

10/27/2017



RELIABILITY MONITOR REPORT
FOR

QSOP 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	16	QSOP (Pb-Free)	ASE Kunshan	16 QSOP (Pb-Free)
ASE Kunshan	24	QSOP (Pb-Free)	ATP (Amkor, PI)	16 QSOP (Pb-Free)
ATP (Amkor, PI)	16	QSOP-CU (Pb-Free)	Carsem-M	16 QSOP (Pb-Free)
UTL (NSEB) UTAC	16	QSOP (Pb-Free)	UTL (NSEB) UTAC	24 QSOP (Pb-Free)
UTL (NSEB) UTAC	16	QSOP-CU (Pb-Free)		

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 236762 FITS: 0.5

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 7/1/2017 and 9/30/2017.

Assembly Information:

Package Type: QSOP (Pb-Free)
Date Code Range: 1613 to 1714

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1613	MAX3645EEE+	135°C	1000 HRS	54	0	
HIGH TEMP OP LIFE	1613	MAX3645EEE+	135°C	1000 HRS	55	0	
HIGH TEMP OP LIFE	1613	MAX3645EEE+	135°C	1000 HRS	55	0	
HIGH TEMP OP LIFE	1613	MAX16917DGEE/V+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1613	MAX16917DGEE/V+	135°C	1000 HRS	78	0	
HIGH TEMP OP LIFE	1619	MAX1031BEEG+	135°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1628	MAX1031BEEG+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1630	MAX1617MEE+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1634	MAX6959AAEE+	135°C	1000 HRS	48	0	
HIGH TEMP OP LIFE	1634	MAX6959AAEE+	135°C	1000 HRS	32	0	
HIGH TEMP OP LIFE	1641	MAX5170BEEE+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1645	MAX11632EEG+	135°C	1000 HRS	88	0	
HIGH TEMP OP LIFE	1645	MAX11632EEG+	135°C	1000 HRS	84	0	
HIGH TEMP OP LIFE	1645	MAX11632EEG+	135°C	1000 HRS	83	0	
HIGH TEMP OP LIFE	1646	MAX6959AAEE+	135°C	1000 HRS	48	0	
HIGH TEMP OP LIFE	1703	MAX1230BEEG+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1714	MAX5170AEEE+	135°C	1000 HRS	80	0	
Total:						0	

PRECONDITIONING LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1630	MAX1617MEE+	260C +0/-5C	12 PASS	320	0	
CONVECTION REFLOW	1703	MAX1230BEEG+	260°C	260 PASS	319	0	
CONVECTION REFLOW	1714	MAX5170AEEE+	260C +0/-5C	PASS	320	0	
				Total:		0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1613	MAX16917DGEE/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1613	MAX16917DGEE/V+	150°C	1000 HRS	80	0	
STORAGE LIFE	1630	MAX1617MEE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1634	MAX6959AEEE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1641	MAX5170BEEE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1645	MAX11632EEG+	150°C	1000 HRS	80	0	
STORAGE LIFE	1645	MAX11632EEG+	150°C	1000 HRS	80	0	
STORAGE LIFE	1646	MAX6959AEEE+	150°C	1000 HRS	80	0	
STORAGE LIFE	1703	MAX1230BEEG+	150°C	1000 HRS	80	0	
STORAGE LIFE	1714	MAX5170AEEE+	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	1618	MAX14930FAEE+	-65C TO +150C (Condition C)	1000 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1618	MAX14930FAEE+	-65C TO +150C (Condition C)	1000 CYS	99	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1618	MAX14930FAEE+	-65C TO +150C (Condition C)	1000 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1630	MAX1617MEE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1634	MAX6959AEEE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1635	MAX11632EEG+	-65C TO +150C (Condition C)	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1641	MAX5170BEEE+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1645	MAX11632EEG+	-65C TO +150C (Condition C)	500 CYS	100	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1645	MAX11632EEG+	-65C TO +150C (Condition C)	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1645	MAX11632EEG+	-65C TO +150C (Condition C)	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1646	MAX6959AEEE+	-65C TO +150C (Condition C)	1000 CYS	80	0	

TEMP CYCLE, 5' RAMP, 10' DWELL	1703	MAX1230BEEG+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1714	MAX5170AEEE+	-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	1619	MAX1168BEEG+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1619	MAX1168BEEG+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1619	MAX1168BEEG+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1630	MAX1617MEE+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1634	MAX6959AEE+	130C, 85% R.H.	96	HRS	79	0
BIASED MOISTURE	1641	MAX5170BEE+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1645	MAX11632EEG+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1645	MAX11632EEG+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1645	MAX11632EEG+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1646	MAX6959AEE+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1703	MAX1230BEEG+	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1714	MAX5170AEEE+	130C, 85% R.H.	96	HRS	78	0
						Total:	0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1635	MAX11632EEG+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1645	MAX11632EEG+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK	1645	MAX11632EEG+	130C, 85% R.H.	96	HRS	100	0
MOISTURE SOAK	1645	MAX11632EEG+	130C, 85% R.H.	96	HRS	100	0
						Total:	0

Assembly Information:

Package Type: QSOP-CU (Pb-Free)
Date Code Range: 1636 to 1641

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1636	MAX16971GEEA/V+	135°C	1000	HRS	80	0
						Total:	0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1636	MAX16971GEEA/V+	150°C	1000	HRS	80	0
STORAGE LIFE	1639	MAX20042UGEE/V+	150°C	2000	HRS	48	0
STORAGE LIFE	1639	MAX20042UGEE/V+	150°C	2000	HRS	48	0

STORAGE LIFE	1639	MAX20042UGEE/V+	150°C	2000	HRS	48	0
						Total:	0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1636	MAX16971GEEA/V+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1639	MAX20042UGEE/V+	-65C TO +150C (Condition C)	1000 CYS	72	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1639	MAX20042UGEE/V+	-65C TO +150C (Condition C)	1000 CYS	72	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1639	MAX20042UGEE/V+	-65C TO +150C (Condition C)	1000 CYS	72	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1641	MAX20042UGEE/V+	-65C TO +150C (Condition C)	1000 CYS	72	0	
						Total:	0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1636	MAX16971GEEA/V+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1639	MAX20042UGEE/V+	130C, 85% R.H.	200 HRS	72	0	
BIASED MOISTURE	1639	MAX20042UGEE/V+	130C, 85% R.H.	100 HRS	80	0	
BIASED MOISTURE	1639	MAX20042UGEE/V+	130C, 85% R.H.	100 HRS	80	0	
BIASED MOISTURE	1641	MAX20042UGEE/V+	130C, 85% R.H.	200 HRS	72	0	
						Total:	0

FAILURE RATE: MTTF (YRS): 236762 FITS: 0.5