

**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)	48	LQFP	ATK (Amkor, K)	64 LQFP
ATP (Amkor, PI)	100	LQFP	ATP (Amkor, PI)	128 LQFP
Stats	100	LQFP	Stats	128 LQFP
Stats	48	LQFP	Stats	64 LQFP

The calculated failure rate for this assembly is:

FAILURE RATE: **MTTF (YRS): 10414** **FITS: 11.0**

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 10/1/03 and 9/30/04 .

Assembly Information:

Package Type: LQFP 10 mm
Flammability: UL 94-V0
Moisture Sensitivity
(JEDEC J-STD20A) Level 4
Date Code Range: 0403 to 0418

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0403	DS80C390	125C, 5.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0418	DS26502	125C, 3.5 VOLTS	1000 HRS	45	0	
				Total:		0	

PRECONDITIONING LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0418	DS26502	125C	24 HRS	199		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	199		
CONVECTION REFLOW			235C +/-0C	3 PASS	199	0	
				Total:		0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0418	DS26502	-55C TO 125C	1000 CYS	77	0	
				Total:		0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0418	DS26502	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
				Total:		0	

Assembly Information:

Package Type: LQFP 14 mm
Flammability: UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A) Level 4
Date Code Range: 0332 to 0432

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0332	DS2154	125C, 5.25 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0340	DS21352	125C, 3.3 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0343	DS2154	125C, 5.0 VOLTS	1000 HRS	80	0	
HIGH VOLTAGE LIFE	0402	DS80C400	125C, 5.5V (PSA) & 3.3V (PSB)	1000 HRS	77	0	
HIGH TEMP OP LIFE	0415	DS21352	125C, 3.3 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0418	DS21Q50	125C, 5.0 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0420	DS21354	125C, 5.25 VOLTS	192 HRS	77	0	
			125C, 3.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0421	DS21354	125C, 5.25 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0425	DS2155	125C, 3.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0428	DS2155	125C, 3.5 VOLTS	1000 HRS	77	1	30028340
HIGH TEMP OP LIFE	0431	DS2155	125C, 3.5 VOLTS	1000 HRS	77	4	30027229
					Total:	5	

PRECONDITIONING LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0340	DS21352	J-STD-020		4	0	
STORAGE LIFE	0340	DS21352	125C	24 HRS	241		
MOISTURE SOAK			30C/60% R.H.	192 HRS	241		
CONVECTION REFLOW			235C +5/-0C	3 PASS	241	0	
PRECONDITION U/S	0340	DS21352	J-STD-020		4	0	
ULTRASOUND	0343	DS2154	J-STD-020		4	0	
STORAGE LIFE	0343	DS2154	125C	24 HRS	241		
MOISTURE SOAK			30C/60% R.H.	192 HRS	241		
CONVECTION REFLOW			235C +5/-0C	3 PASS	241	0	
PRECONDITION U/S	0343	DS2154	J-STD-020		4	0	
ULTRASOUND	0411	DS2154	J-STD-020		4	0	
STORAGE LIFE	0411	DS2154	125C	24 HRS	241		
MOISTURE SOAK			30C/60% R.H.	192 HRS	241		
CONVECTION REFLOW			235C +5/-0C	3 PASS	241		
ULTRASOUND	0415	DS21352	J-STD-020		4	0	
STORAGE LIFE	0415	DS21352	125C	24 HRS	241		
MOISTURE SOAK			30C/60% R.H.	192 HRS	241		
CONVECTION REFLOW			235C +5/-0C	3 PASS	241	0	

PRECONDITION U/S	0415	DS21352	J-STD-020			4	0
STORAGE LIFE	0428	DS21352	125C	24	HRS	241	
MOISTURE SOAK			30C/60% R.H.	192	HRS	241	
CONVECTION REFLOW			235C +5/-0C	3	PASS	241	
STORAGE LIFE	0432	DS2154	125C	24	HRS	241	
MOISTURE SOAK			30C/60% R.H.	192	HRS	241	
CONVECTION REFLOW			235C +5/-0C	3	PASS	241	
Total:							0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0340	DS21352	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0343	DS2154	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0402	DS80C400	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0415	DS21352	-55C TO 125C	1000 CYS	80	0	
TEMP CYCLE	0421	DS21354	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0425	DS2155	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0428	DS2155	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0431	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	0402	DS80C400	130C, 85%R.H.,3.5V	96 HRS	77	0	
HAST	0421	DS21354	130C, 85%R.H.,3.5V	96 HRS	45	0	
HAST	0425	DS2155	130C, 85%R.H.,3.5V	96 HRS	45	0	
HAST	0428	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	0340	DS21352	130C, 85% R.H.	156 HRS	77	0	
HAST, NO BIAS	0343	DS2154	130C, 85% R.H.	156 HRS	77	0	
HAST, NO BIAS	0402	DS80C400	130C, 85% R.H.	200 HRS	77	0	
HAST, NO BIAS	0415	DS21352	130C, 85% R.H.	100 HRS	80	0	
HAST, NO BIAS	0421	DS21354	130C, 85% R.H.	200 HRS	77	0	
HAST, NO BIAS	0425	DS2155	130C, 85% R.H.	200 HRS	77	0	
HAST, NO BIAS	0428	DS2155	130C, 85% R.H.	200 HRS	77	0	
HAST, NO BIAS	0431	DS2155	130C, 85% R.H.	200 HRS	77	0	
Total:							0

FAILURE RATE:

MTTF (YRS): 10414

FITS: 11.0