

4/17/2013



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		
ATP (Amkor, PI)	8	uMax (Pb-Free)	ATP (Amkor, PI)	10 uMax (Pb-Free)
Unisem Malaysia	8	uMax (Pb-Free)	UTL Thailand	8 uMax (Pb-Free)
UTL Thailand	10	uMax (Pb-Free)	UTL Thailand	8 uMax-EP (Pb-Free)
UTL Thailand	10	uMax-EP (Pb-Free)		

The calculated failure rate for this assembly is:

**FAILURE RATE: MTTF (YRS): 62279 FITS: 1.8**

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 4/1/2012 and 3/31/2013.

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### Assembly Information:

Package Type: uMax (Pb-Free)

Date Code Range: 1147 to 1240

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### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1147	DS1308	125C, 5.5 VOLTS	240 HRS	80	0	
HIGH TEMP OP LIFE	1205	MAX5217GUA+	135°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1209	MAX44246AUA+	135°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1213	MAX1744EUB/V+	135°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1213	MAX1744EUB/V+	135°C	500 HRS	79	0	
HIGH TEMP OP LIFE	1217	MAX2750AUA+	135°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1218	MAX5805AAUB+	135°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1224	DS1339A	125C, 5.5 VOLTS	192 HRS	80	0	
HIGH TEMP OP LIFE	1231	DS1390	125C, 5.5 VOLTS	192 HRS	45	0	
HIGH TEMP OP LIFE	1231	DS1390	125C, 5.5 VOLTS	192 HRS	45	0	
HIGH TEMP OP LIFE	1233	MAX14639EUB+	135°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1236	MAX31180	125C, 3.6 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	1238	MAX3747BEUB+	135°C	500 HRS	34	0	
HIGH TEMP OP LIFE	1240	MAX14654EUB+	135°C	192 HRS	79	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	1210	MAX31722	150°C	1000 HRS	50	0	

STORAGE LIFE	1213	MAX1744EUB/V+	150°C	500	HRS	50	0
STORAGE LIFE	1224	MAX16916GUB/V+	150°C	1000	HRS	50	0
STORAGE LIFE	1224	MAX16916GUB/V+	150°C	500	HRS	80	0
<b>Total:</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	1210	MAX31722	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1213	MAX1744EUB/V+	-65C TO 150C	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1214	MAX3747AEUB+	-65C TO 150C	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1214	MAX3747AEUB+	-65C TO 150C	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1215	MAX1744EUB+	-65C TO 150C	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1218	MAX1744EUB/V+	-65C TO 150C	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1224	MAX16916GUB/V+	-65C TO 150C	500	CYS	80	0
<b>Total:</b>							<b>0</b>

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#### TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST	1210	MAX31722	130C, 85%R.H., 3.7V	96	HRS	79	0
BIASED MOISTURE	1224	MAX16916GUB/V+	130C, 85% R.H.	100	HRS	80	0
BIASED MOISTURE	1228	MAX9924UAUB/V+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1228	MAX9924UAUB/V+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1228	MAX9924UAUB/V+	130C, 85% R.H.	96	HRS	80	0
<b>Total:</b>							<b>0</b>

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#### UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST, NO BIAS	1210	MAX31722	130C, 85% R.H.	96	HRS	77	0
MOISTURE SOAK	1213	MAX1744EUB/V+	130C, 85% R.H.	240	HRS	80	0
MOISTURE SOAK	1213	MAX1744EUB/V+	85 C/85% R.H.	240	HRS	80	0
MOISTURE SOAK	1213	MAX1744EUB/V+	85 C/85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1215	MAX1744EUB+	85 C/85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1218	MAX1744EUB/V+	85 C/85% R.H.	1000	HRS	78	0
<b>Total:</b>							<b>0</b>

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#### Assembly Information:

Package Type:                   uMax-EP (Pb-Free)  
Date Code Range:                   to 1231

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**STORAGE LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1114	MAX11666AUB+	150°C	500 HRS	45	0	
STORAGE LIFE	1231	MAX1792EUA33+	150°C	500 HRS	50	0	
<b>Total:</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		MAX44247AUA+	-65C TO 150C	1000 CYS	74	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1114	MAX11666AUB+	-65C TO 150C	500 CYS	77	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1231	MAX1792EUA33/V+	-65C TO 150C	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1231	MAX1792EUA33/V+	-65C TO 150C	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1231	MAX1792EUA33/V+	-65C TO 150C	500 CYS	80	0	
<b>Total:</b>						<b>0</b>	

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**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1231	MAX1792EUA33/V+	130C, 85% R.H.	100 HRS	80	0	
BIASED MOISTURE	1231	MAX1792EUA33/V+	130C, 85% R.H.	100 HRS	79	0	
<b>Total:</b>						<b>0</b>	

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1114	MAX11666AUB+	130C, 85% R.H.	100 HRS	77	0	
MOISTURE SOAK	1231	MAX1792EUA33/V+	130C, 85% R.H.	100 HRS	80	0	
MOISTURE SOAK	1231	MAX1792EUA33/V+	130C, 85% R.H.	100 HRS	80	0	
<b>Total:</b>						<b>0</b>	

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**FAILURE RATE: MTTF (YRS): 62279 FITS: 1.8**