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AT-27C010 CMOS EPROM RELIABILITY DATA

- 125°C OPERATING LIFE TEST
- 200°C RETENTION BAKE
- PROGRAM AND ERASE
- HIGH TEMPERATURE REVERSE BIAS (HTRB)
- 125°C OPERATING LIFE TEST (PLASTIC)
- 150°C RETENTION BAKE (PLASTIC)
- 15 PSIG PRESSURE POT
- 85°C/85% RELATIVE HUMIDITY OPERATING LIFE TEST

JANUARY 2008

2325 Orchard Parkway San Jose CA. 95131

AT-27C010

125°C DYNAMIC OPERATING LIFE TEST

<u>LOT</u> <u>NUMBER</u>	<u>DATE</u> <u>CODE</u>	<u>SAMPLE</u> <u>SIZE</u>	<u>TOTAL</u> <u>CKT-HRS(K)</u>	<u>NUMBER</u> <u>OF FAILURES</u>
92717	9B8935	78	78.0	0
87316	9A8917	78	78.0	0
E901-14056	0A9007	77	77.0	0
95189-2	9C8939	78	78.0	0 (A REV)
92997	9B8935	78	78.0	0
91546	8927	25	25.0	0
90249	9B8925	70	70.0	0
30090	0B9019	48	48.0	0 (A REV)
00119	0A9021	79	79.0	0 (A REV)
02601	0B9028	78	78.0	0 (A REV)
30309-4	0C9033	60	60.0	0 (A REV)
05167	0D9041	116	116.0	0 (A REV)
08040	1A9103	77	77.0	0 (A REV)
80877	1A9103	77	77.0	0 (A REV)
08123	1A9103	77	77.0	0 (A REV)
10300	1A9117	81	81.0	0 (A REV)
131461	1B9127	78	78.0	0
231464-2	2B9219	80	80.0	0
133466-4	1D9201	45	45.0	0
134183-2	2A9212	77	77.0	0
132495-22	2A9217	77	77.0	0
232288-21	2C9232	77	77.0	0
232088-13	2C9233	77	77.0	0
232649-22	2C9235	70	70.0	0
233328-7	2C9242	79	79.0	0
234943-4	2D9307	45	45.0	0
234944-10	3A9308	80	80.0	0
2D1147-12	3A9309	80	80.0	0
3A1260A	3B9324	148	148.00	0
A3B0965 2	3B9335	77	77.0	0
3D1868	3D9409	80	80.0	0
A4A0602	4A9416	80	80.0	0
4B0688	4B9428	82	82.0	0
4B2158AB	4B9434	65	65.0	0
4C0668	4C9442	87	87.0	0
4H5007	4H9445	68	170.0	0
4D318B-3	4D9502	117	117.0	0
5A1395	5A9521	85	212.0	0

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125°C DYNAMIC OPERATING LIFE TEST (CONT.)

<u>LOT NUMBER</u>	<u>DATE CODE</u>	<u>SAMPLE SIZE</u>	<u>TOTAL CKT-HRS(K)</u>	<u>NUMBER OF FAILURES</u>
6A3297-2	6A9624	132	132.0	0
6B0651A-1	6B9625	132	132.0	0
6B0651-1	6B9625	132	132.0	0
6B0999-1	6B9626	132	132.0	0
6B0363-1	6B9626	132	132.0	0
6B0363A-1	6B9626	132	132.0	0
6B0347	6B9624	256	256.0	0
6A2580-2	6B9622	256	256.0	0
6A2580-4	6B9622	256	256.0	0
6A2580-3	6B9622	256	256.0	0
6A2580	6B9622	254	254.0	0
AZ6E3155	6E9620	100	100.0	0
B6A2454	6A9620	100	100.0	0
6E0516-1	6E9613	80	80.0	0

FAILURE RATETOTAL DEVICE HOURS

5,510,000 DEVICE HOURS

BEST ESTIMATE $\lambda = 0.01\%$ PER 1,000 HOURS50°C AMBIENTEXTRAPOLATION TO 50°C VIA
ARRHENNIUS EQUATION AND ACTIVATION
ENERGY OF 0.5eV $\lambda = 0.0004\%$ PER 1,000 HOURS (4 FITS)CONFIDENCE ESTIMATE

λ 60 = 0.001% PER 1,000 HOURS
60% CONFIDENCE (6 FITS)

λ 90 = 0.001% PER 1,000 HOURS
90% CONFIDENCE (14 FITS)

AT-27C010A

PROGRAM/ERASE CYCLE

<u>LOT</u> <u>NUMBER</u>	<u>DATE</u> <u>CODE</u>	<u>SAMPLE</u> <u>SIZE</u>	<u>NUMBER</u> <u>10</u>	<u>OF</u> <u>20</u>	<u>FAILURES</u> <u>30</u>	<u>AT</u> <u>40</u>	<u>CYCLES</u> <u>50</u>
E901	0A9007	15	0	0	0	0	0
30309	0C9033	60	0	0	0	0	0
133036	1C9140	80	0	0	0	0	0
134183	2A9212	111	0	0	0	0	0
132495	2A9217	97	0	0	0	0	0
232288	2C9232	84	0	0	0	0	0
232088	2C9233	91	0	0	0	0	0
233328	2C9242	84	0	0	0	0	0
234943	2D9307	89	0	0	0	0	0
234944	3A9308	88	0	0	0	0	0
2D1147	3A9309	90	0	0	0	0	0
A3B0965	3B9335	77	0	0	0	0	0

AT-27C010A

200°C BAKE WITH FULL BIT PATTERN

<u>LOT NUMBER</u>	<u>DATE CODE</u>	<u>SAMPLE SIZE</u>	<u>NUMBER OF FAILURES IN HOURS</u>		
			250	500	1000
95189	9C8939	76	0	0	0
02601	0B9028	75	0	0	0
00119	0A9021	77	0	0	0
08077	1A9103	78	1	0	0 (SINGLE BIT)
08123	1A9103	77	0	0	0
10300	1A9117	77	0	0	0
10166	1A9118	79	0	0	0
10555	1B9121	60	0	0	0
10556	1B9122	60	0	0	0
11338	1B9123	70	0	0	0
10585	1B9126	60	0	0	0
133036	1C9140	55	0	0	0
132495	2A9217	78	0	0	0
232088-13	2C9233	77	0	0	0
232649-22	2C9235	77	0	0	0
233328-7	2C9242	77	0	0	0
234943-4	2D9307	78	0	0	0
234944-10	3A9308	80	0	0	0
3A1260A	3B9324	154	0	0	0
3D1816	3D9409	77	0	0	0
A4A0602	4A9416	77	0	0	0
4B0688	4A9428	77	0	0	0
4B2158AB	4B9434	77	0	0	0
4B2156A	4C9434	80	0	0	0
4C0180	4C9437	80	0	0	0
4H5007	4H9447	77	0	0	0
4D0318	4D9502	80	0	0	0
5A1395	5A9521	77	0	0	0

FAILURE RATETOTAL DEVICE HOURS

2,268,000 DEVICE HOURS

BEST ESTIMATE $\lambda = 0.08\%$ PER 1,000 HOURS50°C AMBIENTEXTRAPOLATION TO 50°C VIA
ARRHENNIUS EQUATION AND ACTIVATION
ENERGY OF 0.5eV $\lambda = 0.0003\%$ PER 1,000 HOURS (3 FITS)CONFIDENCE ESTIMATE $\lambda = 60 = 0.0003\%$ PER 1,000 HOURS
60% CONFIDENCE (3 FITS) $\lambda = 90 = 0.0006\%$ PER 1,000 HOURS
90% CONFIDENCE (6 FITS)

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125°C HIGH TEMPERATURE REVERSE BIAS

<u>LOT NUMBER</u>	<u>DATE CODE</u>	<u>SAMPLE SIZE</u>	<u>TOTAL CKT-HRS(K)</u>	<u>NUMBER OF FAILURES</u>
E901	0A9007	64	64.0	0
00119	0A9021	77	77.0	1 (SINGLE BIT)

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PLASTIC PACKAGE

125°C DYNAMIC OPERATING LIFE TEST

<u>LOT</u> <u>NUMBER</u>	<u>DATE</u> <u>CODE</u>	<u>SAMPLE</u> <u>SIZE</u>	<u>TOTAL</u> <u>CKT-HRS(K)</u>	<u>NUMBER</u> <u>OF FAILS</u>
96552	9D9018	41	41.0	0
00220	0B9028	77	77.0	0
02362	0C9032	77	77.0	0
02584	0C9041	77	77.0	1 (SINGLE BIT)
133023	1D9144	42	42.0	0
133099	1D9144	45	45.0	0
133244	1D9144	45	45.0	0
231597	2B9225	79	79.0	0
234943AF	2D9305	80	80.0	0
234943-12	3A9307	78	78.0	0
234944	3A9308	158	158.0	0
2D1147	3A9309	79	79.0	0
2D1120	3A9312	80	80.0	0
2D1120AF	3A9313	80	80.0	0
3A0859F1	3B9313	80	80.0	0
3A0373	3A9316	80	80.0	0
3A0506	3B9318	45	45.0	0
3A0534F	3B9318	78	78.0	0
3B0500F	3B9328	78	78.0	0
4A0602A	4A9412	196	196.0	0
4A0602-3	4A9414	199	199.0	0
4A0542	4A9415	80	80.0	0
4A1425	4A9412	80	80.0	0
4B0688-4	4B9427	108	1080.0	0
4B0688-2	4B9429	150	150.0	0
4B2156AC1	4B9434	80	80.0	0
4C0668BF6	4C9441	100	100.0	0
4C1057AC2	4C9442	100	100.0	0
4C1057	4C9442	100	100.0	0
4C1816	4C9445	100	100.0	0
4C1820	4C9445	199	199.0	0
4C1620	4C9447	200	200.0	0
4C1621	4C9447	199	199.0	0
4D0601	4D9451	600	600.0	0
4D0597	4D9452	399	399.0	0
4D0905	4D9453	200	200.0	0
4D1142	4D9501	480	480.0	0
4D0594	4D9501	296	296.0	0
4D0817	4D9501	276	276.0	0
4H5106	4H9502	157	157.0	0
4D1488	4D9504	157	157.0	0
4D1489	4D9504	141	141.0	0
4H5200	4D9507	80	80.0	0

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PLASTIC PACKAGE

125°C DYNAMIC OPERATING LIFE TEST (CONTINUED)

<u>LOT NUMBER</u>	<u>DATE CODE</u>	<u>SAMPLE SIZE</u>	<u>TOTAL CKT-HRS (K)</u>	<u>NUMBER OF FAILS</u>
4D1476	4D9509	80	80.0	0
4D1477	4D9504	159	159.0	0
4H5358	4H9511	473	473.0	0
5E0316	5E9511	170	170.0	0
5A1188	5A9514	178	178.0	0
5A1515	5A9516	160	160.0	0
5A1730	5A9516	240	240.0	0
5E0137	5E9518	160	160.0	0
5A2284	5A9524	308	308.0	0
5B0278	5B9525	300	300.0	0
5B1074	5B9526	242	242.0	0
5B1073	5B9527	100	100.0	0
5B0904	5B9527	200	200.0	0
5B1465	5B9528	100	100.0	0
5B2263	5B9532	80	80.0	0
5B0900	5B9534	78	78.0	0
5B1478	5B9529	80	80.0	0
5B2264	5B9535	160	160.0	0
5C1214	5C9540	160	160.0	0
5C1213	5C9540	160	160.0	0
5C1128	5C9542	80	80.0	0
5C1133	5C9542	80	80.0	0
5C0111	5C9535	96	96.0	0
5C2221	5C9544	80	80.0	0
5C2929	5C9548	160	160.0	0
5C3233	5C9548	160	160.0	0
5C3240	5C9548	160	160.0	0
5C2781	5C9549	240	240.0	0
5C3232	5C9550	158	158.0	0
5C3230	5C9550	160	160.0	0
5D0120	5D9550	160	160.0	0
5H0540	5H9552	200	200.0	0
5H0394	5H9602	80	80.0	0
5H1810	5H9605	160	160.0	0
5H0900	5H9603	170	170.0	0
5H0817	5H9606	441	441.0	0
6E0516	6E9613	271	271.0	0
6A1420	6A9614	144	144.0	0
6B1422	6B9634	132	132.0	0
6B0344A	6B9635	131	131.0	0
6B2495F	6B9637	132	132.0	0
6B1422B	6B9634	132	132.0	0

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PLASTIC PACKAGE

125°C DYNAMIC OPERATING LIFE TEST (CONTINUED)

<u>LOT NUMBER</u>	<u>DATE CODE</u>	<u>SAMPLE SIZE</u>	<u>TOTAL CKT-HRS (K)</u>	<u>NUMBER OF FAILS</u>
6B0344B	6B9635	132	132.0	0
6B1028B	6B9635	132	132.0	0
6B2495A	6B9637	132	132.0	0
6B1493A	6B9633	132	132.0	0
6B1493	6B9633	132	132.0	0
6B3054F	6B9634	498	498.0	0
6B0523-4	6B9629	256	256.0	0
6B0183	6B9629	263	263.3	0
6B0177	6B9629	256	256.0	0
6B0523-10	6B9630	256	256.0	0
6F1436	6F9630	255	255.0	0
6B0523F-2	6B9629	256	256.0	0
6B1464A	6B9628	256	256.0	0
6B1464	6B9628	336	336.0	0
6F1436B	6F9630	256	256.0	0
6F1436A	6F9630	255	255.0	0
7A2524-1	7A5719	80	80.0	0
7A3336-1	7A9719	250	250.0	0
7A3333-1	7A9719	80	80.0	0
7B3415A-1	7B9738	200	200.0	0
7B3415A-2	7B9738	200	200.0	0
7B3415A-3	7B9738	200	200.0	0
7H3453-2	7H9747	200	200.0	0
7H2541-1	7H9744	200	200.0	0
8E2763	8E9850	249	249.0	0
8E2811	8E9950	250	250.0	0
8E0852	8E9945	100	100.0	0
0D0531-2	0D0053	250	250.0	0
1B2770	1B0135	100	100.0	0
1D0103	1D0151	249	249.0	0
2E2768	2E0217	250	250.0	0
2G4851	2G0238	100	100.0	0
2J1593	2J0301	250	250.0	0
3E3242	3E0317	250	250.0	0
3E4211	3E0330	97	97.0	0
4E1864-1	4E0417	100	100.0	0
4H1896	4H0438	100	100.0	0

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PLASTIC PACKAGE

125°C DYNAMIC OPERATING LIFE TEST (CONTINUED)

<u>LOT NUMBER</u>	<u>DATE CODE</u>	<u>SAMPLE SIZE</u>	<u>TOTAL CKT-HRS(K)</u>	<u>NUMBER OF FAILS</u>
7F2313-6	7F0724	77	77.0	0

FAILURE RATETOTAL DEVICE HOURS

23,998,000 DEVICE HOURS

BEST ESTIMATE $\lambda = 0.001\%$ PER 1,000 HOURS50°C AMBIENTEXTRAPOLATION TO 50°C VIA
ARRHENNIUS EQUATION AND ACTIVATION
ENERGY OF 0.5eV $\lambda = 0.0001\%$ PER 1,000 HOURS (1 FITS)CONFIDENCE ESTIMATE λ 60 = 0.0001% PER 1,000 HOURS
60% CONFIDENCE (1 FITS) λ 90 = 0.0001% PER 1,000 HOURS
90% CONFIDENCE (1 FITS)

AT-27C010

PLASTIC PACKAGE

150°C RETENTION BAKE

<u>LOT</u> <u>NUMBER</u>	<u>DATE</u> <u>CODE</u>	<u>PKG</u> <u>TYPE</u>	<u>SAMPLE</u> <u>SIZE</u>	<u>NUMBER OF FAILURES</u> <u>AT INDICATED HOURS</u>			
				(168)	(500)	(1000)	(10,000)
96553A	9D9016	32 PLCC	45	0	0	0	
00268	0B9027	32 PDIP	77	0	0	0	
02649	0C9038	32 PDIP	77	0	0	0	
11391	1B9120	32 PLCC	22	0	0	0	
231597	2B9225	32 TSOP	77	0	0	0	
234943AF	2D9305	32 PLCC	77	0	0	0	
234944BF	3A9307	32 PLCC	77	0	0	0	
234944-4	3A9308	32 TSOP	77	0	0	0	
2D1147	3A9309	32 PLCC	77	0	0	0	
2D1150-9	3A9311	32 TSOP	77	0	0	0	
2D1120	3A9313	32 PLCC	231	0	0	0	
3A0859	3A9313	32 PLCC	77	0	0	0	
3A0373	3A9316	32 PLCC	77	0	0	0	
3A0534F	3B9318	32 PLCC	132	0	0	0	
3A1260AF	3B9323	32 PLCC	77	0	0	0	
3B0500F	3B9328	32 PLCC	132	0	0	0	
4A0602A	4A9412	32 PLCC	105	0	0	0	
4A0602-3	4A9414	32 TSOP	142	0	0	0	
4A0542	4A9415	32 PLCC	77	0	0	0	
4A1425	4A9412	32 TSOP	77	0	0	0	
4B0688	4B9427	32 PLCC	150	0	0	0	1
4B0688-2	4B9429	32 TSOP	177	0	0	0	
4B2156AC1	4B9434	32 PLCC	77	0	0	0	
4C0668	4C9441	32 PLCC	186	0	0	0	
4C1057	4C9442	32 PLCC	246	0	0	0	
4C1816	4C9445	32 PLCC	108	0	0	0	
4C1820	4C9445	32 PLCC	189	0	0	0	
4C1620	4C9447	32 PLCC	176	0	0	0	
4C1621	4C9447	32 PLCC	77	0	0	0	
4H5007	4H5007	32 TSOP	192	0	0	0	
4D0601	4D9451	32 PLCC	1887	0	0	0	
4D0597	4D9452	32 PLCC	904	0	0	0	
4D0903	4D9453	32 PLCC	546	0	0	0	
4D0594	4D9501	32 PLCC	154	0	0	0	
4D0817	4D9501	32 PLCC	310	0	0	0	
4H5106	4H9502	32 PLCC	80	0	0	0	
4D1489	4D9504	32 PLCC	96	0	0	0	
4H5200	4H9504	32 PLCC	77	0	0	0	
4D1488	4D9504	32 PLCC	154	0	0	0	
4H5200	4H9507	32 PLCC	77	0	0	0	
4D1476A	4D9508	32 PLCC	154	0	0	0	
4D1476	4D9509	32 PLCC	154	0	0	0	

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PLASTIC PACKAGE

150°C RETENTION BAKE (CONTINUED)

<u>LOT NUMBER</u>	<u>DATE CODE</u>	<u>PKG TYPE</u>	<u>SAMPLE SIZE</u>	<u>NUMBER OF FAILURES AT INDICATED HOURS</u>		
				(168)	(500)	(1000)
4D1477	4D9509	32 PLCC	284	0	0	0
5E0316	5E9511	32 PLCC	154	0	0	0
5E0317	5E9513	32 PLCC	261	0	0	0
5A1188	5A9514	32 PLCC	552	0	0	0
5A1515	5A9516	32 PLCC	189	0	0	0
5A1730	5A9516	32 PLCC	368	0	0	0
5E0137	5E9518	32 PLCC	154	0	0	0
5A2284	5A9524	32 PLCC	121	0	0	0
5B0278	5B9525	32 PLCC	385	0	0	0
5B1073	5B9527	32 PLCC	109	0	0	0
5B1074	5B9526	32 PLCC	141	0	0	0
5B0904	5B9527	32 PLCC	772	0	0	0
5B1465	5B9528	32 PLCC	240	0	0	0
5B2263	5B9532	32 PLCC	181	0	0	0
5B0900	5B9534	32 TSOP	90	0	0	0
5B0900	5B9535	32 PLCC	456	0	0	0
5B2264	5B9535	32 PLCC	191	0	0	0
5C0109	5C9536	32 PLCC	106	0	0	0
5C1213	5C9540	32 PLCC	276	0	0	0
5C1214	5C9540	32 PLCC	288	0	0	0
5C1128	5C9542	32 PLCC	190	0	0	0
5C1133	5C9542	32 PLCC	190	0	0	0
5B0393	5B9542	32 PLCC	96	0	0	0
5C2929	5C9548	32 PLCC	95	0	0	0
5C3240	5C9548	32 PLCC	191	0	0	0
5C3233	5C9548	32 PLCC	192	0	0	0
5C2781	5C9549	32 PLCC	179	0	0	0
5C3230	5C9550	32 PLCC	176	0	0	0
5C3232	5C9550	32 PLCC	182	0	0	0
5D0653	5D9551	32 PLCC	94	0	0	0
5D0120	5D9550	32 PLCC	235	0	0	0
5H0900	5H9603	32 PLCC	181	0	0	0
5H1810	5H9605	32 PLCC	191	0	0	0
5H2306	5H9609	32 PLCC	192	0	0	0
6B0347	6B9624	32 PLCC	261	0	0	0
6A2580-2	6A9622	32 PLCC	249	0	0	0
6A2580-4	6A9622	32 PLCC	248	0	0	0
6A2580-1	6A9622	32 PLCC	250	0	0	0
6A2580-3	6A9622	32 PLCC	228	0	0	0
6A2550-1	6A9620	32 PLCC	92	0	0	0
6A2550-1	6A9620	32 PLCC	94	0	0	0
6E0516-2	6A9613	32 PLCC	95	0	0	0

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PLASTIC PACKAGE

150°C RETENTION BAKE (CONTINUED)

<u>LOT</u> <u>NUMBER</u>	<u>DATE</u> <u>CODE</u>	<u>PKG</u> <u>TYPE</u>	<u>SAMPLE</u> <u>SIZE</u>	<u>NUMBER OF FAILURES</u> <u>AT INDICATED HOURS</u>		
				(168)	(500)	(1000)
6E0516-1	6A9613	32 PLCC	96	0	0	0
6B0523-9	6B9631	32 TSOP	238	0	0	0
6B2495	6B9637	32 PLCC	264	0	0	0
6B1422B	6B9634	32 PLCC	263	0	0	0
6B1422	6B9634	32 PLCC	262	0	0	0
6B1028B	6B9635	32 PLCC	262	0	0	0
6B0344B	6B9635	32 PLCC	261	0	0	0
6B0344A	6B9635	32 PLCC	261	0	0	0
6B1493A	6B9633	32 PLCC	271	0	0	0
6B1493	6B9633	32 PLCC	264	0	0	0
6B2495B	6B9637	32 PLCC	261	0	0	0
6B2495A	6B9637	32 PLCC	262	0	0	0
6B2502	6B9633	32 PLCC	159	0	0	0
6B2502A	6B9633	32 PLCC	163	0	0	0
6B3006	6B9634	32 PDIP	413	0	0	0
6B0183	6B9629	32 PDIP	411	0	0	0
6B1608-11	6B9631	32 TSOP	67	0	0	0
6B2852F	6B9623	32 PLCC	480	0	0	0
7A2524-1	7A9719	32 PLCC	94	0	0	0
7A2336-1	7A9719	32 PLCC	265	0	0	0
7A2333-1	7A9719	32 PLCC	94	0	0	0
7B3415A-1	7B9738	32 PLCC	200	0	0	0
7H3453-2	7H9747	32 TSOP	200	0	0	0
7H1179-1	7H9747	32 TSOP	80	0	0	0
7J0653-7	7J9816	32 PLCC	250	0	0	0
8E2763	8E9850	32 TSOP	250	0	0	0
8E0852	8E9945	32 PDIP	100	0	0	0
8E2811	8E9950	32 PDIP	250	0	0	0
0D0531-2	0D0053	32 PLCC	250	0	0	0
1B2770	1B0135	32 PDIP	50	0	0	0
1D0103	1D0151	32 PLCC	250	0	0	0
2E2678	2E0217	32 PLCC	500	0	0	0
2G4851	2G0238	32 PDIP	50	0	0	0
2J1593	2J0301	32 PLCC	500	0	0	0
2J1593	2J0301	32 PLCC	500	0	0	0
3E3242	3E0317	32 PLCC	250	0	0	0
3E4211	3E0330	32 PLCC	50	0	0	0

AT-27C010

PLASTIC PACKAGE

150°C RETENTION BAKE (CONTINUED)

<u>LOT</u> <u>NUMBER</u>	<u>DATE</u> <u>CODE</u>	<u>PKG</u> <u>TYPE</u>	<u>SAMPLE</u> <u>SIZE</u>	<u>NUMBER OF FAILURES</u> <u>AT INDICATED HOURS</u>		
				(168)	(500)	(1000)
4E1864-1	4E0417	32 PLCC	100	0	0	0
4H1896	4H0438	32 PLCC	50	0	0	0
7F2313-6	7F0724	32 PDIP	77	0	0	0

FAILURE RATETOTAL DEVICE HOURS

27,051,000 DEVICE HOURS

BEST ESTIMATE
50°C AMBIENT

λ = 0.001% PER 1,000 HOURS
 EXTRAPOLATION TO 50°C VIA
 ARRHENNIUS EQUATION AND ACTIVATION
 ENERGY OF 0.5eV

CONFIDENCE ESTIMATE

λ = 0.0001% PER 1,000 HOURS (1 FIT)
 λ 60 = 0.0001% PER 1,000 HOURS
 60% CONFIDENCE (1 FIT)
 λ 90 = 0.0001% PER 1,000 HOURS
 90% CONFIDENCE (1 FITS)

AT-27C010

PLASTIC PACKAGE

PRESSURE POT TEST

<u>DATE</u> <u>CODE</u>	<u>PACKAGE</u> <u>TYPE</u>	<u>SAMPLE</u> <u>SIZE</u>	<u>NUMBER OF FAILURES</u> <u>AT INDICATE HOURS</u>			
			(24)	(48)	(72)	(96)
9D9007	32 PDIP	45	0	0	0	0
9D9016	32 PLCC	25	0	0	0	0
0A9020	32 PLCC	45	0	0	0	0
0B9027	32 PDIP	45	0	0	0	1 (SINGLE BIT)
0C9033	32 PDIP	45	0	0	0	0
0C9041	32 PDIP	90	0	0	0	0
0D9101	32 PDIP	48	0	0	0	0
0D9102	32 PDIP	45	0	0	0	0
1A9105	32 PDIP	45	0	0	0	0
1B9126	32 PDIP	45	0	0	0	0
1C9135	32 PLCC	48	0	0	0	0
1C9140	32 PDIP	93	0	0	0	0
1C9141	32 PDIP	45	0	0	0	0
1D9204	32 PDIP	41	0	0	0	0
2A9208	32 PDIP	45	0	0	0	0
2A9211	32 PDIP	45	0	0	0	0
2B9225	32 TSOP	45	0	0	0	0
2D9245	32 PLCC	44	0	0	0	0
2D9247	32 PLCC	45	0	0	0	0
2D9252	32 PLCC	45	0	0	0	0
2D9305	32 PLCC	45	0	0	0	0
3A9307	32 TSOP	90	0	0	0	0
3A9308	32 TSOP	45	0	0	0	0
3A9313	32 PLCC	135	0	0	0	0
3A9315	32 PLCC	90	0	0	0	0
3A9316	32 PLCC	90	0	0	0	0
3B9323	32 PLCC	45	0	0	0	0
4A9412	32 PLCC	77	0	0	0	0
4A9414	32 TSOP	153	0	0	0	0
4A9415	32 PLCC	122	0	0	0	0
4A9412	32 TSOP	121	0	0	0	0
4B9427	32 PLCC	154	0	0	0	0
4B9429	32 TSOP	155	0	0	0	0
4B9434	32 PLCC	154	0	0	0	0
4C9441	32 PLCC	199	0	0	0	0
4C9442	32 PLCC	211	0	0	0	0
4C9445	32 PLCC	308	0	0	0	0
4C9447	32 PLCC	462	0	0	0	0
4C9447	32 TSOP	78	0	0	0	0
4D9451	32 PLCC	462	0	0	0	0
4D9452	32 PLCC	231	0	0	0	0
4D9501	32 PLCC	154	0	0	0	0
4D9504	32 PLCC	153	0	0	0	0

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PLASTIC PACKAGE

PRESSURE POT TEST (CONTINUED)

<u>DATE</u> <u>CODE</u>	<u>PACKAGE</u> <u>TYPE</u>	<u>SAMPLE</u> <u>SIZE</u>	<u>NUMBER OF FAILURES</u> <u>AT INDICATE HOURS</u>			
			(24)	(48)	(72)	(96)
4D9509	32 PLCC	770	0	0	0	0
4D0509	32 PLCC	770	0	0	0	0
5E9511	32 PLCC	154	0	0	0	0
5E9513	32 PLCC	77	0	0	0	0
5A9514	32 PLCC	231	0	0	0	0
5A9516	32 PLCC	924	0	0	0	0
5B9532	32 PLCC	77	0	0	0	0
5C9536	32 PLCC	45	0	0	0	0
5C9535	32 PLCC	231	0	0	0	0
5B9538	32 PLCC	231	0	0	0	0
5C9540	32 PLCC	616	0	0	0	0
5C9542	32 PLCC	793	0	0	0	0
5C9544	32 PLCC	180	0	0	0	0
5C9548	32 PLCC	844	0	0	0	0
5C9549	32 PLCC	459	0	0	0	0
5C9550	32 PLCC	693	0	0	0	0
5D9551	32 PLCC	199	0	0	0	0
5H9602	32 PLCC	77	0	0	0	0
5H9603	32 PLCC	231	0	0	0	0
5H9605	32 PLCC	308	0	0	0	0
5H9609	32 PLCC	231	0	0	0	0
5H9613	32 PLCC	408	0	0	0	0
6A9614	32 PLCC	77	0	0	0	0
6E9620	32 PLCC	308	0	0	0	0
6A9618	32 PLCC	45	0	0	0	0
6B9629	32 PDIP	132	0	0	0	0
6B9626	32 PLCC	77	0	0	0	0
6B9626	32 PLCC	132	0	0	0	0
6B9628	32 PLCC	77	0	0	0	0
6F9630	32 PLCC	77	0	0	0	0
6B9626	32 PLCC	77	0	0	0	0
6B9626	32 PLCC	132	0	0	0	0
6E9621	32 TSOP	77	0	0	0	0
6B9626	32 PLCC	132	0	0	0	0
6E9621	32 TSOP	77	0	0	0	0
6B9626	32 PLCC	132	0	0	0	0
6B9625	32 PLCC	132	0	0	0	0
6B9626	32 PLCC	132	0	0	0	0
6B9624	32 PLCC	77	0	0	0	0
6A9622	32 PLCC	77	0	0	0	0

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PLASTIC PACKAGE

PRESSURE POT TEST (CONTINUED)

<u>DATE</u> <u>CODE</u>	<u>PACKAGE</u> <u>TYPE</u>	<u>SAMPLE</u> <u>SIZE</u>	<u>NUMBER OF FAILURES</u> <u>AT INDICATE HOURS</u>			
			(24)	(48)	(72)	(96)
6A9620	32 PLCC	77	0	0	0	0
6A9618	32 PLCC	45	0	0	0	0
6B9631	32 TSOP	132	0	0	0	0
6B9631	32 TSOP	132	0	0	0	0
6B9636	32 PLCC	132	0	0	0	0
6B9635	32 PLCC	132	0	0	0	0
6B9634	32 PLCC	132	0	0	0	0
6B9634	32 PLCC	132	0	0	0	0
6B9635	32 PLCC	132	0	0	0	0
6B9637	32 PLCC	132	0	0	0	0
6B9637	32 PLCC	132	0	0	0	0
6B9637	32 PLCC	132	0	0	0	0
6B9633	32 PLCC	132	0	0	0	0
6B9633	32 PLCC	132	0	0	0	0
6B9635	32 PLCC	132	0	0	0	0
6B9634	32 PLCC	132	0	0	0	0
6B9635	32 PLCC	132	0	0	0	0
6B9637	32 PLCC	132	0	0	0	0
6B9633	32 PLCC	132	0	0	0	0
6B9633	32 PLCC	132	0	0	0	0
6B9634	32 PLCC	256	0	0	0	0
6B9633	32 PLCC	132	0	0	0	0
6B9633	32 PLCC	132	0	0	0	0
6B9634	32 PDIP	132	0	0	0	0
6B9633	32 PLCC	256	0	0	0	0
7A9719	32 PLCC	299	0	0	0	0
7B9738	32 PLCC	462	0	0	0	0
7H9744	32 PDIP	154	0	0	0	0
7H9747	32 TSOP	154	0	0	0	0
7J9816	32 PLCC	100	0	0	0	0
8E2763	32 TSOP	100	0	0	0	0
8E2811	32 PDIP	100	0	0	0	0
0D0053	32 PLCC	100	0	0	0	0
1B0135	32 PDIP	50	0	0	0	0
1D0151	32 PLCC	100	0	0	0	0
2E0217	32 PLCC	100	0	0	0	0
2G0238	32 PDIP	50	0	0	0	0
3E0317	32 PLCC	100	0	0	0	0
3E0320	32 PLCC	100	0	0	0	0
3E0324	32 PLCC	50	0	0	0	0
4E0417	32 PLCC	77	0	0	0	0
4H0438	32 PLCC	50	0	0	0	0
4H0512	32 PLCC	115	0	0	0	0

7F0724

32 PDIP

77

0

0

0

0

AT-27C010

PLASTIC PACKAGE

85°C/85% RELATIVE HUMIDITY OPERATING LIFE TEST

<u>LOT NUMBER</u>	<u>DATE CODE</u>	<u>PACKAGE TYPE</u>	<u>SAMPLE SIZE</u>	<u>NUMBER OF FAILURES AT INDICATED HOURS</u>		
				(168)	(500)	(1000)
00136	0A9020	32 PLCC	36	0	0	0
03564-2	0D9101	32 PDIP	45	0	0	0
231597	2B9225	32 TSOP	45	0	0	0
2D1120	3A9313	32 PLCC	18	0	0	0
4A0542	4A9415	32 PLCC	45	0	0	0
4B0688C4	4B9427	32 PLCC	44	0	0	0
4B2156	4B9434	32 PLCC	45	0	0	0
4H5007	4H9447	32 TSOP	32	0	0	0
4H5200	4H9504	32 PLCC	30	0	0	0
4H5200	4H9507	32 PLCC	30	0	0	0
5E0137	5E9518	32 PLCC	36	0	0	0
5B0900	5B9535	32 PLCC	43	0	0	0
5C0109	5C9536	32 PLCC	45	0	0	0
5H0817	5H9606	32 PDIP	77	0	0	0
7B3415A-1	7B9738	32 PLCC	27	0	0	0
7B3415A-2	7B9738	32 PLCC	27	0	0	0
7B3415A-3	7B9738	32 PLCC	27	0	0	0
7H2541-1	7H9744	32 TSOP	77	0	0	0

Date: September 9, 1994
Subject: AT27C010 (18706A Stepping) Latchup Characterization
From: May Lai
To: G. Korsh, E. Hui, C. Lionbarger, Li-Yang Lee

Packaged units of AT27C010 (18706A Stepping) from lot 4A0602 were tested for latchup. A curve tracer was used to force current into each pin and observe the latchup trigger current and voltage. A 9 ohm resistor was connected in parallel across the Vcc power supply to allow current to be forced out of the Vcc pin during testing. A separate ammeter was connected in series with the Vcc power supply to verify when latchup occurred.

The results in Table 1 indicate that the new AT27C010 (18706A) is quite immune to latchup under normal operating conditions (Vcc = 5.0V, Room Temperature). All input pins can sustain more than -600mA and junction breakdown occurs at voltages greater than 23V. No latchup is observed for negative output voltages up to +/-2.0V & +/-600mA.

Table 1. AT27C010 Latchup Trigger Current and Voltage at 5.5V
 LOT# 4A0602 (18706A Stepping)

PIN NO.	FUNCTION	+I	+V	-I	-V
1	VPP			>600	4.8
2	A16			>600	5.7
3	A15			>600	5.8
4	A12			>600	5.8
5	A7			>600	5.6
6	A6			>600	6.0
7	A5			>600	6.0
8	A4			>600	6.0
9	A3			>600	4.8
10	A2			>600	4.8
11	A1			>600	5.7
12	A0			>600	5.6
13	O0	>600	11.6	>600	3.4
14	O1	>600	11.8	>600	3.4
15	O2	>600	11.8	>600	3.4
16	GND				
17	O3	>600	11.8	>600	3.4
18	O4	>600	11.8	>600	3.4
19	O5	>600	11.8	>600	3.4
20	O6	>600	11.8	>600	3.4
21	O7	>500	11.8	>600	3.6
22	CE			>600	4.8
23	A10			>600	5.0
24	OE			>600	5.0
25	A11			>600	6.0
26	A9			>600	6.2
27	A8			>600	6.0
28	A13			>600	6.0
29	A14			>600	5.8
30	NC				
31	PGM			>600	5.8
32	VCC				