

Radiation Lot Acceptance Testing (RLAT) of the RH1128MW Ultralow Noise Precision High Speed Op Amp for Analog Devices Incorporated

Customer: Analog Devices Incorporated, PO# 47159719

Job Number: RTS24-J0442

Part Type Tested: RH1128MW Ultralow Noise Precision High Speed Op Amp, RH1128M Datasheet Rev. F.

Traceability Information: Manufacturer: Analog Devices, Date Code: 2416, Lot Number: G139291.5, Assembly Lot Number: G137764.1, Wafer Lot Number: WF33524E.1, Wafer Number: 6, Die Type: 6RH1128BK/LT1128B. See photograph of unit under test in Appendix A.

Quantity of Units: 12 units received, 5 units for biased irradiation, 5 units for unbiased irradiation and 2 units for control. Serial numbers 146, 147, 148, 149, and 150 were biased during irradiation, serial numbers 151, 152, 153, 154, and 155 were unbiased during irradiation and serial numbers 156 and 157 were used as control. See Appendix B for the radiation bias connection table.

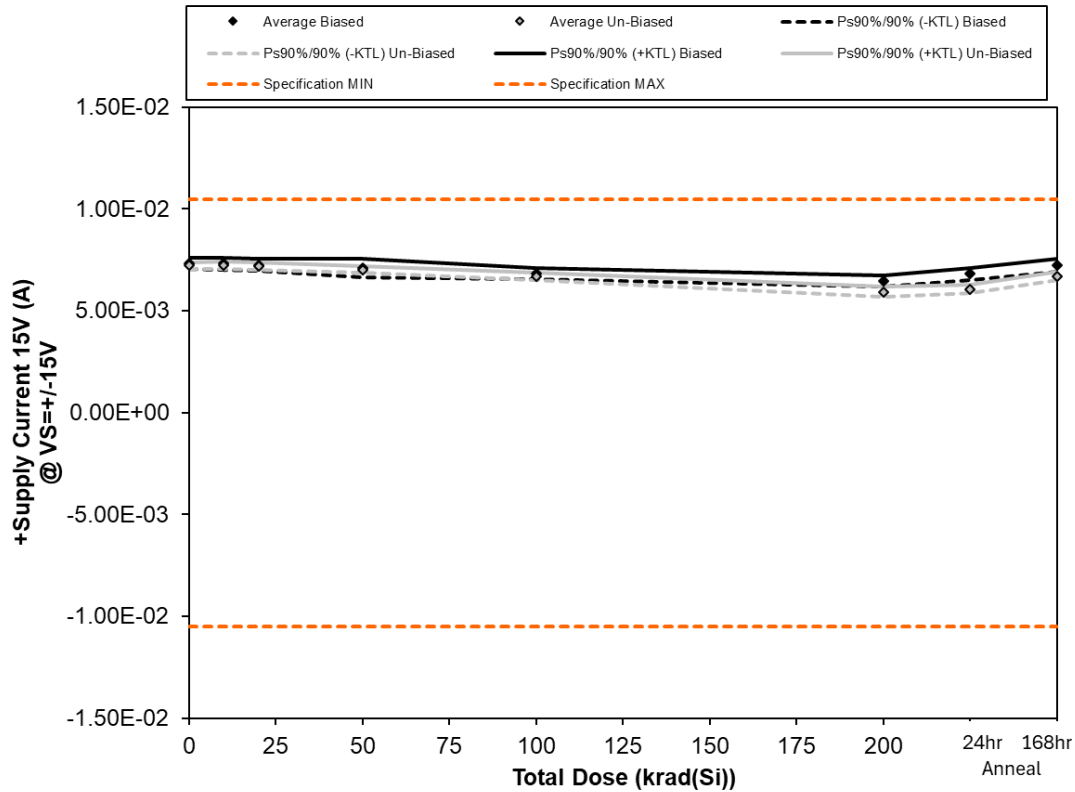
Radiation and Electrical Test Increments: 61.35rad(Si)/s ionizing radiation with electrical test increments: pre-irradiation, 10krad(Si), 20krad(Si), 50krad(Si), 100krad(Si) and 200krad(Si)

Post-Irradiation Anneal: 24-hour room temperature anneal followed by a 168-hour 100°C anneal. Both anneals were performed in the same electrical bias condition as the irradiations. Electrical measurements were made following each anneal increment.

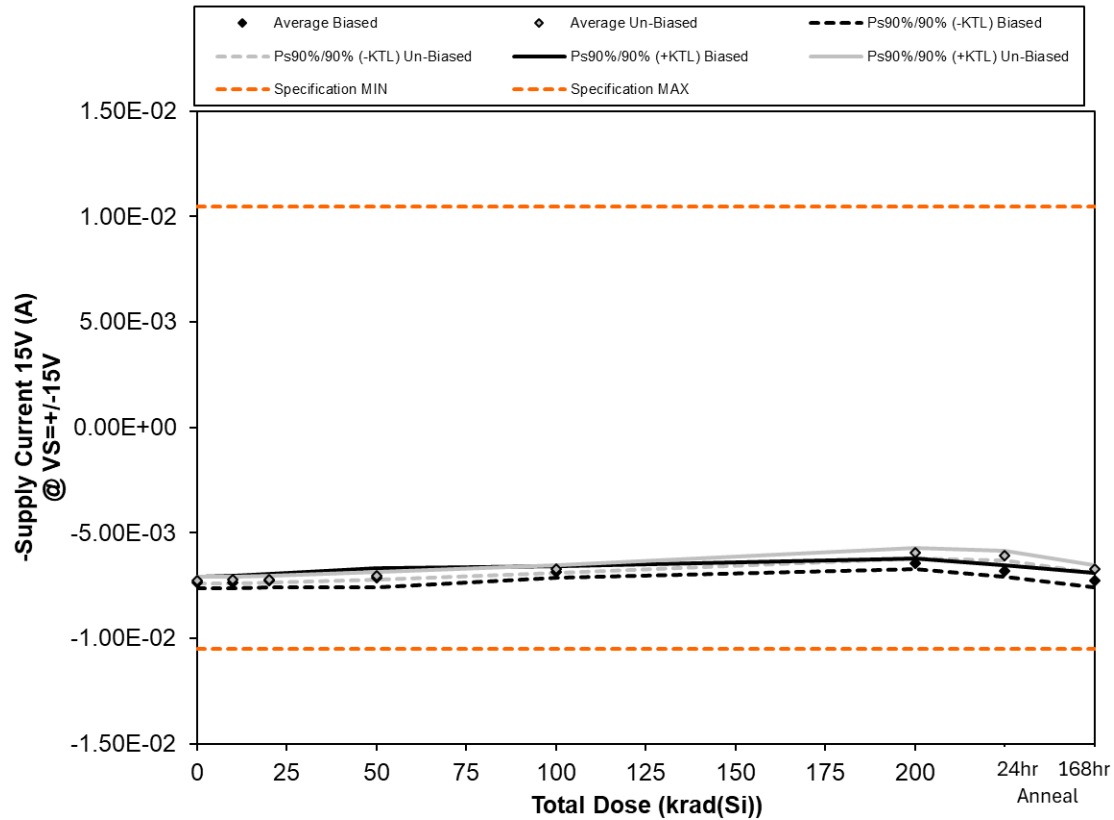
Radiation Test Standard: MIL-STD-883 TM1019 Condition A and RH1128M Datasheet Rev. F.

RLAT Test Result: PASSED the HDR-TID test to the maximum tested dose level of 200krad(Si) on 10/23/2024 with all parameters remaining within their datasheet specifications.

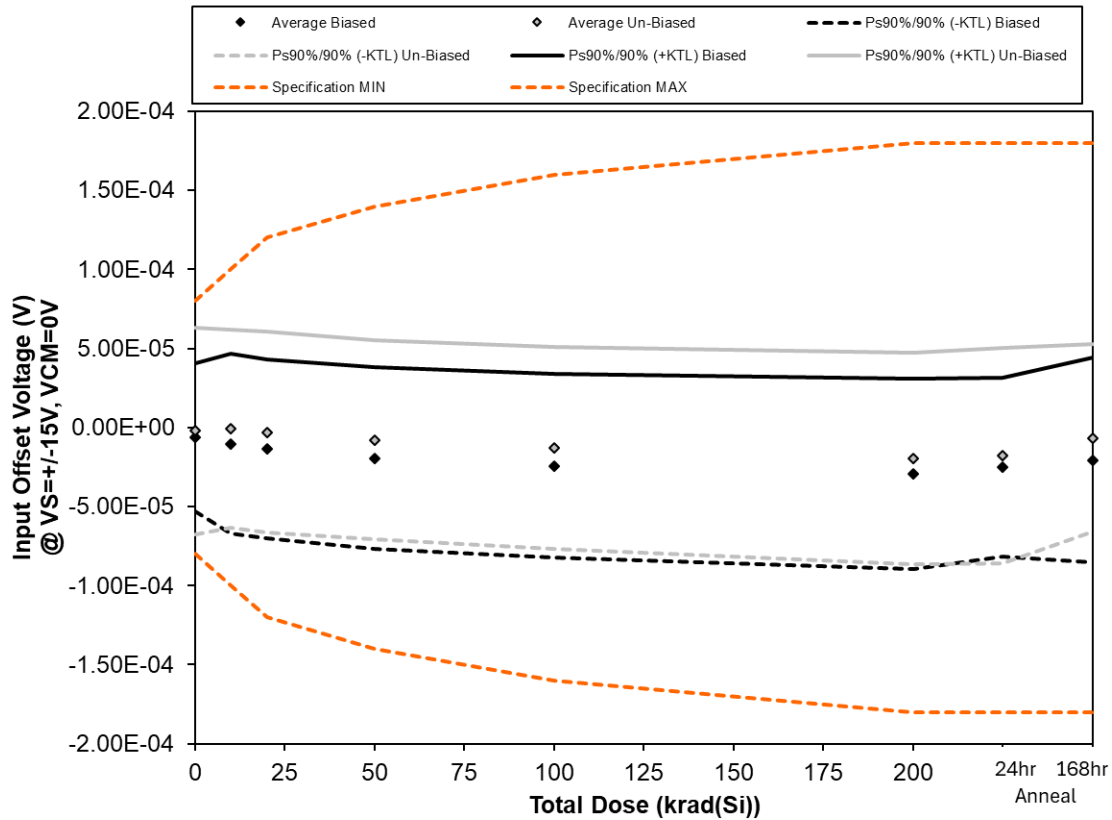
HDR-TID Test Results



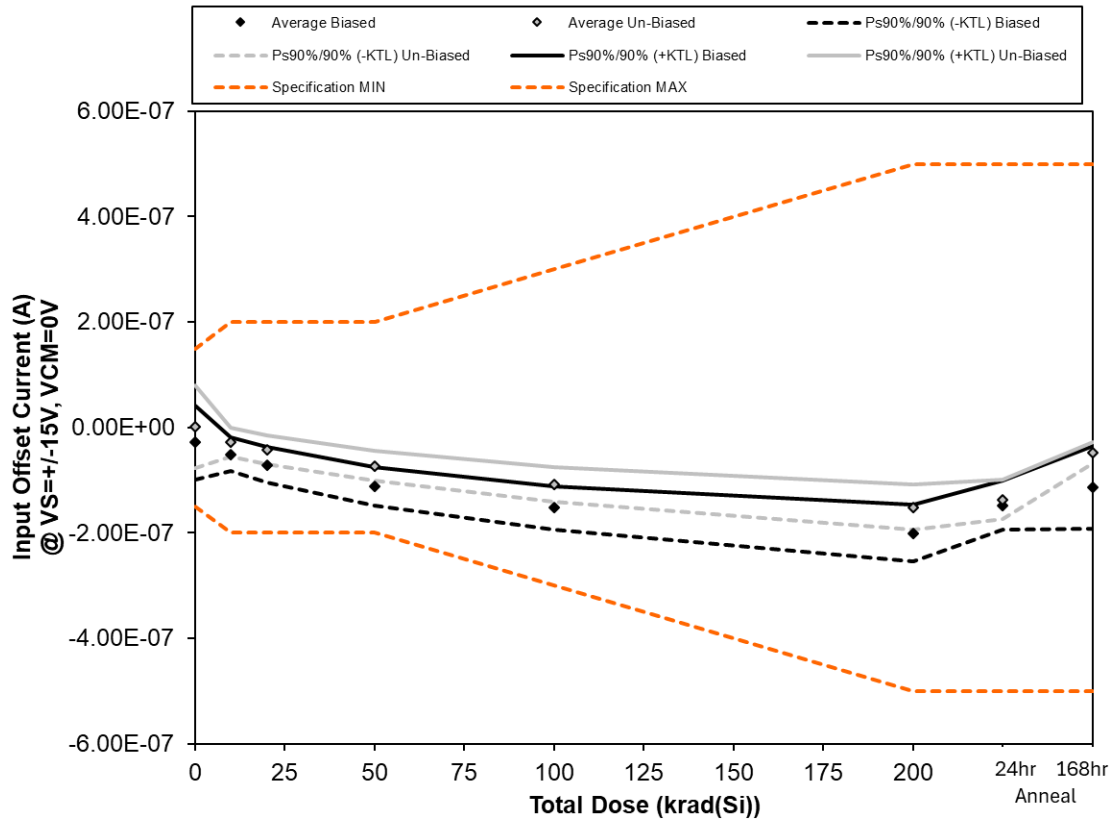
+Supply Current 15V (A) @ VS=+/-15V	Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
	0	10	20	50	100	200		
Device								
146	7.30E-03	7.27E-03	7.21E-03	7.04E-03	6.79E-03	6.41E-03	6.76E-03	7.16E-03
147	7.53E-03	7.52E-03	7.46E-03	7.41E-03	7.00E-03	6.63E-03	6.99E-03	7.43E-03
148	7.30E-03	7.27E-03	7.22E-03	7.04E-03	6.79E-03	6.41E-03	6.78E-03	7.18E-03
149	7.32E-03	7.29E-03	7.23E-03	7.05E-03	6.80E-03	6.42E-03	6.77E-03	7.21E-03
150	7.28E-03	7.25E-03	7.20E-03	7.02E-03	6.78E-03	6.41E-03	6.76E-03	7.16E-03
151	7.24E-03	7.23E-03	7.18E-03	7.04E-03	6.72E-03	6.00E-03	6.14E-03	6.75E-03
152	7.19E-03	7.18E-03	7.14E-03	6.98E-03	6.62E-03	5.83E-03	5.99E-03	6.64E-03
153	7.23E-03	7.22E-03	7.18E-03	7.02E-03	6.65E-03	5.86E-03	6.00E-03	6.67E-03
154	7.20E-03	7.18E-03	7.14E-03	6.99E-03	6.66E-03	5.92E-03	6.06E-03	6.67E-03
155	7.33E-03	7.34E-03	7.29E-03	7.13E-03	6.79E-03	6.04E-03	6.16E-03	6.81E-03
156	7.32E-03	7.32E-03	7.33E-03	7.33E-03	7.32E-03	7.32E-03	7.34E-03	7.30E-03
157	7.35E-03	7.36E-03	7.36E-03	7.35E-03	7.36E-03	7.36E-03	7.37E-03	7.35E-03
Biased Statistics								
Average Biased	7.35E-03	7.32E-03	7.26E-03	7.11E-03	6.83E-03	6.46E-03	6.81E-03	7.23E-03
Std Dev Biased	1.03E-04	1.11E-04	1.10E-04	1.68E-04	9.65E-05	9.68E-05	1.02E-04	1.15E-04
Ps90%/90% (+KTL) Biased	7.63E-03	7.63E-03	7.56E-03	7.58E-03	7.10E-03	6.72E-03	7.09E-03	7.54E-03
Ps90%/90% (-KTL) Biased	7.06E-03	7.02E-03	6.96E-03	6.65E-03	6.57E-03	6.19E-03	6.53E-03	6.91E-03
Un-Biased Statistics								
Average Un-Biased	7.24E-03	7.23E-03	7.19E-03	7.03E-03	6.69E-03	5.93E-03	6.07E-03	6.71E-03
Std Dev Un-Biased	5.77E-05	6.46E-05	6.26E-05	6.20E-05	6.64E-05	8.85E-05	7.79E-05	7.15E-05
Ps90%/90% (+KTL) Un-Biased	7.40E-03	7.41E-03	7.36E-03	7.20E-03	6.87E-03	6.17E-03	6.29E-03	6.91E-03
Ps90%/90% (-KTL) Un-Biased	7.08E-03	7.05E-03	7.01E-03	6.86E-03	6.51E-03	5.69E-03	5.86E-03	6.51E-03
Specification MIN	-1.05E-02	-1.05E-02	-1.05E-02	-1.05E-02	-1.05E-02	-1.05E-02	-1.05E-02	-1.05E-02
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Specification MAX	1.05E-02	1.05E-02	1.05E-02	1.05E-02	1.05E-02	1.05E-02	1.05E-02	1.05E-02
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



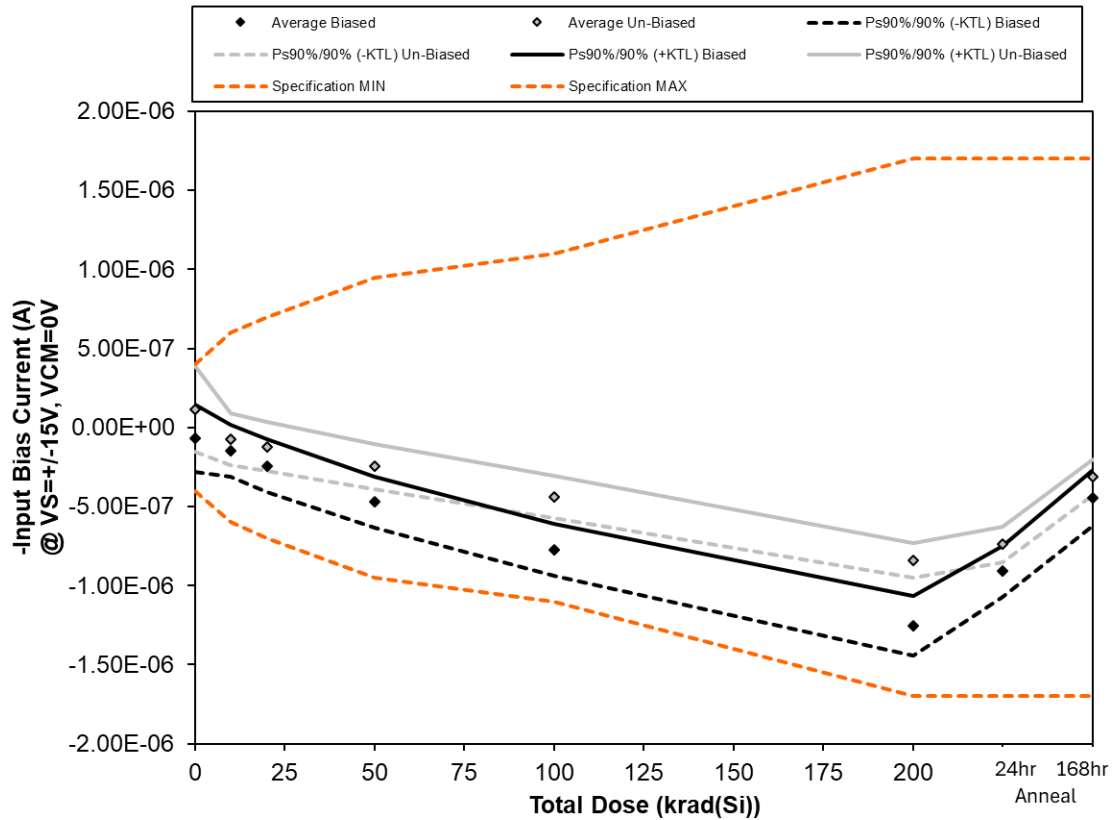
-Supply Current 15V (A) @ VS=+/-15V	Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
	0	10	20	50	100	200		
Device								
146	-7.30E-03	-7.28E-03	-7.21E-03	-7.05E-03	-6.80E-03	-6.42E-03	-6.76E-03	-7.18E-03
147	-7.54E-03	-7.53E-03	-7.47E-03	-7.42E-03	-7.01E-03	-6.63E-03	-6.99E-03	-7.45E-03
148	-7.32E-03	-7.29E-03	-7.23E-03	-7.05E-03	-6.80E-03	-6.42E-03	-6.78E-03	-7.18E-03
149	-7.33E-03	-7.30E-03	-7.23E-03	-7.05E-03	-6.80E-03	-6.42E-03	-6.78E-03	-7.23E-03
150	-7.29E-03	-7.26E-03	-7.21E-03	-7.03E-03	-6.78E-03	-6.42E-03	-6.77E-03	-7.17E-03
151	-7.25E-03	-7.23E-03	-7.19E-03	-7.05E-03	-6.73E-03	-6.02E-03	-6.14E-03	-6.75E-03
152	-7.20E-03	-7.18E-03	-7.14E-03	-6.99E-03	-6.63E-03	-5.85E-03	-5.99E-03	-6.65E-03
153	-7.24E-03	-7.23E-03	-7.19E-03	-7.03E-03	-6.67E-03	-5.88E-03	-6.01E-03	-6.68E-03
154	-7.20E-03	-7.18E-03	-7.15E-03	-7.00E-03	-6.67E-03	-5.94E-03	-6.07E-03	-6.68E-03
155	-7.34E-03	-7.34E-03	-7.30E-03	-7.15E-03	-6.80E-03	-6.06E-03	-6.18E-03	-6.82E-03
156	-7.33E-03	-7.33E-03	-7.33E-03	-7.34E-03	-7.33E-03	-7.33E-03	-7.35E-03	-7.31E-03
157	-7.36E-03	-7.37E-03	-7.37E-03	-7.36E-03	-7.37E-03	-7.36E-03	-7.38E-03	-7.35E-03
Biased Statistics								
Average Biased	-7.36E-03	-7.33E-03	-7.27E-03	-7.12E-03	-6.84E-03	-6.46E-03	-6.82E-03	-7.24E-03
Std Dev Biased	1.03E-04	1.13E-04	1.13E-04	1.68E-04	9.67E-05	9.53E-05	9.89E-05	1.18E-04
Ps90%/90% (+KTL) Biased	-7.07E-03	-7.02E-03	-6.96E-03	-6.66E-03	-6.57E-03	-6.20E-03	-6.55E-03	-6.92E-03
Ps90%/90% (-KTL) Biased	-7.64E-03	-7.64E-03	-7.58E-03	-7.58E-03	-7.10E-03	-6.72E-03	-7.09E-03	-7.56E-03
Un-Biased Statistics								
Average Un-Biased	-7.25E-03	-7.23E-03	-7.19E-03	-7.04E-03	-6.70E-03	-5.95E-03	-6.08E-03	-6.72E-03
Std Dev Un-Biased	5.54E-05	6.45E-05	6.41E-05	6.40E-05	6.60E-05	8.80E-05	7.96E-05	6.97E-05
Ps90%/90% (+KTL) Un-Biased	-7.10E-03	-7.06E-03	-7.02E-03	-6.87E-03	-6.52E-03	-5.71E-03	-5.86E-03	-6.52E-03
Ps90%/90% (-KTL) Un-Biased	-7.40E-03	-7.41E-03	-7.37E-03	-7.22E-03	-6.88E-03	-6.19E-03	-6.30E-03	-6.91E-03
Specification MIN	-1.05E-02	-1.05E-02	-1.05E-02	-1.05E-02	-1.05E-02	-1.05E-02	-1.05E-02	-1.05E-02
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Specification MAX	1.05E-02	1.05E-02	1.05E-02	1.05E-02	1.05E-02	1.05E-02	1.05E-02	1.05E-02
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



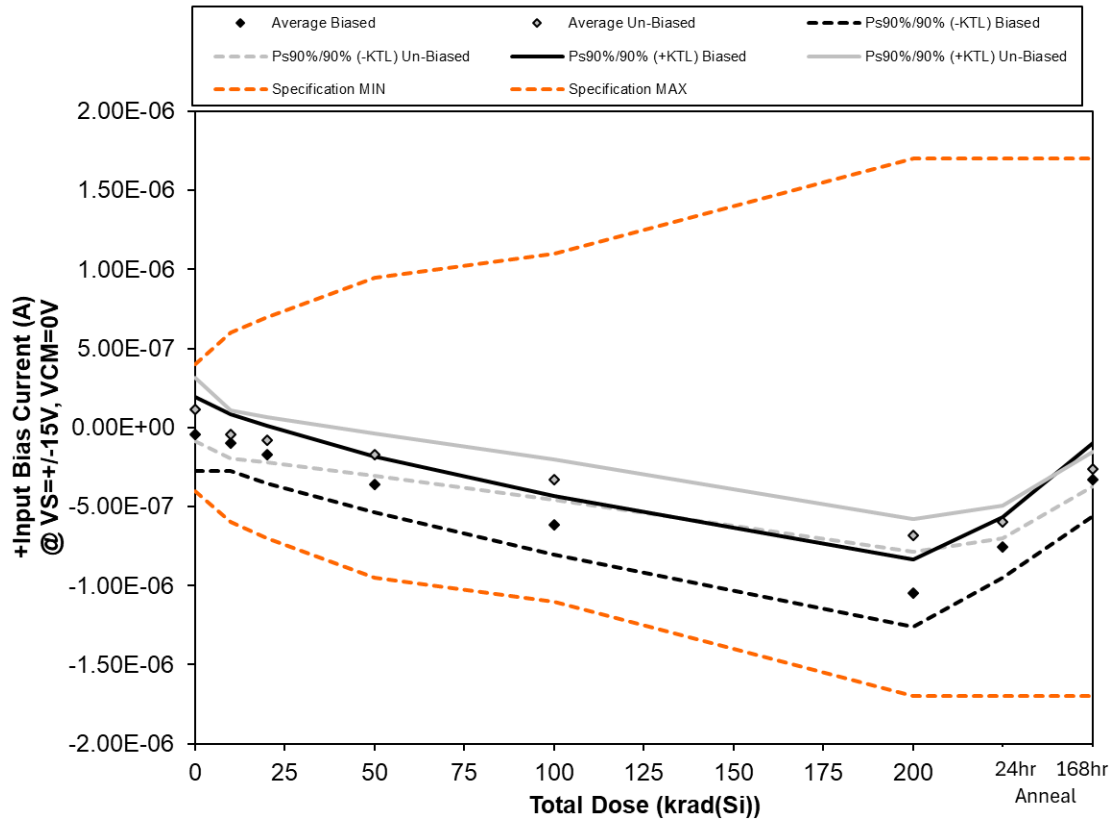
Input Offset Voltage (V) @ VS=+/-15V, VCM=0V	Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
	0	10	20	50	100	200		
Device								
146	-2.57E-06	-5.81E-06	-8.16E-06	-1.34E-05	-1.79E-05	-2.43E-05	-2.15E-05	-1.57E-05
147	-1.06E-05	-1.23E-05	-1.64E-05	-2.38E-05	-2.93E-05	-3.50E-05	-2.87E-05	-2.07E-05
148	-2.81E-05	-3.71E-05	-4.00E-05	-4.67E-05	-5.17E-05	-5.74E-05	-5.22E-05	-5.06E-05
149	1.91E-05	2.06E-05	1.70E-05	1.11E-05	6.81E-06	3.17E-06	5.40E-06	1.43E-05
150	-9.22E-06	-1.63E-05	-1.89E-05	-2.47E-05	-2.89E-05	-3.40E-05	-2.82E-05	-3.02E-05
151	1.10E-05	1.03E-05	9.08E-06	5.12E-06	2.81E-06	1.65E-06	2.01E-06	6.58E-06
152	-4.25E-05	-4.03E-05	-4.26E-05	-4.72E-05	-5.20E-05	-5.91E-05	-5.89E-05	-4.25E-05
153	-4.60E-06	-1.60E-06	-3.75E-06	-9.65E-06	-1.60E-05	-2.61E-05	-2.40E-05	-1.14E-05
154	1.42E-05	1.24E-05	1.01E-05	4.39E-06	-1.33E-06	-8.84E-06	-6.08E-06	5.21E-06
155	1.17E-05	1.42E-05	1.27E-05	7.75E-06	2.67E-06	-4.93E-06	-3.24E-06	8.79E-06
156	2.21E-06	2.06E-06	2.04E-06	1.84E-06	2.09E-06	2.32E-06	1.73E-06	2.11E-06
157	5.81E-06	6.32E-06	6.57E-06	6.32E-06	6.38E-06	6.54E-06	6.08E-06	6.42E-06
Biased Statistics								
Average Biased	-6.29E-06	-1.02E-05	-1.33E-05	-1.95E-05	-2.42E-05	-2.95E-05	-2.50E-05	-2.06E-05
Std Dev Biased	1.70E-05	2.08E-05	2.06E-05	2.09E-05	2.13E-05	2.19E-05	2.06E-05	2.36E-05
Ps90%/90% (+KTL) Biased	4.04E-05	4.69E-05	4.32E-05	3.79E-05	3.41E-05	3.06E-05	3.15E-05	4.42E-05
Ps90%/90% (-KTL) Biased	-5.30E-05	-6.73E-05	-6.98E-05	-7.69E-05	-8.25E-05	-8.96E-05	-8.15E-05	-8.54E-05
Un-Biased Statistics								
Average Un-Biased	-2.04E-06	-9.90E-07	-2.90E-06	-7.91E-06	-1.28E-05	-1.95E-05	-1.80E-05	-6.67E-06
Std Dev Un-Biased	2.38E-05	2.28E-05	2.31E-05	2.30E-05	2.32E-05	2.44E-05	2.48E-05	2.16E-05
Ps90%/90% (+KTL) Un-Biased	6.33E-05	6.17E-05	6.04E-05	5.51E-05	5.10E-05	4.75E-05	5.00E-05	5.25E-05
Ps90%/90% (-KTL) Un-Biased	-6.73E-05	-6.36E-05	-6.62E-05	-7.09E-05	-7.65E-05	-8.64E-05	-8.61E-05	-6.58E-05
Specification MIN	-8.00E-05	-1.00E-04	-1.20E-04	-1.40E-04	-1.60E-04	-1.80E-04	-1.80E-04	-1.80E-04
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Specification MAX	8.00E-05	1.00E-04	1.20E-04	1.40E-04	1.60E-04	1.80E-04	1.80E-04	1.80E-04
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



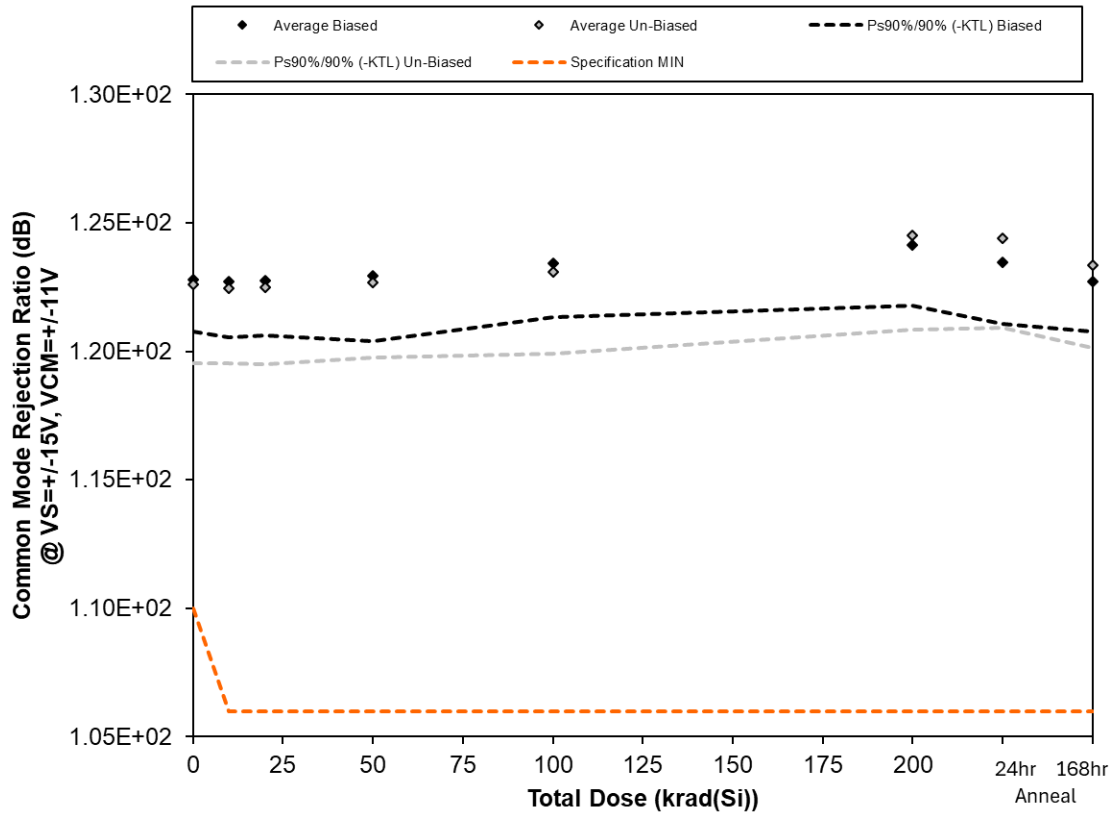
Input Offset Current (A) @ VS=+/-15V, VCM=0V	Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
	0	10	20	50	100	200		
Device								
146	-5.72E-08	-5.08E-08	-7.03E-08	-1.11E-07	-1.56E-07	-2.03E-07	-1.51E-07	-8.13E-08
147	-1.36E-08	-4.37E-08	-6.47E-08	-1.08E-07	-1.46E-07	-1.89E-07	-1.36E-07	-9.45E-08
148	4.70E-09	-4.37E-08	-6.35E-08	-1.06E-07	-1.44E-07	-1.94E-07	-1.38E-07	-1.04E-07
149	-4.96E-08	-4.47E-08	-6.29E-08	-9.99E-08	-1.39E-07	-1.83E-07	-1.36E-07	-1.38E-07
150	-2.72E-08	-7.12E-08	-9.26E-08	-1.34E-07	-1.77E-07	-2.33E-07	-1.76E-07	-1.48E-07
151	4.93E-08	-3.43E-08	-4.62E-08	-7.30E-08	-1.06E-07	-1.39E-07	-1.28E-07	-4.58E-08
152	-2.80E-08	-3.84E-08	-5.55E-08	-8.82E-08	-1.25E-07	-1.76E-07	-1.57E-07	-6.12E-08
153	-6.39E-09	-1.80E-08	-3.23E-08	-6.41E-08	-9.68E-08	-1.42E-07	-1.28E-07	-4.56E-08
154	2.11E-09	-1.66E-08	-3.13E-08	-6.31E-08	-9.79E-08	-1.40E-07	-1.25E-07	-4.21E-08
155	-6.41E-09	-3.22E-08	-4.41E-08	-7.70E-08	-1.16E-07	-1.57E-07	-1.43E-07	-4.78E-08
156	-2.84E-09	-2.94E-09	-2.85E-09	-2.95E-09	-2.89E-09	-3.00E-09	-3.23E-09	-2.65E-09
157	-4.73E-09	-4.85E-09	-4.82E-09	-4.61E-09	-4.85E-09	-4.64E-09	-5.07E-09	-4.63E-09
Biased Statistics								
Average Biased	-2.86E-08	-5.08E-08	-7.08E-08	-1.12E-07	-1.53E-07	-2.01E-07	-1.47E-07	-1.13E-07
Std Dev Biased	2.55E-08	1.18E-08	1.25E-08	1.32E-08	1.52E-08	1.96E-08	1.71E-08	2.85E-08
Ps90%/90% (+KTL) Biased	4.13E-08	-1.85E-08	-3.64E-08	-7.56E-08	-1.11E-07	-1.47E-07	-1.01E-07	-3.49E-08
Ps90%/90% (-KTL) Biased	-9.85E-08	-8.30E-08	-1.05E-07	-1.48E-07	-1.94E-07	-2.54E-07	-1.94E-07	-1.91E-07
Un-Biased Statistics								
Average Un-Biased	2.12E-09	-2.79E-08	-4.19E-08	-7.31E-08	-1.08E-07	-1.51E-07	-1.36E-07	-4.85E-08
Std Dev Un-Biased	2.86E-08	9.96E-09	1.01E-08	1.03E-08	1.22E-08	1.56E-08	1.37E-08	7.39E-09
Ps90%/90% (+KTL) Un-Biased	8.06E-08	-6.14E-10	-1.41E-08	-4.48E-08	-7.49E-08	-1.08E-07	-9.88E-08	-2.82E-08
Ps90%/90% (-KTL) Un-Biased	-7.64E-08	-5.52E-08	-6.97E-08	-1.01E-07	-1.42E-07	-1.94E-07	-1.74E-07	-6.88E-08
Specification MIN	-1.50E-07	-2.00E-07	-2.00E-07	-2.00E-07	-3.00E-07	-5.00E-07	-5.00E-07	-5.00E-07
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Specification MAX	1.50E-07	2.00E-07	2.00E-07	2.00E-07	3.00E-07	5.00E-07	5.00E-07	5.00E-07
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



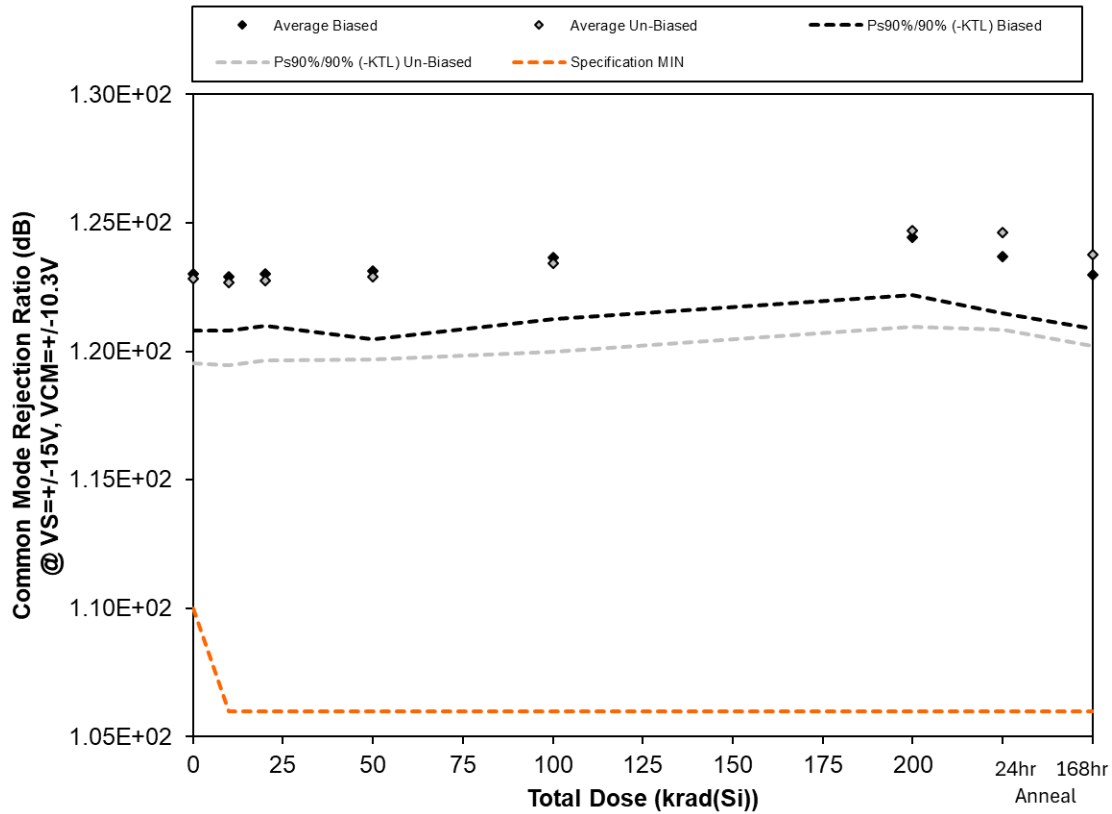
-Input Bias Current (A) @ VS=+/-15V, VCM=0V	Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
Device	0	10	20	50	100	200		
146	2.48E-08	-5.61E-08	-1.52E-07	-3.83E-07	-6.83E-07	-1.16E-06	-8.25E-07	-4.42E-07
147	-1.58E-07	-1.94E-07	-2.91E-07	-5.13E-07	-8.09E-07	-1.28E-06	-9.33E-07	-5.22E-07
148	-4.52E-08	-1.96E-07	-2.92E-07	-5.28E-07	-8.37E-07	-1.35E-06	-9.82E-07	-4.47E-07
149	-1.40E-07	-1.69E-07	-2.67E-07	-4.90E-07	-7.87E-07	-1.27E-06	-9.25E-07	-4.64E-07
150	-2.91E-08	-1.20E-07	-2.13E-07	-4.46E-07	-7.51E-07	-1.24E-06	-8.80E-07	-3.44E-07
151	2.64E-07	-1.13E-07	-1.55E-07	-2.77E-07	-4.68E-07	-8.49E-07	-7.51E-07	-3.30E-07
152	1.50E-08	-9.46E-08	-1.43E-07	-2.66E-07	-4.62E-07	-8.62E-07	-7.56E-07	-3.20E-07
153	1.57E-07	-1.26E-07	-1.68E-07	-2.88E-07	-4.74E-07	-8.70E-07	-7.68E-07	-3.67E-07
154	1.05E-07	2.06E-08	-3.09E-08	-1.58E-07	-3.55E-07	-7.70E-07	-6.65E-07	-2.55E-07
155	4.18E-08	-4.91E-08	-1.03E-07	-2.39E-07	-4.43E-07	-8.51E-07	-7.49E-07	-2.97E-07
156	-5.91E-08	-5.91E-08	-5.90E-08	-5.89E-08	-5.93E-08	-5.92E-08	-5.96E-08	-5.92E-08
157	-6.34E-08	-6.33E-08	-6.33E-08	-6.34E-08	-6.32E-08	-6.33E-08	-6.37E-08	-6.21E-08
Biased Statistics								
Average Biased	-6.96E-08	-1.47E-07	-2.43E-07	-4.72E-07	-7.73E-07	-1.26E-06	-9.09E-07	-4.44E-07
Std Dev Biased	7.75E-08	5.92E-08	6.05E-08	5.87E-08	5.93E-08	6.86E-08	5.91E-08	6.45E-08
Ps90%/90% (+KTL) Biased	1.43E-07	1.54E-08	-7.72E-08	-3.11E-07	-6.11E-07	-1.07E-06	-7.47E-07	-2.67E-07
Ps90%/90% (-KTL) Biased	-2.82E-07	-3.09E-07	-4.09E-07	-6.33E-07	-9.36E-07	-1.44E-06	-1.07E-06	-6.21E-07
Un-Biased Statistics								
Average Un-Biased	1.17E-07	-7.24E-08	-1.20E-07	-2.46E-07	-4.40E-07	-8.40E-07	-7.38E-07	-3.14E-07
Std Dev Un-Biased	9.93E-08	5.96E-08	5.55E-08	5.22E-08	4.94E-08	4.05E-08	4.13E-08	4.12E-08
Ps90%/90% (+KTL) Un-Biased	3.89E-07	9.10E-08	3.22E-08	-1.03E-07	-3.05E-07	-7.29E-07	-6.25E-07	-2.01E-07
Ps90%/90% (-KTL) Un-Biased	-1.56E-07	-2.36E-07	-2.72E-07	-3.89E-07	-5.76E-07	-9.51E-07	-8.51E-07	-4.27E-07
Specification MIN	-4.00E-07	-6.00E-07	-7.00E-07	-9.50E-07	-1.10E-06	-1.70E-06	-1.70E-06	-1.70E-06
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Specification MAX	4.00E-07	6.00E-07	7.00E-07	9.50E-07	1.10E-06	1.70E-06	1.70E-06	1.70E-06
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



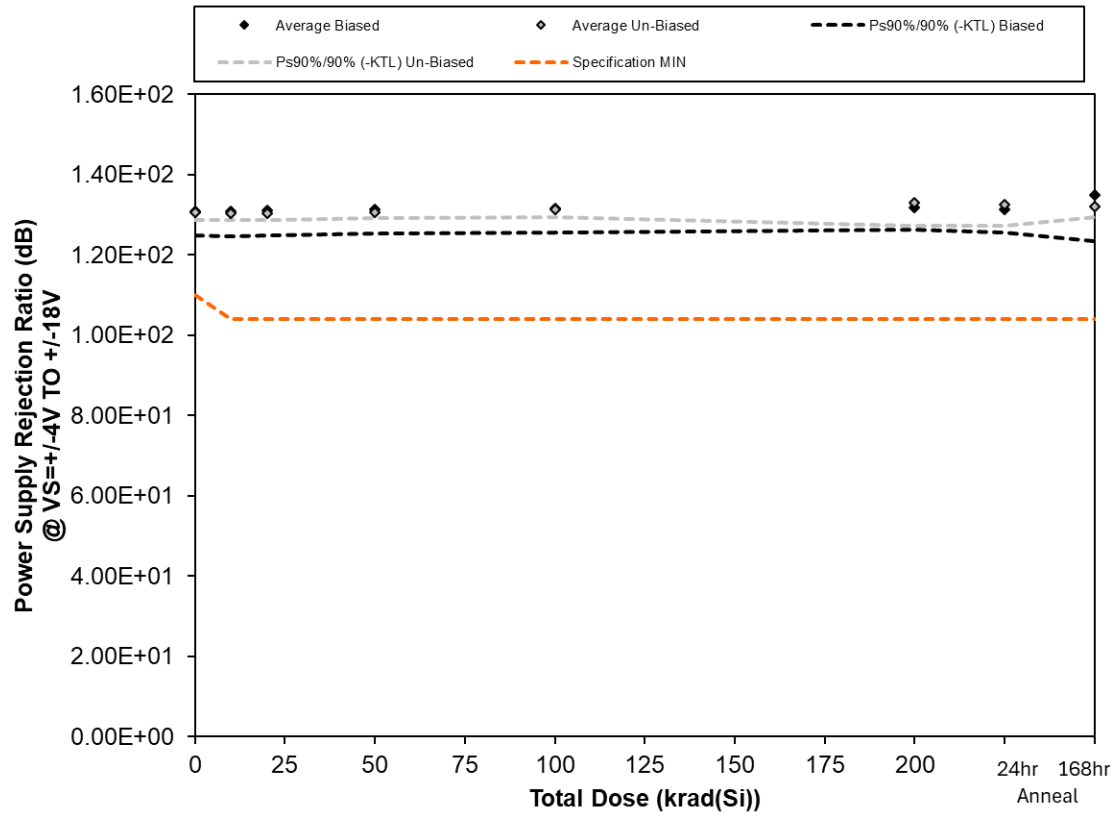
+Input Bias Current (A) @ VS=+/-15V, VCM=0V	Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
	0	10	20	50	100	200		
Device								
146	8.14E-08	-6.16E-09	-8.10E-08	-2.71E-07	-5.25E-07	-9.47E-07	-6.70E-07	-3.59E-07
147	-1.44E-07	-1.50E-07	-2.26E-07	-4.04E-07	-6.58E-07	-1.08E-06	-7.92E-07	-4.24E-07
148	-5.01E-08	-1.52E-07	-2.28E-07	-4.21E-07	-6.89E-07	-1.14E-06	-8.38E-07	-3.41E-07
149	-9.06E-08	-1.25E-07	-2.04E-07	-3.89E-07	-6.44E-07	-1.08E-06	-7.83E-07	-3.24E-07
150	-2.77E-09	-4.94E-08	-1.21E-07	-3.10E-07	-5.70E-07	-9.96E-07	-7.00E-07	-1.95E-07
151	2.13E-07	-7.90E-08	-1.10E-07	-2.03E-07	-3.63E-07	-7.06E-07	-6.18E-07	-2.82E-07
152	4.25E-08	-5.55E-08	-8.70E-08	-1.77E-07	-3.37E-07	-6.81E-07	-5.94E-07	-2.57E-07
153	1.62E-07	-1.08E-07	-1.36E-07	-2.22E-07	-3.76E-07	-7.23E-07	-6.37E-07	-3.19E-07
154	1.03E-07	3.68E-08	1.40E-10	-9.59E-08	-2.56E-07	-6.23E-07	-5.38E-07	-2.11E-07
155	4.71E-08	-1.74E-08	-6.01E-08	-1.63E-07	-3.26E-07	-6.85E-07	-6.03E-07	-2.47E-07
156	-5.61E-08	-5.63E-08	-5.63E-08	-5.60E-08	-5.64E-08	-5.61E-08	-5.64E-08	-5.63E-08
157	-5.85E-08	-5.89E-08	-5.85E-08	-5.85E-08	-5.85E-08	-5.88E-08	-5.88E-08	-5.76E-08
Biased Statistics								
Average Biased	-4.12E-08	-9.63E-08	-1.72E-07	-3.59E-07	-6.17E-07	-1.05E-06	-7.57E-07	-3.29E-07
Std Dev Biased	8.59E-08	6.53E-08	6.70E-08	6.47E-08	6.77E-08	7.67E-08	6.98E-08	8.38E-08
Ps90%/90% (+KTL) Biased	1.94E-07	8.27E-08	1.19E-08	-1.82E-07	-4.31E-07	-8.37E-07	-5.65E-07	-9.90E-08
Ps90%/90% (-KTL) Biased	-2.77E-07	-2.75E-07	-3.56E-07	-5.36E-07	-8.03E-07	-1.26E-06	-9.48E-07	-5.59E-07
Un-Biased Statistics								
Average Un-Biased	1.13E-07	-4.46E-08	-7.86E-08	-1.72E-07	-3.32E-07	-6.84E-07	-5.98E-07	-2.64E-07
Std Dev Un-Biased	7.38E-08	5.62E-08	5.23E-08	4.85E-08	4.68E-08	3.77E-08	3.73E-08	4.03E-08
Ps90%/90% (+KTL) Un-Biased	3.16E-07	1.10E-07	6.47E-08	-3.92E-07	-2.03E-07	-5.80E-07	-4.96E-07	-1.53E-07
Ps90%/90% (-KTL) Un-Biased	-8.90E-08	-1.99E-07	-2.22E-07	-3.05E-07	-4.60E-07	-7.87E-07	-7.01E-07	-3.74E-07
Specification MIN	-4.00E-07	-6.00E-07	-7.00E-07	-9.50E-07	-1.10E-06	-1.70E-06	-1.70E-06	-1.70E-06
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Specification MAX	4.00E-07	6.00E-07	7.00E-07	9.50E-07	1.10E-06	1.70E-06	1.70E-06	1.70E-06
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



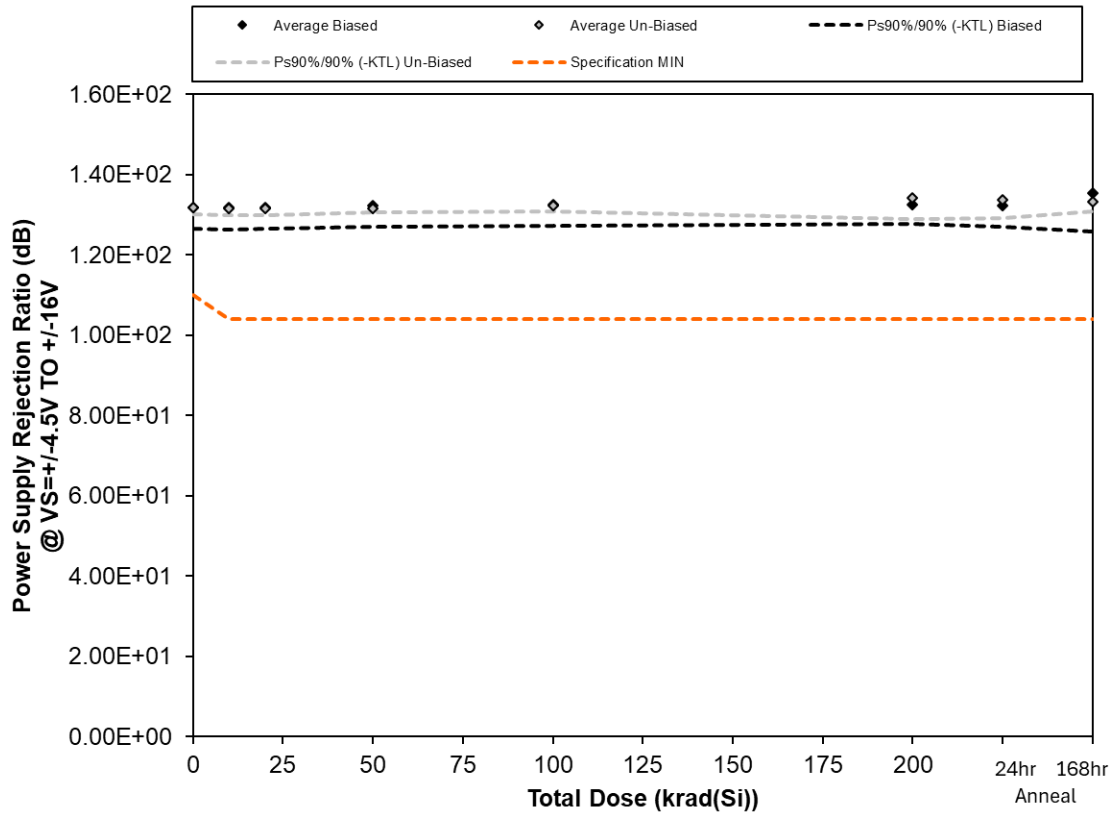
Common Mode Rejection Ratio (dB) @ VS=+/-15V, VCM=+/-11V		Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
Device	0	10	20	50	100	200			
146	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.24E+02	1.23E+02	1.23E+02	1.23E+02
147	1.22E+02	1.22E+02	1.22E+02	1.21E+02	1.22E+02	1.23E+02	1.22E+02	1.22E+02	1.22E+02
148	1.23E+02	1.23E+02	1.23E+02	1.24E+02	1.24E+02	1.25E+02	1.24E+02	1.24E+02	1.23E+02
149	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.23E+02
150	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.25E+02	1.24E+02	1.24E+02	1.23E+02
151	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.25E+02	1.26E+02	1.26E+02	1.26E+02	1.25E+02
152	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.24E+02	1.25E+02	1.25E+02	1.25E+02	1.24E+02
153	1.21E+02	1.21E+02	1.21E+02	1.21E+02	1.21E+02	1.23E+02	1.22E+02	1.22E+02	1.22E+02
154	1.23E+02	1.22E+02	1.22E+02	1.23E+02	1.23E+02	1.24E+02	1.24E+02	1.24E+02	1.23E+02
155	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.25E+02	1.25E+02	1.25E+02	1.24E+02
156	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
157	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
Biased Statistics									
Average Biased	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.24E+02	1.23E+02	1.23E+02	1.23E+02
Std Dev Biased	7.35E-01	7.89E-01	7.70E-01	9.24E-01	7.60E-01	8.56E-01	8.79E-01	7.00E-01	7.00E-01
Ps90%/90% (+KTL) Biased	1.25E+02	1.25E+02	1.25E+02	1.25E+02	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.25E+02
Ps90%/90% (-KTL) Biased	1.21E+02	1.21E+02	1.21E+02	1.20E+02	1.21E+02	1.22E+02	1.21E+02	1.21E+02	1.21E+02
Un-Biased Statistics									
Average Un-Biased	1.23E+02	1.22E+02	1.22E+02	1.23E+02	1.23E+02	1.25E+02	1.24E+02	1.23E+02	1.23E+02
Std Dev Un-Biased	1.11E+00	1.06E+00	1.09E+00	1.07E+00	1.16E+00	1.35E+00	1.26E+00	1.18E+00	1.18E+00
Ps90%/90% (+KTL) Un-Biased	1.26E+02	1.25E+02	1.25E+02	1.26E+02	1.26E+02	1.28E+02	1.28E+02	1.27E+02	1.27E+02
Ps90%/90% (-KTL) Un-Biased	1.20E+02	1.20E+02	1.19E+02	1.20E+02	1.20E+02	1.21E+02	1.21E+02	1.20E+02	1.20E+02
Specification MIN	1.10E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



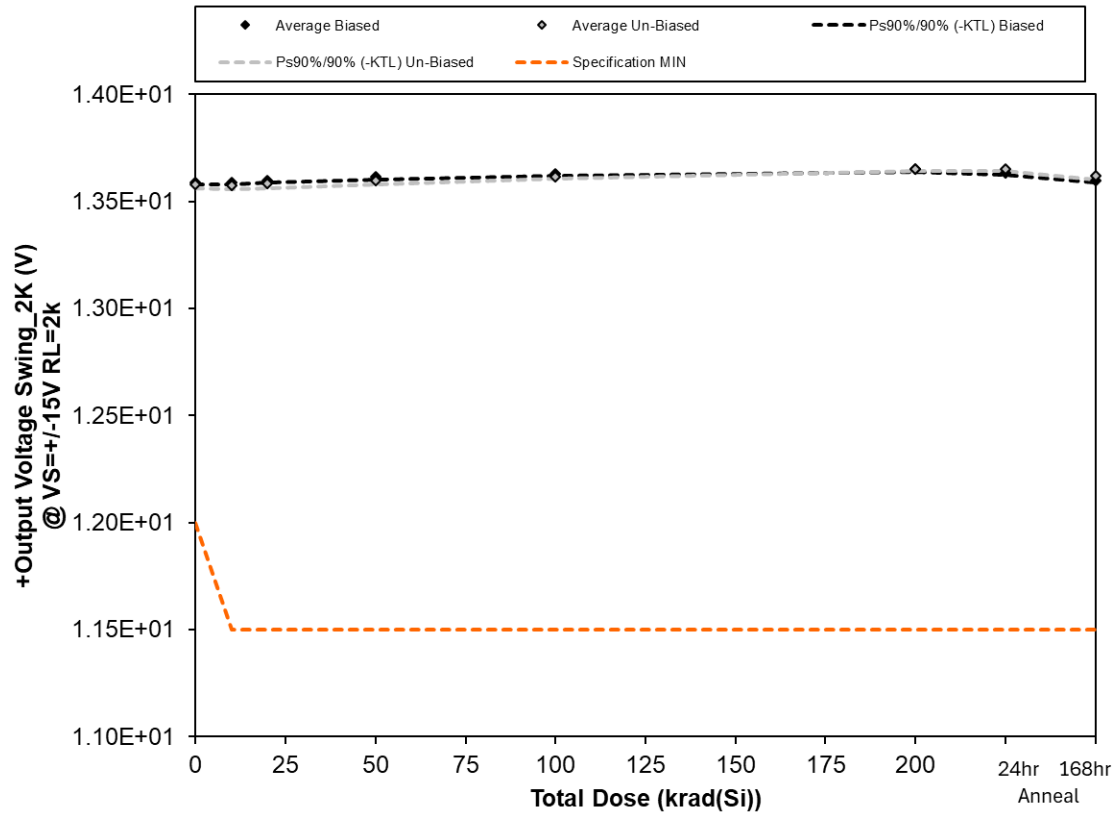
Common Mode Rejection Ratio (dB) @ VS=+-15V, VCM=+-10.3V		Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
Device	0	10	20	50	100	200			
146	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.24E+02	1.24E+02	1.24E+02	1.23E+02
147	1.22E+02	1.22E+02	1.22E+02	1.22E+02	1.22E+02	1.23E+02	1.22E+02	1.22E+02	1.22E+02
148	1.24E+02	1.23E+02	1.24E+02	1.24E+02	1.24E+02	1.25E+02	1.24E+02	1.24E+02	1.23E+02
149	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.24E+02	1.25E+02	1.24E+02	1.24E+02	1.23E+02
150	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.25E+02	1.25E+02	1.24E+02	1.24E+02	1.24E+02
151	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.25E+02	1.26E+02	1.26E+02	1.26E+02	1.25E+02
152	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.24E+02	1.25E+02	1.25E+02	1.25E+02	1.24E+02
153	1.21E+02	1.21E+02	1.21E+02	1.21E+02	1.22E+02	1.23E+02	1.23E+02	1.23E+02	1.22E+02
154	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02
155	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.24E+02	1.25E+02	1.25E+02	1.25E+02	1.24E+02
156	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
157	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02
Biased Statistics									
Average Biased	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.23E+02
Std Dev Biased	8.07E-01	7.65E-01	7.38E-01	9.76E-01	8.71E-01	8.17E-01	8.09E-01	7.54E-01	
Ps90%/90% (+KTL) Biased	1.25E+02	1.25E+02	1.25E+02	1.26E+02	1.26E+02	1.27E+02	1.26E+02	1.25E+02	
Ps90%/90% (-KTL) Biased	1.21E+02	1.21E+02	1.21E+02	1.20E+02	1.21E+02	1.22E+02	1.21E+02	1.21E+02	
Un-Biased Statistics									
Average Un-Biased	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.23E+02	1.25E+02	1.25E+02	1.24E+02	
Std Dev Un-Biased	1.20E+00	1.17E+00	1.14E+00	1.17E+00	1.25E+00	1.37E+00	1.38E+00	1.29E+00	
Ps90%/90% (+KTL) Un-Biased	1.26E+02	1.26E+02	1.26E+02	1.26E+02	1.27E+02	1.28E+02	1.28E+02	1.27E+02	
Ps90%/90% (-KTL) Un-Biased	1.20E+02	1.19E+02	1.20E+02	1.20E+02	1.20E+02	1.21E+02	1.21E+02	1.20E+02	
Specification MIN	1.10E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02	1.06E+02
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



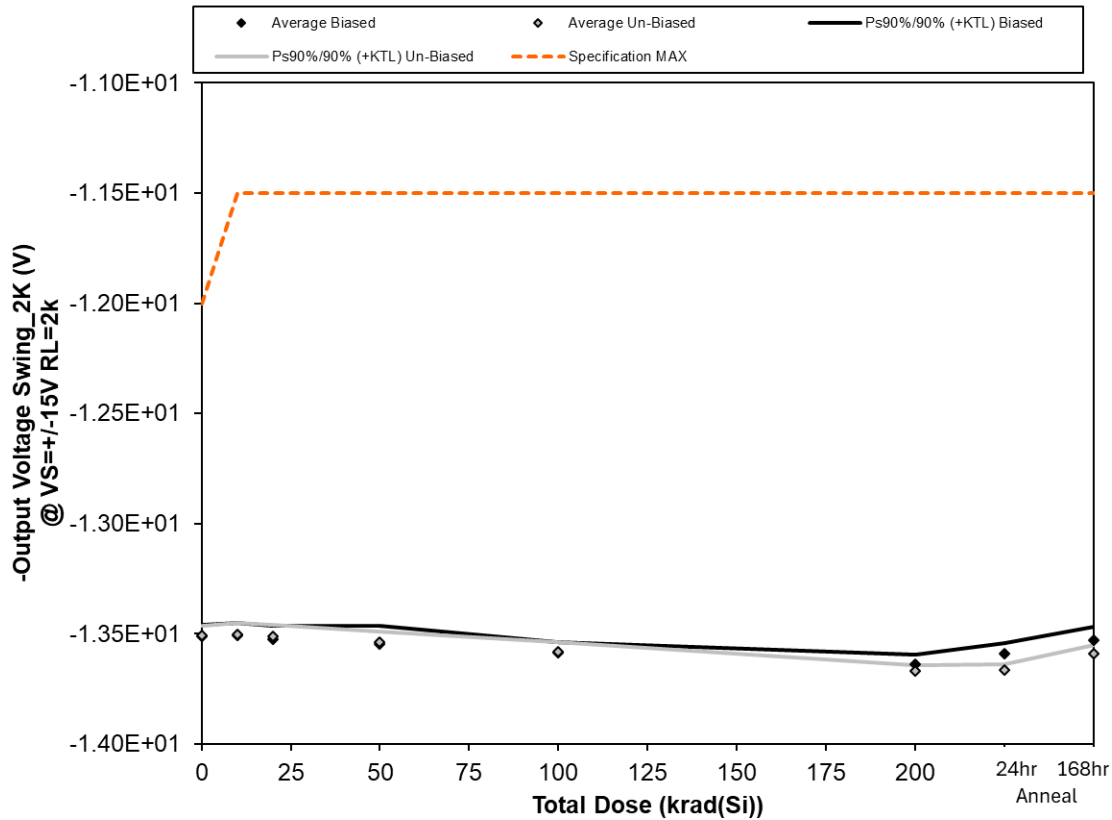
Power Supply Rejection Ratio (dB) @ VS=+-4V TO +/-18V	Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
Device	0	10	20	50	100	200		
146	1.32E+02	1.32E+02	1.32E+02	1.32E+02	1.32E+02	1.32E+02	1.32E+02	1.36E+02
147	1.29E+02	1.29E+02	1.29E+02	1.30E+02	1.31E+02	1.31E+02	1.30E+02	1.32E+02
148	1.29E+02	1.29E+02	1.29E+02	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.32E+02
149	1.34E+02	1.35E+02	1.35E+02	1.35E+02	1.35E+02	1.35E+02	1.35E+02	1.42E+02
150	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.33E+02
151	1.32E+02	1.32E+02	1.31E+02	1.31E+02	1.31E+02	1.30E+02	1.30E+02	1.32E+02
152	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.31E+02	1.32E+02	1.32E+02	1.31E+02
153	1.30E+02	1.30E+02	1.30E+02	1.31E+02	1.32E+02	1.36E+02	1.36E+02	1.34E+02
154	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.32E+02	1.34E+02	1.33E+02	1.33E+02
155	1.31E+02	1.30E+02	1.30E+02	1.30E+02	1.31E+02	1.33E+02	1.32E+02	1.32E+02
156	1.33E+02	1.33E+02	1.33E+02	1.33E+02	1.33E+02	1.33E+02	1.33E+02	1.33E+02
157	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02
Biased Statistics								
Average Biased	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.32E+02	1.32E+02	1.31E+02	1.35E+02
Std Dev Biased	2.24E+00	2.29E+00	2.26E+00	2.21E+00	2.17E+00	2.01E+00	2.14E+00	4.25E+00
Ps90%/90% (+KTL) Biased	1.37E+02	1.37E+02	1.37E+02	1.37E+02	1.38E+02	1.37E+02	1.37E+02	1.47E+02
Ps90%/90% (-KTL) Biased	1.25E+02	1.25E+02	1.25E+02	1.25E+02	1.26E+02	1.26E+02	1.26E+02	1.23E+02
Un-Biased Statistics								
Average Un-Biased	1.31E+02	1.30E+02	1.30E+02	1.31E+02	1.31E+02	1.33E+02	1.33E+02	1.32E+02
Std Dev Un-Biased	6.66E-01	6.47E-01	6.15E-01	5.07E-01	6.69E-01	2.10E+00	1.96E+00	9.71E-01
Ps90%/90% (+KTL) Un-Biased	1.32E+02	1.32E+02	1.32E+02	1.32E+02	1.33E+02	1.39E+02	1.38E+02	1.35E+02
Ps90%/90% (-KTL) Un-Biased	1.29E+02	1.29E+02	1.29E+02	1.29E+02	1.29E+02	1.27E+02	1.27E+02	1.29E+02
Specification MIN	1.10E+02	1.04E+02	1.04E+02	1.04E+02	1.04E+02	1.04E+02	1.04E+02	1.04E+02
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



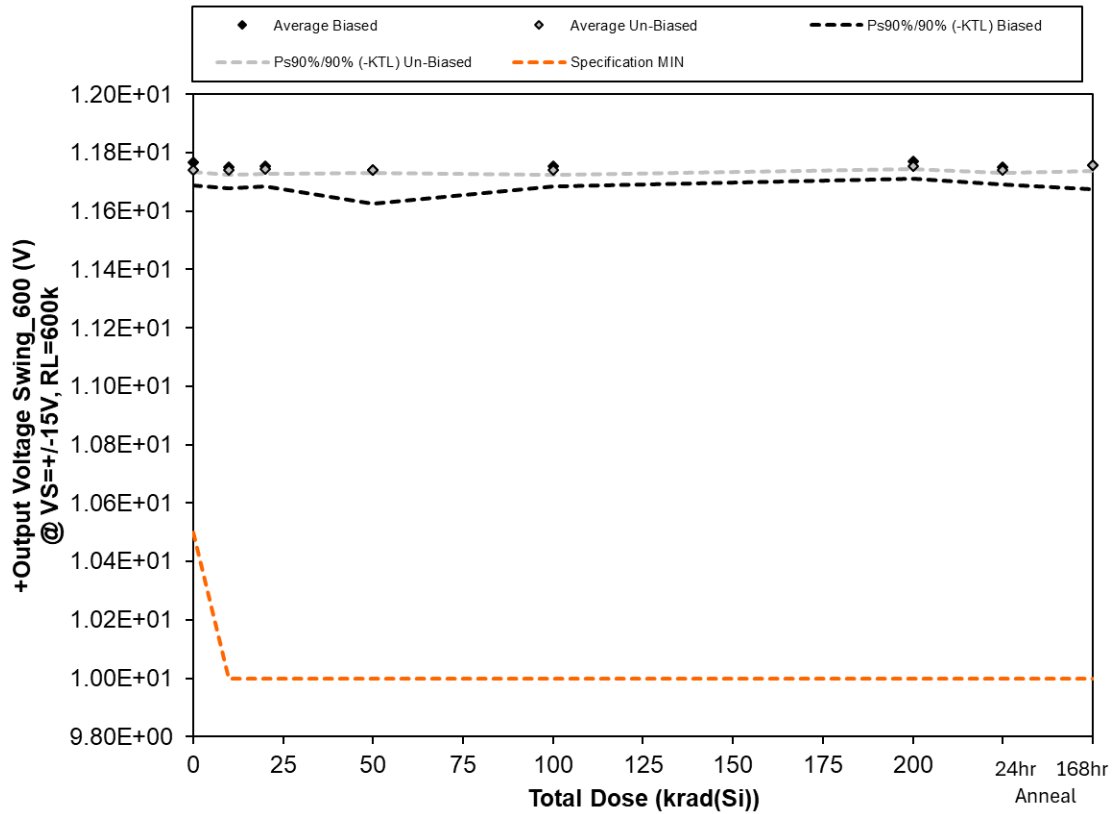
Power Supply Rejection Ratio (dB) @ VS=+/-4.5V TO +/-16V	Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
Device	0	10	20	50	100	200		
146	1.33E+02	1.33E+02	1.33E+02	1.33E+02	1.33E+02	1.33E+02	1.33E+02	1.37E+02
147	1.30E+02	1.30E+02	1.30E+02	1.31E+02	1.32E+02	1.32E+02	1.32E+02	1.33E+02
148	1.30E+02	1.30E+02	1.30E+02	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.33E+02
149	1.35E+02	1.35E+02	1.35E+02	1.35E+02	1.36E+02	1.35E+02	1.35E+02	1.41E+02
150	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.34E+02
151	1.33E+02	1.33E+02	1.32E+02	1.32E+02	1.32E+02	1.32E+02	1.32E+02	1.33E+02
152	1.31E+02	1.31E+02	1.31E+02	1.31E+02	1.32E+02	1.34E+02	1.33E+02	1.32E+02
153	1.31E+02	1.31E+02	1.31E+02	1.32E+02	1.33E+02	1.37E+02	1.36E+02	1.35E+02
154	1.32E+02	1.32E+02	1.32E+02	1.32E+02	1.33E+02	1.35E+02	1.34E+02	1.34E+02
155	1.32E+02	1.31E+02	1.31E+02	1.31E+02	1.32E+02	1.34E+02	1.33E+02	1.33E+02
156	1.34E+02	1.34E+02	1.34E+02	1.34E+02	1.34E+02	1.34E+02	1.34E+02	1.34E+02
157	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02	1.36E+02
Biased Statistics								
Average Biased	1.32E+02	1.32E+02	1.32E+02	1.32E+02	1.33E+02	1.33E+02	1.32E+02	1.36E+02
Std Dev Biased	1.98E+00	2.02E+00	1.96E+00	1.94E+00	1.88E+00	1.76E+00	1.91E+00	3.53E+00
Ps90%/90% (+KTL) Biased	1.37E+02	1.37E+02	1.37E+02	1.38E+02	1.38E+02	1.37E+02	1.38E+02	1.45E+02
Ps90%/90% (-KTL) Biased	1.26E+02	1.26E+02	1.27E+02	1.27E+02	1.27E+02	1.28E+02	1.27E+02	1.26E+02
Un-Biased Statistics								
Average Un-Biased	1.32E+02	1.32E+02	1.31E+02	1.32E+02	1.32E+02	1.34E+02	1.34E+02	1.33E+02
Std Dev Un-Biased	6.18E-01	6.31E-01	5.76E-01	4.32E-01	5.54E-01	1.94E+00	1.69E+00	8.44E-01
Ps90%/90% (+KTL) Un-Biased	1.33E+02	1.33E+02	1.33E+02	1.33E+02	1.34E+02	1.40E+02	1.38E+02	1.36E+02
Ps90%/90% (-KTL) Un-Biased	1.30E+02	1.30E+02	1.30E+02	1.30E+02	1.31E+02	1.29E+02	1.29E+02	1.31E+02
Specification MIN	1.10E+02	1.04E+02	1.04E+02	1.04E+02	1.04E+02	1.04E+02	1.04E+02	1.04E+02
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



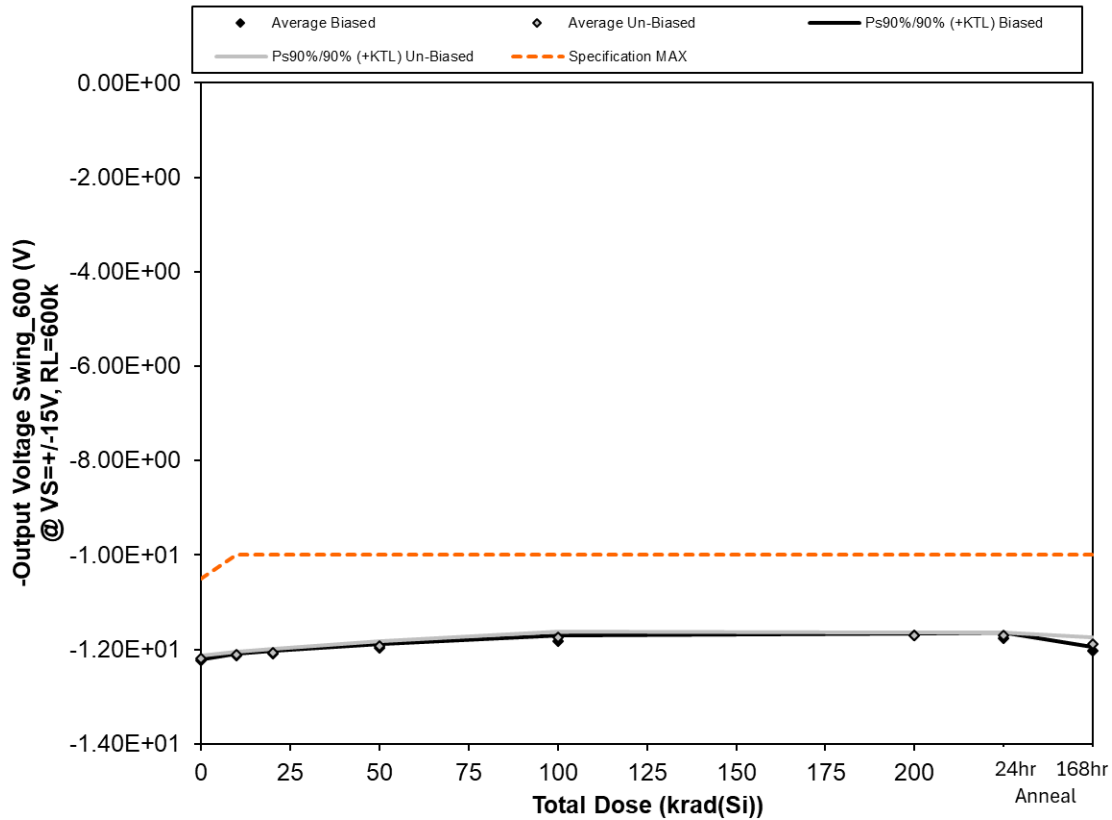
+Output Voltage Swing_2K (V) @ VS=+/-15V RL=2k		Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
Device		0	10	20	50	100	200		
146	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01
147	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.37E+01	1.36E+01	1.36E+01
148	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.37E+01	1.36E+01	1.36E+01
149	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01
150	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.37E+01	1.36E+01	1.36E+01
151	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.37E+01	1.37E+01	1.36E+01
152	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.37E+01	1.37E+01	1.36E+01
153	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01
154	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.37E+01	1.36E+01	1.36E+01
155	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.37E+01	1.36E+01	1.36E+01
156	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01
157	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01
Biased Statistics									
Average Biased	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01
Std Dev Biased	2.55E-03	3.54E-03	4.09E-03	4.42E-03	3.56E-03	3.42E-03	3.90E-03	3.42E-03	3.42E-03
Ps90%/90% (+KTL) Biased	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.37E+01	1.36E+01	1.36E+01	1.36E+01
Ps90%/90% (-KTL) Biased	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01
Un-Biased Statistics									
Average Un-Biased	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.37E+01	1.37E+01	1.37E+01	1.36E+01
Std Dev Un-Biased	7.37E-03	7.09E-03	7.91E-03	6.91E-03	4.51E-03	3.63E-03	3.21E-03	5.72E-03	5.72E-03
Ps90%/90% (+KTL) Un-Biased	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.37E+01	1.37E+01	1.37E+01	1.36E+01
Ps90%/90% (-KTL) Un-Biased	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01
Specification MIN	1.20E+01	1.15E+01	1.15E+01	1.15E+01	1.15E+01	1.15E+01	1.15E+01	1.15E+01	1.15E+01
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



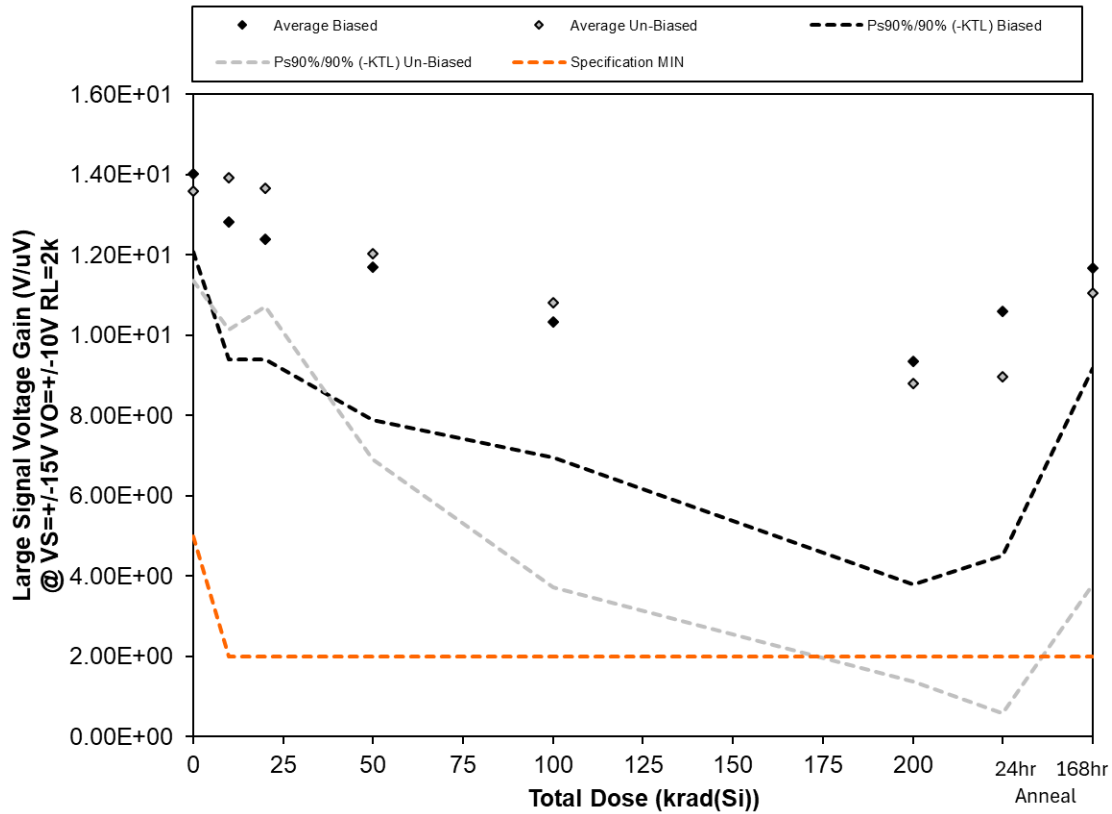
-Output Voltage Swing_2K (V) @ VS=+-15V RL=2k	Total Dose (krad(Si))						24-hr	168-hr
	0	10	20	50	100	200	Anneal	Anneal
Device								
146	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.36E+01	-1.36E+01	-1.36E+01	-1.35E+01
147	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.36E+01	-1.36E+01	-1.35E+01
148	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.36E+01	-1.37E+01	-1.36E+01	-1.35E+01
149	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.36E+01	-1.36E+01	-1.36E+01	-1.35E+01
150	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.36E+01	-1.36E+01	-1.36E+01	-1.35E+01
151	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.36E+01	-1.37E+01	-1.37E+01	-1.36E+01
152	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.37E+01	-1.37E+01	-1.36E+01
153	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.37E+01	-1.37E+01	-1.36E+01
154	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.37E+01	-1.37E+01	-1.36E+01
155	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.37E+01	-1.37E+01	-1.36E+01
156	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01
157	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01
Biased Statistics								
Average Biased	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.36E+01	-1.36E+01	-1.35E+01
Std Dev Biased	1.85E-02	2.15E-02	2.08E-02	2.96E-02	1.78E-02	1.59E-02	1.81E-02	2.19E-02
Ps90%/90% (+KTL) Biased	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.35E+01	-1.35E+01
Ps90%/90% (-KTL) Biased	-1.36E+01	-1.36E+01	-1.36E+01	-1.36E+01	-1.36E+01	-1.37E+01	-1.36E+01	-1.36E+01
Un-Biased Statistics								
Average Un-Biased	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.37E+01	-1.37E+01	-1.36E+01
Std Dev Un-Biased	1.61E-02	1.90E-02	1.88E-02	1.74E-02	1.59E-02	1.03E-02	9.06E-03	1.40E-02
Ps90%/90% (+KTL) Un-Biased	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.35E+01	-1.36E+01	-1.36E+01	-1.36E+01
Ps90%/90% (-KTL) Un-Biased	-1.36E+01	-1.36E+01	-1.36E+01	-1.36E+01	-1.36E+01	-1.37E+01	-1.37E+01	-1.36E+01
Specification MAX	-1.20E+01	-1.15E+01	-1.15E+01	-1.15E+01	-1.15E+01	-1.15E+01	-1.15E+01	-1.15E+01
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



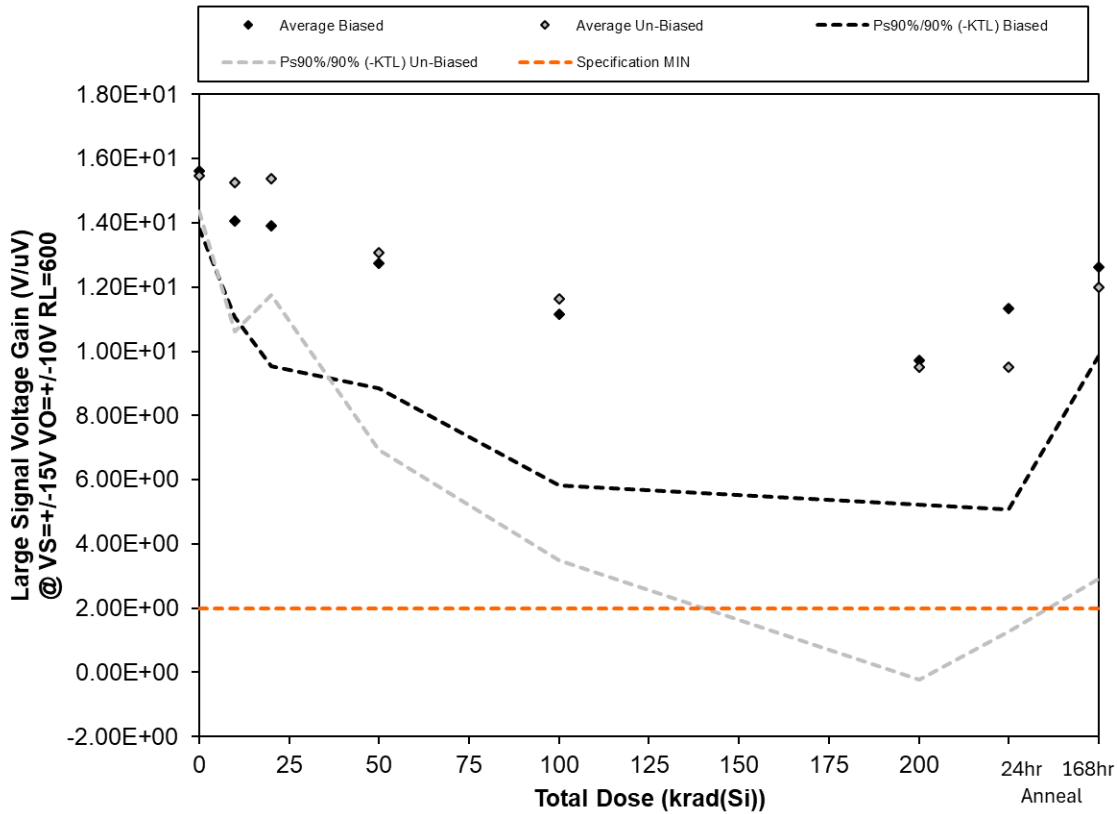
+Output Voltage Swing_600 (V) @ VS=+/-15V, RL=600k	Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
	0	10	20	50	100	200		
Device								
146	1.18E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.18E+01	1.17E+01	1.17E+01
147	1.18E+01	1.17E+01	1.17E+01	1.17E+01	1.18E+01	1.18E+01	1.17E+01	1.17E+01
148	1.18E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01
149	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01
150	1.18E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01
151	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.18E+01	1.17E+01	1.18E+01
152	1.17E+01	1.17E+01	1.18E+01	1.17E+01	1.18E+01	1.18E+01	1.17E+01	1.18E+01
153	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.18E+01	1.17E+01	1.17E+01
154	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.18E+01	1.17E+01	1.18E+01
155	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.18E+01	1.17E+01	1.18E+01
156	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.18E+01
157	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01
Biased Statistics								
Average Biased	1.18E+01	1.18E+01	1.18E+01	1.17E+01	1.18E+01	1.18E+01	1.17E+01	1.18E+01
Std Dev Biased	2.85E-02	2.66E-02	2.53E-02	4.18E-02	2.59E-02	2.20E-02	2.10E-02	3.04E-02
Ps90%/90% (+KTL) Biased	1.18E+01	1.18E+01	1.18E+01	1.19E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01
Ps90%/90% (-KTL) Biased	1.17E+01	1.17E+01	1.17E+01	1.16E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01
Un-Biased Statistics								
Average Un-Biased	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.18E+01	1.17E+01	1.18E+01
Std Dev Un-Biased	2.05E-03	5.90E-03	5.76E-03	4.06E-03	6.53E-03	4.04E-03	4.39E-03	7.28E-03
Ps90%/90% (+KTL) Un-Biased	1.17E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01	1.18E+01
Ps90%/90% (-KTL) Un-Biased	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01	1.17E+01
Specification MIN	1.05E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01	1.00E+01
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



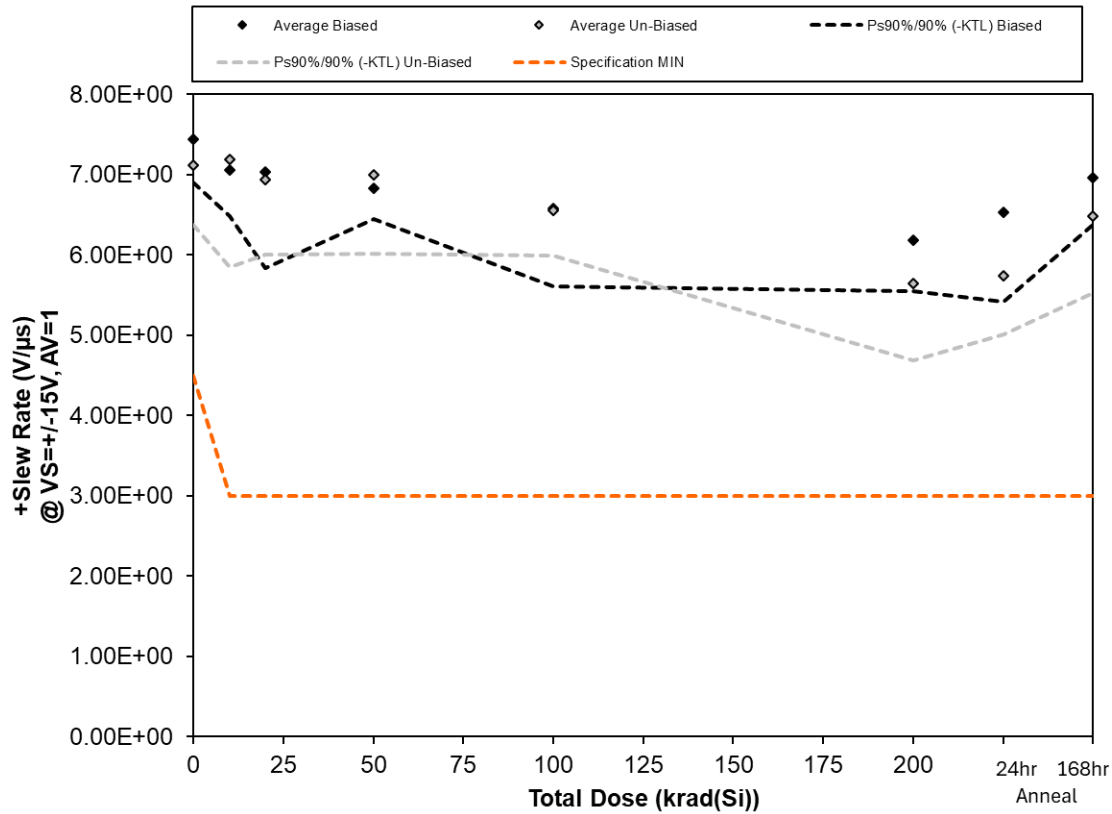
-Output Voltage Swing_600 (V) @ VS=+-15V, RL=600k		Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
		0	10	20	50	100	200		
Device									
146		-1.22E+01	-1.21E+01	-1.21E+01	-1.20E+01	-1.18E+01	-1.17E+01	-1.17E+01	-1.20E+01
147		-1.22E+01	-1.21E+01	-1.21E+01	-1.20E+01	-1.19E+01	-1.17E+01	-1.18E+01	-1.21E+01
148		-1.22E+01	-1.21E+01	-1.21E+01	-1.20E+01	-1.19E+01	-1.17E+01	-1.18E+01	-1.20E+01
149		-1.22E+01	-1.21E+01	-1.21E+01	-1.19E+01	-1.18E+01	-1.17E+01	-1.17E+01	-1.20E+01
150		-1.22E+01	-1.22E+01	-1.21E+01	-1.20E+01	-1.19E+01	-1.17E+01	-1.18E+01	-1.20E+01
151		-1.22E+01	-1.21E+01	-1.21E+01	-1.20E+01	-1.18E+01	-1.17E+01	-1.17E+01	-1.19E+01
152		-1.22E+01	-1.21E+01	-1.20E+01	-1.19E+01	-1.17E+01	-1.17E+01	-1.17E+01	-1.19E+01
153		-1.22E+01	-1.21E+01	-1.20E+01	-1.19E+01	-1.17E+01	-1.17E+01	-1.17E+01	-1.18E+01
154		-1.22E+01	-1.21E+01	-1.21E+01	-1.19E+01	-1.17E+01	-1.17E+01	-1.17E+01	-1.19E+01
155		-1.22E+01	-1.21E+01	-1.21E+01	-1.20E+01	-1.18E+01	-1.17E+01	-1.17E+01	-1.19E+01
156		-1.22E+01	-1.22E+01	-1.22E+01	-1.22E+01	-1.22E+01	-1.22E+01	-1.22E+01	-1.22E+01
157		-1.22E+01	-1.22E+01	-1.22E+01	-1.22E+01	-1.22E+01	-1.22E+01	-1.22E+01	-1.22E+01
Biased Statistics									
Average Biased		-1.22E+01	-1.21E+01	-1.21E+01	-1.20E+01	-1.18E+01	-1.17E+01	-1.18E+01	-1.20E+01
Std Dev Biased		6.48E-03	1.90E-02	2.34E-02	3.14E-02	4.61E-02	1.53E-02	4.07E-02	2.45E-02
Ps90%/90% (+KTL) Biased		-1.22E+01	-1.21E+01	-1.20E+01	-1.19E+01	-1.17E+01	-1.17E+01	-1.16E+01	-1.20E+01
Ps90%/90% (-KTL) Biased		-1.22E+01	-1.22E+01	-1.22E+01	-1.21E+01	-1.20E+01	-1.18E+01	-1.19E+01	-1.21E+01
Un-Biased Statistics									
Average Un-Biased		-1.22E+01	-1.21E+01	-1.21E+01	-1.19E+01	-1.17E+01	-1.17E+01	-1.17E+01	-1.19E+01
Std Dev Un-Biased		1.83E-02	2.26E-02	2.63E-02	3.55E-02	4.64E-02	2.20E-02	2.23E-02	4.68E-02
Ps90%/90% (+KTL) Un-Biased		-1.21E+01	-1.21E+01	-1.20E+01	-1.18E+01	-1.16E+01	-1.16E+01	-1.16E+01	-1.18E+01
Ps90%/90% (-KTL) Un-Biased		-1.22E+01	-1.22E+01	-1.21E+01	-1.20E+01	-1.19E+01	-1.18E+01	-1.18E+01	-1.20E+01
Specification MAX		-1.05E+01	-1.00E+01	-1.00E+01	-1.00E+01	-1.00E+01	-1.00E+01	-1.00E+01	-1.00E+01
Status		PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



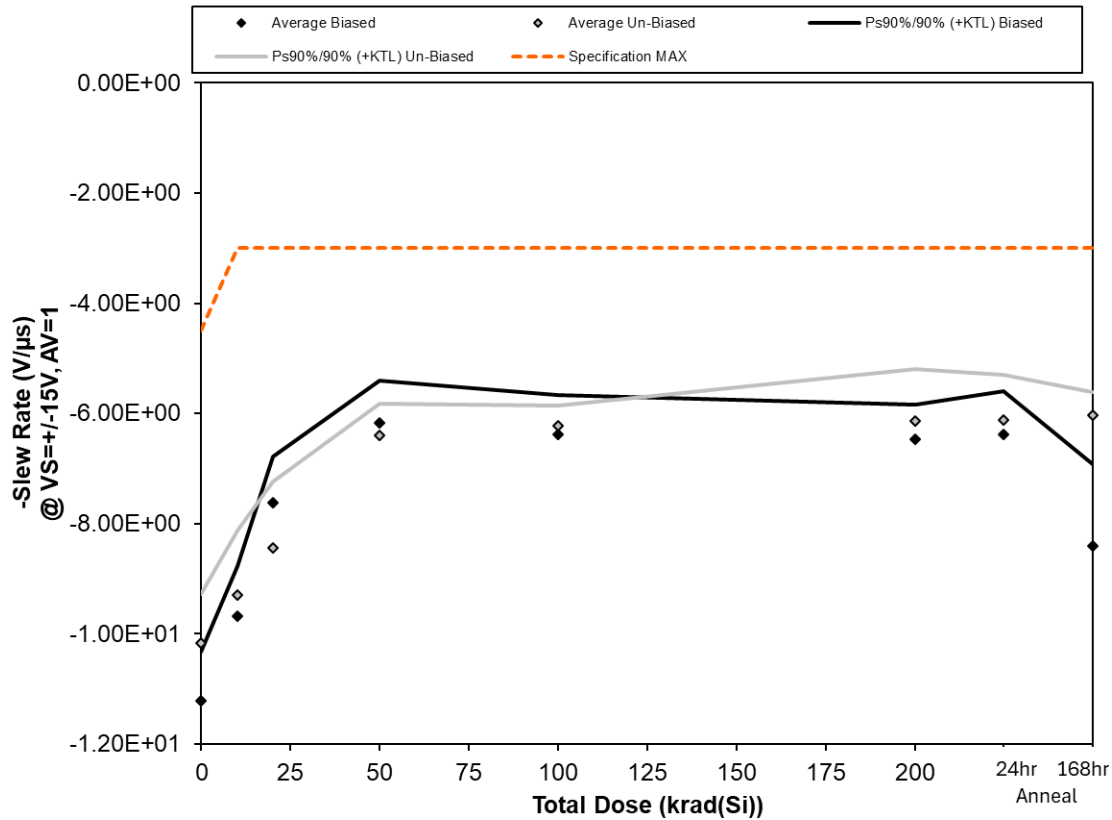
Large Signal Voltage Gain (V/uV) @ VS=+/-15V VO=+/-10V RL=2k		Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
Device	0	10	20	50	100	200			
146	1.44E+01	1.25E+01	1.23E+01	1.11E+01	1.03E+01	8.70E+00	9.50E+00	1.17E+01	
147	1.48E+01	1.44E+01	1.36E+01	1.32E+01	1.21E+01	1.27E+01	1.43E+01	1.30E+01	
148	1.41E+01	1.36E+01	1.33E+01	1.29E+01	1.06E+01	9.60E+00	1.10E+01	1.20E+01	
149	1.29E+01	1.11E+01	1.10E+01	9.80E+00	8.70E+00	7.60E+00	8.80E+00	1.06E+01	
150	1.39E+01	1.25E+01	1.17E+01	1.15E+01	9.90E+00	8.10E+00	9.40E+00	1.11E+01	
151	1.29E+01	1.25E+01	1.30E+01	9.80E+00	7.70E+00	5.40E+00	5.60E+00	7.80E+00	
152	1.33E+01	1.35E+01	1.28E+01	1.09E+01	9.80E+00	7.80E+00	7.80E+00	1.01E+01	
153	1.50E+01	1.61E+01	1.55E+01	1.44E+01	1.48E+01	1.29E+01	1.39E+01	1.51E+01	
154	1.33E+01	1.32E+01	1.36E+01	1.34E+01	1.11E+01	8.90E+00	9.10E+00	1.11E+01	
155	1.35E+01	1.43E+01	1.34E+01	1.16E+01	1.06E+01	9.00E+00	8.40E+00	1.11E+01	
156	1.32E+01	1.31E+01	1.35E+01	1.34E+01	1.31E+01	1.34E+01	1.27E+01	1.37E+01	
157	1.27E+01	1.27E+01	1.27E+01	1.23E+01	1.23E+01	1.25E+01	1.26E+01	1.27E+01	
Biased Statistics									
Average Biased	1.40E+01	1.28E+01	1.24E+01	1.17E+01	1.03E+01	9.34E+00	1.06E+01	1.17E+01	
Std Dev Biased	7.12E-01	1.25E+00	1.08E+00	1.39E+00	1.23E+00	2.02E+00	2.22E+00	9.15E-01	
Ps90%/90% (+KTL) Biased	1.60E+01	1.63E+01	1.54E+01	1.55E+01	1.37E+01	1.49E+01	1.67E+01	1.42E+01	
Ps90%/90% (-KTL) Biased	1.21E+01	9.39E+00	9.41E+00	7.90E+00	6.95E+00	3.80E+00	4.51E+00	9.17E+00	
Un-Biased Statistics									
Average Un-Biased	1.36E+01	1.39E+01	1.37E+01	1.20E+01	1.08E+01	8.80E+00	8.96E+00	1.10E+01	
Std Dev Un-Biased	8.12E-01	1.38E+00	1.08E+00	1.87E+00	2.59E+00	2.71E+00	3.06E+00	2.64E+00	
Ps90%/90% (+KTL) Un-Biased	1.58E+01	1.77E+01	1.66E+01	1.71E+01	1.79E+01	1.62E+01	1.73E+01	1.83E+01	
Ps90%/90% (-KTL) Un-Biased	1.14E+01	1.01E+01	1.07E+01	6.90E+00	3.71E+00	1.36E+00	5.79E-01	3.80E+00	
Specification MIN	5.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	



Large Signal Voltage Gain (V/uV) @ VS=+-15V VO=+-10V RL=600		Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
Device	0	10	20	50	100	200			
146	1.56E+01	1.36E+01	1.30E+01	1.24E+01	1.00E+01	9.20E+00	1.03E+01	1.19E+01	
147	1.64E+01	1.56E+01	1.63E+01	1.49E+01	1.39E+01	1.23E+01	1.49E+01	1.42E+01	
148	1.59E+01	1.46E+01	1.47E+01	1.33E+01	1.25E+01	1.03E+01	1.22E+01	1.30E+01	
149	1.46E+01	1.27E+01	1.31E+01	1.13E+01	9.30E+00	8.40E+00	9.10E+00	1.22E+01	
150	1.56E+01	1.38E+01	1.24E+01	1.18E+01	1.01E+01	8.40E+00	1.02E+01	1.18E+01	
151	1.52E+01	1.34E+01	1.48E+01	1.02E+01	8.00E+00	5.70E+00	6.10E+00	8.20E+00	
152	1.50E+01	1.47E+01	1.35E+01	1.16E+01	1.00E+01	8.10E+00	8.30E+00	1.09E+01	
153	1.60E+01	1.76E+01	1.69E+01	1.59E+01	1.60E+01	1.53E+01	1.43E+01	1.73E+01	
154	1.57E+01	1.42E+01	1.54E+01	1.43E+01	1.21E+01	9.20E+00	9.70E+00	1.17E+01	
155	1.54E+01	1.63E+01	1.63E+01	1.34E+01	1.20E+01	9.20E+00	9.20E+00	1.19E+01	
156	1.54E+01	1.48E+01	1.54E+01	1.55E+01	1.55E+01	1.54E+01	1.45E+01	1.58E+01	
157	1.43E+01	1.39E+01	1.42E+01	1.29E+01	1.27E+01	1.39E+01	1.40E+01	1.39E+01	
Biased Statistics									
Average Biased	1.56E+01	1.41E+01	1.39E+01	1.27E+01	1.12E+01	9.72E+00	1.13E+01	1.26E+01	
Std Dev Biased	6.57E-01	1.09E+00	1.59E+00	1.42E+00	1.95E+00	1.64E+00	2.28E+00	1.00E+00	
Ps90%/90% (+KTL) Biased	1.74E+01	1.71E+01	1.83E+01	1.66E+01	1.65E+01	1.42E+01	1.76E+01	1.54E+01	
Ps90%/90% (-KTL) Biased	1.38E+01	1.11E+01	9.54E+00	8.85E+00	5.81E+00	5.23E+00	5.09E+00	9.88E+00	
Un-Biased Statistics									
Average Un-Biased	1.55E+01	1.52E+01	1.54E+01	1.31E+01	1.16E+01	9.50E+00	9.52E+00	1.20E+01	
Std Dev Un-Biased	3.97E-01	1.69E+00	1.33E+00	2.24E+00	2.97E+00	3.54E+00	3.01E+00	3.31E+00	
Ps90%/90% (+KTL) Un-Biased	1.65E+01	1.99E+01	1.90E+01	1.92E+01	1.98E+01	1.92E+01	1.78E+01	2.11E+01	
Ps90%/90% (-KTL) Un-Biased	1.44E+01	1.06E+01	1.17E+01	6.94E+00	3.48E+00	-2.16E-01	1.27E+00	2.92E+00	
Specification MIN	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	2.00E+00	
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	

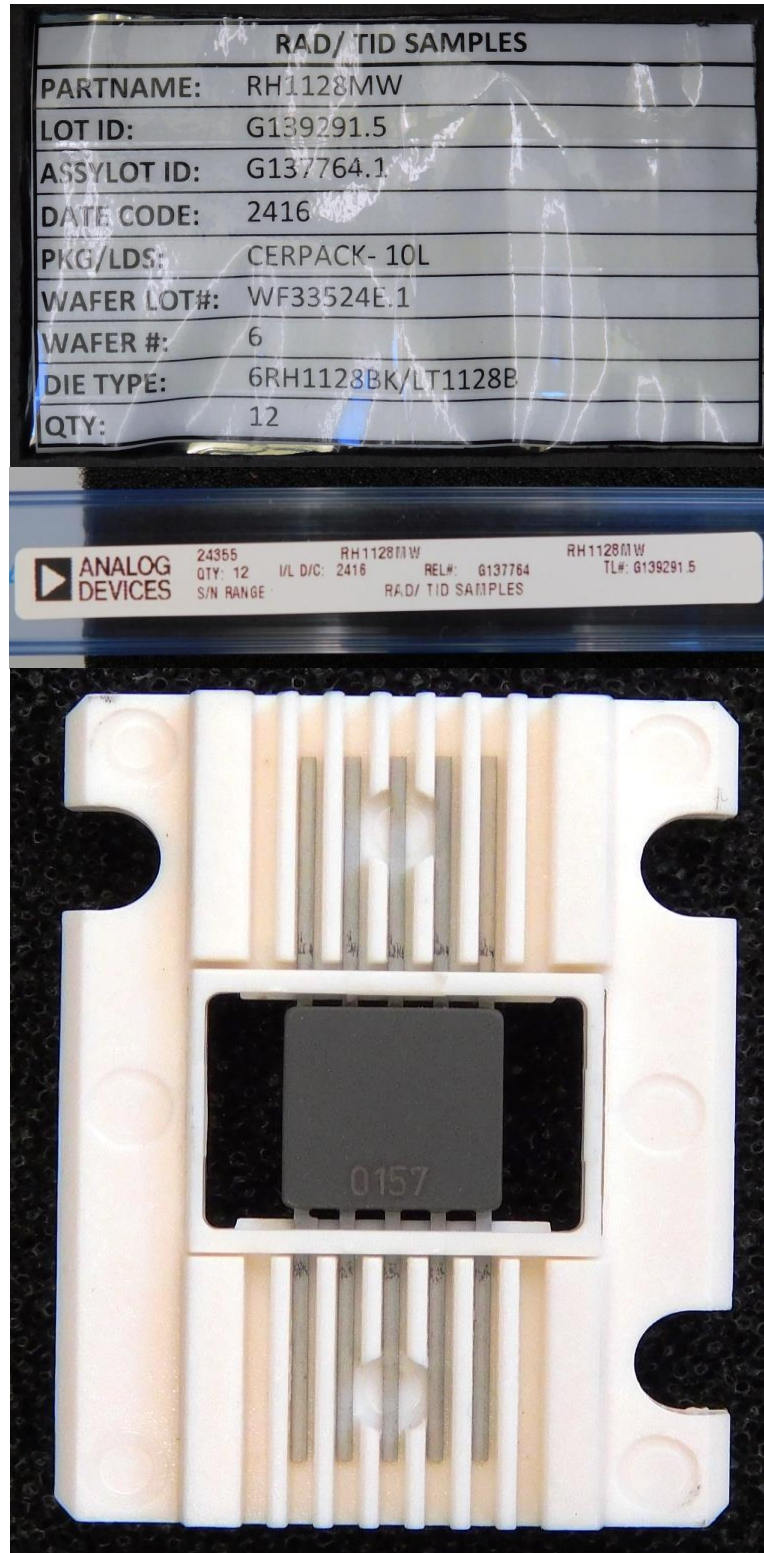


+Slew Rate (V/μs) @ VS=+-15V, AV=1	Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
	0	10	20	50	100	200		
Device								
146	7.59E+00	7.32E+00	6.61E+00	6.63E+00	6.87E+00	6.14E+00	6.56E+00	6.88E+00
147	7.43E+00	6.99E+00	7.60E+00	6.76E+00	6.96E+00	5.90E+00	6.90E+00	7.31E+00
148	7.69E+00	7.01E+00	7.17E+00	6.90E+00	6.10E+00	6.21E+00	6.46E+00	7.01E+00
149	7.24E+00	6.77E+00	6.57E+00	6.98E+00	6.36E+00	6.54E+00	6.84E+00	6.77E+00
150	7.27E+00	7.17E+00	7.23E+00	6.91E+00	6.63E+00	6.11E+00	5.88E+00	6.84E+00
151	7.17E+00	7.15E+00	7.22E+00	7.06E+00	6.76E+00	6.06E+00	5.48E+00	6.37E+00
152	6.65E+00	7.00E+00	6.39E+00	6.75E+00	6.44E+00	5.53E+00	5.48E+00	6.02E+00
153	7.18E+00	6.49E+00	6.81E+00	7.49E+00	6.79E+00	5.16E+00	5.72E+00	6.39E+00
154	7.25E+00	7.71E+00	7.12E+00	6.56E+00	6.33E+00	5.58E+00	5.96E+00	6.94E+00
155	7.33E+00	7.58E+00	7.12E+00	7.11E+00	6.46E+00	5.90E+00	6.05E+00	6.69E+00
156	7.04E+00	7.34E+00	7.15E+00	7.30E+00	6.90E+00	7.77E+00	7.06E+00	6.90E+00
157	7.21E+00	7.21E+00	7.16E+00	7.19E+00	7.10E+00	7.08E+00	7.04E+00	7.25E+00
Biased Statistics								
Average Biased	7.44E+00	7.05E+00	7.04E+00	6.84E+00	6.58E+00	6.18E+00	6.53E+00	6.96E+00
Std Dev Biased	1.96E-01	2.07E-01	4.39E-01	1.40E-01	3.57E-01	2.32E-01	4.07E-01	2.13E-01
Ps90%/90% (+KTL) Biased	7.98E+00	7.62E+00	8.24E+00	7.22E+00	7.56E+00	6.82E+00	7.64E+00	7.55E+00
Ps90%/90% (-KTL) Biased	6.91E+00	6.49E+00	5.83E+00	6.45E+00	5.61E+00	5.54E+00	5.41E+00	6.38E+00
Un-Biased Statistics								
Average Un-Biased	7.12E+00	7.19E+00	6.93E+00	6.99E+00	6.56E+00	5.65E+00	5.74E+00	6.48E+00
Std Dev Un-Biased	2.68E-01	4.87E-01	3.40E-01	3.58E-01	2.06E-01	3.50E-01	2.65E-01	3.49E-01
Ps90%/90% (+KTL) Un-Biased	7.85E+00	8.52E+00	7.86E+00	7.97E+00	7.12E+00	6.61E+00	6.46E+00	7.44E+00
Ps90%/90% (-KTL) Un-Biased	6.38E+00	5.85E+00	6.00E+00	6.01E+00	5.99E+00	4.69E+00	5.01E+00	5.52E+00
Specification MIN	4.50E+00	3.00E+00	3.00E+00	3.00E+00	3.00E+00	3.00E+00	3.00E+00	3.00E+00
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS



-Slew Rate (V/μs) @ VS=+/-15V, AV=1		Total Dose (krad(Si))						24-hr Anneal	168-hr Anneal
Device	0	10	20	50	100	200			
146	-1.10E+01	-1.01E+01	-7.64E+00	-6.19E+00	-6.26E+00	-6.41E+00	-6.13E+00	-8.37E+00	
147	-1.16E+01	-9.74E+00	-8.00E+00	-5.91E+00	-6.85E+00	-6.65E+00	-6.53E+00	-9.30E+00	
148	-1.12E+01	-9.72E+00	-7.44E+00	-5.92E+00	-6.35E+00	-6.15E+00	-6.80E+00	-8.20E+00	
149	-1.08E+01	-9.63E+00	-7.22E+00	-6.26E+00	-6.19E+00	-6.42E+00	-6.38E+00	-7.86E+00	
150	-1.14E+01	-9.19E+00	-7.80E+00	-6.58E+00	-6.30E+00	-6.75E+00	-6.11E+00	-8.28E+00	
151	-9.61E+00	-9.22E+00	-8.54E+00	-6.18E+00	-6.21E+00	-6.51E+00	-6.52E+00	-5.96E+00	
152	-1.04E+01	-9.96E+00	-8.21E+00	-6.30E+00	-6.43E+00	-5.93E+00	-5.81E+00	-5.80E+00	
153	-1.02E+01	-8.78E+00	-8.23E+00	-6.58E+00	-6.23E+00	-5.95E+00	-6.24E+00	-6.10E+00	
154	-1.03E+01	-9.39E+00	-8.06E+00	-6.29E+00	-6.05E+00	-5.79E+00	-6.22E+00	-6.18E+00	
155	-1.03E+01	-9.18E+00	-9.15E+00	-6.68E+00	-6.21E+00	-6.49E+00	-5.84E+00	-6.13E+00	
156	-1.05E+01	-1.10E+01	-9.21E+00	-1.08E+01	-1.09E+01	-9.87E+00	-1.11E+01	-1.08E+01	
157	-1.07E+01	-9.42E+00	-1.03E+01	-1.12E+01	-1.01E+01	-1.10E+01	-9.83E+00	-1.09E+01	
Biased Statistics									
Average Biased	-1.12E+01	-9.68E+00	-7.62E+00	-6.17E+00	-6.39E+00	-6.48E+00	-6.39E+00	-8.40E+00	
Std Dev Biased	3.22E-01	3.26E-01	3.04E-01	2.77E-01	2.64E-01	2.34E-01	2.89E-01	5.38E-01	
Ps90%/90% (+KTL) Biased	-1.03E+01	-8.78E+00	-6.79E+00	-5.41E+00	-5.67E+00	-5.83E+00	-5.60E+00	-6.93E+00	
Ps90%/90% (-KTL) Biased	-1.21E+01	-1.06E+01	-8.45E+00	-6.93E+00	-7.11E+00	-7.12E+00	-7.18E+00	-9.88E+00	
Un-Biased Statistics									
Average Un-Biased	-1.02E+01	-9.31E+00	-8.44E+00	-6.41E+00	-6.23E+00	-6.13E+00	-6.13E+00	-6.03E+00	
Std Dev Un-Biased	3.22E-01	4.29E-01	4.35E-01	2.13E-01	1.35E-01	3.40E-01	2.99E-01	1.54E-01	
Ps90%/90% (+KTL) Un-Biased	-9.29E+00	-8.13E+00	-7.25E+00	-5.82E+00	-5.86E+00	-5.20E+00	-5.30E+00	-5.61E+00	
Ps90%/90% (-KTL) Un-Biased	-1.11E+01	-1.05E+01	-9.63E+00	-6.99E+00	-6.60E+00	-7.07E+00	-6.95E+00	-6.46E+00	
Specification MAX	-4.50E+00	-3.00E+00	-3.00E+00	-3.00E+00	-3.00E+00	-3.00E+00	-3.00E+00	-3.00E+00	
Status	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	

Appendix A: Photograph of Packing Label and a Sample Unit-Under-Test to Show Part Traceability



Appendix B: Radiation Bias Connections

TID Radiation Biased Conditions:

Pin	Function	Connection / Bias
1	NC	NC
2	VOS TRIM	NC
3	-IN	To Pin 7 via 10k Ω Resistor
4	+IN	To 8V via 10k Ω Resistor
5	V-	To -15V Decoupled to GND via 0.1 μ F Capacitor
6	OVERCOMP	NC
7	OUT	To Pin 3 via 10k Ω Resistor
8	V+	To +15V Decoupled to GND via 0.1 μ F Capacitor
9	VOS TRIM	NC
10	NC	NC

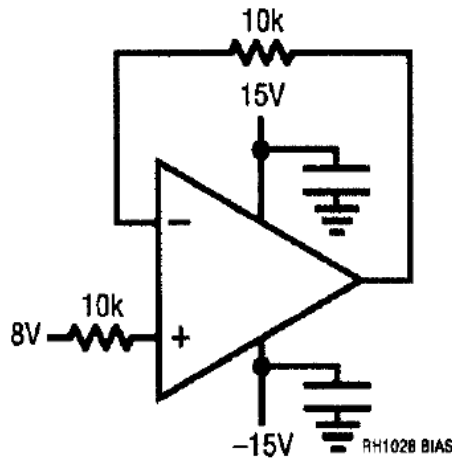


Figure B.1. Irradiation bias circuit.

TID Radiation Unbiased Conditions: All pins grounded.