

RELIABILITY MONITOR REPORT  
FOR

**iButton 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		
ATEC		BRICK	ATEC	iButton F30 (RoHS)
ATEC		iButton F50 (Pb-Free)	ATEC	iButton Retainer
ATEC		iButton Socket	Dallas	BRICK
Dallas		Dongle/Fob	Dallas	iButton F30 (RoHS)
Dallas		iButton F30 w/Bump	Dallas	iButton F50 (Pb-Free)
Dallas		iButton F50 w/Bump	Dallas	iButton F50nw
Dallas		iButton F50w/IC's	Dallas	iButton R30
Dallas		iButton Retainer	Dallas	iButton Socket
Dallas		Puk Can F50 Insert Mold w/Bump	Dallas	Puk Can F50 Insert Mold w/Bump/E
Fastech		BRICK	Fastech	Dongle/Fob
Fastech		iButton F30 (RoHS)	Fastech	iButton F30 w/Bump
Fastech		iButton F30 w/Bump (RoHS)	Fastech	iButton F30w/IC's
Fastech		iButton F30w/IC's (RoHS)	Fastech	iButton F50 (Pb-Free)
Fastech		iButton F50 w/Bump	Fastech	iButton F50w/IC's (RoHS)
Fastech		Puk Can F50 Insert Mold w/Bump/B	Hana	iButton F30 (RoHS)
Hana		iButton F50 (Pb-Free)		

The calculated failure rate for this assembly is:

**FAILURE RATE:                      MTTF (YRS): 4625                      FITS: 24.7**

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 04/01/2004 and 03/31/2005.

**Assembly Information:**

Package Type:                      BRICK (Pb-Free)  
 Flammability:                      UL 94-V0  
 Moisture Sensitivity  
 (JEDEC J-STD20A)  
 Date Code Range:                      0542                      to 0542

**PACKAGE TESTS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
SOLDERABILITY (Sn/Pb)	0542	DS9100	JESD22-B102, COND C		15	0	
SOLDERABILITY (Pb-Free)	0542	DS9100	JESD22-B102, COND C		15	0	
<b>Total:</b>						<b>0</b>	

**Assembly Information:**

Package Type:                      iButton  
 Flammability:                      UL 94-V0  
 Moisture Sensitivity  
 (JEDEC J-STD20A)  
 Date Code Range:                      0415                      to 0505

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**MECHANICAL LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MECHANICAL SHOCK	0427	DS1923	200G, 1/2 SINE, 6 MS	30	CYS	50	0
VIBRATION, VARIABLE FREQUENCY	0427	DS1923	10g or 0.06", 5Hz-2KHz, X Y Z axis	9	HRS	50	0
<b>Total:</b>						<b>0</b>	

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**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0425	DS1955B0	85 C, 5.25 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0440	DS1955B0	85 C, 5.25 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0445	DS1955B0	85 C, 5.25 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0445	DS1955B0	85 C, 5.25 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0451	DS1955B0	85 C, 5.25 VOLTS	1000	HRS	77	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	0415	DS1982	85 C	1000	HRS	77	0
STORAGE LIFE	0422	DS1922L	85 C	1000	HRS	77	0
STORAGE LIFE	0423	DS1992	70 C	1000	HRS	77	0
STORAGE LIFE	0425	DS1955B0	85 C	1000	HRS	77	0
STORAGE LIFE	0427	DS1923	85 C	1000	HRS	77	0
STORAGE LIFE	0430	DS1923	85 C	1000	HRS	77	0
STORAGE LIFE	0431	DS1923	85 C	1000	HRS	50	0
STORAGE LIFE	0435	DS1992	70 C	1000	HRS	77	0
STORAGE LIFE	0440	DS1955B0	85 C	1000	HRS	77	0
STORAGE LIFE	0441	DS1922T	125C	1000	HRS	77	0
STORAGE LIFE	0445	DS1955B0	85 C	1000	HRS	70	0
STORAGE LIFE	0445	DS1955B0	85 C	1000	HRS	77	0
STORAGE LIFE	0445	DS1955B0	85 C	1000	HRS	77	0
STORAGE LIFE	0450	DS1992	70 C	500	HRS	77	0
STORAGE LIFE	0451	DS1955B0	85 C	1000	HRS	77	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	0415	DS1982	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0423	DS1992	-40 TO 85C	500	CYS	77	0
TEMP CYCLE	0425	DS1955B0	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0427	DS1923	-40 TO 85C	1000	CYS	77	0

TEMP CYCLE	0430	DS1923	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0431	DS1922L	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0431	DS1922L	-40 TO 85C	450	CYS	77	0
TEMP CYCLE	0431	DS1923	-40 TO 85C	1000	CYS	50	0
TEMP CYCLE	0435	DS1992	-40 TO 85C	500	CYS	77	0
TEMP CYCLE	0440	DS1955B0	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0450	DS1992	-40 TO 85C	500	CYS	77	0
TEMP CYCLE	0451	DS1955B0	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0502	DS1955B0	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0502	DS1955B0	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0502	DS1955B0	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0505	DS1922L	-40 TO 85C	1000	CYS	74	0
<b>Total:</b>						<b>0</b>	<b>0</b>

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
MOISTURE SOAK	0415	DS1982	85 C/85% R.H.	1000	HRS	77	0
MOISTURE CYCLING	0422	DS1922L	85 C/85% R.H.	500	CYS	77	0
MOISTURE SOAK			85 C/85% R.H.	1000	HRS	77	0
MOISTURE SOAK	0423	DS1992	60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0425	DS1955B0	60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0427	DS1923	60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0430	DS1923	60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0431	DS1923	60C/90% R.H.	1000	HRS	50	0
MOISTURE SOAK	0435	DS1992	60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0440	DS1955B0	60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0441	DS1922T	60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0445	DS1955B0	60C/90% R.H.	1000	HRS	71	0
MOISTURE SOAK	0445	DS1955B0	60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0445	DS1955B0	60C/90% R.H.	1000	HRS	77	0
MOISTURE SOAK	0450	DS1992	60C/90% R.H.	500	HRS	77	0
MOISTURE SOAK	0451	DS1955B0	60C/90% R.H.	1000	HRS	77	0
<b>Total:</b>						<b>0</b>	<b>0</b>

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**Assembly Information:**

Package Type: iButton (RoHS)  
 Flammability: UL 94-V0  
 Moisture Sensitivity (JEDEC J-STD20A)  
 Date Code Range: 0429 to 0503

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**STORAGE LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0429	DS1990	70 C	1000 HRS	77	0	
STORAGE LIFE	0446	DS1990	70 C	1000 HRS	77	0	
STORAGE LIFE	0503	DS1990	70 C	500 HRS	77	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	0429	DS1990	-40 TO 85C	500 CYS	77	0	
TEMP CYCLE	0446	DS1990	-40 TO 85C	500 CYS	77	0	
TEMP CYCLE	0503	DS1990	-40 TO 85C	500 CYS	77	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	0429	DS1990	60C/90% R.H.	1000 HRS	77	0	
MOISTURE SOAK	0446	DS1990	60C/90% R.H.	1000 HRS	77	0	
MOISTURE SOAK	0503	DS1990	60C/90% R.H.	500 HRS	77	0	
					<b>Total:</b>	<b>0</b>	

**FAILURE RATE:****MTTF (YRS): 4625****FITS: 24.7**