

4/16/2014



RELIABILITY MONITOR REPORT  
FOR

**QFP 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		
ANAM-AICL	48	LQFP (Pb-Free)	ANAM-AICL	64 LQFP (Pb-Free)
ANAM-AICL	80	TQFP (Pb-Free)	ANAM-AICL	64 TQFP-EP (Pb-Free)
ASE Kaohsiung	48	LQFP (Pb-Free)	ASE Kaohsiung	64 LQFP (Pb-Free)
ASE Kaohsiung	100	LQFP (Pb-Free)	ASE Kaohsiung	64 TQFP-EP (Pb-Free)
ASEK-ASY	48	LQFP (Pb-Free)	Carsem-S	48 LQFP (Pb-Free)

The calculated failure rate for this assembly is:

**FAILURE RATE: MTTF (YRS): 36778 FITS: 3.1**

The parameters used to calculate this failure rate are as follows:

**Cf: 60% Ea: 0.7 Tu: 25 °C**

The reliability data follows. A 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

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### Assembly Information:

Package Type: LQFP (Pb-Free)

Date Code Range: 1236 to 1406

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### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1236	71M6542FT	125C, 3.6 VOLTS	192 HRS	80	0	
HIGH TEMP OP LIFE	1305	MAX17823	125C, 3.3V (PSA) & 65V (PSD)	500 HRS	80	0	
HIGH TEMP OP LIFE	1306	MAX17823	125C, 3.3V (PSA) & 65V (PSD)	500 HRS	80	0	
HIGH TEMP OP LIFE	1310	MAX14803CCM+	135°C	1096 HRS	80	0	
HIGH TEMP OP LIFE	1310	MAX9248ECM/V+	135°C	500 HRS	43	0	
HIGH TEMP OP LIFE	1330	71M6543GT	125C, 3.6 VOLTS	192 HRS	80	0	
HIGH TEMP OP LIFE	1331	MAX17823	125C, 3.0V (PSA) & 65.0V (PSD)	2000 HRS	80	0	
<b>Total:</b>						<b>0</b>	

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### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1305	MAX17823	150°C	500 HRS	80	0	
STORAGE LIFE	1306	MAX17823	150°C	500 HRS	80	0	
STORAGE LIFE	1310	MAX9248ECM/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1406	MAX14803CCM+	150°C	500 HRS	80	0	
<b>Total:</b>						<b>0</b>	

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### TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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TEMP CYCLE, 5' RAMP, 10' DWELL	1244	MAX2981GCB+	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1244	MAX2981GCB+	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1244	MAX2981GCB+	-65C TO 150C	1000	CYS	79	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1244	MAX2981GCB+	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1304	MAX2981GCB+	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1304	MAX2981GCB+	-65C TO 150C	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1305	MAX17823	-65C TO 150C	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1306	MAX17823	-65C TO 150C	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1310	MAX9248ECM/V+	-65C TO 150C	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1310	MAX9248ECM/V+	-65C TO 150C	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1315	MAX9248ECM/V+	-65C TO 150C	500	CYS	80	0
<b>Total:</b>						<b>0</b>	

#### TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST	1305	MAX17823	130C, 85%R.H., 3.4V	96	HRS	80	1 40048404
HAST	1306	MAX17823	130C, 85%R.H., 3.4V	96	HRS	80	0
BIASED MOISTURE	1310	MAX9248ECM/V+	130C, 85% R.H.	100	HRS	80	0
BIASED MOISTURE	1315	MAX9248ECM/V+	130C, 85% R.H.	100	HRS	80	0
<b>Total:</b>						<b>1</b>	

#### UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST, NO BIAS	1306	MAX17823	130C, 85% R.H.	96	HRS	80	1 40048294
MOISTURE SOAK	1310	MAX9248ECM/V+	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1310	MAX9248ECM/V+	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1315	MAX9248ECM/V+	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1406	MAX14803CCM+	130C, 85% R.H.	100	HRS	80	0
<b>Total:</b>						<b>1</b>	

#### Assembly Information:

Package Type: TQFP (Pb-Free)  
Date Code Range: 1250 to 1250

#### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1250	MAX14921ECS+	135°C	192	HRS	80	0

Total: 0

**Assembly Information:**

Package Type: TQFP-EP (Pb-Free)

Date Code Range: 1251 to 1338

**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1305	MAX9259GCB/V+	135°C	1000 HRS	35	0	
HIGH TEMP OP LIFE	1309	MAX14807ECB+	135°C	192 HRS	47	0	
HIGH TEMP OP LIFE	1312	MAX14807ECB+	135°C	192 HRS	45	1	
HIGH TEMP OP LIFE	1331	MAX14807ECB+	135°C	192 HRS	33	0	
HIGH TEMP OP LIFE	1337	MAX9259GCB/V+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1337	MAX9259GCB/V+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1338	MAX9259GCB/V+	135°C	1000 HRS	80	0	
<b>Total:</b>						<b>1</b>	

**STORAGE LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1305	MAX9259GCB/V+	150°C	500 HRS	50	0	
STORAGE LIFE	1338	MAX9259GCB/V+	150°C	500 HRS	50	0	
<b>Total:</b>						<b>0</b>	

**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1251	MAX9264GCB/V+	-65C TO 150C	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1302	MAX9264GCB/V+	-65C TO 150C	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1302	MAX9264GCB/V+	-65C TO 150C	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1305	MAX9259GCB/V+	-65C TO 150C	500 CYS	35	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1337	MAX9259GCB/V+	-65C TO 150C	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1337	MAX9259GCB/V+	-65C TO 150C	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1338	MAX9259GCB/V+	-65C TO 150C	500 CYS	80	0	
<b>Total:</b>						<b>0</b>	

**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1251	MAX9264GCB/V+	130C, 85% R.H.	100 HRS	48	0	
BIASED MOISTURE	1302	MAX9264GCB/V+	130C, 85% R.H.	100 HRS	48	0	
BIASED MOISTURE	1302	MAX9264GCB/V+	130C, 85% R.H.	100 HRS	46	0	

BIASED MOISTURE	1305	MAX9259GCB/V+	130C, 85% R.H.	100	HRS	33	0
BIASED MOISTURE	1337	MAX9259GCB/V+	130C, 85% R.H.	100	HRS	33	0
BIASED MOISTURE	1337	MAX9259GCB/V+	130C, 85% R.H.	100	HRS	48	0
BIASED MOISTURE	1338	MAX9259GCB/V+	130C, 85% R.H.	100	HRS	48	0
<b>Total:</b>							<b>0</b>

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1251	MAX9264GCB/V+	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1305	MAX9259GCB/V+	130C, 85% R.H.	100	HRS	35	0
MOISTURE SOAK	1337	MAX9259GCB/V+	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1337	MAX9259GCB/V+	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1338	MAX9259GCB/V+	130C, 85% R.H.	100	HRS	80	0
<b>Total:</b>							<b>0</b>

**FAILURE RATE: MTTF (YRS): 36778 FITS: 3.1**