

10/27/2017



**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	32 LGA (Pb-Free)
ASE Chung-Li	33	LGA (Pb-Free)	ASE Chung-Li	8 OLGA (Pb-Free)
ASE Chung-Li	14	OLGA (Pb-Free)	ASE Chung-Li	22 OLGA (Pb-Free)
ASE Korea	29	LGA (Pb-Free)	ASE Korea	42 LGA (Pb-Free)
Dallas-Maxfilm	14	OLGA (Pb-Free)	JCAP	14 OLGA (Pb-Free)
UTL (NSEB) UTAC	14	OLGA (Pb-Free)		

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 128519 FITS: 0.9

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: LGA (Pb-Free)
 Date Code Range: 1650 to 1717

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE		MAXM17575ALI+	135°C	1000 HRS	48	0	
HIGH TEMP OP LIFE		MAXM17575ATC+	135°C	1000 HRS	47	0	
HIGH TEMP OP LIFE	1650	MAXM17503ALJ+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1707	MAXM17574ALC+	135°C	500 HRS	50	0	
HIGH TEMP OP LIFE	1707	MAXM17574ALC+	135°C	500 HRS	50	0	
HIGH TEMP OP LIFE	1707	MAXM17574ALC+	135°C	1000 HRS	50	0	
HIGH TEMP OP LIFE	1707	MAXM17575ATC+	135°C	192 HRS	48	0	
HIGH TEMP OP LIFE	1707	MAXM17575ATC+	135°C	500 HRS	47	0	
HIGH TEMP OP LIFE	1708	MAXM17761ALI+	135°C	1000 HRS	48	0	
HIGH TEMP OP LIFE	1710	MAXM17546	135°C	500 HRS	77	0	
HIGH TEMP OP LIFE	1714	MAXM17761AL1+	135°C	500 HRS	48	0	
HIGH TEMP OP LIFE	1714	MAXM17761AL1+	135°C	1000 HRS	48	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE		MAXM17575	150°C	1000 HRS	80	0	
STORAGE LIFE		MAXM17575	150°C	1000 HRS	80	0	

STORAGE LIFE		MAXM17761ALI+	150°C	1000 HRS	80	0
STORAGE LIFE	1702	MAXM17575ALI+	150°C	500 HRS	80	0
STORAGE LIFE	1702	MAXM17575ALI+	150°C	1000 HRS	80	0
STORAGE LIFE	1707	MAXM17574ALC+	150°C	1000 HRS	90	0
STORAGE LIFE	1707	MAXM17574ALC+	150°C	1000 HRS	90	0
STORAGE LIFE	1707	MAXM17574ALC+	150°C	1000 HRS	90	0
STORAGE LIFE	1710	MAXM17546	150°C	500 HRS	300	0
STORAGE LIFE	1712	MAXM17761ALI+	150°C	1000 HRS	80	0
STORAGE LIFE	1712	MAXM17761ALI+	150°C	500 HRS	80	0
Total:					0	0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1702	MAXM17575ALI+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1702	MAXM17575ALI+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1707	MAXM17574ALC+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1707	MAXM17574ALC+	-65C TO +150C (Condition C)	1000 CYS	90	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1707	MAXM17574ALC+	-65C TO +150C (Condition C)	1000 CYS	90	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1712	MAXM17575ALI+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1712	MAXM17761ALI+	-65C TO +150C (Condition C)	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1712	MAXM17761ALI+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1717	MAXM20745ALO+	-65C TO +150C (Condition C)	1000 CYS	890	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1717	MAXM20735ALO+	-65C TO +150C (Condition C)	1000 CYS	996	0	
Total:					0	0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE		MAXM17575	85 C/85% R.H.	1000 HRS	24	0	
BIASED MOISTURE		MAXM17575	85 C/85% R.H.	1000 HRS	23	0	
BIASED MOISTURE		MAXM17761ALI+	85 C/85% R.H.	1000 HRS	24	0	
BIASED MOISTURE		MAXM17761ALI+	85 C/85% R.H.	1000 HRS	24	0	
BIASED MOISTURE	1702	MAXM17572ATC+	130C, 85% R.H.	264 HRS	48	0	
BIASED MOISTURE	1708	MAXM17575	85 C/85% R.H.	500 HRS	23	0	
BIASED MOISTURE	1708	MAXM17575	85 C/85% R.H.	1000 HRS	23	0	
BIASED MOISTURE	1708	MAXM17575	85 C/85% R.H.	1000 HRS	24	0	
BIASED MOISTURE	1708	MAXM17575	85 C/85% R.H.	500 HRS	24	0	
BIASED MOISTURE	1714	MAXM17761	85 C/85% R.H.	1000 HRS	24	0	

BIASED MOISTURE	1714	MAXM17761	130C, 85% R.H.	500 HRS	24	0
BIASED MOISTURE	1714	MAXM17761	85 C/85% R.H.	500 HRS	24	0
BIASED MOISTURE	1714	MAXM17761	85 C/85% R.H.	1000 HRS	24	0
Total:						0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1702	MAXM17575ALI+	130C, 85% R.H.	500 HRS	80	0	
MOISTURE SOAK	1702	MAXM17575ALI+	130C, 85% R.H.	500 HRS	80	0	
MOISTURE SOAK	1705	MAXM17574ALC+	85 C/85% R.H.	500 HRS	46	0	
MOISTURE SOAK	1705	MAXM17574ALC+	85 C/85% R.H.	1000 HRS	46	0	
MOISTURE SOAK	1712	MAXM17761ALI+	130C, 85% R.H.	500 HRS	80	0	
MOISTURE SOAK	1712	MAXM17761ALI+	130C, 85% R.H.	96 HRS	80	0	
Total:						0	

Assembly Information:

Package Type: OLGA (Pb-Free)
Date Code Range: 1631 to 1728

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE		MAX86915EFD+	135°C	500 HRS	80	0	
HIGH TEMP OP LIFE		MAX86915EFD+	135°C	500 HRS	80	0	
HIGH TEMP OP LIFE		MAX86915EFD+	135°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1649	MAX86150EFF+	135°C	1000 HRS	77	0	
Total:						0	

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
SOLDERABILITY		MAX86915EFD+	JESD22-B102, COND C (245C)		15	0	
BOND STRENGTH		MAX86915EFD+	> 5 GMS	200 WIRES	20	0	
SOLDERABILITY		MAX86915EFD+	JESD22-B102, COND C (245C)		15	0	
BOND STRENGTH		MAX86915EFD+	> 5 GMS	200 WIRES	20	0	
SOLDERABILITY		MAX86915EFD+	JESD22-B102, COND C (245C)		15	0	
BOND STRENGTH		MAX86915EFD+	> 5 GMS	200 WIRES	20	0	
Total:						0	

PRECONDITIONING LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW		MAX86915EFD+	260C +0/-5C	PASS	350	0	
CONVECTION REFLOW		MAX86915EFD+	260C +0/-5C	PASS	10	0	
CONVECTION REFLOW		MAX86915EFD+	260C +0/-5C	PASS	350	0	
CONVECTION REFLOW		MAX86915EFD+	260C +0/-5C	PASS	250	0	

CONVECTION REFLOW		MAX86915EFD+	260C +0/-5C	PASS	250	0
CONVECTION REFLOW		MAX86915EFD+	260C +0/-5C	PASS	350	0
CONVECTION REFLOW		MAX86915EFD+	260C +0/-5C	PASS	350	0
CONVECTION REFLOW		MAX86907GEFD+	260C +0/-5C	PASS	500	0
CONVECTION REFLOW		MAX86915EFD+	260C +0/-5C	PASS	20	0
CONVECTION REFLOW		MAX86915EFD+	260C +0/-5C	PASS	250	0
CONVECTION REFLOW	1641	VT1677SBF	260C +0/-5C	PASS	28	0
CONVECTION REFLOW	1641	VT1677SBF	260C +0/-5C	PASS	28	0
CONVECTION REFLOW	1641	VT1677SBF	260C +0/-5C	PASS	28	0
CONVECTION REFLOW	1649	VT1677SBF	260C +0/-5C	PASS	24	0
CONVECTION REFLOW	1649	VT1677SBF	260C +0/-5C	PASS	28	0
CONVECTION REFLOW	1707	VT1677SBF	260C +0/-5C	PASS	28	0
CONVECTION REFLOW	1707	VT1677SBF	260C +0/-5C	PASS	28	0
CONVECTION REFLOW	1707	VT1677SBF	260C +0/-5C	PASS	28	0
CONVECTION REFLOW	1713	VT1677SBF	260C +0/-5C	PASS	28	0
CONVECTION REFLOW	1715	VT1677SBF	260C +0/-5C	PASS	28	0
CONVECTION REFLOW	1715	VT1677SBF	260C +0/-5C	PASS	28	0
CONVECTION REFLOW	1715	VT1677SBF	260C +0/-5C	PASS	28	0
CONVECTION REFLOW	1715	VT1677SBF	260C +0/-5C	PASS	28	0
CONVECTION REFLOW	1725	MAX86915EFD+	260C +0/-5C	PASS	250	0
CONVECTION REFLOW	1728	VT1677SBFQ+CNQ	260C +0/-5C	PASS	300	0
Total:					0	0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE		MAX87020	150°C	105 HRS	36	0	
STORAGE LIFE	1639	MAX86907DEFD+	150°C	120 HRS	40	0	
STORAGE LIFE	1649	MAX86150EFF+	150°C	1000 HRS	77	0	
Total:					0	0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX86915EFD+	-65C TO +150C (Condition C)	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX86915EFD+	-65C TO +150C (Condition C)	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX86915EFD+	-65C TO +150C (Condition C)	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX86915EFD+	-65C TO +150C (Condition C)	96 CYS	50	0	
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX86915EFD+	-65C TO +150C (Condition C)	1000 CYS	77	0	
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX86915EFD+	-65C TO +150C (Condition C)	1000 CYS	77	0	

TEMP CYCLE, 5' RAMP, 10' DWELL		MAX86915EFD+	-65C TO +150C (Condition C)	500	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX86915EFD+	-65C TO +150C (Condition C)	96	CYS	50	0
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX86915EFD+	-65C TO +150C (Condition C)	96	CYS	50	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1631	MAX86907BEFD+T	-65C TO +150C (Condition C)	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1631	MAX86907BEFD+T	-65C TO +150C (Condition C)	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1631	MAX86907BEFD+T	-65C TO +150C (Condition C)	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1639	MAX86907DEFD+	-65C TO +150C (Condition C)	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1639	MAX86907DEFD+	-65C TO +150C (Condition C)	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1649	MAX86150EFF+	-65C TO +150C (Condition C)	1000	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1649	MAX86150EFF+	-65C TO +150C (Condition C)	500	CYS	77	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1725	MAX86915EFD+	-65C TO +150C (Condition C)	96	CYS	50	0
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE		MAX86915EFD+	130C, 85% R.H.	120 HRS	50	0	
BIASED MOISTURE		MAX86915EFD+	130C, 85% R.H.	120 HRS	50	0	
BIASED MOISTURE	1649	VT1677SBF	130C, 85% R.H.	96 HRS	24	0	
BIASED MOISTURE	1725	MAX86915EFD+	130C, 85% R.H.	120 HRS	50	0	
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK		MAX86915EFD+	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK		MAX86915EFD+	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK		MAX86915EFD+	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK		MAX86915EFD+	130C, 85% R.H.	96 HRS	77	0	
MOISTURE SOAK		MAX86915EFD+	130C, 85% R.H.	96 HRS	50	0	
MOISTURE SOAK		MAX86915EFD+	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK		MAX86907GEFD+	130C, 85% R.H.	96 HRS	77	0	
MOISTURE SOAK	1631	MAX86907BEFD+T	130C, 85% R.H.	96 HRS	77	0	
MOISTURE SOAK	1631	MAX86907BEFD+T	130C, 85% R.H.	96 HRS	77	0	
MOISTURE SOAK	1631	MAX86907BEFD+T	130C, 85% R.H.	96 HRS	77	0	
MOISTURE SOAK	1639	MAX86907DEFD+	130C, 85% R.H.	96 HRS	77	0	
MOISTURE SOAK	1639	MAX86907DEFD+	130C, 85% R.H.	96 HRS	76	0	

MOISTURE SOAK	1639	MAX86907DEFD+	130C, 85% R.H.	120	HRS	77	0
MOISTURE SOAK	1639	MAX86907DEFD+	85 C/85% R.H.	120	HRS	40	0
MOISTURE SOAK	1725	MAX86915EFD+	130C, 85% R.H.	96	HRS	50	0
					Total:		0

FAILURE RATE: MTTF (YRS): 128519 FITS: 0.9