

8/1/2019



RELIABILITY MONITOR REPORT
FOR

DFN 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	6	TDFN (Pb-Free)	ASE Chung-Li	8 TDFN (Pb-Free)
ASE Chung-Li	14	TDFN (Pb-Free)	ASE Chung-Li	83 TDFN (Pb-Free)
ASE Chung-Li	10	TDFN w/Cu-Wire (Pb-Free)	ASE Chung-Li	12 TDFN w/Cu-Wire (Pb-Free)
UTL (NSEB) UTAC	6	TDFN (Pb-Free)	UTL (NSEB) UTAC	14 TDFN (Pb-Free)
UTL (NSEB) UTAC	6	TDFN Hybrid (Pb-Free)	UTL (NSEB) UTAC	63 TDFN Hybrid (Pb-Free)
UTL (NSEB) UTAC	10	TDFN w/Cu-Wire (Pb-Free)	UTL (NSEB) UTAC	12 TDFN w/Cu-Wire (Pb-Free)
UTL (NSEB) UTAC	6	uDFN (Pb-Free)	UTL (NSEB) UTAC	8 uDFN (Pb-Free)
UTL (NSEB) UTAC	10	uDFN (Pb-Free)		

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 179689 FITS: 0.6

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: TDFN (Pb-Free)
Date Code Range: 1803 to 1912

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1803	MAX98306ETD+T	125°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1805	MAX5054AATA/V+T	125°C	1000 HRS	48	0	
HIGH TEMP OP LIFE	1805	MAX5054AATA/V+T	125°C	1000 HRS	29	0	
HIGH TEMP OP LIFE	1828	MAX15006AATT+	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1831	MAX98306ETD+T	125°C	500 HRS	80	0	
HIGH TEMP OP LIFE	1831	MAX98306ETD+T	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1840	MAX9814ETD+	125°C	1000 HRS	45	0	
HIGH TEMP OP LIFE	1903	MAX40026ATA/VY+	125°C	192 HRS	78	0	
HIGH TEMP OP LIFE	1910	MAX4239ATT+T	125°C	192 HRS	80	0	
				Total:		0	

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1910	MAX4239ATT+T	260C +0/-5C	3 PASS	350	0	
				Total:		0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE		MAX98306ETD+T	150°C	1000 HRS	80	0	
STORAGE LIFE	1806	MAX5423ETA+	150°C	1000 HRS	30	0	
STORAGE LIFE	1828	MAX15006AATT+	150°C	1000 HRS	80	0	
STORAGE LIFE	1840	MAX9814ETD+	150°C	1000 HRS	80	0	
STORAGE LIFE	1910	MAX4239ATT+T	150°C	1000 HRS	80	0	
STORAGE LIFE	1912	MAX4990ETD+	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	1803	MAX98306ETD+T	-65C TO +150C (Condition C)	1000 CYS	79	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1805	MAX5054AATAV+T	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1828	MAX15006AATT+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1840	MAX9814ETD+	-65C TO +150C (Condition C)	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1912	MAX4990ETD+	-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	1828	MAX15006AATT+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1840	MAX9814ETD+	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1910	MAX4239ATT+T	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	1910	MAX4239ATT+T	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK	1912	MAX4990ETD+	130C, 85% R.H.	96 HRS	80	0	
Total:						0	

Assembly Information:

Package Type: TDFN Hybrid (Pb-Free)

Date Code Range: 1827 to 1827

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1827	90-2884A+Q0U	125°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1827	90-2884A+Q0U	125°C	1000 HRS	80	0	

HIGH TEMP OP LIFE	1827	90-2884A+Q0U	125°C	500	HRS	79	0
						Total:	0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1827	90-2884A+Q0U	150°C	1000	HRS	80	0
STORAGE LIFE	1827	90-2884A+Q0U	150°C	1000	HRS	80	0
STORAGE LIFE	1827	90-2884A+Q0U	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	1827	90-2884A+Q0U	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1827	90-2884A+Q0U	-65C TO +150C (Condition C)	1000	CYS	80	0
TEMP CYCLE, 5' RAMP, 10' DWELL	1827	90-2884A+Q0U	-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	1827	90-2884A+Q0U	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1827	90-2884A+Q0U	130C, 85% R.H.	96	HRS	80	0
BIASED MOISTURE	1827	90-2884A+Q0U	130C, 85% R.H.	96	HRS	80	0
						Total:	0

Assembly Information:

Package Type: TDFN w/Cu-Wire (Pb-Free)
Date Code Range: 1734 to 1822

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE		MAX17761XATC+	125°C	1000	HRS	77	0
HIGH TEMP OP LIFE		MAX20471ATCA/V+	125°C	192	HRS	80	0
HIGH TEMP OP LIFE	1821	MAX38903BATB+	125°C	192	HRS	80	0
HIGH TEMP OP LIFE	1822	MAX17612AATB+	125°C	192	HRS	80	0
						Total:	0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CSAM	1734	MAX20019ATBA/VY+ T		1000		22	0
BOND STRENGTH	1734	MAX20019ATBA/VY+ > 5 GMS T		1000	WIRES	3	0
CSAM	1736	MAX20019ATBA/VY+ T		1000		22	0

BOND STRENGTH	1736	MAX20019ATBA/VY+ > 5 GMS T	96	WIRES	3	0	
BOND STRENGTH	1736	MAX20019ATBA/VY+ > 5 GMS T	96	WIRES	3	0	
BOND STRENGTH	1736	MAX20019ATBA/VY+ > 5 GMS T	1000	WIRES	3	0	
BOND STRENGTH	1736	MAX20019ATBA/VY+ > 5 GMS T	1000	WIRES	3	0	
CSAM	1739	MAX20019ATBA/VY+ T	96	HRS	22	0	
CSAM	1739	MAX20019ATBA/VY+ T	1000		22	0	
BOND STRENGTH	1739	MAX20019ATBA/VY+ > 5 GMS T	96	WIRES	3	0	
BOND STRENGTH	1739	MAX20019ATBA/VY+ > 5 GMS T	96	WIRES	3	0	
BOND STRENGTH	1739	MAX20019ATBA/VY+ > 5 GMS T	1000	WIRES	3	0	
CSAM	1740	MAX20019ATBA/VY+ T	96	HRS	22	0	
CSAM	1740	MAX20019ATBA/VY+ T	1000		22	0	
BOND STRENGTH	1740	MAX20019ATBA/VY+ > 5 GMS T	96	WIRES	3	0	
BOND STRENGTH	1740	MAX20019ATBA/VY+ > 5 GMS T	1000	WIRES	3	0	
CSAM	1740	MAX20019ATBA/VY+ T	96	HRS	22	0	
CSAM	1740	MAX20019ATBA/VY+ T	1000		22	0	
BOND STRENGTH	1740	MAX20019ATBA/VY+ > 5 GMS T	1000	WIRES	3	0	
BOND STRENGTH	1740	MAX20019ATBA/VY+ > 5 GMS T	1000	WIRES	3	0	
CSAM	1740	MAX20019ATBA/VY+ T	96	HRS	22	0	
BOND STRENGTH	1740	MAX20019ATBA/VY+ > 5 GMS T	96	WIRES	3	0	
BOND STRENGTH	1740	MAX20019ATBA/VY+ > 5 GMS T	96	WIRES	3	0	
BOND STRENGTH	1740	MAX20019ATBA/VY+ > 5 GMS T	500	WIRES	3	0	
BOND STRENGTH	1740	MAX20019ATBA/VY+ > 5 GMS T	500	WIRES	3	0	
BOND STRENGTH	1740	MAX20019ATBA/VY+ > 5 GMS T	1000	WIRES	3	0	
BOND STRENGTH	1740	MAX20019ATBA/VY+ > 5 GMS T	1000	WIRES	3	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE		MAX17761XATC+	150°C	1000 HRS	80	0	

STORAGE LIFE	MAX20471ATCA/V+	150°C	1000 HRS	79	0
STORAGE LIFE	MAX20471ATCA/V+	150°C	1000 HRS	80	0
STORAGE LIFE	MAX20471ATCA/V+	150°C	1000 HRS	79	0
Total:				0	0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, 5' RAMP, 10' DWELL	1740	MAX20019ATBA/VY+ T	-65C TO +150C (Condition C)	1000	CYS	70	0
Total:						0	0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE		MAX20471ATCA/V+	130C, 85% R.H.	96	HRS	79	0
BIASED MOISTURE	1740	MAX20019ATBA/VY+ T	130C, 85% R.H.	96	HRS	77	0
BIASED MOISTURE	1740	MAX20019ATBA/VY+ T	130C, 85% R.H.	96	HRS	79	0
BIASED MOISTURE	1740	MAX20019ATBA/VY+ T	130C, 85% R.H.	96	HRS	79	0
BIASED MOISTURE	1740	MAX20019ATBA/VY+ T	130C, 85% R.H.	96	HRS	78	0
BIASED MOISTURE	1740	MAX20019ATBA/VY+ T	130C, 85% R.H.	96	HRS	79	0
Total:						0	0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK		MAX17761XATC+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK		MAX20471ATCA/V+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK		MAX20471ATCA/V+	130C, 85% R.H.	96	HRS	80	0
MOISTURE SOAK		MAX20471ATCA/V+	130C, 85% R.H.	96	HRS	80	0
Total:						0	0

Assembly Information:

Package Type: uDFN (Pb-Free)
Date Code Range: 1701 to 1827

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1701	MAX4906FELB+	125°C	192	HRS	80	0
HIGH TEMP OP LIFE	1701	MAX4906FELB+	125°C	1000	HRS	80	0
HIGH TEMP OP LIFE	1820	MAX2659ELT+T	125°C	1000	HRS	78	0
Total:						0	0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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CONVECTION REFLOW	1701	MAX4906FELB+	85 C/85% R.H.	3	PASS	349	0
CONVECTION REFLOW	1827	MAX4906FELB+	85 C/85% R.H.	3	PASS	350	0
CONVECTION REFLOW	1827	MAX4906FELB+	85 C/85% R.H.	3	PASS	350	0
						Total:	0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1701	MAX4906FELB+	150°C	1000 HRS	79	0	
STORAGE LIFE	1824	MAX5128ELA+T	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	1824	MAX5128ELA+T	-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	1701	MAX4906FELB+	130C, 85% R.H.	96 HRS	47	0	
BIASED MOISTURE	1701	MAX4906FELB+	130C, 85% R.H.	96 HRS	31	0	
BIASED MOISTURE	1824	MAX5128ELA+T	130C, 85% R.H.	96 HRS	80	0	
BIASED MOISTURE	1827	MAX4906FELB+	130C, 85% R.H.	96 HRS	16	0	
BIASED MOISTURE	1827	MAX4906FELB+	130C, 85% R.H.	96 HRS	48	0	
BIASED MOISTURE	1827	MAX4906FELB+	130C, 85% R.H.	96 HRS	16	0	
BIASED MOISTURE	1827	MAX4906FELB+	130C, 85% R.H.	96 HRS	32	0	
BIASED MOISTURE	1827	MAX4906FELB+	130C, 85% R.H.	96 HRS	48	0	
						Total:	0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1701	MAX4906FELB+	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK	1827	MAX4906FELB+	130C, 85% R.H.	96 HRS	80	0	
MOISTURE SOAK	1827	MAX4906FELB+	130C, 85% R.H.	96 HRS	80	0	
						Total:	0

FAILURE RATE: MTTF (YRS): 179689 FITS: 0.6