

8/1/2019



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)	ATP (Amkor, PI)	20 TSSOP (Pb-Free)
ATP (Amkor, PI)	28	TSSOP-CU (Pb-free)	Carsem-M	14 TSSOP (Pb-Free)
Greatek	20	TSSOP (Pb-Free)	Greatek	28 TSSOP (Pb-Free)
Greatek	28	TSSOP-CU (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	28	TSSOP-CU (Pb-free)		

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 305272 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. A 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 .

Assembly Information:

Package Type: TSSOP (Pb-Free)

Date Code Range: 1805 to 1913

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1811	MAX5170BEEE+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1813	MAX4478AUD+	125°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1817	MAX3222CUP+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1818	MAX5100BEUP+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1818	MAX5100BEUP+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1818	MAX5100BEUP+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1820	MAX4581EUE+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1823	MAX15005BAUE/V+	125°C	1000 HRS	42	0	
HIGH TEMP OP LIFE	1826	MAX7034AU/V+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1826	MAX7034AU/V+	125°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1829	MAX9201EUE+	125°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1830	MAX4478AUD+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1833	MAX3222CUP+	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1837	MAX4581EUE+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1905	MAX16833CAUE/V+ QA	125°C	1000 HRS	76	0	
HIGH TEMP OP LIFE	1911	MAX3223EEUP+	125°C	1000 HRS	78	0	

HIGH TEMP OP LIFE	1913	MAX4583CUE+	125°C	1000 HRS	79	0
				Total:		0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BOND STRENGTH	1818	MAX5100BEUP+	> 5 GMS	WIRES	20	0	
BOND STRENGTH	1818	MAX5100BEUP+	> 5 GMS	WIRES	20	0	
BOND STRENGTH	1818	MAX5100BEUP+	> 5 GMS	WIRES	20	0	
BOND STRENGTH	1826	MAX7034AUI/V+	> 5 GMS	WIRES	20	0	
BOND STRENGTH	1826	MAX7034AUI/V+	> 5 GMS	WIRES	20	0	
CONVECTION REFLOW	1830	MAX4478AUD+	85 C/85% R.H.	3 PASS	320	0	
CONVECTION REFLOW	1832	MAX2235EUP+	85 C/85% R.H.	3 PASS	320	0	
CONVECTION REFLOW	1833	MAX3222CUP+	85 C/85% R.H.	3 PASS	320	0	
CONVECTION REFLOW	1835	MAX221ECUE+	85 C/85% R.H.	3 PASS	320	0	
CONVECTION REFLOW	1911	MAX3223EEUP+	260C +0/-5C	3 PASS	320	0	
CONVECTION REFLOW	1913	MAX4583CUE+	260C +0/-5C	3 PASS	320	0	
				Total:		0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1805	MAX15034BAUI/V+	150°C	1000 HRS	28	0	
STORAGE LIFE	1813	MAX4478AUD+	150°C	1000 HRS	80	0	
STORAGE LIFE	1817	MAX3222CUP+	150°C	1000 HRS	75	0	
STORAGE LIFE	1818	MAX5100BEUP+	150°C	1000 HRS	79	0	
STORAGE LIFE	1818	MAX5100BEUP+	150°C	1000 HRS	80	0	
STORAGE LIFE	1818	MAX5100BEUP+	150°C	1000 HRS	79	0	
STORAGE LIFE	1823	MAX15005BAUE/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1826	MAX7034AUI/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1826	MAX7034AUI/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1829	MAX9201EUE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1830	MAX4478AUD+	150°C	1000 HRS	80	0	
STORAGE LIFE	1833	MAX3222CUP+	150°C	1000 HRS	80	0	
STORAGE LIFE	1835	MAX221ECUE+	150°C	1000 HRS	79	0	
STORAGE LIFE	1837	MAX4581EUE+	150°C	1000 HRS	80	0	
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	
				Total:		0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1811	MAX5170BEEE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1817	MAX3222CUP+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1818	MAX5100BEUP+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1818	MAX5100BEUP+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1818	MAX5100BEUP+	-65C TO +150C (Condition C)	1000 CYS	78	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1823	MAX15005BAUE/V+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1826	MAX7034AUI/V+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1826	MAX7034AUI/V+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1830	MAX4478AUD+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1832	MAX2235EUP+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1833	MAX3222CUP+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1835	MAX221ECUE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1837	MAX4581EUE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
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	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE		MAX3222CUP+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1811	MAX5170BEEE+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1813	MAX4478AUD+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1818	MAX5100BEUP+	130C, 85% R.H.	96 HRS	75	0	
BIASED MOISTURE	1818	MAX5100BEUP+	130C, 85% R.H.	96 HRS	71	0	
BIASED MOISTURE	1818	MAX5100BEUP+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1823	MAX15005BAUE/V+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1830	MAX4478AUD+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1832	MAX2235EUP+	130C, 85% R.H.	1000 HRS	80	0	

BIASED MOISTURE	1832	MAX2235EUP+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1835	MAX221ECUE+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1837	MAX4581EUE+	130C, 85% R.H.	96	HRS	77	0
MOISTURE SOAK	1905	MAX16833CAUE/V+ QA	130C, 85% R.H.	96	CYS	96	0
BIASED MOISTURE	1911	MAX3223EEUP+	130C, 85% R.H.	96	HRS	77	0
BIASED MOISTURE	1913	MAX4583CUE+	130C, 85% R.H.	96	HRS	78	0
Total:							0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1829	MAX9201EUE+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1833	MAX3222CUP+	130C, 85% R.H.	96	HRS	80	0
Total:							0

Assembly Information:

Package Type: TSSOP-CU (Pb-free)

Date Code Range: 1736 to 1816

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1736	MAX20097AUI/V+	125°C	192	HRS	78	0
HIGH TEMP OP LIFE	1736	MAX20097AUI/V+	125°C	1000	HRS	79	0
HIGH TEMP OP LIFE	1743	MAX20097AUI/V+	125°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1743	MAX20097AUI/V+	125°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1743	MAX20097AUI/V+	125°C	1000	HRS	79	0
HIGH TEMP OP LIFE	1802	MAX20097AUI/V+	125°C	1000	HRS	77	0
Total:							0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1816	MXL1543CAI+	260C +/-5C	3	PASS	400	0
CONVECTION REFLOW	1816	MXL1543CAI+	260C +/-5C	3	PASS	400	0
Total:							0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1816	MXL1543CAI+	150°C	1000	HRS	85	0
STORAGE LIFE	1816	MXL1543CAI+	150°C	1000	HRS	84	0
Total:							0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1736	MAX20097AUI/V+	-65C TO +150C (Condition C)	1000	CYS	72	0

TEMP CYCLE, 5' RAMP, 10' DWELL	1736	MAX20097AUI/V+	-65C TO +150C (Condition C)	1000	CYS	73	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1743	MAX20097AUI/V+	-65C TO +150C (Condition C)	1000	CYS	73	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1816	MXL1543CAI+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1816	MXL1543CAI+	-65C TO +150C (Condition C)	1000	CYS	80	0
Total:						0	0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1816	MXL1543CAI+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1816	MXL1543CAI+	130C, 85% R.H.	96	HRS	80	0
Total:						0	0

FAILURE RATE: MTTF (YRS): 305272 FITS: 0.4