



4/11/2009

RELIABILITY MONITOR REPORT  
FOR

**DAL 0.35 $\mu$ 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:

DS1080L	DS1091L	DS1099	DS1181L	DS2432
DS2745	DS2780	DS2782	DS2786	DS2788
DS3655	DS4424	DS7505	MAX3816ACUE	MAX4760EWX+
MAX5477HETE	MAX7456EUI+			

The calculated failure rate for devices using this process is:

**FAILURE RATE:**                      **MTTF (YRS): 122289**                      **FITS: 0.9**

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 10/1/2007 and 9/30/2008 .

**Process Information:**

Process Description:                      DAL 0.35µm Silicon Gate CMOS

**DATA RETENTION**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
STORAGE LIFE	0747	DS3655	150C	1000 HRS	77	0	QS709624AB-NPI
				<b>Total:</b>		<b>0</b>	

**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
HIGH TEMP OP LIFE		MAX4760EWX+T	135C	1000 HRS	45	0	DIB2DA044Q2
HIGH TEMP OP LIFE	0719	DS1091L	125C, 3.6 VOLTS	1000 HRS	45	0	QJ721459ADA
HIGH TEMP OP LIFE	0719	DS1091L	125C, 3.6 VOLTS	1000 HRS	32	0	QJ721459ADA
HIGH TEMP OP LIFE	0723	DS2786	125C, 5.5 VOLTS	1000 HRS	45	0	QJ801005BA
HIGH TEMP OP LIFE	0730	MAX7456EUI+	135C	192 HRS	55	0	DXI0EQ002AQ
HIGH TEMP OP LIFE	0732	DS1099	125C, 5.5 VOLTS	408 HRS	45	0	IJ611604AF
HIGH TEMP OP LIFE	0732	DS1099	125C, 5.5 VOLTS	408 HRS	32	0	IJ611604AF
HIGH TEMP OP LIFE	0732	DS1080L	125C, 3.6 VOLTS	1000 HRS	45	0	IJ549628BE
HIGH TEMP OP LIFE	0736	DS1181L	125C, 3.6 VOLTS	1000 HRS	45	0	QK805647BBA-NPI
HIGH TEMP OP LIFE	0736	DS2788	125C, 5.5 VOLTS	1000 HRS	77	0	QK718177CC-NPI
HIGH TEMP OP LIFE	0744	DS2745	125C, 5.5 VOLTS	1000 HRS	77	0	QD801003ABA

HIGH TEMP OP LIFE	0745	DS1099	125C, 5.5 VOLTS	240	HRS	45	0	VD736413AC
HIGH TEMP OP LIFE	0746	DS7505	125C, 3.7 VOLTS	1000	HRS	77	0	QJ805646BC-NPI
HIGH TEMP OP LIFE	0747	DS3655	125C, 3.6V (PSA) & 3.0V (PSB)	1000	HRS	45	0	QS709624AB-NPI
HIGH TEMP OP LIFE	0749	DS2782	125C, 5.5 VOLTS	1000	HRS	75	0	QK753345AE
HIGH TEMP OP LIFE	0804	DS2780	125C, 5.5 VOLTS	1000	HRS	77	0	QK752167ADA
HIGH TEMP OP LIFE	0804	DS4424	125C, 5.5 VOLTS	1000	HRS	45	0	QJ804645AC-NPI
HIGH TEMP OP LIFE	0809	MAX3816ACUE+	135C	192	HRS	48	0	DK0AFA001DQ
HIGH TEMP OP LIFE	0836	DS2432	125C, 5.25 VOLTS	1000	HRS	45	0	QH740152ADA
HIGH TEMP OP LIFE	0836	DS2432	125C, 5.25 VOLTS	1000	HRS	45	0	QH740152AB
HIGH TEMP OP LIFE	0836	DS2432	125C, 5.25 VOLTS	1000	HRS	45	0	QH740152AC
HIGH TEMP OP LIFE	N/A	MAX4760EWX+T	135C	500	HRS	45	0	DIB2DA044Q1
HIGH TEMP OP LIFE	N/A	MAX4760EWX+T	135C	500	HRS	45	0	DIB2DAO44Q2
<b>Total:</b>							<b>0</b>	

#### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
STORAGE LIFE	0732	DS1099	150C	1000 HRS	77	0	IJ611604AF
STORAGE LIFE	0732	DS1080L	150C	1000 HRS	55	0	IJ549628BE
STORAGE LIFE	0836	DS2432	150C	1000 HRS	77	0	QH740152ADA
STORAGE LIFE	0836	DS2432	150C	1000 HRS	77	0	QH740152AB
STORAGE LIFE	0836	DS2432	150C	1000 HRS	76	0	QH740152AC
STORAGE LIFE	N/A	MAX4760EWX+T	150C	1000 HRS	77	0	DIB2DA044Q1
STORAGE LIFE	N/A	MAX4760EWX+T	150C	800 HRS	77	0	DIB2DA044Q2
<b>Total:</b>							<b>0</b>

#### TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
TEMP CYCLE, 5' RAMP, 10' DWELL	0629	MAX5477HETE	-65C TO 150C	1500 CYS	76	0	DRI0CA006DA
TEMP CYCLE, 5' RAMP, 10' DWELL	0629	MAX5477HETE	-65C TO 150C	2000 CYS	76	0	DR10CA006DA
TEMP CYCLE, 5' RAMP, 10' DWELL	0629	MAX5477HETE	-65C TO 150C	2500 CYS	76	0	DR10CA006DA
TEMP CYCLE, 5' RAMP, 10' DWELL	0629	MAX5477HETE	-65C TO 150C	1500 CYS	77	0	DRI0CA006DB
TEMP CYCLE, 5' RAMP, 10' DWELL	0629	MAX5477HETE	-65C TO 150C	2000 CYS	77	0	DR10CA006DB
TEMP CYCLE, 5' RAMP, 10' DWELL	0629	MAX5477HETE	-65C TO 150C	2500 CYS	76	0	DR10CA006DB

TEMP CYCLE, 5' RAMP, 10' DWELL	0629	MAX5477HETE	-65C TO 150C	2000	CYS	77	0	DR10CA006DC
TEMP CYCLE, 5' RAMP, 10' DWELL	0629	MAX5477HETE	-65C TO 150C	2500	CYS	77	0	DRI0CA006DC
BOND STRENGTH	0732	DS1099	MIL-STD-883-2011 : COND D	30	WIRES	5	0	IJ611604AF
TEMP CYCLE, 5' RAMP, 10' DWELL	0732	DS1099	-55C TO 125C	1000	CYS	77	0	IJ611604AF
BOND STRENGTH	0732	DS1080L	MIL-STD-883-2011 : COND D	40	WIRES	5	0	IJ549628BE
TEMP CYCLE, 5' RAMP, 10' DWELL	0732	DS1080L	-65C TO 150C	500	CYS	77	0	IJ549628BE
TEMP CYCLE, 5' RAMP, 10' DWELL	0738	MAX7456EUI+	-65C TO 150C	450	CYS	77	0	DXI0EA006Q1
TEMP CYCLE, 5' RAMP, 10' DWELL	0738	MAX7456EUI+	-65C TO 150C	450	CYS	77	0	DXI0EA006Q2
TEMP CYCLE, 5' RAMP, 10' DWELL	0738	MAX7456EUI+	-65C TO 150C	450	CYS	77	0	DXI0EA006Q3
TEMP CYCLE, 5' RAMP, 10' DWELL	0836	DS2432	-55C TO 125C	1000	CYS	77	0	QH740152ADA
TEMP CYCLE, 5' RAMP, 10' DWELL	0836	DS2432	-55C TO 125C	1000	CYS	77	0	QH740152AB
TEMP CYCLE, 5' RAMP, 10' DWELL	0836	DS2432	-55C TO 125C	1000	CYS	77	0	QH740152AC
TEMP CYCLE, 15' RAMP, 15' DWELL	N/A	MAX4760EWX+T	-40C TO +125C	300	CYS	77	0	DIB2DA029Q1
TEMP CYCLE, 15' RAMP, 15' DWELL	N/A	MAX4760EWX+T	-40C TO +125C	1000	CYS	77	0	DIB2DA044Q1
TEMP CYCLE, 15' RAMP, 15' DWELL	N/A	MAX4760EWX+t	-40C TO +125C	1000	CYS	77	0	DIB2DA044Q2
TEMP CYCLE, 5' RAMP, 10' DWELL	N/A	MAX4760EWX+T	-65C TO 150C	500	CYS	77	0	DIB2DA044Q2
<b>Total:</b>							<b>0</b>	

### TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE	TEST CODE	VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.	
HAST	0732	DS1099		130C, 85%R.H.,5.5V	96	HRS	77	0	IJ611604AF
HAST	0732	DS1080L		130C, 85%R.H.,3.5V	96	HRS	77	0	IJ549628BE
BIASED MOISTURE	0738	MAX7456EUI+		130C, 85% R.H.	96	HRS	48	0	DXI0EA006Q1
BIASED MOISTURE	0738	MAX7456EUI+		130C, 85% R.H.	96	HRS	48	0	DXI0EA006Q2
BIASED MOISTURE	0738	MAX7456EUI+		130C, 85% R.H.	96	HRS	48	0	DXI0EA006Q3
HAST	0836	DS2432		130C, 85%R.H.,5.5V	96	HRS	45	0	QH740152ADA
HAST	0836	DS2432		130C, 85%R.H.,5.5V	96	HRS	45	0	QH740152AB
HAST	0836	DS2432		130C, 85%R.H.,5.5V	96	HRS	45	0	QH740152AC
<b>Total:</b>							<b>0</b>		

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
AUTOCLAVE	0732	DS1099	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	IJ611604AF
AUTOCLAVE	0732	DS1080L	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	IJ549628BE
<b>Total:</b>						<b>0</b>	

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

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
WRITE CYCLE STRESS (KCYS)	0736	DS2788	50 C, 5.5 VOLTS	50 KCYS	77	0	QK718177CC-NPI
STORAGE LIFE	0736	DS2788	150C	1000 HRS	77	0	QK718177CC-NPI
WRITE CYCLE STRESS (KCYS)	0746	DS7505	25 C, 3.7 VOLTS	80 KCYS	77	0	QJ805646BC-NPI
STORAGE LIFE	0746	DS7505	150C	1000 HRS	77	0	QJ805646BC-NPI
WRITE CYCLE STRESS (KCYS)	0746	DS7505	85 C, 3.7 VOLTS	20 KCYS	77	0	QJ805646BC-NPI
STORAGE LIFE	0746	DS7505	150C	1000 HRS	77	0	QJ805646BC-NPI
<b>Total:</b>						<b>0</b>	

**FAILURE RATE:****MTTF (YRS): 122289****FITS: 0.9**