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AT-27C080 EPROM RELIABILITY DATA

- 125°C OPERATING LIFE TEST

- 200°C RETENTION BAKE

- 125°C OPERATING LIFE TEST (PLASTIC)

- 150°C RETENTION BAKE (PLASTIC)

- 15 PSIG PRESSURE POT

* This report was generated from AT-27C080 reliability testing.
 This data is applicable to the following device types due to same
 technology grouping as defined in MIL-M-38535 Appendix A:

    AT-27C040   AT-27C4096

JANUARY 2005

2325 Orchard Parkway San Jose CA. 95131

AT-27C080

125°C DYNAMIC OPERATING LIFE TEST

LOT NUMBER	DATE CODE	SAMPLE SIZE	TOTAL CKT-HRS(K)	NUMBER OF FAILURES
A3B0575-2	3B9336	79	79.0	0
A3B0575-1	3B9337	77	77.0	0
4C0157	4C9437	60	60.0	0

FAILURE RATE

TOTAL DEVICE HOURS		216,000 DEVICE HOURS
BEST ESTIMATE	λ	= 0.33% PER 1000 HOURS
50°C AMBIENT		EXTRAPOLATION TO 50°C VIA ARRHENNIUS EQUATION AND ACTIVATION ENERGY OF O.5eV
	λ	= 0.01% PER 1,000 HOURS (105 FITS)
CONFIDENCE ESTIMATE	λ	60 = 0.014% PER 1000 HOURS 60% CONFIDENCE (138 FITS)
	λ	90 = 0.04% PER 1000 HOURS 90% CONFIDENCE (370 FITS)

AT-27C080

200°C DATA RETENTION BAKE

LOT NUMBER	DATE CODE	SAMPLE SIZE	TOTAL CKT-HRS(K)	NUMBER OF FAILURES
A3B0575	3B9337	76	76.0	0
4C0157	4C9437	33	33.0	0

FAILURE RATE

TOTAL DEVICE HOURS   76,000 DEVICE HOURS

BEST ESTIMATE λ = 0.9% PER 1,000 HOURS

50°C AMBIENT   EXTRAPOLATION TO 50°C VIA
                           ARRHENNIUS EQUATION AND
                           ACTIVATION ENERGY OF 0.5eV
                     λ = 0.003% PER 1,000 HOURS (31
                           FITS)

CONFIDENCE ESTIMATE λ 60 = 0.004% PER 1,000 HOURS
                           60% CONFIDENCE (41 FITS)
                     λ 90 = 0.01% PER 1,000 HOURS
                           90% CONFIDENCE (102 FITS)

AT-27C080

PLASTIC PACKAGE

125°C DYNAMIC OPERATING LIFE TEST

LOT NUMBER	DATE CODE	PKG	SAMPLE SIZE	TOTAL CKT-HRS(K)	OF NUMBER FAILURES
3B1126	3B9342	40 TSOP	77	77.0	0
3C0893	3C9352	32 SOIC	79	79.0	0
3D04424	3D9404	40 TSOP	80	80.0	0
4C0157	4C9437	32 PDIP	80	80.0	0
6D3922	6D9728	32 TSOP	299	299.0	0
9E1049	9E9928	32 PLCC	250	250.0	0
9G1260-2	9G9933	32 SOIC	100	100.0	0
2G0467	2G0230	32 TSOP	250	250.0	0

FAILURE RATE

TOTAL DEVICE HOURS		1,215,000 DEVICE HOURS
BEST ESTIMATE	λ	= 0.06% PER 1,000 HOURS
50°C AMBIENT		EXTRAPOLATION TO 50°C VIA ARRHENNIUS EQUATION AND ACTIVATION ENERGY OF 0.5eV
	λ	= 0.002% PER 1,000 HOURS (19 FITS)
CONFIDENCE ESTIMATE	λ	60 = 0.003% PER 1,000 HOURS 60% CONFIDENCE (26 FITS)
	λ	90 = 0.006% PER 1,000 HOURS 90% CONFIDENCE (64 FITS)

AT-27C080

PLASTIC PACKAGE

150°C RETENTION BAKE

LOT NUMBER	DATE CODE	PKG	SAMPLE SIZE	TOTAL CKT-HRS(K)	NUMBER OF FAILURES
3B1126	3B9342	40 TSOP	77	77.0	0
3C0893	3C9352	32 SOIC	78	78.0	0
W311032	3D9404	40 TSOP	77	77.0	0
3D0442-1	3D9404	40 TSOP	100	100.0	0
3D0442-2	3D9405	40 TSOP	99	99.0	0
3D1492-2	3D9411	40 TSOP	80	80.0	0
4C0157-2	4C9438	32 TSOP	77	77.0	0
6D3922	6D9728	32 TSOP	214	214.0	0
8J3881	8J9909	32 PDIP	250	250.0	0
9G1260-2	9G9933	32 SOIC	100	100.0	0
9E1049	9E9928	32 PLCC	250	250.0	0
0C3857	0C0052	32 PDIP	250	250.0	0
2G0467	2G0230	32 TSOP	498	498.0	0
4G5537	4G0432	32 PLCC	500	500.0	0

FAILURE RATE

TOTAL DEVICE HOURS	2,650,000 DEVICE HOURS
BEST ESTIMATE	λ =0.03% PER 1000 HOURS
50°C AMBIENT	EXTRAPOLATION TO 50°C VIA ARRHENNIUS EQUATION AND ACTIVATION ENERGY OF 0.5eV
	λ = 0.0005% PER 1,000 HOURS (5 FITS)
CONFIDENCE ESTIMATE	λ 60 = 0.0006% PER 1,000 HOURS 60% CONFIDENCE (6 FITS)
	λ 90 = 0.001% PER 1,000 HOURS 90% CONFIDENCE (13 FITS)

AT-27C080

PLACTIC PACKAGE

PRESSURE POT TEST

DATE CODE (96)	PACKAGE TYPE	SAMPLE SIZE	NUMBER OF FAILURE AT INDICATED HOURS			
			(24)	(48)	(72)	
3D9404	40 TSOP	45	0	0	0	0
4C9438	32 TSOP	450	0	0	0	0
6D9728	32 TSOP	200	0	0	0	0
8E9837	40 TSOP	50	0	0	0	0
8B9843	40 PDIP	100	0	0	0	0
8J9909	32 PDIP	100	0	0	0	0
9E9929	32 SOIC	100	0	0	0	0
9G9933	32 SOIC	50	0	0	0	0

Date: May 5, 1994

Subject: AT27C080(18712A Latchup Data)

From: T. Pearce

To: G. Korsh, E. Hui, C. Lionbarger
Copy: M. Wong, H. Nguyen, LY. Lee

Three packaged units of the AT27C080 (18712A Stepping) from lot
4C0157 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 are show in page 2 an indicate that the new AT27C080
(18712A) is quite immune to latchup under normal operating
conditions (Vcc=4.5v to 5.5v room temperature). Inputs can sustain
-2.8 with respect to ground and no latchup is observed. No latchup
is observed for possitive input voltages up to 18v where
destructive junction breakdown occurs. Outputs can sustain 13.4v
and -2.7v with respect to ground and no latchup is observed.

AT27C080 (18712A) Latchup Trigger Current and Voltages

Pin	Function	-V (v)	-I (mA)	+V (v)	+I (mA)
1	A19	6.0	>600	>14	
2	A16	5.8	>600	>14	
3	A15	5.8	>600	>14	
4	A12	5.8	>600	>14	
5	A7	6.0	>600	11.0	
6	A6	6.1	>600	11.2	
7	A5	5.6	>600	11.3	
8	A4	5.4	>600	11.7	
9	A3	3.9	>600	11.6	
10	A2	4.0	>600	12.1	
11	A1	4.0	>600	>14	
12	A0	3.9	>600	>14	
13	O0	2.7	>600	13.6	>600
14	O1	2.7	>600	13.4	>600
15	O2	2.7	>600	13.4	>600
16	GND				
17	O3	2.7	>600	13.6	>600
18	O4	2.7	>600	13.6	>600
19	O5	2.8	>600	13.7	>600
20	O6	2.8	>600	13.7	>600
21	O7	2.7	>600	13.8	>600
22	CE	3.8	>600	>14	
23	A10	3.9	>600	>14	
24	OE	2.8	>600	>14	
25	A11	5.5	>600	>14	
26	A9	5.7	>600	>14	
27	A8	6.0	>600	>14	
28	A13	5.8	>600	>14	
29	A14	5.8	>600	>14	
30	A17	5.8	>600	>14	
31	A18	5.9	>600	>14	
32	VCC				