11/8/2010

PRODUCT RELIABILITY REPORT
FOR

DS1775, Rev A3

Maxim Integrated Products

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Conclusion:

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

DS1775, Rev A3

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):**	**75857**	**FITS:**	**1.5**
	DEVICE HOURS:	**608878508**	**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: 5.5** **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:	SA E6H, 2P2M,HPVt,PF-Ring,TCZ,ALOCOS:GOI
Passivation:	TEOS Oxide-Nitride Passivation
Die Size:	54 x 36
Number of Transistors:	5670
Interconnect:	Aluminum / 0.5% Copper
Gate Oxide Thickness:	150 Å

ELECTRICAL CHARACTERIZATION

DESCRIPTION	DATE CODE/PRODUCT/LOT		CONDITION	READPOIN		QTY	FAILS	FA#
ESD SENSITIVITY	0720 **DS1775**	QJ718116AF	JESD22-C101 CDM 100 VOLTS	3	PUL'S	3	0	
ESD SENSITIVITY	0720 **DS1775**	QJ718116AF	JESD22-C101 CDM 200 VOLTS	3	PUL'S	3	0	
ESD SENSITIVITY	0720 **DS1775**	QJ718116AF	JESD22-C101 CDM 500 VOLTS	3	PUL'S	3	0	
ESD SENSITIVITY	0720 **DS1775**	QJ718116AF	JESD22-C101 CDM 1000 VOLTS	3	PUL'S	3	0	
ESD SENSITIVITY	0720 **DS1775**	QJ718116AF	JESD22-C101 CDM 2000 VOLTS	3	PUL'S	3	2	No FA
ESD SENSITIVITY	0728 **DS1775**	QJ718116AF	EOS/ESD S5.1 HBM 500 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	0728 **DS1775**	QJ718116AF	EOS/ESD S5.1 HBM 1000 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	0728 **DS1775**	QJ718116AF	EOS/ESD S5.1 HBM 2000 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	0728 **DS1775**	QJ718116AF	EOS/ESD S5.1 HBM 4000 VOLTS	1	PUL'S	3	3	No FA

ESD SENSITIVITY	0728	**DS1775**	QJ718116AF	EOS/ESD S5.1 HBM 8000 VOLTS	1	PUL'S	3	3	No FA
LATCH-UP	0728	**DS1775**	QJ718116AF	JESD78, I-TEST 125C			6	0	
LATCH-UP	0728	**DS1775**	QJ718116AF	JESD78, V-SUPPLY TEST 125C			6	0	
ESD SENSITIVITY	0728	**DS1775**	QJ718116AF	JESD22-A115 MM 50 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	0728	**DS1775**	QJ718116AF	JESD22-A115 MM 100 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	0728	**DS1775**	QJ718116AF	JESD22-A115 MM 200 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	0728	**DS1775**	QJ718116AF	JESD22-A115 MM 400 VOLTS	1	PUL'S	3	3	No FA
					Total:			**11**	

OPERATING LIFE

DESCRIPTION	**DATE CODE/PRODUCT/LOT**			**CONDITION**	**READPOIN**		**QTY**	**FAILS**	**FA#**
HIGH TEMP OP LIFE	0906	DS5250	WK942982D	125C, 5.5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0921	DS7865	WQ946139A	125C, 5.5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0923	DS5250	WK947706A	125C, 5.5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0923	DS1748	WN945795L	125C, 5.5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0925	DS21Q50	WK945230A	125C, 3.5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0940	DS80C320	WK048689A	125C, 5.5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0944	DS80C320	WK049844A	125C, 5.5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0947	DS1341	WD048116A	125C, 5.5 VOLTS	192	HRS	77	0	
HIGH TEMP OP LIFE	0949	DS80C320	WK049846A	125C, 5.5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	1037	DS1340	WD157959A	125C, 5.5 VOLTS	192	HRS	77	0	
					Total:			**0**	

FAILURE RATE: **MTTF (YRS): 75857** **FITS: 1.5**

DEVICE HOURS: 608878508 **FAILS: 0**