5/16/2012

PRODUCT RELIABILITY REPORT
FOR

DS26522

Maxim Integrated Products

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Dallas, TX 75244-3292

Prepared by:

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Conclusion:

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

DS26522

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):**	**281614**	**FITS:**	**0.4**
	DEVICE HOURS:	**2260432033**	**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: 3.5** **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:	2P, 4M,0.35um,Sil.P1,P2Cap,Ti/TiN M1-M4,BPSG,Masked N+ESD,
Passivation:	Passivation w/Nov TEOS Oxide-Nitride
Die Size:	155 x 270
Number of Transistors:	582000
Interconnect:	Aluminum / 0.5% Copper
Gate Oxide Thickness:	131 Å

ESD CDM

DESCRIPTION	DATE CODE/PRODUCT/LOT			CONDITION	READPOIN		QTY	FAILS	FA#
ESD SENSITIVITY	1126	**DS26521**	DS26521LN2	JESD22-C101 CDM 250 VOLTS	3	PUL'S	5	0	
ESD SENSITIVITY	1126	**DS26521**	DS26521LN2	JESD22-C101 CDM 500 VOLTS	3	PUL'S	5	0	
ESD SENSITIVITY	1126	**DS26521**	DS26521LN2	JESD22-C101 CDM 750 VOLTS	3	PUL'S	5	1	No FA
					Total:			**1**	

ESD HBM

DESCRIPTION	DATE CODE/PRODUCT/LOT			CONDITION	READPOIN		QTY	FAILS	FA#
ESD SENSITIVITY	1005	**DS26521**	QN100253A	JESD22-A114 HBM 500 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	1005	**DS26521**	QN100253A	JESD22-A114 HBM 1000 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	1005	**DS26521**	QN100253A	JESD22-A114 HBM 2000 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	1005	**DS26521**	QN100253A	JESD22-A114 HBM 4000 VOLTS	1	PUL'S	3	0	
ESD SENSITIVITY	1005	**DS26521**	QN100253A	JESD22-A114 HBM 8000 VOLTS	1	PUL'S	3	0	
					Total:			**0**	

LATCH-UP

DESCRIPTION	DATE CODE/PRODUCT/LOT			CONDITION	READPOIN	QTY	FAILS	FA#
LATCH-UP I	1005	**DS26521**	QN100253A	JESD78A, I-TEST 85C		6	0	
LATCH-UP V	1005	**DS26521**	QN100253A	JESD78A, V-SUPPLY TEST 125C		6	0	
					Total:		**0**	

OPERATING LIFE

DESCRIPTION	DATE CODE/PRODUCT/LOT			CONDITION	READPOIN	QTY	FAILS	FA#
HIGH VOLTAGE LIFE	0131	DS2155	ZK051026FB	125C, 3.5 VOLTS	1000 HRS	77	0	
HIGH VOLTAGE LIFE	0134	DS2155	ZC051028BA	125C, 3.5 VOLTS	1000 HRS	77	0	
HIGH VOLTAGE LIFE	0150	DS2155	ZK143024AB	125C, 3.5 VOLTS	1000 HRS	77	0	
HIGH VOLTAGE LIFE	0213	DS3160	ZK124064AB	125C, 3.5 VOLTS	1000 HRS	71	0	
HIGH VOLTAGE LIFE	0222	DS2156	ZK216161BA	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH VOLTAGE LIFE	0233	DS2155	ZK326158AA	125C, 3.5 VOLTS	1000 HRS	77	0	
HIGH VOLTAGE LIFE	0234	DS3154	ZK228078AB	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0317	DS3154	ZK408111AE	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0403	DS3184	ZS448224BB	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0418	DS26502	ZN450308AB	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0425	DS26528	QK449364AB	125C, 3.5 VOLTS	1000 HRS	44	0	
HIGH TEMP OP LIFE	0436	DS3170	QK526391BA	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0440	DS26556	QK534422BA	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0442	DS3184	QS525109AB	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0447	MAXQ3311	QK521357C	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0448	DS26334	QK544026B	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0501	DS3254	QK522385AB	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0520	DS26504	QN611329B	125C, 3.5 VOLTS	1000 HRS	44	0	
HIGH TEMP OP LIFE	0525	DS2155	QK619663AB	125C, 3.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0527	DS26303	QN610221B	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0537	DS26528	QK069183A	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0542	**DS26521**	QN064481B	125C, 3.5 VOLTS	192 HRS	45	0	
HIGH TEMP OP LIFE	0548	DS26303	QN060221A	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0604	DS26522	QL064481BC	125C, 3.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0617	DS3184	QS069028AF	125C, 3.6 VOLTS	1000 HRS	45	0	

HIGH TEMP OP LIFE	0617	DS3184	QS069028A	125C, 3.6 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0617	DS3184	QS069028A	125C, 3.6 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0618	DS2155	QK068011AA	125C, 3.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0620	DS26528	QK060309AA	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0632	DS26334	QK064057BB	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0632	DS26303	QN066205A	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0641	DS3254	QK072332AB	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0650	DS26522	QL064481AB	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0650	DS26522	QL064481AC	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0716	DS26900	QN077106B	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0811	DS26303	QN080344B	125C, 3.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0913	DS2155	QK097040AB	125C, 3.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0913	DS2155	QK096061AB	125C, 3.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0916	DS2155	QK098054AB	125C, 3.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0931	DS26528	QP099206AB	125C, 3.5 VOLTS (PSA)	1000	HRS	45	0
HIGH TEMP OP LIFE	0931	DS26528	QP099206A	125C, 3.5 VOLTS (PSA)	1000	HRS	45	0
HIGH TEMP OP LIFE	0931	DS26528	QP099206A	125C, 3.5 VOLTS (PSA)	1000	HRS	45	0
HIGH TEMP OP LIFE	1115	DS26303	ZX111250AE	125C, 3.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	1115	DS26303	ZX117261AE	125C, 3.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	1115	DS26303	ZX117262AE	125C, 3.5 VOLTS	1000	HRS	77	0
					Total:			**0**

FAILURE RATE: **MTTF (YRS): 281614** **FITS: 0.4**

DEVICE HOURS: 2260432033 **FAILS: 0**