

1/24/2019



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	32	LGA (Pb-Free)	ASE Chung-Li	14 OLGA (Pb-Free)
ASE Chung-Li	14	OLGA Hybrid	ASE Kaoshiung	17 OLGA Hybrid
ASE Kaoshiung	44	OLGA Hybrid	ASE Korea	29 LGA
ASE Korea	29	LGA (Pb-Free)	ATC (Amkor, China)	12 LGA (Pb-Free)
UTAC DG	10	LGA	UTAC DG	10 LGA (Pb-Free)

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 112339 FITS: 1.0

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 10/1/2018 and 12/31/2018.

Assembly Information:

Package Type: LGA
Date Code Range: 1726 to 1726

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1726	MAXM17546ALY+	135°C	1000 HRS	35	0	
HIGH TEMP OP LIFE	1726	MAXM17546ALY+	135°C	1000 HRS	36	0	
HIGH TEMP OP LIFE	1726	MAXM17546ALY+	135°C	1000 HRS	39	0	
Total:						0	

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW		MAX30207	260C +/-5C	PASS	40	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE		MAX30207	150°C	96 HRS	40	0	
STORAGE LIFE	1726	MAXM17546ALY+	150°C	1000 HRS	79	0	
STORAGE LIFE	1726	MAXM17546ALY+	150°C	1000 HRS	79	0	
STORAGE LIFE	1726	MAXM17546ALY+	150°C	1000 HRS	79	0	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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BIASED MOISTURE	1726	MAXM17546ALY+	85 C/85% R.H.	1000 HRS	43	0
BIASED MOISTURE	1726	MAXM17546ALY+	85 C/85% R.H.	1000 HRS	43	0
BIASED MOISTURE	1726	MAXM17546ALY+	85 C/85% R.H.	1000 HRS	43	0
Total:						0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1726	MAXM17546ALY+	85C, 85% R.H.	500 HRS	34	0	
MOISTURE SOAK	1726	MAXM17546ALY+	85C, 85% R.H.	1000 HRS	34	0	
Total:						0	

Assembly Information:

Package Type: LGA (Pb-Free)
Date Code Range: 1650 to 1826

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1650	MAXM17503ALJ+	135°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1802	MAXM17546ALY	135°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1826	MAX33250EELC+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1826	MAX33250EELC+	125°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1826	MAX33250EELC+	125°C	500 HRS	80	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE		MAX30207	150°C	96 HRS	30	0	
STORAGE LIFE		MAX30208	150°C	96 HRS	42	0	
STORAGE LIFE	1826	MAX33250EELC+	150°C	1000 HRS	80	0	
STORAGE LIFE	1826	MAX33250EELC+	150°C	500 HRS	80	0	
STORAGE LIFE	1826	MAX33250EELC+	150°C	500 HRS	80	0	
Total:						0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1826	MAX33250EELC+	-40C TO +125C (Condition G)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1826	MAX33250EELC+	-55C TO +125C (Condition B)	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1826	MAX33250EELC+	-40C TO +125C (Condition G)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1826	MAX33250EELC+	-55C TO +125C (Condition B)	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1826	MAX33250EELC+	-40C TO +125C (Condition G)	1000 CYS	80	0	

TEMP CYCLE, 5' RAMP, 10' DWELL	1826	MAX33250EELC+	-55C TO +125C (Condition B)	500	CYS	80	0
Total:							0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1826	MAX33250EELC+	85 C/85% R.H.	500	HRS	48	0
BIASED MOISTURE	1826	MAX33250EELC+	85 C/85% R.H.	500	HRS	48	0
BIASED MOISTURE	1826	MAX33250EELC+	85 C/85% R.H.	500	HRS	48	0
Total:							0

Assembly Information:

Package Type: OLGA (Pb-Free)
Date Code Range: 1734 to 1810

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1810	MAX86917EFD+T	135°C	1000	HRS	79	0
Total:							0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1734	MAX86915EFD+	260C +/-5C	3	PASS	350	0
CONVECTION REFLOW	1805	MAX86917EFD+	260C +/-5C		PASS	200	0
CONVECTION REFLOW	1805	MAX86917EFD+	260C +/-5C		PASS	200	0
CONVECTION REFLOW	1810	MAX86917EFD+T	260C +/-5C		PASS	350	0
CONVECTION REFLOW	1810	MAX86917EFD+T	260C +/-5C		PASS	350	0
CONVECTION REFLOW	1810	MAX86917EFD+T	260C +/-5C		PASS	349	0
Total:							0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1807	MAX86915EFD+	150°C	1000	HRS	80	0
STORAGE LIFE	1807	MAX86915EFD+	150°C	1000	HRS	80	0
STORAGE LIFE	1807	MAX86915EFD+	150°C	1000	HRS	80	0
STORAGE LIFE	1810	MAX86917EFD+T	150°C	1000	HRS	79	0
STORAGE LIFE	1810	MAX86917EFD+T	150°C	1000	HRS	80	0
STORAGE LIFE	1810	MAX86917EFD+T	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	1734	MAX86915EFD+	-65C TO +150C (Condition C)	1000	CYS	77	0

TEMP CYCLE, 5' RAMP, 10' DWELL	1805	MAX86917EFD+		96	CYS	50	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1805	MAX86917EFD+		240	CYS	50	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1805	MAX86917EFD+		96	CYS	50	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1805	MAX86917EFD+		240	CYS	50	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1807	MAX86915EFD+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1807	MAX86915EFD+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1807	MAX86915EFD+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1810	MAX86917EFD+T	-40C TO +125C (Condition G)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1810	MAX86917EFD+T	-40C TO +125C (Condition G)	1000	CYS	78	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1810	MAX86917EFD+T	-40C TO +125C (Condition G)	1000	CYS	79	0
Total:						0	0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE		MAX86915EFD+	85 C/85% R.H.	1000	HRS	20	0
BIASED MOISTURE		MAX86915EFD+	85 C/85% R.H.	1000	HRS	20	0
BIASED MOISTURE	1734	MAX86915EFD+	85 C/85% R.H.	240	HRS	77	0
Total:						0	0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1805	MAX86917EFD+	130C, 85% R.H.	96	HRS	49	0
MOISTURE SOAK	1805	MAX86917EFD+	85C, 85% R.H.	120	HRS	48	0
MOISTURE SOAK	1805	MAX86917EFD+	130C, 85% R.H.	96	HRS	50	0
MOISTURE SOAK	1805	MAX86917EFD+	85C, 85% R.H.	120	HRS	50	0
MOISTURE SOAK	1805	MAX86917EFD+T	85C, 85% R.H.	120	HRS	50	0
MOISTURE SOAK	1807	MAX86915EFD+	85C, 85% R.H.	1000	HRS	76	0
MOISTURE SOAK	1807	MAX86915EFD+	85C, 85% R.H.	1000	HRS	73	0
MOISTURE SOAK	1810	MAX86917EFD+T	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1810	MAX86917EFD+T	130C, 85% R.H.	96	HRS	25	0
MOISTURE SOAK	1810	MAX86917EFD+T	85C, 85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1810	MAX86917EFD+T	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1810	MAX86917EFD+T	130C, 85% R.H.	96	HRS	25	0
MOISTURE SOAK	1810	MAX86917EFD+T	85C, 85% R.H.	1000	HRS	80	0
MOISTURE SOAK	1810	MAX86917EFD+T	130C, 85% R.H.	96	HRS	80	0

MOISTURE SOAK	1810	MAX86917EFD+T	85C, 85% R.H.	1000	HRS	74	0
						Total:	0

Assembly Information:

Package Type: OLGA Hybrid
 Date Code Range: 1743 to 1825

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1810	MAX20008AFOD/VY +	135°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1810	MAX86917EFD+T	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1814	MAXM22511GLH+	125°C	1000 HRS	30	0	
HIGH TEMP OP LIFE	1814	MAXM22511GLH+	125°C	1000 HRS	20	0	
HIGH TEMP OP LIFE	1814	MAXM22511GLH+	125°C	1000 HRS	30	0	
						Total:	0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1743	MAX86915EFD+	260C +/-5C	3 PASS	350	0	
CONVECTION REFLOW	1805	MAX86917EFD+T	260C +/-5C	3 PASS	3000	0	
CONVECTION REFLOW	1807	MAX86915EFD+T	260C +/-5C	3 PASS	240	0	
CONVECTION REFLOW	1807	MAX86915EFD+	260C +/-5C	3 PASS	240	0	
CONVECTION REFLOW	1807	MAX86915EFD+	260C +/-5C	3 PASS	240	0	
CONVECTION REFLOW	1807	MAX86915EFD+	260C +/-5C	3 PASS	200	0	
CONVECTION REFLOW	1825	MAX86917EFD+T	260C +/-5C	PASS	300	0	
CONVECTION REFLOW	1825	MAX86917EFD+T	260C +/-5C	PASS	300	0	
CONVECTION REFLOW	1825	MAX86917EFD+T	260C +/-5C	PASS	300	0	
CONVECTION REFLOW	1825	MAX86917EFD+T	260C +/-5C	PASS	200	0	
						Total:	0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1805	MAX86917EFD+T	-65C TO +150C (Condition C)	96 CYS	50	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1807	MAX86915EFD+	-65C TO +150C (Condition C)	240 CYS	50	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1825	MAX86917EFD+T	-40C TO +125C (Condition G)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1825	MAX86917EFD+T	-40C TO +125C (Condition G)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1825	MAX86917EFD+T	-40C TO +125C (Condition G)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1825	MAX86917EFD+T	-65C TO +150C (Condition C)	96 CYS	50	0	

TEMP CYCLE, 5' RAMP, 10' DWELL	1825	MAX86917EFD+T	-40C TO +125C (Condition G)	CYS	50	0
Total:						0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1807	MAX86915EFD+	85 C/85% R.H.	450	HRS	50	0
BIASED MOISTURE	1825	MAX86917EFD+T	130C, 85% R.H.		HRS	1	0
BIASED MOISTURE	1825	MAX86917EFD+T	85 C/85% R.H.	96	HRS	50	0
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1743	MAX86915EFD+	130C, 85% R.H.	96	HRS	77	0
MOISTURE SOAK	1805	MAX86917EFD+T	130C, 85% R.H.	96	HRS	50	0
MOISTURE SOAK	1807	MAX86915EFD+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1807	MAX86915EFD+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1807	MAX86915EFD+	130C, 85% R.H.	96	HRS	50	0
MOISTURE SOAK	1825	MAX86917EFD+T	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1825	MAX86917EFD+T	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1825	MAX86917EFD+T	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1825	MAX86917EFD+T	130C, 85% R.H.	96	HRS	50	0
Total:						0	

FAILURE RATE: MTTF (YRS): 112339 FITS: 1.0