

4/17/2013



RELIABILITY MONITOR REPORT  
FOR

**LGA 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 Chung-Li	6	uLGA (Pb-Free)	HANA-AYT	6 uLGA (Pb-Free)
SOLLEDS	14	OLGA (Pb-Free)	UTL Thailand	6 uLGA (Pb-Free)

The calculated failure rate for this assembly is:

**FAILURE RATE: MTTF (YRS): 91271 FITS: 1.3**

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.

**Assembly Information:**

Package Type: OLGA (Pb-Free)  
Date Code Range: 1309 to N/A

**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX88920EFD+T	-65C TO 150C	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX88920EFD+T	-65C TO 150C	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX88920EFD+T	-65C TO 150C	1000 CYS	79	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	N/A	MAX88920EFD+T	-65C TO 150C	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	N/A	MAX88920EFD+T	-65C TO 150C	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	N/A	MAX88920EFD+T	-65C TO 150C	500 CYS	79	0	
<b>Total:</b>						<b>0</b>	

**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1309	MAX88920EFD+T	130C, 85% R.H.	24 HRS	80	0	
MOISTURE SOAK	1309	MAX88920EFD+T	130C, 85% R.H.	24 HRS	80	0	
MOISTURE SOAK	N/A	MAX88920EFD+T	85 C/85% R.H.	1000 HRS	76	0	
MOISTURE SOAK	N/A	MAX88920EFD+T	85 C/85% R.H.	1000 HRS	78	0	
MOISTURE SOAK	N/A	MAX88920EFD+T	85 C/85% R.H.	1000 HRS	77	0	
<b>Total:</b>						<b>0</b>	

---

**Assembly Information:**

Package Type: uLGA (Pb-Free)

Date Code Range: 1149 to 1235

---

**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1151	MAX4845DEYT+T	135°C	1000 HRS	44	0	
HIGH TEMP OP LIFE	1151	MAX4845DEYT+T	135°C	1000 HRS	43	0	
HIGH TEMP OP LIFE	1151	MAX4845DEYT+T	135°C	1000 HRS	43	0	
HIGH TEMP OP LIFE	1210	MAX4845DEYT+	135°C	1000 HRS	43	0	
HIGH TEMP OP LIFE	1210	MAX4845DEYT+	135°C	1000 HRS	43	0	
HIGH TEMP OP LIFE	1210	MAX4845DEYT+	135°C	500 HRS	43	0	
HIGH TEMP OP LIFE	1210	MAX4845DEYT+	135°C	1000 HRS	43	0	
HIGH TEMP OP LIFE	1219	MAX44260AYT+	135°C	1000 HRS	77	0	
HIGH TEMP OP LIFE	1219	MAX44260AYT+	135°C	1000 HRS	77	0	
HIGH TEMP OP LIFE	1219	MAX44260AYT+	135°C	1000 HRS	75	0	
<b>Total:</b>						<b>0</b>	

---

**STORAGE LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1149	MAX44280AYT+T	150°C	1000 HRS	80	0	
STORAGE LIFE	1201	MAX4231AYT+C7G	150°C	1000 HRS	80	0	
STORAGE LIFE	1201	MAX4231AYT+C7G	150°C	1000 HRS	80	0	
STORAGE LIFE	1201	MAX4231AYT+C7G	150°C	1000 HRS	80	0	
STORAGE LIFE	1202	MAX44280AYT+T	150°C	1000 HRS	80	0	
STORAGE LIFE	1204	MAX44280AYT+T	150°C	1000 HRS	80	0	
STORAGE LIFE	1211	MAX4845DEYT+T	150°C	1000 HRS	80	0	
STORAGE LIFE	1211	MAX4845DEYT+T	150°C	1000 HRS	80	0	
STORAGE LIFE	1211	MAX4845DEYT+T	150°C	1000 HRS	80	0	
STORAGE LIFE	1217	MAX4231AYR+C7G	150°C	1000 HRS	80	0	
STORAGE LIFE	1217	MAX4231AYT+C7G	150°C	1000 HRS	79	0	
STORAGE LIFE	1217	MAX4231AYT+C7G	150°C	1000 HRS	80	0	
STORAGE LIFE	1219	MAX44260AYT+	150°C	1000 HRS	76	0	
STORAGE LIFE	1219	MAX44260AYT+	150°C	1000 HRS	77	0	
STORAGE LIFE	1219	MAX44260AYT+	150°C	1000 HRS	73	0	
STORAGE LIFE	1220	MAX44260AYT+T	150°C	1000 HRS	79	0	
STORAGE LIFE	1220	MAX44260AYT+T	150°C	500 HRS	80	0	
STORAGE LIFE	1220	MAX44260AYT+T	150°C	1000 HRS	79	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	1149	MAX44280AYT+T	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1201	MAX4231AYT+C7G	-65C TO 150C	1000	CYS	82	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1201	MAX4231AYT+C7G	-65C TO 150C	1000	CYS	85	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1202	MAX44280AYT+T	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1204	MAX44280AYT+T	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1205	MAX4231AYT+C7G	-65C TO 150C	1000	CYS	82	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1205	MAX4231AYT+C7G	-65C TO 150C	1000	CYS	85	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1205	MAX4231AYT+C7G	-65C TO 150C	500	CYS	85	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1211	MAX4845DEYT+T	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1211	MAX4845DEYT+	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1211	MAX4845DEYT+T	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1217	MAX4231AYT+C7G	-65C TO 150C	1000	CYS	85	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1217	MAX4231AYT+C7G	-65C TO 150C	1000	CYS	83	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1217	MAX4231AYT+C7G	-65C TO 150C	1000	CYS	84	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1219	MAX44260AYT+	-65C TO 150C	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1219	MAX44260AYT+	-65C TO 150C	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1219	MAX44260AYT+	-65C TO 150C	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1220	MAX44260AYT+T	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1220	MAX44260AYT+T	-65C TO 150C	1000	CYS	79	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1220	MAX44260AYT+T	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1233	MAX4231AYT+C7G	-65C TO 150C	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1233	MAX4231AYT+C7G	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1235	MAX4231AYT+C7G	-65C TO 150C	1000	CYS	80	0
<b>Total:</b>						<b>0</b>	

---

**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1149	MAX44280AYT+T	130C, 85% R.H.	100 HRS	70	0	
BIASED MOISTURE	1202	MAX44280AYT+T	130C, 85% R.H.	100 HRS	70	0	
BIASED MOISTURE	1204	MAX44280AYT+T	130C, 85% R.H.	100 HRS	69	0	
BIASED MOISTURE	1205	MAX4231AYT+C7G	130C, 85% R.H.	100 HRS	17	0	
BIASED MOISTURE	1219	MAX44260AYT+	130C, 85% R.H.	100 HRS	45	0	
BIASED MOISTURE	1233	MAX4231AYT+C7G	130C, 85% R.H.	100 HRS	80	0	
BIASED MOISTURE	1235	MAX4231AYT+C7G	130C, 85% R.H.	100 HRS	80	0	
<b>Total:</b>						<b>0</b>	

---

**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1219	MAX44260AYT+	130C, 85% R.H.	100 HRS	77	0	
MOISTURE SOAK	1219	MAX44260AYT+	130C, 85% R.H.	500 HRS	77	0	
MOISTURE SOAK	1219	MAX44260AYT+	130C, 85% R.H.	100 HRS	77	0	
MOISTURE SOAK	1219	MAX44260AYT+	130C, 85% R.H.	500 HRS	75	0	
MOISTURE SOAK	1219	MAX44260AYT+	130C, 85% R.H.	500 HRS	77	0	
MOISTURE SOAK	1219	MAX44260AYT+	130C, 85% R.H.	100 HRS	77	0	
<b>Total:</b>						<b>0</b>	

**FAILURE RATE: MTTF (YRS): 91271 FITS: 1.3**