

**RELIABILITY MONITOR REPORT
FOR**

BGA Module 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	ASSY SITE	PINS	PACKAGE
ATP (Amkor, PI)	256	MCMBGA	ATP (Amkor, PI)	300	MCMBGA
Carsem	48	BGA Module w/RRBattery	Dallas	256	BGA Module w/RRBattery
Dallas	168	BGA Module, 1 Side	Dallas	168	BGA Module, 2 Sided, Frame
Fastech	168	BGA Module, 1 Side	Stats	256	MCMBGA
Stats	300	MCMBGA			

Note: Due to the nature of the construction on this assembly, there is no operating life data collected

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 7/1/04 and 6/30/05.

Assembly Information:

Package Type: BGA Module
 Flammability: UL 94-V0
 Moisture Sensitivity (JEDEC J-STD20A) Level 3
 Date Code Range: 0435 to 0452

MECHANICAL LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MECHANICAL SHOCK GROSS LEAK	0435	DS2030	200G, 1/2 SINE, 6 MS 25 C, AIR PRESSURE DECAY	30 CYS	22	0	
VIBRATION, VARIABLE FREQUENCY GROSS LEAK	0435	DS2030	10g or 0.06", 5Hz-2KHz, X Y Z axis 25 C, AIR PRESSURE DECAY	9 HRS	22	0	
MECHANICAL SHOCK GROSS LEAK	0435	DS2030	200G, 1/2 SINE, 6 MS 25 C, AIR PRESSURE DECAY	30 CYS	22	0	
VIBRATION, VARIABLE FREQUENCY GROSS LEAK	0435	DS2030	10g or 0.06", 5Hz-2KHz, X Y Z axis 25 C, AIR PRESSURE DECAY	9 HRS	22	0	
MECHANICAL SHOCK GROSS LEAK	0435	DS2045	200G, 1/2 SINE, 6 MS 25 C, AIR PRESSURE DECAY	30 CYS	22	0	
VIBRATION, VARIABLE FREQUENCY GROSS LEAK	0435	DS2045	10g or 0.06", 5Hz-2KHz, X Y Z axis 25 C, AIR PRESSURE DECAY	9 HRS	22	0	
Total:						0	

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
X-RAY	0439	DS2045	MIL-STD-883-2012 : TOP & SIDE VIEW		6	0	
X-RAY	0447	DS2045	MIL-STD-883-2012 : TOP & SIDE VIEW		6	0	
X-RAY	0447	DS2030	MIL-STD-883-2012 : TOP & SIDE VIEW		6	0	
X-RAY	0452	DS2045	MIL-STD-883-2012 : TOP & SIDE VIEW		6	0	

Total: 0

PRECONDITIONING LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0439	DS2045	125C	48 HRS	345		
MOISTURE SOAK			30C/60% R.H.	192 HRS	345		
CONVECTION REFLOW			220C +5/-0C	2 PASS	345	0	
GROSS LEAK			25 C, AIR PRESSURE DECAY		345	0	
STORAGE LIFE	0447	DS2045	125C	48 HRS	219		
MOISTURE SOAK			30C/60% R.H.	192 HRS	219		
CONVECTION REFLOW			220C +5/-0C	2 PASS	219	0	
GROSS LEAK			25 C, AIR PRESSURE DECAY		219	0	
STORAGE LIFE	0447	DS2030	125C	48 HRS	205		
MOISTURE SOAK			30C/60% R.H.	192 HRS	205		
CONVECTION REFLOW			220C +5/-0C	2 PASS	205	0	
GROSS LEAK			25 C, AIR PRESSURE DECAY		205	0	
STORAGE LIFE	0452	DS2045	125C	48 HRS	269		
MOISTURE SOAK			30C/60% R.H.	192 HRS	269		
CONVECTION REFLOW			220C +5/-0C	2 PASS	269	0	
GROSS LEAK			25 C, AIR PRESSURE DECAY		269	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0447	DS2045	85 C	1000 HRS	65	0	
STORAGE LIFE	0447	DS2030	85 C	1000 HRS	51	0	
STORAGE LIFE	0452	DS2045	85 C	1000 HRS	114	0	
Total:						0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0447	DS2045	-40 TO 85C	1000 CYS	77	0	
TEMP CYCLE	0447	DS2030	-40 TO 85C	1000 CYS	77	0	
TEMP CYCLE	0452	DS2045	-40 TO 85C	1000 CYS	77	0	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
FLUX DIP & H2O RINSE	0447	DS2045	JESD22-A113	1 HRS	77	0	
BIASED MOISTURE (BATTERY)			60C/90% R.H., BATTERY BIAS	1000 HRS	77	0	
FLUX DIP & H2O RINSE	0447	DS2030	JESD22-A113	1 HRS	77	0	
BIASED MOISTURE (BATTERY)			60C/90% R.H., BATTERY BIAS	1000 HRS	77	0	
FLUX DIP & H2O RINSE	0452	DS2045	JESD22-A113	1 HRS	77	0	
BIASED MOISTURE (BATTERY)			60C/90% R.H., BATTERY BIAS	1000 HRS	77	0	
Total:						0	

Assembly Information:

Package Type: BGA Module 1725 mil
Flammability: UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A) Level 3
Date Code Range: 0418 to 0418

PRECONDITIONING LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0418	DS3832	125C	24 HRS	24	0	
MOISTURE SOAK			30C/60% R.H.	192 HRS	24	0	
CONVECTION REFLOW			220C +/-0C	2 PASS	24	0	
EXTERNAL VISUAL			JESD22-B101		24	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0418	DS3832	85 C	1000 HRS	8	0	
Total:						0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0418	DS3832	-40 TO 85C	1000 CYS	8	0	
EXTERNAL VISUAL			JESD22-B101		8	0	
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	0418	DS3832	60C/90% R.H.	1000 HRS	8	0	
Total:						0	