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PRODUCT RELIABILITY REPORT
FOR

DS26528, Rev A5

Dallas Semiconductor

4401 South Beltwood Parkway
Dallas, TX 75244-3292

Prepared by:

Don Lipps
Staff Reliability Engineer
Dallas Semiconductor
4401 South Beltwood Pkwy.
Dallas, TX 75244-3292
Email : don.lipps@dalsemi.com
ph: 972-371-3739
fax: 972-371-6016

Conclusion

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

DS26528, Rev A5

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): 51852** **FITS: 2.2**

The parameters used to calculate this failure rate are as follows:

Cf: 60% **Ea: 0.7** **B: 0** **Tu: 25 °C** **Vu: 3.5 Volt**

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. "*" after DATE CODE denotes specific product

Device Information:

Process:	2P, 4M,0.35um,Sil.P1,P2Cap,Ti/TiN M1-M4,BPSG,Masked
Passivation:	Passivation w/Nov TEOS Oxide-Nitride
Die Size:	235 x 245
Number of Transistors:	4300000
Interconnect:	Aluminum / 1% Silicon / 0.5% Copper
Gate Oxide Thickness:	75 Å

ELECTRICAL CHARACTERIZATION

DESCRIPTION	DATE COD	CONDITION	READPOINT	QTY	FAILS	FA#
ESD SENSITIVITY	0529	EOS/ESD S5.1 HBM 500 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0529	EOS/ESD S5.1 HBM 1000 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0529	EOS/ESD S5.1 HBM 2000 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0529	EOS/ESD S5.1 HBM 4000 VOLTS	1 PUL'S	3	0	
LATCH-UP	0529	JESD78, I-TEST 125C	2 DYS	6	0	
LATCH-UP	0529	JESD78, V-SUPPLY TEST 125C	2 DYS	6	0	
ESD SENSITIVITY	0620 *	EOS/ESD S5.1 HBM 500 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0620 *	EOS/ESD S5.1 HBM 1000 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0620 *	EOS/ESD S5.1 HBM 2000 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0620 *	EOS/ESD S5.1 HBM 4000 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0620 *	EOS/ESD S5.1 HBM 8000 VOLTS	1 PUL'S	3	0	
LATCH-UP	0620 *	JESD78, I-TEST 125C	2 DYS	6	0	
LATCH-UP	0620 *	JESD78, V-SUPPLY TEST 125C	2 DYS	6	0	
			Total:		**0**	

OPERATING LIFE

DESCRIPTION	DATE COD	CONDITION	READPOINT	QTY	FAILS	FA#

HIGH TEMP OP LIFE	0525		125C, 3.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0527		125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0536		125C, 3.5V (PSA) & 2.0V (PSB)	1000	HRS	45	0
HIGH TEMP OP LIFE	0537		125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0542		125C, 3.5 VOLTS	192	HRS	45	0
HIGH TEMP OP LIFE	0548		125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0606		125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0616		125C, 3.5 VOLTS	500	HRS	45	0
HIGH TEMP OP LIFE	0616		125C, 3.5 VOLTS	500	HRS	45	0
HIGH TEMP OP LIFE	0618		125C, 3.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0620	*	125C, 3.5 VOLTS	1000	HRS	45	0
					Total:		**0**

FAILURE RATE: **MTTF (YRS): 51852** **FITS: 2.2**