

4/16/2014



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	OTDFN (Pb-Free)	ASE Chung-Li	8 TDFN (Pb-Free)
ASE Chung-Li	10	TDFN (Pb-Free)	HANA-AYT	6 OTDFN (Pb-Free)
HANA-BKK	6	OTDFN (Pb-Free)	PHIL	6 OTDFN (Pb-Free)
UTL	8	TDFN (Pb-Free)	UTL	10 TDFN (Pb-Free)
UTL	6	TDFN Hybrid (Pb-Free)		

The calculated failure rate for this assembly is:

**FAILURE RATE: MTTF (YRS): 30642 FITS: 3.7**

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: OTDFN (Pb-Free)

Date Code Range: 1246 to 1402

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### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1246	MAX44009EDT+T	135°C	1000 HRS	80	1	
HIGH TEMP OP LIFE	1246	MAX44009EDT+T	135°C	1000 HRS	33	0	
HIGH TEMP OP LIFE	1246	MAX44009EDT+T	135°C	1000 HRS	78	0	
HIGH TEMP OP LIFE	1249	MAX44005EDT+T	135°C	1000 HRS	32	0	
HIGH TEMP OP LIFE	1249	MAX44005EDT+T	135°C	1000 HRS	28	0	
HIGH TEMP OP LIFE	1314	MAX44005EDT+T	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1314	MAX44005EDT+T	135°C	1000 HRS	78	1	
HIGH TEMP OP LIFE	1314	MAX44005EDT+T	135°C	1000 HRS	78	1	
HIGH TEMP OP LIFE	1315	MAX44005EDT+T	135°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1320	MAX44005EDT+T	135°C	1000 HRS	77	0	
					<b>Total:</b>	<b>3</b>	

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### PRECONDITIONING LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
CONVECTION REFLOW	1315	MAX44005EDT+T	260C +/-5C	12 PASS	995	0	
					<b>Total:</b>	<b>0</b>	

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### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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STORAGE LIFE	1249	MAX44005EDT+T	150°C	1000 HRS	80	0
STORAGE LIFE	1314	MAX44005EDT+	150°C	1000 HRS	196	0
STORAGE LIFE	1315	MAX44005EDT+T	150°C	1000 HRS	80	0
STORAGE LIFE	1320	MAX44005EDT+T	150°C	1000 HRS	80	0
STORAGE LIFE	1320	MAX44005EDT+	150°C	72 HRS	95	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	1246	MAX44009EDT+T	-65C TO 150C	1000 CYS	95	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1246	MAX44009EDT+T	-65C TO 150C	1000 CYS	99	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1246	MAX44009EDT+T	-65C TO 150C	300 CYS	96	1	
TEMP CYCLE, 5' RAMP, 10' DWELL	1247	MAX44005EDT+T	-65C TO 150C	1000 CYS	77	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1249	MAX44005EDT+T	-65C TO 150C	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1311	MAX44009EDT+T	-65C TO 150C	1000 CYS	1000	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1315	MAX44005EDT+T	-65C TO 150C	1000 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1319	MAX44009EDT+T	-65C TO 150C	1000 CYS	993	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1320	MAX44005EDT+T	-65C TO 150C	1000 CYS	79	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1402	MAX44009EDT+T	-65C TO 150C	500 CYS	200	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1402	MAX44009EDT+T	-65C TO 150C	500 CYS	200	0	
<b>Total:</b>						<b>1</b>	

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### UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	1246	MAX44009EDT+T	85 C/85% R.H.	1000 HRS	35	0	
MOISTURE SOAK	1246	MAX44009EDT+T	85 C/85% R.H.	1000 HRS	34	0	
MOISTURE SOAK	1246	MAX44009EDT+T	85 C/85% R.H.	1000 HRS	34	0	
MOISTURE SOAK	1247	MAX44005EDT+T	85 C/85% R.H.	1000 HRS	78	0	
MOISTURE SOAK	1247	MAX44005EDT+T	85 C/85% R.H.	1000 HRS	80	0	
MOISTURE SOAK	1247	MAX44005EDT+T	85 C/85% R.H.	1000 HRS	79	0	
MOISTURE SOAK	1320	MAX44005EDT+T	85 C/85% R.H.	1000 HRS	79	0	
<b>Total:</b>						<b>0</b>	

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### Assembly Information:

Package Type: TDFN (Pb-Free)  
Date Code Range: 1121 to N/A

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**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1121	MAX6769TALD2+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1240	MAX17510ATB+	135°C	668 HRS	31	0	
HIGH TEMP OP LIFE	1240	MAX17510ATB+	135°C	1000 HRS	48	0	
HIGH TEMP OP LIFE	1301	MAX17502HATB+T	135°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1301	MAX17502HATB+T	135°C	192 HRS	79	0	
HIGH TEMP OP LIFE	1302	MAX17048	125C, 5.0 VOLTS	192 HRS	77	0	
HIGH TEMP OP LIFE	1303	MAX13253ATB+	135°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1311	MAX31740	125C, 5.5 VOLTS	192 HRS	80	0	
HIGH TEMP OP LIFE	1313	MAX14670ETB+T	135°C	192 HRS	80	0	
HIGH TEMP OP LIFE	1313	MAX14670ETB+T	135°C	192 HRS	78	0	
HIGH TEMP OP LIFE	1315	MAX31850	135C, 3.7V (PSA)	192 HRS	80	0	
HIGH TEMP OP LIFE	1319	MAX17501BATB+T	135°C	192 HRS	78	1	
HIGH TEMP OP LIFE	1319	MAX17501GATB+T	135°C	192 HRS	78	0	
HIGH TEMP OP LIFE	1319	MAX17501BATB+T	135°C	192 HRS	78	0	
HIGH TEMP OP LIFE	1320	MAX15062AATA+	135°C	228 HRS	80	0	
HIGH TEMP OP LIFE	1323	MAX14783EATA+	135°C	192 HRS	32	0	
HIGH TEMP OP LIFE	1323	MAX14783EATA+	135°C	192 HRS	48	0	
HIGH TEMP OP LIFE	1330	MAX16840ATB+	135°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1331	MAX14562ETA+	135°C	1000 HRS	80	0	
HIGH TEMP OP LIFE	1337	MAX16840ATB+	135°C	1000 HRS	79	0	
HIGH TEMP OP LIFE	1340	MAX14834ETB+T	135°C	240 HRS	80	1	
				<b>Total:</b>		<b>2</b>	

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**STORAGE LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	1330	MAX16840ATB+	150°C	1000 HRS	80	0	
STORAGE LIFE	1331	MAX14562ETA+	150°C	1000 HRS	80	0	
STORAGE LIFE	1337	MAX16840ATB+	150°C	1000 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
TEMP CYCLE, 5' RAMP, 10' DWELL	1330	MAX16840ATB+	-65C TO 150C	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1331	MAX14562ETA+	-65C TO 150C	500 CYS	80	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1337	MAX16840ATB+	-65C TO 150C	500 CYS	80	0	
				<b>Total:</b>		<b>0</b>	

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**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	1246	MAX17047	85/85, 1.9 & 4.5 VOLTS	1000 HRS	72	0	
BIASED MOISTURE	1330	MAX16840ATB+	130C, 85% R.H.	100 HRS	38	0	
BIASED MOISTURE	1331	MAX14562ETA+	130C, 85% R.H.	100 HRS	80	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	N/A	MAX5969BETB+T	85 C/85% R.H.	500 HRS	44	0	
MOISTURE SOAK	N/A	MAX5969BETB+T	85 C/85% R.H.	500 HRS	45	0	
MOISTURE SOAK	N/A	MAX5969BETB+T	85 C/85% R.H.	500 HRS	45	0	
					<b>Total:</b>	<b>0</b>	

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**Assembly Information:**

Package Type: TDFN Hybrid (Pb-Free)

Date Code Range: 1342 to 1342

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**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	1342	DS28E01	125C, 5.25 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	1342	DS28E01	125C, 5.25 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	1342	DS28E01	125C, 5.25 VOLTS	1000 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	1342	DS28E01	150°C	1000 HRS	77	0	
STORAGE LIFE	1342	DS28E01	150°C	1000 HRS	77	0	
STORAGE LIFE	1342	DS28E01	150°C	1000 HRS	77	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	1342	DS28E01	-55C TO 125C	1000 CYS	82	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1342	DS28E01	-55C TO 125C	1000 CYS	82	0	
TEMP CYCLE, 5' RAMP, 10' DWELL	1342	DS28E01	-55C TO 125C	1000 CYS	82	0	
					<b>Total:</b>	<b>0</b>	

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**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST	1342	DS28E01	130C, 85%R.H., 5.25V	100 HRS	45	0	

HAST	1342	DS28E01	130C, 85%R.H., 5.25V	100	HRS	45	0
HAST	1342	DS28E01	130C, 85%R.H., 5.25V	100	HRS	45	0
<b>Total:</b>							<b>0</b>

**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST, NO BIAS	1342	DS28E01	130C, 85% R.H.	300	HRS	77	0
HAST, NO BIAS	1342	DS28E01	130C, 85% R.H.	300	HRS	77	0
HAST, NO BIAS	1342	DS28E01	130C, 85% R.H.	300	HRS	77	0
<b>Total:</b>							<b>0</b>

**FAILURE RATE: MTTF (YRS): 30642 FITS: 3.7**