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PROCESS RELIABILITY REPORT
FOR

DS1100, Rev A3

Dallas Semiconductor

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Conclusion:

The following qualification successfully meets the quality and reliability standards required of all Dallas Semiconductor processes:

DS1100, Rev A3

In addition, Dallas Semiconductor's continuous reliability monitor program ensures that all outgoing product will continue to meet Maxim's quality and reliability standards. The current status of the reliability monitor program can be viewed at http://www.maxim-ic.com/TechSupport /dsreliability.html.

Reliability Derating:

The Arrhenius model will be used to determine the acceleration factor for failure mechanisms that are temperature accelerated.

AfT = exp((Ea/k)*(1/Tu - 1/Ts)) = tu/ts
AfT = Acceleration factor due to Temperature
tu = Time at use temperature (e.g. 55°C)
ts = Time at stress temperature (e.g. 125°C)
k = Boltzmann's Constant (8.617 x 10-5 eV/°K)
Tu = Temperature at Use (°K)
Ts = Temperature at Stress (°K)
Ea = Activation Energy (e.g. 0.7 ev)

The activation energy of the failure mechanism is derived from either internal studies or industry accepted standards, or activation energy of 0.7ev will be used whenever actual failure mechanisms or their activation energies are unknown. All deratings will be done from the stress ambient temperature to the use ambient temperature.

An exponential model will be used to determine the acceleration factor for failure mechanisms, which are voltage accelerated.

AfV = exp(B*(Vs - Vu))
AfV = Acceleration factor due to Voltage
Vs = Stress Voltage (e.g. 7.0 volts)
Vu = Maximum Operating Voltage (e.g. 5.5 volts)
B = Constant related to failure mechanism type (e.g. 1.0, 2.4, 2.7, etc.)

The Constant, B, related to the failure mechanism is derived from either internal studies or industry accepted standards, or a B of 1.0 will be used whenever actual failure mechanisms or their B are unknown. All deratings will be done from the stress voltage to the maximum operating voltage. Failure rate data from the operating life test is reported using a Chi-Squared statistical model at the 60% or 90% confidence level (Cf).

The failure rate, Fr, is related to the acceleration during life test by:

Fr = X/(ts * AfV * AfT * N * 2)
X = Chi-Sq statistical upper limit
N = Life test sample size

Failure Rates are reported in FITs (Failures in Time) or MTTF (Mean Time To Failure). The FIT rate is related to MTTF by:

MTTF = 1/Fr

NOTE: MTTF is frequently used interchangeably with MTBF.

The calculated failure rate for this device/process is:

FAILURE RATE: MTTF (YRS): 65097 FITS: 1.8

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. A the start of this data is the device information. The next section is the detailed reliability data for each stress. The reliability data section includes the latest data available and may contain some generic data.

Device Information:

Process:	D6W-1P2M,HPVt,E2,TCZ PBL:GOI
Passivation:	Passivation w/Nov TEOS Oxide-Nitride
Interconnect:	Aluminum / 1% Silicon / 0.5% Copper
Gate Oxide Thickness:	150 Å

OPERATING LIFE

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
HIGH VOLTAGE LIFE	0126	125C, 6.0 VOLTS	1000 HRS	77	0	
HIGH VOLTAGE LIFE	0132	125C, 6.0 VOLTS	1000 HRS	77	0	
HIGH VOLTAGE LIFE	0230	125C, 6.0 VOLTS	1000 HRS	80	0	
HIGH VOLTAGE LIFE	0243	125C, 6.0 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0312	125C, 5.5 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0323	125C, 5.5 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0333	125C, 5.5 VOLTS	1000 HRS	80	0	
			Total:		**0**	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	0126	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0132	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0230	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0243	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0312	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0323	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0333	-55C TO 125C	1000 CYS	40	0	
			Total:		**0**	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#

BIASED MOISTURE	0126	85/85, 5.5 VOLTS	1000	HRS	77	0
BIASED MOISTURE	0132	85/85, 5.5 VOLTS	1000	HRS	77	0
BIASED MOISTURE	0230	85/85, 5.5 VOLTS	1000	HRS	77	0
BIASED MOISTURE	0243	85/85, 5.5 VOLTS	1000	HRS	77	0
BIASED MOISTURE	0312	85/85, 5.5 VOLTS	1000	HRS	77	0
BIASED MOISTURE	0323	85/85, 5.5 VOLTS	1000	HRS	77	0
BIASED MOISTURE	0333	85/85, 5.5 VOLTS	1000	HRS	77	0
				Total:		**0**

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QTY	FAILS	FA#
AUTOCLAVE	0126	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0	
AUTOCLAVE	0132	121C, 2 ATM STEAM, UNBIASED	168	HRS	39	0	
AUTOCLAVE	0230	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0	
AUTOCLAVE	0243	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0	
AUTOCLAVE	0312	121C, 2 ATM STEAM, UNBIASED	168	HRS	39	0	
AUTOCLAVE	0323	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0	
AUTOCLAVE	0333	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0	
				Total:		**0**	

FAILURE RATE: **MTTF (YRS): 65097** **FITS: 1.8**