

**RELIABILITY MONITOR REPORT  
FOR**

**0.6  $\mu\text{m}$  Process-8"**

**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:

DS1089L	DS1090	DS12885	DS1310	DS1315
DS1338	DS1338-3	DS1338-33	DS1339	DS1340
DS1340C	DS1374	DS1374-3	DS1374-33	DS1374C
DS1375	DS13Q10	DS1482	DS1500	DS1501
DS1553	DS1558	DS1620	DS1621	DS1626
DS1631	DS1643	DS1678	DS1720	DS1721
DS1726	DS1743	DS1748	DS1775	DS1805
DS1820B	DS1822	DS1825	DS1830	DS1845
DS1847	DS1848	DS1849	DS1852	DS1854
DS1855	DS1856	DS1857	DS1858	DS1859
DS1861	DS1862	DS1864	DS1870	DS1881
DS1882	DS18S20	DS1921	DS1921G	DS1961
DS1990	DS2030W	DS2045W	DS2050W	DS2065W
DS2070W	DS2118M	DS2119M	DS2120	DS2125
DS2127	DS21348	DS21352	DS21354	DS21448
DS2148	DS2149	DS2154	DS21552	DS21554
DS21600	DS21602	DS21604	DS21610	DS2198
DS21Q352	DS21Q354	DS21Q50	DS21Q552	DS21Q554
DS21Q58	DS21Q59	DS2401	DS2408	DS2411
DS2421	DS2422	DS2432	DS2470	DS2482-1
DS2482-8	DS2501	DS2502	DS2503	DS2505
DS25LV02	DS2711	DS2712	DS2715	DS2740
DS2740B	DS2751	DS2760	DS2761	DS2762
DS2764	DS2770	DS28EA00	DS3030W	DS3045W
DS3050W	DS3065W	DS3070W	DS30MD	DS3231S
DS3232	DS3234	DS3501	DS3901A	DS3902
DS3903	DS3904	DS3905	DS3906	DS3930
DS4077	DS4077C	DS4301	DS4302	DS4520
DS4550	DS5002	DS5240	DS5250	DS7864B
DS7864D	DS7865	DS80C310	DS80C320	DS80C323
DSQ3301-K01	DSQ3301-K01+T			

The calculated failure rate for devices using this process is:

**FAILURE RATE:                      MTTF (YRS): 325342                      FITS: 0.4**

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 10/1/2005 and 9/30/2006 .

**Device Information:**

Process:                                      0.6 µm Process-8"  
 Interconnect:                              Aluminum / 1% Silicon / 0.5% Copper  
 Gate Oxide Thickness:                      150 Å

**OPERATING LIFE**

DESCRIPTION	DATE	TEST	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
	CODE	VEHICLE					

HIGH TEMP OP LIFE	0518	DS21352	125C, 3.3 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0523	DS2154	125C, 5.0 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0527	DS2401	125C, 6.0 VOLTS	1000	HRS	75	0
HIGH TEMP OP LIFE	0539	DS1820B	125C, 5.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0541	DS2401	125C, 6.0 VOLTS	1000	HRS	80	0
HIGH TEMP OP LIFE	0541	DS21352	125C, 3.3 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0547	DS80C320	125C, 5.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0548	DS1862	125C, 5.5V (PSA) & 3.6V (PSB)	1000	HRS	77	0
HIGH TEMP OP LIFE	0549	DS1855	125C, 5.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0549	DS2422	125C, 5.5V (PSA) & 3.0V (PSB)	1000	HRS	77	0
HIGH TEMP OP LIFE	0551	DS80C320	125C, 5.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0552	DS1881	125C, +5.5V (PSA), +5.5V (PSD)	192	HRS	77	0
HIGH TEMP OP LIFE	0601	DS3234	125C, 5.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0606	DS25LV02	125C, 5.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0607	DS2401	125C, 6.0 VOLTS	1000	HRS	80	0
HIGH TEMP OP LIFE	0609	DS21448	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0609	DS21448	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0611	DS21Q352	125C, 3.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0611	DS21Q352	125C, 3.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0612	DS3901A	125C, 5.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0613	DS80C320	125C, 5.5 VOLTS	1000	HRS	70	0
HIGH TEMP OP LIFE	0614	DS5250	125C, 5.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0614	DS2401	125C, 6.0 VOLTS	1000	HRS	80	0
HIGH TEMP OP LIFE	0614	DS21Q50	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0619	DS1921	125C, 5.25 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0621	DS21Q50	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0621	DS21Q50	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0622	DS21Q50	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0622	DS21Q50	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH VOLTAGE LIFE	0622	DS5002	125C, 5.5 VOLTS	1000	HRS	45	0
HIGH VOLTAGE LIFE	0622	DS5002	125C, 5.5 VOLTS	1000	HRS	45	0
HIGH VOLTAGE LIFE	0622	DS5002	125C, 5.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0623	DS1882	125C, 5.5V (PSA), -7.0V (PSC) & +7.0V (PSD)	1000	HRS	77	0
HIGH TEMP OP LIFE	0625	DS1805	125C, 5.5 VOLTS	1000	HRS	45	0
HIGH VOLTAGE LIFE	0626	DS5250	125C, 5.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0626	DS2762	125C, 5.5 VOLTS	1000	HRS	77	0

HIGH TEMP OP LIFE	0626	DS2740	125C, 5.5 VOLTS	1000 HRS	77	0
HIGH TEMP OP LIFE	0627	DS21354	125C, 3.5 VOLTS	1000 HRS	45	0
HIGH VOLTAGE LIFE	0627	DS5002	125C, 5.5 VOLTS	1000 HRS	45	0
HIGH TEMP OP LIFE	0627	DS7865	125C, 5.5 VOLTS	1000 HRS	77	0
HIGH TEMP OP LIFE	0629	DS2503	125C, 6.0 VOLTS	1000 HRS	77	0
HIGH TEMP OP LIFE	0630	DS1805	125C, 5.5 VOLTS	1000 HRS	77	0
HIGH TEMP OP LIFE	0635	DS2432	125C, 5.25 VOLTS	1000 HRS	77	0
<b>Total:</b>						<b>0</b>

---

### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0551	DS80C320	150C	1000 HRS	77	0	
STORAGE LIFE	0601	DS3234	125C	1000 HRS	77	0	
STORAGE LIFE	0606	DS25LV02	150C	1000 HRS	77	0	
STORAGE LIFE	0607	DS2401	150C	1000 HRS	77	0	
STORAGE LIFE	0609	DS21448	150C	1000 HRS	76	0	
STORAGE LIFE	0609	DS21448	150C	1000 HRS	76	0	
STORAGE LIFE	0611	DS21Q352	150C	1000 HRS	77	0	
STORAGE LIFE	0611	DS21Q352	150C	1000 HRS	77	0	
STORAGE LIFE	0613	DS80C320	150C	1000 HRS	77	0	
STORAGE LIFE	0614	DS2401	150C	1000 HRS	77	0	
STORAGE LIFE	0614	DS21Q50	150C	1000 HRS	77	0	
STORAGE LIFE	0621	DS1955B5	85 C	1000 HRS	77	0	
STORAGE LIFE	0621	DS21Q50	150C	1000 HRS	77	0	
STORAGE LIFE	0621	DS21Q50	150C	1000 HRS	77	0	
STORAGE LIFE	0622	DS21Q50	150C	1000 HRS	77	0	
STORAGE LIFE	0622	DS21Q50	150C	1000 HRS	77	0	
STORAGE LIFE	0622	DS5002	150C	1000 HRS	77	0	
STORAGE LIFE	0622	DS5002	150C	1000 HRS	77	0	
STORAGE LIFE	0622	DS5002	150C	1000 HRS	77	0	
STORAGE LIFE	0625	DS1805	150C	1000 HRS	77	0	
STORAGE LIFE	0626	DS5250	150C	1000 HRS	77	0	
STORAGE LIFE	0626	DS2740	150C	1000 HRS	77	0	
STORAGE LIFE	0627	DS21354	150C	1000 HRS	77	0	
STORAGE LIFE	0627	DS5002	150C	1000 HRS	77	0	
STORAGE LIFE	0629	DS2503	150C	1000 HRS	77	0	
<b>Total:</b>						<b>0</b>	

---

**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0518	DS21352	-55C TO 125C	1000 CYS	80	0	
TEMP CYCLE	0523	DS2154	-55C TO 125C	1000 CYS	80	0	
TEMP CYCLE	0527	DS2401	-55C TO 125C	1000 CYS	45	0	
TEMP CYCLE	0541	DS2401	-55C TO 125C	1000 CYS	45	0	
TEMP CYCLE	0541	DS21352	-55C TO 125C	1000 CYS	80	0	
TEMP CYCLE	0547	DS80C320	-55C TO 125C	1000 CYS	45	0	
TEMP CYCLE	0551	DS80C320	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0601	DS3234	-40 TO 85C	1000 CYS	77	0	
TEMP CYCLE	0607	DS2401	-55C TO 125C	1000 CYS	45	0	
TEMP CYCLE	0609	DS21448	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0609	DS21448	-55C TO 125C	1000 CYS	76	0	
TEMP CYCLE	0611	DS21Q352	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0611	DS21Q352	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0613	DS80C320	-55C TO 125C	1000 CYS	45	0	
TEMP CYCLE	0614	DS5250	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0614	DS2401	-55C TO 125C	1000 CYS	45	0	
TEMP CYCLE	0614	DS21Q50	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0621	DS1955B5	-40 TO 85C	500 CYS	77	0	
TEMP CYCLE	0621	DS21Q50	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0621	DS21Q50	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0622	DS21Q50	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0622	DS21Q50	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0622	DS5002	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0622	DS5002	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0622	DS5002	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0625	DS1805	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0626	DS5250	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0626	DS2740	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0627	DS21354	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0627	DS5002	-55C TO 125C	1000 CYS	77	0	
<b>Total:</b>						<b>0</b>	

---

**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST	0527	DS2401	130C, 85%R.H.,5.5V	96 HRS	70	0	

HAST	0541	DS2401	130C, 85%R.H.,5.5V	96	HRS	77	0		
BIASED MOISTURE	0547	DS80C320	85/85, 5.5 VOLTS	1000	HRS	45	1	30047208	
HAST	0551	DS80C320	130C, 85%R.H.,5.5V	96	HRS	44	0		
BIASED MOISTURE	0601	DS3234	85/85, 5.5 VOLTS	1000	HRS	45	0		
HAST	0607	DS2401	130C, 85%R.H.,5.5V	96	HRS	77	0		
BIASED MOISTURE	0609	DS21448	85/85, 3.5 VOLTS	1000	HRS	45	0		
BIASED MOISTURE	0609	DS21448	85/85, 3.5 VOLTS	1000	HRS	45	0		
BIASED MOISTURE	0611	DS21Q352	85/85, 3.5 VOLTS	1000	HRS	45	0		
BIASED MOISTURE	0611	DS21Q352	85/85, 3.5 VOLTS	1000	HRS	45	0		
BIASED MOISTURE	0613	DS80C320	85/85, 5.5 VOLTS	1000	HRS	45	0		
HAST	0614	DS2401	130C, 85%R.H.,5.5V	96	HRS	77	0		
BIASED MOISTURE	0622	DS5002	85/85, 5.5 VOLTS	1000	HRS	45	0		
BIASED MOISTURE	0622	DS5002	85/85, 5.5 VOLTS	1000	HRS	45	0		
BIASED MOISTURE	0622	DS5002	85/85, 5.5 VOLTS	1000	HRS	454	0		
BIASED MOISTURE	0625	DS1805	85/85, 5.5 VOLTS	1000	HRS	45	0		
BIASED MOISTURE	0626	DS5250	85/85, 5.5 VOLTS	1000	HRS	45	0		
HAST	0626	DS2740	130C, 85%R.H.,5.5V	100	HRS	77	0		
HAST	0627	DS21354	130C, 85%R.H.,3.5V	96	HRS	45	0		
BIASED MOISTURE	0627	DS5002	85/85, 5.5 VOLTS	1000	HRS	45	0		
<b>Total:</b>							<b>1</b>		

---

### UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE	TEST	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
	CODE	VEHICLE					
HAST, NO BIAS	0518	DS21352	130C, 85% R.H.	100	HRS	77	0
HAST, NO BIAS	0523	DS2154	130C, 85% R.H.	100	HRS	77	0
AUTOCLAVE	0527	DS2401	121C, 2 ATM STEAM, UNBIASED	168	HRS	45	0
AUTOCLAVE	0541	DS2401	121C, 2 ATM STEAM, UNBIASED	168	HRS	45	0
HAST, NO BIAS	0541	DS21352	130C, 85% R.H.	100	HRS	79	0
AUTOCLAVE	0547	DS80C320	121C, 2 ATM STEAM, UNBIASED	168	HRS	45	0
HAST, NO BIAS	0551	DS80C320	130C, 85% R.H.	200	HRS	77	0
AUTOCLAVE	0601	DS3234	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0607	DS2401	121C, 2 ATM STEAM, UNBIASED	168	HRS	45	0
HAST, NO BIAS	0609	DS21448	130C, 85% R.H.	200	HRS	76	0
HAST, NO BIAS	0609	DS21448	130C, 85% R.H.	200	HRS	76	0
AUTOCLAVE	0613	DS80C320	121C, 2 ATM STEAM, UNBIASED	168	HRS	45	0
AUTOCLAVE	0614	DS5250	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0614	DS2401	121C, 2 ATM STEAM, UNBIASED	168	HRS	45	0
HAST, NO BIAS	0614	DS21Q50	130C, 85% R.H.	100	HRS	75	0

MOISTURE SOAK	0621	DS1955B5	60C/90% R.H.	1000	HRS	77	0
HAST, NO BIAS	0621	DS21Q50	130C, 85% R.H.	200	HRS	77	0
HAST, NO BIAS	0621	DS21Q50	130C, 85% R.H.	200	HRS	77	0
HAST, NO BIAS	0622	DS21Q50	130C, 85% R.H.	200	HRS	77	0
HAST, NO BIAS	0622	DS21Q50	130C, 85% R.H.	200	HRS	77	0
AUTOCLAVE	0622	DS5002	121C, 2 ATM STEAM, UNBIASED	168	HRS	75	0
AUTOCLAVE	0622	DS5002	121C, 2 ATM STEAM, UNBIASED	168	HRS	75	0
AUTOCLAVE	0622	DS5002	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0625	DS1805	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0626	DS5250	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0626	DS2740	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
HAST, NO BIAS	0627	DS21354	130C, 85% R.H.	200	HRS	74	0
AUTOCLAVE	0627	DS5002	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
						<b>Total:</b>	<b>0</b>

---

#### W/E ENDURANCE AND DATA RET'N

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
WRITE CYCLE STRESS (KCYS)	0539	DS1820B	55 C, 5.5 VOLTS	30	KCYS	77	0
STORAGE LIFE			150C	500	HRS	77	0
WRITE CYCLE STRESS (KCYS)	0548	DS1862	70 C, 5.5V (PSA) & 3.6V (PSB)	50	KCYS	77	0
STORAGE LIFE			150C	1000	HRS	77	0
WRITE CYCLE STRESS (KCYS)	0549	DS1855	85 C, 5.5 VOLTS	30	KCYS	77	0
STORAGE LIFE			150C	1000	HRS	77	0
WRITE CYCLE STRESS (KCYS)	0552	DS1881	70C, +5.5V (PSA), +5.5V (PSD)	30	KCYS	77	0
STORAGE LIFE			150C	1000	HRS	77	0
WRITE CYCLE STRESS (KCYS)	0612	DS3901A	70 C, 5.5 VOLTS	30	KCYS	77	0
STORAGE LIFE			150C	1000	HRS	77	0
WRITE CYCLE STRESS (KCYS)	0623	DS1882	70C, 5.5V (PSA), -7.0V (PSC) & +7.0V (PSD)	30	KCYS	77	0
STORAGE LIFE			150C	1000	HRS	77	0
WRITE CYCLE STRESS (KCYS)	0626	DS2762	85 C, 5.5 VOLTS	30	KCYS	77	0
STORAGE LIFE			150C	1000	HRS	75	0
WRITE CYCLE STRESS (KCYS)	0635	DS2432	25 C, 5.0 VOLTS	50	KCYS	77	0
STORAGE LIFE			150C	1000	HRS	77	0
						<b>Total:</b>	<b>0</b>

**FAILURE RATE:**

**MTTF (YRS): 325342**

**FITS: 0.4**