

**RELIABILITY MONITOR REPORT  
FOR**

**1.2  $\mu\text{m}$  Process**

**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 Process Reliability Monitor. The products covered by this process monitor are:

DS1000	DS1004	DS1012	DS1040	DS1045
DS1202	DS1205	DS1233	DS1267	DS1336
DS1380	DS1384	DS14285	DS1589	DS1602
DS1609	DS1610	DS1620	DS1632	DS1640
DS1648	DS1666	DS1669	DS1688	DS1689
DS1820	DS1833	DS1867	DS1869	DS2016
DS2107A	DS2130	DS2143	DS2164	DS2165
DS2404	DS2435	DS5001	DS5002	DS50C302
DS9502	DS9503			

The calculated failure rate for devices using this process is:

**FAILURE RATE:**                      **MTTF (YRS): 27547**                      **FITS: 4.1**

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 the process information. 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 10/1/03 and 9/30/04.

**Device Information:**

Process:                      1.2 µm Process  
 Interconnect:                      Aluminum / 1% Silicon / 0.5% Copper  
 Gate Oxide Thickness:                      225 Å

**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH VOLTAGE LIFE	0340	DS1267	125C, 6.0 V, -4.0V	1000 HRS	80	0	
HIGH VOLTAGE LIFE	0357	DS1267	125C, 5.5 V, -4.0V	1000 HRS	80	0	
HIGH TEMP OP LIFE	0402	DS1233	125C, 5.5 VOLTS	1000 HRS	80	0	
HIGH VOLTAGE LIFE	0408	DS1267	125C, 5.5 V, -4.0V	1000 HRS	80	0	
HIGH TEMP OP LIFE	0409	DS1644	85 C, 5.5V (PSA) & 0.0V (PSB)	1000 HRS	77	0	
HIGH TEMP OP LIFE	0410	DS1233	125C, 5.5 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0421	DS1233	125C, 5.5 VOLTS	500 HRS	61	0	
<b>Total:</b>						<b>0</b>	

**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0340	DS1267	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0357	DS1267	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0402	DS1233	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0408	DS1267	-55C TO 125C	1000 CYS	40	0	

TEMP CYCLE	0409	DS1644	-40 TO 85C	1000	CYS	77	0
TEMP CYCLE	0410	DS1233	-55C TO 125C	1000	CYS	40	0
TEMP CYCLE	0421	DS1233	-55C TO 125C	1000	CYS	35	0
<b>Total:</b>						<b>0</b>	<b>0</b>

**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0340	DS1267	85/85, 5.5 VOLTS	1000	HRS	77	0
BIASED MOISTURE	0357	DS1267	85/85, 5.5 VOLTS	1000	HRS	77	0
HAST	0402	DS1233	130C, 85%R.H.,5.5V	96	HRS	77	
BIASED MOISTURE	0408	DS1267	85/85, 5.5 VOLTS	1000	HRS	77	0
HAST	0410	DS1233	130C, 85%R.H.,5.5V	96	HRS	77	
HAST	0421	DS1233	130C, 85%R.H.,5.5V	96	HRS	61	
<b>Total:</b>						<b>0</b>	<b>0</b>

**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0340	DS1267	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0
AUTOCLAVE	0357	DS1267	121C, 2 ATM STEAM, UNBIASED	96	HRS	40	0
AUTOCLAVE	0402	DS1233	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0
AUTOCLAVE	0408	DS1267	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0
MOISTURE SOAK	0409	DS1644	60C/90% R.H.	1000	HRS	77	0
AUTOCLAVE	0410	DS1233	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0
AUTOCLAVE	0421	DS1233	121C, 2 ATM STEAM, UNBIASED	168	HRS	35	0
<b>Total:</b>						<b>0</b>	<b>0</b>

**FAILURE RATE:**

**MTTF (YRS): 27547**

**FITS: 4.1**