

RELIABILITY MONITOR REPORT  
FOR

**BGA Module 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		
ATP (Amkor, PI)	256	MCMBGA	ATP (Amkor, PI)	300 MCMBGA
Carsem	48	BGA Module w/RRBattery	Dallas	256 BGA Module w/RRBattery
Dallas	168	BGA Module, 1 Side	Dallas	168 BGA Module, 2 Sided, Frame
Fastech	168	BGA Module, 1 Side	Stats	256 MCMBGA
Stats	300	MCMBGA		

The calculated failure rate for this assembly is:

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:                    BGA Module 1725 mil  
Flammability:                    UL 94-V0  
Moisture Sensitivity  
(JEDEC J-STD20A)                Level 3  
Date Code Range:                0350      to    0418

### PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
X-RAY	0401	DS3832	MIL-STD-883-2012 : TOP & SIDE VIEW		6	0	
PHYSICAL DIMENSIONS			JESD22-B100		6	0	
MARK PERMANENCY			JESD22-B107		6	0	
BALL SHEAR			JESD22-B117		6	0	
				<b>Total:</b>		<b>0</b>	

### PRECONDITIONING LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0350	DS3832	125C	24 HRS	24	0	
MOISTURE SOAK			30C/60% R.H.	192 HRS	24	0	
CONVECTION REFLOW			220C +5/-0C	2 PASS	24	0	
EXTERNAL VISUAL			JESD22-B101		24	0	
STORAGE LIFE	0401	DS3832	125C	24 HRS	135	0	
MOISTURE SOAK			30C/60% R.H.	192 HRS	135	0	
CONVECTION REFLOW			220C +5/-0C	2 PASS	135	0	
STORAGE LIFE	0418	DS3832	125C	24 HRS	24	0	
MOISTURE SOAK			30C/60% R.H.	192 HRS	24	0	
CONVECTION REFLOW			220C +5/-0C	2 PASS	24	0	
EXTERNAL VISUAL			JESD22-B101		24	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	0350	DS3832	85 C	1000 HRS	8	0	
STORAGE LIFE	0401	DS3832	85 C	1000 HRS	45	0	
STORAGE LIFE	0418	DS3832	85 C	1000 HRS	8	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	0350	DS3832	-40 TO 85C	1000 CYS	8	0	
TEMP CYCLE	0401	DS3832	-40 TO 85C	1000 CYS	45	0	
EXTERNAL VISUAL			JESD22-B101		45	0	
TEMP CYCLE	0418	DS3832	-40 TO 85C	1000 CYS	8	0	
EXTERNAL VISUAL			JESD22-B101		8	0	
					<b>Total:</b>	<b>0</b>	

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	0350	DS3832	60C/90% R.H.	1000 HRS	8	0	
MOISTURE SOAK	0401	DS3832	60C/90% R.H.	1000 HRS	45	0	
MOISTURE SOAK	0418	DS3832	60C/90% R.H.	1000 HRS	8	0	
					<b>Total:</b>	<b>0</b>	