

7/10/2017



RELIABILITY MONITOR REPORT  
FOR

**TSSOP 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	20	TSSOP (Pb-Free)	ASE Chung-Li	38 TSSOP (Pb-Free)
ATP (Amkor, PI)	14	TSSOP (Pb-Free)	ATP (Amkor, PI)	16 TSSOP (Pb-Free)
ATP (Amkor, PI)	38	TSSOP (Pb-Free)	ATP (Amkor, PI)	16 TSSOP-EP (Pb-Free)
ATP (Amkor, PI)	20	TSSOP-EP (Pb-Free)	ATP (Amkor, PI)	28 TSSOP-EP (Pb-Free)
Carsem-M	14	TSSOP (Pb-Free)	CARSEM-M	20 TSSOP (Pb-Free)
UTL (NSEB) UTAC	14	TSSOP (Pb-Free)	UTL (NSEB) UTAC	16 TSSOP (Pb-Free)
UTL (NSEB) UTAC	20	TSSOP (Pb-Free)	UTL (NSEB) UTAC	14 TSSOP-EP (Pb-Free)

The calculated failure rate for this assembly is:

**FAILURE RATE: MTTF (YRS): 268015 FITS: 0.4**

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 4/1/2017 and 6/30/2017.

**Assembly Information:**

Package Type: TSSOP (Pb-Free)

Date Code Range: 1443 to 1711

**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1443	MAX1281BCUP+	135°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1618	MAX16833CAUE/V+	135°C	1000 HRS	78	0	
HIGH TEMP OP LIFE	1618	MAX3380EEUP+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1619	MAX32625	135°C	192 HRS	48	0	
HIGH TEMP OP LIFE	1619	MAX3232EUE+	135°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1620	MAX9144EUD+	135°C	1000 HRS	78	0	
HIGH TEMP OP LIFE	1622	MAX3232EEUP+	135°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1629	MAX15005BAUE/V+	135°C	1000 HRS	48	0	
HIGH TEMP OP LIFE	1629	MAX15005BAUE/V+	135°C	1000 HRS	33	0	
HIGH TEMP OP LIFE	1631	MAX1785EUU+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1635	MAX5437EUD+	135°C	1000 HRS	47	0	
HIGH TEMP OP LIFE	1642	MAX9201EUE+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1644	MAX3232EUE+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1653	MAX9201EUE+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1701	MAX4478AUD+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1703	MAX3232EUE+	135°C	1000 HRS	80	0	

HIGH TEMP OP LIFE	1711	MAX1281BEUP+	135°C	500	HRS	79	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	1443	MAX1281BCUP+	150°C	1000	HRS	80	0
STORAGE LIFE	1603	MAX17880GUU/V+	150°C	1000	HRS	80	0
STORAGE LIFE	1606	MAX1178CCUP+	150°C	1000	HRS	20	0
STORAGE LIFE	1618	MAX3380EEUP+	150°C	1000	HRS	80	0
STORAGE LIFE	1619	MAX3232EUE+	150°C	1000	HRS	80	0
STORAGE LIFE	1620	MAX9144EUD+	150°C	1000	HRS	80	0
STORAGE LIFE	1622	MAX3232EEUP+	150°C	1000	HRS	79	0
STORAGE LIFE	1629	MAX15005BAUE/V+	150°C	1000	HRS	80	0
STORAGE LIFE	1631	MAX1785EUU+	150°C	1000	HRS	80	0
STORAGE LIFE	1635	MAX5437EUD+	150°C	1000	HRS	80	0
STORAGE LIFE	1642	MAX9201EUE+	150°C	1000	HRS	80	0
STORAGE LIFE	1644	MAX3232EUE+	150°C	1000	HRS	80	0
STORAGE LIFE	1653	MAX9201EUE+	150°C	1000	HRS	80	0
STORAGE LIFE	1701	MAX4478AUD+	150°C	1000	HRS	80	0
STORAGE LIFE	1703	MAX3232EUE+	150°C	1000	HRS	80	0
STORAGE LIFE	1711	MAX1281BEUP+	150°C	500	HRS	90	0
STORAGE LIFE	1711	MAX1281BEUP+	150°C	500	HRS	90	0
						<b>Total:</b>	<b>0</b>

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**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1443	MAX1281BCUP+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1537	MAX5437EUD+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1618	MAX3380EEUP+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1619	MAX3232EUE+	-65C TO +150C (Condition C)	1000	CYS	79	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1620	MAX9144EUD+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1622	MAX3232EEUP+	-65C TO +150C (Condition C)	1000	CYS	79	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1629	MAX15005BAUE/V+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1631	MAX1785EUU+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1635	MAX5437EUD+	-65C TO +150C (Condition C)	1000	CYS	80	0

TEMP CYCLE, 5' RAMP, 10' DWELL	1642	MAX9201EUE+	-65C TO +150C (Condition C)	1000 CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1644	MAX3232EUE+	-65C TO +150C (Condition C)	1000 CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1653	MAX9201EUE+	-65C TO +150C (Condition C)	1000 CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1701	MAX4478AUD+	-65C TO +150C (Condition C)	1000 CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1703	MAX3232EUE+	-65C TO +150C (Condition C)	1000 CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1711	MAX1281BEUP+	-65C TO +150C (Condition C)	500 CYS	90	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1711	MAX1281BEUP+	-65C TO +150C (Condition C)	500 CYS	110	0
<b>Total:</b>					<b>0</b>	<b>0</b>

### TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1443	MAX1281BCUP+	130C, 85% R.H.	100 HRS	80	0	
BIASED MOISTURE	1606	MAX1178CCUP+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1618	MAX3380EEUP+	130C, 85% R.H.	100 HRS	80	0	
BIASED MOISTURE	1619	MAX3232EUE+	130C, 85% R.H.	100 HRS	80	0	
BIASED MOISTURE	1620	MAX9144EUD+	130C, 85% R.H.	100 HRS	80	0	
BIASED MOISTURE	1622	MAX3232EEUP+	130C, 85% R.H.	96 HRS	79	0	
BIASED MOISTURE	1629	MAX15005BAUE/V+	130C, 85% R.H.	96 HRS	77	0	
BIASED MOISTURE	1631	MAX1785EUU+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1635	MAX5437EUD+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1642	MAX9201EUE+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1644	MAX3232EUE+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1653	MAX9201EUE+	130C, 85% R.H.	96 HRS	79	0	
BIASED MOISTURE	1701	MAX4478AUD+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1703	MAX3232EUE+	130C, 85% R.H.	96 HRS	80	0	
<b>Total:</b>					<b>0</b>	<b>0</b>	

### UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1711	MAX1281BEUP+	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK	1711	MAX1281BEUP+	130C, 85% R.H.	96 HRS	80	0	
<b>Total:</b>					<b>0</b>	<b>0</b>	

### Assembly Information:

Package Type: TSSOP-EP (Pb-Free)  
Date Code Range: 1618 to 1641

### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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HIGH TEMP OP LIFE	1632	MAX20051AUD/V+C MS	135°C	192	HRS	80	0
HIGH TEMP OP LIFE	1636	MAX20051AUD/V+C MS	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1640	MAX20051AUD/V+C MS	135°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1641	MAX2235EUP+	135°C	1000	HRS	80	0
<b>Total:</b>							<b>0</b>

### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1618	MAX16833CAUE/V+	150°C	1000	HRS	79	0
STORAGE LIFE	1618	MAX16833CAUE/V+	150°C	1000	HRS	80	0
STORAGE LIFE	1625	MAX15034BAUI/V+	150°C	500	HRS	80	0
STORAGE LIFE	1625	MAX15034BAUI/V+	150°C	500	HRS	80	0
STORAGE LIFE	1625	MAX15034BAUI/V+	150°C	500	HRS	80	0
STORAGE LIFE	1641	MAX2235EUP+	150°C	1000	HRS	80	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	1618	MAX16833CAUE/V+	-65C TO +150C (Condition C)	1000	CYS	79	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1625	MAX15034BAUI/V+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1625	MAX15034BAUI/V+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1625	MAX15034BAUI/V+	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1641	MAX2235EUP+	-65C TO +150C (Condition C)	1000	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	1618	MAX16833CAUE/V+	130C, 85% R.H.	100	HRS	80	0
BIASED MOISTURE	1618	MAX16833CAUE/V+	130C, 85% R.H.	96	HRS	20	0
BIASED MOISTURE	1641	MAX2235EUP+	130C, 85% R.H.	96	HRS	80	0
<b>Total:</b>							<b>0</b>

### UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1618	MAX16833CAUE/V+	130C, 85% R.H.	100	HRS	80	0
<b>Total:</b>							<b>0</b>

**FAILURE RATE: MTTF (YRS): 268015 FITS: 0.4**