

**RELIABILITY MONITOR REPORT
FOR**

0.6 μ 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:

DS1002	DS1050	DS1052	DS1077	DS1077L
DS1085	DS1085L	DS1086	DS1086L	DS1087L
DS1090	DS1100	DS1100L	DS1102L	DS1110
DS1110L	DS1123L	DS1135	DS1135L	DS12885
DS12R885	DS12R885-5	DS1311	DS1318	DS1337
DS1338-18	DS1338-3	DS1338-33	DS1339U-2	DS1339U-3
DS1339U-33	DS1340	DS1371	DS1374-18	DS1374-3
DS1374-33	DS1375	DS1482	DS1500	DS1501
DS1543	DS1553	DS1558	DS1615	DS1616
DS1620	DS1621	DS1626	DS1631	DS1631A
DS1643	DS1672	DS1678	DS1679	DS1682
DS1720	DS1721	DS1722	DS1726	DS1731
DS1743	DS1748	DS1775	DS1805	DS1809
DS1820	DS1822	DS1830	DS1831	DS1845
DS1846	DS1847	DS1848	DS1849	DS1851
DS1852	DS1854	DS1855	DS1858	DS1859
DS1870	DS1921	DS1921H	DS1921Z	DS1961
DS2117M	DS2118M	DS2119M	DS2120	DS2125
DS2127	DS2129	DS21348	DS21349	DS21352
DS21354	DS21448	DS2148	DS2149	DS2154
DS21552	DS21554	DS21600	DS21602	DS21604
DS21610	DS2196	DS2197	DS21Q43	DS21Q50
DS21Q58	DS21Q59	DS2401	DS2405	DS2408
DS2409	DS2411	DS2415	DS2417	DS2421
DS2422	DS2432	DS2433	DS2434	DS2436
DS2438	DS2450	DS2470	DS2482-800	DS2490
DS2501	DS2502	DS2503	DS2505	DS2702
DS2720	DS2740	DS2751	DS2760	DS2761
DS2762	DS2763	DS2770	DS2890	DS3902
DS3903	DS3904	DS3905	DS3930	DS4000
DS4301	DS4302	DS4510	DS5001	DS5002
DS5240	DS5250	DS7864B	DS7864D	DS80C310
DS80C320	DS80C323	DS80CH11	DS87C550	

The calculated failure rate for devices using this process is:

FAILURE RATE: MTTF (YRS): 478249 FITS: 0.2

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 07/01/2003 and 06/30/2004 .

Device Information:

Process: 0.6 µm Process
 Interconnect: Aluminum / 1% Silicon / 0.5% Copper
 Gate Oxide Thickness: 150 Å

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0303	DS2118M	125C, 5.5 VOLTS	1000	HRS	0	
LOW TEMP OP LIFE	0309	DS2490	25C, 6.0V(PSA) & 12.25V(PSB)	1000	HRS	0	
HIGH TEMP OP LIFE	0309	DS2118M	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0320	DS2127	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0320	DS1123L	125C, 3.6 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0323	DS5250	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0323	DS1100	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0323	DS80C320	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0324	DS1743	125C, 5.5 VOLTS	988	HRS	0	
HIGH TEMP OP LIFE	0324	DS2470	125C, 5.25 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0324	DS1558	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0324	DS1553	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0325	DS1859	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0327	DS2502	125C, 6.0 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0327	DS2502	125C, 6.0 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0327	DS2502	125C, 6.0 VOLTS	1000	HRS	0	
HIGH VOLTAGE LIFE	0327	DS3905	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0327	DS7864B	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP REVERSE BIAS	0330	DS2761	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP REVERSE BIAS	0330	DS2761	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP REVERSE BIAS	0330	DS2761	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0330	DS4301	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0330	DS2502	125C, 6.0 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0330	DS2502	125C, 6.0 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0330	DS2502	125C, 6.0 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0331	DS2401	125C, 6.0 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0332	DS2154	125C, 5.25 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0333	DS1087L	125C, 3.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0334	DS2411	125C, 5.25 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0335	DS2411	125C, 5.25 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0335	DS2411	125C, 5.25 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0336	DS21354	125C, 5.25 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0337	DS1859	125C, 5.5 VOLTS	1000	HRS	0	
HIGH TEMP OP LIFE	0339	DS1859	125C, 5.5 VOLTS	1000	HRS	0	

HIGH TEMP OP LIFE	0340	DS2770	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0340	DS2422	125C, 5.5V (PSA) & 3.0V (PSB)	1000 HRS	0
HIGH TEMP OP LIFE	0341	DS1859	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0341	DS1859	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0343	DS2401	125C, 6.0 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0343	DS2762	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0344	DS5240	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0345	DS2432	125C, 5.25 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0345	DS2401	125C, 6.0 VOLTS	1000 HRS	0
HIGH VOLTAGE LIFE	0346	DS5240	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0347	DS5002	125C, 5.0 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0347	DS5002	125C, 5.0 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0348	DS1086L	125C, 3.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0348	DS5002	125C, 5.0 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0350	DS1870	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0401	DS4510	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0402	DS21448	125C, 3.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0403	DS2401	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0403	DS2401	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0403	DS2401	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0403	DS1318	125C, 3.6 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0403	DS12R885-5	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0405	DS80C320	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0408	DS2502	125C, 6.0 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0409	DS2505	125C, 6.0 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0409	DS2129	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0414	DS2503	125C, 6.0 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0416	DS3902	125C, 5.5 VOLTS	1000 HRS	0
HIGH TEMP OP LIFE	0418	DS1822	125C, 5.5 VOLTS	1000 HRS	0
				Total:	0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0320	DS1123L	150C	1000 HRS		0	
STORAGE LIFE	0327	DS2502	125C	1000 HRS		0	
STORAGE LIFE	0327	DS2502	125C	1000 HRS		0	
STORAGE LIFE	0327	DS2502	125C	1000 HRS		0	

STORAGE LIFE	0330	DS2761	125C	1000	HRS	0
STORAGE LIFE	0330	DS2761	125C	1000	HRS	0
STORAGE LIFE	0330	DS2761	125C	1000	HRS	0
STORAGE LIFE	0330	DS2502	125C	1000	HRS	0
STORAGE LIFE	0330	DS2502	125C	1000	HRS	0
STORAGE LIFE	0330	DS2502	125C	1000	HRS	0
STORAGE LIFE	0334	DS2411	125C	1000	HRS	0
STORAGE LIFE	0335	DS2411	125C	1000	HRS	0
STORAGE LIFE	0335	DS2411	125C	1000	HRS	0
STORAGE LIFE	0337	DS1859	150C	1000	HRS	0
STORAGE LIFE	0340	DS2770	150C	1000	HRS	0
STORAGE LIFE	0341	DS1859	150C	1000	HRS	0
STORAGE LIFE	0341	DS1859	150C	1000	HRS	0
STORAGE LIFE	0403	DS2401	125C	1000	HRS	0
STORAGE LIFE	0403	DS2401	125C	1000	HRS	0
STORAGE LIFE	0403	DS2401	125C	1000	HRS	0
STORAGE LIFE	0408	DS2502	150C	1000	HRS	0
STORAGE LIFE	0409	DS2505	150C	1000	HRS	0
Total:						0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0303	DS2118M	-55C TO 125C	1000	CYS	0	
TEMP CYCLE	0309	DS2118M	-55C TO 125C	1000	CYS	0	
TEMP CYCLE	0323	DS1100	-55C TO 125C	1000	CYS	0	
TEMP CYCLE	0323	DS80C320	-55C TO 125C	1000	CYS	0	
TEMP CYCLE, SLOW	0330	DS2761	-40C TO +125C	2000	CYS	0	
TEMP CYCLE, SLOW	0330	DS2761	-40C TO +125C	2000	CYS	0	
TEMP CYCLE, SLOW	0330	DS2761	-40C TO +125C	1000	CYS	0	
TEMP CYCLE	0330	DS2502	-40 TO 85C	1000	CYS	0	
TEMP CYCLE	0330	DS2502	-40 TO 85C	1000	CYS	1	30017244
TEMP CYCLE	0331	DS2401	-55C TO 125C	1000	CYS	0	
TEMP CYCLE	0333	DS1087L	-55C TO 125C	1000	CYS	0	
TEMP CYCLE	0334	DS2411	-40 TO 85C	1000	CYS	0	
TEMP CYCLE	0335	DS2411	-40 TO 85C	1000	CYS	0	
TEMP CYCLE	0335	DS2411	-40 TO 85C	1000	CYS	0	
TEMP CYCLE	0336	DS21354	-55C TO 125C	1000	CYS	0	
TEMP CYCLE	0337	DS1859	-55C TO 125C	1000	CYS	0	

TEMP CYCLE	0340	DS2770	-55C TO 125C	1000	CYS	0
TEMP CYCLE	0341	DS1859	-55C TO 125C	1000	CYS	0
TEMP CYCLE	0341	DS1859	-55C TO 125C	1000	CYS	0
TEMP CYCLE	0344	DS5240	-55C TO 125C	1000	CYS	0
TEMP CYCLE	0345	DS2401	-55C TO 125C	1000	CYS	0
TEMP CYCLE	0346	DS5240	-55C TO 125C	1000	CYS	0
TEMP CYCLE	0347	DS5002	-55C TO 125C	1000	CYS	0
TEMP CYCLE	0347	DS5002	-55C TO 125C	1000	CYS	0
TEMP CYCLE	0348	DS1086L	-55C TO 125C	1000	CYS	0
TEMP CYCLE	0348	DS5002	-55C TO 125C	1000	CYS	0
TEMP CYCLE	0409	DS2129	-55C TO 125C	1000	CYS	0
TEMP CYCLE	0414	DS2503	-55C TO 125C	1000	CYS	0
Total:						1

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0323	DS1100	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0323	DS80C320	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0327	DS2502	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0327	DS2502	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0327	DS2502	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0330	DS2761	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0330	DS2761	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0330	DS2761	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0330	DS2502	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0330	DS2502	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0330	DS2502	85/85, 5.5 VOLTS	1000	HRS	0	
HAST	0331	DS2401	130C, 85%R.H.,5.5V	96	HRS	0	
HAST	0333	DS1087L	130C, 85%R.H.,3.5V	96	HRS	0	
BIASED MOISTURE	0334	DS2411	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0335	DS2411	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0335	DS2411	85/85, 5.5 VOLTS	1000	HRS	0	
HAST	0336	DS21354	130C, 85%R.H.,3.5V	96	HRS	0	
BIASED MOISTURE	0340	DS2770	85/85, 5.5 VOLTS	1000	HRS	0	
BIASED MOISTURE	0344	DS5240	85/85, 5.5 VOLTS	1000	HRS	0	
HAST	0345	DS2401	130C, 85%R.H.,5.5V	96	HRS	0	
BIASED MOISTURE	0346	DS5240	85/85, 5.5 VOLTS	1000	HRS	0	

BIASED MOISTURE	0347	DS5002	85/85, 5.5 VOLTS	1000	HRS	0
BIASED MOISTURE	0347	DS5002	85/85, 5.5 VOLTS	1000	HRS	0
HAST	0348	DS1086L	130C, 85%R.H.,5.5V	96	HRS	0
BIASED MOISTURE	0348	DS5002	85/85, 5.5 VOLTS	1000	HRS	0
BIASED MOISTURE	0403	DS2401	85/85, 5.5 VOLTS	1000	HRS	0
BIASED MOISTURE	0403	DS2401	85/85, 5.5 VOLTS	1000	HRS	0
BIASED MOISTURE	0403	DS2401	85/85, 5.5 VOLTS	1000	HRS	0
HAST	0414	DS2503	130C, 85%R.H.,5.5V	96	HRS	0
Total:						0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0303	DS2118M	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0309	DS2118M	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0323	DS1100	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0323	DS80C320	121C, 2 ATM STEAM, UNBIASED	96	HRS	0	
AUTOCLAVE	0327	DS2502	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0327	DS2502	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0327	DS2502	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0330	DS2761	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0330	DS2761	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0330	DS2761	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0330	DS2502	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0330	DS2502	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0330	DS2502	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0331	DS2401	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0333	DS1087L	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0334	DS2411	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0335	DS2411	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0335	DS2411	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
HAST, NO BIAS	0336	DS21354	130C, 85% R.H.	200	HRS	0	
MOISTURE SOAK	0337	DS1859	85 C/85% R.H.	1000	HRS	0	
AUTOCLAVE	0340	DS2770	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
MOISTURE SOAK	0341	DS1859	85 C/85% R.H.	1000	HRS	0	
MOISTURE SOAK	0341	DS1859	85 C/85% R.H.	1000	HRS	0	
HAST, NO BIAS	0344	DS5240	130C, 85% R.H.	200	HRS	0	
AUTOCLAVE	0345	DS2401	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	
AUTOCLAVE	0346	DS5240	121C, 2 ATM STEAM, UNBIASED	168	HRS	0	

AUTOCLAVE	0348	DS1086L	121C, 2 ATM STEAM, UNBIASED	168	HRS	0
AUTOCLAVE	0403	DS2401	121C, 2 ATM STEAM, UNBIASED	168	HRS	0
AUTOCLAVE	0403	DS2401	121C, 2 ATM STEAM, UNBIASED	168	HRS	0
AUTOCLAVE	0403	DS2401	121C, 2 ATM STEAM, UNBIASED	168	HRS	0
AUTOCLAVE	0409	DS2129	121C, 2 ATM STEAM, UNBIASED	168	HRS	0
AUTOCLAVE	0414	DS2503	121C, 2 ATM STEAM, UNBIASED	168	HRS	0
Total:						0

W/E ENDURANCE AND DATA RET'N

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
WRITE CYCLE STRESS	0327	DS3905	70 C, 5.5 VOLTS	30	KCYS	0	
STORAGE LIFE			150C	1000	HRS	0	
WRITE CYCLE STRESS	0330	DS4301	70 C, 5.5 VOLTS	30	KCYS	0	
STORAGE LIFE			150C	1000	HRS	0	
WRITE CYCLE STRESS	0333	DS1087L	70 C, 3.6 VOLTS	5	KCYS	0	
STORAGE LIFE			150C	1000	HRS	0	
WRITE CYCLE STRESS	0339	DS1859	70 C, 5.5 VOLTS	30	KCYS	1	30017817
STORAGE LIFE			150C	1000	HRS	0	
WRITE CYCLE STRESS	0343	DS2762	85 C, 5.5 VOLTS	30	KCYS	0	
STORAGE LIFE			150C	1000	HRS	0	
WRITE CYCLE STRESS	0348	DS1086L	70 C, 3.6 VOLTS	10	KCYS	0	
STORAGE LIFE			150C	1000	HRS	0	
WRITE CYCLE STRESS	0350	DS1870	70 C, 5.5 VOLTS	30	KCYS	0	
STORAGE LIFE			150C	1000	HRS	0	
WRITE CYCLE STRESS	0401	DS4510	70 C, 5.5 VOLTS	30	KCYS	1	30019498
STORAGE LIFE			150C	1000	HRS	0	
WRITE CYCLE STRESS	0416	DS3902	70 C, 5.5 VOLTS	30	KCYS	0	
STORAGE LIFE			150C	1000	HRS	0	
WRITE CYCLE STRESS	0418	DS1822	55 C, 5.5 VOLTS	30	KCYS	0	
STORAGE LIFE			150C	1000	HRS	0	
Total:						2	

FAILURE RATE:

MTTF (YRS): 478249

FITS: 0.2