

RELIABILITY MONITOR REPORT
FOR

Flip Chip Package

Dallas Semiconductor

4401 South Beltwood Parkway
Dallas, TX 75244-3292

This Report was prepared by
Dallas Semiconductor Reliability Engineering

Summary:

The data in the tables that follow was generated as the result of an on-going Package Reliability Monitor. The assemblies covered by this package monitor are:

ASSY SITE	PINS	PACKAGE		
Dallas		Bump, 1 layer, glob	Dallas	Bump, 1 layer, no encap.
Dallas		Bump, 1 layer, underfill	Dallas	Bump, 2 layer, glob
Dallas		Bump, 2 layer, no encap.	Dallas	Bump, 2 layer, underfill
Dallas		Bump, 2 layer, underfill, resistor	Dallas	Bump, RDL layer, BCB Passivation

The calculated failure rate for this assembly is:

FAILURE RATE: **MTTF (YRS): 88128** **FITS: 1.3**

The parameters used to calculate this failure rate are as follows:

Cf: 60% **Ea: 0.7** **B: 0** **Tu: 25 °C** **Vu: 5.5 Volts**

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 07/01/2003 and 06/30/2004.

Assembly Information:

Package Type: Flip Chip RDL (Solder Bump)
 Flammability: UL 94-V0
 Moisture Sensitivity
 (JEDEC J-STD20A) Level 1
 Date Code Range: 0330 to 0335

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP REVERSE BIAS	0330	DS2761	125C, 5.5 VOLTS	1000 HRS	45	0	
HIGH TEMP REVERSE BIAS	0330	DS2761	125C, 5.5 VOLTS	1000 HRS	45	0	
HIGH TEMP REVERSE BIAS	0330	DS2761	125C, 5.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0334	DS2411	125C, 5.25 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0335	DS2411	125C, 5.25 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0335	DS2411	125C, 5.25 VOLTS	1000 HRS	45	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0330	DS2761	125C	1000 HRS	77	0	
STORAGE LIFE	0330	DS2761	125C	1000 HRS	77	0	
STORAGE LIFE	0330	DS2761	125C	1000 HRS	77	0	
STORAGE LIFE	0334	DS2411	125C	1000 HRS	77	0	
STORAGE LIFE	0335	DS2411	125C	1000 HRS	77	0	
STORAGE LIFE	0335	DS2411	125C	1000 HRS	77	0	

Total: 0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, SLOW	0330	DS2761	-40C TO +125C	2000 CYS	77	0	
TEMP CYCLE, SLOW	0330	DS2761	-40C TO +125C	2000 CYS	77	0	
TEMP CYCLE, SLOW	0330	DS2761	-40C TO +125C	1000 CYS	77	0	
TEMP CYCLE	0334	DS2411	-40 TO 85C	1000 CYS	77	0	
TEMP CYCLE	0335	DS2411	-40 TO 85C	1000 CYS	77	0	
TEMP CYCLE	0335	DS2411	-40 TO 85C	1000 CYS	77	0	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0330	DS2761	85/85, 5.5 VOLTS	1000 HRS	77	0	
BIASED MOISTURE	0330	DS2761	85/85, 5.5 VOLTS	1000 HRS	77	0	
BIASED MOISTURE	0330	DS2761	85/85, 5.5 VOLTS	1000 HRS	77	0	
BIASED MOISTURE	0334	DS2411	85/85, 5.5 VOLTS	1000 HRS	77	0	
BIASED MOISTURE	0335	DS2411	85/85, 5.5 VOLTS	1000 HRS	77	0	
BIASED MOISTURE	0335	DS2411	85/85, 5.5 VOLTS	1000 HRS	77	0	
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0330	DS2761	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0330	DS2761	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0330	DS2761	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0334	DS2411	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0335	DS2411	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0335	DS2411	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
Total:						0	

Assembly Information:

Package Type: Flip Chip (Solder Bump)
Flammability: UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A) Level 1
Date Code Range: 0327 to 0413

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0327	DS2502	125C, 6.0 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0327	DS2502	125C, 6.0 VOLTS	1000 HRS	80	0	

HIGH TEMP OP LIFE	0327	DS2502	125C, 6.0 VOLTS	1000 HRS	80	0
HIGH TEMP OP LIFE	0330	DS2502	125C, 6.0 VOLTS	1000 HRS	80	0
HIGH TEMP OP LIFE	0330	DS2502	125C, 6.0 VOLTS	1000 HRS	80	0
HIGH TEMP OP LIFE	0330	DS2502	125C, 6.0 VOLTS	1000 HRS	80	0
Total:						0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0327	DS2502	125C	1000 HRS	80	0	
STORAGE LIFE	0327	DS2502	125C	1000 HRS	80	0	
STORAGE LIFE	0327	DS2502	125C	1000 HRS	80	0	
STORAGE LIFE	0330	DS2502	125C	1000 HRS	80	0	
STORAGE LIFE	0330	DS2502	125C	1000 HRS	80	0	
STORAGE LIFE	0330	DS2502	125C	1000 HRS	80	0	
Total:						0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0330	DS2502	-40 TO 85C	1000 CYS	80	0	
TEMP CYCLE	0330	DS2502	-40 TO 85C	1000 CYS	80	1	30017244
TEMP CYCLE	0413	DS2401	-40 TO 85C	1000 CYS	80	0	
TEMP CYCLE	0413	DS2401	-40 TO 85C	1000 CYS	80	0	
TEMP CYCLE	0413	DS2401	-40 TO 85C	1000 CYS	80	0	
TEMP CYCLE	0413	DS2401	-40 TO 85C	1000 CYS	80	0	
Total:						1	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0327	DS2502	85/85, 5.5 VOLTS	1000 HRS	80	0	
BIASED MOISTURE	0327	DS2502	85/85, 5.5 VOLTS	1000 HRS	80	0	
BIASED MOISTURE	0327	DS2502	85/85, 5.5 VOLTS	1000 HRS	80	0	
BIASED MOISTURE	0330	DS2502	85/85, 5.5 VOLTS	1000 HRS	80	0	
BIASED MOISTURE	0330	DS2502	85/85, 5.5 VOLTS	1000 HRS	80	0	
BIASED MOISTURE	0330	DS2502	85/85, 5.5 VOLTS	1000 HRS	80	0	
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0327	DS2502	121C, 2 ATM STEAM, UNBIASED	168 HRS	80	0	
AUTOCLAVE	0327	DS2502	121C, 2 ATM STEAM, UNBIASED	168 HRS	80	0	
AUTOCLAVE	0327	DS2502	121C, 2 ATM STEAM, UNBIASED	168 HRS	80	0	
AUTOCLAVE	0330	DS2502	121C, 2 ATM STEAM, UNBIASED	168 HRS	80	0	

AUTOCLAVE	0330	DS2502	121C, 2 ATM STEAM, UNBIASED	168	HRS	80	0
AUTOCLAVE	0330	DS2502	121C, 2 ATM STEAM, UNBIASED	168	HRS	80	0
					Total:		0

FAILURE RATE: **MTTF (YRS): 88128** **FITS: 1.3**