



1/25/2008

**RELIABILITY MONITOR REPORT  
FOR**

**DAL 0.6 $\mu$ m Silicon Gate CMOS**

**MAXIM Integrated Products**

**120 San Gabriel Dr.  
Sunnyvale, CA 94086**

**This Report was prepared by  
Maxim 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:

DS1086H	DS1124	DS1311	DS1372	DS1643
DS1682	DS1722	DS1744	DS1747	DS1859
DS1921G	DS1922L	DS1955B5	DS1990	DS21348
DS21448	DS2154	DS2432	DS2502	DS29020
DS29022	DS3232	DS32B35	DS32C35	DS5001
DS5240	DS9490	DSQ33G4		

The calculated failure rate for devices using this process is:

**FAILURE RATE:**                      **MTTF (YRS): 164247**                      **FITS: 0.7**

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

**Cf: 60%**                      **Ea: 0.7**                      **Tu: 25 °C**

The reliability data follows and in this section is the detailed reliability data by stress. The reliability data section includes the latest data available. This report covers data between and

**Process Information:**

Process Description:                      DAL 0.6µm Silicon Gate CMOS

**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0626	DS2502	125C, 6.0 VOLTS	1000 HRS	77	0	
HIGH VOLTAGE LIFE	0636	DS32B35	125C, 3.6 VOLTS	168 HRS	100	0	
HIGH VOLTAGE LIFE	0636	DS32B35	125C, 3.6 VOLTS	168 HRS	100	0	
HIGH TEMP OP LIFE	0636	DS32C35	125C, 3.6 VOLTS	1000 HRS	100	0	
HIGH VOLTAGE LIFE	0636	DS32B35	125C, 3.6 VOLTS	168 HRS	100	0	
HIGH VOLTAGE LIFE	0636	DS32C35	125C, 3.6 VOLTS	168 HRS	100	0	
HIGH VOLTAGE LIFE	0636	DS32C35	125C, 3.6 VOLTS	168 HRS	100	0	
HIGH VOLTAGE LIFE	0636	DS32C35	125C, 3.6 VOLTS	168 HRS	100	0	
HIGH TEMP OP LIFE	0641	DS21348	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0644	DS2154	125C, 5.25 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0645	DS21448	125C, 3.3 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0651	DS1086H	125C, 5.25 VOLTS	1000 HRS	45	0	
HIGH VOLTAGE LIFE	0651	DS5240	125C, 5.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0652	DS1086H	125C, 5.25 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0701	DS1086H	125C, 5.25 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0705	DS5001	125C, 5.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0710	DS21448	125C, 3.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0710	DS1722	125C, 5.5 VOLTS	1000 HRS	77	0	

HIGH TEMP OP LIFE	0714	DS1682	125C, 5.5 VOLTS	1000 HRS	77	0
HIGH TEMP REVERSE BIAS	0717	DS2432	125C, 5.25 VOLTS	1000 HRS	48	0
HIGH TEMP REVERSE BIAS	0717	DS2432	125C, 5.25 VOLTS	1000 HRS	48	0
HIGH TEMP REVERSE BIAS	0717	DS2432	125C, 5.25 VOLTS	1000 HRS	48	0
HIGH TEMP OP LIFE	0718	DS1124	125C, 5.25 VOLTS	1000 HRS	45	0
HIGH TEMP OP LIFE	0720	DS1859	125C, 5.5 VOLTS	1000 HRS	77	0
HIGH TEMP OP LIFE	0720	DS3232	125C, 5.5 VOLTS	1000 HRS	45	0
HIGH TEMP OP LIFE	0722	DS1311	125C, 5.5 VOLTS	1000 HRS	77	0
HIGH TEMP OP LIFE	0723	DS1372	125C, 5.5 VOLTS	1000 HRS	45	0
<b>Total:</b>						<b>0</b>

---

### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0626	DS2502	150C	1000 HRS	77	0	
STORAGE LIFE	0636	DS32C35	125C	1000 HRS	77	0	
STORAGE LIFE	0641	DS21348	150C	1000 HRS	77	0	
STORAGE LIFE	0645	DS21448	150C	1000 HRS	77	0	
STORAGE LIFE	0651	DS1086H	150C	1000 HRS	77	0	
STORAGE LIFE	0651	DS5240	150C	1000 HRS	77	0	
STORAGE LIFE	0652	DS1086H	150C	1000 HRS	77	0	
STORAGE LIFE	0701	DS1086H	150C	1000 HRS	76	0	
STORAGE LIFE	0703	DS1922L	85 C	500 HRS	77	0	
STORAGE LIFE	0709	DS1990	70 C	1000 HRS	77	0	
STORAGE LIFE	0710	DS21448	150C	1000 HRS	77	0	
STORAGE LIFE	0710	DS29022	70 C	336 HRS	77	0	
STORAGE LIFE	0710	DS29022	70 C	336 HRS	77	0	
STORAGE LIFE	0710	DS29022	70 C	336 HRS	77	0	
STORAGE LIFE	0714	DS29020	70 C	336 HRS	77	0	
STORAGE LIFE	0714	DS1643	85 C	1000 HRS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		76	0	
STORAGE LIFE	0715	DS1747	85 C	1000 HRS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		77	0	
VISUAL INSPECTION	0715	DS1744	WHISKERS < 50uM		57	0	
STORAGE LIFE			85 C	1000 HRS	77	0	
STORAGE LIFE	0716	DS1990	85 C	1000 HRS	77	0	
STORAGE LIFE	0716	DSQ33G4	85 C	1000 HRS	77	0	
STORAGE LIFE	0716	DS1921G	85 C	1000 HRS	77	0	

STORAGE LIFE	0717	DS9490	85 C	1000 HRS	77	0
STORAGE LIFE	0717	DS2432	150C	1000 HRS	77	0
STORAGE LIFE	0717	DS2432	150C	1000 HRS	77	0
STORAGE LIFE	0717	DS2432	150C	1000 HRS	77	0
VISUAL INSPECTION	0718	DS1744	WHISKERS < 50uM		77	0
STORAGE LIFE			85 C	1000 HRS	77	0
VISUAL INSPECTION	0718	DS1744	WHISKERS < 50uM		77	0
STORAGE LIFE			85 C	1000 HRS	77	0
STORAGE LIFE	0734	DS1955B5	85 C	1000 HRS	77	0
STORAGE LIFE	0734	DS1955B5	85 C	1000 HRS	77	0
STORAGE LIFE	0734	DS1955B5	85 C	1000 HRS	77	0
STORAGE LIFE	0739	DS1955B5	85 C	1000 HRS	77	0
STORAGE LIFE	0739	DS1955B5	85 C	1000 HRS	77	0
STORAGE LIFE	0739	DS1955B5	85 C	1000 HRS	77	0
<b>Total:</b>					<b>0</b>	<b>0</b>

---

#### TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0626	DS2502	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0636	DS32C35	-40 TO 85C	1000 CYS	77	0	
TEMP CYCLE	0641	DS21348	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0645	DS21448	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0651	DS1086H	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0651	DS5240	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0652	DS1086H	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0701	DS1086H	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0703	DS1922L	-40 TO 85C	1000 CYS	77	0	
TEMP CYCLE	0709	DS1990	-40 TO 85C	500 CYS	77	0	
TEMP CYCLE	0710	DS21448	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0710	DS29022	0C TO 70C	300 CYS	77	0	
TEMP CYCLE	0710	DS29022	0C TO 70C	300 CYS	77	0	
TEMP CYCLE	0710	DS29022	0C TO 70C	300 CYS	77	0	
TEMP CYCLE	0714	DS29020	-40 TO 85C	500 CYS	77	0	
TEMP CYCLE	0714	DS1643	-40 TO 85C	1000 CYS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		77	0	
VISUAL INSPECTION	0715	DS1747	WHISKERS < 50uM		77		
TEMP CYCLE			-40 TO 85C	1000 CYS	77	0	
TEMP CYCLE	0715	DS1744	-40 TO 85C	1000 CYS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		77	0	



BIASED MOISTURE	0715	DS1747	85/85, 3.5 VOLTS	1000	HRS	77	0
HAST	0717	DS2432	130C, 85%R.H.,5.5V	96	HRS	45	0
HAST	0717	DS2432	130C, 85%R.H.,5.5V	96	HRS	45	0
HAST	0717	DS2432	130C, 85%R.H.,5.5V	96	HRS	45	0
BIASED MOISTURE	0720	DS1859	85/85, 5.5 VOLTS	1000	HRS	76	0
<b>Total:</b>							<b>0</b>

---

### UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST, NO BIAS	0636	DS32C35	130C, 85% R.H.	96	HRS	77	0
HAST, NO BIAS	0645	DS21448	130C, 85% R.H.	200	HRS	77	0
AUTOCLAVE	0651	DS1086H	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0651	DS5240	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0652	DS1086H	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0701	DS1086H	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
MOISTURE SOAK	0703	DS1922L	85 C/85% R.H.	500	HRS	77	0
MOISTURE SOAK	0709	DS1990	60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0714	DS29020	85 C/85% R.H.	274	HRS	77	0
VISUAL INSPECTION	0715	DS1744	WHISKERS < 50uM			77	0
MOISTURE SOAK			60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0716	DS1990	85 C/85% R.H.	959	HRS	77	0
MOISTURE SOAK	0716	DSQ33G4	60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0716	DS1921G	85 C/85% R.H.	1000	HRS	77	0
MOISTURE SOAK	0717	DS9490	60C/90% R.H.	1000	HRS	77	0
VISUAL INSPECTION	0718	DS1744	WHISKERS < 50uM			77	0
MOISTURE SOAK			60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0718	DS1744	60C/90% R.H.	1000	HRS	77	0
VISUAL INSPECTION			WHISKERS < 50uM			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
STORAGE LIFE	0714	DS1682	150C	1000	HRS	77	0
WRITE CYCLE STRESS (KCYS)			85 C, 5.5 VOLTS	30	KCYS	77	0
STORAGE LIFE	0718	DS1124	150C	1000	HRS	77	0
WRITE CYCLE STRESS (KCYS)	0720	DS1859	70 C, 5.5 VOLTS	30	KCYS	77	0
STORAGE LIFE			150C	1000	HRS	73	0
<b>Total:</b>							<b>0</b>

**FAILURE RATE:**

**MTTF (YRS): 164247**

**FITS: 0.7**