

# ***RADIATION TEST REPORT***

PRODUCT: REF10AJQMLR

MASK:

FILE:

DATE CODE:

GAMMA: 0, 30K, 50K, 100K, 24Hr.

GAMMA SOURCE: Co60

DOSE RATE: 53.60 rad/sec

FACILITIES: National Semiconductor  
Sunnyvale, Ca.

TESTED: February 14, 2001

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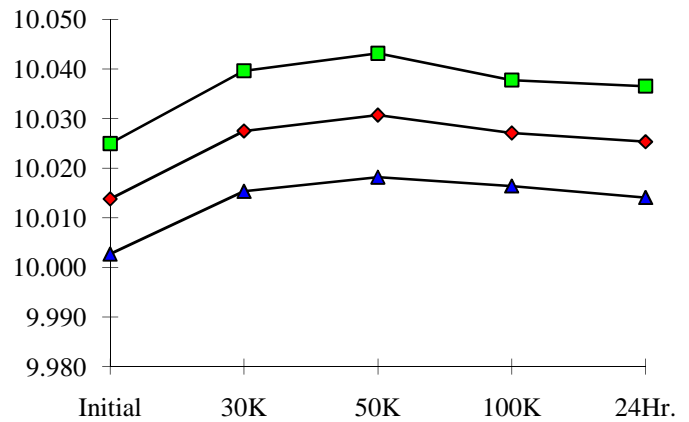
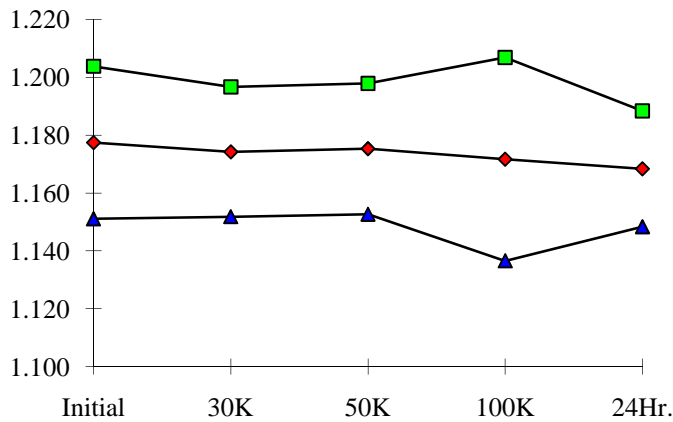
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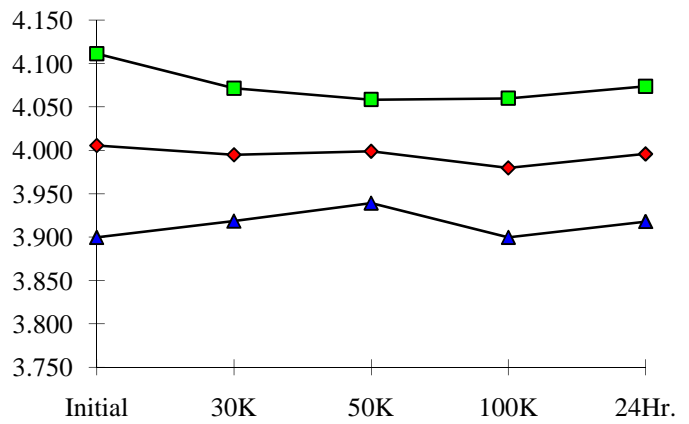
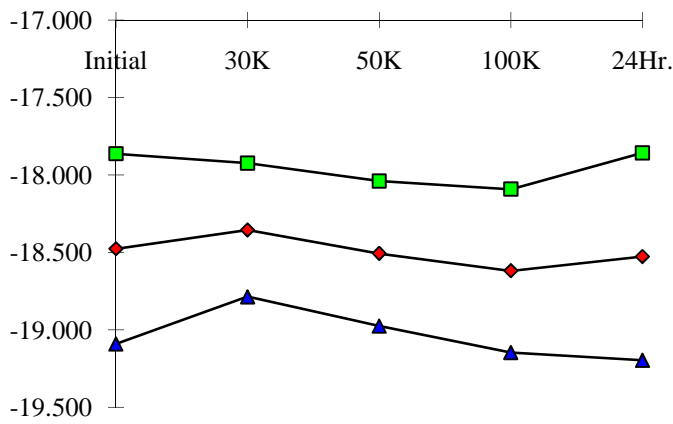
T# 1	ISY @ Vin=15V & IL=0mA					mA
SN	Initial	30K	50K	100K	24Hr.	
3	1.168	1.162	1.158	1.168	1.157	
4	1.176	1.176	1.175	1.168	1.169	
5	1.190	1.182	1.186	1.189	1.177	
7	1.175	1.164	1.167	1.168	1.162	
9	1.169	1.175	1.173	1.162	1.165	
min	1.169	1.164	1.167	1.162	1.162	
max	1.190	1.182	1.186	1.189	1.177	
stdev	0.009	0.007	0.008	0.012	0.007	
average	1.177	1.174	1.175	1.172	1.168	
+3S	1.204	1.197	1.198	1.207	1.188	
-3S	1.151	1.152	1.153	1.137	1.148	

T# 2	VOUT @ Vin=15V,IL=0					V
SN	Initial	30K	50K	100K	24Hr.	
3	10.018	10.018	10.018	10.018	10.018	
4	10.008	10.022	10.025	10.023	10.020	
5	10.015	10.028	10.032	10.030	10.027	
7	10.015	10.030	10.033	10.025	10.025	
9	10.017	10.031	10.034	10.030	10.029	
min	10.008	10.022	10.025	10.023	10.020	
max	10.017	10.031	10.034	10.030	10.029	
stdev	0.004	0.004	0.004	0.004	0.004	
average	10.014	10.028	10.031	10.027	10.025	
+3S	10.025	10.040	10.043	10.038	10.037	
-3S	10.003	10.015	10.018	10.016	10.014	



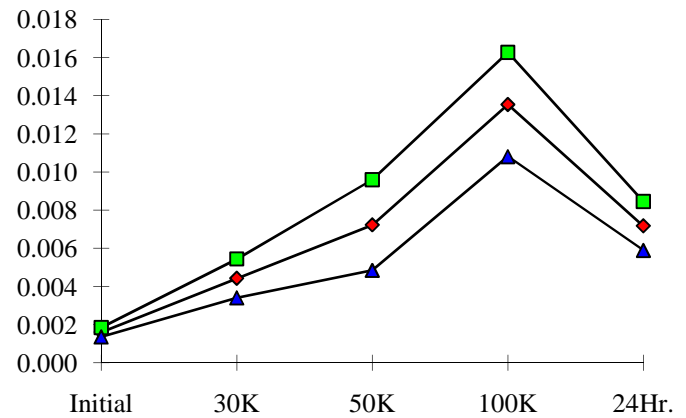
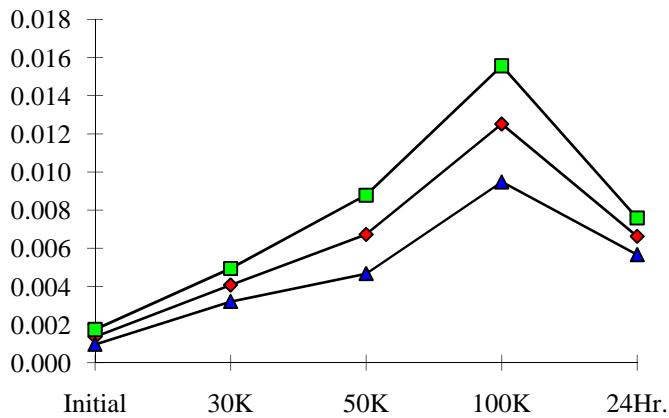
T# 3	VTRIM - Vin=15V Vref=10V					%FS
SN	Initial	30K	50K	100K	24Hr.	
3	-17.524	-17.768	-17.765	-17.767	-17.828	
4	-18.273	-18.250	-18.369	-18.488	-18.441	
5	-18.383	-18.393	-18.531	-18.478	-18.296	
7	-18.749	-18.543	-18.717	-18.851	-18.824	
9	-18.504	-18.236	-18.412	-18.659	-18.546	
min	-18.749	-18.543	-18.717	-18.851	-18.824	
max	-18.273	-18.236	-18.369	-18.478	-18.296	
stdev	0.204	0.144	0.156	0.176	0.223	
average	-18.477	-18.355	-18.507	-18.619	-18.527	
+3S	-17.864	-17.925	-18.040	-18.092	-17.858	
-3S	-19.091	-18.786	-18.975	-19.146	-19.196	

T# 4	VTRIM + Vin=15V Vref=10V					%FS
SN	Initial	30K	50K	100K	24Hr.	
3	3.994	3.994	3.994	3.994	3.994	
4	3.998	3.992	3.991	3.971	3.993	
5	3.995	3.990	3.988	3.989	3.990	
7	4.056	4.030	4.029	4.011	4.031	
9	3.974	3.968	3.987	3.948	3.969	
min	3.974	3.968	3.987	3.948	3.969	
max	4.056	4.030	4.029	4.011	4.031	
stdev	0.035	0.026	0.020	0.027	0.026	
average	4.005	3.995	3.999	3.980	3.996	
+3S	4.111	4.072	4.058	4.060	4.074	
-3S	3.900	3.918	3.939	3.900	3.918	



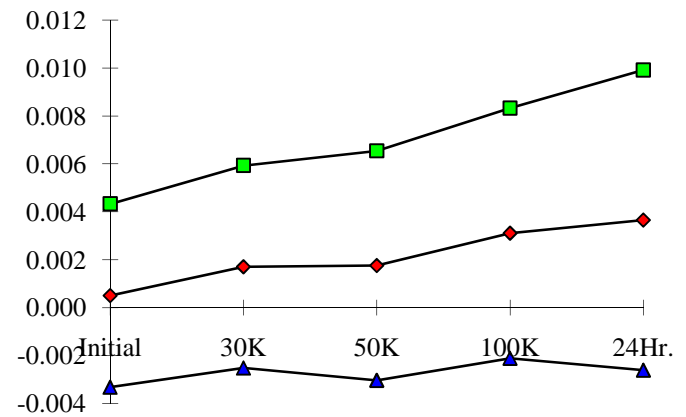
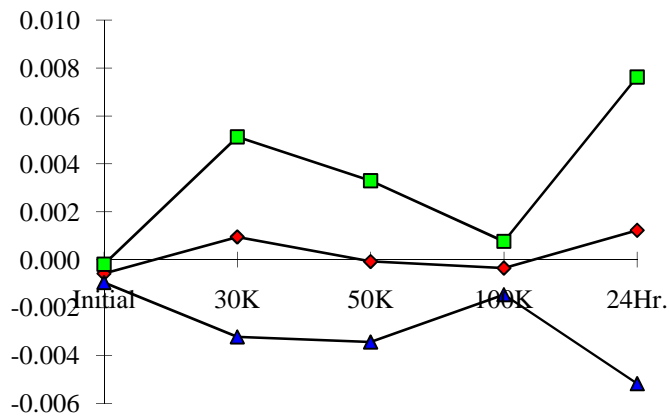
T# 5	LINE REG 13V TO 33V				%/V
SN	Initial	30K	50K	100K	24Hr.
3	0.001	0.001	0.001	0.001	0.001
4	0.001	0.004	0.006	0.012	0.006
5	0.001	0.004	0.006	0.012	0.007
7	0.002	0.005	0.008	0.014	0.007
9	0.001	0.004	0.007	0.012	0.007
min	0.001	0.004	0.006	0.012	0.006
max	0.002	0.005	0.008	0.014	0.007
stdev	0.000	0.000	0.001	0.001	0.000
average	0.001	0.004	0.007	0.013	0.007
+3S	0.002	0.005	0.009	0.016	0.008
-3S	0.001	0.003	0.005	0.009	0.006

T# 6	LINE REG 13 TO 30V				%/V
SN	Initial	30K	50K	100K	24Hr.
3	0.001	0.002	0.001	0.001	0.001
4	0.002	0.004	0.007	0.013	0.007
5	0.002	0.004	0.007	0.013	0.007
7	0.002	0.005	0.008	0.015	0.008
9	0.002	0.004	0.007	0.013	0.007
min	0.002	0.004	0.007	0.013	0.007
max	0.002	0.005	0.008	0.015	0.008
stdev	0.000	0.000	0.001	0.001	0.000
average	0.002	0.004	0.007	0.014	0.007
+3S	0.002	0.005	0.010	0.016	0.008
-3S	0.001	0.003	0.005	0.011	0.006



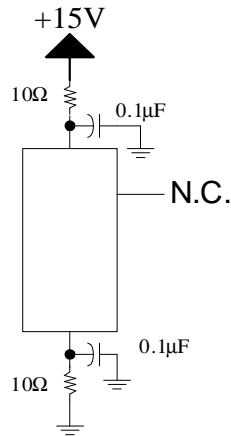
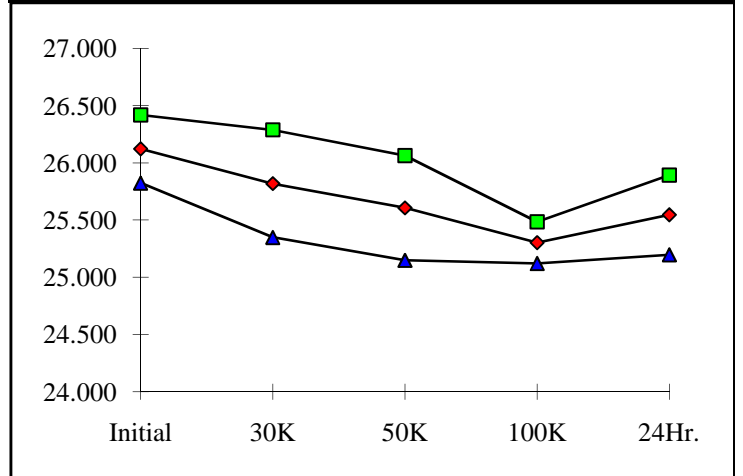
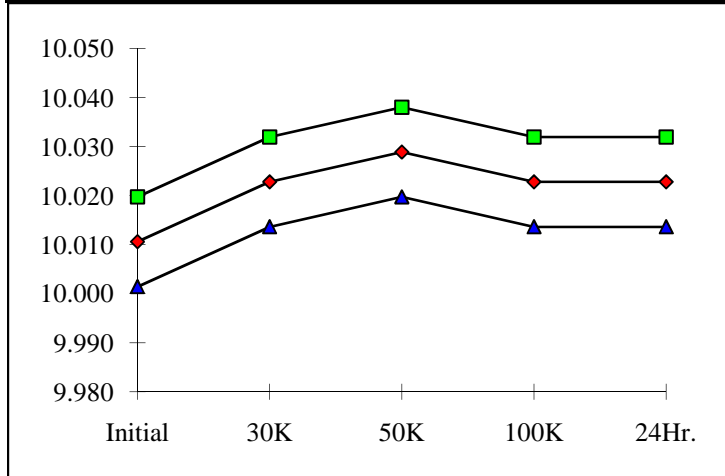
T# 7	LOAD REG 0 TO 8mA				%/mA
SN	Initial	30K	50K	100K	24Hr.
3	0.000	0.000	-0.001	-0.001	-0.001
4	-0.001	0.002	-0.001	-0.001	-0.001
5	-0.001	0.002	-0.001	0.000	0.002
7	0.000	0.000	-0.001	-0.001	0.000
9	-0.001	0.000	0.002	-0.001	0.004
min	-0.001	0.000	-0.001	-0.001	-0.001
max	0.000	0.002	0.002	0.000	0.004
stdev	0.000	0.001	0.001	0.000	0.002
average	-0.001	0.001	0.000	0.000	0.001
+3S	0.000	0.005	0.003	0.001	0.008
-3S	-0.001	-0.003	-0.003	-0.001	-0.005

T# 8	LOAD REG 0 TO 10mA				%/mA
SN	Initial	30K	50K	100K	24Hr.
3	0.000	0.005	0.000	0.002	0.002
4	0.002	0.002	0.000	0.002	0.002
5	0.002	0.003	0.004	0.005	0.005
7	-0.001	0.002	0.002	0.004	0.002
9	-0.001	0.000	0.002	0.002	0.006
min	-0.001	0.000	0.000	0.002	0.002
max	0.002	0.003	0.004	0.005	0.006
stdev	0.001	0.001	0.002	0.002	0.002
average	0.001	0.002	0.002	0.003	0.004
+3S	0.004	0.006	0.007	0.008	0.010
-3S	-0.003	-0.003	-0.003	-0.002	-0.003



T# 9	Vout @ Vin=15V & Isink @ 0.3mA					V
SN	Initial	30K	50K	100K	24Hr.	
3	10.018	10.012	10.012	10.018	10.012	
4	10.006	10.018	10.024	10.018	10.018	
5	10.012	10.024	10.030	10.024	10.024	
7	10.012	10.024	10.030	10.024	10.024	
9	10.012	10.024	10.030	10.024	10.024	
min	10.006	10.018	10.024	10.018	10.018	
max	10.012	10.024	10.030	10.024	10.024	
stdev	0.003	0.003	0.003	0.003	0.003	
average	10.011	10.023	10.029	10.023	10.023	
+3S	10.020	10.032	10.038	10.032	10.032	
-3S	10.001	10.014	10.020	10.014	10.014	

T# 10	ISC @ 15V					mA
SN	Initial	30K	50K	100K	24Hr.	
3	26.001	26.123	26.244	26.244	26.244	
4	26.123	26.001	25.758	25.394	25.637	
5	26.123	25.880	25.637	25.272	25.394	
7	26.244	25.758	25.637	25.272	25.637	
9	26.001	25.637	25.394	25.272	25.515	
min	26.001	25.637	25.394	25.272	25.394	
max	26.244	26.001	25.758	25.394	25.637	
stdev	0.099	0.157	0.153	0.061	0.116	
average	26.123	25.819	25.606	25.302	25.545	
+3S	26.420	26.289	26.065	25.485	25.894	
-3S	25.825	25.348	25.148	25.120	25.196	



Bias Circuit