

6/25/2020



**RELIABILITY MONITOR REPORT
FOR**

TSSOP 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)	16	TSSOP (Pb-Free)	Carsem-M	14 TSSOP (Pb-Free)
Greatek	56	TSSOP (Pb-Free)	UTL (NSEB) UTAC	14 TSSOP (Pb-Free)
UTL (NSEB) UTAC	16	TSSOP (Pb-Free)	UTL (NSEB) UTAC	20 TSSOP (Pb-Free)
UTL (NSEB) UTAC	20	TSSOP-CU (Pb-free)		

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 182205 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. 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.

Assembly Information:

Package Type: TSSOP (Pb-Free)

Date Code Range: 1905 to 2003

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1911	MAX3223EEUP+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1913	MAX4583CUE+	125°C	100 HRS	79	0	
HIGH TEMP OP LIFE	1917	MAX3222CUP+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1927	MAX16823AUE+	125°C	1000 HRS	42	0	
HIGH TEMP OP LIFE	1931	MAX3222CUP+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1933	MAX4678EUE+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1933	MAX17840AGUN/V+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1936	MAX16833CAUE/V+ CLN	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1938	MAX17840AGUN/V+	125°C	1000 HRS	78	0	
HIGH TEMP OP LIFE	1938	MAX17840AGUN/V+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1944	MAX20051AUD/V+C MS	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1947	MAX3232EUE+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1948	MAX4478AUD+	125°C	1000 HRS	80	0	
Total:						0	

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1911	MAX3223EEUP+	260C +0/-5C	3 PASS	320	0	

CONVECTION REFLOW	1913	MAX4583CUE+	260C +/-5C	3	PASS	320	0
CONVECTION REFLOW	1916	MAX16823AUE+	130C, 85% R.H.	3	PASS	317	0
CONVECTION REFLOW	1917	MAX3222CUP+		3	PASS	270	0
CONVECTION REFLOW	1931	MAX3222CUP+		3	PASS	320	0
CONVECTION REFLOW	1936	MAX16833CAUE/V+ CLN		3	PASS	320	0
CONVECTION REFLOW	1938	MAX15005BAUE/V+		3	PASS	320	0
CONVECTION REFLOW	1942	MAX16833FAUE/V+C LN		3	PASS	320	0
CONVECTION REFLOW	1944	MAX20051AUD/V+C MS		3	PASS	320	0
CONVECTION REFLOW	1947	MAX3232EUE+		3	PASS	80	0
CONVECTION REFLOW	1948	MAX4478AUD+		3	PASS	320	0
CONVECTION REFLOW	2003	MAX16961SAUEA/V		3	PASS	120	0
Total:						0	0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1905	MAX16833CAUE/V+ QA	150°C	1000 HRS	80	0	
STORAGE LIFE	1911	MAX3223EEUP+	150°C	1000 HRS	80	0	
STORAGE LIFE	1913	MAX4583CUE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1916	MAX16823AUE+	150°C	1000 HRS	76	0	
STORAGE LIFE	1917	MAX3222CUP+	150°C	1000 HRS	80	0	
STORAGE LIFE	1933	MAX17840AGUN/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1936	MAX16833CAUE/V+ CLN	150°C	1000 HRS	80	0	
STORAGE LIFE	1938	MAX15005BAUE/V+	150°C	500 HRS	80	0	
STORAGE LIFE	1942	MAX16833FAUE/V+C LN	150°C	1000 HRS	80	0	
STORAGE LIFE	1944	MAX20051AUD/V+C MS	150°C	96 HRS	80	0	
STORAGE LIFE	1947	MAX3232EUE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1948	MAX4478AUD+	150°C	1000 HRS	80	0	
Total:						0	0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1905	MAX16833CAUE/V+ QA	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1911	MAX3223EEUP+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1913	MAX4583CUE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1916	MAX16823AUE+	-65C TO +150C (Condition C)	1000 CYS	79	0	

TEMP CYCLE, 5' RAMP, 10' DWELL	1936	MAX16833CAUE/V+ CLN	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1938	MAX15005BAUE/V+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1942	MAX16833FAUE/V+C LN	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1944	MAX20051AUD/V+C MS	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1947	MAX3232EUE+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1948	MAX4478AUD+	-65C TO +150C (Condition C)	1000	CYS	80	0
Total:						0	0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1911	MAX3223EEUP+	130C, 85% R.H.	96	HRS	77	0
BIASED MOISTURE	1913	MAX4583CUE+	130C, 85% R.H.	96	HRS	78	0
BIASED MOISTURE	1933	MAX17840AGUN/V+	130C, 85% R.H.	96	HRS	54	0
BIASED MOISTURE	1933	MAX17840AGUN/V+	130C, 85% R.H.	96	HRS	26	0
BIASED MOISTURE	1936	MAX16833CAUE/V+ CLN	130C, 85% R.H.	96	HRS	69	0
BIASED MOISTURE	1936	MAX16833CAUE/V+ CLN	130C, 85% R.H.	96	HRS	11	0
BIASED MOISTURE	1938	MAX17840AGUN/V+	130C, 85% R.H.	96	HRS	53	0
BIASED MOISTURE	1938	MAX17840AGUN/V+	130C, 85% R.H.	96	HRS	27	0
BIASED MOISTURE	1938	MAX17840AGUN/V+	130C, 85% R.H.	96	HRS	53	0
BIASED MOISTURE	1938	MAX17840AGUN/V+	130C, 85% R.H.	96	HRS	27	0
BIASED MOISTURE	1942	MAX16833FAUE/V+C LN	130C, 85% R.H.	96	HRS	11	0
Total:						0	0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1938	MAX15005BAUE/V+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1947	MAX3232EUE+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1948	MAX4478AUD+	130C, 85% R.H.	96	HRS	80	0
Total:						0	0

Assembly Information:

Package Type: TSSOP-CU (Pb-free)
Date Code Range: 1823 to 1918

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1918	MAX25612AUP/V+	125°C	192	HRS	80	0
Total:						0	0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CSAM	1823	MAX20090AUP/V+		1 PASS	22	0	
CSAM	1823	MAX20090AUP/V+	130C, 85% R.H.	1 PASS	22	0	
PLATING THICKNESS	1823	MAX20090AUP/V+	130C, 85% R.H.	1 PASS	2	0	
PLATING THICKNESS	1823	MAX20090AUP/V+		1 PASS	2	0	
Bond Pull	1823	MAX20090AUP/V+		200	3	0	
BOND PULL	1823	MAX20090AUP/V+	150°C	1 PASS	3	0	
BOND PULL	1823	MAX20090AUP/V+	130C, 85% R.H.	1 PASS	3	0	
BOND PULL	1823	MAX20090AUP/V+	130C, 85% R.H.	1 PASS	3	0	
BOND PULL	1823	MAX20090AUP/V+	130C, 85% R.H.	1 PASS	3	0	
PLATING THICKNESS	1823	MAX20090AUP/V+		96	2	0	
PLATING THICKNESS	1823	MAX20090AUP/V+	125°C	1 PASS	2	0	
PLATING THICKNESS	1823	MAX20090AUP/V+		1 PASS	2	0	
PLATING THICKNESS	1823	MAX20090AUP/V+	> 5 GMS	1 PASS	2	0	
Bond Pull	1823	MAX20090AUP/V+		96	3	0	
Bond Shear	1823	MAX20090AUP/V+		96	3	0	
BOND PULL	1823	MAX20090AUP/V+	150°C	1 PASS	3	0	
BOND PULL	1823	MAX20090AUP/V+	125°C	1 PASS	3	0	
BOND PULL	1823	MAX20090AUP/V+	125°C	1 PASS	3	0	
CSAM	1823	MAX20090AUP/V+		1 PASS	22	0	
CSAM	1823	MAX20090AUP/V+		1 PASS	22	0	
CSAM	1823	MAX20090AUP/V+		1 PASS	22	0	
CONVECTION REFLOW	1823	MAX20090AUP/V+		3 PASS	123	0	
PLATING THICKNESS	1823	MAX20090AUP/V+		1 PASS	2	0	
PLATING THICKNESS	1823	MAX20090AUP/V+	> 5 GMS	1 PASS	2	0	
PLATING THICKNESS	1823	MAX20090AUP/V+	> 5 GMS	1 PASS	2	0	
BOND PULL	1823	MAX20090AUP/V+	> 5 GMS	1 PASS	3	0	
BOND PULL	1823	MAX20090AUP/V+	130C, 85% R.H.	1 PASS	3	0	
BOND PULL	1823	MAX20090AUP/V+		1 PASS	3	0	
Total:						0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1823	MAX20090AUP/V+	-65C TO +150C (Condition C)	1000 CYS	10	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1823	MAX20090AUP/V+	-65C TO +150C (Condition C)	1000 CYS	29	0	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1823	MAX20090AUP/V+	130C, 85% R.H.	96	HRS	45	0
					Total:	0	0

FAILURE RATE: MTTF (YRS): 182205 FITS: 0.6