

PRODUCT RELIABILITY REPORT FOR

DS75, Rev A7

Maxim Integrated Products

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Conclusion:

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

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): 114231 FITS: 1.0

DEVICE HOURS: 916894251 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 EC8, 0.8um BiCMOS, 2 Poly, 3 Metal, 5 inch Reticles, 8 inch Wafer.

Passivation: TEOS Oxide-Nitride Passivation

Die Size: 60 x 54 Number of Transistors: 11500

Interconnect: Aluminum / 0.5% Copper

Gate Oxide Thickness: 175 Å

ESD CDM									
DESCRIPTION	DATE CODE/PRODUCT/LOT			CONDITION	READPOIN		QTY	FAILS	FA#
ESD SENSITIVITY	1146	DS75	WD273776A	JESD22-C101 CDM 500 VOLTS	3	PUL'S	3	0	
ESD SENSITIVITY	1146	DS75	WD273776A	JESD22-C101 CDM 750 VOLTS	3	PUL'S	3	0	
ESD SENSITIVITY	1146	DS75	WD273776A	JESD22-C101 CDM 1000 VOLTS	3	PUL'S	3	0	
					Total:			0	

ESD HBM									
DESCRIPTION	DATE CODE/PRODUCT/LOT		CONDITION	READPOIN		QTY	FAILS	FA#	
ESD SENSITIVITY	1146	DS75	WD273776A	JESD22-A114 HBM 500 VOLTS	1	PUL'S	5	0	
ESD SENSITIVITY	1146	DS75	WD273776A	JESD22-A114 HBM 1000 VOLTS	1	PUL'S	5	0	
ESD SENSITIVITY	1146	DS75	WD273776A	JESD22-A114 HBM 1500 VOLTS	1	PUL'S	5	0	
ESD SENSITIVITY	1146	DS75	WD273776A	JESD22-A114 HBM 2000 VOLTS	2	PUL'S	5	0	
ESD SENSITIVITY	1146	DS75	WD273776A	JESD22-A114 HBM 4000 VOLTS	1	PUL'S	5	0	
				Total	:		0		

LATCH-UP										
DESCRIPTION	DATE CODE/PRODUCT/LOT			CONDITION R			OPOIN	QTY	FAILS	FA#
LATCH-UP I	1146	DS75	WD273776A	JESD78	A, I-TEST 25C			6	0	
LATCH-UP I	1146	DS75	WD273776A	JESD78 250mA	A, I-TEST 25C			6	0	
LATCH-UP V	1146	DS75	WD273776A	JESD78. TEST 25	A, V-SUPPLY C			6	0	
						Total:	:		0	
OPERATING LIFE										
DESCRIPTION	DATE	CODE/PRODUCT	/LOT	CONDIT	ION	READ	POIN	QTY	FAILS	FA#
HIGH TEMP OP LIFE	0851	DS75	WJ943229R	125C, 5.	5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0903	DS87C520	WK943232A	125C, 5.	5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0905	DS75	WJ943230BA	A 125C, 5.	5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0906	DS75	WJ945780B	125C, 5.	5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0906	DS87C520	WK943228G	125C, 5.	5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0907	DS32KHZS	WH943227P	125C, 5.	5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0930	DS1302	WJ946666A	125C, 5.	5 VOLTS	1000	HRS	80	0	
HIGH TEMP OP LIFE	1004	DS75	FD051295AC	125C, 5.	5 VOLTS	1000	HRS	80	0	
HIGH TEMP OP LIFE	1016	DS75	FD054294AB	3 125C, 5.	5 VOLTS	1000	HRS	80	0	
HIGH TEMP OP LIFE	1022	DS75	FJ047086AB	125C, 5.	5 VOLTS	1000	HRS	80	0	
HIGH TEMP OP LIFE	1044	DS75	FJ160750AC	125C, 5.	5 VOLTS	1000	HRS	80	0	
HIGH TEMP OP LIFE	1051	DS75	FD162044AC	125C, 5.	5 VOLTS	1000	HRS	80	0	
HIGH TEMP OP LIFE	1138	DS75	FD272216AE	125C, 5.	5 VOLTS	192	HRS	80	0	
HIGH TEMP OP LIFE	1146	DS75	WD273776A	125C, 5.	5 VOLTS	192	HRS	77	0	
				204	FITO	Total:			0	
FAILURE RATE:		MTTF (YRS)): 114	231	FITS:	1.0				
	D	EVICE HOURS	s: 916894	251	FAILS:	0				

Rev B, 1/3/08