4/17/2012

PRODUCT RELIABILITY REPORT
FOR

DS8005

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:

DS8005

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):**	**176595**	**FITS:**	**0.6**
	DEVICE HOURS:	**1417472077**	**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: 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:	B8, MFN B8 flow with TMA Topglass.
Passivation:	TEOS Ox-Nit Passivation for E35X; Full BEOL at SA; PT only in Dallas
Die Size:	103 x 82
Number of Transistors:	12220
Interconnect:	Aluminum / 0.5% Copper
Gate Oxide Thickness:	NA

ESD HBM

DESCRIPTION	DATE CODE/PRODUCT/LOT			CONDITION	READPOIN		QTY	FAILS	FA#
ESD SENSITIVITY	1152	**DS8005**	ZM219044A	JESD22-A114 HBM 500 VOLTS	1	PUL'S	5	0	
ESD SENSITIVITY	1152	**DS8005**	ZM219044A	JESD22-A114 HBM 1000 VOLTS	1	PUL'S	5	0	
ESD SENSITIVITY	1152	**DS8005**	ZM219044A	JESD22-A114 HBM 2000 VOLTS	1	PUL'S	5	0	
ESD SENSITIVITY	1152	**DS8005**	ZM219044A	JESD22-A114 HBM 4000 VOLTS	1	PUL'S	5	0	
ESD SENSITIVITY	1152	**DS8005**	ZM219044A	JESD22-A114 HBM 6000 VOLTS	1	PUL'S	5	0	
ESD SENSITIVITY	1152	**DS8005**	ZM219044A	JESD22-A114 HBM 8000 VOLTS	1	PUL'S	5	0	
					Total:			**0**	

LATCH-UP

DESCRIPTION	DATE CODE/PRODUCT/LOT			CONDITION	READPOIN	QTY	FAILS	FA#
LATCH-UP I	1152	**DS8005**	ZM219044A	JESD78A, I-TEST 25C 100mA		6	0	
LATCH-UP V	1152	**DS8005**	ZM219044A	JESD78A, V-SUPPLY TEST 25C		6	0	
					Total:		**0**	

OPERATING LIFE

DESCRIPTION	DATE CODE	PRODUCT	LOT	CONDITION	READPOIN		QTY	FAILS	FA#
HIGH VOLTAGE LIFE	0338	PX65Y	S0BAEQ001	135C, 5.0V (PSA)	1000	HRS	45	0	
HIGH VOLTAGE LIFE	0338	PX65Y	S0BAEQ001	135C, 5.0V (PSA)	1000	HRS	45	0	
HIGH VOLTAGE LIFE	0338	PX65Y	S0BAEQ001	135C, 5.0V (PSA)	1000	HRS	45	0	
HIGH TEMP OP LIFE	0350	PX70Y	D9DAJZ002A	135C, 5.0V (PSA)	1000	HRS	77	0	
HIGH TEMP OP LIFE	0352	PX81Z-1Z	DV8OZ001C	135C, 5.0V (PSA)	1000	HRS	80	0	
HIGH TEMP OP LIFE	0352	PX65Y	D0BCDZ001	135C, 5.0V (PSA)	1000	HRS	45	0	
HIGH TEMP OP LIFE	0724	DS8007	QN616349B	125C, 6.0 VOLTS	1000	HRS	45	0	
HIGH TEMP OP LIFE	0740	DS8007	QN824614B	125C, 6.0 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0740	DS8007	XN716349CA	125C, 6.0 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0744	DS8113	QK732036AB	125C, 6.0 VOLTS	1000	HRS	45	0	
HIGH TEMP OP LIFE	0747	DS3510	QJ712635BA	125C, 5.5 V (PSA) & 15.0 V (PSB)	1000	HRS	77	0	
HIGH TEMP OP LIFE	0747	DS3510	QJ712635BA	125C, 5.5 V (PSA) & 15.0 V (PSB)	1000	HRS	77	0	
HIGH TEMP OP LIFE	0750	DS8007	QN824614A	125C, 6.0 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0821	DS2413	WJ840032AB	125C, 5.25 VOLTS	1000	HRS	45	0	
HIGH TEMP OP LIFE	0833	DS3514	QJ803644BA	125C, 5.5 V (PSA) & 15.0 V (PSB)	1000	HRS	77	0	
HIGH TEMP OP LIFE	0833	DS8024	QM832036G	125C, 6.0 VOLTS	1000	HRS	45	0	
HIGH TEMP OP LIFE	0834	DS8023	QM840693B	125C, 6.0 VOLTS	1000	HRS	45	0	
HIGH TEMP OP LIFE	0837	DS2413	WJ942402BE	125C, 5.25 VOLTS	1000	HRS	45	0	
HIGH TEMP OP LIFE	0839	DS8007	SN839727AA	125C, 6.0 VOLTS	192	HRS	120	0	
HIGH TEMP OP LIFE	0851	DS8313	QM941961B	125C, 6.0 VOLTS	1000	HRS	45	0	
HIGH TEMP OP LIFE	0940	DS8113	FM948234AA	125C, 6.0 VOLTS	1000	HRS	80	0	
HIGH TEMP OP LIFE	0944	DS2413	QJ094300AB	125C, 5.25 VOLTS	1000	HRS	45	0	
HIGH TEMP OP LIFE	1118	MAX34406	ZJ168552AC	125C, 5.0V (PSA) & 20.0V (PSD)	192	HRS	70	0	
HIGH TEMP OP LIFE	1152	**DS8005**	ZM219044A	125C, 6.0 VOLTS	192	HRS	45	0	
					Total:			**0**	

FAILURE RATE: **MTTF (YRS): 176595** **FITS: 0.6**

DEVICE HOURS: 1417472077 **FAILS: 0**

ESD HBM testing at 6000 & 8000 VOLTS is done on a reduced pin combination stressing only card interface, power and ground pins.