



7/19/2012

**RELIABILITY MONITOR REPORT  
FOR**

**San Antonio Silicon Gate 0.4 $\mu$ m 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:

AK24	MAX13325GUI/	MAX13335EGEE	MAX13362ATL/	MAX13366GTE/
MAX15021ATI+	MAX15022ATI+	MAX15029AGA/	MAX16128UAA	MAX16833AUE/
MAX16833CAU	MAX16833FAU	MAX16903SAU	MAX16908RAU	MAX16917BGE
MAX16922ATPF	MAX16924GGM	MAX16924GTM/	MAX16941AUE/	MAX16942EGEE
MAX16946GTE/	MAX16946GTE+	MAX16948AGT	MAX16952AUE/	MAX16969DGE
MAX16977RAT	MAX16981GEE/	MAX17018DAT	MAX17114ETM	MAX34565
MAX4967EGEE/	MAX5112GTJ+	MAX5316GTG+	MAX5971BETI+	MAX5982BETE+
MAX77100EWL	MAX8643ETG+	MAX8795AGTJ/	MAX8795AGTJ+	MAX8798AETX
MAX8904ETN+	MAX8939EWW+	MAX9736AETJ+	MAX9737ETG+	MAX9739ETG+
MAX9924UAUB	MT23	PQ77		

The calculated failure rate for devices using this process is:

**FAILURE RATE: MTTF (YRS): 215760 QUANTITY: 2028 FAILS: 0 FITS: 0.5**

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 7/1/2011 and 6/30/2012 .

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## Process Information:

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

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### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
HIGH TEMP OP LIFE		PQ77	135C, 5.0V (PSA)	192 HRS	48	0	TAFA3Q001CQ
HIGH TEMP OP LIFE	1007	MAX8904ETN+	135C	192 HRS	43	0	TQIZGQ003DQ
HIGH TEMP OP LIFE	1052	MAX17114ETM+CB2	135C	1000 HRS	48	0	TURZEA282AA
HIGH TEMP OP LIFE	1052	MAX17114ETM+CB2	135C	1000 HRS	47	0	TURZEA282AB
HIGH TEMP OP LIFE	1103	MAX4967EGEE/V+	135C	1000 HRS	90	0	TKWZCA015BD
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	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	1118	AK24	135C, 5.0V (PSA)	192 HRS	80	0	T0RZCQ002DQ
HIGH TEMP OP LIFE	1120	MAX5982BETE+	135C	192 HRS	48	0	T2CZAQ001CQ
HIGH TEMP OP LIFE	1124	MAX16941AUE/V+	135C	500 HRS	26	0	TXNZCQ001EA
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	MT23	135C, 12.0V (PSA)	192	HRS	80	0	TAAP2Q001DQ
HIGH TEMP OP LIFE	1139	MAX16128UAACAC+T	135C	192	HRS	80	0	TAAP2Q001DQ
HIGH TEMP OP LIFE	1139	MAX5112GTJ+	135C	192	HRS	48	0	T2EZBQ001BQ
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	1151	MAX16952AUE/V+	135C	1000	HRS	80	0	TF9YG003CD
HIGH TEMP OP LIFE	1152	MAX16922ATPF/V+	135C	1000	HRS	79	0	TACG5Q001BD
HIGH TEMP OP LIFE	1153	MAX16833FAUE/V+	135C	700	HRS	47	0	TADW3A005AH
HIGH TEMP OP LIFE	1206	MAX77100EWL+T	135C	192	HRS	48	0	TAF3Q001CQ
HIGH TEMP OP LIFE	1216	MAX5971BETI+	135C	192	HRS	47	0	TAFV1A004LQ
HIGH TEMP OP LIFE	1216	MAX5971BETI+	135C	192	HRS	47	0	TAFV1A004MQ
HIGH TEMP OP LIFE	1216	MAX5971BETI+	135C	192	HRS	46	0	TAFV1A004NQ
<b>Total:</b>							<b>0</b>	

#### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.	
STORAGE LIFE	1022	MAX13325GUI/V+	150C	500	HRS	45	0	TZYCA003B
STORAGE LIFE	1031	MAX16946GTE/V+	150C	500	HRS	50	0	TZOZCQ003A
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
STORAGE LIFE	1152	MAX16922ATPF/V+	150C	500	HRS	50	1	TACG5Q001BD
STORAGE LIFE	1215	MAX9737ETG+	150C	500	HRS	80	0	TQXZBA006A#
<b>Total:</b>							<b>2</b>	

#### TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
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TEMP CYCLE, 5' RAMP, 10' DWELL	1050	MAX8795AGTJ/V+	-65C TO 150C	500	CYS	80	0	TAHXDA136A#
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	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	TWRZfq002GA
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	1152	MAX16922ATPF/V+	-65C TO 150C	500	CYS	80	0	TACG5Q001BD
TEMP CYCLE, 5' RAMP, 10' DWELL	1202	MAX16977RATE/V+	-65C TO 150C	500	CYS	80	0	TP5ZCQ002EC
TEMP CYCLE, 5' RAMP, 10' DWELL	1202	MAX16946GTE/V+	-65C TO 150C	500	CYS	80	0	TZOZC3005BA
TEMP CYCLE, 5' RAMP, 10' DWELL	1210	MAX16917BGEE/V+	-65C TO 150C	500	CYS	80	0	TSEYAA018LB
TEMP CYCLE, 5' RAMP, 10' DWELL	1210	MAX16917BGEE/V+	-65C TO 150C	500	CYS	80	0	TSEYAA018KF
TEMP CYCLE, 5' RAMP, 10' DWELL	1210	MAX16917BGEE/V+	-65C TO 150C	500	CYS	80	0	TSEYAA018JB
TEMP CYCLE, 5' RAMP, 10' DWELL	1211	MAX9739ETG+	-65C TO 150C	500	CYS	80	0	TQXZBA005C#
TEMP CYCLE, 5' RAMP, 10' DWELL	1215	MAX9737ETG+	-65C TO 150C	500	CYS	80	1	TQXZBA006A#
TEMP CYCLE, 5' RAMP, 10' DWELL	1215	MAX9739ETG+	-65C TO 150C	500	CYS	80	0	TQXZBA004L#
TEMP CYCLE, 5' RAMP, 10' DWELL	1215	MAX9736AETJ+	-65C TO 150C	500	CYS	80	0	TFUXCA166A#
TEMP CYCLE, 5' RAMP, 10' DWELL	1215	MAX9736AETJ+	-65C TO 150C	500	CYS	80	0	TFUXCA165C#
TEMP CYCLE, 5' RAMP, 10' DWELL	1216	MAX9736AETJ+	-65C TO 150C	500	CYS	80	0	TFUXCA169A#
<b>Total:</b>							<b>1</b>	

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#### 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	1105	MAX16903SAUE50/V+	130C, 85% R.H.	100	HRS	46	0	TTDZIQ003B#
BIASED MOISTURE	1105	MAX16903SAUE50/V+	130C, 85% R.H.	100	HRS	46	0	TTDZIQ003A#

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	1131	MAX15022ATI+	130C, 85% R.H.	100	HRS	34	0	TLWYBQ001EC
BIASED MOISTURE	1131	MAX15022ATI+	130C, 85% R.H.	100	HRS	34	0	TLWYBQ001ED
BIASED MOISTURE	1131	MAX15022ATI+	130C, 85% R.H.	100	HRS	46	0	TLWYBQ001EE
BIASED MOISTURE	1138	MAX16833CAUE/V+	130C, 85% R.H.	100	HRS	25	0	TWRXBQ001CA
BIASED MOISTURE	1142	MAX15021ATI+	130C, 85% R.H.	100	HRS	29	0	TLWZBQ001DZ
BIASED MOISTURE	1150	MAX8795AGTJ+	130C, 85% R.H.	96	HRS	80	0	TAHXDA156CA(R253 33F
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
<b>Total:</b>							<b>1</b>	

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#### 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	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): 215760**    **QUANTITY: 2028**    **FAILS: 0**    **FITS: 0.5**