

RELIABILITY MONITOR REPORT  
FOR

**0.35  $\mu$ m Chartered Process**

**Dallas Semiconductor**

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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:

DS21455	DS21458	DS2155	DS2156	DS2174
DS2194	DS21FF42	DS21FF44	DS21FT42	DS21FT44
DS21Q42	DS21Q44	DS26101	DS26102	DS26303
DS26324	DS26334	DS26401	DS26502	DS26503
DS26504	DS26521	DS26524	DS26528	DS26556
DS3112	DS31256	DS3131	DS3134	DS3141
DS31412	DS3142	DS3143	DS3144	DS3146
DS3148	DS3150	DS3151	DS3152	DS3153
DS3154	DS3160	DS3161	DS3162	DS3163
DS3164	DS3170	DS3171	DS3172	DS3173
DS3174	DS3181	DS3182	DS3183	DS3184
DS3251	DS3252	DS3253	DS3254	DS33R11
DS33R41				

The calculated failure rate for devices using this process is:

**FAILURE RATE:**                      **MTTF (YRS): 69327**                      **FITS: 1.6**

The parameters used to calculate this failure rate are as follows:

**Cf: 60%**                      **Ea: 0.7**                      **B: 0**                      **Tu: 25 °C**                      **Vu: 3.3 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 7/1/2005 and 6/30/2006.

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## Device Information:

Process: 0.35  $\mu$ m Chartered Process  
Interconnect: Aluminum / 1% Silicon / 0.5% Copper  
Gate Oxide Thickness: 75 Å

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## OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0520	DS26504	125C, 3.5 VOLTS	1000 HRS	44	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
HIGH TEMP OP LIFE	0522	DS31256	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0527	DS3150	125C, 3.5 VOLTS	1000 HRS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
HIGH TEMP OP LIFE	0536	DS33R41	125C, 3.5V (PSA) & 2.0V (PSB)	1000 HRS	45	0	
HIGH TEMP OP LIFE	0611	DS3112	125C, 3.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0614	DS26401	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0616	DS26401	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0616	DS26401	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0616	DS26401	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0618	DS2155	125C, 3.5 VOLTS	1000 HRS	77	0	

HIGH TEMP OP LIFE	0619	DS31256	125C, 3.5 VOLTS	1000	HRS	45	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	0520	DS26504	150C	1000	HRS	76	0
VISUAL INSPECTION			WHISKERS < 50uM			3	0
STORAGE LIFE	0522	DS31256	150C	1000	HRS	77	0
STORAGE LIFE	0527	DS3150	150C	1000	HRS	77	0
VISUAL INSPECTION			WHISKERS < 50uM			3	0
STORAGE LIFE	0536	DS33R41	150C	1000	HRS	77	0
STORAGE LIFE	0611	DS3112	150C	1000	HRS	77	0
STORAGE LIFE	0614	DS26401	150C	1000	HRS	77	0
STORAGE LIFE	0616	DS26401	150C	1000	HRS	77	0
STORAGE LIFE	0616	DS26401	150C	1000	HRS	77	0
STORAGE LIFE	0616	DS26401	150C	1000	HRS	77	0
STORAGE LIFE	0616	DS26401	150C	1000	HRS	77	0
STORAGE LIFE	0619	DS31256	150C	1000	HRS	107	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	0520	DS26504	-55C TO 125C	1000	CYS	76	0
VISUAL INSPECTION			WHISKERS < 50uM			3	0
TEMP CYCLE	0522	DS31256	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0527	DS3150	-55C TO 125C	1000	CYS	77	0
VISUAL INSPECTION			WHISKERS < 50uM			3	0
TEMP CYCLE	0536	DS33R41	-55C TO 125C	1000	CYS	76	0
TEMP CYCLE	0611	DS3112	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0614	DS26401	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0616	DS26401	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0616	DS26401	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0616	DS26401	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0616	DS26401	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0619	DS31256	-55C TO 125C	1000	CYS	77	0
						<b>Total:</b>	<b>0</b>

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**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST	0520	DS26504	130C, 85%R.H.,3.5V	96	HRS	45	0
VISUAL INSPECTION			WHISKERS < 50uM			3	0
BIASED MOISTURE	0522	DS31256	85/85, 3.5 VOLTS	1000	HRS	45	0
HAST	0527	DS3150	130C, 85%R.H.,3.5V	96	HRS	72	0

VISUAL INSPECTION	0527	DS3150	WHISKERS < 50uM			3	0
BIASED MOISTURE	0536	DS33R41	85/85, 2.0 VOLTS	1000	HRS	45	0
BIASED MOISTURE	0611	DS3112	85/85, 3.5 VOLTS	1000	HRS	45	0
BIASED MOISTURE	0616	DS26401	85/85, 3.5 VOLTS	1000	HRS	45	0
BIASED MOISTURE	0616	DS26401	85/85, 3.5 VOLTS	1000	HRS	45	0
BIASED MOISTURE	0616	DS26401	85/85, 3.5 VOLTS	1000	HRS	45	0
BIASED MOISTURE	0619	DS31256	85/85, 3.5 VOLTS	1000	HRS	45	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
HAST, NO BIAS	0520	DS26504	130C, 85% R.H.	200	HRS	76	0
VISUAL INSPECTION			WHISKERS < 50uM			3	0
HAST, NO BIAS	0527	DS3150	130C, 85% R.H.	200	HRS	77	0
VISUAL INSPECTION			WHISKERS < 50uM			3	0
HAST, NO BIAS	0616	DS26401	130C, 85% R.H.	200	HRS	77	0
HAST, NO BIAS	0616	DS26401	130C, 85% R.H.	200	HRS	73	0
HAST, NO BIAS	0616	DS26401	130C, 85% R.H.	200	HRS	70	0
<b>Total:</b>						<b>0</b>	<b>0</b>

**FAILURE RATE:**

**MTTF (YRS): 69327**

**FITS: 1.6**