

8/1/2019



**RELIABILITY MONITOR REPORT
FOR**

QSOP 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	QSOP (Pb-Free)	Carsem-M	16 QSOP (Pb-Free)
Greatek	16	QSOP (Pb-Free)	Greatek	24 QSOP (Pb-Free)
Greatek	28	QSOP (Pb-Free)	UTL (NSEB) UTAC	16 QSOP (Pb-Free)
UTL (NSEB) UTAC	24	QSOP (Pb-Free)		

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 174280 FITS: 0.7

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.

Assembly Information:

Package Type: QSOP (Pb-Free)

Date Code Range: 1804 to 1910

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1804	MAX4582CUE+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1811	MAX16953AEE/V+	125°C	500 HRS	44	0	
HIGH TEMP OP LIFE	1811	MAX16953AEE/V+	125°C	500 HRS	44	0	
HIGH TEMP OP LIFE	1811	MAX16953AEE/V+	125°C	1000 HRS	44	0	
HIGH TEMP OP LIFE	1811	MAX16953AEE/V+	125°C	500 HRS	44	0	
HIGH TEMP OP LIFE	1817	MAX1231BCEG+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1817	MAX1231BCEG+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1820	MAX3645EEEE+	125°C	1000 HRS	55	0	
HIGH TEMP OP LIFE	1823	MAX1138EEEE+	125°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1823	MAX1138EEEE+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1823	MAX16972AGEEB/V+	125°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1828	MAX1030BEEG+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1832	MAX5170BEEEE+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1832	MAX5170BEEEE+	125°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1832	MAX5170BEEEE+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1910	MAX5170BEEEE+	125°C	1000 HRS	79	0	
Total:						0	

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CSAM	1823	MAX1138EEEE+			25	0	
PHYSICAL DIMENSION	1823	MAX1138EEEE+	JESD22-B100		15	0	
BOND CRATER	1823	MAX1138EEEE+			20	0	
SOLDER SHOCK	1823	MAX1138EEEE+			15	0	
CSAM	1823	MAX1138EEEE+			25	0	
PHYSICAL DIMENSION	1823	MAX1138EEEE+	JESD22-B100		15	0	
BOND CRATER	1823	MAX1138EEEE+			20	0	
SOLDER SHOCK	1823	MAX1138EEEE+			15	0	
CONVECTION REFLOW	1828	MAX1030BEEG+	85 C/85% R.H.	3	PASS	320	0
					Total:	0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1804	MAX4582CUE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1811	MAX16953AEE/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1811	MAX16953AEE/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1817	MAX1231BCEG+	150°C	1000 HRS	80	0	
STORAGE LIFE	1817	MAX1231BCEG+	150°C	1000 HRS	80	0	
STORAGE LIFE	1820	MAX3645EEEE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1823	MAX1138EEEE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1823	MAX1138EEEE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1828	MAX1030BEEG+	150°C	1000 HRS	80	0	
STORAGE LIFE	1832	MAX5170BEEEE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1832	MAX5170BEEEE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1910	MAX5170BEEEE+	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	1804	MAX4582CUE+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1810	MAX8538EEI+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1811	MAX16953AEE/V+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1811	MAX16953AEE/V+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1820	MAX3645EEEE+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1823	MAX1138EEEE+	-65C TO +150C (Condition C)	1000	CYS	78	0

TEMP CYCLE, 5' RAMP, 10' DWELL	1823	MAX1138EEEE+	-65C TO +150C (Condition C)	1000	CYS	78	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1828	MAX1030BEEG+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1832	MAX5170BEEEE+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1832	MAX5170BEEEE+	-65C TO +150C (Condition C)	1000	CYS	79	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1910	MAX5170BEEEE+	-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	1817	MAX1231BCEG+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1817	MAX1231BCEG+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1820	MAX3645EEEE+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1828	MAX1030BEEG+	130C, 85% R.H.	96	HRS	8	0
BIASED MOISTURE	1832	MAX5170BEEEE+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1910	MAX5170BEEEE+	130C, 85% R.H.	96	HRS	79	0
Total:						0	0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1823	MAX1138EEEE+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1823	MAX1138EEEE+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1832	MAX5170BEEEE+	130C, 85% R.H.	96	HRS	75	0
Total:						0	0

FAILURE RATE: MTTF (YRS): 174280 FITS: 0.7