

4/16/2014



**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	28	LGA (Pb-Free)	ASE Chung-Li	14 OLGA (Pb-Free)
ASE Korea	16	LGA (Pb-Free)	ASEK-ASY	60 LGA-FC (Pb-Free)
SOLLEDS	14	OLGA (Pb-Free)		

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 190259 FITS: 0.6

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 4/1/2013 and 3/31/2014.

Assembly Information:

Package Type: LGA (Pb-Free)

Date Code Range: 1249 to 1321

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1249	MAX21000	125C, 3.6 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	1303	MAX21000	125C, 3.6 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	1304	MAX21000	125C, 3.6 VOLTS	1000 HRS	80	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1249	MAX21000	150°C	1000 HRS	80	0	
STORAGE LIFE	1303	MAX21000	150°C	1000 HRS	80	0	
STORAGE LIFE	1304	MAX21000	150°C	1000 HRS	80	0	
Total:						0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	1249	MAX21000	J-STD-020		80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1249	MAX21000	-55C TO 125C	1000 CYS	80	0	
ULTRASOUND	1303	MAX21000	J-STD-020		80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1303	MAX21000	-55C TO 125C	1000 CYS	80	0	
ULTRASOUND	1304	MAX21000	J-STD-020		80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1304	MAX21000	-55C TO 125C	1000 CYS	80	0	

TEMP CYCLE, 5' RAMP, 10' DWELL	1321	MAX17515ELI+	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1321	MAX17515ELI+	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1321	MAX17515ELI+	-65C TO 150C	1000	CYS	80	0

Total: 0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE		MAX21001/V+	130C, 85% R.H.	264	HRS	80	0
HAST	1249	MAX21000	110C, 85% R.H., 2.5V	264	HRS	80	0
HAST	1303	MAX21000	110C, 85% R.H., 2.5V	264	HRS	80	1 40047559
HAST	1303	MAX21000	110C, 85% R.H., 2.5V	264	HRS	80	0
HAST	1304	MAX21000	110C, 85% R.H., 2.5V	264	HRS	80	0
						Total:	1

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST, NO BIAS	1249	MAX21000	110C, 85% R.H.	264	HRS	80	0
HAST, NO BIAS	1249	MAX21000	110C, 85% R.H.	264	HRS	720	0
HAST, NO BIAS	1303	MAX21000	110C, 85% R.H.	264	HRS	80	0
HAST, NO BIAS	1303	MAX21000	110C, 85% R.H.	264	HRS	720	0
HAST, NO BIAS	1304	MAX21000	110C, 85% R.H.	264	HRS	80	0
HAST, NO BIAS	1304	MAX21000	110C, 85% R.H.	264	HRS	800	0
MOISTURE SOAK	1321	MAX17515ELI+	85 C/85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1321	MAX17515ELI+	85 C/85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1321	MAX17515ELI+	85 C/85% R.H.	1000	HRS	80	0
						Total:	0

Assembly Information:

Package Type: LGA-FC (Pb-Free)

Date Code Range: 1324 to 1325

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1324	MAX24101ELU+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1325	MAX24101ELU+	135°C	1000	HRS	79	0
HIGH TEMP OP LIFE	1325	MAX24101ELU+	135°C	192	HRS	80	0
HIGH TEMP OP LIFE	1325	MAX24101ELU+	135°C	1000	HRS	79	0
						Total:	0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
-------------	-----------	--------------	-----------	-----------	----------	-------	-------

STORAGE LIFE	1324	MAX24101ELU+	150°C	1000 HRS	80	0
STORAGE LIFE	1325	MAX24101ELU+	150°C	1000 HRS	80	0
STORAGE LIFE	1325	MAX24101ELU+	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	1324	MAX24101ELU+	-65C TO 150C	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1325	MAX24101ELU+	-65C TO 150C	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1325	MAX24101ELU+	-65C TO 150C	1000 CYS	80	0	
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1324	MAX24101ELU+	85 C/85% R.H.	1000 HRS	48	0	
MOISTURE SOAK	1325	MAX24101ELU+	85 C/85% R.H.	1000 HRS	47	0	
MOISTURE SOAK	1325	MAX24101ELU+	85 C/85% R.H.	1000 HRS	48	0	
Total:						0	

Assembly Information:

Package Type: OLGA (Pb-Free)
Date Code Range: 1304 to 1435

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1304	MAX88920EFD+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1307	MAX88920EFD+T	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1307	MAX88920EFD+T	135°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1307	MAX88920EFD+T	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1319	MAX88921EFD+	135°C	500 HRS	77	0	
HIGH TEMP OP LIFE	1319	MAX88921EFD+	135°C	500 HRS	77	0	
HIGH TEMP OP LIFE	1319	MAX88921EFD+	135°C	500 HRS	77	0	
HIGH TEMP OP LIFE	1322	MAX88920EFD+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1323	MAX88920EFD+	135°C	192 HRS	80	1	
HIGH TEMP OP LIFE	1327	MAX88920EFD+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1328	MAX88921EFD+	135°C	1000 HRS	77	0	
HIGH TEMP OP LIFE	1328	MAX88921EFD+	135°C	1000 HRS	77	0	
HIGH TEMP OP LIFE	1328	MAX88922EFD+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1331	MAX88920EFD+T	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1331	MAX88920EFD+T	135°C	1000 HRS	80	0	

HIGH TEMP OP LIFE	1331	MAX88920EFD+T	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1332	MAX88922EFD+T	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1332	MAX88922EFD+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1333	MAX88922EFD+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1344	MAX88922EFD+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1344	MAX88922EFD+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1344	MAX88922EFD+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1345	MAX88922EFD+	135°C	500	HRS	79	0
HIGH TEMP OP LIFE	1345	MAX88922EFD+	135°C	500	HRS	78	0
HIGH TEMP OP LIFE	1345	MAX88922EFD+	135°C	500	HRS	80	0
HIGH TEMP OP LIFE	1351	MAX88900EFD+T	135°C	1000	HRS	77	0
HIGH TEMP OP LIFE	1351	MAX88900EFD+T	135°C	1000	HRS	77	0
HIGH TEMP OP LIFE	1351	MAX88900EFD+T	135°C	1000	HRS	77	0
HIGH TEMP OP LIFE	1402	MAX88922EFD+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1402	MAX88922EFD+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1404	MAX86900AEFD+T	135°C	500	HRS	77	0
HIGH TEMP OP LIFE	1404	MAX86900AEFD+T	135°C	500	HRS	77	0
HIGH TEMP OP LIFE	1404	MAX86900AEFD+T	135°C	500	HRS	77	0
Total:						1	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE		MAX88922EFD+	150°C	120	HRS	52	0
STORAGE LIFE	1304	MAX88920EFD+	150°C	1000	HRS	80	0
STORAGE LIFE	1307	MAX88920EFD+T	150°C	1000	HRS	80	0
STORAGE LIFE	1307	MAX88920EFD+T	150°C	1000	HRS	80	0
STORAGE LIFE	1307	MAX88920EFD+T	150°C	1000	HRS	80	0
STORAGE LIFE	1322	MAX88920EFD+	150°C	1000	HRS	80	0
STORAGE LIFE	1328	MAX88921EFD+	150°C	1000	HRS	77	0
STORAGE LIFE	1328	MAX88921EFD+	150°C	1000	HRS	76	0
STORAGE LIFE	1328	MAX88921EFD+	150°C	1000	HRS	77	0
STORAGE LIFE	1332	MAX88922EFD+T	150°C	1000	HRS	80	0
STORAGE LIFE	1332	MAX88922EFD+	150°C	1000	HRS	80	0
STORAGE LIFE	1333	MAX88922EFD+	150°C	1000	HRS	80	0
STORAGE LIFE	1344	MAX88922EFD+	150°C	160	HRS	80	0
STORAGE LIFE	1344	MAX88922EFD+	150°C	1000	HRS	79	0
STORAGE LIFE	1344	MAX88922EFD+	150°C	160	HRS	80	0
STORAGE LIFE	1344	MAX88922EFD+	150°C	1000	HRS	79	0
STORAGE LIFE	1344	MAX88922EFD+	150°C	1000	HRS	63	0

STORAGE LIFE	1344	MAX88922EFD+	150°C	160	HRS	50	0
STORAGE LIFE	1351	MAX88900EFD+T	150°C	1000	HRS	77	0
STORAGE LIFE	1351	MAX88900EFD+T	150°C	1000	HRS	77	1
STORAGE LIFE	1351	MAX86900EFD+T	150°C	1000	HRS	50	0
STORAGE LIFE	1402	MAX88922EFD+	150°C	1000	HRS	80	0
STORAGE LIFE	1402	MAX88922EFD+	150°C	1000	HRS	79	0
STORAGE LIFE	1404	MAX86900AEFD+T	150°C	1000	HRS	77	1
STORAGE LIFE	1404	MAX86900AEFD+T	150°C	1000	HRS	77	1
STORAGE LIFE	1404	MAX86900AEFD+T	150°C	500	HRS	77	0
STORAGE LIFE	1404	MAX86900AEFD+T	150°C	120	HRS	50	0
STORAGE LIFE	1430	MAX86900AEFD+T	150°C	120	HRS	50	0
STORAGE LIFE	1435	MAX86900AEFD+T	150°C	120	HRS	43	0
Total:							3

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1304	MAX88920EFD+	-65C TO 150C	200	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1309	MAX88920EFD+T	-65C TO 150C	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1309	MAX88920EFD+T	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1322	MAX 88920EFD+	-65C TO 150C	500	CYS	80	1
TEMP CYCLE, 5' RAMP, 10' DWELL	1328	MAX88921EFD+	-65C TO 150C	300	CYS	80	1
TEMP CYCLE, 5' RAMP, 10' DWELL	1332	MAX88922EFD+T	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1332	MAX88922EFD+T	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1333	MAX88922EFD+	-65C TO 150C	1000	CYS	78	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1344	MAX88922EFD+	-65C TO 150C	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1344	MAX88922EFD+	-65C TO 150C	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1344	MAX88922EFD+	-65C TO 150C	1000	CYS	77	1
TEMP CYCLE, 5' RAMP, 10' DWELL	1344	MAX88922EFD+	-65C TO 150C	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1344	MAX88922EFD+	-65C TO 150C	1000	CYS	76	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1344	MAX88922EFD+	-65C TO 150C	500	CYS	50	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1345	MAX88200EFD+	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1345	MAX88922EFD+	-65C TO 150C	1000	CYS	77	0

TEMP CYCLE, 5' RAMP, 10' DWELL	1345	MAX88200EFD+	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1349	MAX88922AEFD+	-65C TO 150C	20	CYS	50	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1351	MAX86900EFD+T	-65C TO 150C	78	CYS	50	1
TEMP CYCLE, 5' RAMP, 10' DWELL	1402	MAX88922EFD+	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1402	MAX88922EFD+	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1402	MAX88922EFD+T	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1402	MAX86900AEFD+T	-65C TO 150C	20	CYS	50	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1404	MAX86900AEFD+T	-65C TO 150C	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1404	MAX86900AEFD+T	-65C TO 150C	1000	CYS	76	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1404	MAX86900AEFD+T	-65C TO 150C	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1430	MAX86900AEFD+T	-65C TO 150C	20	CYS	50	0
Total:						4	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK		MAX88320EFD+	130C, 85% R.H.	24	HRS	100	0
MOISTURE SOAK		MAX88922EFD+	85 C/85% R.H.	120	HRS	52	1
MOISTURE SOAK	1304	MAX88920EFD+	85 C/85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1307	MAX88920EFD+T	85 C/85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1307	MAX88920EFD+T	85 C/85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1307	MAX88920EFD+T	85 C/85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1319	MAX88921EFD+	130C, 85% R.H.	24	HRS	77	0
MOISTURE SOAK	1319	MAX88921EFD+	130C, 85% R.H.	24	HRS	77	0
MOISTURE SOAK	1319	MAX88921EFD+	130C, 85% R.H.	24	HRS	77	0
MOISTURE SOAK	1322	MAX88920EFD+	85 C/85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1328	MAX88921EFD+	130C, 85% R.H.	500	HRS	77	1
MOISTURE SOAK	1331	MAX88920EFD+T	130C, 85% R.H.	24	HRS	80	0
MOISTURE SOAK	1331	MAX88920EFD+T	130C, 85% R.H.	24	HRS	80	0
MOISTURE SOAK	1331	MAX88920EFD+T	130C, 85% R.H.	24	HRS	80	0
MOISTURE SOAK	1333	MAX88922EFD+	85 C/85% R.H.	500	HRS	80	0
MOISTURE SOAK	1344	MAX88922EFD+	85 C/85% R.H.	1000	HRS	79	0
MOISTURE SOAK	1344	MAX88922EFD+	130C, 85% R.H.	160	HRS	80	0
MOISTURE SOAK	1344	MAX88922EFD+	85 C/85% R.H.	1000	HRS	79	0
MOISTURE SOAK	1344	MAX88922EFD+	85 C/85% R.H.	1000	HRS	77	0

MOISTURE SOAK	1344	MAX88922EFD+	85 C/85% R.H.	160	HRS	80	0
MOISTURE SOAK	1344	MAX88922EFD+	130C, 85% R.H.	160	HRS	50	0
MOISTURE SOAK	1344	MAX88922EFD+	130C, 85% R.H.	120	HRS	50	0
MOISTURE SOAK	1349	MAX88922AEFD+	85 C/85% R.H.	120	HRS	50	0
MOISTURE SOAK	1351	MAX88900EFD+T	85 C/85% R.H.	1000	HRS	77	0
MOISTURE SOAK	1351	MAX88900EFD+T	130C, 85% R.H.	1000	HRS	77	0
MOISTURE SOAK	1351	MAX86900EFD+T	85 C/85% R.H.	1000	HRS	50	0
MOISTURE SOAK	1402	MAX88922EFD+	85 C/85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1402	MAX88922EFD+	85 C/85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1402	MAX88922EFD+	85 C/85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1404	MAX86900AEFD+T	130C, 85% R.H.	24	HRS	77	0
MOISTURE SOAK	1404	MAX86900AEFD+T	85 C/85% R.H.	500	HRS	77	0
MOISTURE SOAK	1404	MAX86900AEFD+T	130C, 85% R.H.	1000	HRS	77	0
MOISTURE SOAK	1404	MAX86900AEFD+T	130C, 85% R.H.	500	HRS	77	0
MOISTURE SOAK	1404	MAX86900AEFD+T	130C, 85% R.H.	100	HRS	50	0
MOISTURE SOAK	1430	MAX86900AEFD+T	85 C/85% R.H.	120	HRS	50	0
						Total:	2

FAILURE RATE: MTTF (YRS): 190259 FITS: 0.6