

**RELIABILITY MONITOR REPORT
FOR**

BGA 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		
ASAT China	16	CSBGA	ASAT China	25 CSBGA
ASAT China	16	CSBGA (Pb-Free)	ASAT China	25 CSBGA (Pb-Free)
ASAT Hong Kong	16	CSBGA	ASAT Hong Kong	256 CSBGA
ASAT Hong Kong	100	CSBGA (Pb-Free)	ASAT Hong Kong	16 CSBGA (Pb-Free)
ASAT Hong Kong	49	CSBGA (Pb-Free)	ATP (Amkor, PI)	256 BGA
ATP (Amkor, PI)	272	BGA	ATP (Amkor, PI)	100 CSBGA
ATP (Amkor, PI)	16	CSBGA	ATP (Amkor, PI)	169 CSBGA
ATP (Amkor, PI)	25	CSBGA	ATP (Amkor, PI)	256 CSBGA
ATP (Amkor, PI)	49	CSBGA	ATP (Amkor, PI)	100 CSBGA (Pb-Free)
ATP (Amkor, PI)	16	CSBGA (Pb-Free)	ATP (Amkor, PI)	169 CSBGA (Pb-Free)
ATP (Amkor, PI)	25	CSBGA (Pb-Free)	ATP (Amkor, PI)	256 CSBGA (Pb-Free)
ATP (Amkor, PI)	144	TE-PBGA	ATP (Amkor, PI)	400 TE-PBGA
ATP (Amkor, PI)	100	TECSBGA	ATP (Amkor, PI)	144 TECSBGA
ATP (Amkor, PI)	256	TECSBGA	Carsem	25 CSBGA
SCS (Stats Chippac S	256	BGA	SCS (Stats Chippac S	100 CSBGA
SCS (Stats Chippac S	16	CSBGA	SCS (Stats Chippac S	25 CSBGA
SCS (Stats Chippac S	49	CSBGA	SCS (Stats Chippac S	16 CSBGA (Pb-Free)
SCS (Stats Chippac S	25	CSBGA (Pb-Free)		

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 24911 FITS: 4.6

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 04/01/2005 and 03/31/2006 .

Assembly Information:

Package Type: CSBGA 197
 Flammability: UL 94-V0
 Moisture Sensitivity Level 3
 (JEDEC J-STD20A)
 Date Code Range: 0525 to 0525

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0525	DS1852	125C, 5.5 VOLTS	1000 HRS	77	0	
				Total:		0	

Assembly Information:

Package Type: CSBGA 669
Flammability: UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A) Level 3
Date Code Range: 0448 to 0521

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0448	DS26334	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0521	DS33Z44	125C, 3.5V (PSA) & 2.0V (PSB)	1000 HRS	45	0	
Total:						0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0521	DS33Z44	-55C TO 125C	1000 CYS	77	0	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0521	DS33Z44	85/85, 2.0 VOLTS	1000 HRS	45	0	
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST, NO BIAS	0521	DS33Z44	130C, 85% R.H.	200 HRS	77	0	
Total:						0	

Assembly Information:

Package Type: CSBGA (Pb-Free) 669
Flammability: UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A) Level 3
Date Code Range: 0518 to 0518

MOISTURE SENSITIVITY LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0518	DS21458	J-STD-020		8	0	
STORAGE LIFE			125C	48 HRS	8		
MOISTURE SOAK			30C/60% R.H.	192 HRS	8		
CONVECTION REFLOW			260C +/-5C	3 PASS	8	0	
EXTERNAL VISUAL			J-STD-020, 6.1a		8	0	
PRECONDITION U/S			J-STD-020		8	0	
Total:						0	

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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HIGH TEMP OP LIFE	0518	DS21458	125C, 3.5 VOLTS	1000 HRS	45	0
Total:						0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
X-RAY	0518	DS21458	MIL-STD-883-2012 : TOP & SIDE VIEW		6	0	
PHYSICAL DIMENSIONS			JESD22-B100		6	0	
BALL SHEAR			JESD22-B117		6	0	
Total:						0	

PRECONDITIONING LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0518	DS21458	125C	48 HRS	244		
MOISTURE SOAK			30C/60% R.H.	192 HRS	244		
CONVECTION REFLOW			260C +/-5C	3 PASS	244	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0518	DS21458	150C	1000 HRS	77	0	
Total:						0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0518	DS21458	-55C TO 125C	1000 CYS	77	0	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE CYCLING	0518	DS21458	85/85, 3.5 VOLTS	1000 HRS	45	0	
Total:						0	

FAILURE RATE: MTTF (YRS): 24911 FITS: 4.6