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RELIABILITY REPORT
FOR

DS26102, Rev A2

Dallas Semiconductor

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Conclusion:

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

DS26102, Rev A2

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.

Device Description:

A description of this device can be found in the product data sheet. You can find the product data sheet at http://dbserv.maxim-ic.com/l_datasheet3.cfm.

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): 32952 FITS: 3.5

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.

Device Information:

Process:	1P, 4M,0.35um, Sil.P1, Ti/TiN M1-M4 ,BPSG,Masked N+ESD,
Passivation:	Passivation w/Nov TEOS Oxide-Nitride
Die Size:	250 x 264
Number of Transistors:	0
Interconnect:	Aluminum / 1% Silicon / 0.5% Copper
Gate Oxide Thickness:	75 Å

ELECTRICAL CHARACTERIZATION

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
ESD SENSITIVITY	0244	EOS/ESD S5.1 HBM 500 VOLTS	1	PUL'S	3	0
ESD SENSITIVITY	0244	EOS/ESD S5.1 HBM 1000 VOLTS	1	PUL'S	3	0
ESD SENSITIVITY	0244	EOS/ESD S5.1 HBM 2000 VOLTS	1	PUL'S	3	0
ESD SENSITIVITY	0244	EOS/ESD S5.1 HBM 4000 VOLTS	1	PUL'S	3	3
ESD SENSITIVITY	0244	EOS/ESD S5.1 HBM 8000 VOLTS	1	PUL'S	3	3
LATCH-UP	0244	JESD78, I-TEST 125C			6	0
LATCH-UP	0244	JESD78, Vsupply TEST 125C			6	0
				Total:		**6**

OPERATING LIFE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
HIGH VOLTAGE LIFE	0026	125C, 3.5 VOLTS	1000	HRS	143	1
INFANT LIFE	0042	125C, 3.5 VOLTS	48	HRS	269	0
HIGH VOLTAGE LIFE	0042	125C, 3.5 VOLTS	2000	HRS	157	1
HIGH VOLTAGE LIFE	0109	125C, 3.5 VOLTS	1000	HRS	80	0
HIGH VOLTAGE LIFE	0143	125C, 3.5 VOLTS	336	HRS	77	0
HIGH VOLTAGE LIFE	0152	125C, 3.5 VOLTS	1000	HRS	80	0
HIGH VOLTAGE LIFE	0224	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH VOLTAGE LIFE	0230	125C, 3.5 VOLTS	1000	HRS	77	0

HIGH VOLTAGE LIFE	0231	125C, 3.5 VOLTS	1000	HRS	77	0
HIGH VOLTAGE LIFE	0244	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH VOLTAGE LIFE	0244	125C, 3.5 VOLTS	1000	HRS	42	0
HIGH VOLTAGE LIFE	0320	125C, 3.5 VOLTS	192	HRS	45	0
				Total:		**2**

STORAGE LIFE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
STORAGE LIFE	0224	150C	1000	HRS	77	0
STORAGE LIFE	0244	150C	1000	HRS	75	0
STORAGE LIFE	0244	150C	1000	HRS	77	0
STORAGE LIFE	0319	150C	500	HRS	76	
				Total:		**0**

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
TEMP CYCLE	0026	-55C TO 125C	1000	CYS	70	0
TEMP CYCLE	0042	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0224	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0244	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0244	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0319	-55C TO 125C	500	CYS	77	0
				Total:		**0**

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
BIASED MOISTURE	0042	85/85, 3.5 VOLTS	959	HRS	29	0
BIASED MOISTURE	0224	85/85, 3.5 VOLTS	1000	HRS	45	0
BIASED MOISTURE	0244	85/85, 3.5 VOLTS	1000	HRS	45	0
				Total:		**0**

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
MOISTURE SOAK	0026	85 C/85% R.H.	959	HRS	38	0
MOISTURE SOAK	0244	85 C/85% R.H.	1000	HRS	77	0
				Total:		**0**

FAILURE RATE: **MTTF (YRS): 32952** **FITS: 3.5**