

**6/25/2020**



**RELIABILITY MONITOR REPORT  
FOR**

**SOIC Package**

**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 Package Reliability Monitor. The specific assemblies included in this package monitor are:

ASSY SITE	PINS	PACKAGE		
ASE Chung-Li	8	SOIC (Pb-Free)	ASE Chung-Li	16 SOIC (Pb-Free)
ATP (Amkor, PI)	8	SOIC (Pb-Free)	ATP (Amkor, PI)	18 SOIC (Pb-Free)
ATP (Amkor, PI)	20	SOIC (Pb-Free)	Carsem-M	8 SOIC (Pb-Free)
Carsem-M	16	SOIC (Pb-Free)	Greatek	8 SOIC (Pb-Free)
UTL (NSEB) UTAC	8	SOIC (Pb-Free)	UTL (NSEB) UTAC	14 SOIC (Pb-Free)
UTL (NSEB) UTAC	16	SOIC (Pb-Free)		

The calculated failure rate for this assembly is:

**FAILURE RATE: MTTF (YRS): 223806 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. At the start of this data is a description of the assembly vehicle used to generate this reliability data. The next section is the detailed reliability data for each stress. The reliability data section includes the latest data available. This report covers data between 1/1/2020 and 3/31/2020.

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### Assembly Information:

Package Type: SOIC (Pb-Free)

Date Code Range: 1825 to 1951

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### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE		MAX22701EASA+	125°C	1000 HRS	26	0	
HIGH TEMP OP LIFE	1825	MAX3082EESA+	125°C	500 HRS	58	0	
HIGH TEMP OP LIFE	1836	DG211CSE+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1848	MAX15013AASA+	125°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1907	MAX222CWN+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1912	MAX845ESA+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1912	MAX4172ESA+	125°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1912	MAX44248ASA+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1914	MAX4091ASA+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1918	MAX22518AWA+	125°C	288 HRS	80	0	
HIGH TEMP OP LIFE	1922	MAX1709ESE+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1923	MAX4094ASD+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1924	MAX604ESA+	125°C	500 HRS	79	0	
HIGH TEMP OP LIFE	1927	MAX3082EESA+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1929	DG201ACSE+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1939	MAX33054EASA+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1939	MAX33012EASA+	125°C	192 HRS	80	0	

HIGH TEMP OP LIFE	1942	DG201ACSE+	125°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1943	MAX309CSE+	125°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1948	MAX913ESA+	125°C	96	HRS	80	0
<b>Total:</b>						<b>0</b>	<b>0</b>

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**PACKAGE TESTS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BOND CRATER	1833	MAX20471ASAA/V+		1	PASS	15	0
BOND CRATER	1833	MAX20471ASAA/V+		1	PASS	15	0
CONVECTION REFLOW	1907	MAX222CWN+		3	PASS	319	0
CONVECTION REFLOW	1912	MAX4172ESA+	260C +0/-5C	3	PASS	320	0
CONVECTION REFLOW	1912	MAX845ESA+	260C +0/-5C	3	PASS	320	0
CONVECTION REFLOW	1912	MAX4172ESA+	130C, 85% R.H.	3	PASS	320	0
CONVECTION REFLOW	1914	MAX233AEWP+G36		3	PASS	500	0
BOND CRATER	1914	MAX233AEWP+G36		1	PASS	20	0
RESISTANCE TO SOLVENTS	1914	MAX233AEWP+G36		1	PASS	15	0
SOLDER SHOCK	1914	MAX233AEWP+G36		1	PASS	15	0
CONVECTION REFLOW	1914	MAX233AEWP+G36	150°C	3	PASS	280	0
CONVECTION REFLOW	1914	MAX4091ASA+	260C +0/-5C	3	PASS	320	0
CSAM	1916	MAX3235EEWP+G36	130C, 85% R.H.	1	PASS	22	0
CSAM	1916	MAX3235EEWP+G36		1	PASS	22	0
CONVECTION REFLOW	1916	MAX3235EEWP+G36	130C, 85% R.H.	3	PASS	500	0
BOND CRATER	1916	MAX3235EEWP+G36	130C, 85% R.H.	1	PASS	20	0
RESISTANCE TO SOLVENTS	1916	MAX3235EEWP+G36		1	PASS	15	0
SOLDER SHOCK	1916	MAX3235EEWP+G36	125°C	1	PASS	15	0
BOND PULL	1916	MAX3235EEWP+G36	125°C	1	PASS	20	0
BOND PULL	1916	MAX3235EEWP+G36	130C, 85% R.H.	1	PASS	20	0
CSAM	1916	MAX3235EEWP+G36		1	PASS	22	0
CSAM	1916	MAX3235EEWP+G36		1	PASS	22	0
CONVECTION REFLOW	1916	MAX3235EEWP+G36		3	PASS	499	0
BOND CRATER	1916	MAX3235EEWP+G36		1	PASS	20	0
RESISTANCE TO SOLVENTS	1916	MAX3235EEWP+G36		1	PASS	15	0
SOLDER SHOCK	1916	MAX3235EEWP+G36	> 5 GMS	1	PASS	15	0
BOND PULL	1916	MAX3235EEWP+G36	> 5 GMS	1	PASS	20	0
BOND PULL	1916	MAX3235EEWP+G36	150°C	1	PASS	20	0
CONVECTION REFLOW	1917	MAX222CWN+	130C, 85% R.H.	3	PASS	294	0
CSAM	1921	MAX14878AWA+T		1	PASS	22	0

CONVECTION REFLOW	1921	MAX14878AWA+T	260C +/-5C	3	PASS	450	0
BOND PULL	1921	MAX14878AWA+T	> 5 GMS	1	PASS	20	0
CSAM	1921	MAX14878AWA+T		1	PASS	22	0
CONVECTION REFLOW	1921	MAX14878AWA+T	260C +/-5C	3	PASS	450	0
BOND PULL	1921	MAX14878AWA+T	> 5 GMS	1	PASS	20	0
CSAM	1921	MAX14878AWA+T		1	PASS	22	0
CONVECTION REFLOW	1921	MAX14878AWA+T	260C +/-5C	3	PASS	450	0
BOND PULL	1921	MAX14878AWA+T	> 5 GMS	1	PASS	20	0
CONVECTION REFLOW	1923	MAX4094ASD+		3	PASS	320	0
CONVECTION REFLOW	1924	MAX604ESA+		3	PASS	320	0
CONVECTION REFLOW	1924	MAX309ESE+	125°C	3	PASS	320	0
CONVECTION REFLOW	1927	MAX3082EESA+		3	PASS	318	0
CONVECTION REFLOW	1929	DG201ACSE+		3		320	0
CONVECTION REFLOW	1930	MAX6126AASA50+		3	PASS	60	0
CONVECTION REFLOW	1932	MAX6126BASA25+		3	PASS	320	0
CONVECTION REFLOW	1937	MAX202ECEEE+		3		320	0
CONVECTION REFLOW	1941	MAX232ACWE+		3	PASS	320	0
CONVECTION REFLOW	1942	DG201ACSE+		3	PASS	320	0
CONVECTION REFLOW	1943	MAX309CSE+		3	PASS	320	0
CONVECTION REFLOW	1948	MAX22446ZAWE+		3	PASS	300	0
CONVECTION REFLOW	1948	MAX22446CAWE+		3	PASS	300	0
CONVECTION REFLOW	1951	MAX253ESA+		3	PASS	320	0
<b>Total:</b>						<b>0</b>	<b>0</b>

#### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1833	MAX20471ASAA/V+	150°C	1000 HRS	79	0	
STORAGE LIFE	1833	MAX20471ASAA/V+	150°C	1000 HRS	79	0	
STORAGE LIFE	1833	MAX20471ASAA/V+	150°C	1000 HRS	79	0	
STORAGE LIFE	1835	MAX253CSA+	150°C	1000 HRS	78	0	
STORAGE LIFE	1848	MAX15013AASA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1906	MAX14878AWA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1907	MAX222CWN+	150°C	1000 HRS	80	0	
STORAGE LIFE	1912	MAX845ESA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1912	MAX4172ESA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1914	MAX233AEWP+G36	150°C	1000 HRS	80	0	
STORAGE LIFE	1917	MAX222CWN+	150°C	1000 HRS	80	0	
STORAGE LIFE	1921	MAX14878AWA+T	150°C	500 HRS	80	0	
STORAGE LIFE	1921	MAX14878AWA+T	150°C	500 HRS	80	0	

STORAGE LIFE	1921	MAX14878AWA+T	150°C	500	HRS	80	0
STORAGE LIFE	1924	MAX604ESA+	150°C	1000	HRS	80	0
STORAGE LIFE	1924	MAX309ESE+	150°C	1000	HRS	80	0
STORAGE LIFE	1927	MAX3082EESA+	150°C	1000	HRS	80	0
STORAGE LIFE	1939	MAX33054EASA+	150°C	1000	HRS	80	0
STORAGE LIFE	1941	MAX232ACWE+	150°C	1000	HRS	80	0
STORAGE LIFE	1942	DG201ACSE+	150°C	1000	HRS	80	0
STORAGE LIFE	1943	MAX309CSE+	150°C	1000	HRS	80	0
STORAGE LIFE	1948	MAX913ESA+	150°C	1000	HRS	80	0
STORAGE LIFE	1951	MAX253ESA+	150°C	1000	HRS	80	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, 5' RAMP, 10' DWELL	1825	MAX3082EESA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1833	MAX20471ASAA/V+	-65C TO +150C (Condition C)	1000 CYS	78	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1833	MAX20471ASAA/V+	-65C TO +150C (Condition C)	1000 CYS	78	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1833	MAX20471ASAA/V+	-65C TO +150C (Condition C)	1000 CYS	78	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1906	MAX14878AWA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1907	MAX222CWN+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1912	MAX845ESA+	-65C TO +150C (Condition C)	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1912	MAX4172ESA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1912	MAX44248ASA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1914	MAX233AEWP+G36	-65C TO +150C (Condition C)	500 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1914	MAX233AEWP+G36	-65C TO +150C (Condition C)	500 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1917	MAX222CWN+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1921	MAX14878AWA+T	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1924	MAX604ESA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1924	MAX309ESE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1927	MAX3082EESA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1938	MAX309ESE+	-65C TO +150C (Condition C)	1000 CYS	80	0	

TEMP CYCLE, 5' RAMP, 10' DWELL	1941	MAX232ACWE+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1942	DG201ACSE+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1943	MAX309CSE+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1948	MAX913ESA+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1951	MAX253ESA+	-65C TO +150C (Condition C)	1000	CYS	80	0
<b>Total:</b>							<b>0</b>

### TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1825	MAX3082EESA+	130C, 85% R.H.	96	HRS	79	0
BIASED MOISTURE	1833	MAX20471ASAA/V+	130C, 85% R.H.	192	HRS	73	0
BIASED MOISTURE	1833	MAX20471ASAA/V+	130C, 85% R.H.	96	HRS	79	0
BIASED MOISTURE	1833	MAX20471ASAA/V+	130C, 85% R.H.	192	HRS	72	0
BIASED MOISTURE	1833	MAX20471ASAA/V+	130C, 85% R.H.	96	HRS	79	0
BIASED MOISTURE	1835	MAX253CSA+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1836	DG211CSE+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1848	MAX15013AASA+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1907	MAX222CWN+	130C, 85% R.H.	96	HRS	78	0
BIASED MOISTURE	1912	MAX4172ESA+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1912	MAX845ESA+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1912	MAX4172ESA+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1914	MAX4091ASA+	130C, 85% R.H.	96	HRS	78	0
BIASED MOISTURE	1921	MAX14878AWA+T	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1921	MAX14878AWA+T	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1921	MAX14878AWA+T	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1924	MAX604ESA+	130C, 85% R.H.	96	HRS	79	0
BIASED MOISTURE	1942	DG201ACSE+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1951	MAX253ESA+	130C, 85% R.H.	96	HRS	80	0
<b>Total:</b>							<b>0</b>

### UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1836	DG211CSE+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1914	MAX233AEWP+G36	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1914	MAX233AEWP+G36	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1916	MAX3235EERP+G36	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1916	MAX3235EERP+G36	130C, 85% R.H.	96	HRS	80	0

MOISTURE SOAK	1921	MAX14878AWA+T	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1921	MAX14878AWA+T	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1921	MAX14878AWA+T	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1924	MAX309ESE+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1927	MAX3082EESA+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1941	MAX232ACWE+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1943	MAX309CSE+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1948	MAX913ESA+	130C, 85% R.H.	96	HRS	80	0
					<b>Total:</b>		<b>0</b>

**FAILURE RATE: MTTF (YRS): 223806 FITS: 0.5**