

**8/1/2019**



**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		
ATP (Amkor, PI)	8	SOIC (Pb-Free)	ATP (Amkor, PI)	18 SOIC (Pb-Free)
ATP (Amkor, PI)	24	SOIC (Pb-Free)	Carsem-M	0 SOIC (Pb-Free)
Carsem-M	16	SOIC (Pb-Free)	Greatek	8 SOIC (Pb-Free)
UTL (NSEB) UTAC	8	SOIC (Pb-Free)	UTL (NSEB) UTAC	16 SOIC (Pb-Free)

The calculated failure rate for this assembly is:

**FAILURE RATE: MTTF (YRS): 259241 FITS: 0.4**

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 4/1/2019 and 8/1/2019.

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### Assembly Information:

Package Type: SOIC (Pb-Free)

Date Code Range: 1808 to 1921

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### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE		DS1685S-3+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1808	MAX222CWN+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1813	MAX351ESE+	125°C	1000 HRS	78	0	
HIGH TEMP OP LIFE	1819	MAX253ESA+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1820	MAX6350ESA+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1822	MAX253ESA+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1822	DG211CSE+	125°C	1000 HRS	77	0	
HIGH TEMP OP LIFE	1825	DG201ACSE+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1825	MAX3082EESA+	125°C	500 HRS	58	0	
HIGH TEMP OP LIFE	1828	MAX6126BASA25+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1835	MAX253CSA+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1836	DG211CSE+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1837	MAX4016ESA+	125°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1837	MAX4016ESA+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1848	MAX15013AASA+	125°C	192 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	1914	MAX4091ASA+	125°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1921	MAX14878AWA+T	125°C	192	HRS	80	0
HIGH TEMP OP LIFE	1921	MAX14878AWA+T	125°C	192	HRS	80	0
HIGH TEMP OP LIFE	1921	MAX14878AWA+T	125°C	192	HRS	80	0
<b>Total:</b>							<b>0</b>

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### PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1822	DG211CSE+	260C +0/-5C	3	PASS	320	0
CONVECTION REFLOW	1825	MAX3082EESA+	85 C/85% R.H.	3	PASS	320	0
CONVECTION REFLOW	1825	DG201ACSE+			PASS	320	0
CONVECTION REFLOW	1825	MAX3082EESA+	85 C/85% R.H.	3	PASS	320	0
CONVECTION REFLOW	1833	MAX20471ASAA/V+	85 C/85% R.H.	3	PASS	350	0
CONVECTION REFLOW	1833	MAX20471ASAA/V+	85 C/85% R.H.	3	PASS	350	0
CONVECTION REFLOW	1906	MAX14878AWA+	85 C/85% R.H.	3	PASS	350	0
CONVECTION REFLOW	1907	MAX222CWN+	260C +0/-5C		PASS	319	0
CONVECTION REFLOW	1912	MAX4172ESA+	260C +0/-5C		PASS	320	0
CONVECTION REFLOW	1912	MAX845ESA+	260C +0/-5C	3	PASS	320	0
CONVECTION REFLOW	1914	MAX4091ASA+	260C +0/-5C	3	PASS	320	0
CSAM	1921	MAX14878AWA+T				22	0
CONVECTION REFLOW	1921	MAX14878AWA+T	260C +0/-5C	3	PASS	450	0
CSAM	1921	MAX14878AWA+T				22	0
CONVECTION REFLOW	1921	MAX14878AWA+T	260C +0/-5C	3	PASS	450	0
CSAM	1921	MAX14878AWA+T				22	0
CONVECTION REFLOW	1921	MAX14878AWA+T	260C +0/-5C	3	PASS	450	0
<b>Total:</b>							<b>0</b>

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### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE		DS1685S-3+	150°C	1000	HRS	80	0
STORAGE LIFE	1821	MAX15013AASA+	150°C	1000	HRS	80	0
STORAGE LIFE	1822	MAX253ESA+	150°C	1000	HRS	80	0
STORAGE LIFE	1822	MAX232ACWE+	150°C	1000	HRS	80	0
STORAGE LIFE	1825	MAX3082EESA+	150°C	1000	HRS	80	0
STORAGE LIFE	1825	DG201ACSE+	150°C	1000	HRS	80	0
STORAGE LIFE	1825	MAX3082EESA+	150°C	1000	HRS	80	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	1833	MAX20471ASAA/V+	150°C	1000	HRS	79	0
STORAGE LIFE	1835	MAX253CSA+	150°C	1000	HRS	78	0

STORAGE LIFE	1836	DG211CSE+	150°C	1000 HRS	80	0
STORAGE LIFE	1837	MAX4016ESA+	150°C	1000 HRS	80	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	MAX4172ESA+	150°C	1000 HRS	80	0
STORAGE LIFE	1912	MAX845ESA+	150°C	1000 HRS	80	0
STORAGE LIFE	1914	MAX4091ASA+	150°C	1000 HRS	80	0
<b>Total:</b>					<b>80</b>	<b>0</b>

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### TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL		DS1685S-3+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1813	MAX351ESE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1821	MAX15013AASA+	-65C TO +150C (Condition C)	1000 CYS	78	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1822	MAX253ESA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1822	DG211CSE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1822	MAX232ACWE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1825	MAX3082EESA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1825	DG201ACSE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
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	1835	MAX253CSA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1836	DG211CSE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1837	MAX4016ESA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1848	MAX15013AASA+	-65C TO +150C (Condition C)	1000 CYS	80	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	MAX4172ESA+	-65C TO +150C (Condition C)	1000 CYS	80	0	

TEMP CYCLE, 5' RAMP, 10' DWELL	1912	MAX845ESA+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1914	MAX4091ASA+	-65C TO +150C (Condition C)	1000	CYS	77	0
<b>Total:</b>						<b>0</b>	<b>0</b>

### TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE		DS1685S-3+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1813	MAX351ESE+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1821	MAX15013AASA+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1822	MAX253ESA+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1822	DG211CSE+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1822	MAX232ACWE+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1825	DG201ACSE+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1825	MAX3082EESA+	130C, 85% R.H.	96	HRS	79	0
BIASED MOISTURE	1833	MAX20471ASAA/V+	130C, 85% R.H.	96	HRS	80	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
MOISTURE SOAK	1907	MAX222CWN+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1912	MAX845ESA+	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
<b>Total:</b>						<b>0</b>	<b>0</b>

### UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1833	MAX20471ASAA/V+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1833	MAX20471ASAA/V+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1833	MAX20471ASAA/V+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1836	DG211CSE+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1912	MAX4172ESA+	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

**Total:**      **0**

**FAILURE RATE:**    **MTTF (YRS): 259241    FITS: 0.4**