

4/23/2015



**RELIABILITY MONITOR REPORT
FOR**

QFN 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	8	TQFN (Pb-Free)	ASE Chung-Li	12 TQFN (Pb-Free)
ASE Chung-Li	16	TQFN (Pb-Free)	ASE Chung-Li	20 TQFN (Pb-Free)
ASE Chung-Li	28	TQFN (Pb-Free)	ASE Chung-Li	32 TQFN (Pb-Free)
ASE Chung-Li	36	TQFN (Pb-Free)	ASE Chung-Li	40 TQFN (Pb-Free)
ASE Chung-Li	48	TQFN (Pb-Free)	ASE Chung-Li	56 TQFN (Pb-Free)
ASE Chung-Li	68	TQFN (Pb-Free)	ASE Chung-Li	16 TQFN-HYB (Pb-Free)
ATK (Amkor, K)	28	QFND (Pb-Free)	ATK (Amkor, K)	48 QFND (Pb-Free)
ATP (Amkor, PI)	32	QFND (Pb-Free)	UTACDG	12 QFN (Pb-Free)
UTACDG	12	TQFN (Pb-Free)	UTACDG	16 TQFN (Pb-Free)
UTACDG	20	TQFN (Pb-Free)	UTACDG	24 TQFN (Pb-Free)
UTACDG	28	TQFN (Pb-Free)	UTACDG	40 TQFN (Pb-Free)
UTACDG	48	TQFN (Pb-Free)	UTACDG	56 TQFN (Pb-Free)
UTACDG	68	TQFN (Pb-Free)	UTL (NSEB) UTAC	20 TQFN (Pb-Free)
UTL (NSEB) UTAC	24	TQFN (Pb-Free)	UTL (NSEB) UTAC	32 TQFN (Pb-Free)
UTL (NSEB) UTAC	48	TQFN (Pb-Free)	UTL (NSEB) UTAC	10 uTQFN (Pb-Free)

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 163079 FITS: 0.7

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 4/1/2014 and 3/31/2015.

Assembly Information:

Package Type: QFN (Pb-Free)
Date Code Range: 1427 to 1427

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1427	MAX1932ETC+	135°C	1000 HRS	45	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1427	MAX1932ETC+	150°C	1000 HRS	80	0	
Total:						0	

Assembly Information:

Package Type: QFND (Pb-Free)
Date Code Range: 1420 to 1425

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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HIGH TEMP OP LIFE	1420	MAX14900EAGM+	135°C	1000 HRS	45	0
HIGH TEMP OP LIFE	1420	MAX14900EAGM+	135°C	1000 HRS	45	0
HIGH TEMP OP LIFE	1420	MAX14900EAGM+	135°C	1000 HRS	45	0
HIGH TEMP OP LIFE	1425	MAX16993AGJC +CT	135°C	192 HRS	80	0
Total:						0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1420	MAX14900EAGM+	150°C	1000 HRS	45	0	
STORAGE LIFE	1420	MAX14900EAGM+	150°C	1000 HRS	80	0	
STORAGE LIFE	1425	MAX16993AGJC/VY +CT	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	1420	MAX14900EAGM+	-65C TO +150C (Condition C)	1000 CYS	73	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1420	MAX16984RAGI+	-65C TO +150C (Condition C)	1000 CYS	24	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1420	MAX16984RAGI+	-65C TO +150C (Condition C)	1000 CYS	48	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1425	MAX16993AGJC +CT	-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	1425	MAX16993AGJC +CT	130C, 85% R.H.	96 HRS	80	0	
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1425	MAX16993AGJC +CT	130C, 85% R.H.	96 HRS	80	0	
Total:						0	

Assembly Information:

Package Type: TQFN (Pb-Free)

Date Code Range: 1314 to 1505

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1314	MAX2553ETN+	135°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1319	MAX2553ETN+	135°C	1000 HRS	77	0	
HIGH TEMP OP LIFE	1346	MAX2880ETP+	135°C	240 HRS	80	0	

HIGH TEMP OP LIFE	1347	MAX3646ETG+	135°C	500	HRS	80	0
HIGH TEMP OP LIFE	1348	MAX3646ETG+	135°C	500	HRS	80	0
HIGH TEMP OP LIFE	1403	MAX98400ETX+	135°C	500	HRS	80	0
HIGH TEMP OP LIFE	1404	MAX2172ETL+	135°C	500	HRS	80	0
HIGH TEMP OP LIFE	1405	MAX44205ATC+	135°C	192	HRS	79	0
HIGH TEMP OP LIFE	1405	MAX2172ETL+	135°C	500	HRS	80	0
HIGH TEMP OP LIFE	1413	MAX16814CATP+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1414	DS3922	125C, 3.6V (PSA) & 76.0V (PSD)	192	HRS	79	0
HIGH TEMP OP LIFE	1415	MAX16936RATEA +CA	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1417	MAX9736BETJ+	135°C	500	HRS	80	0
HIGH TEMP OP LIFE	1419	MAX98400AETX+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1421	MAX14808ETK+	135°C	1000	HRS	77	0
HIGH TEMP OP LIFE	1422	MAX4811CTN+	135°C	168	HRS	100	0
HIGH TEMP OP LIFE	1422	MAX16046ETN+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1422	MAX9788ETI+	135°C	1000	HRS	48	0
HIGH TEMP OP LIFE	1424	MAX14808ETK+	135°C	168	HRS	80	0
HIGH TEMP OP LIFE	1424	MAX14808ETK+	135°C	500	HRS	78	0
HIGH TEMP OP LIFE	1424	MAX16990ATCD+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1425	MAX16936RATE+ CA	135°C	1000	HRS	79	0
HIGH TEMP OP LIFE	1426	MAX14826GTG+	135°C	192	HRS	80	0
HIGH TEMP OP LIFE	1426	MAX14778ETP+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1426	MAX16936RATEA +CA	135°C	1000	HRS	79	0
HIGH TEMP OP LIFE	1430	MAX8795AGTJ+	135°C	500	HRS	80	0
HIGH TEMP OP LIFE	1431	MAX17503ATP+	135°C	192	HRS	77	0
HIGH TEMP OP LIFE	1431	MAX2871ETJ+	135°C	192	HRS	80	0
HIGH TEMP OP LIFE	1431	MAX2769BETI+	135°C	192	HRS	73	0
HIGH TEMP OP LIFE	1432	MAX8795AGTJ+	135°C	500	HRS	80	0
HIGH TEMP OP LIFE	1435	MAX2769BETI+	135°C	192	HRS	74	0
HIGH TEMP OP LIFE	1436	MAX14778ETP+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1436	MAX14778ETP+	135°C	500	HRS	80	0
HIGH TEMP OP LIFE	1436	MAX9730ETI+	135°C	1000	HRS	48	0
HIGH TEMP OP LIFE	1446	MAX14842ATE+	135°C	192	HRS	42	1
HIGH TEMP OP LIFE	1446	MAX14842ATE+	135°C	192	HRS	38	0
HIGH TEMP OP LIFE	1446	MAX2551ETN+	135°C	500	HRS	60	0
HIGH TEMP OP LIFE	1446	MAX2551ETN+	135°C	500	HRS	60	0
HIGH TEMP OP LIFE	1450	MAX11300GTL+	135°C	192	HRS	80	0
HIGH TEMP OP LIFE	1450	MAX11300GTL+	135°C	192	HRS	80	0

Total: 1

PRECONDITIONING LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1436	MAX5961ETM+	260C +0/-5C	26	PASS	700	0
						Total:	0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1412	MAX1058BETM+	150°C	1000	HRS	80	0
STORAGE LIFE	1415	MAX16936RATEA +CA	150°C	1000	HRS	77	0
STORAGE LIFE	1422	MAX2172ETL+C8S	150°C	1000	HRS	80	0
STORAGE LIFE	1422	MAX4811CTN+	150°C	1000	HRS	80	0
STORAGE LIFE	1422	MAX16046ETN+	150°C	1000	HRS	80	0
STORAGE LIFE	1422	MAX9788ETI+	150°C	1000	HRS	80	0
STORAGE LIFE	1423	MAX1358BETL+	150°C	1000	HRS	79	0
STORAGE LIFE	1424	MAX16990ATCD+	150°C	1000	HRS	50	0
STORAGE LIFE	1425	MAX9668ETP+	150°C	1000	HRS	76	0
STORAGE LIFE	1426	MAX14778ETP+	150°C	1000	HRS	80	0
STORAGE LIFE	1426	MAX8663ETL+	150°C	1000	HRS	80	0
STORAGE LIFE	1426	MAX8663ETL+	150°C	500	HRS	80	0
STORAGE LIFE	1426	MAX8663ETL+	150°C	1000	HRS	77	0
STORAGE LIFE	1427	MAX2769BETI+	150°C	500	HRS	50	0
STORAGE LIFE	1427	MAX1258BETM+	150°C	1000	HRS	80	0
STORAGE LIFE	1435	MAX9736AETJ+	150°C	1000	HRS	80	0
STORAGE LIFE	1436	MAX14778ETP+	150°C	1000	HRS	80	0
STORAGE LIFE	1436	MAX9730ETI+	150°C	1000	HRS	80	0
STORAGE LIFE	1438	MAX2172ETL+C8S	150°C	1000	HRS	80	0
STORAGE LIFE	1446	MAX16927GTM+	150°C	1000	HRS	50	0
						Total:	0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1411	MAX3646ETG+	-65C TO +150C (Condition C)	1000	CYS	79	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1412	MAX1058BETM+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1415	MAX16936RATEA +CA	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1422	MAX2172ETL+C8S	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1422	MAX4811CTN+	-65C TO +150C (Condition C)	500	CYS	80	0

TEMP CYCLE, 5' RAMP, 10' DWELL	1422	MAX16046ETN+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1422	MAX9788ETI+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1423	MAX1358BETL+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1424	MAX16990ATCD+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1425	MAX9668ETP+	-65C TO +150C (Condition C)	500	CYS	79	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1425	MAX16936RATE+ CA	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1426	MAX14778ETP+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1426	MAX8663ETL+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1426	MAX8663ETL+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1426	MAX8663ETL+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1426	MAX16936RATEA +CA	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1427	MAX2769BETI+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1427	MAX1932ETC+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1427	MAX1258BETM+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1435	MAX2769BETI+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1435	MAX5961ETM+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1435	MAX9736AETJ+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1436	MAX14778ETP+	-65C TO +150C (Condition C)	850	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1436	MAX5961ETM+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1436	MAX9730ETI+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1437	MAX5961ETM+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1438	MAX2172ETL+C8S	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1446	MAX16927GTM+	-65C TO +150C (Condition C)	500	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1450	MAX9669ETI+	-65C TO +150C (Condition C)	500	CYS	80	0
Total:						0	0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1411	MAX3646ETG+	130C, 85% R.H.	100	HRS	80	0

BIASED MOISTURE	1422	MAX9788ETI+	130C, 85% R.H.	100	HRS	80	0
BIASED MOISTURE	1425	MAX16936RATE+ CA	130C, 85% R.H.	96	HRS	76	0
BIASED MOISTURE	1426	MAX14778ETP+	130C, 85% R.H.	100	HRS	79	0
BIASED MOISTURE	1426	MAX16936RATEA +CA	130C, 85% R.H.	96	HRS	76	0
BIASED MOISTURE	1427	MAX2769BETI+	130C, 85% R.H.	100	HRS	48	0
BIASED MOISTURE	1431	MAX2769BETI+	130C, 85% R.H.	100	HRS	48	0
BIASED MOISTURE	1435	MAX2769BETI+	130C, 85% R.H.	100	HRS	48	0
BIASED MOISTURE	1436	MAX14778ETP+	130C, 85% R.H.	100	HRS	79	0
BIASED MOISTURE	1436	MAX9730ETI+	130C, 85% R.H.	100	HRS	80	0
BIASED MOISTURE	1446	MAX16927GTM+	130C, 85% R.H.	96	HRS	32	0
BIASED MOISTURE	1505	MAX16936RATEA +CA	130C, 85% R.H.	100	HRS	76	0
Total:							0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1327	MAX17491GTA+	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1415	MAX16936RATEA +CA	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1424	MAX16990ATCD+	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1425	MAX16936RATE+ CA	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1426	MAX14778ETP+	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1426	MAX16936RATEA +CA	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1427	MAX2769BETI+	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1431	MAX2769BETI+	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1435	MAX2769BETI+	130C, 85% R.H.	100	HRS	80	0
MOISTURE SOAK	1435	MAX5961ETM+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1436	MAX5961ETM+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1437	MAX5961ETM+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1446	MAX16927GTM+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1505	MAX16936RATEA +CA	130C, 85% R.H.	100	HRS	80	0
Total:							0

Assembly Information:

Package Type: TQFN-HYB (Pb-Free)

Date Code Range: 1308 to 1308

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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MOISTURE SOAK	1308	MAX11190ETE+	85 C/85% R.H.	500	HRS	47	0
MOISTURE SOAK	1308	MAX11190ETE+	85 C/85% R.H.	1000	HRS	23	0
MOISTURE SOAK	1308	MAX11190ETE+	85 C/85% R.H.	1000	HRS	24	0
Total:							0

Assembly Information:

Package Type: uTQFN (Pb-Free)
Date Code Range: 1302 to 1452

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1302	MAX4995AAVB+	135°C	192	HRS	40	0
HIGH TEMP OP LIFE	1302	MAX4995AAVB+	135°C	1000	HRS	40	0
HIGH TEMP OP LIFE	1426	MAX4995AAVB+	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1426	MAX4995AAVB+	135°C	192	HRS	80	0
HIGH TEMP OP LIFE	1450	MAX4995AAVB+TCJ Y	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1452	MAX4995AAVB+TCJ Y	135°C	500	HRS	80	0
Total:							0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1426	MAX4995AAVB+	150°C	1000	HRS	80	0
STORAGE LIFE	1426	MAX4995AAVB+	150°C	500	HRS	80	0
STORAGE LIFE	1450	MAX4995AAVB+TCJ Y	150°C	1000	HRS	80	0
STORAGE LIFE	1452	MAX4995AAVB+TCJ Y	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	1426	MAX4995AAVB+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1450	MAX4995AAVB+TCJ Y	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1452	MAX4995AAVB+TCJ Y	-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	1302	MAX4995AAVB+	130C, 85% R.H.	100	HRS	40	0
BIASED MOISTURE	1426	MAX4995AAVB+	130C, 85% R.H.	96	HRS	46	0
BIASED MOISTURE	1450	MAX4995AAVB+TCJ Y	130C, 85% R.H.	100	HRS	32	0
BIASED MOISTURE	1452	MAX4995AAVB+TCJ Y	130C, 85% R.H.	100	HRS	34	0

FAILURE RATE: MTTF (YRS): 163079 FITS: 0.7

Total: 0