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RELIABILITY REPORT
FOR

DS1673, 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:

DS1673, 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): 74027 FITS: 1.5

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 and may contain some generic data.

Device Information:

Process:	1P, 2M, 0.8um, PdplDiode, HP Vts , WJ BPSG ,
Passivation:	Passivation w/Nov TEOS Oxide-Nitride
Die Size:	102 x 132
Number of Transistors:	11500
Interconnect:	Aluminum / 1% Silicon / 0.5% Copper
Gate Oxide Thickness:	175 Å

OPERATING LIFE

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
HIGH VOLTAGE LIFE	9924	125C, 6.0 VOLTS	1000 HRS	128	0	
HIGH VOLTAGE LIFE	9936	125C, 7.0 VOLTS	1000 HRS	116	0	
HIGH VOLTAGE LIFE	9938	125C, 7.0 VOLTS	1000 HRS	116	0	
HIGH VOLTAGE LIFE	9940	125C, 7.0 VOLTS	1000 HRS	116	0	
HIGH VOLTAGE LIFE	0141	125C, 7.0 VOLTS	1000 HRS	77	0	
HIGH VOLTAGE LIFE	0220	125C, 7.0 VOLTS	1000 HRS	77	0	
			Total:		**0**	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	9936	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	9938	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	9940	-55C TO 125C	1000 CYS	77	0	
			Total:		**0**	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
HAST	9936	130C, 85%R.H.,5.5V	100 HRS	42	0	
HAST	9938	130C, 85%R.H.,5.5V	100 HRS	42	0	
HAST	9940	130C, 85%R.H.,5.5V	100 HRS	42	0	
			Total:		**0**	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QTY	FAILS	FA#
AUTOCLAVE	9936	121C, 2 ATM STEAM, UNBIASED	168	HRS	43	0	
AUTOCLAVE	9938	121C, 2 ATM STEAM, UNBIASED	168	HRS	45	0	
AUTOCLAVE	9940	121C, 2 ATM STEAM, UNBIASED	168	HRS	45	0	
AUTOCLAVE	0141	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0	
AUTOCLAVE	0220	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0	
				Total:		**0**	

FAILURE RATE: **MTTF (YRS): 74027** **FITS: 1.5**