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AT-27C516 CMOS EPROM RELIABILITY DATA*

- (PLASTIC)
- 125°C DYNAMIC OPERATING LIFE TEST
- 150°C RETENTION BAKE (PLASTIC)
- 15 PSIG PRESSURE POT
- TEST
- 85°C/85% RELATIVE HUMIDITY OPERATING LIFE
- EXTENDED TEMPERATURE CYCLE
- EXTENDED THERMAL SHOCK

* This report was generated from AT-27C516 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-27C1024

JULY 2003

2325 Orchard Parkway San Jose CA. 95131

AT-27C516

PLASTIC PACKAGE

125°C DYNAMIC OPERATING LIFE TEST

<u>LOT NUMBER FAILURES</u>	<u>DATE CODE</u>	<u>SAMPLE SIZE</u>	<u>TOTAL CKT-HRS (K)</u>	<u>NUMBER OF</u>
4D2099B	4D9508	79	79.0	0
5A0753	5A9513	200	200.0	0
6B1420A	6B9631	135	135.0	0
6B2933AB	6B9634	132	132.0	0
7H3002B	7H9841	100	100.0	0

FAILURE RATETOTAL DEVICE HOURS

646,000 DEVICE HOURS

BEST ESTIMATE $\lambda = 0.1\%$ PER 1000 HOURS50°C AMBIENT

EXTRAPOLATION TO 50°C VIA
ARRHENNIUS EQUATION AND
ACTIVATION ENERGY OF 0.5eV
 $\lambda = 0.004\%$ PER 1,000 HOURS (36
FITS)

CONFIDENCE ESTIMATE

λ 60 = 0.005% PER 1000 HOURS
60% CONFIDENCE (48 FITS)
 λ 90 = 0.01% PER 1000 HOURS
90% CONFIDENCE (121
FITS)

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PLASTIC PACKAGE

150°C RETENTION BAKE

<u>LOT NUMBER</u>	<u>DATE CODE</u>	<u>SAMPLE SIZE</u>	<u>HOURS TO FAILURES</u>			
			<u>24</u>	<u>168</u>	<u>500</u>	
<u>1000</u>						
4D2099B 0	4D9508	78	0	0	0	
5A0753 0	5A9513	103	0	0	0	
5A3121 0	5D9611	79	0	0	0	
5D3121-1 0	5D9611	79	0	0	0	
6B2933B 0	6B9634	432	0	0	0	
6C2055A 0	6C9639	289	0	0	0	
6C2300 0	6C9650	243	0	0	0	
7H3002B	7H9841	100	0	0	0	0

FAILURE RATETOTAL DEVICE HOURS

1,245,000 DEVICE HOURS

BEST ESTIMATE $\lambda = 0.06\%$ PER 1000 HOURS50°C AMBIENT

EXTRAPOLATION TO 50°C VIA
ARRHENNIUS EQUATION AND
ACTIVATION ENERGY OF 0.5eV
 $\lambda = 0.002\%$ PER 1,000 HOURS (21
FITS)

CONFIDENCE ESTIMATE

λ 60 = 0.002% PER 1000 HOURS
60% CONFIDENCE (27 FITS)
 λ 90 = 0.007% PER 1000 HOURS
90% CONFIDENCE (61 FITS)

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PLASTIC PACKAGE

85°C/85% RELATIVE HUMIDITY OPERATING LIFE TEST

LOT FAILURES NUMBER <u>HOURS</u>	DATE <u>CODE</u>	PACKAGE <u>SIZE</u>	SAMPLE <u>SIZE</u>	NUMBER OF	
				<u>AT INDICATED</u>	
				(168)	(500)
(1000)					
4D2099B 0	4D9508	44	54	0	0
6C2055A 0	6C9639	44	54	0	0

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PRESSURE POT TEST

<u>FAILURES</u> <u>DATE CODE</u>	<u>PACKAGE TYPE</u>	<u>SAMPLE SIZE</u>	<u>NUMBER OF</u> <u>AT INDICATED HOURS</u>			
			(24)	(48)	(72)	
(96)						
4D9508 0	44 PLCC	123	0	0	0	
5A9513	44 PLCC	77	0	0	0	0
6B9631	44 PLCC	132	0	0	0	0
6B9634	44 PLCC	660	0	0	0	0
7H9841	44 PLCC	50	0	0	0	0

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PLASTIC PACKAGE

EXTENDED TEMPERATURE CYCLE

-65°C to 150°C PLCC/TSOP/SOIC/PDIP

<u>DATE CODE FAILURES</u>	<u>PACKAGE TYPE</u>	<u>SAMPLE SIZE</u>	<u>NUMBER OF CYCLES</u>	<u>NUMBER OF</u>
6C9639	44 PLCC	200	1000	0
6C9640	44 PLCC	100	1000	0
7D9833	44 PLCC	100	1000	0
7H9841	44PLCC	50	1000	0

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PLASTIC PACKAGE

EXTENDED THERMAL SHOCK

-55°C TO 125°C

<u>DATE CODE FAILURES</u>	<u>PACKAGE TYPE</u>	<u>SAMPLE SIZE</u>	<u>NUMBER OF CYCLES</u>	<u>NUMBER OF</u>
6B9631	44 PLCC	77	1000	0
6C9640	44 PLCC	100	1000	0