

RELIABILITY MONITOR REPORT
FOR

MQFP 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	MQFP	ATK (Amkor, K)	80 MQFP
ATP (Amkor, PI)	100	MQFP	ATP (Amkor, PI)	44 MQFP
ATP (Amkor, PI)	80	MQFP	Carsem	80 MQFP
Stats	100	MQFP	Stats	80 MQFP

The calculated failure rate for this assembly is:

FAILURE RATE: **MTTF (YRS): 73087** **FITS: 1.6**

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 07/01/2003 and 06/30/2004.

Assembly Information:

Package Type: MQFP 14 mm
 Flammability: UL 94-V0
 Moisture Sensitivity Level 4
 (JEDEC J-STD20A)
 Date Code Range: 0323 to 0348

MOISTURE SENSITIVITY LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
EXTERNAL VISUAL	0329	DS5002	J-STD-020, 6.1a		8	0	
ULTRASOUND			J-STD-020		8	0	
STORAGE LIFE			125C	48 HRS	8		
MOISTURE SOAK			30C/60% R.H.	192 HRS	8		
CONVECTION REFLOW			220C	3 PASS	8	0	
EXTERNAL VISUAL			J-STD-020, 6.1a		8	0	
PRECONDITION U/S			J-STD-020		8	0	
EXTERNAL VISUAL	0330	DS5002	J-STD-020, 6.1a		8	0	
ULTRASOUND			J-STD-020		8	0	
STORAGE LIFE			125C	48 HRS	8		
MOISTURE SOAK			30C/60% R.H.	192 HRS	8		
CONVECTION REFLOW			220C	3 PASS	8	0	
EXTERNAL VISUAL			J-STD-020, 6.1a		8	0	
PRECONDITION U/S			J-STD-020		8	0	
EXTERNAL VISUAL	0330	DS5002	J-STD-020, 6.1a		8	0	
ULTRASOUND			J-STD-020		8	0	
STORAGE LIFE			125C	48 HRS	8		
MOISTURE SOAK			30C/60% R.H.	192 HRS	8		
CONVECTION REFLOW			220C	3 PASS	8	0	
EXTERNAL VISUAL			J-STD-020, 6.1a		8	0	
PRECONDITION U/S			J-STD-020		8	0	
EXTERNAL VISUAL	0347	DS5002	J-STD-020, 6.1a		8	0	

ULTRASOUND	0347	DS5002	J-STD-020			8	0
STORAGE LIFE			125C	48	HRS	8	
MOISTURE SOAK			30C/60% R.H.	192	HRS	8	
CONVECTION REFLOW			220C	3	PASS	8	0
EXTERNAL VISUAL			J-STD-020, 6.1a			8	0
PRECONDITION U/S			J-STD-020			8	0
EXTERNAL VISUAL	0347	DS5002	J-STD-020, 6.1a			8	0
ULTRASOUND			J-STD-020			8	0
STORAGE LIFE			125C	48	HRS	8	
MOISTURE SOAK			30C/60% R.H.	192	HRS	8	
CONVECTION REFLOW			220C	3	PASS	8	0
EXTERNAL VISUAL			J-STD-020, 6.1a			8	0
PRECONDITION U/S			J-STD-020			8	0
EXTERNAL VISUAL	0348	DS5002	J-STD-020, 6.1a			8	0
ULTRASOUND			J-STD-020			8	0
STORAGE LIFE			125C	48	HRS	8	
MOISTURE SOAK			30C/60% R.H.	192	HRS	8	
CONVECTION REFLOW			220C	3	PASS	8	0
EXTERNAL VISUAL			J-STD-020, 6.1a			8	0
PRECONDITION U/S			J-STD-020			8	0
Total:						0	0

MOISTURE SENSITIVITY LEVEL 4

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
EXTERNAL VISUAL	0346	DS5240	J-STD-020, 6.1a			8	0
ULTRASOUND			J-STD-020			8	0
STORAGE LIFE			125C	48	HRS	8	
MOISTURE SOAK			30C/60% R.H.	96	HRS	8	
CONVECTION REFLOW			220C	3	PASS	8	0
EXTERNAL VISUAL			J-STD-020, 6.1a			8	0
PRECONDITION U/S			J-STD-020			8	0
Total:						0	0

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0323	DS5250	125C, 5.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0329	DS5002	125C, 5.0 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0330	DS5002	125C, 5.0 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0330	DS5002	125C, 5.0 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0344	DS5240	125C, 5.5 VOLTS	1000	HRS	45	0
HIGH VOLTAGE LIFE	0346	DS5240	125C, 5.5 VOLTS	1000	HRS	44	0
HIGH TEMP OP LIFE	0347	DS5002	125C, 5.0 VOLTS	1000	HRS	75	0
HIGH TEMP OP LIFE	0347	DS5002	125C, 5.0 VOLTS	1000	HRS	75	0
HIGH TEMP OP LIFE	0348	DS5002	125C, 5.0 VOLTS	1000	HRS	75	0
Total:						0	0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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SOLDERABILITY	0329	DS5002	JESD22-B102		3	0
X-RAY	0329	DS5002	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 TEST CONDITION B		6	0
SOLDERABILITY	0330	DS5002	JESD22-B102		3	0
X-RAY	0330	DS5002	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 TEST CONDITION B		6	0
SOLDERABILITY	0330	DS5002	JESD22-B102		3	0
X-RAY	0330	DS5002	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 TEST CONDITION B		6	0
SOLDERABILITY	0346	DS5240	JESD22-B102		3	0
X-RAY	0346	DS5240	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 TEST CONDITION B		6	0
SOLDERABILITY	0347	DS5002	JESD22-B102		3	0
X-RAY	0347	DS5002	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 TEST CONDITION B		6	0
SOLDERABILITY	0347	DS5002	JESD22-B102		3	0
X-RAY	0347	DS5002	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 TEST CONDITION B		6	0
SOLDERABILITY	0348	DS5002	JESD22-B102		3	0
X-RAY	0348	DS5002	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 TEST CONDITION B		6	0
Total:						0

PRECONDITIONING LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0329	DS5002	125C	48 HRS	308		
MOISTURE SOAK			30C/60% R.H.	192 HRS	308		
CONVECTION REFLOW			220C	3 PASS	308	0	
STORAGE LIFE	0330	DS5002	125C	48 HRS	308		
MOISTURE SOAK			30C/60% R.H.	192 HRS	308		
CONVECTION REFLOW			220C	3 PASS	308	0	
STORAGE LIFE	0330	DS5002	125C	48 HRS	308		
MOISTURE SOAK			30C/60% R.H.	192 HRS	308		
CONVECTION REFLOW			220C	3 PASS	308	0	

Total: 0

PRECONDITIONING LEVEL 4

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0346	DS5240	125C	48 HRS	276		
MOISTURE SOAK			30C/60% R.H.	96 HRS	276		
CONVECTION REFLOW			220C	3 PASS	276	0	
Total:						0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0329	DS5002	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0330	DS5002	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0330	DS5002	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0344	DS5240	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0346	DS5240	-55C TO 125C	1000 CYS	76	0	
TEMP CYCLE	0347	DS5002	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0347	DS5002	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0348	DS5002	-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	0329	DS5002	85/85, 5.5 VOLTS	1000 HRS	53	0	
BIASED MOISTURE	0330	DS5002	85/85, 5.5 VOLTS	1000 HRS	53	0	
BIASED MOISTURE	0330	DS5002	85/85, 5.5 VOLTS	1000 HRS	53	0	
BIASED MOISTURE	0344	DS5240	85/85, 5.5 VOLTS	1000 HRS	77	0	
BIASED MOISTURE	0346	DS5240	85/85, 5.5 VOLTS	1000 HRS	76	0	
BIASED MOISTURE	0347	DS5002	85/85, 5.5 VOLTS	1000 HRS	42	0	
BIASED MOISTURE	0347	DS5002	85/85, 5.5 VOLTS	1000 HRS	42	0	
BIASED MOISTURE	0348	DS5002	85/85, 5.5 VOLTS	1000 HRS	42	0	
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0329	DS5002	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0330	DS5002	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0330	DS5002	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
HAST, NO BIAS	0344	DS5240	130C, 85% R.H.	200 HRS	77	0	
AUTOCLAVE	0346	DS5240	121C, 2 ATM STEAM, UNBIASED	168 HRS	76	0	
Total:						0	

FAILURE RATE: MTTF (YRS): 73087 FITS: 1.6