

**RELIABILITY MONITOR REPORT
FOR**

LQFP 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		
ATK (Amkor, K)	100	LQFP	ATK (Amkor, K)	128 LQFP
ATK (Amkor, K)	144	LQFP	ATK (Amkor, K)	48 LQFP
ATK (Amkor, K)	64	LQFP	ATK (Amkor, K)	100 LQFP (Pb-Free)
ATK (Amkor, K)	128	LQFP (Pb-Free)	ATK (Amkor, K)	144 LQFP (Pb-Free)
ATK (Amkor, K)	48	LQFP (Pb-Free)	ATK (Amkor, K)	64 LQFP (Pb-Free)
ATK (Amkor, K)	144	LQFP Exposed Pad (Pb-Free)	ATK (Amkor, K)	48 LQFP Exposed Pad (Pb-Free)
ATP (Amkor, PI)	100	LQFP	ATP (Amkor, PI)	128 LQFP
ATP (Amkor, PI)	100	LQFP (Pb-Free)	SCS (StatsChipPac Si	100 LQFP
SCS (StatsChipPac Si	128	LQFP	SCS (StatsChipPac Si	48 LQFP
SCS (StatsChipPac Si	64	LQFP	SCS (StatsChipPac Si	100 LQFP (Pb-Free)
SCS (StatsChipPac Si	128	LQFP (Pb-Free)		

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 46766 FITS: 2.4

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

Cf: 60% Ea: 0.7 Tu: 25 °C

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 7/1/2006 and 6/30/2007.

Assembly Information:

Package Type: LQFP 14x14x1.4
 Flammability: UL 94-V0
 Moisture Sensitivity (JEDEC J-STD20A) Level 4
 Date Code Range: 0629 to 0709

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0629	DS2155	125C, 3.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0635	DS2155	125C, 3.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0644	DS2154	125C, 5.25 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0709	DS2155	125C, 3.5 VOLTS	1000 HRS	77	0	
Total:						0	

PRECONDITIONING LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0629	DS2155	125C	24 HRS	199		
MOISTURE SOAK			30C/60% R.H.	192 HRS	199		
CONVECTION REFLOW			235C +5/-0C	3 PASS	199	0	
STORAGE LIFE	0635	DS2155	125C	24 HRS	199		
MOISTURE SOAK			30C/60% R.H.	192 HRS	199		
CONVECTION REFLOW			235C +5/-0C	3 PASS	199	0	

STORAGE LIFE	0709	DS2155	125C	24	HRS	122		
MOISTURE SOAK			30C/60% R.H.	192	HRS	122		
CONVECTION REFLOW			240C +0/-5C	3	PASS	122	0	
Total:							0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO	
TEMP CYCLE	0629	DS2155	-55C TO 125C	1000	CYS	77	0	
TEMP CYCLE	0635	DS2155	-55C TO 125C	1000	CYS	75	0	
TEMP CYCLE	0709	DS2155	-55C TO 125C	1000	CYS	77	0	
Total:							0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO	
HAST	0629	DS2155	130C, 85%R.H.,3.5V	96	HRS	45	0	
HAST	0635	DS2155	130C, 85%R.H.,3.5V	96	HRS	44	0	
HAST	0709	DS2155	130C, 85%R.H.,3.5V	96	HRS	45	0	
Total:							0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO	
HAST, NO BIAS	0629	DS2155	130C, 85% R.H.	200	HRS	77	0	
HAST, NO BIAS	0635	DS2155	130C, 85% R.H.	192	HRS	76	0	
Total:							0	

Assembly Information:

Package Type: LQFP (Pb-Free) 14x14x1.4
 Flammability: UL 94-V0
 Moisture Sensitivity (JEDEC J-STD20A) Level 4
 Date Code Range: 0626 to 0627

MOISTURE SENSITIVITY LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO	
ULTRASOUND	0627	DS21354	J-STD-020			8	0	
STORAGE LIFE			125C	24	HRS	8		
MOISTURE SOAK			30C/60% R.H.	192	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	
Total:							0	

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO	
HIGH TEMP OP LIFE	0627	DS21354	125C, 3.5 VOLTS	1000	HRS	45	0	
Total:							0	

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
SOLDERABILITY (Sn/Pb)	0627	DS21354	JESD22-B102, COND C		3	0	
SOLDERABILITY (Pb-Free)			JESD22-B102, COND C		3	0	
X-RAY	0627	DS21354	MIL-STD-883-2012 : TOP & SIDE VIEW		6	0	
PHYSICAL DIMENSIONS			JESD22-B100		6	0	
MARK PERMANENCY			JESD22-B107		6	0	
LEAD INTEGRITY			JESD22-B105, COND B		6	0	
EXTERNAL VISUAL			JESD22-B101		6	0	
EDX			25 C		6	0	
					Total:	0	

PRECONDITIONING LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0626	DS80C400	125C	24 HRS	45		
MOISTURE SOAK			30C/60% R.H.	192 HRS	45		
CONVECTION REFLOW			260C +0/-5C	3 PASS	45	0	
STORAGE LIFE	0626	DS80C400	125C	24 HRS	45		
MOISTURE SOAK			30C/60% R.H.	192 HRS	45		
CONVECTION REFLOW			260C +0/-5C	3 PASS	45	0	
STORAGE LIFE	0626	DS80C400	125C	24 HRS	45		
MOISTURE SOAK			30C/60% R.H.	192 HRS	45		
CONVECTION REFLOW			260C +0/-5C	3 PASS	45	0	
STORAGE LIFE	0627	DS21354	125C	24 HRS	321		
MOISTURE SOAK			30C/60% R.H.	192 HRS	321		
CONVECTION REFLOW			260C +0/-5C	3 PASS	321	0	
					Total:	0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0627	DS21354	150C	1000 HRS	77	0	
					Total:	0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0627	DS21354	-55C TO 125C	1000 CYS	77	0	
					Total:	0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST	0626	DS80C400	130C, 85%R.H.,3.5V	100 HRS	45	0	
HAST	0626	DS80C400	130C, 85%R.H.,3.5V	100 HRS	45	0	
HAST	0626	DS80C400	130C, 85%R.H.,3.5V	100 HRS	44	0	
HAST	0627	DS21354	130C, 85%R.H.,3.5V	96 HRS	45	0	
					Total:	0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST, NO BIAS	0627	DS21354	130C, 85% R.H.	200 HRS	74	0	
Total:						0	

Assembly Information:

Package Type: LQFP (Pb-Free) 20x20x1.4
Flammability: UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A) Level 4
Date Code Range: 0632 to 0632

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0632	DS26303	125C, 3.5 VOLTS	1000 HRS	45	0	
Total:						0	

FAILURE RATE: MTTF (YRS): 46766 FITS: 2.4