4/8/2013

PRODUCT RELIABILITY REPORT
FOR

DS8500, Rev B2

Maxim Integrated

14460 Maxim Dr.
Dallas, TX 75244

Approved by:

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Conclusion:

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

DS8500, Rev B2

In addition, Maxim Integrated'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.maximintegrated.com/qa/reliability/monitor.

Device Description:

A description of this device can be found in the product data sheet. You can find the product data sheet at http://www.maximintegrated.com/search/parts.mvp.

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):**	**56259**	**FITS:**	**2.0**
	DEVICE HOURS:	**451571549**	**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:	Maxim SA Fab S45
Passivation:	SiN/SiO2
Die Size:	80 x 80
Number of Transistors:	54042
Interconnect:	Aluminum / 0.5% Copper
Gate Oxide Thickness:	140Å

ESD HBM

DESCRIPTION	DATE CODE/PRODUCT/LOT			CONDITION	READPOIN		QTY	FAILS	FA#
ESD SENSITIVITY	1306	**DS8500**	ZX380516BB	JESD22-A114 HBM 500 VOLTS	1	PUL'S	5	0	
ESD SENSITIVITY	1306	**DS8500**	ZX380516BB	JESD22-A114 HBM 1000 VOLTS	1	PUL'S	5	0	
ESD SENSITIVITY	1306	**DS8500**	ZX380516BB	JESD22-A114 HBM 1500 VOLTS	1	PUL'S	5	0	
ESD SENSITIVITY	1306	**DS8500**	ZX380516BB	JESD22-A114 HBM 2000 VOLTS	1	PUL'S	5	2	No FA
					Total:			**2**	

LATCH-UP

DESCRIPTION	DATE CODE/PRODUCT/LOT			CONDITION	READPOIN	QTY	FAILS	FA#
LATCH-UP I	1306	**DS8500**	ZX380516BB	JESD78A, I-TEST 25C 250mA		6	0	
LATCH-UP V	1306	**DS8500**	ZX380516BB	JESD78A, V-SUPPLY TEST 25C		6	0	
					Total:		**0**	

OPERATING LIFE

DESCRIPTION	DATE CODE/PRODUCT/LOT			CONDITION	READPOIN		QTY	FAILS	FA#
HIGH TEMP OP LIFE	0702	MAX6618	QD770500A	125C, 3.6V (PSA) & 1.1V (PSB)	1000	HRS	45	0	

HIGH TEMP OP LIFE	0708	DS2731	XK664400AD	125C, 4.9V (PSA) & 13.2V (PSB)	1000	HRS	45	0
HIGH TEMP OP LIFE	0737	MAX8688	SZ60FQ002A	125C, 3.6 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0749	MAXQ3180	QK774000AA	125C, 3.6 VOLTS	1000	HRS	44	0
HIGH TEMP OP LIFE	0812	DS8102	QJ880400AB	125C, 3.6 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0816	DS4560	QD836692A	100C, 13.2V (PSB) & 5.5V (PSA)	1000	HRS	45	0
HIGH TEMP OP LIFE	0819	DS2733	XJ881600BB	125C, 13.31V (PSB) & 3.5V (PSA)	1000	HRS	45	0
HIGH TEMP OP LIFE	0835	**DS8500**	QJ982700AB	125C, 3.6 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0928	DV24	FE9710863-0	125C, 3.6V (PSA), -25V (PSC) & 25V (PSD)	1000	HRS	45	0
HIGH TEMP OP LIFE	0943	MAX31190	WJ051035AB	125C, 3.6 VOLTS	192	HRS	45	0
HIGH TEMP OP LIFE	0950	MAX8990	EYGZCA004	135C, 5.0 V(PSA), 10.0V(PSB) & -3.3V(PSC)	192	HRS	45	0
HIGH TEMP OP LIFE	1018	DS4560	WD054757A	100C, 13.2V (PSB) & 5.5V (PSA)	192	HRS	45	0
HIGH TEMP OP LIFE	1035	MAX34561	WS154453B	125C, 13.2V (PSB) & 5.5V (PSA)	192	HRS	45	0
HIGH TEMP OP LIFE	1105	DS3920	ZJ163071AB	135C, 75V (V8)	192	HRS	77	0
HIGH TEMP OP LIFE	1113	MAX17710	ZJ156745BC	125C, 5.5 VOLTS	240	HRS	48	0
HIGH TEMP OP LIFE	1140	MAX34565	ZJ271249AA	125C, 5.0V (PSA) & 13.2V (PSB)	500	HRS	77	0
HIGH TEMP OP LIFE	1218	MAX31910	ZJ276928FA	135C, 36V (V8)	192	HRS	80	0
HIGH TEMP OP LIFE	1231	MAX31865	ZJ381729AB-	125C, 3.7V (PSA)	192	HRS	80	0
HIGH TEMP OP LIFE	1306	**DS8500**	ZX380516BB	125C, 3.6 VOLTS	192	HRS	48	0
					Total:			**0**

FAILURE RATE: **MTTF (YRS): 56259** **FITS: 2.0**

DEVICE HOURS: 451571549 **FAILS: 0**