

**RELIABILITY MONITOR REPORT  
FOR**

**0.8  $\mu\text{m}$  Process**

**Dallas Semiconductor**

**4401 South Beltwood Parkway  
Dallas, TX 75244-3292**

**This Report was prepared by  
Dallas Semiconductor Reliability Engineering**

## Summary:

The data in the tables that follow was generated as the result of an on-going Process Reliability Monitor. The products covered by this process monitor are:

DS1023	DS1033	DS1035	DS1044	DS1065
DS1073	DS1075	DS1175	DS1231	DS1232
DS1233	DS1302	DS1305	DS1306	DS1307
DS1308	DS1312	DS1314	DS1315	DS1321
DS1323	DS13D12	DS13D14	DS13D21	DS1481
DS1620	DS1621	DS1623	DS1624	DS1629
DS1670	DS1671	DS1673	DS1674	DS1677
DS1680	DS1685	DS1705	DS1706	DS1707
DS1708	DS1720	DS1721	DS17285	DS17485
DS1780	DS17885	DS1800	DS1801	DS1802
DS1803	DS1804	DS1806	DS1807	DS1810
DS1811	DS1812	DS1813	DS1814	DS1815
DS1816	DS1817	DS1818	DS1819	DS1821
DS1832	DS1834	DS1836	DS1844	DS1866
DS1868	DS2105	DS2106	DS2109	DS2110
DS2114	DS2118M	DS21372	DS2151	DS2152
DS2153	DS2154	DS2172	DS21Q41	DS21S07
DS21T05	DS21T06	DS21T07	DS21T11	DS2401
DS2406	DS2407	DS2423	DS2430	DS2434
DS2435	DS2436	DS2480	DS24S03	DS24S34
DS2502	DS2503	DS2505	DS2506	DS32KHZ
DS4201	DS60	DS75	DS76KHZ	DS80C310
DS80CH10	DS83C520	DS87C520	DS87C530	

The calculated failure rate for devices using this process is:

**FAILURE RATE:**                      **MTTF (YRS): 78575**                      **FITS: 1.5**

The parameters used to calculate this failure rate are as follows:

**Cf: 60%**                      **Ea: 0.7**                      **B: 0**                      **Tu: 25 °C**                      **Vu: 5.5 Volts**

The reliability data follows. At the start of this data is the process information. The next section is the detailed reliability data for each stress. The reliability data section includes the latest data available. This report covers data between 10/1/03 and 9/30/04.

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## Device Information:

Process: 0.8 µm Process  
Interconnect: Aluminum / 1% Silicon / 0.5% Copper  
Gate Oxide Thickness: 175 Å

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## OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0334	DS1620	125C, 5.5 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0345	DS1803	125C, 5.25 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0347	DS87C520	125C, 5.5 VOLTS	12 HRS	1000	0	
HIGH TEMP OP LIFE	0347	DS87C520	125C, 5.5 VOLTS	988 HRS	76	0	
HIGH TEMP OP LIFE	0347	DS87C520	125C, 5.5 VOLTS	12 HRS	517	0	

HIGH TEMP OP LIFE	0348	DS1302	125C, 5.5 VOLTS	1000 HRS	80	0
HIGH TEMP OP LIFE	0350	DS1620	125C, 5.5 VOLTS	1000 HRS	80	0
HIGH TEMP OP LIFE	0403	DS1232	125C, 5.5 VOLTS	1000 HRS	80	0
HIGH TEMP OP LIFE	0403	DS1803	125C, 5.25 VOLTS	1000 HRS	75	0
HIGH TEMP OP LIFE	0404	DS1302	125C, 5.5 VOLTS	1000 HRS	80	0
HIGH TEMP OP LIFE	0412	DS1073	125C, 3.5 VOLTS	1000 HRS	77	0
HIGH TEMP OP LIFE	0413	DS1073	125C, 3.5 VOLTS	1000 HRS	77	0
HIGH TEMP OP LIFE	0413	DS1073	125C, 3.5 VOLTS	1000 HRS	77	0
HIGH TEMP OP LIFE	0429	DS1232	125C, 5.5 VOLTS	1000 HRS	77	0
HIGH TEMP OP LIFE	0430	DS1624	125C, 5.5 VOLTS	1000 HRS	77	0
HIGH TEMP OP LIFE	0430	DS1233	125C, 5.5 VOLTS	500 HRS	77	0
HIGH TEMP OP LIFE	0433	DS1302	125C, 5.5 VOLTS	500 HRS	80	0
HIGH TEMP OP LIFE	0434	DS32KHZ	125C, 5.5 VOLTS	500 HRS	64	0
HIGH TEMP OP LIFE	0435	DS32KHZ	125C, 5.5 VOLTS	500 HRS	64	0
<b>Total:</b>						<b>0</b>

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#### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0334	DS1620	150C	1000 HRS	50	0	
STORAGE LIFE	0347	DS87C520	150C	1000 HRS	76	0	
STORAGE LIFE	0350	DS1620	150C	1000 HRS	50	0	
STORAGE LIFE	0412	DS1073	150C	1000 HRS	77	0	
STORAGE LIFE	0413	DS1073	150C	1000 HRS	77	0	
STORAGE LIFE	0413	DS1073	150C	1000 HRS	77	0	
STORAGE LIFE	0430	DS1624	150C	1000 HRS	77	0	
STORAGE LIFE	0430	DS1233	150C	500 HRS	77	0	
STORAGE LIFE	0430	DS1233	150C	500 HRS	77	0	
STORAGE LIFE	0430	DS1233	150C	500 HRS	77	0	
STORAGE LIFE	0434	DS32KHZ	125C	500 HRS	77	0	
STORAGE LIFE	0434	DS32KHZ	125C	500 HRS	77	0	
STORAGE LIFE	0435	DS32KHZ	125C	500 HRS	77	0	
<b>Total:</b>						<b>0</b>	

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#### TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0334	DS1620	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0345	DS1803	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0348	DS1302	-55C TO 125C	1000 CYS	45	0	

TEMP CYCLE	0350	DS1620	-55C TO 125C	1000	CYS	40	0
TEMP CYCLE	0403	DS1232	-55C TO 125C	1000	CYS	40	0
TEMP CYCLE	0403	DS1803	-55C TO 125C	1000	CYS	40	0
TEMP CYCLE	0404	DS1302	-55C TO 125C	1000	CYS	45	0
TEMP CYCLE	0412	DS1073	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0413	DS1073	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0413	DS1073	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0429	DS1232	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0430	DS1624	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0430	DS1233	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0430	DS1233	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0430	DS1233	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0433	DS1302	-55C TO 125C	1000	CYS	45	0
TEMP CYCLE	0434	DS32KHZ	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0434	DS32KHZ	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0435	DS32KHZ	-40 TO 85C	1000	CYS	77	0
<b>Total:</b>							<b>0</b>

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#### TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0334	DS1620	85/85, 5.5 VOLTS	1000 HRS	70	0	
BIASED MOISTURE	0345	DS1803	85/85, 5.5 VOLTS	1000 HRS	77	0	
BIASED MOISTURE	0348	DS1302	85/85, 5.5 VOLTS	1000 HRS	77	0	
BIASED MOISTURE	0350	DS1620	85/85, 5.5 VOLTS	1000 HRS	70	0	
BIASED MOISTURE	0403	DS1803	85/85, 5.5 VOLTS	1000 HRS	70	0	
BIASED MOISTURE	0404	DS1302	85/85, 5.5 VOLTS	1000 HRS	77	0	
HAST	0412	DS1073	130C, 85%R.H.,3.5V	156 HRS	45	0	
HAST	0413	DS1073	130C, 85%R.H.,3.5V	156 HRS	45	0	
HAST	0413	DS1073	130C, 85%R.H.,3.5V	156 HRS	45	0	
HAST	0430	DS1624	130C, 85%R.H.,5.5V	96 HRS	76	0	
HAST	0430	DS1233	130C, 85%R.H.,5.5V	96 HRS	77	0	
HAST	0430	DS1233	130C, 85%R.H.,5.5V	96 HRS	76	0	
HAST	0430	DS1233	130C, 85%R.H.,5.5V	96 HRS	77	0	
BIASED MOISTURE	0433	DS1302	85/85, 5.5 VOLTS	500 HRS	77	0	
BIASED MOISTURE	0434	DS32KHZ	85/85, 5.5 VOLTS	500 HRS	77	0	
BIASED MOISTURE	0434	DS32KHZ	85/85, 5.5 VOLTS	500 HRS	77	0	
BIASED MOISTURE	0435	DS32KHZ	85/85, 5.5 VOLTS	500 HRS	77	0	
<b>Total:</b>							<b>0</b>

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0345	DS1803	121C, 2 ATM STEAM, UNBIASED	168 HRS	40	0	
AUTOCLAVE	0348	DS1302	121C, 2 ATM STEAM, UNBIASED	96 HRS	45	0	
AUTOCLAVE	0403	DS1232	121C, 2 ATM STEAM, UNBIASED	96 HRS	40	0	
AUTOCLAVE	0403	DS1803	121C, 2 ATM STEAM, UNBIASED	168 HRS	40	0	
AUTOCLAVE	0404	DS1302	121C, 2 ATM STEAM, UNBIASED	96 HRS	45	0	
AUTOCLAVE	0412	DS1073	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0413	DS1073	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0413	DS1073	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0429	DS1232	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0430	DS1624	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0430	DS1233	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0430	DS1233	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0430	DS1233	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0434	DS32KHZ	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
MOISTURE SOAK	0434	DS32KHZ	60C/90% R.H.	500 HRS	77	0	
AUTOCLAVE	0434	DS32KHZ	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
MOISTURE SOAK	0434	DS32KHZ	60C/90% R.H.	500 HRS	77	0	
AUTOCLAVE	0435	DS32KHZ	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
MOISTURE SOAK	0435	DS32KHZ	60C/90% R.H.	500 HRS	77	0	
<b>Total:</b>						<b>0</b>	

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**WRITE CYCLE STRESS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
WRITE CYCLE STRESS	0334	DS1620	85 C, 5.5 VOLTS	50 KCYS	50	0	
WRITE CYCLE STRESS	0350	DS1620	85 C, 5.5 VOLTS	50 KCYS	50	0	
<b>Total:</b>						<b>0</b>	

**FAILURE RATE:****MTTF (YRS): 78575****FITS: 1.5**