



ATMEL CORPORATION

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AT-27BV512 CMOS EPROM RELIABILITY DATA*

-125°C OPERATING LIFE TEST (PLASTIC)

-150°C RETENTION BAKE (PLASTIC)

-15 PSIG PRESSURE POT

-EXTENDED TEMPERATURE CYCLE

JULY 2003

2325 Orchard Parkway San Jose CA. 95131

AT-27BV512

PLASTIC PACKAGE

125°C DYNAMIC OPERATING LIFE TEST

<u>LOT NUMBER</u>	<u>DATE CODE</u>	<u>SAMPLE SIZE</u>	<u>TOTAL CKT-HRS (K)</u>	<u>NUMBER OF FAILS</u>
7D3370-2	7D9812	248	248.0	0
8D0946-3	8D9901	100	100.0	0
2H1980A	2H0245	100	100.0	0

FAILURE RATETOTAL DEVICE HOURS

448,000 DEVICE HOURS

BEST ESTIMATE $\lambda = 0.2\%$ PER 1,000 HOURS50°C AMBIENT

EXTRAPOLATION TO 50°C VIA
ARRHENNIUS EQUATION AND
ACTIVATION ENERGY OF 0.5eV
 $\lambda = 0.005\%$ PER 1,000 HOURS (53
FITS)

CONFIDENCE ESTIMATE

λ 60 = 0.007% PER 1,000 HOURS
60% CONFIDENCE (70 FITS)
 λ 90 = 0.01% PER 1,000 HOURS
90% CONFIDENCE (174 FITS)

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PLASTIC PACKAGE

150°C RETENTION BAKE

<u>LOT</u> <u>FAILURES</u> <u>NUMBER</u> <u>HOURS</u>	<u>DATE</u> <u>CODE</u>	<u>PKG</u> <u>TYPE</u>	<u>SAMPLE</u> <u>SIZE</u>	<u>NUMBER OF</u> <u>AT INDICATED</u>		
				<u>(168)</u>	<u>(500)</u>	
(1000)						
7D3370-2	7D9812	32 PLCC	250	0	0	0
8D0946-3	8D9901	28 TSOP	99	0	0	0
2E0387	2E0210	32 PLCC	50	0	0	0
2H1980A	2H0245	32 PLCC	50	0	0	0

FAILURE RATETOTAL DEVICE HOURS

449,000 DEVICE HOURS

BEST ESTIMATE $\lambda = 0.2\%$ PER 1,000 HOURS50°C AMBIENTEXTRAPOLATION TO 50°C VIA ARRHENNIUS
EQUATION AND ACTIVATION ENERGY OF
0.5eV $\lambda = 0.002\%$ PER 1,000 HOURS (22 FITS)CONFIDENCE ESTIMATE $\lambda_{60} = 0.003\%$ PER 1,000 HOURS

60% CONFIDENCE (29 FITS)

 $\lambda_{90} = 0.007\%$ PER 1,000 HOURS

90% CONFIDENCE (73 FITS)

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PLASTIC PACKAGE

PRESSURE POT TEST

<u>DATE</u> <u>CODE</u>	<u>PACKAGE</u> <u>TYPE</u>	<u>SAMPLE</u> <u>SIZE</u>	NUMBER OF FAILURES AT INDICATED HOURS			
			<u>(24)</u>	<u>(48)</u>	<u>(72)</u>	<u>(96)</u>
7D9812	32 PLCC	100	0	0	0	0
8A9835	28 TSOP	99	0	0	0	0
8D9901	28 TSOP	50	0	0	0	0
2E0210	32 PLCC	50	0	0	0	0
2H0245	32 PLCC	50	0	0	0	0

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PLASTIC PACKAGE

EXTENDED TEMPERATURE CYCLING

-65°C to +150°C PLCC/TSOP/SOIC/PDIP
-55°C to +125°C CBGA

<u>DATE</u> <u>CODE</u>	<u>PKG</u> <u>TYPE</u>	<u>SAMPLE</u> <u>SIZE</u>	<u>NUMBER</u> <u>OF CYCLES</u>	<u>NUMBER</u> <u>OF FAILURES</u>
7D9812	32 PLCC	100	1000	0
8A9835	28 TSOP	100	1000	0
2H0245	32 PLCC	50	1000	0

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