ESA-QCA9929T-C

NATIONAL SEMICONDUCTOR CORPORATION
RADIATION EFFECTS LABORATORY
SOUTH PORTLAND, MAINE 04106
TOTAL DOSE RADIATION REPORT

CUSTOMER: TECNOLOGICA

PART TYPE: JM54AC139SEA

INPUT BIAS CIRCUIT: INPUTS = LOW

DOSE RATE : 72.732 Rad Si/sec.

TESTER: Steven Collomy

RADIATION MANAGER: MIKE MAHER

TELEPHONE: (207) 775-8391

WAFER RUN NUMBER: CF065744

WAFER NUMBER: Not Available on Document

PACKAGE TYPE: DIP

PRODUCTION LOT #: 0Y3174A019

IPI #: MCK2330B

(There are 2 reports in this package)

○ FAIL Room Anneal

○ PASS Rebound Anneal

PASSING LEVEL: Fail Rm. Ann. After 100k Rad Si/sec.

REVIEWED BY: _ Steven Collomy 9/17/96 __

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NATIONAL SEMICONDUCTOR RADIATION R&D ENGINEERING

Device Type: 54AC139
Test: ICCH (μA)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	-0.016	-0.016	-0.016	0.000	N/A	1
A0 (k)	-0.024	-0.020	-0.016	0.004	N/A	5
Control	-0.024	-0.024	-0.024	0.000	-0.008	1
A3 (k)	0.047	0.877	1.406	0.560	0.896	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
A10 (k)	149.110	1566.600	2098.000	801.285	1566.620	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
A30 (k)	1461.000	11916.601	15434.001	5875.440	11916.620	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
A50 (k)	2150.900	20639.000	26311.000	10367.200	20639.020	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
A80 (k)	1660.500	24820.100	31652.000	12973.800	24820.119	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
A100 (k)	1371.500	192697.000	502360.000	238764.000	192697.016	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
AANN (k)	10.025	347.817	555.370	203.813	347.837	5

Device Type: 54AC139

Test: ICCL (µA)

Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96

Wafer Run/Num: CF065744

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	-0.016	-0.016	-0.016	0.000	N/A	1
A0 (k)	-0.016	-0.016	-0.016	0.000	N/A	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
A3 (k)	0.095	1.334	2.192	0.812	1.351	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
A10 (k)	233.900	2482.640	3321.100	1271.150	2482.656	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
A30 (k)	1845.700	15881.700	20677.000	7890.370	15881.717	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
A50 (k)	2362.600	25273.299	32466.000	12849.899	25273.314	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
A80 (k)	1725.600	103383.008	410070.000	172051.000	103383.023	5
Control	-0.024	-0.024	-0.024	0.000	-0.008	1
A100 (k)	1430.500	271325.000	502360.000	235137.016	271325.031	5
Control	-0.024	-0.024	-0.024	0.000	-0.008	1
AANN (k)	14.868	563.252	870.760	324.597	563.268	5

"NATIONAL SEMICONDUCTOR RADIATION R&D ENGINEERING"

Device Type: 54AC139
Test: ICCF (µA)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	-0.024	-0.017	-0.016	0.002	N/A	12
A0 (k)	-0.024	-0.019	-0.008	0.004	N/A	60
Control	-0.024	-0.018	-0.008	0.005	-0.001	12
A3 (k)	0.039	0.976	1.994	0.563	0.994	60
Control	-0.024	-0.018	-0.016	0.003	-0.001	12
A10 (k)	133.730	1641.720	2702.400	793.220	1641.739	60
Control	-0.024	-0.019	-0.016	0.004	-0.002	12
A30 (k)	1446.800	12348.300	18007.000	5558.750	12348.318	60
Control	-0.024	-0.018	-0.016	0.003	-0.001	12
A50 (k)	2150.900	21415.701	29372.000	9733.091	21415.721	60
Control	-0.024	-0.017	-0.016	0.002	0.000	12
A80 (k)	1660.500	101023.992	410070.000	155607.000	101024.008	60
Control	-0.024	-0.018	-0.016	0.003	-0.001	12
A100 (k)	1369.500	271147.000	502619.969	212806.016	271147.031	60
Control	-0.024	-0.020	-0.016	0.004	-0.003	12
AANN (k)	9.437	380.432	716.120	204.835	380.451	60

NATIONAL SEMICONDUCTOR RADIATION R&D ENGINEERING

Device Type: 54AC139
Test: VION (V)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	-0.728	-0.727	-0.726	0.000	N/A	6
A0 (k)	-0.729	-0.728	-0.726	0.000	N/A	30
Control	-0.727	-0.727	-0.726	0.000	0.001	6
A3 (k)	-0.739	-0.737	-0.735	0.000	-0.009	30
Control	-0.727	-0.726	-0.725	0.000	0.001	6
A10 (k)	-0.739	-0.736	-0.734	0.001	-0.009	30
Control	-0.728	-0.727	-0.726	0.000	0.000	6
A30 (k)	-0.738	-0.734	-0.731	0.002	-0.006	30
Control	-0.727	-0.726	-0.725	0.000	0.001	6
A50 (k)	-0.736	-0.731	-0.727	0.003	-0.003	30
Control	-0.727	-0.726	-0.725	0.000	0.002	6
A80 (k)	-0.736	-0.725	-0.696	0.014	0.003	30
Control	-0.727	-0.727	-0.726	0.000	0.000	6
A100 (k)	-0.736	-0.711	-0.692	0.018	0.017	30
Control	-0.740	-0.739	-0.738	0.000	-0.012	6
AANN (k)	-0.742	-0.741	-0.739	0.000	-0.013	30

Device Type: 54AC139
Test: VICP (V)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	0.760	0.761	0.762	0.000	N/A	6
A0 (k)	0.761	0.762	0.763	0.000	N/A	30
Control	0.760	0.761	0.762	0.000	0.000	6
A3 (k)	0.769	0.770	0.772	0.000	0.008	30
Control	0.760	0.761	0.762	0.000	0.000	6
A10 (k)	0.768	0.770	0.772	0.001	0.008	30
Control	0.760	0.761	0.762	0.000	0.000	6
A30 (k)	0.767	0.768	0.770	0.000	0.006	30
Control	0.760	0.761	0.762	0.000	0.000	6
A50 (k)	0.764	0.766	0.768	0.001	0.004	30
Control	0.759	0.760	0.761	0.000	-0.001	6
A80 (k)	0.745	0.762	0.767	0.008	0.000	30
Control	0.760	0.761	0.762	0.000	0.000	6
A100 (k)	0.742	0.753	0.766	0.010	-0.010	30
Control	0.771	0.772	0.772	0.000	0.010	6
AANN (k)	0.771	0.773	0.775	0.000	0.010	30

Device Type: 54AC139

Test: IIH (µA)

Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96

Wafer Run/Num: CF065744

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	0.000	0.002	0.002	0.000	N/A	6
A0 (k)	0.000	0.002	0.003	0.000	N/A	30
Control	0.000	0.002	0.003	0.001	0.000	6
A3 (k)	0.000	0.002	0.003	0.000	0.000	30
Control	0.000	0.002	0.003	0.000	0.000	6
A10 (k)	0.000	0.002	0.003	0.000	0.000	30
Control	0.000	0.001	0.002	0.000	0.000	6
A30 (k)	0.000	0.002	0.003	0.000	0.000	30
Control	0.000	0.002	0.003	0.001	0.000	6
A50 (k)	0.000	0.002	0.003	0.000	0.000	30
Control	0.000	0.002	0.002	0.000	0.000	6
A80 (k)	0.000	0.002	0.003	0.000	0.000	30
Control	0.000	0.002	0.002	0.000	0.000	6
A100 (k)	0.000	0.002	0.003	0.000	0.000	30
Control	0.000	0.000	0.002	0.000	-0.002	6
AANN (k)	0.000	0.001	0.002	0.000	-0.001	30

Device Type: 54AC139

Test: IIL (μA)

Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96

Wafer Run/Num: CF065744

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	-0.002	0.000	0.000	0.000	N/A	6
A0 (k)	-0.002	0.000	0.000	0.000	N/A	30
Control	-0.002	-0.001	0.000	0.000	-0.001	6
A3 (k)	-0.003	0.000	0.000	0.000	0.000	30
Control	-0.002	-0.001	0.000	0.001	-0.001	6
A10 (k)	-0.002	-0.001	0.000	0.000	-0.001	30
Control	-0.002	0.000	0.000	0.001	0.000	6
A30 (k)	-0.002	-0.001	0.000	0.000	-0.001	30
Control	-0.002	0.000	0.000	0.001	0.000	6
A50 (k)	-0.003	-0.001	0.000	0.000	-0.001	30
Control	-0.002	0.000	0.000	0.001	0.000	6
A80 (k)	-0.002	0.000	0.000	0.000	0.000	30
Control	-0.002	0.000	0.000	0.000	0.000	6
A100 (k)	-0.003	-0.001	0.000	0.000	-0.001	30
Control	-0.002	-0.001	0.000	0.000	-0.001	6
AANN (k)	-0.002	-0.001	0.000	0.000	-0.001	30

Device Type: 54AC139
Test: VOL07 (V)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	0.320	0.330	0.342	0.007	N/A	8
A0 (k)	0.315	0.334	0.361	0.012	N/A	40
Control	0.319	0.330	0.342	0.008	0.000	8
A3 (k)	0.306	0.325	0.353	0.012	-0.009	40
Control	0.320	0.331	0.344	0.008	0.001	8
A10 (k)	0.306	0.326	0.354	0.012	-0.008	40
Control	0.319	0.330	0.342	0.008	0.000	8
A30 (k)	0.305	0.330	0.358	0.013	-0.004	40
Control	0.319	0.330	0.342	0.008	0.000	8
A50 (k)	0.303	0.336	0.366	0.015	0.002	40
Control	0.320	0.330	0.342	0.008	0.000	8
A80 (k)	0.302	0.338	0.375	0.018	0.004	40
Control	0.319	0.329	0.341	0.007	-0.001	8
A100 (k)	0.302	0.339	0.374	0.018	0.005	40
Control	0.309	0.319	0.331	0.007	-0.011	8
AANN (k)	0.299	0.319	0.344	0.011	-0.015	40

NATIONAL SEMICONDUCTOR RADIATION R&D ENGINEERING

Device Type: 54AC139
Test: VOHQ7 (V)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.
Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	4.976	4.985	4.998	0.007	N/A	8
A0 (k)	4.932	4.974	5.003	0.020	N/A	40
Control	4.976	4.986	4.998	0.007	0.001	8
A3 (k)	4.945	4.984	5.013	0.018	0.010	40
Control	4.976	4.986	4.998	0.007	0.001	8
A10 (k)	4.943	4.983	5.013	0.019	0.008	40
Control	4.976	4.985	4.998	0.007	0.000	8
A30 (k)	4.929	4.973	5.008	0.021	-0.002	40
Control	4.976	4.985	4.998	0.007	0.000	8
A50 (k)	4.919	4.963	5.003	0.023	-0.012	40
Control	4.976	4.984	4.998	0.007	-0.001	8
A80 (k)	4.908	4.955	4.998	0.026	-0.019	40
Control	4.976	4.986	4.998	0.007	0.001	8
A100 (k)	4.903	4.949	4.993	0.027	-0.025	40
Control	4.986	4.995	5.009	0.007	0.010	8
AANN (k)	4.934	4.974	5.000	0.019	0.000	40

NATIONAL SEMICONDUCTOR RADIATION R&D ENGINEERING

Test Date: 9/10/96
Wafer Run/Num: CF065744
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Device Type: 54AC139
Test: VOLQ5 (V)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	0.173	0.179	0.185	0.004	N/A	8
A0 (k)	0.172	0.181	0.195	0.006	N/A	40
Control	0.174	0.179	0.186	0.004	0.000	8
A3 (k)	0.167	0.177	0.191	0.006	-0.005	40
Control	0.174	0.180	0.186	0.004	0.000	8
A10 (k)	0.167	0.177	0.191	0.006	-0.004	40
Control	0.173	0.179	0.185	0.004	0.000	8
A30 (k)	0.165	0.181	0.198	0.008	-0.001	40
Control	0.173	0.179	0.185	0.004	0.000	8
A50 (k)	0.164	0.185	0.206	0.010	0.004	40
Control	0.174	0.180	0.186	0.004	0.001	8
A80 (k)	0.163	0.187	0.212	0.012	0.005	40
Control	0.173	0.179	0.185	0.004	0.000	8
A100 (k)	0.163	0.187	0.211	0.012	0.006	40
Control	0.168	0.173	0.179	0.003	-0.006	8
AANN (k)	0.161	0.173	0.187	0.006	-0.009	40

NATIONAL SEMICONDUCTOR RADIATION RAD ENGINEERING

Device Type: 54AC139
Test: VOH05 (V)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	4.221	4.224	4.231	0.004	N/A	8
A0 (k)	4.198	4.219	4.236	0.011	N/A	40
Control	4.221	4.225	4.231	0.004	0.000	8
A3 (k)	4.204	4.224	4.239	0.010	0.005	40
Control	4.221	4.225	4.231	0.004	0.000	8
A10 (k)	4.203	4.223	4.239	0.010	0.004	40
Control	4.222	4.225	4.231	0.003	0.001	8
A30 (k)	4.193	4.216	4.234	0.011	-0.003	40
Control	4.221	4.225	4.231	0.004	0.000	8
A50 (k)	4.186	4.209	4.231	0.013	-0.010	40
Control	4.221	4.225	4.231	0.004	0.000	8
A80 (k)	4.172	4.203	4.228	0.016	-0.016	40
Control	4.221	4.225	4.231	0.004	0.000	8
A100 (k)	4.165	4.199	4.226	0.017	-0.020	40
Control	4.227	4.231	4.236	0.003	0.006	8
AANN (k)	4.196	4.217	4.229	0.010	-0.002	40

Device Type: 54AC139
Test: VOLQ3 (V)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	0.009	0.009	0.010	0.000	N/A	8
A0 (k)	0.008	0.009	0.010	0.000	N/A	40
Control	0.009	0.010	0.010	0.000	0.000	8
A3 (k)	0.008	0.009	0.010	0.000	0.000	40
Control	0.009	0.010	0.010	0.000	0.000	8
A10 (k)	0.008	0.010	0.013	0.001	0.001	40
Control	0.008	0.009	0.010	0.000	0.000	8
A30 (k)	0.009	0.015	0.023	0.004	0.006	40
Control	0.008	0.009	0.010	0.000	0.000	8
A50 (k)	0.009	0.019	0.031	0.006	0.010	40
Control	0.009	0.009	0.010	0.000	0.000	8
A80 (k)	0.008	0.021	0.036	0.008	0.012	40
Control	0.008	0.009	0.010	0.000	0.000	8
A100 (k)	0.008	0.021	0.036	0.008	0.012	40
Control	0.008	0.009	0.011	0.000	0.000	8
AANN (k)	0.007	0.010	0.013	0.002	0.000	40

NATIONAL SEMICONDUCTOR RADIATION R&D ENGINEERING

Device Type: 54AC139
Test: VOH03 (V)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	5.495	5.498	5.500	0.002	N/A	8
A0 (k)	5.495	5.498	5.500	0.002	N/A	40
Control	5.495	5.498	5.500	0.002	0.000	8
A3 (k)	5.495	5.498	5.500	0.002	0.000	40
Control	5.495	5.498	5.500	0.002	0.000	8
A10 (k)	5.495	5.498	5.502	0.002	0.000	40
Control	5.497	5.499	5.500	0.001	0.001	8
A30 (k)	5.492	5.494	5.500	0.002	-0.004	40
Control	5.495	5.498	5.500	0.002	0.000	8
A50 (k)	5.482	5.492	5.500	0.005	-0.007	40
Control	5.497	5.499	5.500	0.001	0.001	8
A80 (k)	5.476	5.488	5.500	0.007	-0.010	40
Control	5.495	5.498	5.500	0.002	0.000	8
A100 (k)	5.472	5.488	5.500	0.008	-0.010	40
Control	5.495	5.498	5.500	0.002	0.000	8
AANN (k)	5.495	5.498	5.500	0.002	0.000	40

Device Type: 54AC139

Test: IH2++ (nS)

Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96

Wafer Run/Num: CF065744

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	7.525	7.692	7.792	0.096	N/A	8
A0 (k)	7.384	7.803	8.330	0.254	N/A	40
Control	7.498	7.670	7.792	0.097	-0.022	8
A3 (k)	7.283	7.678	8.175	0.240	-0.125	40
Control	7.512	7.679	7.792	0.094	-0.013	8
A10 (k)	7.216	7.658	8.148	0.253	-0.145	40
Control	7.532	7.688	7.778	0.087	-0.004	8
A30 (k)	7.189	7.652	8.149	0.255	-0.152	40
Control	7.505	7.677	7.792	0.097	-0.015	8
A50 (k)	7.149	7.639	8.196	0.268	-0.165	40
Control	7.471	7.663	7.798	0.105	-0.029	8
A80 (k)	7.055	7.564	8.217	0.287	-0.240	40
Control	7.451	7.648	7.785	0.107	-0.044	8
A100 (k)	7.021	7.549	8.203	0.290	-0.254	40
Control	6.377	7.053	7.631	0.537	-0.639	8
AANN (k)	6.095	7.013	7.947	0.575	-0.790	40

Device Type: 54AC139

Test: IH1++ (nS)

Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	6.440	6.845	7.234	0.320	N/A	8
A0 (k)	6.407	6.977	7.675	0.343	N/A	40
Control	6.447	6.826	7.227	0.324	-0.019	8
A3 (k)	6.346	6.886	7.556	0.330	-0.090	40
Control	6.440	6.821	7.198	0.321	-0.024	8
A10 (k)	6.339	6.883	7.556	0.328	-0.093	40
Control	6.440	6.846	7.321	0.353	0.001	8
A30 (k)	6.299	6.915	7.617	0.336	-0.062	40
Control	6.447	6.838	7.274	0.336	-0.007	8
A50 (k)	6.286	6.934	7.677	0.341	-0.043	40
Control	6.454	6.853	7.314	0.347	0.008	8
A80 (k)	6.272	6.960	7.920	0.389	-0.017	40
Control	6.447	6.846	7.321	0.350	0.001	8
A100 (k)	6.279	7.001	7.758	0.396	0.025	40
Control	6.011	6.501	7.011	0.381	-0.344	8
AANN (k)	6.011	6.703	7.501	0.402	-0.274	40

Device Type: 54AC139
Test: IH1-+ (nS)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	6.575	7.000	7.380	0.329	N/A	8
A0 (k)	6.515	7.152	7.912	0.369	N/A	40
Control	6.568	6.975	7.339	0.329	-0.025	8
A3 (k)	6.433	7.054	7.798	0.356	-0.098	40
Control	6.555	6.970	7.339	0.323	-0.030	8
A10 (k)	6.433	7.034	7.811	0.354	-0.118	40
Control	6.555	6.996	7.395	0.357	-0.004	8
A30 (k)	6.420	7.018	7.796	0.350	-0.134	40
Control	6.555	6.984	7.341	0.343	-0.016	8
A50 (k)	6.427	7.046	7.796	0.343	-0.106	40
Control	6.568	7.000	7.381	0.350	0.000	8
A80 (k)	6.447	7.110	8.194	0.395	-0.042	40
Control	6.555	6.997	7.408	0.357	-0.003	8
A100 (k)	6.460	7.164	8.000	0.393	0.012	40
Control	6.373	6.732	7.100	0.339	-0.267	8
AANN (k)	6.367	6.940	7.711	0.363	-0.212	40

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Device Type: 54AC139
Test: HL2-- (nS)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	6.583	6.758	6.964	0.130	N/A	8
A0 (k)	6.496	6.849	7.400	0.234	N/A	40
Control	6.590	6.743	6.943	0.121	-0.014	8
A3 (k)	6.422	6.765	7.300	0.225	-0.083	40
Control	6.596	6.747	6.950	0.120	-0.011	8
A10 (k)	6.422	6.756	7.279	0.229	-0.093	40
Control	6.590	6.759	6.977	0.129	0.002	8
A30 (k)	6.414	6.744	7.220	0.219	-0.105	40
Control	6.596	6.749	6.950	0.120	-0.008	8
A50 (k)	6.387	6.740	7.227	0.217	-0.109	40
Control	6.603	6.739	6.923	0.110	-0.018	8
A80 (k)	6.374	6.741	7.233	0.220	-0.108	40
Control	6.603	6.734	6.910	0.108	-0.024	8
A100 (k)	6.401	6.769	7.240	0.218	-0.080	40
Control	5.885	6.343	6.756	0.331	-0.415	8
AANN (k)	5.865	6.534	7.301	0.373	-0.315	40

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Device Type: 54AC139
Test: HL1-- (nS)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	6.164	6.509	6.764	0.231	N/A	8
A0 (k)	6.117	6.612	7.100	0.254	N/A	40
Control	6.123	6.494	6.751	0.241	-0.015	8
A3 (k)	6.043	6.542	7.027	0.254	-0.070	40
Control	6.117	6.486	6.744	0.237	-0.023	8
A10 (k)	6.016	6.525	7.027	0.255	-0.087	40
Control	6.117	6.514	6.798	0.264	0.005	8
A30 (k)	5.989	6.519	7.067	0.269	-0.092	40
Control	6.117	6.502	6.758	0.254	-0.007	8
A50 (k)	5.982	6.542	7.121	0.282	-0.070	40
Control	6.123	6.517	6.785	0.260	0.008	8
A80 (k)	5.975	6.590	7.544	0.343	-0.022	40
Control	6.123	6.514	6.805	0.264	0.005	8
A100 (k)	5.982	6.622	7.389	0.346	0.010	40
Control	5.788	6.231	6.556	0.271	-0.278	8
AANN (k)	5.694	6.386	6.993	0.320	-0.226	40

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Device Type: 54AC139
Test: HL1+- (nS)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	5.663	6.024	6.923	0.417	N/A	8
A0 (k)	5.629	6.109	7.226	0.413	N/A	40
Control	5.643	6.000	6.863	0.403	-0.024	8
A3 (k)	5.549	6.033	7.105	0.404	-0.076	40
Control	5.643	5.995	6.876	0.410	-0.029	8
A10 (k)	5.535	6.014	7.111	0.410	-0.095	40
Control	5.636	6.023	6.870	0.406	-0.001	8
A30 (k)	5.508	5.995	7.071	0.412	-0.114	40
Control	5.649	6.018	6.876	0.405	-0.006	8
A50 (k)	5.508	5.999	7.071	0.409	-0.110	40
Control	5.649	6.033	6.883	0.404	0.008	8
A80 (k)	5.495	6.018	7.071	0.427	-0.091	40
Control	5.649	6.028	6.870	0.402	0.003	8
A100 (k)	5.495	6.036	7.078	0.420	-0.073	40
Control	5.388	5.842	6.608	0.370	-0.182	8
AANN (k)	5.159	5.866	6.903	0.373	-0.243	40

Device Type: 54AC139

Test: LH2++ (nS)

Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	5.737	5.829	5.937	0.074	N/A	8
A0 (k)	5.663	5.875	6.179	0.147	N/A	40
Control	5.737	5.808	5.876	0.058	-0.021	8
A3 (k)	5.602	5.794	6.091	0.140	-0.081	40
Control	5.737	5.812	5.890	0.062	-0.018	8
A10 (k)	5.562	5.786	6.106	0.155	-0.089	40
Control	5.737	5.825	5.910	0.071	-0.004	8
A30 (k)	5.555	5.782	6.119	0.153	-0.093	40
Control	5.737	5.814	5.883	0.060	-0.015	8
A50 (k)	5.535	5.776	6.146	0.158	-0.099	40
Control	5.737	5.802	5.856	0.051	-0.027	8
A80 (k)	5.488	5.727	6.106	0.165	-0.148	40
Control	5.723	5.788	5.837	0.049	-0.041	8
A100 (k)	5.455	5.718	6.092	0.165	-0.157	40
Control	4.830	5.244	5.615	0.347	-0.586	8
AANN (k)	4.622	5.219	5.851	0.377	-0.656	40

Device Type: 54AC139
Test: LH1++ (nS)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	5.084	5.313	5.537	0.145	N/A	8
A0 (k)	5.077	5.393	5.792	0.162	N/A	40
Control	5.090	5.299	5.543	0.151	-0.014	8
A3 (k)	5.023	5.331	5.732	0.161	-0.062	40
Control	5.090	5.295	5.517	0.141	-0.018	8
A10 (k)	5.023	5.320	5.752	0.162	-0.073	40
Control	5.090	5.318	5.637	0.183	0.005	8
A30 (k)	5.017	5.322	5.779	0.176	-0.071	40
Control	5.097	5.315	5.597	0.167	0.003	8
A50 (k)	5.017	5.327	5.792	0.185	-0.066	40
Control	5.097	5.326	5.637	0.180	0.013	8
A80 (k)	5.010	5.339	6.155	0.243	-0.055	40
Control	5.104	5.325	5.644	0.187	0.012	8
A100 (k)	5.010	5.355	6.014	0.246	-0.038	40
Control	4.862	5.092	5.342	0.165	-0.221	8
AANN (k)	4.720	5.096	5.584	0.212	-0.297	40

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Device Type: 54AC139
Test: LH1-+ (nS)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	5.084	5.334	5.598	0.181	N/A	8
A0 (k)	5.058	5.419	5.920	0.201	N/A	40
Control	5.064	5.312	5.598	0.184	-0.022	8
A3 (k)	4.990	5.358	5.853	0.198	-0.061	40
Control	5.064	5.310	5.578	0.179	-0.024	8
A10 (k)	4.997	5.345	5.880	0.196	-0.074	40
Control	5.064	5.335	5.692	0.219	0.001	8
A30 (k)	4.990	5.340	5.860	0.200	-0.079	40
Control	5.064	5.325	5.652	0.203	-0.009	8
A50 (k)	4.997	5.363	5.873	0.203	-0.055	40
Control	5.071	5.334	5.685	0.212	0.000	8
A80 (k)	5.004	5.408	6.230	0.255	-0.011	40
Control	5.064	5.333	5.692	0.217	-0.001	8
A100 (k)	5.011	5.444	6.095	0.268	0.026	40
Control	4.870	5.183	5.497	0.243	-0.151	8
AANN (k)	4.722	5.271	5.847	0.292	-0.148	40

Device Type: 54AC139
Test: HL2-- (nS)
Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	4.866	5.156	5.287	0.141	N/A	8
A0 (k)	4.792	5.197	5.536	0.184	N/A	40
Control	4.873	5.140	5.253	0.130	-0.016	8
A3 (k)	4.752	5.135	5.468	0.176	-0.062	40
Control	4.879	5.143	5.260	0.128	-0.013	8
A10 (k)	4.732	5.128	5.495	0.187	-0.069	40
Control	4.879	5.153	5.287	0.138	-0.003	8
A30 (k)	4.759	5.135	5.489	0.177	-0.061	40
Control	4.866	5.139	5.260	0.133	-0.017	8
A50 (k)	4.772	5.143	5.509	0.178	-0.054	40
Control	4.879	5.129	5.233	0.123	-0.027	8
A80 (k)	4.772	5.129	5.482	0.175	-0.068	40
Control	4.873	5.120	5.227	0.121	-0.035	8
A100 (k)	4.799	5.141	5.482	0.171	-0.055	40
Control	4.166	4.708	5.293	0.449	-0.447	8
AANN (k)	4.099	4.822	5.582	0.433	-0.374	40

Test Date: 9/10/96
Device Type: 54AC139
Wafer Run/Num: CF065744
Test: HL1-- (nS)
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Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	4.720	4.994	5.179	0.179	N/A	8
A0 (k)	4.673	5.064	5.435	0.196	N/A	40
Control	4.646	4.981	5.179	0.202	-0.013	8
A3 (k)	4.606	5.014	5.374	0.197	-0.050	40
Control	4.659	4.977	5.179	0.197	-0.018	8
A10 (k)	4.592	5.003	5.361	0.198	-0.061	40
Control	4.653	5.000	5.206	0.218	0.006	8
A30 (k)	4.585	5.006	5.368	0.200	-0.058	40
Control	4.653	4.992	5.179	0.212	-0.003	8
A50 (k)	4.592	5.025	5.401	0.207	-0.039	40
Control	4.646	5.000	5.193	0.218	0.006	8
A80 (k)	4.606	5.056	5.644	0.245	-0.008	40
Control	4.646	5.000	5.213	0.221	0.006	8
A100 (k)	4.612	5.082	5.576	0.254	0.018	40
Control	4.444	4.806	5.086	0.243	-0.189	8
AANN (k)	4.290	4.875	5.341	0.289	-0.189	40

Test Date: 9/10/96

Device Type: 54AC139

Wafer Run/Num: CF065744

Test: HL1+- (nS)

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Comment: Z139 CDIP I=L RM.ANN. D.R.=72.732 Rad Si/sec.

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	4.438	4.610	5.292	0.280	N/A	8
A0 (k)	4.392	4.656	5.447	0.275	N/A	40
Control	4.425	4.586	5.232	0.267	-0.024	8
A3 (k)	4.378	4.608	5.366	0.269	-0.048	40
Control	4.425	4.583	5.238	0.271	-0.028	8
A10 (k)	4.332	4.589	5.373	0.275	-0.067	40
Control	4.425	4.613	5.238	0.263	0.003	8
A30 (k)	4.278	4.563	5.332	0.273	-0.093	40
Control	4.432	4.605	5.245	0.265	-0.005	8
A50 (k)	4.291	4.561	5.326	0.269	-0.095	40
Control	4.432	4.617	5.245	0.263	0.007	8
A80 (k)	4.311	4.578	5.306	0.279	-0.077	40
Control	4.425	4.615	5.245	0.265	0.004	8
A100 (k)	4.317	4.589	5.312	0.269	-0.067	40
Control	4.210	4.471	5.024	0.241	-0.139	8
AANN (k)	3.995	4.442	5.131	0.236	-0.214	40

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Device Type: 54AC139
Test: ICCH (µA)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	-0.016	-0.016	-0.016	0.000	N/A	1
B0 (k)	-0.024	-0.018	-0.016	0.004	N/A	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
B100 (k)	29405.000	34205.199	37253.000	3122.190	34205.219	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
B150 (k)	24911.000	104880.000	405900.000	168303.000	104880.016	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
BANN (k)	0.087	0.792	2.804	1.131	0.810	5

Device Type: 54AC139
Test: IIL (µA)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	-0.002	0.000	0.000	0.000	N/A	6
B0 (k)	-0.002	0.000	0.000	0.000	N/A	30
Control	-0.002	0.000	0.000	0.000	0.000	6
B100 (k)	-0.002	0.000	0.000	0.000	0.000	30
Control	-0.002	0.000	0.000	0.000	0.000	6
B150 (k)	-0.002	0.000	0.000	0.000	0.000	30
Control	-0.002	-0.001	0.000	0.000	-0.001	6
BANN (k)	-0.002	-0.001	0.000	0.000	-0.001	30

NATIONAL SEMICONDUCTOR RADIATION R&D ENGINEERING

Device Type: 54AC139
Test: VOL07 (V)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	0.319	0.330	0.342	0.008	N/A	8
B0 (k)	0.314	0.332	0.352	0.009	N/A	40
Control	0.319	0.329	0.342	0.008	0.000	8
B100 (k)	0.318	0.344	0.363	0.011	0.011	40
Control	0.313	0.323	0.335	0.007	-0.007	8
B150 (k)	0.318	0.341	0.365	0.011	0.009	40
Control	0.313	0.322	0.334	0.007	-0.008	8
BANN (k)	0.306	0.328	0.352	0.011	-0.004	40

NATIONAL SEMICONDUCTOR RADIATION R&D ENGINEERING

Device Type: 54AC139
Test: VOHQ7 (V)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	4.976	4.985	4.998	0.007	N/A	8
B0 (k)	4.955	4.976	5.013	0.014	N/A	40
Control	4.976	4.984	4.998	0.007	-0.001	8
B100 (k)	4.914	4.944	4.974	0.016	-0.033	40
Control	4.984	4.992	5.003	0.006	0.007	8
B150 (k)	4.898	4.935	4.964	0.016	-0.041	40
Control	4.986	4.993	5.003	0.005	0.008	8
BANN (k)	4.898	4.945	4.977	0.024	-0.032	40

Device Type: 54AC139
Test: VOL05 (V)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	0.173	0.179	0.186	0.004	N/A	8
B0 (k)	0.171	0.181	0.190	0.005	N/A	40
Control	0.174	0.179	0.185	0.004	0.000	8
B100 (k)	0.176	0.191	0.207	0.007	0.010	40
Control	0.169	0.175	0.181	0.004	-0.004	8
B150 (k)	0.174	0.189	0.206	0.007	0.008	40
Control	0.169	0.174	0.182	0.004	-0.005	8
BANN (k)	0.165	0.178	0.193	0.007	-0.002	40

Test Date: 9/10/96

Device Type: 54AC139

Wafer Run/Num: CF065744

Test: VOH05 (V)

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Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	4.221	4.225	4.231	0.004	N/A	8
B0 (k)	4.209	4.220	4.239	0.008	N/A	40
Control	4.221	4.225	4.231	0.004	0.000	8
B100 (k)	4.172	4.195	4.211	0.010	-0.025	40
Control	4.225	4.229	4.236	0.004	0.004	8
B150 (k)	4.157	4.188	4.206	0.013	-0.032	40
Control	4.226	4.229	4.236	0.003	0.005	8
BANN (k)	4.178	4.201	4.218	0.012	-0.019	40

Device Type: 54AC139
Test: VOL03 (V)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	.Count
Control	0.009	0.009	0.010	0.000	N/A	8
B0 (k)	0.008	0.009	0.010	0.000	N/A	40
Control	0.008	0.009	0.010	0.000	0.000	8
B100 (k)	0.016	0.025	0.039	0.007	0.016	40
Control	0.008	0.009	0.010	0.000	0.000	8
B150 (k)	0.014	0.025	0.039	0.008	0.015	40
Control	0.008	0.009	0.011	0.000	0.000	8
BANN (k)	0.005	0.009	0.013	0.002	0.000	40

Device Type:	54AC139	Test Date:	9/10/96
Test:	VOHQ3 (V)	Wafer Run/Num:	CF065744
Comment:	Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.	Page:	13 OF 25

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	5.497	5.499	5.500	0.001	N/A	8
B0 (k)	5.495	5.498	5.500	0.002	N/A	40
Control	5.497	5.499	5.500	0.001	0.000	8
B100 (k)	5.472	5.485	5.492	0.007	-0.013	40
Control	5.495	5.498	5.500	0.002	-0.001	8
B150 (k)	5.466	5.484	5.495	0.010	-0.015	40
Control	5.495	5.498	5.500	0.002	-0.001	8
BANN (k)	5.492	5.497	5.500	0.002	-0.001	40

Device Type: 54AC139
Test: LH2++ (nS)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	7.518	7.687	7.785	0.092	N/A	8
B0 (k)	7.357	7.834	8.196	0.209	N/A	40
Control	7.458	7.651	7.798	0.112	-0.036	8
B100 (k)	7.068	7.602	8.056	0.237	-0.232	40
Control	7.364	7.566	7.711	0.114	-0.121	8
B150 (k)	7.062	7.561	8.002	0.224	-0.273	40
Control	6.276	7.018	7.658	0.605	-0.669	8
BANN (k)	6.175	7.260	8.102	0.551	-0.574	40

Device Type: 54AC139
Test: LH1++ (nS)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.
Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	6.447	6.832	7.207	0.319	N/A	8
B0 (k)	6.353	6.981	7.529	0.329	N/A	40
Control	6.454	6.863	7.361	0.361	0.030	8
B100 (k)	6.272	6.998	7.556	0.332	0.018	40
Control	6.386	6.772	7.207	0.337	-0.060	8
B150 (k)	6.313	7.029	7.583	0.330	0.049	40
Control	5.957	6.496	7.091	0.418	-0.336	8
BANN (k)	6.044	6.879	7.696	0.438	-0.102	40

Device Type: 54AC139
Test: LH1-+ (nS)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	6.568	6.983	7.366	0.326	N/A	8
B0 (k)	6.481	7.139	7.658	0.341	N/A	40
Control	6.555	6.993	7.388	0.353	0.010	8
B100 (k)	6.474	7.133	7.611	0.299	-0.006	40
Control	6.494	6.920	7.281	0.336	-0.063	8
B150 (k)	6.568	7.224	7.759	0.290	0.084	40
Control	6.253	6.717	7.172	0.382	-0.266	8
BANN (k)	6.716	7.437	8.079	0.411	0.297	40

Device Type: 54AC139
Test: HL2-- (nS)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	6.590	6.756	6.957	0.126	N/A	8
B0 (k)	6.489	6.882	7.387	0.205	N/A	40
Control	6.596	6.729	6.910	0.110	-0.027	8
B100 (k)	6.381	6.789	7.206	0.194	-0.093	40
Control	6.543	6.673	6.849	0.108	-0.083	8
B150 (k)	6.468	6.877	7.294	0.189	-0.004	40
Control	5.818	6.315	6.777	0.384	-0.441	8
BANN (k)	6.059	6.852	7.449	0.364	-0.029	40

Device Type: 54AC139
Test: HL1-- (nS)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	6.137	6.499	6.764	0.236	N/A	8
B0 (k)	6.069	6.619	6.993	0.242	N/A	40
Control	6.117	6.523	6.818	0.273	0.024	8
B100 (k)	5.955	6.618	7.107	0.300	-0.002	40
Control	6.069	6.452	6.711	0.251	-0.047	8
B150 (k)	6.002	6.663	7.188	0.310	0.044	40
Control	5.727	6.224	6.624	0.313	-0.275	8
BANN (k)	6.029	6.663	7.201	0.332	0.044	40

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Device Type: 54AC139
Test: HL1+- (nS)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	5.656	6.014	6.896	0.410	N/A	8
B0 (k)	5.575	6.107	7.105	0.399	N/A	40
Control	5.649	6.038	6.870	0.401	0.024	8
B100 (k)	5.455	6.020	6.977	0.396	-0.087	40
Control	5.609	5.963	6.823	0.403	-0.051	8
B150 (k)	5.441	6.006	6.943	0.396	-0.101	40
Control	5.240	5.816	6.494	0.384	-0.198	8
BANN (k)	5.119	5.888	6.588	0.369	-0.219	40

Device Type: 54AC139

Test: LH2++ (nS)

Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	5.743	5.825	5.917	0.067	N/A	8
B0 (k)	5.663	5.901	6.166	0.129	N/A	40
Control	5.717	5.791	5.850	0.049	-0.034	8
B100 (k)	5.468	5.755	6.092	0.141	-0.145	40
Control	5.669	5.732	5.790	0.047	-0.093	8
B150 (k)	5.441	5.723	6.045	0.135	-0.178	40
Control	4.770	5.218	5.609	0.390	-0.608	8
BANN (k)	4.695	5.307	5.790	0.352	-0.594	40

Device Type: 54AC139
Test: IH1++ (nS)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	5.090	5.309	5.530	0.143	N/A	8
B0 (k)	5.037	5.399	5.745	0.159	N/A	40
Control	5.097	5.338	5.685	0.201	0.029	8
B100 (k)	4.975	5.349	5.785	0.199	-0.049	40
Control	5.050	5.262	5.543	0.166	-0.046	8
B150 (k)	4.969	5.335	5.792	0.203	-0.063	40
Control	4.794	5.058	5.342	0.205	-0.251	8
BANN (k)	4.747	5.131	5.517	0.222	-0.267	40

Device Type: 54AC139

Test: LH1-+ (nS)

Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	5.071	5.320	5.584	0.180	N/A	8
B0 (k)	5.011	5.416	5.793	0.193	N/A	40
Control	5.064	5.335	5.692	0.215	0.014	8
B100 (k)	5.024	5.430	5.813	0.200	0.014	40
Control	5.024	5.277	5.591	0.195	-0.044	8
B150 (k)	5.044	5.468	5.873	0.201	0.051	40
Control	4.655	5.130	5.550	0.321	-0.190	8
BANN (k)	4.856	5.476	5.994	0.331	0.060	40

NATIONAL SEMICONDUCTOR RADIATION R&D ENGINEERING

Device Type: 54AC139
Test: HL2-- (nS)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	4.866	5.145	5.273	0.136	N/A	8
B0 (k)	4.806	5.233	5.596	0.179	N/A	40
Control	4.879	5.120	5.226	0.119	-0.024	8
B100 (k)	4.819	5.180	5.529	0.165	-0.053	40
Control	4.839	5.076	5.185	0.119	-0.069	8
B150 (k)	4.859	5.214	5.549	0.162	-0.018	40
Control	4.173	4.722	5.353	0.460	-0.423	8
BANN (k)	4.294	4.982	5.730	0.408	-0.251	40

Device Type: 54AC139
Test: HL1-- (nS)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	4.673	4.981	5.186	0.193	N/A	8
B0 (k)	4.646	5.073	5.347	0.195	N/A	40
Control	4.639	5.000	5.206	0.223	0.019	8
B100 (k)	4.626	5.076	5.354	0.211	0.004	40
Control	4.606	4.952	5.139	0.211	-0.029	8
B150 (k)	4.639	5.094	5.382	0.216	0.022	40
Control	4.303	4.769	5.126	0.315	-0.212	8
BANN (k)	4.371	4.994	5.401	0.312	-0.078	40

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Device Type: 54AC139
Test: HL1+- (nS)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	4.438	4.600	5.259	0.272	N/A	8
B0 (k)	4.372	4.657	5.386	0.269	N/A	40
Control	4.438	4.616	5.238	0.260	0.017	8
B100 (k)	4.284	4.570	5.265	0.258	-0.088	40
Control	4.398	4.568	5.211	0.266	-0.031	8
B150 (k)	4.264	4.557	5.238	0.257	-0.100	40
Control	4.062	4.437	4.903	0.238	-0.163	8
BANN (k)	3.962	4.438	4.956	0.234	-0.219	40

NATIONAL SEMICONDUCTOR RADIATION R&D ENGINEERING

Device Type:	54AC139	Test Date:	9/10/96
Test:	ICCL (µA)	Wafer Run/Num:	CF065744
Comment:	Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.	Page:	2 OF 25

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	-0.016	-0.016	-0.016	0.000	N/A	1
B0 (k)	-0.016	-0.016	-0.016	0.000	N/A	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
B100 (k)	33834.000	115041.992	420760.000	170930.000	115042.008	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
B150 (k)	26800.000	200271.016	502619.969	235210.984	200271.031	5
Control	-0.016	-0.016	-0.016	0.000	0.000	1
BANN (k)	0.325	0.980	2.979	1.122	0.996	5

Device Type: 54AC139
Test: ICCF (μA)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	-0.024	-0.018	-0.016	0.004	N/A	12
B0 (k)	-0.024	-0.018	-0.008	0.003	N/A	60
Control	-0.024	-0.018	-0.016	0.004	0.000	12
B100 (k)	29372.000	208869.000	502619.969	216870.000	208869.016	60
Control	-0.024	-0.018	-0.016	0.003	0.001	12
B150 (k)	24911.000	199812.000	502619.969	212751.000	199812.016	60
Control	-0.024	-0.020	-0.016	0.004	-0.002	12
BANN (k)	0.071	0.805	2.875	1.012	0.823	60

Device Type: 54AC139
Test: VICN (V)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

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Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	-0.727	-0.726	-0.725	0.000	N/A	6
B0 (k)	-0.731	-0.730	-0.729	0.000	N/A	30
Control	-0.727	-0.726	-0.725	0.000	0.000	6
B100 (k)	-0.731	-0.717	-0.696	0.014	0.013	30
Control	-0.735	-0.734	-0.733	0.000	-0.008	6
B150 (k)	-0.731	-0.717	-0.696	0.015	0.014	30
Control	-0.736	-0.735	-0.734	0.000	-0.009	6
BANN (k)	-0.742	-0.740	-0.739	0.000	-0.010	30

Device Type: 54AC139
Test: VICP (V)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	0.760	0.761	0.762	0.000	N/A	6
B0 (k)	0.763	0.764	0.766	0.000	N/A	30
Control	0.759	0.760	0.762	0.000	0.000	6
B100 (k)	0.746	0.758	0.767	0.008	-0.007	30
Control	0.767	0.767	0.768	0.000	0.007	6
B150 (k)	0.744	0.756	0.766	0.009	-0.009	30
Control	0.768	0.769	0.770	0.000	0.008	6
BANN (k)	0.772	0.774	0.775	0.000	0.009	30

Device Type: 54AC139
Test: IIH (µA)
Comment: Z139 CDIP I=L 100C REB.ANN. D.R.=72.732 Rad Si/sec.

Test Date: 9/10/96
Wafer Run/Num: CF065744

Dose Level krad(Si)	Minimum	Mean	Maximum	Standard Deviation	Mean Delta	Count
Control	0.000	0.002	0.002	0.001	N/A	6
B0 (k)	0.000	0.002	0.003	0.000	N/A	30
Control	0.000	0.002	0.002	0.000	0.000	6
B100 (k)	0.000	0.002	0.003	0.000	0.000	30
Control	0.000	0.002	0.002	0.000	0.000	6
B150 (k)	0.000	0.002	0.003	0.000	0.000	30
Control	0.000	0.000	0.002	0.000	-0.002	6
BANN (k)	0.000	0.001	0.002	0.000	-0.001	30