



AHEAD OF WHAT'S POSSIBLE™

HIGH DOSE RADIATION TEST REPORT REF05

December 2001

Generic



Radiation Test Report	
Product:	REF05
Gamma:	0, 30k, 50k, 100k, 24Hr
Gamma Source:	Co60/TM1019 Condition A
Dose Rate:	58.96 Rad/s
Facilities:	National Semiconductor
Tested:	December 3rd, 2001

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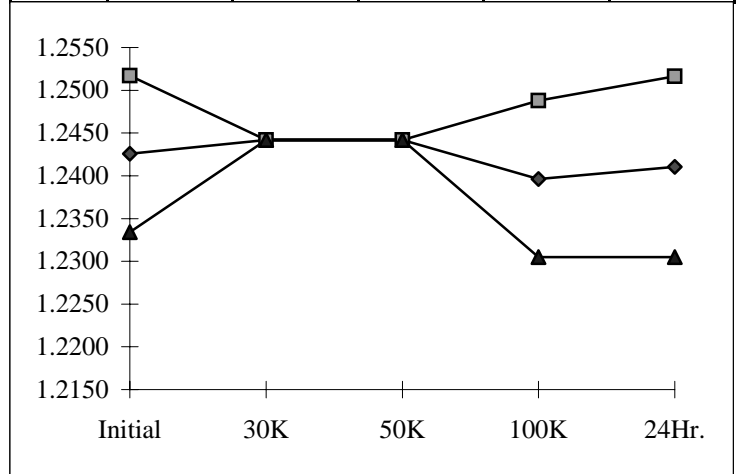
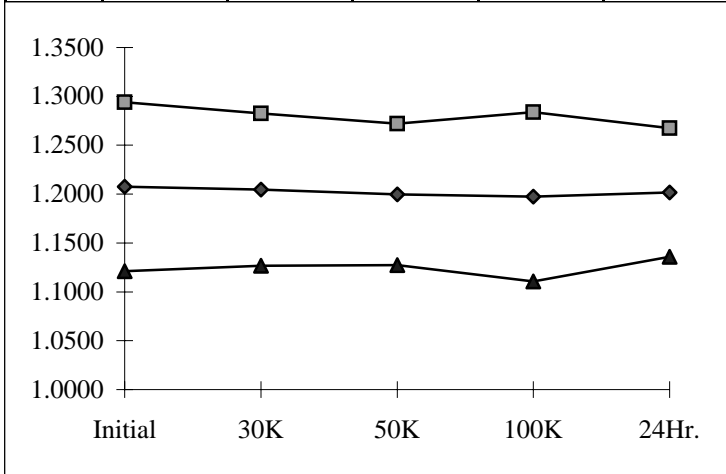
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Warning:

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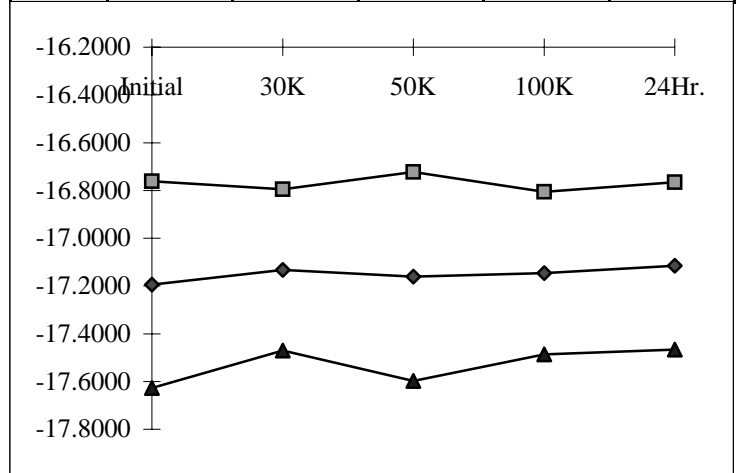
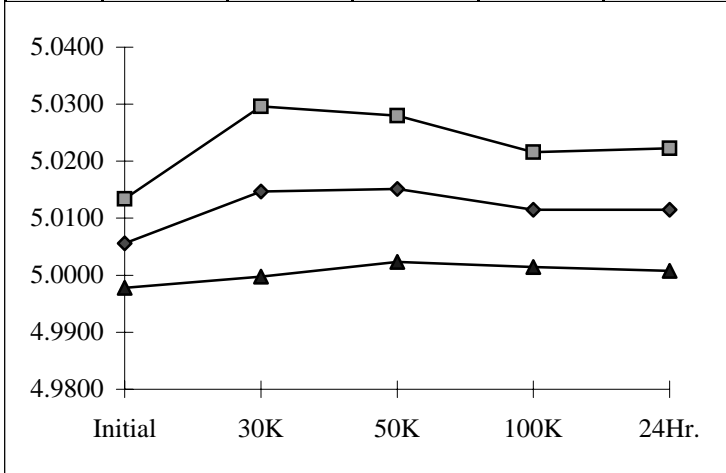
T# 1	ISY @ Vin=15V & IL=0mA					mA
SN	Initial	30K	50K	100K	24Hr.	
6	1.1970	1.1978	1.1898	1.1904	1.1968	
7	1.2503	1.2433	1.2356	1.2399	1.2330	
8	1.1886	1.1880	1.1830	1.1759	1.1828	
9	1.1986	1.1948	1.1909	1.1890	1.1920	
10	1.1928	1.1923	1.1895	1.1847	1.1988	
min	1.1886	1.1880	1.1830	1.1759	1.1828	
max	1.2503	1.2433	1.2356	1.2399	1.2330	
stdev	0.0288	0.0260	0.0241	0.0289	0.0219	
average	1.2076	1.2046	1.1998	1.1974	1.2017	
+3S	1.2939	1.2825	1.2722	1.2840	1.2674	
-3S	1.1212	1.1267	1.1273	1.1108	1.1359	

T# 2	V ref					V
SN	Initial	30K	50K	100K	24Hr.	
6	1.2441	1.2442	1.2442	1.2381	1.2441	
7	1.2441	1.2442	1.2442	1.2442	1.2441	
8	1.2441	1.2442	1.2442	1.2381	1.2441	
9	1.2441	1.2442	1.2442	1.2381	1.2380	
10	1.2380	1.2442	1.2442	1.2381	1.2380	
min	1.2380	1.2442	1.2442	1.2381	1.2380	
max	1.2441	1.2442	1.2442	1.2442	1.2441	
stdev	0.0030	0.0000	0.0000	0.0031	0.0035	
average	1.2426	1.2442	1.2442	1.2396	1.2411	
+3S	1.2517	1.2442	1.2442	1.2488	1.2516	
-3S	1.2334	1.2442	1.2442	1.2305	1.2305	



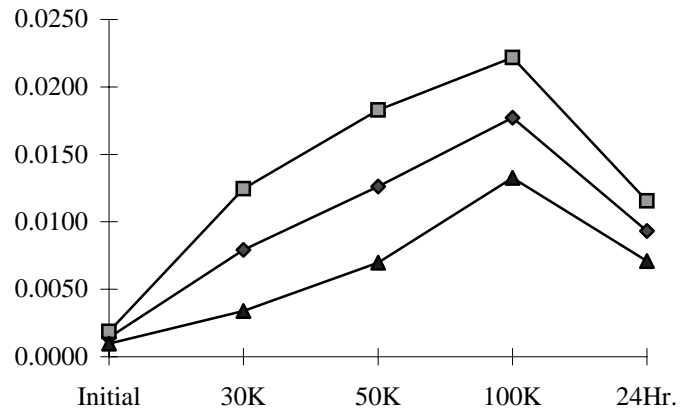
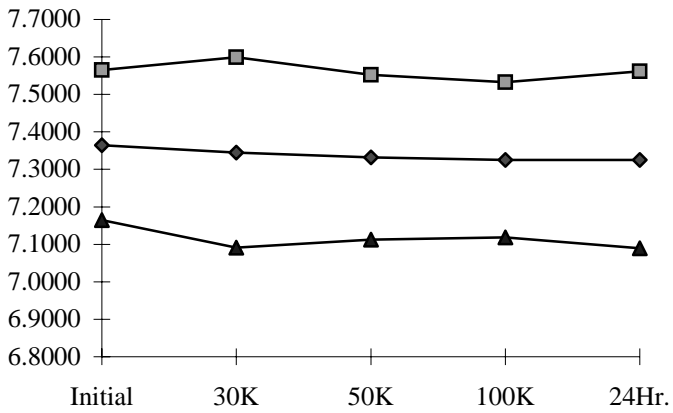
T# 3	Vout @ Vin=15V & IL=0mA					V
SN	Initial	30K	50K	100K	24Hr.	
6	4.9980	5.0000	4.9994	5.0006	5.0011	
7	5.0065	5.0147	5.0147	5.0141	5.0146	
8	5.0053	5.0147	5.0147	5.0086	5.0084	
9	5.0084	5.0208	5.0208	5.0147	5.0146	
10	5.0022	5.0086	5.0104	5.0086	5.0084	
min	5.0022	5.0086	5.0104	5.0086	5.0084	
max	5.0084	5.0208	5.0208	5.0147	5.0146	
stdev	0.0026	0.0050	0.0043	0.0034	0.0036	
average	5.0056	5.0147	5.0152	5.0115	5.0115	
+3S	5.0134	5.0296	5.0280	5.0216	5.0222	
-3S	4.9978	4.9998	5.0023	5.0014	5.0008	

T# 4	Vtrim(-) Vin=15V, Vref=5V					%/FS
SN	Initial	30K	50K	100K	24Hr.	
6	-16.7536	-16.8168	-16.8271	-16.7507	-16.7573	
7	-17.2192	-17.1918	-17.1917	-17.1966	-17.2004	
8	-17.3401	-17.2057	-17.3081	-17.2210	-17.2159	
9	-17.2240	-17.1681	-17.1818	-17.1889	-17.0812	
10	-16.9949	-16.9658	-16.9594	-16.9767	-16.9660	
min	-17.3401	-17.2057	-17.3081	-17.2210	-17.2159	
max	-16.9949	-16.9658	-16.9594	-16.9767	-16.9660	
stdev	0.1444	0.1124	0.1457	0.1136	0.1166	
average	-17.1946	-17.1329	-17.1603	-17.1458	-17.1159	
+3S	-16.7615	-16.7955	-16.7233	-16.8051	-16.7660	
-3S	-17.6276	-17.4702	-17.5972	-17.4865	-17.4658	



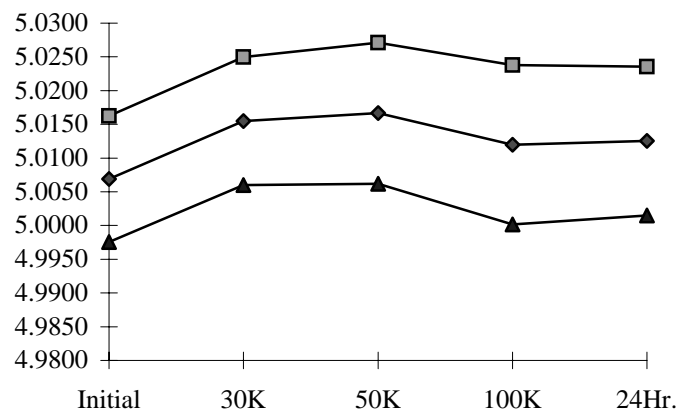
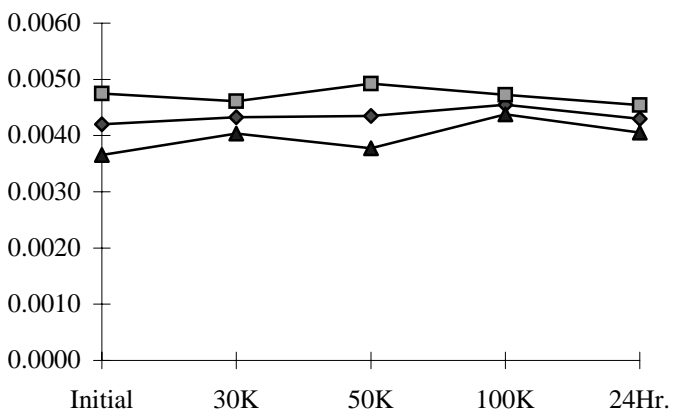
T# 5	Vtrim(+) Vin=15V,Vref=5V				%/FS
SN	Initial	30K	50K	100K	24Hr.
6	7.1554	7.1769	7.1779	7.1516	7.1509
7	7.4122	7.4002	7.3758	7.3767	7.3760
8	7.4141	7.4246	7.4002	7.3848	7.3850
9	7.3606	7.3180	7.3180	7.3025	7.3271
10	7.2717	7.2380	7.2354	7.2381	7.2138
min	7.2717	7.2380	7.2354	7.2381	7.2138
max	7.4141	7.4246	7.4002	7.3848	7.3850
stdev	0.0667	0.0848	0.0733	0.0691	0.0787
average	7.3647	7.3452	7.3324	7.3255	7.3255
+3S	7.5649	7.5995	7.5521	7.5327	7.5615
-3S	7.1644	7.0909	7.1126	7.1184	7.0894

T# 6	Line Reg. 8V to 33V				%/V
SN	Initial	30K	50K	100K	24Hr.
6	0.0017	0.0018	0.0019	0.0017	0.0018
7	0.0013	0.0058	0.0099	0.0156	0.0084
8	0.0013	0.0080	0.0130	0.0179	0.0092
9	0.0015	0.0086	0.0134	0.0184	0.0095
10	0.0016	0.0093	0.0142	0.0190	0.0102
min	0.0013	0.0058	0.0099	0.0156	0.0084
max	0.0016	0.0093	0.0142	0.0190	0.0102
stdev	0.0002	0.0015	0.0019	0.0015	0.0007
average	0.0014	0.0079	0.0126	0.0177	0.0093
+3S	0.0019	0.0125	0.0183	0.0222	0.0116
-3S	0.0010	0.0034	0.0070	0.0133	0.0071



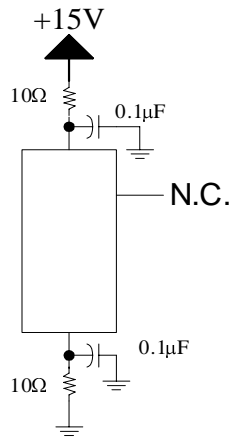
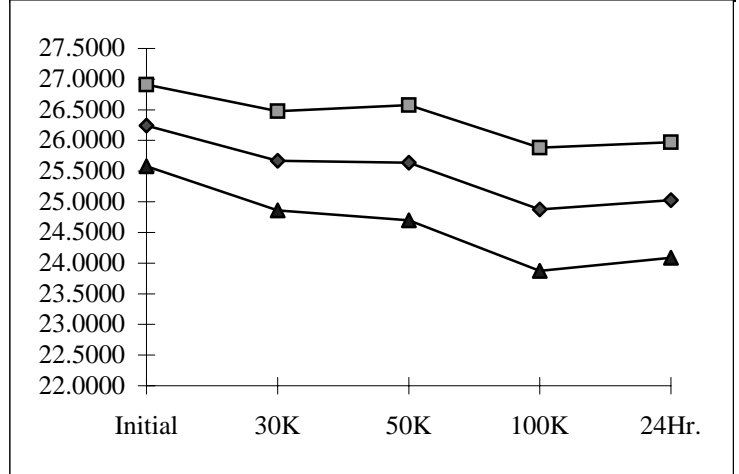
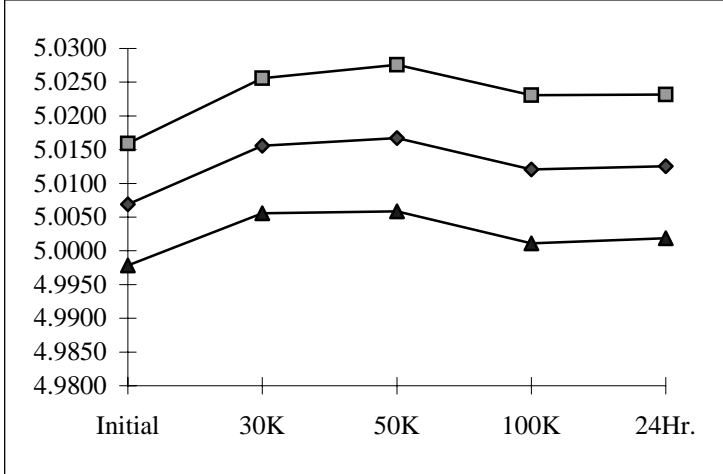
T# 7	Load Reg 0 to 10mA				%/mA
SN	Initial	30K	50K	100K	24Hr.
6	0.0045	0.0045	0.0042	0.0042	0.0045
7	0.0044	0.0044	0.0045	0.0045	0.0043
8	0.0041	0.0044	0.0045	0.0046	0.0043
9	0.0043	0.0043	0.0043	0.0045	0.0044
10	0.0040	0.0042	0.0041	0.0046	0.0042
min	0.0040	0.0042	0.0041	0.0045	0.0042
max	0.0044	0.0044	0.0045	0.0046	0.0044
stdev	0.0002	0.0001	0.0002	0.0001	0.0001
average	0.0042	0.0043	0.0044	0.0046	0.0043
+3S	0.0047	0.0046	0.0049	0.0047	0.0045
-3S	0.0037	0.0040	0.0038	0.0044	0.0041

T# 8	Isink @ 0.2mA				V
SN	Initial	30K	50K	100K	24Hr.
6	5.0010	5.0012	5.0008	5.0008	5.0014
7	5.0067	5.0154	5.0168	5.0142	5.0133
8	5.0067	5.0150	5.0161	5.0103	5.0114
9	5.0109	5.0196	5.0211	5.0161	5.0171
10	5.0033	5.0119	5.0126	5.0073	5.0083
min	5.0033	5.0119	5.0126	5.0073	5.0083
max	5.0109	5.0196	5.0211	5.0161	5.0171
stdev	0.0031	0.0032	0.0035	0.0039	0.0037
average	5.0069	5.0155	5.0167	5.0120	5.0125
+3S	5.0162	5.0250	5.0271	5.0238	5.0236
-3S	4.9976	5.0060	5.0062	5.0001	5.0015



T# 9	Isink @ 0.3mA					V
SN	Initial	30K	50K	100K	24Hr.	
6	5.0010	5.0012	5.0008	5.0008	5.0010	
7	5.0067	5.0154	5.0168	5.0138	5.0137	
8	5.0063	5.0150	5.0161	5.0107	5.0114	
9	5.0109	5.0200	5.0214	5.0161	5.0167	
10	5.0036	5.0119	5.0126	5.0077	5.0083	
min	5.0036	5.0119	5.0126	5.0077	5.0083	
max	5.0109	5.0200	5.0214	5.0161	5.0167	
stdev	0.0030	0.0033	0.0036	0.0037	0.0036	
average	5.0069	5.0156	5.0167	5.0121	5.0125	
+3S	5.0159	5.0256	5.0276	5.0231	5.0232	
-3S	4.9978	5.0056	5.0059	5.0011	5.0019	

T# 10	ISC Vo=0v					mA
SN	Initial	30K	50K	100K	24Hr.	
6	26.3656	26.4871	26.6086	26.6086	26.0011	
7	26.4871	26.0011	26.0011	25.2721	25.3936	
8	26.3656	25.7581	25.7581	25.0291	25.1506	
9	26.0011	25.3936	25.2721	24.5431	24.6646	
10	26.1226	25.5151	25.5151	24.6646	24.9076	
min	26.0011	25.3936	25.2721	24.5431	24.6646	
max	26.4871	26.0011	26.0011	25.2721	25.3936	
stdev	0.2218	0.2694	0.3137	0.3346	0.3137	
average	26.2441	25.6670	25.6366	24.8772	25.0291	
+3S	26.9096	26.4752	26.5777	25.8810	25.9702	
-3S	25.5786	24.8587	24.6955	23.8735	24.0880	



Bias Circuit