DALLAS SEMICONDUCTOR MAXIM

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RELIABILITY REPORT
FOR

DS2430A, Rev A3

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:

DS2430A, 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.

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): 87145 FITS: 1.3

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, 2M, 0.8um,E2,DSDw/LVWells,Ti/TiN M1+M2,
Passivation:	Laser/TEOS Ox - Pass/Nit - Gen.LaserPrb
Die Size:	96 x 70
Number of Transistors:	9708
Interconnect:	Aluminum / 1% Silicon / 0.5% Copper
Gate Oxide Thickness:	175 Å

OPERATING LIFE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
INFANT LIFE	9647	125C, 6.0 VOLTS	48	HRS	392	0
HIGH VOLTAGE LIFE	9647	125C, 6.0 VOLTS	2000	HRS	116	0
INFANT LIFE	9715	125C, 6.0 VOLTS	48	HRS	392	0
HIGH VOLTAGE LIFE	9715	125C, 6.0 VOLTS	2000	HRS	116	0
HIGH TEMP OP LIFE	9851	125C, 6.0 VOLTS	1000	HRS	80	0
HIGH TEMP OP LIFE	9851	125C, 6.0 VOLTS	1000	HRS	80	0
HIGH VOLTAGE LIFE	0141	125C, 6.0 VOLTS	1000	HRS	80	0
				Total:		**0**

STORAGE LIFE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
STORAGE LIFE	9634	150C	1000	HRS	77	0
STORAGE LIFE	9647	150C	1000	HRS	77	0
STORAGE LIFE	9715	150C	1000	HRS	77	0
STORAGE LIFE	9819	150C	1000	HRS	80	1
STORAGE LIFE	9851	150C	1000	HRS	50	0
STORAGE LIFE	9851	150C	1000	HRS	45	0
STORAGE LIFE	9851	150C	1000	HRS	80	1
				Total:		**2**

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
TEMP CYCLE	9647	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	9715	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	9851	-55C TO 125C	1000	CYS	80	0
TEMP CYCLE	9851	-40 TO 85C	1000	CYS	80	1
TEMP CYCLE	9851	-40 TO 85C	8000	CYS	80	0
TEMP CYCLE	9912	-55C TO 125C	1000	CYS	80	1
					Total:	**2**

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
BIASED MOISTURE	9647	85/85, 5.5 VOLTS	959	HRS	77	0
BIASED MOISTURE	9715	85/85, 5.5 VOLTS	959	HRS	77	1
BIASED MOISTURE	9819	85/85, 5.5 VOLTS	959	HRS	80	0
BIASED MOISTURE	9851	85/85, 5.5 VOLTS	959	HRS	80	0
BIASED MOISTURE	9851	85/85, 5.5 VOLTS	959	HRS	80	0
BIASED MOISTURE	9851	85/85, 5.5 VOLTS	959	HRS	80	0
					Total:	**1**

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
AUTOCLAVE	9647	121C, 2 ATM STEAM, UNBIASED	168	HRS	45	0
AUTOCLAVE	9715	121C, 2 ATM STEAM, UNBIASED	168	HRS	42	0
AUTOCLAVE	9819	121C, 2 ATM STEAM, UNBIASED	168	HRS	50	0
AUTOCLAVE	9851	121C, 2 ATM STEAM, UNBIASED	96	HRS	50	0
AUTOCLAVE	9851	121C, 2 ATM STEAM, UNBIASED	96	HRS	50	0
AUTOCLAVE	9851	121C, 2 ATM STEAM, UNBIASED	96	HRS	50	0
					Total:	**0**

WRITE CYCLE STRESS

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
WRITE CYCLE STRESS	9634	25 C, 6.0 VOLTS	50	KCYS	77	0
WRITE CYCLE STRESS	9647	25 C, 6.0 VOLTS	50	KCYS	77	0
WRITE CYCLE STRESS	9715	25 C, 6.0 VOLTS	50	KCYS	77	0
WRITE CYCLE STRESS	9837	85 C, 6.0 VOLTS	50	KCYS	77	0
					Total:	**0**

FAILURE RATE: **MTTF (YRS): 87145** **FITS: 1.3**