

RELIABILITY MONITOR REPORT  
FOR

**PBGA Package**

**Dallas Semiconductor**

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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 DongGuan	24	PBGA w/WIRE BOND and CRYSTAL	ASAT DongGuan	36 PBGA w/WIRE BOND and CRYSTAL
ASAT Hong Kong	36	PBGA w/WIRE BOND and CRYSTAL	ATP (Amkor, PI)	256 MCMBGA
ATP (Amkor, PI)	300	MCMBGA	ATP (Amkor, PI)	256 MCMBGA (Pb-Free)
ATP (Amkor, PI)	300	MCMBGA (Pb-Free)	ATP (Amkor, PI)	256 PBGA
ATP (Amkor, PI)	272	PBGA	ATP (Amkor, PI)	256 PBGA (Pb-Free)
ATP (Amkor, PI)	144	PBGA-TE	ATP (Amkor, PI)	400 PBGA-TE
ATP (Amkor, PI)	484	PBGA-TE	ATP (Amkor, PI)	144 PBGA-TE (Pb-Free)
ATP (Amkor, PI)	256	PBGA-TE (Pb-Free)	ATP (Amkor, PI)	400 PBGA-TE (Pb-Free)
Carsem	36	PBGA w/WIRE BOND and CRYSTAL	Dallas	36 PBGA w/SOIC and CRYSTAL
SCS (StatsChipPac Si	256	MCMBGA	SCS (StatsChipPac Si	300 MCMBGA
SCS (StatsChipPac Si	256	PBGA	SCS (StatsChipPac Si	256 PBGA (Pb-Free)

The calculated failure rate for this assembly is:

**FAILURE RATE: MTTF (YRS): 10575 FITS: 10.8**

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 7/1/2006 and 6/30/2007

**Assembly Information:**

Package Type: PBGA (Pb-Free) 27x27x1.53  
 Flammability: UL 94-V0  
 Moisture Sensitivity (JEDEC J-STD20A) Level 4  
 Date Code Range: 0651 to 0651

**MOISTURE SENSITIVITY LEVEL 4**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0651	DS31256	J-STD-020		8	0	
STORAGE LIFE			125C	48 HRS	8		
MOISTURE SOAK			30C/60% R.H.	96 HRS	8		
CONVECTION REFLOW			260C +0/-5C	3 PASS	8	0	
EXTERNAL VISUAL			J-STD-020, 6.1a		8	0	
PRECONDITION U/S			J-STD-020		8	0	
ULTRASOUND	0651	DS31256	J-STD-020		8	0	
STORAGE LIFE			125C	48 HRS	8		
MOISTURE SOAK			30C/60% R.H.	96 HRS	8		
CONVECTION REFLOW			260C +0/-5C	3 PASS	8	0	
EXTERNAL VISUAL			J-STD-020, 6.1a		8	0	
PRECONDITION U/S			J-STD-020		8	0	
<b>Total:</b>						<b>0</b>	

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**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0651	DS31256	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0651	DS31256	125C, 3.5 VOLTS	1000 HRS	45	0	
<b>Total:</b>						<b>0</b>	

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**PACKAGE TESTS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BALL SHEAR	0651	DS31256	JESD22-B117		6	0	
BALL SHEAR	0651	DS31256	JESD22-B117		6	0	
<b>Total:</b>						<b>0</b>	

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**PRECONDITIONING LEVEL 4**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0651	DS31256	125C	48 HRS	244		
MOISTURE SOAK			30C/60% R.H.	96 HRS	244		
CONVECTION REFLOW			260C +/-5C	3 PASS	244	0	
STORAGE LIFE	0651	DS31256	125C	48 HRS	244		
MOISTURE SOAK			30C/60% R.H.	96 HRS	244		
CONVECTION REFLOW			260C +/-5C	3 PASS	244	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	0651	DS31256	150C	1000 HRS	77	0	
STORAGE LIFE	0651	DS31256	150C	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	0651	DS31256	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0651	DS31256	-55C TO 125C	1000 CYS	77	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	0651	DS31256	85/85, 3.5 VOLTS	1000 HRS	45	0	
BIASED MOISTURE	0651	DS31256	85/85, 3.5 VOLTS	1000 HRS	45	0	
<b>Total:</b>						<b>0</b>	

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**FAILURE RATE: MTTF (YRS): 10575 FITS: 10.8**