

RELIABILITY MONITOR REPORT  
FOR

**TO 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		
Carsem	3	TO220	Carsem	3 TO226 (PR35)
Carsem	2	TO92	Carsem	3 TO92
Fastech	3	TO92	Hana	2 TO92
Hana	3	TO92		

The calculated failure rate for this assembly is:

**FAILURE RATE:**                      **MTTF (YRS): 36896**                      **FITS: 3.1**

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 7/1/03 and 6/30/04 .

**Assembly Information:**

Package Type:                      TO92 150 mil  
 Flammability:                      UL 94-V0  
 Moisture Sensitivity  
 (JEDEC J-STD20A)  
 Date Code Range:                      0331                      to                      0418

**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0331	DS2401	125C, 6.0 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0345	DS2401	125C, 6.0 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0414	DS2503	125C, 6.0 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0418	DS1822	125C, 5.5 VOLTS	1000 HRS	77	0	
<b>Total:</b>						<b>0</b>	

**PACKAGE TESTS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
SOLDERABILITY	0412	DS2501	JESD22-B102		20	0	
SOLDERABILITY	0414	DS2503	JESD22-B102		3	0	
X-RAY	0414	DS2503	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	
<b>Total:</b>						<b>0</b>	

**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0331	DS2401	-55C TO 125C	1000 CYS	45	0	

TEMP CYCLE	0345	DS2401	-55C TO 125C	1000 CYS	45	0
TEMP CYCLE	0414	DS2503	-55C TO 125C	1000 CYS	77	0
<b>Total:</b>					<b>0</b>	<b>0</b>

**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST	0331	DS2401	130C, 85%R.H.,5.5V	96 HRS	77	0	
HAST	0345	DS2401	130C, 85%R.H.,5.5V	96 HRS	77	0	
HAST	0414	DS2503	130C, 85%R.H.,5.5V	96 HRS	77	0	
<b>Total:</b>					<b>0</b>	<b>0</b>	

**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0331	DS2401	121C, 2 ATM STEAM, UNBIASED	168 HRS	45	0	
AUTOCLAVE	0345	DS2401	121C, 2 ATM STEAM, UNBIASED	168 HRS	45	0	
AUTOCLAVE	0414	DS2503	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
<b>Total:</b>					<b>0</b>	<b>0</b>	

**FAILURE RATE:                    MTTF (YRS): 36896                    FITS: 3.1**