

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): 15888** **FITS: 7.2**

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 1/1/04 and 12/31/04 .

Assembly Information:

Package Type: MQFP 14 mm
 Flammability: UL 94-V0
 Moisture Sensitivity Level 4
 (JEDEC J-STD20A)
 Date Code Range: 0220 to 0441

MOISTURE SENSITIVITY LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0347	DS5002	J-STD-020		8	0	
STORAGE LIFE			125C	48 HRS	8	0	
MOISTURE SOAK			30C/60% R.H.	192 HRS	8	0	
CONVECTION REFLOW			220C +5/-0C	3 PASS	8	0	
EXTERNAL VISUAL			J-STD-020, 6.1a		8	0	
PRECONDITION U/S			J-STD-020		8	0	
ULTRASOUND	0347	DS5002	J-STD-020		8	0	
STORAGE LIFE			125C	48 HRS	8	0	
MOISTURE SOAK			30C/60% R.H.	192 HRS	8	0	
CONVECTION REFLOW			220C +5/-0C	3 PASS	8	0	
EXTERNAL VISUAL			J-STD-020, 6.1a		8	0	
PRECONDITION U/S			J-STD-020		8	0	
ULTRASOUND	0348	DS5002	J-STD-020		8	0	
STORAGE LIFE			125C	48 HRS	8	0	
MOISTURE SOAK			30C/60% R.H.	192 HRS	8	0	
CONVECTION REFLOW			220C +5/-0C	3 PASS	8	0	
EXTERNAL VISUAL			J-STD-020, 6.1a		8	0	
PRECONDITION U/S			J-STD-020		8	0	
Total:						0	

MOISTURE SENSITIVITY LEVEL 4

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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ULTRASOUND	0346	DS5240	J-STD-020			8	0
STORAGE LIFE			125C	48	HRS	8	0
MOISTURE SOAK			30C/60% R.H.	96	HRS	8	0
CONVECTION REFLOW			220C +5/-0C	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	0220	DS5002	125C, 5.0 VOLTS	1000 HRS	79	1	30021501
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	
HIGH TEMP OP LIFE	0416	DS5240	125C, 5.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0440	DS5250	125C, 5.5 VOLTS	1000 HRS	77	0	
Total:						1	

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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
ULTRASOUND	0220	DS5002	J-STD-020		4	0	

STORAGE LIFE	0220	DS5002	125C	24	HRS	206	0
MOISTURE SOAK			30C/60% R.H.	192	HRS	206	0
CONVECTION REFLOW			220C +5/-0C	3	PASS	206	0
PRECONDITION U/S	0220	DS5002	J-STD-020			4	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	0
MOISTURE SOAK			30C/60% R.H.	96	HRS	276	0
CONVECTION REFLOW			220C +5/-0C	3	PASS	276	0
STORAGE LIFE	0347	DS5002	125C	48	HRS	77	0
MOISTURE SOAK			30C/60% R.H.	96	HRS	77	0
CONVECTION REFLOW			220C +5/-0C	3	PASS	77	0
STORAGE LIFE	0347	DS5002	125C	48	HRS	77	0
MOISTURE SOAK			30C/60% R.H.	96	HRS	77	0
CONVECTION REFLOW			220C +5/-0C	3	PASS	77	0
STORAGE LIFE	0348	DS5002	125C	48	HRS	77	0
MOISTURE SOAK			30C/60% R.H.	96	HRS	77	0
CONVECTION REFLOW			220C +5/-0C	3	PASS	77	0
Total:							0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0220	DS5002	-55C TO 125C	1000	CYS	40	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
TEMP CYCLE	0441	DS5240	-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	0220	DS5002	85/85, 5.5 VOLTS	1000	HRS	42	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	0220	DS5002	121C, 2 ATM STEAM, UNBIASED	96	HRS	40	0
AUTOCLAVE	0346	DS5240	121C, 2 ATM STEAM, UNBIASED	168	HRS	76	0

AUTOCLAVE	0347	DS5002	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0347	DS5002	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0348	DS5002	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
						Total:	0

FAILURE RATE: **MTTF (YRS): 15888** **FITS: 7.2**