



4/17/2012

RELIABILITY MONITOR REPORT  
FOR

**LGA Package**

**MAXIM Integrated Products**

120 San Gabriel Dr.  
Sunnyvale, CA 94086

This Report was prepared by  
Maxim 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 Chung-Li	6	uLGA (Pb-Free)	Carsem-S	48 LGA Flip Chip (Pb-Free)
Carsem-S	64	LGA Flip Chip (Pb-Free)	HANA-AYT	6 uLGA (Pb-Free)
UTL	6	uLGA (Pb-Free)		

The calculated failure rate for this assembly is:

**FAILURE RATE: MTTF (YRS): 20735 FITS: 5.5**

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 4/1/2011 and 3/31/2012.

**Assembly Information:**

Package Type: LGA Flip Chip (Pb-Free)

Date Code Range: 1120 to 1147

**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1120	MAX2597ELB+	135C	500 HRS	44	0	
HIGH TEMP OP LIFE	1120	MAX2597ELB+	135C	500 HRS	43	0	
HIGH TEMP OP LIFE	1120	MAX2597ELB+	135C	500 HRS	44	0	
<b>Total:</b>						<b>0</b>	

**STORAGE LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1120	MAX2597ELB+	150C	1000 HRS	76	0	
STORAGE LIFE	1120	MAX2597ELB+	150C	1000 HRS	76	0	
STORAGE LIFE	1120	MAX2597ELB+	150C	1000 HRS	75	0	
STORAGE LIFE	1125	MAX3541ELM+	150C	500 HRS	77	0	
STORAGE LIFE	1129	MAX2597ELB+	150C	500 HRS	77	0	
STORAGE LIFE	1147	MAX3541ELM+	150C	500 HRS	200	0	
STORAGE LIFE	1147	MAX3541ELM+	150C	500 HRS	200	0	
<b>Total:</b>						<b>0</b>	

**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1125	MAX3541ELM+	-65C TO 150C	500 CYS	77	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1129	MAX2597ELB+	-65C TO 150C	1000 CYS	75	0	

TEMP CYCLE, 5' RAMP, 10' DWELL	1129	MAX2597ELB+	-65C TO 150C	1000	CYS	77	1
<b>Total:</b>							<b>1</b>

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### UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1120	MAX2597ELB+	85 C/85% R.H.	485 HRS	41	0	
MOISTURE SOAK	1120	MAX2597ELB+	85 C/85% R.H.	485 HRS	41	0	
MOISTURE SOAK	1120	MAX2597ELB+	85 C/85% R.H.	485 HRS	41	0	
MOISTURE SOAK	1129	MAX25973LB+	85 C/85% R.H.	1000 HRS	40	0	
MOISTURE SOAK	1129	MAX2597ELB+	85 C/85% R.H.	1000 HRS	40	0	
MOISTURE SOAK	1129	MAX2597ELB+	85 C/85% R.H.	1000 HRS	40	0	
<b>Total:</b>							<b>0</b>

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### Assembly Information:

Package Type: uLGA (Pb-Free)  
Date Code Range: 0946 to 1205

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### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1151	MAX4845DEYT+T	135C	500 HRS	44	0	
HIGH TEMP OP LIFE	1151	MAX4845DEYT+T	135C	500 HRS	44	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	0946	MAX4231AYT+C7G	150C	1000 HRS	80	0	
STORAGE LIFE	1127	MAX4231AYT+C7G	150C	1000 HRS	80	0	
STORAGE LIFE	1143	MAX4231AYT+C7G	150C	1000 HRS	80	0	
STORAGE LIFE	1143	MAX4231AYT+C7G	150C	1048 HRS	80	0	
STORAGE LIFE	1143	MAX4231AYT+C7G	150C	1000 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	0946	MAX4231AYT+C7G	-65C TO 150C	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1143	MAX4231AYT+C7G	-65C TO 150C	1000	CYS	85	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1143	MAX4231AYT+C7G	-65C TO 150C	1000	CYS	85	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1143	MAX4231AYT+C7G	-65C TO 150C	1000	CYS	85	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1146	MAX4845DEYT+T	-65C TO 150C	1000	CYS	85	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1201	MAX4231AYT+C7G	-65C TO 150C	500	CYS	85	0

TEMP CYCLE, 5' RAMP, 10' DWELL	1201	MAX4231AYT+C7G	-65C TO 150C	500	CYS	85	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	1205	MAX4231AYT+C7G	130C, 85% R.H.	100	HRS	48	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	1143	MAX4231AYT+C7G	130C, 85% R.H.	100	HRS	77	0
						<b>Total:</b>	<b>0</b>

**FAILURE RATE:    MTTF (YRS): 20735    FITS: 5.5**