

dallas semiconductor reliability report: DS1208

Process:

Metal: Gate Ox Thickness: Passivation:

Summary Data with Chi-Square Distribution Assumed.
 Stress Ambient Temperature and Voltage to
 Field Ambient Temperature And Voltage

Cf: Tuse:
 Ea: Vuse:
 β:

DESCRIPTION	VEHICLE	REV	DATE CODE	CONDITION	READPOINT	QUANTITY	FAILS	FILE #	DEVICE HRS
HIGH TEMPERATURE OPERATING LIFE									
INFANT LIFE	DS12885	C1	9804	125C, 6.0 VOLTS	48 HOURS	429	0		2646132
HIGH VOLTAGE LIFE		C1	9804	125C, 6.0 VOLTS	336 HOURS	153	0		6606079
		C1	9804	125C, 6.0 VOLTS	1000 HOURS	153	0		13054870
		C1	9804	125C, 6.0 VOLTS	1500 HOURS	153	0		9830474
INFANT LIFE	DS12885	C1	9807	125C, 6.0 VOLTS	48 HOURS	429	0		2646132
HIGH VOLTAGE LIFE		C1	9807	125C, 6.0 VOLTS	336 HOURS	153	0		6606079
		C1	9807	125C, 6.0 VOLTS	1000 HOURS	153	0		13054870
		C1	9807	125C, 6.0 VOLTS	1500 HOURS	153	0		9830474
INFANT LIFE	DS2401	C1	9752	125C, 6.0 VOLTS	48 HOURS	399	0		2461088
HIGH VOLTAGE LIFE		C1	9752	125C, 6.0 VOLTS	336 HOURS	200	0		8635397
		C1	9752	125C, 6.0 VOLTS	528 HOURS	200	0		4934513
HIGH VOLTAGE LIFE	DS2401	C2	9808	125C, 6.0 VOLTS	48 HOURS	200	0		1233628
		C2	9808	150C, 6.0 VOLTS	48 HOURS	419	0		8634985
		C2	9808	150C, 6.0 VOLTS	336 HOURS	419	0		51809909
HIGH VOLTAGE LIFE	DS2401	C2	9832	125C, 6.0 VOLTS	48 HOURS	195	0		1202787
		C2	9832	125C, 6.0 VOLTS	336 HOURS	195	0		7216725
		C2	9832	125C, 6.0 VOLTS	1000 HOURS	194	1	22411	16553234
INFANT LIFE	DS2401	C2	9835	125C, 6.0 VOLTS	48 HOURS	370	0		2282212
OP-LIFE		C2	9835	125C, 6.0 VOLTS	336 HOURS	80	0		3454159

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Process: Single Poly, Single Metal (Ti/TiN layers) 0.6 μ m Standard Process

Metal: Al / 0.5% Cu / 0.8% Si Gate Ox Thickness: 160 Å Passivation: TEOS Oxide / Nitride

Summary Data with Chi-Square Distribution Assumed.
Stress Ambient Temperature and Voltage to
Field Ambient Temperature And Voltage

Cf: 60% Tuse: 55 °C
Ea: 0.7 Vuse: 5.5 Volts
 β : 1

DESCRIPTION	VEHICLE	REV	DATE	CODE	CONDITION	READPOINT	QUANTITY	FAILS	FILE #	DEVICE HRS
OP-LIFE	DS2401	C2	9835		125C, 6.0 VOLTS	1000	HOURS 80	0		6826076
INFANT LIFE	DS2401	C2	9841		125C, 7.0 VOLTS	48	HOURS 195	0		3269515
OP-LIFE		C2	9841		125C, 6.0 VOLTS	336	HOURS 115	0		4965353
		C2	9841		125C, 6.0 VOLTS	1000	HOURS 115	0		9812484
		C2	9841		125C, 6.0 VOLTS	2000	HOURS 110	0		14135323
INFANT LIFE	DS2401	C2	9842		125C, 7.0 VOLTS	48	HOURS 195	0		3269515
OP-LIFE		C2	9842		125C, 6.0 VOLTS	336	HOURS 115	0		4965353
		C2	9842		125C, 6.0 VOLTS	1000	HOURS 115	0		9812484
		C2	9842		125C, 6.0 VOLTS	2000	HOURS 115	0		14777837
INFANT LIFE	DS2401	C2	9851		125C, 6.0 VOLTS	48	HOURS 234	0		1443345
HIGH VOLTAGE LIFE		C2	9851		125C, 6.0 VOLTS	336	HOURS 77	0		3324628
		C2	9851		125C, 6.0 VOLTS	1000	HOURS 77	0		6570098
OP-LIFE	DS2401	C2	9853		125C, 6.0 VOLTS	48	HOURS 80	0		493451
		C2	9853		125C, 6.0 VOLTS	336	HOURS 80	0		2960708
		C2	9853		125C, 6.0 VOLTS	1000	HOURS 80	0		6826076
		C2	9853		125C, 6.0 VOLTS	48	HOURS 75	1	22990	462611
		C2	9853		125C, 6.0 VOLTS	336	HOURS 75	0		2775663
		C2	9853		125C, 6.0 VOLTS	1000	HOURS 75	0		6399446
HIGH VOLTAGE LIFE	DS2401	C2	9902		125C, 6.0 VOLTS	48	HOURS 114	0		703168
		C2	9902		125C, 6.0 VOLTS	336	HOURS 113	0		4181999

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DESCRIPTION	VEHICLE	REV	DATE	CODE	CONDITION	READPOINT	QUANTITY	FAILS	FILE #	DEVICE HRS
HIGH VOLTAGE LIFE	DS2401	C2	9902		125C, 6.0 VOLTS	1000	HOURS	113	0	9641832
		C2	9902		125C, 6.0 VOLTS	48	HOURS	116	0	715504
		C2	9902		125C, 6.0 VOLTS	336	HOURS	116	0	4293026
		C2	9902		125C, 6.0 VOLTS	1000	HOURS	116	0	9897810
		C2	9902		125C, 6.0 VOLTS	48	HOURS	116	0	715504
		C2	9902		125C, 6.0 VOLTS	336	HOURS	115	0	4256017
		C2	9902		125C, 6.0 VOLTS	1000	HOURS	115	0	9812484
		C2	9902		125C, 6.0 VOLTS	48	HOURS	116	0	715504
		C2	9902		125C, 6.0 VOLTS	48	HOURS	116	0	715504
INFANT LIFE	DS2401	C2	9921		125C, 6.0 VOLTS	48	HOURS	97	0	598310
INFANT LIFE	DS2401	C2	9926		125C, 6.0 VOLTS	48	HOURS	234	0	1443345
HIGH VOLTAGE LIFE		C2	9926		125C, 6.0 VOLTS	336	HOURS	77	0	3324628
		C2	9926		125C, 6.0 VOLTS	1000	HOURS	77	0	6570098
HIGH VOLTAGE LIFE	DS2401	C2	9928		125C, 6.0 VOLTS	48	HOURS	550	0	3392477
		C2	9928		125C, 6.0 VOLTS	168	HOURS	01/08/2000		
		C2	9928		125C, 6.0 VOLTS	48	HOURS	571	0	3522008
		C2	9928		125C, 6.0 VOLTS	168	HOURS	01/14/2000		
INFANT LIFE	DS2401	C2	9943		125C, 6.0 VOLTS	48	HOURS	250	0	1542035
HIGH VOLTAGE LIFE		C2	9943		125C, 6.0 VOLTS	336	HOURS	77	0	3324628
HIGH VOLTAGE LIFE	DS2405	B1	9822		125C, 6.0 VOLTS	48	HOURS	253	0	1560540

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DESCRIPTION	VEHICLE	REV	DATE CODE	CONDITION	READPOINT	QUANTITY	FAILS	FILE #	DEVICE HRS
HIGH VOLTAGE LIFE	DS2405	B1	9822	125C, 6.0 VOLTS	336	HOURS 253	0		9363238
		B1	9822	125C, 6.0 VOLTS	1000	HOURS 253	0		21587465
INFANT LIFE	DS2409	A1	9740	125C, 6.0 VOLTS	48	HOURS 769	0		4743300
HIGH VOLTAGE LIFE		A1	9740	125C, 6.0 VOLTS	336	HOURS 116	0		5008530
		A1	9740	125C, 6.0 VOLTS	1000	HOURS 116	0		9897810
INFANT LIFE	DS2409	A1	9749	125C, 6.0 VOLTS	48	HOURS 766	0		4724796
HIGH VOLTAGE LIFE		A1	9749	125C, 6.0 VOLTS	336	HOURS 116	0		5008530
		A1	9749	125C, 6.0 VOLTS	1000	HOURS 116	0		9897810
		A1	9749	125C, 6.0 VOLTS	1500	HOURS 116	0		7453170
		A1	9749	125C, 6.0 VOLTS	1500	HOURS 116	0		7453170
OP-LIFE	DS2415	A1	9917	125C, 6.0 VOLTS	48	HOURS 192	0		1184283
DEVICE HRS: 4.26E+08							TOTALS:	2	
FAILURE RATE (Fits):								7	

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Field Ambient Temperature And Voltage

Cf: 60% Tuse: 55 $^{\circ}\text{C}$
Ea: 0.7 Vuse: 5.5 Volts
 β : 1

DESCRIPTION	VEHICLE	REV	DATE CODE	CONDITION	READPOINT	QUANTITY	FAILS	FILE #	DEVICE HRS
File #	FAILURE MODE			FAILURE MECHANISM					CORRECTIVE ACTION
22411	PREFUNCTIONAL			SUSPECT GATE OXIDE					IN PROCESS
22990	PREFUNCTIONAL			SUSPECT GATE OXIDE					IN PROCESS
	DEVICE	REV	DIE SIZE (x)	DIE SIZE (y)		No. of Transistors			
	DS12885	C1	99	122		16100			
	DS2401	C1	54	28		2371			
	DS2401	C2	54	28		2371			
	DS2405	B1	53	34		0			
	DS2409	A1	76	75		3600			
	DS2415	A1	56	45		4830			