

**RELIABILITY MONITOR REPORT
FOR**

DAL 0.35 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 specific products in this process monitor are:

DS1863	DS2431	DS2704R	DS2756	DS2782
DS2784	DS2786	DS28DG02	DS3605	DS3640
DS3641	DS3650	DS3882	DS3988	DS3994
DS4026	DS75LX			

The calculated failure rate for devices using this process is:

FAILURE RATE: MTTF (YRS): 138147 FITS: 0.8

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

Cf: 60% Ea: 0.7 Tu: 25 °C

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 10/1/2006 and 9/30/2007 .

Device Information:

Process: DAL 0.35µm Process
Interconnect: Aluminum / 1% Silicon / 0.5% Copper
Gate Oxide Thickness: 120 Å

Device Information:

Process: DAL 0.35µm Process
Interconnect: Aluminum / 1% Silicon / 0.5% Copper
Gate Oxide Thickness: 131 Å

DATA RETENTION

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0632	DS3640	150C	1000 HRS	77	0	
STORAGE LIFE	0651	DS3641	150C	1000 HRS	77	0	
STORAGE LIFE	0711	DS3650	150C	1000 HRS	77	0	
STORAGE LIFE	0715	DS3605	150C	1000 HRS	77	0	
				Total:		0	

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0626	DS1863	125C, 5.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0632	DS3640	125C, 3.6V (PSA) & 3.9V (PSB)	1000 HRS	45	0	
HIGH TEMP OP LIFE	0637	DS2431	125C, 5.25 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0640	DS2756	125C, 5.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0642	DS3988	125C, 5.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0642	DS2786	125C, 5.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0651	DS3641	125C, 3.6 VOLTS	1000 HRS	45	0	

HIGH TEMP OP LIFE	0702	DS2431	125C, 5.25 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0705	DS28DG02	125C, 3.6 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0708	DS2431	125C, 5.25 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0711	DS3650	125C, 3.0V (PSB) & 3.6V (PSA)	1000	HRS	45	0
HIGH TEMP OP LIFE	0713	DS3994	125C, 5.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0713	DS75LX	125C, 3.7 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0714	DS2431	125C, 5.25 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0714	DS2784	125C, 5.5 V (PSA) & 15.0 V (PSB)	1000	HRS	77	0
HIGH TEMP OP LIFE	0715	DS3605	125C, 3.6 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0717	DS2704R	125C, 5.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0723	DS2431	150C, 5.25 VOLTS	816	HRS	45	0
Total:							0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0642	DS2431	150C	1000	HRS	34	0
STORAGE LIFE	0649	DS4026	125C	1000	HRS	77	0
STORAGE LIFE	0649	DS4026	125C	1000	HRS	77	0
STORAGE LIFE	0649	DS4026	85 C	1000	HRS	77	0
STORAGE LIFE	0649	DS4026	125C	1000	HRS	77	0
STORAGE LIFE	0711	DS3882	150C	500	HRS	77	0
STORAGE LIFE	0715	DS2782	150C	1000	HRS	77	0
STORAGE LIFE	0723	DS2431	150C	2000	HRS	77	0
STORAGE LIFE	0723	DS2431	175C	500	HRS	77	0
STORAGE LIFE	0723	DS3882	150C	500	HRS	68	0
STORAGE LIFE	0723	DS3882	150C	500	HRS	77	0
Total:							0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0637	DS2431	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE, SLOW	0642	DS2431	-40C TO +125C	1000	CYS	80	0
TEMP CYCLE, SLOW	0642	DS2431	-40C TO +125C	1000	CYS	80	0
TEMP CYCLE	0649	DS4026	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0649	DS4026	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0649	DS4026	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0702	DS2431	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0708	DS2431	-55C TO 125C	1000	CYS	77	0

BOND STRENGTH	0711	DS3882	MIL-STD-883-2011 : COND D	60	WIRES	5	0
TEMP CYCLE			-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0714	DS2431	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0715	DS2782	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0723	DS3882	-55C TO 125C	1000	CYS	77	0
BOND STRENGTH			MIL-STD-883-2011 : COND D	60	WIRES	5	0
TEMP CYCLE	0723	DS2431	-65C TO 150C	1000	CYS	77	0
BOND STRENGTH			MIL-STD-883-2011 : COND D	30	WIRES	15	0
TEMP CYCLE	0723	DS3882	-55C TO 125C	1000	CYS	77	0
BOND STRENGTH			MIL-STD-883-2011 : COND D	60	WIRES	5	0
Total:						0	0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST	0637	DS2431	130C, 85%R.H.,5.5V	96	HRS	77	0
BIASED MOISTURE	0642	DS2431	85/85, 5.5 VOLTS	1000	HRS	80	0
BIASED MOISTURE	0642	DS2431	85/85, 5.5 VOLTS	1000	HRS	80	0
BIASED MOISTURE	0649	DS4026	85/85, 3.5 VOLTS	836	HRS	77	0
BIASED MOISTURE	0649	DS4026	85/85, 3.5 VOLTS	836	HRS	77	0
BIASED MOISTURE	0649	DS4026	85/85, 3.5 VOLTS	836	HRS	77	0
HAST	0708	DS2431	130C, 85%R.H.,5.5V	96	HRS	77	0
BIASED MOISTURE	0711	DS3882	85/85, 5.5 VOLTS	1000	HRS	77	0
HAST	0714	DS2431	130C, 85%R.H.,5.5V	96	HRS	77	0
BIASED MOISTURE	0715	DS2782	85/85, 5.5 VOLTS	1000	HRS	77	0
HAST	0723	DS2431	130C, 85%R.H.,5.5V	192	HRS	76	0
BIASED MOISTURE	0723	DS3882	85/85, 5.5 VOLTS	1000	HRS	77	0
BIASED MOISTURE	0723	DS3882	85/85, 5.5 VOLTS	1000	HRS	77	0
Total:						0	0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0640	DS2431	121C, 2 ATM STEAM, UNBIASED	168	HRS	231	0
AUTOCLAVE	0649	DS4026	121C, 2 ATM STEAM, UNBIASED	168	HRS	76	0
AUTOCLAVE	0649	DS4026	121C, 2 ATM STEAM, UNBIASED	168	HRS	76	0
AUTOCLAVE	0649	DS4026	121C, 2 ATM STEAM, UNBIASED	168	HRS	74	0
AUTOCLAVE	0711	DS3882	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0723	DS2431	121C, 2 ATM STEAM, UNBIASED	336	HRS	77	0
AUTOCLAVE	0723	DS3882	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0723	DS3882	121C, 2 ATM STEAM, UNBIASED	168	HRS	75	0
Total:						0	0

W/E ENDURANCE AND DATA RET'N

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0626	DS1863	150C	1000 HRS	77	0	
WRITE CYCLE STRESS (KCYS)			85 C, 5.5 VOLTS	50 KCYS	77	0	
STORAGE LIFE	0637	DS2431	150C	1000 HRS	76	0	
WRITE CYCLE STRESS (KCYS)			85 C, 5.25 VOLTS	50 KCYS	77	0	
STORAGE LIFE	0637	DS2431	150C	1000 HRS	77	0	
WRITE CYCLE STRESS (KCYS)			25 C, 5.25 VOLTS	200 KCYS	77	0	
STORAGE LIFE	0640	DS2756	150C	1000 HRS	77	0	
WRITE CYCLE STRESS (KCYS)			70 C, 5.5 VOLTS	50 KCYS	77	0	
WRITE CYCLE STRESS (KCYS)	0642	DS3988	70 C, 5.5 VOLTS	30 KCYS	77	0	
STORAGE LIFE			150C	1000 HRS	77	0	
WRITE CYCLE STRESS (KCYS)	0642	DS2786	50 C, 5.5 VOLTS (PSA), 15.0 VOLTS (PSB)	10 KCYS	77	0	
STORAGE LIFE			150C	1000 HRS	77	0	
WRITE CYCLE STRESS (KCYS)	0642	DS2786	50 C, 5.5 VOLTS (PSA), 15.0 VOLTS (PSB)	1 KCYS	77	0	
STORAGE LIFE			150C	1000 HRS	77	0	
STORAGE LIFE	0642	DS2786	150C	1000 HRS	77	0	
WRITE CYCLE STRESS (CYS)			50 C, 5.5 VOLTS (PSA), 15.0 VOLTS (PSB)	100 CYS	77	0	
STORAGE LIFE	0705	DS28DG02	150C	1000 HRS	77	0	
WRITE CYCLE STRESS (KCYS)			25 C, 3.6 VOLTS	200 KCYS	77	0	
STORAGE LIFE	0708	DS2431	150C	1000 HRS	77	0	
WRITE CYCLE STRESS (KCYS)			85 C, 5.25 VOLTS	50 KCYS	77	0	
STORAGE LIFE	0708	DS2431	150C	1000 HRS	77	0	
WRITE CYCLE STRESS (KCYS)			25 C, 5.25 VOLTS	200 KCYS	77	0	
STORAGE LIFE	0711	DS3882	150C	500 HRS	77	0	
WRITE CYCLE STRESS (KCYS)			85 C, 5.25 VOLTS	30 KCYS	77	0	
WRITE CYCLE STRESS (KCYS)	0713	DS3994	70 C, 5.5 VOLTS	30 KCYS	77	0	
STORAGE LIFE			150C	1000 HRS	77	0	
STORAGE LIFE	0714	DS2431	150C	1000 HRS	76	0	
WRITE CYCLE STRESS (KCYS)			85 C, 5.25 VOLTS	50 KCYS	77	0	
WRITE CYCLE STRESS (KCYS)	0714	DS2431	25 C, 5.25 VOLTS	200 KCYS	77	0	
STORAGE LIFE			150C	1000 HRS	77	0	
WRITE CYCLE STRESS (KCYS)	0714	DS2784	50 C, 5.5 V (PSA) & 15.0 V (PSB)	50 KCYS	77	0	
STORAGE LIFE			150C	1000 HRS	77	0	

STORAGE LIFE	0722	DS2431	150C	2000	HRS	77	0
WRITE CYCLE STRESS (KCYS)			85 C, 5.25 VOLTS	50	KCYS	77	0
WRITE CYCLE STRESS (KCYS)	0722	DS2431	125C, 5.25 VOLTS	1	KCYS	77	0
STORAGE LIFE			150C	2000	HRS	76	0
STORAGE LIFE	0723	DS3882	150C	500	HRS	77	0
WRITE CYCLE STRESS (KCYS)			85 C, 5.25 VOLTS	30	KCYS	77	0
WRITE CYCLE STRESS (KCYS)	0723	DS3882	85 C, 5.25 VOLTS	30	KCYS	77	0
STORAGE LIFE			150C	500	HRS	77	0
Total:							0

W/E ENDURANCE AND OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0711	DS3882	125C, 5.25 VOLTS	432	HRS	73	0
WRITE CYCLE STRESS (KCYS)			85 C, 5.25 VOLTS	30	KCYS	77	0
HIGH TEMP OP LIFE	0722	DS2431	150C, 5.25 VOLTS	816	HRS	76	0
WRITE CYCLE STRESS (KCYS)			85 C, 5.25 VOLTS	50	KCYS	77	0
HIGH TEMP OP LIFE	0723	DS3882	125C, 5.25 VOLTS	408	HRS	75	0
WRITE CYCLE STRESS (KCYS)			85 C, 5.25 VOLTS	30	KCYS	77	0
HIGH TEMP OP LIFE	0725	DS3882	125C, 5.25 VOLTS	408	HRS	76	0
WRITE CYCLE STRESS (KCYS)			85 C, 5.25 VOLTS	30	KCYS	77	0
Total:							0

FAILURE RATE:

MTTF (YRS): 138147

FITS: 0.8