251	-1.2282	PASS
CLAMP5 VF@700MA	V	-2.9	0	-1.2245	-1.2267	PASS
CLAMP6 VF@700MA	V	-2.9	0	-1.2245	-1.2266	PASS
CLAMP7 VF@700MA	V	-2.9	0	-1.2231	-1.2251	PASS
CLAMP8 VF@700MA	V	-2.9	0	-1.2389	-1.2403	PASS
OUT1_OFF	V	-0.1	0.2	0.0012	0.0002	PASS
OUT1_SAT_LOW_VS	V	0	2.5	2.0256	2.0844	PASS
OUT2_OFF	V	-0.1	0.2	0.0008	0.0001	PASS
OUT2_SAT_LOW_VS	V	0	2.5	2.0176	2.239	PASS
OUT3_OFF	V	-0.1	0.2	0.0009	0.0003	PASS
OUT3_SAT_LOW_VS	V	0	2.5	2.0096	2.0736	PASS
OUT4_OFF	V	-0.1	0.2	0.0012	-0.0001	PASS
OUT4_SAT_LOW_VS	V	0	2.5	2.0029	2.219	PASS
OUT5_OFF	V	-0.1	0.2	0.0004	-0.0006	PASS
OUT5_SAT_LOW_VS	V	0	2.5	2.0009	2.0758	PASS
OUT6_OFF	V	-0.1	0.2	0.0008	-0.0003	PASS
OUT6_SAT_LOW_VS	V	0	2.5	2.0018	2.2123	PASS
OUT7_OFF	V	-0.1	0.2	0.0013	0	PASS
OUT7_SAT_LOW_VS	V	0	2.5	2.0063	2.0977	PASS
OUT8_OFF	V	-0.1	0.2	0.0014	-0.0002	PASS
OUT8_SAT_LOW_VS	V	0	2.5	2.0368	2.2525	PASS

Table 2. SN 208 TID Results

Test Name	Unit	Min Limit	Max Limit	Pre-Irradiation Value	Post-Irradiation Value after 72 Hours Anneal	100krad(Si) [PASS/FAIL]
ICC1	uA	-0.15	19	0.0888	0.1306	PASS
ICC2	mA	0	24	4.9388	4.9642	PASS
ICC3	mA	0	24	5.845	5.9297	PASS
INPUT1 OFF CUR	uA	-9	9	-0.117	-0.0675	PASS
INPUT2 OFF CUR	uA	-9	9	-0.0882	-0.1099	PASS
INPUT3 OFF CUR	uA	-9	9	-0.1091	-0.0686	PASS
INPUT4 OFF CUR	uA	-9	9	-0.1154	0.0578	PASS
INPUT5 OFF CUR	uA	-9	9	-0.1333	-0.1412	PASS
INPUT6 OFF CUR	uA	-9	9	-0.103	-0.1092	PASS
INPUT7 OFF CUR	uA	-9	9	-0.1062	-0.124	PASS
INPUT8 OFF CUR	uA	-9	9	-0.0657	-0.1172	PASS
INPUT1 ON CUR	uA	5	95	60.9289	61.0522	PASS
INPUT2 ON CUR	uA	5	95	60.0668	60.048	PASS
INPUT3 ON CUR	uA	5	95	60.3251	60.4478	PASS
INPUT4 ON CUR	uA	5	95	60.3015	60.4747	PASS
INPUT5 ON CUR	uA	5	95	60.5738	60.672	PASS
INPUT6 ON CUR	uA	5	95	60.8026	60.8083	PASS
INPUT7 ON CUR	uA	5	95	60.7136	60.8049	PASS
INPUT8 ON CUR	uA	5	95	60.7236	60.7107	PASS
IN1 VIH	V	0.825	2.4	1.45	1.475	PASS
IN1 VIL	V	0.825	2.4	1.4	1.425	PASS
IN2 VIH	V	0.825	2.4	1.45	1.45	PASS
IN2 VIL	V	0.825	2.4	1.425	1.4	PASS
IN3 VIH	V	0.825	2.4	1.45	1.475	PASS
IN3 VIL	V	0.825	2.4	1.425	1.45	PASS
IN4 VIH	V	0.825	2.4	1.45	1.45	PASS
IN4 VIL	V	0.825	2.4	1.425	1.4	PASS
IN5 VIH	V	0.825	2.4	1.45	1.475	PASS
IN5 VIL	V	0.825	2.4	1.425	1.45	PASS
IN6 VIH	V	0.825	2.4	1.45	1.425	PASS
IN6 VIL	V	0.825	2.4	1.4	1.4	PASS
IN7 VIH	V	0.825	2.4	1.45	1.475	PASS
IN7 VIL	V	0.825	2.4	1.425	1.45	PASS
IN8 VIH	V	0.825	2.4	1.45	1.425	PASS
IN8 VIL	V	0.825	2.4	1.425	1.4	PASS
OUTPUT1 LEAKAGE	uA	-40	40	-0.0179	-0.0045	PASS
OUTPUT2 LEAKAGE	uA	-40	40	-0.0082	0.0009	PASS
OUTPUT3 LEAKAGE	uA	-40	40	-0.0078	0.0028	PASS
OUTPUT4 LEAKAGE	uA	-40	40	-0.0071	0.0007	PASS
OUTPUT5 LEAKAGE	uA	-40	40	-0.016	-0.0011	PASS
OUTPUT6 LEAKAGE	uA	-40	40	-0.0194	-0.0059	PASS
OUTPUT7 LEAKAGE	uA	-40	40	-0.0281	-0.0086	PASS
OUTPUT8 LEAKAGE	uA	-40	40	-0.0377	-0.0141	PASS
OUT1_LEAKAGE_VS	uA	-9	9	0.1411	0.0842	PASS
OUT2_LEAKAGE_VS	uA	-9	9	0.1483	0.0848	PASS
OUT3_LEAKAGE_VS	uA	-9	9	0.1565	0.0913	PASS
OUT4_LEAKAGE_VS	uA	-9	9	0.1528	0.0846	PASS
OUT5_LEAKAGE_VS	uA	-9	9	0.1568	0.0929	PASS
OUT6_LEAKAGE_VS	uA	-9	9	0.1522	0.0774	PASS
OUT7_LEAKAGE_VS	uA	-9	9	0.1431	0.0777	PASS
OUT8_LEAKAGE_VS	uA	-9	9	0.0053	0.0085	PASS
OUTPUT1 SAT	V	0	2	1.6737	1.8533	PASS
OUTPUT2 SAT	V	0	2	1.674	1.943	PASS
OUTPUT3 SAT	V	0	2	1.6708	1.8491	PASS
OUTPUT4 SAT	V	0	2	1.6704	1.9381	PASS

OUTPUT5 SAT	V	0	2	1.6695	1.8472	PASS
OUTPUT6 SAT	V	0	2	1.6675	1.9365	PASS
OUTPUT7 SAT	V	0	2	1.6704	1.8495	PASS
OUTPUT8 SAT	V	0	2	1.6857	1.952	PASS
OUTPUT1 SAT	V	0	2.1	1.798	1.9865	PASS
OUTPUT2 SAT	V	0	2.1	1.7944	2.1055	PASS
OUTPUT3 SAT	V	0	2.1	1.7925	1.9787	PASS
OUTPUT4 SAT	V	0	2.1	1.7883	2.1009	PASS
OUTPUT5 SAT	V	0	2.1	1.7889	1.9746	PASS
OUTPUT6 SAT	V	0	2.1	1.7902	2.099	PASS
OUTPUT7 SAT	V	0	2.1	1.7928	1.981	PASS
OUTPUT8 SAT	V	0	2.1	1.8117	2.1219	PASS
OUTPUT1 SAT	V	0	2.5	2.022	2.2299	PASS
OUTPUT2 SAT	V	0	2.5	2.0139	2.4308	PASS
OUTPUT3 SAT	V	0	2.5	2.0081	2.2157	PASS
OUTPUT4 SAT	V	0	2.5	2.0058	2.4185	PASS
OUTPUT5 SAT	V	0	2.5	2.0045	2.2102	PASS
OUTPUT6 SAT	V	0	2.5	2.0042	2.4159	PASS
OUTPUT7 SAT	V	0	2.5	2.012	2.2176	PASS
OUTPUT8 SAT	V	0	2.5	2.0379	2.453	PASS
CH1 TURN ON	uS	0	1	0.4055	0.5214	PASS
CH1 TURN OFF	uS	0	4	2.0522	1.2978	PASS
CH1 RISE TIME	uS	0	1	0.3836	0.3366	PASS
CH1 FALL TIME	uS	0	4	1.3392	0.9399	PASS
CH2 TURN ON	uS	0	1	0.3649	0.4424	PASS
CH2 TURN OFF	uS	0	4	1.9333	1.2475	PASS
CH2 RISE TIME	uS	0	1	0.3413	0.2137	PASS
CH2 FALL TIME	uS	0	4	1.1902	0.8378	PASS
CH3 TURN ON	uS	0	1	0.3631	0.476	PASS
CH3 TURN OFF	uS	0	4	1.9428	1.2464	PASS
CH3 RISE TIME	uS	0	1	0.3389	0.2849	PASS
CH3 FALL TIME	uS	0	4	1.1903	0.8812	PASS
CH4 TURN ON	uS	0	1	0.3646	0.4354	PASS
CH4 TURN OFF	uS	0	4	1.9256	1.2435	PASS
CH4 RISE TIME	uS	0	1	0.3414	0.2136	PASS
CH4 FALL TIME	uS	0	4	1.182	0.8377	PASS
CH5 TURN ON	uS	0	1	0.3619	0.5069	PASS
CH5 TURN OFF	uS	0	4	1.9247	1.2425	PASS
CH5 RISE TIME	uS	0	1	0.342	0.2829	PASS
CH5 FALL TIME	uS	0	4	1.1918	0.8798	PASS
CH6 TURN ON	uS	0	1	0.3602	0.429	PASS
CH6 TURN OFF	uS	0	4	1.9275	1.2499	PASS
CH6 RISE TIME	uS	0	1	0.3406	0.2125	PASS
CH6 FALL TIME	uS	0	4	1.1805	0.8378	PASS
CH7 TURN ON	uS	0	1	0.36	0.5061	PASS
CH7 TURN OFF	uS	0	4	1.9247	1.2449	PASS
CH7 RISE TIME	uS	0	1	0.339	0.2809	PASS
CH7 FALL TIME	uS	0	4	1.1815	0.8784	PASS
CH8 TURN ON	uS	0	1	0.3601	0.421	PASS
CH8 TURN OFF	uS	0	4	1.9259	1.2489	PASS
CH8 RISE TIME	uS	0	1	0.3324	0.213	PASS
CH8 FALL TIME	uS	0	4	1.1845	0.8362	PASS
CLAMP1 LEAKAGE	uA	-40	40	0.0721	0.034	PASS
CLAMP2 LEAKAGE	uA	-40	40	0.0642	0.0293	PASS
CLAMP3 LEAKAGE	uA	-40	40	0.06	0.0346	PASS
CLAMP4 LEAKAGE	uA	-40	40	0.058	0.0289	PASS
CLAMP5 LEAKAGE	uA	-40	40	0.058	0.0286	PASS
CLAMP6 LEAKAGE	uA	-40	40	0.0593	0.0319	PASS
CLAMP7 LEAKAGE	uA	-40	40	0.0577	0.0279	PASS

CLAMP8 LEAKAGE	uA	-40	40	0.079	0.04	PASS
CLAMP1 VF@200MA	V	-2.4	0	-0.9617	-0.943	PASS
CLAMP2 VF@200MA	V	-2.4	0	-0.9618	-0.9429	PASS
CLAMP3 VF@200MA	V	-2.4	0	-0.963	-0.9435	PASS
CLAMP4 VF@200MA	V	-2.4	0	-0.9625	-0.9431	PASS
CLAMP5 VF@200MA	V	-2.4	0	-0.9628	-0.9431	PASS
CLAMP6 VF@200MA	V	-2.4	0	-0.9632	-0.9433	PASS
CLAMP7 VF@200MA	V	-2.4	0	-0.9627	-0.9431	PASS
CLAMP8 VF@200MA	V	-2.4	0	-0.9676	-0.947	PASS
CLAMP1 VF@700MA	V	-2.9	0	-1.2175	-1.2201	PASS
CLAMP2 VF@700MA	V	-2.9	0	-1.2186	-1.2212	PASS
CLAMP3 VF@700MA	V	-2.9	0	-1.2237	-1.2261	PASS
CLAMP4 VF@200MA	V	-2.9	0	-1.2226	-1.2254	PASS
CLAMP5 VF@700MA	V	-2.9	0	-1.2233	-1.2261	PASS
CLAMP6 VF@700MA	V	-2.9	0	-1.224	-1.2272	PASS
CLAMP7 VF@700MA	V	-2.9	0	-1.2228	-1.226	PASS
CLAMP8 VF@700MA	V	-2.9	0	-1.2388	-1.2424	PASS
OUT1_OFF	V	-0.1	0.2	0.0011	0.0001	PASS
OUT1_SAT_LOW_VS	V	0	2.5	2.0169	2.0752	PASS
OUT2_OFF	V	-0.1	0.2	0.0008	0.0001	PASS
OUT2_SAT_LOW_VS	V	0	2.5	2.0069	2.2244	PASS
OUT3_OFF	V	-0.1	0.2	0.0009	0.0001	PASS
OUT3_SAT_LOW_VS	V	0	2.5	2.0027	2.0603	PASS
OUT4_OFF	V	-0.1	0.2	0.0008	-0.0002	PASS
OUT4_SAT_LOW_VS	V	0	2.5	1.9983	2.214	PASS
OUT5_OFF	V	-0.1	0.2	0.0005	-0.0006	PASS
OUT5_SAT_LOW_VS	V	0	2.5	1.9984	2.0557	PASS
OUT6_OFF	V	-0.1	0.2	0.0005	-0.0002	PASS
OUT6_SAT_LOW_VS	V	0	2.5	1.9995	2.2119	PASS
OUT7_OFF	V	-0.1	0.2	0.001	0.0002	PASS
OUT7_SAT_LOW_VS	V	0	2.5	2.0063	2.0636	PASS
OUT8_OFF	V	-0.1	0.2	0.0014	0.0001	PASS
OUT8_SAT_LOW_VS	V	0	2.5	2.0324	2.2497	PASS

Table 3. SN 209 TID Results

Test Name	Unit	Min Limit	Max Limit	Pre-Irradiation Value	Post-Irradiation Value after 72 Hours Anneal	100krad(Si) [PASS/FAIL]
ICC1	uA	-0.15	19	0.0879	0.1318	PASS
ICC2	mA	0	24	4.8335	4.8604	PASS
ICC3	mA	0	24	5.7433	5.8082	PASS
INPUT1 OFF CUR	uA	-9	9	-0.1084	-0.0703	PASS
INPUT2 OFF CUR	uA	-9	9	-0.0842	-0.0977	PASS
INPUT3 OFF CUR	uA	-9	9	-0.1091	-0.068	PASS
INPUT4 OFF CUR	uA	-9	9	-0.1165	0.063	PASS
INPUT5 OFF CUR	uA	-9	9	-0.1281	-0.1435	PASS
INPUT6 OFF CUR	uA	-9	9	-0.0984	-0.1075	PASS
INPUT7 OFF CUR	uA	-9	9	-0.1051	-0.1222	PASS
INPUT8 OFF CUR	uA	-9	9	-0.0691	-0.1125	PASS
INPUT1 ON CUR	uA	5	95	58.9983	59.1698	PASS
INPUT2 ON CUR	uA	5	95	58.8774	58.9118	PASS
INPUT3 ON CUR	uA	5	95	58.9023	59.0691	PASS
INPUT4 ON CUR	uA	5	95	58.9097	59.135	PASS
INPUT5 ON CUR	uA	5	95	59.0363	59.1737	PASS
INPUT6 ON CUR	uA	5	95	59.2287	59.2737	PASS
INPUT7 ON CUR	uA	5	95	59.4073	59.5382	PASS
INPUT8 ON CUR	uA	5	95	59.6071	59.6325	PASS
IN1 VIH	V	0.825	2.4	1.425	1.35	PASS

IN1 VIL	V	0.825	2.4	1.4	1.325	PASS
IN2 VIH	V	0.825	2.4	1.425	1.425	PASS
IN2 VIL	V	0.825	2.4	1.4	1.375	PASS
IN3 VIH	V	0.825	2.4	1.45	1.375	PASS
IN3 VIL	V	0.825	2.4	1.4	1.35	PASS
IN4 VIH	V	0.825	2.4	1.45	1.425	PASS
IN4 VIL	V	0.825	2.4	1.425	1.4	PASS
IN5 VIH	V	0.825	2.4	1.45	1.375	PASS
IN5 VIL	V	0.825	2.4	1.425	1.35	PASS
IN6 VIH	V	0.825	2.4	1.45	1.425	PASS
IN6 VIL	V	0.825	2.4	1.425	1.4	PASS
IN7 VIH	V	0.825	2.4	1.45	1.375	PASS
IN7 VIL	V	0.825	2.4	1.4	1.35	PASS
IN8 VIH	V	0.825	2.4	1.45	1.425	PASS
IN8 VIL	V	0.825	2.4	1.4	1.375	PASS
OUTPUT1 LEAKAGE	uA	-40	40	-0.0171	-0.0165	PASS
OUTPUT2 LEAKAGE	uA	-40	40	-0.0099	0	PASS
OUTPUT3 LEAKAGE	uA	-40	40	-0.0085	-0.0083	PASS
OUTPUT4 LEAKAGE	uA	-40	40	-0.0087	0	PASS
OUTPUT5 LEAKAGE	uA	-40	40	-0.0173	-0.013	PASS
OUTPUT6 LEAKAGE	uA	-40	40	-0.0232	-0.0078	PASS
OUTPUT7 LEAKAGE	uA	-40	40	-0.0293	-0.0187	PASS
OUTPUT8 LEAKAGE	uA	-40	40	-0.0382	-0.0124	PASS
OUT1_LEAKAGE_VS	uA	-9	9	0.1361	0.0695	PASS
OUT2_LEAKAGE_VS	uA	-9	9	0.1453	0.0804	PASS
OUT3_LEAKAGE_VS	uA	-9	9	0.1499	0.0798	PASS
OUT4_LEAKAGE_VS	uA	-9	9	0.1503	0.0824	PASS
OUT5_LEAKAGE_VS	uA	-9	9	0.1493	0.0792	PASS
OUT6_LEAKAGE_VS	uA	-9	9	0.1421	0.0789	PASS
OUT7_LEAKAGE_VS	uA	-9	9	0.1383	0.0712	PASS
OUT8_LEAKAGE_VS	uA	-9	9	0.0065	0.0081	PASS
OUTPUT1 SAT	V	0	2	1.6773	1.9052	PASS
OUTPUT2 SAT	V	0	2	1.6724	1.9372	PASS
OUTPUT3 SAT	V	0	2	1.6737	1.9294	PASS
OUTPUT4 SAT	V	0	2	1.6669	1.9346	PASS
OUTPUT5 SAT	V	0	2	1.6672	1.9252	PASS
OUTPUT6 SAT	V	0	2	1.6711	1.9346	PASS
OUTPUT7 SAT	V	0	2	1.6714	1.9246	PASS
OUTPUT8 SAT	V	0	2	1.6834	1.9452	PASS
OUTPUT1 SAT	V	0	2.1	1.8019	2.0593	PASS
OUTPUT2 SAT	V	0	2.1	1.7919	2.1	PASS
OUTPUT3 SAT	V	0	2.1	1.7925	2.0884	PASS
OUTPUT4 SAT	V	0	2.1	1.7922	2.0951	PASS
OUTPUT5 SAT	V	0	2.1	1.7899	2.0835	PASS
OUTPUT6 SAT	V	0	2.1	1.7925	2.0955	PASS
OUTPUT7 SAT	V	0	2.1	1.7928	2.0845	PASS
OUTPUT8 SAT	V	0	2.1	1.8107	2.1148	PASS
OUTPUT1 SAT	V	0	2.5	2.0282	2.3563	PASS
OUTPUT2 SAT	V	0	2.5	2.0097	2.4217	PASS
OUTPUT3 SAT	V	0	2.5	2.0084	2.4034	PASS
OUTPUT4 SAT	V	0	2.5	2.0074	2.4172	PASS
OUTPUT5 SAT	V	0	2.5	2.0055	2.393	PASS
OUTPUT6 SAT	V	0	2.5	2.0084	2.4162	PASS
OUTPUT7 SAT	V	0	2.5	2.01	2.4021	PASS
OUTPUT8 SAT	V	0	2.5	2.0376	2.4459	PASS
CH1 TURN ON	uS	0	1	0.4115	0.6335	PASS
CH1 TURN OFF	uS	0	4	2.0545	1.3275	PASS
CH1 RISE TIME	uS	0	1	0.3879	0.2424	PASS
CH1 FALL TIME	uS	0	4	1.318	0.9213	PASS

CH2 TURN ON	uS	0	1	0.3656	0.4326	PASS
CH2 TURN OFF	uS	0	4	1.9294	1.2754	PASS
CH2 RISE TIME	uS	0	1	0.3407	0.2095	PASS
CH2 FALL TIME	uS	0	4	1.1762	0.863	PASS
CH3 TURN ON	uS	0	1	0.3679	0.6075	PASS
CH3 TURN OFF	uS	0	4	1.9251	1.2729	PASS
CH3 RISE TIME	uS	0	1	0.343	0.2012	PASS
CH3 FALL TIME	uS	0	4	1.173	0.8621	PASS
CH4 TURN ON	uS	0	1	0.3704	0.4356	PASS
CH4 TURN OFF	uS	0	4	1.9178	1.2683	PASS
CH4 RISE TIME	uS	0	1	0.3455	0.2128	PASS
CH4 FALL TIME	uS	0	4	1.1713	0.8617	PASS
CH5 TURN ON	uS	0	1	0.3655	0.6001	PASS
CH5 TURN OFF	uS	0	4	1.9245	1.2703	PASS
CH5 RISE TIME	uS	0	1	0.3446	0.1983	PASS
CH5 FALL TIME	uS	0	4	1.1757	0.8592	PASS
CH6 TURN ON	uS	0	1	0.3657	0.4367	PASS
CH6 TURN OFF	uS	0	4	1.9203	1.2651	PASS
CH6 RISE TIME	uS	0	1	0.345	0.2116	PASS
CH6 FALL TIME	uS	0	4	1.1734	0.8591	PASS
CH7 TURN ON	uS	0	1	0.363	0.6042	PASS
CH7 TURN OFF	uS	0	4	1.9321	1.2741	PASS
CH7 RISE TIME	uS	0	1	0.3428	0.1986	PASS
CH7 FALL TIME	uS	0	4	1.1767	0.8643	PASS
CH8 TURN ON	uS	0	1	0.3605	0.4209	PASS
CH8 TURN OFF	uS	0	4	1.93	1.272	PASS
CH8 RISE TIME	uS	0	1	0.3329	0.2107	PASS
CH8 FALL TIME	uS	0	4	1.1782	0.8662	PASS
CLAMP1 LEAKAGE	uA	-40	40	0.0734	0.0376	PASS
CLAMP2 LEAKAGE	uA	-40	40	0.0639	0.0279	PASS
CLAMP3 LEAKAGE	uA	-40	40	0.0672	0.0343	PASS
CLAMP4 LEAKAGE	uA	-40	40	0.0646	0.0319	PASS
CLAMP5 LEAKAGE	uA	-40	40	0.0554	0.0276	PASS
CLAMP6 LEAKAGE	uA	-40	40	0.0613	0.0289	PASS
CLAMP7 LEAKAGE	uA	-40	40	0.059	0.0323	PASS
CLAMP8 LEAKAGE	uA	-40	40	0.081	0.0417	PASS
CLAMP1 VF@200MA	V	-2.4	0	-0.9639	-0.9445	PASS
CLAMP2 VF@200MA	V	-2.4	0	-0.962	-0.9431	PASS
CLAMP3 VF@200MA	V	-2.4	0	-0.9634	-0.9439	PASS
CLAMP4 VF@200MA	V	-2.4	0	-0.9634	-0.9437	PASS
CLAMP5 VF@200MA	V	-2.4	0	-0.9631	-0.9433	PASS
CLAMP6 VF@200MA	V	-2.4	0	-0.9633	-0.9438	PASS
CLAMP7 VF@200MA	V	-2.4	0	-0.9625	-0.9428	PASS
CLAMP8 VF@200MA	V	-2.4	0	-0.9673	-0.9469	PASS
CLAMP1 VF@700MA	V	-2.9	0	-1.2241	-1.2259	PASS
CLAMP2 VF@700MA	V	-2.9	0	-1.2194	-1.2234	PASS
CLAMP3 VF@700MA	V	-2.9	0	-1.2239	-1.2272	PASS
CLAMP4 VF@200MA	V	-2.9	0	-1.2241	-1.2273	PASS
CLAMP5 VF@700MA	V	-2.9	0	-1.2231	-1.2259	PASS
CLAMP6 VF@700MA	V	-2.9	0	-1.2239	-1.2283	PASS
CLAMP7 VF@700MA	V	-2.9	0	-1.221	-1.2238	PASS
CLAMP8 VF@700MA	V	-2.9	0	-1.2374	-1.2406	PASS
OUT1_OFF	V	-0.1	0.2	0.0011	0.0003	PASS
OUT1_SAT_LOW_VS	V	0	2.5	2.0228	2.2322	PASS
OUT2_OFF	V	-0.1	0.2	0.0013	0.0001	PASS
OUT2_SAT_LOW_VS	V	0	2.5	2.0049	2.22	PASS
OUT3_OFF	V	-0.1	0.2	0.0014	-0.0001	PASS
OUT3_SAT_LOW_VS	V	0	2.5	2.002	2.2148	PASS
OUT4_OFF	V	-0.1	0.2	0.001	-0.0001	PASS

OUT4_SAT_LOW_VS	V	0	2.5	2.0019	2.216	PASS
OUT5_OFF	V	-0.1	0.2	0.0006	-0.0004	PASS
OUT5_SAT_LOW_VS	V	0	2.5	1.9989	2.2084	PASS
OUT6_OFF	V	-0.1	0.2	0.0007	-0.0008	PASS
OUT6_SAT_LOW_VS	V	0	2.5	2.0021	2.2157	PASS
OUT7_OFF	V	-0.1	0.2	0.0014	0.0002	PASS
OUT7_SAT_LOW_VS	V	0	2.5	2.0042	2.2132	PASS
OUT8_OFF	V	-0.1	0.2	0.0008	-0.0002	PASS
OUT8_SAT_LOW_VS	V	0	2.5	2.0323	2.2471	PASS

Table 4. SN 210 TID Results

Test Name	Unit	Min Limit	Max Limit	Pre-Irradiation Value	Post-Irradiation Value after 72 Hours Anneal	100krad(Si) [PASS/FAIL]
ICC1	uA	-0.15	19	0.0993	0.1305	PASS
ICC2	mA	0	24	4.7838	4.783	PASS
ICC3	mA	0	24	5.6832	5.7444	PASS
INPUT1 OFF CUR	uA	-9	9	-0.1164	-0.064	PASS
INPUT2 OFF CUR	uA	-9	9	-0.0888	-0.1058	PASS
INPUT3 OFF CUR	uA	-9	9	-0.108	-0.0628	PASS
INPUT4 OFF CUR	uA	-9	9	-0.1217	0.0555	PASS
INPUT5 OFF CUR	uA	-9	9	-0.1356	-0.1435	PASS
INPUT6 OFF CUR	uA	-9	9	-0.1001	-0.1069	PASS
INPUT7 OFF CUR	uA	-9	9	-0.1103	-0.1222	PASS
INPUT8 OFF CUR	uA	-9	9	-0.0663	-0.1102	PASS
INPUT1 ON CUR	uA	5	95	59.1351	59.2867	PASS
INPUT2 ON CUR	uA	5	95	58.9357	58.9414	PASS
INPUT3 ON CUR	uA	5	95	58.5713	58.7192	PASS
INPUT4 ON CUR	uA	5	95	58.5453	58.7386	PASS
INPUT5 ON CUR	uA	5	95	58.3831	58.4979	PASS
INPUT6 ON CUR	uA	5	95	58.3911	58.4103	PASS
INPUT7 ON CUR	uA	5	95	58.3457	58.448	PASS
INPUT8 ON CUR	uA	5	95	58.161	58.1593	PASS
IN1 VIH	V	0.825	2.4	1.425	1.35	PASS
IN1 VIL	V	0.825	2.4	1.4	1.325	PASS
IN2 VIH	V	0.825	2.4	1.45	1.425	PASS
IN2 VIL	V	0.825	2.4	1.425	1.4	PASS
IN3 VIH	V	0.825	2.4	1.45	1.375	PASS
IN3 VIL	V	0.825	2.4	1.425	1.35	PASS
IN4 VIH	V	0.825	2.4	1.45	1.425	PASS
IN4 VIL	V	0.825	2.4	1.425	1.4	PASS
IN5 VIH	V	0.825	2.4	1.45	1.375	PASS
IN5 VIL	V	0.825	2.4	1.425	1.35	PASS
IN6 VIH	V	0.825	2.4	1.45	1.425	PASS
IN6 VIL	V	0.825	2.4	1.425	1.4	PASS
IN7 VIH	V	0.825	2.4	1.45	1.375	PASS
IN7 VIL	V	0.825	2.4	1.425	1.35	PASS
IN8 VIH	V	0.825	2.4	1.45	1.425	PASS
IN8 VIL	V	0.825	2.4	1.4	1.375	PASS
OUTPUT1 LEAKAGE	uA	-40	40	-0.0177	-0.009	PASS
OUTPUT2 LEAKAGE	uA	-40	40	-0.0086	0.0006	PASS
OUTPUT3 LEAKAGE	uA	-40	40	-0.0059	-0.0008	PASS
OUTPUT4 LEAKAGE	uA	-40	40	-0.0074	0	PASS
OUTPUT5 LEAKAGE	uA	-40	40	-0.0163	-0.0038	PASS
OUTPUT6 LEAKAGE	uA	-40	40	-0.0235	-0.0067	PASS
OUTPUT7 LEAKAGE	uA	-40	40	-0.0286	-0.0128	PASS
OUTPUT8 LEAKAGE	uA	-40	40	-0.0359	-0.0153	PASS
OUT1_LEAKAGE_VS	uA	-9	9	0.1266	0.0661	PASS

OUT2_LEAKAGE_VS	uA	-9	9	0.1391	0.0712	PASS
OUT3_LEAKAGE_VS	uA	-9	9	0.1412	0.0753	PASS
OUT4_LEAKAGE_VS	uA	-9	9	0.1459	0.0763	PASS
OUT5_LEAKAGE_VS	uA	-9	9	0.142	0.0763	PASS
OUT6_LEAKAGE_VS	uA	-9	9	0.1422	0.069	PASS
OUT7_LEAKAGE_VS	uA	-9	9	0.1321	0.0659	PASS
OUT8_LEAKAGE_VS	uA	-9	9	0.0053	0.0085	PASS
OUTPUT1 SAT	V	0	2	1.6717	1.8965	PASS
OUTPUT2 SAT	V	0	2	1.6665	1.9223	PASS
OUTPUT3 SAT	V	0	2	1.6659	1.9165	PASS
OUTPUT4 SAT	V	0	2	1.6646	1.9197	PASS
OUTPUT5 SAT	V	0	2	1.6617	1.9127	PASS
OUTPUT6 SAT	V	0	2	1.6652	1.921	PASS
OUTPUT7 SAT	V	0	2	1.6659	1.9146	PASS
OUTPUT8 SAT	V	0	2	1.6763	1.9275	PASS
OUTPUT1 SAT	V	0	2.1	1.7983	2.0487	PASS
OUTPUT2 SAT	V	0	2.1	1.7886	2.0816	PASS
OUTPUT3 SAT	V	0	2.1	1.786	2.0742	PASS
OUTPUT4 SAT	V	0	2.1	1.7867	2.0761	PASS
OUTPUT5 SAT	V	0	2.1	1.785	2.0674	PASS
OUTPUT6 SAT	V	0	2.1	1.7896	2.0784	PASS
OUTPUT7 SAT	V	0	2.1	1.7902	2.0726	PASS
OUTPUT8 SAT	V	0	2.1	1.8052	2.0919	PASS
OUTPUT1 SAT	V	0	2.5	2.0223	2.3437	PASS
OUTPUT2 SAT	V	0	2.5	2.011	2.3992	PASS
OUTPUT3 SAT	V	0	2.5	2.0071	2.3856	PASS
OUTPUT4 SAT	V	0	2.5	1.9999	2.3892	PASS
OUTPUT5 SAT	V	0	2.5	2.0022	2.3776	PASS
OUTPUT6 SAT	V	0	2.5	2.009	2.3914	PASS
OUTPUT7 SAT	V	0	2.5	2.0113	2.385	PASS
OUTPUT8 SAT	V	0	2.5	2.0318	2.4175	PASS
CH1 TURN ON	uS	0	1	0.4008	0.6217	PASS
CH1 TURN OFF	uS	0	4	2.0963	1.3488	PASS
CH1 RISE TIME	uS	0	1	0.3817	0.2329	PASS
CH1 FALL TIME	uS	0	4	1.3433	0.925	PASS
CH2 TURN ON	uS	0	1	0.3674	0.4416	PASS
CH2 TURN OFF	uS	0	4	1.9539	1.2802	PASS
CH2 RISE TIME	uS	0	1	0.3496	0.2116	PASS
CH2 FALL TIME	uS	0	4	1.2096	0.8779	PASS
CH3 TURN ON	uS	0	1	0.3653	0.6058	PASS
CH3 TURN OFF	uS	0	4	1.9755	1.2932	PASS
CH3 RISE TIME	uS	0	1	0.3447	0.1976	PASS
CH3 FALL TIME	uS	0	4	1.2007	0.8757	PASS
CH4 TURN ON	uS	0	1	0.3656	0.4381	PASS
CH4 TURN OFF	uS	0	4	1.9681	1.287	PASS
CH4 RISE TIME	uS	0	1	0.3456	0.2103	PASS
CH4 FALL TIME	uS	0	4	1.1973	0.885	PASS
CH5 TURN ON	uS	0	1	0.3632	0.585	PASS
CH5 TURN OFF	uS	0	4	1.9707	1.3	PASS
CH5 RISE TIME	uS	0	1	0.3457	0.1968	PASS
CH5 FALL TIME	uS	0	4	1.1984	0.8839	PASS
CH6 TURN ON	uS	0	1	0.3642	0.4354	PASS
CH6 TURN OFF	uS	0	4	1.9848	1.2939	PASS
CH6 RISE TIME	uS	0	1	0.3472	0.2082	PASS
CH6 FALL TIME	uS	0	4	1.21	0.8771	PASS
CH7 TURN ON	uS	0	1	0.3633	0.6003	PASS
CH7 TURN OFF	uS	0	4	1.9723	1.2982	PASS
CH7 RISE TIME	uS	0	1	0.3475	0.1985	PASS
CH7 FALL TIME	uS	0	4	1.2038	0.8771	PASS

|						
CH8 TURN ON	uS	0	1	0.363	0.4381	PASS
CH8 TURN OFF	uS	0	4	1.998	1.3032	PASS
CH8 RISE TIME	uS	0	1	0.3429	0.211	PASS
CH8 FALL TIME	uS	0	4	1.221	0.8882	PASS
CLAMP1 LEAKAGE	uA	-40	40	0.0656	0.0336	PASS
CLAMP2 LEAKAGE	uA	-40	40	0.0636	0.0299	PASS
CLAMP3 LEAKAGE	uA	-40	40	0.058	0.0309	PASS
CLAMP4 LEAKAGE	uA	-40	40	0.0587	0.0286	PASS
CLAMP5 LEAKAGE	uA	-40	40	0.0603	0.0293	PASS
CLAMP6 LEAKAGE	uA	-40	40	0.0554	0.0343	PASS
CLAMP7 LEAKAGE	uA	-40	40	0.0593	0.0256	PASS
CLAMP8 LEAKAGE	uA	-40	40	0.0813	0.0396	PASS
CLAMP1 VF@200MA	V	-2.4	0	-0.9621	-0.9434	PASS
CLAMP2 VF@200MA	V	-2.4	0	-0.9616	-0.9428	PASS
CLAMP3 VF@200MA	V	-2.4	0	-0.9622	-0.9428	PASS
CLAMP4 VF@200MA	V	-2.4	0	-0.9623	-0.9429	PASS
CLAMP5 VF@200MA	V	-2.4	0	-0.9622	-0.9427	PASS
CLAMP6 VF@200MA	V	-2.4	0	-0.9629	-0.9431	PASS
CLAMP7 VF@200MA	V	-2.4	0	-0.9619	-0.9421	PASS
CLAMP8 VF@200MA	V	-2.4	0	-0.9654	-0.9459	PASS
CLAMP1 VF@700MA	V	-2.9	0	-1.2206	-1.2234	PASS
CLAMP2 VF@700MA	V	-2.9	0	-1.2198	-1.223	PASS
CLAMP3 VF@700MA	V	-2.9	0	-1.2218	-1.2247	PASS
CLAMP4 VF@200MA	V	-2.9	0	-1.2232	-1.2262	PASS
CLAMP5 VF@700MA	V	-2.9	0	-1.222	-1.2252	PASS
CLAMP6 VF@700MA	V	-2.9	0	-1.2247	-1.2283	PASS
CLAMP7 VF@700MA	V	-2.9	0	-1.2214	-1.2232	PASS
CLAMP8 VF@700MA	V	-2.9	0	-1.2332	-1.2383	PASS
OUT1_OFF	V	-0.1	0.2	0.0012	-0.0002	PASS
OUT1_SAT_LOW_VS	V	0	2.5	2.0167	2.2166	PASS
OUT2_OFF	V	-0.1	0.2	0.001	0	PASS
OUT2_SAT_LOW_VS	V	0	2.5	2.0067	2.21	PASS
OUT3_OFF	V	-0.1	0.2	0.0012	-0.0001	PASS
OUT3_SAT_LOW_VS	V	0	2.5	1.9999	2.2023	PASS
OUT4_OFF	V	-0.1	0.2	0.0012	0	PASS
OUT4_SAT_LOW_VS	V	0	2.5	1.996	2.1998	PASS
OUT5_OFF	V	-0.1	0.2	0.0005	-0.0006	PASS
OUT5_SAT_LOW_VS	V	0	2.5	1.9965	2.1964	PASS
OUT6_OFF	V	-0.1	0.2	0.0007	-0.0005	PASS
OUT6_SAT_LOW_VS	V	0	2.5	2.0018	2.2041	PASS
OUT7_OFF	V	-0.1	0.2	0.0011	-0.0001	PASS
OUT7_SAT_LOW_VS	V	0	2.5	2.0041	2.2035	PASS
OUT8_OFF	V	-0.1	0.2	0.0013	-0.0001	PASS
OUT8_SAT_LOW_VS	V	0	2.5	2.0264	2.2312	PASS

Appendix A: AAHS298B Functional Block Diagram
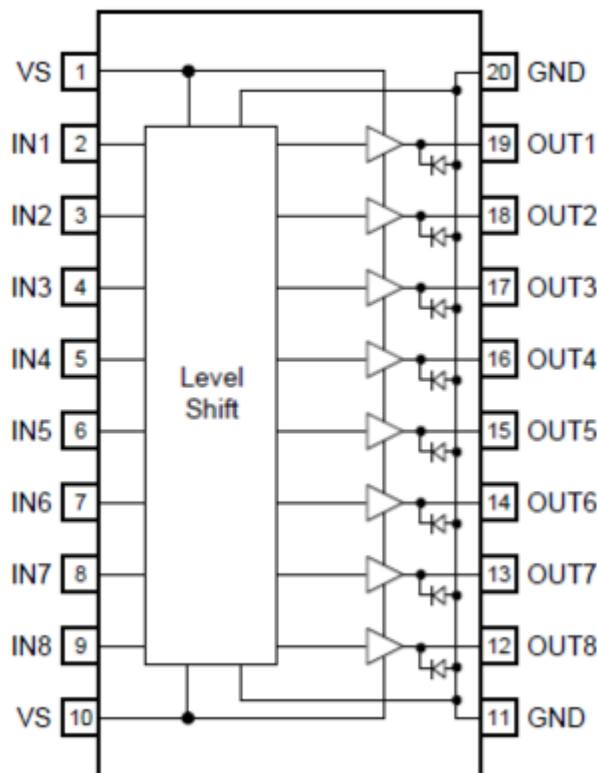
Figure A.1. AAHS298B Functional Block Diagram

Appendix B: Radiation Bias Connections and Absolute Maximum Ratings

Table B.1. Absolute Maximum Ratings

Pin	Function	Connection / Bias
1	VS	50V
2	IN1	2V
3	IN2	0V
4	IN2	2V
5	IN2	0V
6	IN5	2V
7	IN6	0V
8	IN7	2V
9	IN8	0V
10	VS	50V
11	GND	0V
12	OUT8	10k to Ground
13	OUT7	10k to Ground
14	OUT6	10k to Ground
15	OUT5	10k to Ground
16	OUT4	10k to Ground
17	OUT3	10k to Ground
18	OUT2	10k to Ground
19	OUT1	10k to Ground
20	GND	0V
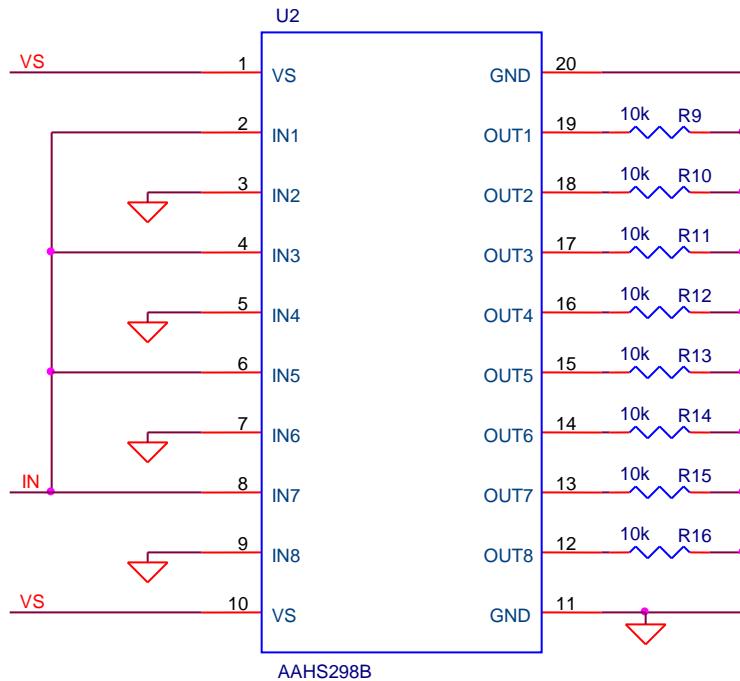
Figure B.1. Irradiation Bias Circuit

Table B.2. Absolute Maximum Ratings

Absolute Maximum Ratings:	
Parameter	**Max Rating**
Supply Voltage (+VS)	75V
Max Voltage between Input and Ground	15V
Max Voltage between Output and Ground	75V
Single Output Continuous Current	-700mA
Multiple Output Simultaneously Continuous Current	-2800mA

Appendix C: Electrical Test Parameters and Conditions

The expected ranges of values as well as the measurement conditions are taken from Microsemi AAHS298B Datasheet Revision 1.1 published 6/26/2012. See: http://www.microsemi.com/existing-parts/parts/35#docs-specs. All electrical tests for this device were performed on the Credence ASL1000 tester. Data was taken pre-irradiation, post irradiation and after 72 hours of biased annealing at Microsemi. Dry Ice was used for transit between DMEA and Microsemi to freeze annealing effects during transit. Descriptions of the measured parameters and test conditions are shown in Table C.1.

A listing of the measurement precision/resolution for each parameter is shown in Table C.2. The precision/resolution values were obtained from test data or from the resolution of the ASL-1000 tester for the particular test shown. A single unit was tested 255 times and the standard deviation for the repeatability of each measurement was calculated. This number was used to calculate the precision of the measurement unless it was determined that the resolution of the tester was worse than this statistical value. This is particularly clear when the standard deviation of the measurement is 0.

Table C.1. Measured parameters and test conditions for the AAHS298B 8 Channel High Side Driver.

Test Name	Test Description
ICC1	ICC at 50V, Vin = 0V
ICC2	ICC at 50V, Vin = 2.5V on all 8 inputs.
ICC3	ICC at 50V, Vin = 5V
INPUT1 OFF CUR	Measure current on Input 1 at 0V
INPUT2 OFF CUR	Measure current on Input 2 at 0V
INPUT3 OFF CUR	Measure current on Input 3 at 0V
INPUT4 OFF CUR	Measure current on Input 4 at 0V
INPUT5 OFF CUR	Measure current on Input 5 at 0V
INPUT6 OFF CUR	Measure current on Input 6 at 0V
INPUT7 OFF CUR	Measure current on Input 7 at 0V
INPUT8 OFF CUR	Measure current on Input 8 at 0V
INPUT1 ON CUR	Measure current on Input 1 at 5V
INPUT2 ON CUR	Measure current on Input 2 at 5V
INPUT3 ON CUR	Measure current on Input 3 at 5V
INPUT4 ON CUR	Measure current on Input 4 at 5V
INPUT5 ON CUR	Measure current on Input 5 at 5V
INPUT6 ON CUR	Measure current on Input 6 at 5V
INPUT7 ON CUR	Measure current on Input 7 at 5V
INPUT8 ON CUR	Measure current on Input 8 at 5V
IN1 VIH	Ramp up voltage on Input1 until output turns on
IN1 VIL	Ramp down voltage on Input1 until output turns off.
IN2 VIH	Ramp up voltage on Input2 until output turns on
IN2 VIL	Ramp down voltage on Input2 until output turns off.
IN3 VIH	Ramp up voltage on Input3 until output turns on
IN3 VIL	Ramp down voltage on Input3 until output turns off.
IN4 VIH	Ramp up voltage on Input4 until output turns on
IN4 VIL	Ramp down voltage on Input4 until output turns off.
IN5 VIH	Ramp up voltage on Input5 until output turns on
IN5 VIL	Ramp down voltage on Input5 until output turns off.
IN6 VIH	Ramp up voltage on Input6 until output turns on
IN6 VIL	Ramp down voltage on Input6 until output turns off.
IN7 VIH	Ramp up voltage on Input7 until output turns on
IN7 VIL	Ramp down voltage on Input7 until output turns off.
IN8 VIH	Ramp up voltage on Input8 until output turns on
IN8 VIL	Ramp down voltage on Input8 until output turns off.
OUTPUT1 LEAKAGE	Force 0V on Output1, measure current
OUTPUT2 LEAKAGE	Force 0V on Output2, measure current
OUTPUT3 LEAKAGE	Force 0V on Output3, measure current

OUTPUT4 LEAKAGE	Force 0V on Output4, measure current
OUTPUT5 LEAKAGE	Force 0V on Output5, measure current
OUTPUT6 LEAKAGE	Force 0V on Output6, measure current
OUTPUT7 LEAKAGE	Force 0V on Output7, measure current
OUTPUT8 LEAKAGE	Force 0V on Output8, measure current
OUTPUT1 SAT	Force 350mA on Output1, measure voltage, subtract from 50V.
OUTPUT2 SAT	Force 350mA on Output2, measure voltage, subtract from 50V.
OUTPUT3 SAT	Force 350mA on Output3, measure voltage, subtract from 50V.
OUTPUT4 SAT	Force 350mA on Output4, measure voltage, subtract from 50V.
OUTPUT5 SAT	Force 350mA on Output5, measure voltage, subtract from 50V.
OUTPUT6 SAT	Force 350mA on Output6, measure voltage, subtract from 50V.
OUTPUT7 SAT	Force 350mA on Output7, measure voltage, subtract from 50V.
OUTPUT8 SAT	Force 350mA on Output8, measure voltage, subtract from 50V.
OUTPUT1 SAT	Force 500mA on Output1, measure voltage, subtract from 50V.
OUTPUT2 SAT	Force 500mA on Output2, measure voltage, subtract from 50V.
OUTPUT3 SAT	Force 500mA on Output3, measure voltage, subtract from 50V.
OUTPUT4 SAT	Force 500mA on Output4, measure voltage, subtract from 50V.
OUTPUT5 SAT	Force 500mA on Output5, measure voltage, subtract from 50V.
OUTPUT6 SAT	Force 500mA on Output6, measure voltage, subtract from 50V.
OUTPUT7 SAT	Force 500mA on Output7, measure voltage, subtract from 50V.
OUTPUT8 SAT	Force 500mA on Output8, measure voltage, subtract from 50V.
OUTPUT1 SAT	Force 700mA on Output1, measure voltage, subtract from 50V.
OUTPUT2 SAT	Force 700mA on Output2, measure voltage, subtract from 50V.
OUTPUT3 SAT	Force 700mA on Output3, measure voltage, subtract from 50V.
OUTPUT4 SAT	Force 700mA on Output4, measure voltage, subtract from 50V.
OUTPUT5 SAT	Force 700mA on Output5, measure voltage, subtract from 50V.
OUTPUT6 SAT	Force 700mA on Output6, measure voltage, subtract from 50V.
OUTPUT7 SAT	Force 700mA on Output7, measure voltage, subtract from 50V.
OUTPUT8 SAT	Force 700mA on Output8, measure voltage, subtract from 50V.
CH1 TURN ON	Measure prop delay Input 1 rising to Output1 rising
CH1 TURN OFF	Measure prop delay Input 1 falling to Output1 falling
CH1 OUTPUT RISE	Measure Output1 rise time
CH1 OUTPUT FALL	Measure Output1 fall time
CH2 TURN ON	Measure prop delay Input2 rising to Output2 rising
CH2 TURN OFF	Measure prop delay Input2 falling to Output2 falling
CH2 OUTPUT RISE	Measure Output2 rise time
CH2 OUTPUT FALL	Measure Output2 fall time
CH3 TURN ON	Measure prop delay Input3 rising to Output3 rising
CH3 TURN OFF	Measure prop delay Input3 falling to Output3 falling
CH3 OUTPUT RISE	Measure Output3 rise time
CH3 OUTPUT FALL	Measure Output3 fall time

CH4 TURN ON	Measure prop delay Input4 rising to Output4 rising
CH4 TURN OFF	Measure prop delay Input4 falling to Output4 falling
CH4 OUTPUT RISE	Measure Output4 rise time
CH4 OUTPUT FALL	Measure Output4 fall time
CH5 TURN ON	Measure prop delay Input5 rising to Output5 rising
CH5 TURN OFF	Measure prop delay Input5 falling to Output5 falling
CH5 OUTPUT RISE	Measure Output5 rise time
CH5 OUTPUT FALL	Measure Output5 fall time
CH6 TURN ON	Measure prop delay Input6 rising to Output6 rising
CH6 TURN OFF	Measure prop delay Input6 falling to Output6 falling
CH6 OUTPUT RISE	Measure Output6 rise time
CH6 OUTPUT FALL	Measure Output6 fall time
CH7 TURN ON	Measure prop delay Input7 rising to Output7 rising
CH7 TURN OFF	Measure prop delay Input7 falling to Output7 falling
CH7 OUTPUT RISE	Measure Output7 rise time
CH7 OUTPUT FALL	Measure Output7 fall time
CH8 TURN ON	Measure prop delay Input8 rising to Output8 rising
CH8 TURN OFF	Measure prop delay Input8 falling to Output8 falling
CH8 OUTPUT RISE	Measure Output8 rise time
CH8 OUTPUT FALL	Measure Output8 fall time
CLAMP1 LEAKAGE	Force Output1 to 50V, Measure Current
CLAMP2 LEAKAGE	Force Output2 to 50V, Measure Current
CLAMP3 LEAKAGE	Force Output3 to 50V, Measure Current
CLAMP4 LEAKAGE	Force Output4 to 50V, Measure Current
CLAMP5 LEAKAGE	Force Output5 to 50V, Measure Current
CLAMP6 LEAKAGE	Force Output6 to 50V, Measure Current
CLAMP7 LEAKAGE	Force Output7 to 50V, Measure Current
CLAMP8 LEAKAGE	Force Output8 to 50V, Measure Current
CLAMP1 VF@200MA	Force -200mA on Output1, measure voltage
CLAMP2 VF@200MA	Force -200mA on Output2, measure voltage
CLAMP3 VF@200MA	Force -200mA on Output3, measure voltage
CLAMP4 VF@200MA	Force -200mA on Output4, measure voltage
CLAMP5 VF@200MA	Force -200mA on Output5, measure voltage
CLAMP6 VF@200MA	Force -200mA on Output6, measure voltage
CLAMP7 VF@200MA	Force -200mA on Output7, measure voltage
CLAMP8 VF@200MA	Force -200mA on Output8, measure voltage
CLAMP1 VF@700MA	Force -700mA on Output1, measure voltage
CLAMP2 VF@700MA	Force -700mA on Output2, measure voltage
CLAMP3 VF@700MA	Force -700mA on Output3, measure voltage
CLAMP4 VF@700MA	Force -700mA on Output4, measure voltage
CLAMP5 VF@700MA	Force -700mA on Output5, measure voltage

CLAMP6 VF@700MA	Force -700mA on Output6, measure voltage
CLAMP7 VF@700MA	Force -700mA on Output7, measure voltage
CLAMP8 VF@700MA	Force -700mA on Output8, measure voltage
OUT1_OFF	Set Vs=10V, Vin=0.8V, measure output voltage
OUT1_SAT_LOW_VS	Force 700mA on Output1, measure voltage, subtract from 10V.
OUT2_OFF	Set Vs=10V, Vin=0.8V, measure output voltage
OUT2_SAT_LOW_VS	Force 700mA on Output1, measure voltage, subtract from 10V.
OUT3_OFF	Set Vs=10V, Vin=0.8V, measure output voltage
OUT3_SAT_LOW_VS	Force 700mA on Output1, measure voltage, subtract from 10V.
OUT4_OFF	Set Vs=10V, Vin=0.8V, measure output voltage
OUT4_SAT_LOW_VS	Force 700mA on Output1, measure voltage, subtract from 10V.
OUT5_OFF	Set Vs=10V, Vin=0.8V, measure output voltage
OUT5_SAT_LOW_VS	Force 700mA on Output1, measure voltage, subtract from 10V.
OUT6_OFF	Set Vs=10V, Vin=0.8V, measure output voltage
OUT6_SAT_LOW_VS	Force 700mA on Output1, measure voltage, subtract from 10V.
OUT7_OFF	Set Vs=10V, Vin=0.8V, measure output voltage
OUT7_SAT_LOW_VS	Force 700mA on Output1, measure voltage, subtract from 10V.
OUT8_OFF	Set Vs=10V, Vin=0.8V, measure output voltage
OUT8_SAT_LOW_VS	Force 700mA on Output1, measure voltage, subtract from 10V.

Table C.2. Measured parameters, pre-irradiation specifications and measurement precision for the AAHS298B

Test Name	Unit	Min Limit	Max Limit	Measurement Resolution
ICC1	uA	-1.00E-01	2.00E+01	2.40E-02
ICC2	mA	0.00E+00	2.50E+01	1.20E-02
ICC3	mA	0.00E+00	2.50E+01	1.20E-02
INPUT1 OFF CUR	uA	-1.00E+01	1.00E+01	1.20E-02
INPUT2 OFF CUR	uA	-1.00E+01	1.00E+01	1.80E-02
INPUT3 OFF CUR	uA	-1.00E+01	1.00E+01	1.80E-02
INPUT4 OFF CUR	uA	-1.00E+01	1.00E+01	1.80E-02
INPUT5 OFF CUR	uA	-1.00E+01	1.00E+01	1.20E-02
INPUT6 OFF CUR	uA	-1.00E+01	1.00E+01	1.20E-02
INPUT7 OFF CUR	uA	-1.00E+01	1.00E+01	1.80E-02
INPUT8 OFF CUR	uA	-1.00E+01	1.00E+01	1.80E-02
INPUT1 ON CUR	uA	0.00E+00	1.00E+02	1.08E-01
INPUT2 ON CUR	uA	0.00E+00	1.00E+02	1.08E-01
INPUT3 ON CUR	uA	0.00E+00	1.00E+02	1.08E-01
INPUT4 ON CUR	uA	0.00E+00	1.00E+02	1.08E-01
INPUT5 ON CUR	uA	0.00E+00	1.00E+02	1.02E-01
INPUT6 ON CUR	uA	0.00E+00	1.00E+02	9.60E-02
INPUT7 ON CUR	uA	0.00E+00	1.00E+02	1.08E-01
INPUT8 ON CUR	uA	0.00E+00	1.00E+02	1.08E-01

IN1 VIH	V	8.00E-01	2.50E+00	2.50E-02
IN1 VIL	V	8.00E-01	2.50E+00	2.50E-02
IN2 VIH	V	8.00E-01	2.50E+00	2.50E-02
IN2 VIL	V	8.00E-01	2.50E+00	2.50E-02
IN3 VIH	V	8.00E-01	2.50E+00	2.50E-02
IN3 VIL	V	8.00E-01	2.50E+00	2.50E-02
IN4 VIH	V	8.00E-01	2.50E+00	2.50E-02
IN4 VIL	V	8.00E-01	2.50E+00	2.50E-02
IN5 VIH	V	8.00E-01	2.50E+00	2.50E-02
IN5 VIL	V	8.00E-01	2.50E+00	2.50E-02
IN6 VIH	V	8.00E-01	2.50E+00	2.50E-02
IN6 VIL	V	8.00E-01	2.50E+00	2.50E-02
IN7 VIH	V	8.00E-01	2.50E+00	2.50E-02
IN7 VIL	V	8.00E-01	2.50E+00	3.60E-02
IN8 VIH	V	8.00E-01	2.50E+00	2.50E-02
IN8 VIL	V	8.00E-01	2.50E+00	2.50E-02
OUTPUT1 LEAKAGE	uA	-5.00E+01	5.00E+01	6.00E-03
OUTPUT2 LEAKAGE	uA	-5.00E+01	5.00E+01	6.00E-03
OUTPUT3 LEAKAGE	uA	-5.00E+01	5.00E+01	6.00E-03
OUTPUT4 LEAKAGE	uA	-5.00E+01	5.00E+01	6.00E-03
OUTPUT5 LEAKAGE	uA	-5.00E+01	5.00E+01	6.00E-03
OUTPUT6 LEAKAGE	uA	-5.00E+01	5.00E+01	6.00E-03
OUTPUT7 LEAKAGE	uA	-5.00E+01	5.00E+01	6.00E-03
OUTPUT8 LEAKAGE	uA	-5.00E+01	5.00E+01	6.00E-03
OUT1_LEAKAGE_VS	uA	-1.00E+01	1.00E+01	1.80E-02
OUT2_LEAKAGE_VS	uA	-1.00E+01	1.00E+01	1.80E-02
OUT3_LEAKAGE_VS	uA	-1.00E+01	1.00E+01	1.80E-02
OUT4_LEAKAGE_VS	uA	-1.00E+01	1.00E+01	1.80E-02
OUT5_LEAKAGE_VS	uA	-1.00E+01	1.00E+01	1.80E-02
OUT6_LEAKAGE_VS	uA	-1.00E+01	1.00E+01	1.80E-02
OUT7_LEAKAGE_VS	uA	-1.00E+01	1.00E+01	1.80E-02
OUT8_LEAKAGE_VS	uA	-1.00E+01	1.00E+01	6.00E-03
OUTPUT1 SAT	V	0.00E+00	2.20E+00	6.00E-03
OUTPUT2 SAT	V	0.00E+00	2.20E+00	6.00E-03
OUTPUT3 SAT	V	0.00E+00	2.20E+00	6.00E-03
OUTPUT4 SAT	V	0.00E+00	2.20E+00	6.00E-03
OUTPUT5 SAT	V	0.00E+00	2.20E+00	6.00E-03
OUTPUT6 SAT	V	0.00E+00	2.20E+00	6.00E-03
OUTPUT7 SAT	V	0.00E+00	2.20E+00	6.00E-03
OUTPUT8 SAT	V	0.00E+00	2.20E+00	6.00E-03
OUTPUT1 SAT	V	0.00E+00	2.30E+00	6.00E-03
OUTPUT2 SAT	V	0.00E+00	2.30E+00	6.00E-03
OUTPUT3 SAT	V	0.00E+00	2.30E+00	6.00E-03
OUTPUT4 SAT	V	0.00E+00	2.30E+00	6.00E-03
OUTPUT5 SAT	V	0.00E+00	2.30E+00	6.00E-03

OUTPUT6 SAT	V	0.00E+00	2.30E+00	6.00E-03
OUTPUT7 SAT	V	0.00E+00	2.30E+00	6.00E-03
OUTPUT8 SAT	V	0.00E+00	2.30E+00	6.00E-03
OUTPUT1 SAT	V	0.00E+00	2.70E+00	6.00E-03
OUTPUT2 SAT	V	0.00E+00	2.70E+00	6.00E-03
OUTPUT3 SAT	V	0.00E+00	2.70E+00	6.00E-03
OUTPUT4 SAT	V	0.00E+00	2.70E+00	6.00E-03
OUTPUT5 SAT	V	0.00E+00	2.70E+00	6.00E-03
OUTPUT6 SAT	V	0.00E+00	2.70E+00	6.00E-03
OUTPUT7 SAT	V	0.00E+00	2.70E+00	6.00E-03
OUTPUT8 SAT	V	0.00E+00	2.70E+00	6.00E-03
CH1 TURN ON	uS	0.00E+00	2.00E+00	6.00E-03
CH1 TURN OFF	uS	0.00E+00	1.00E+01	3.00E-02
CH1 RISE TIME	uS	0.00E+00	2.00E+00	1.20E-02
CH1 FALL TIME	uS	0.00E+00	1.00E+01	4.20E-02
CH2 TURN ON	uS	0.00E+00	2.00E+00	6.00E-03
CH2 TURN OFF	uS	0.00E+00	1.00E+01	2.40E-02
CH2 RISE TIME	uS	0.00E+00	2.00E+00	1.20E-02
CH2 FALL TIME	uS	0.00E+00	1.00E+01	4.20E-02
CH3 TURN ON	uS	0.00E+00	2.00E+00	6.00E-03
CH3 TURN OFF	uS	0.00E+00	1.00E+01	2.40E-02
CH3 RISE TIME	uS	0.00E+00	2.00E+00	1.20E-02
CH3 FALL TIME	uS	0.00E+00	1.00E+01	5.40E-02
CH4 TURN ON	uS	0.00E+00	2.00E+00	6.00E-03
CH4 TURN OFF	uS	0.00E+00	1.00E+01	3.60E-02
CH4 RISE TIME	uS	0.00E+00	2.00E+00	1.20E-02
CH4 FALL TIME	uS	0.00E+00	1.00E+01	4.80E-02
CH5 TURN ON	uS	0.00E+00	2.00E+00	2.40E-02
CH5 TURN OFF	uS	0.00E+00	1.00E+01	2.40E-02
CH5 RISE TIME	uS	0.00E+00	2.00E+00	1.20E-02
CH5 FALL TIME	uS	0.00E+00	1.00E+01	4.20E-02
CH6 TURN ON	uS	0.00E+00	2.00E+00	3.60E-02
CH6 TURN OFF	uS	0.00E+00	1.00E+01	3.00E-02
CH6 RISE TIME	uS	0.00E+00	2.00E+00	4.80E-02
CH6 FALL TIME	uS	0.00E+00	1.00E+01	5.40E-02
CH7 TURN ON	uS	0.00E+00	2.00E+00	1.80E-02
CH7 TURN OFF	uS	0.00E+00	1.00E+01	4.80E-02
CH7 RISE TIME	uS	0.00E+00	2.00E+00	2.40E-02
CH7 FALL TIME	uS	0.00E+00	1.00E+01	6.00E-02
CH8 TURN ON	uS	0.00E+00	2.00E+00	1.20E-02
CH8 TURN OFF	uS	0.00E+00	1.00E+01	4.80E-02
CH8 RISE TIME	uS	0.00E+00	2.00E+00	2.40E-02
CH8 FALL TIME	uS	0.00E+00	1.00E+01	1.02E-01
CLAMP1 LEAKAGE	uA	-5.00E+01	5.00E+01	1.20E-02
CLAMP2 LEAKAGE	uA	-5.00E+01	5.00E+01	1.20E-02

CLAMP3 LEAKAGE	uA	-5.00E+01	5.00E+01	1.20E-02
CLAMP4 LEAKAGE	uA	-5.00E+01	5.00E+01	1.20E-02
CLAMP5 LEAKAGE	uA	-5.00E+01	5.00E+01	1.20E-02
CLAMP6 LEAKAGE	uA	-5.00E+01	5.00E+01	1.20E-02
CLAMP7 LEAKAGE	uA	-5.00E+01	5.00E+01	1.20E-02
CLAMP8 LEAKAGE	uA	-5.00E+01	5.00E+01	1.20E-02
CLAMP1 VF@200MA	V	-2.50E+00	0.00E+00	-1.71E-03
CLAMP2 VF@200MA	V	-2.50E+00	0.00E+00	-1.71E-03
CLAMP3 VF@200MA	V	-2.50E+00	0.00E+00	-1.70E-03
CLAMP4 VF@200MA	V	-2.50E+00	0.00E+00	-1.71E-03
CLAMP5 VF@200MA	V	-2.50E+00	0.00E+00	-1.71E-03
CLAMP6 VF@200MA	V	-2.50E+00	0.00E+00	-1.70E-03
CLAMP7 VF@200MA	V	-2.50E+00	0.00E+00	-1.69E-03
CLAMP8 VF@200MA	V	-2.50E+00	0.00E+00	-1.69E-03
CLAMP1 VF@700MA	V	-3.00E+00	0.00E+00	-1.28E-03
CLAMP2 VF@700MA	V	-3.00E+00	0.00E+00	-1.27E-03
CLAMP3 VF@700MA	V	-3.00E+00	0.00E+00	-1.27E-03
CLAMP4 VF@200MA	V	-3.00E+00	0.00E+00	-1.29E-03
CLAMP5 VF@700MA	V	-3.00E+00	0.00E+00	-1.27E-03
CLAMP6 VF@700MA	V	-3.00E+00	0.00E+00	-1.26E-03
CLAMP7 VF@700MA	V	-3.00E+00	0.00E+00	-1.25E-03
CLAMP8 VF@700MA	V	-3.00E+00	0.00E+00	-1.24E-03