

10/27/2017



**RELIABILITY MONITOR REPORT
FOR**

uMAX 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 Kunshan	10	uSOP (Pb-Free)	ATP (Amkor, PI)	8 uMax (Pb-Free)
ATP (Amkor, PI)	10	uMax (Pb-Free)	ATP (Amkor, PI)	10 uSOP (Pb-Free)
MAXIM PHILIPPIN	8	uMax (Pb-Free)	UTL (NSEB) UTAC	8 uMax (Pb-Free)
UTL (NSEB) UTAC	10	uMax (Pb-Free)	UTL (NSEB) UTAC	8 uSOP (Pb-Free)
UTL (NSEB) UTAC	10	uSOP (Pb-Free)		

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 293351 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 7/1/2017 and 9/30/2017.

Assembly Information:

Package Type: uMax (Pb-Free)
Date Code Range: 1604 to 1730

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1604	MAX30034CUA+	135°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1636	MAX3747AEUB+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1650	MAX40201FAUA+	135°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1712	MAX669EUB/V+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1715	MAX5431AEUB+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1719	MAX16956AUBD/V+	135°C	1000 HRS	77	0	
HIGH TEMP OP LIFE	1722	MAX44285TAUA+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1726	MAX4003EUA+	135°C	1000 HRS	80	0	
Total:						0	

PRECONDITIONING LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1712	MAX669EUB/V+	260C +0/-5C	PASS	320	0	
CONVECTION REFLOW	1715	MAX5431AEUB+	260C +0/-5C	PASS	320	0	
CONVECTION REFLOW	1722	MAX44285TAUA+	260C +0/-5C	PASS	500	0	
CONVECTION REFLOW	1730	MAX16956AUBB+	260C +0/-5C	PASS	320	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1636	MAX3747AEUB+	150°C	1000 HRS	80	0	
STORAGE LIFE	1704	MAX9933EUA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1712	MAX669EUB/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1715	MAX5431AEUB+	150°C	1000 HRS	80	0	
STORAGE LIFE	1719	MAX16956AUBD/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1722	MAX44285TAUA+	150°C	500 HRS	80	0	
					Total:	0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX66960USB TEMP MOD	-65C TO +150C (Condition C)	500 CYS	47	0	
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX66960USB TEAM MOD	-65C TO +150C (Condition C)	500 CYS	47	0	
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX66960USB TEMP MOD	-65C TO +150C (Condition C)	500 CYS	47	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1636	MAX3747AEUB+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1712	MAX669EUB/V+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1715	MAX5431AEUB+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1719	MAX16956AUBD/V+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1722	MAX44285TAUA+	-65C TO +150C (Condition C)	200 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1722	MAX44285TAUA+	-65C TO +150C (Condition C)	500 CYS	80	0	
					Total:	0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1636	MAX3747AEUB+	130C, 85% R.H.	96 HRS	79	0	
BIASED MOISTURE	1712	MAX669EUB/V+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1715	MAX5431AEUB+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1719	MAX16956AUBD/V+	130C, 85% R.H.	96 HRS	48	0	
BIASED MOISTURE	1719	MAX16956AUBD/V+	130C, 85% R.H.	96 HRS	32	0	
BIASED MOISTURE	1722	MAX44285TAUA+	130C, 85% R.H.	100 HRS	79	0	
					Total:	0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1722	MAX44285TAUA+	130C, 85% R.H.	100 HRS	80	0	
					Total:	0	

Assembly Information:

Package Type: uSOP (Pb-Free)

Date Code Range: 1548 to 1710

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1548	MAX17551AUB+	135°C	1000 HRS	75	0	
HIGH TEMP OP LIFE	1548	MAX17551AUB+	135°C	1000 HRS	75	0	
HIGH TEMP OP LIFE	1613	MAX9921AUB/V+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1631	MAX14710EUB+	135°C	500 HRS	79	0	
HIGH TEMP OP LIFE	1632	87-1086U+L00	135°C	500 HRS	26	0	
HIGH TEMP OP LIFE	1632	87-1086U+L00	135°C	500 HRS	26	0	
HIGH TEMP OP LIFE	1632	87-1086U+L00	135°C	500 HRS	28	0	
HIGH TEMP OP LIFE	1634	MAX9933EUA+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1637	MAX5431AEUB+	135°C	1000 HRS	44	0	
HIGH TEMP OP LIFE	1637	87-1L91U+33V	135°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1641	MAX4003EUA+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1644	MAX4475AUA+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1645	MAX1954AEUB+	135°C	1000 HRS	45	0	
HIGH TEMP OP LIFE	1703	MAX11606EUA+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1704	MAX9933EUA+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1704	MAX16956AUBE/V+	135°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1710	MAX1745EUB/V+	135°C	1000 HRS	78	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1631	MAX14710EUB+	150°C	1000 HRS	80	0	
STORAGE LIFE	1632	87-1086U+L00	150°C	1000 HRS	80	0	
STORAGE LIFE	1632	87-1086U+L00	150°C	1000 HRS	90	0	
STORAGE LIFE	1634	MAX9933EUA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1637	87-1L91U+33V	150°C	1000 HRS	86	0	
STORAGE LIFE	1641	MAX4003EUA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1644	MAX4475AUA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1645	MAX1954AEUB+	150°C	1000 HRS	80	0	
STORAGE LIFE	1703	MAX11606EUA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1704	MAX16956AUBE/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1710	MAX1745EUB/V+	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	1625	MAX16916GUB/V+	-65C TO +150C (Condition C)	500 CYS	2174	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1631	MAX14710EUB+	-65C TO +150C (Condition C)	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1632	87-1086U+L00	-65C TO +150C (Condition C)	1000 CYS	118	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1632	87-1086U+L00	-65C TO +150C (Condition C)	1000 CYS	116	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1634	MAX9933EUA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1637	87-1L91U+33V	-65C TO +150C (Condition C)	1000 CYS	95	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1641	MAX4003EUA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1644	MAX4475AUA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1645	MAX1954AEUB+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1703	MAX11606EUA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1704	MAX9933EUA+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1704	MAX16956AUBE/V+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1710	MAX1745EUB/V+	-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	1631	MAX14710EUB+	130C, 85% R.H.	100 HRS	80	0	
BIASED MOISTURE	1631	MAX14710EUB+	130C, 85% R.H.	100 HRS	80	0	
BIASED MOISTURE	1634	MAX9933EUA+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1641	MAX4003EUA+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1644	MAX4475AUA+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1645	MAX1954AEUB+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1703	MAX11606EUA+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1704	MAX9933EUA+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1704	MAX16956AUBE/V+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1710	MAX1745EUB/V+	130C, 85% R.H.	96 HRS	80	0	
					Total:	0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1631	MAX14710EUB+	130C, 85% R.H.	96 HRS	80	0	

MOISTURE SOAK	1632	87-1086U+L00	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1632	87-1086U+L00	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1632	87-1086U+L00	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1637	87-1L91U+33V	130C, 85% R.H.	96	HRS	80	0
					Total:		0

FAILURE RATE: MTTF (YRS): 293351 FITS: 0.4