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PRODUCT RELIABILITY REPORT
FOR

MAXQ2010, Rev B3

Maxim Integrated Products

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Conclusion:

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

MAXQ2010, Rev B3

In addition, Maxim'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):**	**30410**	**FITS:**	**3.8**
	DEVICE HOURS:	**244091649**	**FAILS:**	**0**

Only data from Operating Life or similar stresses are used for this calculation.

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

Cf: 60% **Ea: 0.7** **B: 0** **Tu: 25** **°C** **Vu: 3.6** **Volts**

The reliability data follows. At 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. **Bold** Product Number denotes specific product data.

Device Information:

Process:	TSMC 0.18um Mixed signal, Embedded Flash, General Purpose, Two Poly Five Metal, 1.8V/3.3V Polyimide - No
Passivation:	SiO/SiN
Die Size:	130 x 150
Number of Transistors:	0
Interconnect:	Aluminum / 0.5% Copper
Gate Oxide Thickness:	32 Å

ELECTRICAL CHARACTERIZATION

DESCRIPTION	DATE CODE/PRODUCT/LOT		CONDITION	READPOIN		QTY	FAILS	FA#
ESD SENSITIVITY	0828	**MAXQ2010** QK086138CA	EOS/ESD S5.1 HBM 500 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	0828	**MAXQ2010** QK086138CA	EOS/ESD S5.1 HBM 1000 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	0828	**MAXQ2010** QK086138CA	EOS/ESD S5.1 HBM 2000 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	0828	**MAXQ2010** QK086138CA	EOS/ESD S5.1 HBM 3000 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	0828	**MAXQ2010** QK086138CA	EOS/ESD S5.1 HBM 4000 VOLTS	1	PUL'S	3	0	
LATCH-UP	0828	**MAXQ2010** QK086138CA	JESD78, I-TEST 125C			6	0	
LATCH-UP	0828	**MAXQ2010** QK086138CA	JESD78, V-SUPPLY TEST 125C			6	0	
				Total:			**0**	

OPERATING LIFE

DESCRIPTION	DATE CODE/PRODUCT/LOT		CONDITION	READPOIN		QTY	FAILS	FA#
HIGH TEMP OP LIFE	0814	MAXQ1103 QN089294AA	125C, 3.6V (PSA) & 2.0V (PSB)	1000	HRS	77	0	

HIGH TEMP OP LIFE	0828	**MAXQ2010**	QK086138CA	125C, 3.6 VOLTS	1000	HRS	76	0
HIGH TEMP OP LIFE	0837	MAX2990	QN096322AB	125C, 3.6V (PSA) & 2.0V (PSB)	1000	HRS	77	0
HIGH TEMP OP LIFE	0851	MAXQ3108	QJ091011AC	125C, 3.6 VOLTS	192	HRS	73	0
HIGH TEMP OP LIFE	0909	MAXQ8913	NQQ8ZAD	125C, 3.6V (PSA) & 5.0V (PSB)	192	HRS	77	0
					Total:			**0**

W/E ENDURANCE AND DATA RET'N

DESCRIPTION	DATE CODE/PRODUCT/LOT			CONDITION	READPOIN		QTY	FAILS	FA#
WRITE CYCLE STRESS (KCYS)	0828	**MAXQ2010**	QK086138CA	85 C, 3.6 VOLTS	20	KCYS	77	0	
STORAGE LIFE	0828	**MAXQ2010**	QK086138CA	150C	1000	HRS	77	0	
WRITE CYCLE STRESS (KCYS)	0834	MAXQ1103	QN099609AA	85 C, 3.6V (PSA) & 2.0V (PSB)	20	KCYS	77	0	
STORAGE LIFE	0834	MAXQ1103	QN099609AA	150C	1000	HRS	77	0	
WRITE CYCLE STRESS (KCYS)	0837	MAX2990	QN096322AB	85 C, 3.6V (PSA) & 2.0V (PSB)	1	KCYS	77	0	
STORAGE LIFE	0837	MAX2990	QN096322AB	150C	1000	HRS	77	0	
WRITE CYCLE STRESS (KCYS)	0851	MAXQ3108	QJ091011AC	85 C, 3.6 VOLTS	1	KCYS	77	0	
STORAGE LIFE	0851	MAXQ3108	QJ091011AC	150C	96	HRS	77	0	
WRITE CYCLE STRESS (KCYS)	0904	MAXQ1103	QN091170BA	85 C, 3.6V (PSA) & 2.0V (PSB)	20	KCYS	77	0	
STORAGE LIFE	0904	MAXQ1103	QN091170BA	150C	1000	HRS	77	0	
WRITE CYCLE STRESS (KCYS)	0909	MAXQ8913	NQQ8ZAD	85 C, 3.6V (PSA) & 5.0V (PSB)	1	KCYS	77	0	
STORAGE LIFE	0909	MAXQ8913	NQQ8ZAD	150C	96	HRS	77	0	
					Total:			**0**	

FAILURE RATE: **MTTF (YRS): 30410** **FITS: 3.8**

DEVICE HOURS: 244091649 **FAILS: 0**