



4/17/2012

**RELIABILITY MONITOR REPORT
FOR**

San Antonio 0.4 μ m Silicon Gate CMOS (S4)

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:

DS3920	MAX13335EGEE	MAX13362ATL/	MAX13366GTE/	MAX14574ESE+
MAX15021ATI+	MAX15022ATI+	MAX15024AAT	MAX15029AGA/	MAX1556ETB/V
MAX16128UAA	MAX16822BAS	MAX16833AUE/	MAX16833CAU	MAX16833FAU
MAX16908RAU	MAX16917BGE	MAX16924GGM	MAX16924GTM/	MAX16941AUE/
MAX16942EGEE	MAX16946GTE/	MAX16946GTE+	MAX16948AGT	MAX16969DGE
MAX16977RAT	MAX16981GEE/	MAX17018BATL	MAX17018DAT	MAX17114ETM
MAX34565	MAX4967EGEE/	MAX5112GTJ+	MAX5214GUA+	MAX5316GTG+
MAX8643ETG+	MAX8795AGTJ/	MAX8795AGTJ+	MAX8798AETX	MAX8899EWZ+
MAX8899GEWZ	MAX8904ETN+	MAX8939EWW+	MAX9669ETI+	MAX9924UAUB

The calculated failure rate for devices using this process is:

FAILURE RATE: MTTF (YRS): 197697 QUANTITY: 1942 FAILS: 0 FITS: 0.6

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 4/1/2011 and 3/31/2012 .

Process Information:

Process Description: San Antonio 0.4µm Silicon Gate CMOS (S4)

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
HIGH TEMP OP LIFE	1007	MAX8904ETN+	135C	192 HRS	43	0	TQIZGQ003DQ
HIGH TEMP OP LIFE	1014	MAX15024AATB+T	135C	700 HRS	77	0	TJZBQ001D#
HIGH TEMP OP LIFE	1018	MAX14574ESE+	135C	192 HRS	50	0	TM6ZAQ001CQ
HIGH TEMP OP LIFE	1038	MAX16917BGEE/V+CAT	135C	1000 HRS	77	0	TSEYAA008Q3
HIGH TEMP OP LIFE	1042	MAX5214GUA+	135C	192 HRS	50	0	TC1ZCQ001LQ
HIGH TEMP OP LIFE	1052	MAX17114ETM+CB2	135C	1000 HRS	48	0	TURZEA282AA
HIGH TEMP OP LIFE	1052	MAX17114ETM+CB2	135C	1000 HRS	48	0	TURZEA282AB
HIGH TEMP OP LIFE	1103	MAX4967EGEE/V+	135C	500 HRS	90	0	TKWZCA015BD
HIGH TEMP OP LIFE	1105	DS3920	135C, 75V (V8)	192 HRS	77	0	ZJ163071ABA-NPI
HIGH TEMP OP LIFE	1105	MAX16924GTM/V+	135C	1000 HRS	78	0	TYUZFQ003DE
HIGH TEMP OP LIFE	1105	MAX16908RAUE50/V+	135C	1000 HRS	85	0	TTDYCQ003F#
HIGH TEMP OP LIFE	1107	MAX9669ETI+	135C	1000 HRS	80	0	TRMZB2407BA
HIGH TEMP OP LIFE	1107	MAX16822BASA+	135C	1000 HRS	80	0	TNCYC2026G
HIGH TEMP OP LIFE	1109	MAX8939EWW+	135C	500 HRS	47	0	TE0ZCQ002BQ
HIGH TEMP OP LIFE	1109	MAX16924GTM/V+	135C	1000 HRS	75	0	TYUZFQ003FB
HIGH TEMP OP LIFE	1109	MAX16924GTM/V+	135C	1000 HRS	75	0	TYUZFQ003D

HIGH TEMP OP LIFE	1110	MAX16941AUE/V+	135C	192	HRS	50	0	TXNZCQ001BF
HIGH TEMP OP LIFE	1128	MAX13335EGEE/+	135C	192	HRS	80	0	TU8ZBQ001AQ
HIGH TEMP OP LIFE	1130	MAX15029AGA/VY+	135C	1000	HRS	79	0	TJXXDQ001UV
HIGH TEMP OP LIFE	1131	MAX16969DGEE/V+	135C	1000	HRS	80	0	TR1ZBQ003AK
HIGH TEMP OP LIFE	1137	MAX8798AETX+	135C	1000	HRS	80	0	TRIZG2026N
HIGH TEMP OP LIFE	1139	MAX5112GTJ+	135C	192	HRS	48	0	T2EZBQ001BQ
HIGH TEMP OP LIFE	1139	MAX16128UAACAC+T	135C	192	HRS	80	0	TAAP2Q001DQ
HIGH TEMP OP LIFE	1140	MAX34565	125C, 5.0V (PSA) & 13.2V (PSB)	500	HRS	77	0	ZJ271249AAC
HIGH TEMP OP LIFE	1141	MAX5316GTG+	135C	192	HRS	80	0	TABC2Q003DQ
HIGH TEMP OP LIFE	1149	MAX16981GEE/V+	135C	192	HRS	80	0	TACW9Q001BQ
HIGH TEMP OP LIFE	1150	MAX13366GTE/V+	135C	192	HRS	80	0	TADE7Q001DQ
HIGH TEMP OP LIFE	1153	MAX16833FAUE/V+	135C	324	HRS	48	0	TADW3A005AH
Total:							0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.	
STORAGE LIFE	1031	MAX16946GTE/V+	150C	500 HRS	50	0	TZOZCQ003A	
STORAGE LIFE	1049	MAX1556ETB/V+	150C	1000 HRS	77	0	TQX0F3056BA	
STORAGE LIFE	1052	MAX17114ETM+CB2	150C	1000 HRS	215	0	TURZEA282A	
STORAGE LIFE	1052	MAX17114ETM+CB2	150C	1000 HRS	77	0	TURZEA282AB	
STORAGE LIFE	1108	MAX16924GTM/V+	150C	1000 HRS	50	0	TYUZFQ003FB	
STORAGE LIFE	1130	MAX15029AGA/VY+	150C	1000 HRS	80	0	TJXXDQ001UV	
STORAGE LIFE	1131	MAX9924UAUB+	150C	1000 HRS	50	0	TIDZDQ002BA	
STORAGE LIFE	1134	MAX16948AGTE/V+	150C	500 HRS	50	1	TAAO0Q002CZ	
STORAGE LIFE	1138	MAX16833CAUE/V+	150C	1000 HRS	80	0	TWRXBQ001CA	
STORAGE LIFE	1142	MAX15021ATI+	150C	1048 HRS	45	0	TLWZBQ001DZ	
STORAGE LIFE	1145	MAX16948AGTE/V+	150C	500 HRS	50	0	TAAO0Q002EA	
STORAGE LIFE	1150	MAX8795AGTJ+	150C	500 HRS	50	0	TAHXDA156C#	
STORAGE LIFE	1150	MAX13366GTE/V+	150C	500 HRS	50	0	TADE7Q001DD	
STORAGE LIFE	1151	MAX8795AGTJ+	150C	500 HRS	50	0	TAHXDA156DX	
Total:							1	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.	
TEMP CYCLE, 15' RAMP, 15' DWELL		MAX8899EWZ+T	-40C TO +125C	1000	CYS	200	0	HLBPR50000BLK-02
TEMP CYCLE, 15' RAMP, 15' DWELL		MAX8899EWZ+T	-40C TO +125C	1000	CYS	200	0	HLBPR50000REG2.0
							3	

TEMP CYCLE, 15' RAMP, 15' DWELL		MAX8899EWZ+T	-40C TO +125C	1000	CYS	200	0	HLBPR50000REG2.0 4
TEMP CYCLE, 5' RAMP, 10' DWELL	1050	MAX8795AGTJ/V+	-65C TO 150C	500	CYS	80	0	TAHXDA136A#
TEMP CYCLE, 5' RAMP, 10' DWELL	1052	MAX17114ETM+CB2	-65C TO 150C	1000	CYS	77	0	TURZEA282A
TEMP CYCLE, 5' RAMP, 10' DWELL	1052	MAX17114ETM+CB2	-65C TO 150C	1000	CYS	77	0	TURZEA282AA
TEMP CYCLE, 5' RAMP, 10' DWELL	1052	MAX17114ETM+CB2	-65C TO 150C	1000	CYS	77	0	TURZEA282AB
TEMP CYCLE, 5' RAMP, 10' DWELL	1103	MAX17018BATL/V+	-65C TO 150C	1000	CYS	77	0	TKFYDA006DA
TEMP CYCLE, 5' RAMP, 10' DWELL	1108	MAX16924GTM/V+	-65C TO 150C	1000	CYS	77	0	TYUZFQ003FB
TEMP CYCLE, 5' RAMP, 10' DWELL	1108	MAX16924GTM/V+	-65C TO 150C	1000	CYS	77	0	TYUZFQ003FC
TEMP CYCLE, 5' RAMP, 10' DWELL	1108	MAX16924GTM/V+	-65C TO 150C	1000	CYS	77	0	TYUZFQ003EB
TEMP CYCLE, 5' RAMP, 10' DWELL	1108	MAX16924GTM/V+	-65C TO 150C	1000	CYS	77	0	TYUZFQ003ED
TEMP CYCLE, 5' RAMP, 10' DWELL	1124	MAX16941AUE/V+	-65C TO 150C	1000	CYS	77	0	TXNZCQ001HB
TEMP CYCLE, 5' RAMP, 10' DWELL	1126	MAX16924GGM/VY+	-65C TO 150C	1000	CYS	77	0	TYUZFA005Q1
TEMP CYCLE, 5' RAMP, 10' DWELL	1130	MAX15022ATI+	-65C TO 150C	500	CYS	80	0	TLWYBQ001DE
TEMP CYCLE, 5' RAMP, 10' DWELL	1130	MAX15022ATI+	-65C TO 150C	500	CYS	80	0	TLWYBQ001DD
TEMP CYCLE, 5' RAMP, 10' DWELL	1130	MAX15022ATI+	-65C TO 150C	500	CYS	80	0	TLWYBQ001DC
TEMP CYCLE, 5' RAMP, 10' DWELL	1130	MAX15029AGA/VY+	-65C TO 150C	1000	CYS	80	0	TJXXDQ001UV
TEMP CYCLE, 5' RAMP, 10' DWELL	1131	MAX15022ATI+	-65C TO 150C	500	CYS	80	0	TLWYBQ001EC
TEMP CYCLE, 5' RAMP, 10' DWELL	1131	MAX15022ATI+	-65C TO 150C	500	CYS	80	0	TLWYBQ001ED
TEMP CYCLE, 5' RAMP, 10' DWELL	1131	MAX15022ATI+	-65C TO 150C	500	CYS	80	0	TLWYBQ001EE
TEMP CYCLE, 5' RAMP, 10' DWELL	1132	MAX13362ATL/V+	-65C TO 150C	500	CYS	80	0	TKRZBQ003FF
TEMP CYCLE, 5' RAMP, 10' DWELL	1134	MAX16948AGTE/V+	-65C TO 150C	500	CYS	80	0	TAAO0Q002CZ
TEMP CYCLE, 5' RAMP, 10' DWELL	1136	MAX8643ETG+	-65C TO 150C	100	CYS	996	0	TM0AEA274I
TEMP CYCLE, 5' RAMP, 10' DWELL	1138	MAX16833CAUE/V+	-65C TO 150C	500	CYS	80	0	TWRXBQ001CA
TEMP CYCLE, 5' RAMP, 10' DWELL	1138	MAX8643ETG+	-65C TO 150C	50	CYS	598	0	TM0AEA280F
TEMP CYCLE, 5' RAMP, 10' DWELL	1138	MAX8643ETG+	-65C TO 150C	1000	CYS	596	0	TM0AEA280F
TEMP CYCLE, 5' RAMP, 10' DWELL	1140	MAX16942EGEE/V+	-65C TO 150C	500	CYS	80	0	TZKZAA016AF

TEMP CYCLE, 5' RAMP, 10' DWELL	1141	MAX17018DATL/V+	-65C TO 150C	500	CYS	80	0	TKFXAA009IA
TEMP CYCLE, 5' RAMP, 10' DWELL	1143	MAX17018DATL/V+	-65C TO 150C	500	CYS	80	0	TKFXAA009JA
TEMP CYCLE, 5' RAMP, 10' DWELL	1143	MAX16946GTE/V+	-65C TO 150C	500	CYS	80	0	TZOZCA004DC
TEMP CYCLE, 5' RAMP, 10' DWELL	1144	MAX16833CAUE/V+	-65C TO 150C	500	CYS	80	0	TWRXBQ001AA
TEMP CYCLE, 5' RAMP, 10' DWELL	1145	MAX16948AGTE/V+	-65C TO 150C	500	CYS	80	0	TAAO0Q002EA
TEMP CYCLE, 5' RAMP, 10' DWELL	1145	MAX16948AGTE/V+	-65C TO 150C	500	CYS	80	0	TAAO0Q002DA
TEMP CYCLE, 5' RAMP, 10' DWELL	1146	MAX16946GTE+	-65C TO 150C	500	CYS	80	0	TZOZC3005AT
TEMP CYCLE, 5' RAMP, 10' DWELL	1147	MAX16833AUE/V+T	-65C TO 150C	500	CYS	80	0	TWRZC3005AT
TEMP CYCLE, 5' RAMP, 10' DWELL	1148	MAX8643ETG+	-65C TO 150C	50	CYS	2541	0	TM0AEA302KA
TEMP CYCLE, 5' RAMP, 10' DWELL	1150	MAX8795AGTJ+	-65C TO 150C	500	CYS	80	0	TAHXDA156C#
TEMP CYCLE, 5' RAMP, 10' DWELL	1150	MAX8795AGTJ+	-65C TO 150C	500	CYS	80	0	TAHXDA156CA(R25333F
TEMP CYCLE, 5' RAMP, 10' DWELL	1150	MAX8795AGTJ+	-65C TO 150C	500	CYS	80	0	TAHXDA156CX
TEMP CYCLE, 5' RAMP, 10' DWELL	1150	MAX13366GTE/V+	-65C TO 150C	500	CYS	80	0	TADE7Q001DD
TEMP CYCLE, 5' RAMP, 10' DWELL	1151	MAX8795AGTJ+	-65C TO 150C	500	CYS	80	0	TAHXDA156DX
TEMP CYCLE, 5' RAMP, 10' DWELL	1151	MAX8795AGTJ+	-65C TO 150C	500	CYS	80	0	TAHXDA160AX
TEMP CYCLE, 5' RAMP, 10' DWELL	1151	MAX8795AGTJ+	-65C TO 150C	500	CYS	80	0	TAHXDA159AX
TEMP CYCLE, 5' RAMP, 10' DWELL	1152	MAX16946GTE/V+	-65C TO 150C	500	CYS	80	0	TZOZCA004AE
TEMP CYCLE, 5' RAMP, 10' DWELL	1202	MAX16977RATE/V+	-65C TO 150C	500	CYS	80	0	TP5ZCQ002EC
TEMP CYCLE, 15' RAMP, 15' DWELL	N/A	MAX8899GEWZ+T	-40C TO +125C	1000	CYS	77	0	TXPRAA233AB
TEMP CYCLE, 15' RAMP, 15' DWELL	N/A	MAX8899GEWZ+T	-40C TO +125C	1000	CYS	77	0	TXPRAA233AG
Total:							0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
BIASED MOISTURE	1050	MAX8795AGTJ/V+	130C, 85% R.H.	96 HRS	80	0	TAHXDA136A#
BIASED MOISTURE	1130	MAX15022ATI+	130C, 85% R.H.	96 HRS	33	0	TLWYBQ001DE
BIASED MOISTURE	1130	MAX15022ATI+	130C, 85% R.H.	100 HRS	33	0	TLWYBQ001DD

BIASED MOISTURE	1130	MAX15029AGA/VY+	130C, 85% R.H.	100	HRS	80	0	TJXXDQ001UV
BIASED MOISTURE	1131	MAX9924UAUB+	130C, 85% R.H.	100	HRS	26	0	TIDZDQ002BA
BIASED MOISTURE	1142	MAX15021ATI+	130C, 85% R.H.	100	HRS	29	0	TLWZBQ001DZ
BIASED MOISTURE	1145	MAX16948AGTE/V+	130C, 85% R.H.	100	HRS	48	0	TAAO0Q002EA
BIASED MOISTURE	1151	MAX8795AGTJ+	130C, 85% R.H.	96	HRS	80	1	TAHXDA156DX
BIASED MOISTURE	1151	MAX8795AGTJ+	130C, 85% R.H.	96	HRS	80	0	TAHXDA160AX
Total:							1	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.	
MOISTURE SOAK	1050	MAX8795AGTJ/V+	130C, 85% R.H.	96	HRS	80	0	TAHXDA136A#
MOISTURE SOAK	1126	MAX16924GGM/VY+	130C, 85% R.H.	100	HRS	15	0	TYUZFA005Q1
MOISTURE SOAK	1130	MAX15022ATI+	130C, 85% R.H.	96	HRS	80	0	TLWYBQ001DE
MOISTURE SOAK	1130	MAX15022ATI+	130C, 85% R.H.	100	HRS	80	0	TLWYBQ001DD
MOISTURE SOAK	1131	MAX16969DGEE/V+	130C, 85% R.H.	100	HRS	80	0	TR1ZBQ003AK
MOISTURE SOAK	1131	MAX15022ATI+	130C, 85% R.H.	100	HRS	80	0	TLWYBQ001EC
MOISTURE SOAK	1131	MAX15022ATI+	130C, 85% R.H.	100	HRS	80	0	TLWYBQ001ED
MOISTURE SOAK	1131	MAX15022ATI+	130C, 85% R.H.	100	HRS	80	0	TLWYBQ001EE
MOISTURE SOAK	1134	MAX16948AGTE/V+	130C, 85% R.H.	100	HRS	80	0	TAAO0Q002CZ
MOISTURE SOAK	1138	MAX16833CAUE/V+	130C, 85% R.H.	100	HRS	80	0	TWRXBQ001CA
MOISTURE SOAK	1141	MAX17018DATL/V+	130C, 85% R.H.	100	HRS	80	0	TKFXAA009IA
MOISTURE SOAK	1142	MAX15021ATI+	130C, 85% R.H.	100	HRS	76	0	TLWZBQ001DZ
MOISTURE SOAK	1143	MAX17018DATL/V+	130C, 85% R.H.	96	HRS	80	0	TKFXAA009JA
MOISTURE SOAK	1143	MAX16946GTE/V+	130C, 85% R.H.	100	HRS	80	0	TZOZCA004DC
MOISTURE SOAK	1144	MAX16833CAUE/V+	130C, 85% R.H.	100	HRS	80	0	TWRXBQ001AA
MOISTURE SOAK	1145	MAX16948AGTE/V+	130C, 85% R.H.	100	HRS	80	0	TAAO0Q002EA
MOISTURE SOAK	1145	MAX16948AGTE/V+	130C, 85% R.H.	100	HRS	80	0	TAAO0Q002DA

MOISTURE SOAK	1146	MAX16946GTE+	130C, 85% R.H.	96	HRS	80	0	TZOZC3005AT
MOISTURE SOAK	1150	MAX8795AGTJ+	130C, 85% R.H.	96	HRS	80	0	TAHXDA156C#
MOISTURE SOAK	1150	MAX8795AGTJ+	130C, 85% R.H.	96	HRS	80	0	TAHXDA156CA(R253 33F
MOISTURE SOAK	1150	MAX8795AGTJ+	130C, 85% R.H.	96	HRS	80	0	TAHXDA156CX
MOISTURE SOAK	1151	MAX8795AGTJ+	130C, 85% R.H.	96	HRS	80	0	TAHXDA156DX
MOISTURE SOAK	1151	MAX8795AGTJ+	130C, 85% R.H.	96	HRS	80	0	TAHXDA160AX
MOISTURE SOAK	1151	MAX8795AGTJ+	130C, 85% R.H.	96	HRS	80	0	TAHXDA159AX
MOISTURE SOAK	1152	MAX16946GTE/V+	130C, 85% R.H.	100	HRS	80	0	TZOZCA004AE
MOISTURE SOAK	1202	MAX16946GTE/V+	130C, 85% R.H.	100	HRS	80	0	TZOZC3005BA

Total: **0**

FAILURE RATE: **MTTF (YRS): 197697** **QUANTITY: 1942** **FAILS: 0** **FITS: 0.6**