

8/1/2019



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 Kaoshiung	336	CSBGA (Pb-Free)	ASE Kaoshiung	49 Flip Chip BGA
ATC (Amkor, China)	76	Flip Chip BGA	UTAC DG	36 HSP BGA (Pb-free)

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 15309 FITS: 7.5

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 4/1/2019 and 8/1/2019

Assembly Information:

Package Type: CSBGA (Pb-Free)

Date Code Range: to

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW		MAX2086CXD+	85 C/85% R.H.	3 PASS	235	0	
CONVECTION REFLOW		MAX2087CDX+	85 C/85% R.H.	3 PASS	234	0	
CONVECTION REFLOW		MAX2086CXD+	85 C/85% R.H.	3 PASS	235	0	
Total:						0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX2086CXD+	-65C TO +150C (Condition C)	1000 CYS	77	0	
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX2087CDX+	-65C TO +150C (Condition C)	1000 CYS	77	0	
TEMP CYCLE, 5' RAMP, 10' DWELL		MAX2086CXD+	-65C TO +150C (Condition C)	1000 CYS	77	0	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE		MAX2086CXD+	85 C/85% R.H.	1000 HRS	25	0	
BIASED MOISTURE		MAX2087CDX+	85 C/85% R.H.	1000 HRS	22	0	
BIASED MOISTURE		MAX2086CXD+	85 C/85% R.H.	1000 HRS	24	0	
Total:						0	

Assembly Information:

Package Type: Flip Chip BGA
Date Code Range: 1911 to 1913

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1913	MAX20024MGXXA/V +	125°C	1000 HRS	79	0	
Total:						0	

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1911	MAX77812EXJ+	85 C/85% R.H.	3 PASS	400	0	
CONVECTION REFLOW	1911	MAX77812EXJ+	85 C/85% R.H.	3 PASS	400	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1913	MAX20024MGXXA/V +	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	1913	MAX20024MGXXA/V +	-65C TO +150C (Condition C)	1000 CYS	80	0	
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1911	MAX77812EXJ+	130C, 85% R.H.	96 HRS	100	0	
MOISTURE SOAK	1913	MAX20024MGXXA/V +	130C, 85% R.H.	96 HRS	80	0	
Total:						0	

Assembly Information:

Package Type: HSP BGA (Pb-free)
Date Code Range: 1831 to 1832

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CSAM	1831	DS32KHZ			25	0	
CONVECTION REFLOW	1831	DS32KHZ	85 C/85% R.H.	3 PASS	455	0	
CSAM	1831	DS32KHZ			25	0	
CONVECTION REFLOW	1831	DS32KHZ	85 C/85% R.H.	3 PASS	498	0	
CSAM	1832	DS32KHZ			25	0	

CONVECTION REFLOW	1832	DS32KHZ	85 C/85% R.H.	3	PASS	499	0
					Total:		0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1831	DS32KHZ	150°C	1000 HRS	79	0	
STORAGE LIFE	1831	DS32KHZ	150°C	1000 HRS	80	0	
STORAGE LIFE	1832	DS32KHZ	150°C	1000 HRS	79	0	
					Total:		0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1831	DS32KHZ	-65C TO +150C (Condition C)	1000 CYS	86	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1831	DS32KHZ	-65C TO +150C (Condition C)	1000 CYS	86	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1832	DS32KHZ	-65C TO +150C (Condition C)	1000 CYS	82	0	
					Total:		0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1831	DS32KHZ	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK	1831	DS32KHZ	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK	1832	DS32KHZ	130C, 85% R.H.	96 HRS	80	0	
					Total:		0

FAILURE RATE: MTTF (YRS): 15309 FITS: 7.5