

4/23/2015



**RELIABILITY MONITOR REPORT  
FOR**

**Epson 0.18 $\mu$ m Silicon Gate (S18)**

**MAXIM INTEGRATED**

**160 RIO ROBLES  
SAN JOSE, CA 95134**

**This Report was prepared by  
MAXIM INTEGRATED 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:

MAX14662ETI+	MAX14691ATP+	MAX14832ETB+	MAX14839GTC+	MAX14871EUE+
MAX15068ATP+	MAX15096GWE	MAX16935RAU	MAX16935RAU	MAX16935SAU
MAX16970GEE	MAX16970GEE	MAX16971GEE	MAX16971GEE	MAX16971GEE
MAX17503ATP+	MAX17552AUB	MAX20091ATM	MAX98357AETE	

The calculated failure rate for devices using this process is:

**FAILURE RATE: MTTF (YRS): 43594 QUANTITY: 1511 FAILS: 1 FITS: 2.6**

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 4/1/2014 and 3/31/2015 .

**Process Information:**

Process Description: Epson 0.18µm Silicon Gate (S18)

**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
HIGH TEMP OP LIFE	1345	MAX17552AUB+	135°C	192 HRS	75	0	EAQK7Q003EQ
HIGH TEMP OP LIFE	1347	MAX16935RAUE+	135°C	1000 HRS	80	0	EANK5Q001CE
HIGH TEMP OP LIFE	1352	MAX16971GEEA+GE	135°C	1000 HRS	80	0	EAPU2Q002AH
HIGH TEMP OP LIFE	1352	MAX16970GEEB+GE	135°C	500 HRS	80	0	EAPU1Q001E#
HIGH TEMP OP LIFE	1352	MAX16970GEEB+GE	135°C	1000 HRS	80	0	EAPU1Q001E#
HIGH TEMP OP LIFE	1402	MAX16935RAUE+GE	135°C	1000 HRS	80	0	EANK5Q002BB
HIGH TEMP OP LIFE	1402	MAX16935RAUE+GE	135°C	500 HRS	80	0	EANK5Q002CD
HIGH TEMP OP LIFE	1406	MAX14662ETI+	135°C	192 HRS	80	0	EARH7Q003BQ
HIGH TEMP OP LIFE	1408	MAX15096GWE+	135°C	192 HRS	80	0	EAQG2Q001BQ
HIGH TEMP OP LIFE	1409	MAX16935RAUE+GE	135°C	500 HRS	80	0	EANK5Q003CA
HIGH TEMP OP LIFE	1419	MAX14691ATP+	135°C	192 HRS	79	0	EARL3Q001IQ
HIGH TEMP OP LIFE	1420	MAX14871EUE+	135°C	192 HRS	80	0	EATA2Q002EQ
HIGH TEMP OP LIFE	1420	MAX16935RAUE+GE	135°C	500 HRS	80	0	EANK5Q002E#
HIGH TEMP OP LIFE	1420	MAX16935RAUE+GE	135°C	1000 HRS	80	0	EANK5Q002E#
HIGH TEMP OP LIFE	1431	MAX17503ATP+	135°C	192 HRS	77	0	EATZ5Q001DQ
HIGH TEMP OP LIFE	1436	MAX14832ETB+T	135°C	192 HRS	80	0	EAOV1Q001FQ
HIGH TEMP OP LIFE	1439	MAX16971GEEA+	135°C	1000 HRS	80	0	EAPU2A004B#
HIGH TEMP OP LIFE	1440	MAX15068ATP+	135°C	192 HRS	80	1	EAXF1Q001BQ
HIGH TEMP OP LIFE	1444	MAX14839GTC+	135°C	192 HRS	80	0	EAXS6Q001FQ
<b>Total:</b>						<b>1</b>	

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**STORAGE LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
STORAGE LIFE	1352	MAX16971GEEA+GE	150°C	500 HRS	50	0	EAPU2Q002AH
STORAGE LIFE	1352	MAX16970GEEB+GE	150°C	1000 HRS	80	0	EAPU1Q001E#
STORAGE LIFE	1352	MAX16971GEEB+	150°C	1000 HRS	77	0	EAPU2Q002A#
STORAGE LIFE	1402	MAX16935RAUE+GE	150°C	1000 HRS	80	0	EANK5Q002CD
STORAGE LIFE	1411	MAX16971GEEA+GE	150°C	1000 HRS	80	0	EAPU2Q001Q1/Q2/Q3
STORAGE LIFE	1420	MAX16935RAUE+GE	150°C	1000 HRS	80	0	EANK5Q002E#
STORAGE LIFE	1420	MAX16935RAUE+	150°C	500 HRS	80	0	EANK5Q002EA
STORAGE LIFE	1420	MAX16935RAUE+	150°C	1000 HRS	80	0	EANK5Q002EA
STORAGE LIFE	1439	MAX16971GEEA+	150°C	500 HRS	50	0	EAPU2A004B#
STORAGE LIFE	1439	MAX16971GEEA+	150°C	1000 HRS	80	0	EAPU2A004B#
STORAGE LIFE	1441	MAX20091ATM+	150°C	500 HRS	50	0	EAQY0A004E
STORAGE LIFE	1441	MAX20091ATM+	150°C	1000 HRS	50	0	EAQY0A004E
STORAGE LIFE	1442	MAX20091ATM+	150°C	500 HRS	50	0	EAQY0Q003H#
STORAGE LIFE	1442	MAX20091ATM+	150°C	1000 HRS	50	0	EAQY0Q003H#
<b>Total:</b>						<b>0</b>	

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**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
TEMP CYCLE, 15' RAMP, 15' DWELL	1321	MAX98357AETE+	-40C TO +125C (Condition G)	850 CYS	77	0	EAMU0Q001C#
TEMP CYCLE, 5' RAMP, 10' DWELL	1350	MAX16970GEEA+GE	-65C TO +150C (Condition C)	1000 CYS	80	0	EAPU1Q001CA
TEMP CYCLE, 5' RAMP, 10' DWELL	1351	MAX16935SAUE+GE	-65C TO +150C (Condition C)	500 CYS	80	0	EANK5Q001G#
TEMP CYCLE, 5' RAMP, 10' DWELL	1352	MAX16970GEEB+GE	-65C TO +150C (Condition C)	500 CYS	90	0	EAPU1Q001E#
TEMP CYCLE, 5' RAMP, 10' DWELL	1352	MAX16971GEEB+	-65C TO +150C (Condition C)	500 CYS	80	0	EAPU2Q002A#
TEMP CYCLE, 5' RAMP, 10' DWELL	1352	MAX16971GEEB+	-65C TO +150C (Condition C)	1000 CYS	75	0	EAPU2Q002AX
TEMP CYCLE, 5' RAMP, 10' DWELL	1402	MAX16935RAUE+GE	-65C TO +150C (Condition C)	1000 CYS	80	0	EANK5Q002BB
TEMP CYCLE, 5' RAMP, 10' DWELL	1402	MAX16935RAUE+GE	-65C TO +150C (Condition C)	500 CYS	80	0	EANK5Q002CD
TEMP CYCLE, 5' RAMP, 10' DWELL	1407	MAX16935SAUE+GE	-65C TO +150C (Condition C)	500 CYS	80	0	EANK5Q003A#

TEMP CYCLE, 5' RAMP, 10' DWELL	1409	MAX16935RAUE+GE	-65C TO +150C (Condition C)	500	CYS	80	0	EANK5Q003CA
TEMP CYCLE, 5' RAMP, 10' DWELL	1411	MAX16971GEEA+GE	-65C TO +150C (Condition C)	500	CYS	80	0	EAPU2Q001Q1/Q2/Q 3
TEMP CYCLE, 5' RAMP, 10' DWELL	1420	MAX16935RAUE+GE	-65C TO +150C (Condition C)	500	CYS	80	0	EANK5Q002E#
TEMP CYCLE, 5' RAMP, 10' DWELL	1420	MAX16935RAUE+	-65C TO +150C (Condition C)	500	CYS	80	0	EANK5Q002EA
TEMP CYCLE, 5' RAMP, 10' DWELL	1420	MAX16935RAUE+GE	-65C TO +150C (Condition C)	1000	CYS	75	0	EANK5Q002E#
TEMP CYCLE, 5' RAMP, 10' DWELL	1439	MAX16971GEEA+	-65C TO +150C (Condition C)	500	CYS	80	0	EAPU2A004B#
TEMP CYCLE, 5' RAMP, 10' DWELL	1441	MAX20091ATM+	-65C TO +150C (Condition C)	500	CYS	80	0	EAQY0A004E
TEMP CYCLE, 5' RAMP, 10' DWELL	1442	MAX20091ATM+	-65C TO +150C (Condition C)	500	CYS	80	0	EAQY0Q003H#
<b>Total:</b>							<b>0</b>	

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#### TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.	
BIASED MOISTURE	1351	MAX16935SAUE+GE	130C, 85% R.H.	96	HRS	78	0	EANK5Q001G#
BIASED MOISTURE	1352	MAX16970GEEB+GE	130C, 85% R.H.	100	HRS	89	0	EAPU1Q001E#
BIASED MOISTURE	1352	MAX16971GEEB+	130C, 85% R.H.	100	HRS	80	0	EAPU2Q002A#
BIASED MOISTURE	1402	MAX16935RAUE+GE	130C, 85% R.H.	96	HRS	78	0	EANK5Q002CD
BIASED MOISTURE	1407	MAX16935SAUE+GE	130C, 85% R.H.	96	HRS	80	0	EANK5Q003A#
BIASED MOISTURE	1409	MAX16935RAUE+GE	130C, 85% R.H.	96	HRS	78	0	EANK5Q003CA
BIASED MOISTURE	1411	MAX16971GEEA+GE	130C, 85% R.H.	100	HRS	80	1	EAPU2Q001Q1/Q2/Q 3
BIASED MOISTURE	1420	MAX16935RAUE+GE	130C, 85% R.H.	96	HRS	78	0	EANK5Q002E#
BIASED MOISTURE	1420	MAX16935RAUE+	130C, 85% R.H.	96	HRS	80	0	EANK5Q002EA
BIASED MOISTURE	1420	MAX16935RAUE+GE	130C, 85% R.H.	96	HRS	80	0	EANK5Q002E#
BIASED MOISTURE	1439	MAX16971GEEA+	130C, 85% R.H.	96	HRS	80	0	EAPU2A004B#
<b>Total:</b>							<b>1</b>	

**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	LOT NO.
MOISTURE SOAK	1321	MAX98357AETE+	85 C/85% R.H.	1000 HRS	80	0	EAMU0Q001C#
MOISTURE SOAK	1321	MAX98357AETE+	130C, 85% R.H.	1000 HRS	80	0	EAMU0Q001C
MOISTURE SOAK	1351	MAX16935SAUE+GE	130C, 85% R.H.	96 HRS	80	0	EANK5Q001G#
MOISTURE SOAK	1352	MAX16970GEEB+GE	130C, 85% R.H.	200 HRS	90	0	EAPU1Q001E#
MOISTURE SOAK	1352	MAX16971GEEB+	130C, 85% R.H.	100 HRS	80	0	EAPU2Q002A#
MOISTURE SOAK	1352	MAX16971GEEB+	130C, 85% R.H.	500 HRS	80	0	EAPU1Q002AX
MOISTURE SOAK	1402	MAX16935RAUE+GE	130C, 85% R.H.	96 HRS	80	0	EANK5Q002CD
MOISTURE SOAK	1407	MAX16935SAUE+GE	130C, 85% R.H.	96 HRS	80	0	EANK5Q003A#
MOISTURE SOAK	1409	MAX16935RAUE+GE	130C, 85% R.H.	96 HRS	80	0	EANK5Q003CA
MOISTURE SOAK	1411	MAX16971GEEA+GE	130C, 85% R.H.	100 HRS	80	0	EAPU2Q001Q1/Q2/Q 3
MOISTURE SOAK	1411	MAX16971GEEA+GE	130C, 85% R.H.	200 HRS	80	0	EAPU2Q001/2/3
MOISTURE SOAK	1420	MAX16935RAUE+GE	130C, 85% R.H.	96 HRS	80	0	EANK5Q002E#
MOISTURE SOAK	1420	MAX16935RAUE+	130C, 85% R.H.	96 HRS	80	0	EANK5Q002EA
MOISTURE SOAK	1420	MAX16935RAUE+GE	130C, 85% R.H.	96 HRS	80	0	EANK52002E#
MOISTURE SOAK	1439	MAX16971GEEA+	130C, 85% R.H.	96 HRS	80	0	EAPU2A004B#
MOISTURE SOAK	1441	MAX20091ATM+	130C, 85% R.H.	100 HRS	80	0	EAQY0A004E
MOISTURE SOAK	1442	MAX20091ATM+	130C, 85% R.H.	96 HRS	80	0	EAQY0Q003H#

**Total: 0**

**FAILURE RATE: MTF (YRS): 43594 QUANTITY: 1511 FAILS: 1 FITS: 2.6**