

10/27/2017



RELIABILITY MONITOR REPORT
FOR

BGA 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	144	CSBGA (Pb-Free)	ASE Chung-Li	144 Flip Chip BGA (Pb-Free)
ASE Kaoshiung	120	CSBGA (Pb-Free)	ASE Kaoshiung	336 CSBGA (Pb-Free)
ASE Kaoshiung	380	CSBGA (Pb-Free)	ASE Kunshan	380 CSBGA Hybrid
ASE Kunshan	380	CSBGA Hybrid (Pb-Free)	ATP (Amkor, PI)	256 CSBGA (Pb-Free)
ATP (Amkor, PI)	76	Flip Chip BGA (Pb-Free)	UTAC DG	100 CSBGA (Pb-Free)
UTAC DG	36	PBGA		

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 47136 FITS: 2.4

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: CSBGA (Pb-Free)

Date Code Range: 1641 to 1710

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE		MAX32560-LNS+T	135°C	192 HRS	80	0	
HIGH TEMP OP LIFE		MAX32610	135°C	356 HRS	45	0	
HIGH TEMP OP LIFE	1641	MAX2084CXL+	135°C	500 HRS	25	0	
HIGH TEMP OP LIFE	1641	MAX2084CXL	135°C	1000 HRS	24	0	
HIGH TEMP OP LIFE	1709	87-26324+XNB	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1709	87-26324+XNB	135°C	1000 HRS	80	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE		MAX32610	150°C	500 HRS	77	0	
STORAGE LIFE	1709	87-26324+XNB	150°C	1000 HRS	80	0	
STORAGE LIFE	1709	87-26324+XNB	150°C	500 HRS	80	0	
STORAGE LIFE	1709	87-26324+XNB	150°C	1000 HRS	80	0	
STORAGE LIFE	1709	87-26324+XNB	150°C	500 HRS	80	0	
STORAGE LIFE	1709	87-2155C+XNA	150°C	1000 HRS	80	0	
STORAGE LIFE	1709	87-2155C+XNA	150°C	1000 HRS	80	0	
STORAGE LIFE	1710	MAX2086CXD+	150°C	500 HRS	140	0	
STORAGE LIFE	1710	MAX2086CXD+	150°C	1000 HRS	140	0	

Total: 0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1709	87-26324+XNB	-65C TO +150C (Condition C)	500 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1709	87-26324+XNB	-65C TO +150C (Condition C)	1000 CYS	85	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1709	87-26324+XNB	-65C TO +150C (Condition C)	500 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1709	87-26324+XNB	-65C TO +150C (Condition C)	1000 CYS	85	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1710	MAX2086CXD+	-65C TO +150C (Condition C)	500 CYS	200	0	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1709	87-26324+XNB	85 C/85% R.H.	500 HRS	39	0	
BIASED MOISTURE	1709	87-26324+XNB	85 C/85% R.H.	500 HRS	15	0	
BIASED MOISTURE	1709	87-26324+XNB	85 C/85% R.H.	500 HRS	39	0	
BIASED MOISTURE	1709	87-26324+XNB	85 C/85% R.H.	500 HRS	15	0	
BIASED MOISTURE	1709	87-2155C+XNA	85 C/85% R.H.	500 HRS	15	0	
BIASED MOISTURE	1709	87-2155C+XNA	85 C/85% R.H.	500 HRS	31	0	
BIASED MOISTURE	1709	87-2155C+XNA	85 C/85% R.H.	500 HRS	15	0	
BIASED MOISTURE	1709	87-2155C+XNA	85 C/85% R.H.	500 HRS	15	0	
BIASED MOISTURE	1709	87-2155C+XNA	85 C/85% R.H.	500 HRS	31	0	
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK		MAX32610	130C, 85% R.H.	96 HRS	77	0	
MOISTURE SOAK	1709	87-26324+XNB	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK	1709	87-26324+XNB	130C, 85% R.H.	96 HRS	80	0	
Total:						0	

Assembly Information:

Package Type: CSBGA Hybrid

Date Code Range: 1641 to 1641

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1641	MAX2084CXL+	130C, 85% R.H.	264 HRS	50	0	
BIASED MOISTURE	1641	MAX2084CXL+	130C, 85% R.H.	264 HRS	50	0	
Total:						0	

Assembly Information:

Package Type: CSBGA Hybrid (Pb-Free)
Date Code Range: 1641 to 1641

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1641	MAX2084CXL+	130C, 85% R.H.	264 HRS	50	0	
					Total:	0	

Assembly Information:

Package Type: Flip Chip BGA (Pb-Free)
Date Code Range: 1638 to 1638

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE		MAX32565-LNS	135°C	192 HRS	80	0	
					Total:	0	

PRECONDITIONING LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1638	MAX20024AGXXG/V +	260C +0/-5C	245 PASS	155	0	
CONVECTION REFLOW	1638	MAX20024AGXXG/V +	260C +0/-5C	245 PASS	77	0	
CONVECTION REFLOW	1638	MAX20024AGXXG/V +	260C +0/-5C	245 PASS	150	0	
					Total:	0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1638	MAX20024AGXXG/V +	-65C TO +150C (Condition C)	750 CYS	83	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1638	MAX20024AGXXG/V +	-65C TO +150C (Condition C)	750 CYS	50	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1638	MAX20024AGXXG/V +	-65C TO +150C (Condition C)	500 CYS	147	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1638	MAX20024AGXXG/V +	-65C TO +150C (Condition C)	1000 CYS	186	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1638	MAX20024AGXXG/V +	-65C TO +150C (Condition C)	1000 CYS	147	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1638	MAX20024AGXXG/V +	-65C TO +150C (Condition C)	1000 CYS	184	0	
					Total:	0	

Assembly Information:

Package Type: PBGA
Date Code Range: 1708 to 1708

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1708	89-32KHZ-0W8	150°C	500 HRS	80	0	
STORAGE LIFE	1708	89-32KHZ-0W8	150°C	1000 HRS	80	0	
STORAGE LIFE	1708	89-32KHZ-0W8	150°C	1000 HRS	80	0	
STORAGE LIFE	1708	89-32KHZ-0W8	150°C	500 HRS	80	0	
STORAGE LIFE	1708	89-32KHZ-0W8	150°C	1000 HRS	80	0	
STORAGE LIFE	1708	89-32KHZ-0W8	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	1708	89-32KHZ-0W8	-65C TO +150C (Condition C)	500 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1708	89-32KHZ-0W8	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1708	89-32KHZ-0W8	-65C TO +150C (Condition C)	500 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1708	89-32KHZ-0W8	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1708	89-32KHZ-0W8	-65C TO +150C (Condition C)	500 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1708	89-32KHZ-0W8	-65C TO +150C (Condition C)	1000 CYS	80	0	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1708	89-32KHZ-0W8	85 C/85% R.H.	500 HRS	62	0	
BIASED MOISTURE	1708	89-32KHZ-0W8	85 C/85% R.H.	500 HRS	62	0	
BIASED MOISTURE	1708	89-32KHZ-0W8	85 C/85% R.H.	500 HRS	62	0	
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1708	89-32KHZ-0W8	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK	1708	89-32KHZ-0W8	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK	1708	89-32KHZ-0W8	130C, 85% R.H.	96 HRS	80	0	
Total:						0	

FAILURE RATE: MTTF (YRS): 47136 FITS: 2.4