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PRODUCT RELIABILITY REPORT FOR

DS1374, Rev A2

Maxim Integrated Products

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Prepared by:

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Conclusion:

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

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DS1374, Rev A2
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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):	24324	FITS:	4.7
QUANTITY:	695	DEVICE HOURS:	672500	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: 3.0 V
		D . V		14. 010

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 Informatio	n:										
Process:		EC6H-2P	EC6H-2P2M, HPVt,TCN1,PF-ring ALOCOS:GOI.								
Passivation:		Passivati	on w/Nov Tl	EOS Oxide-Nitride							
Die Size:		58 x 84									
Number of Trans	istors:	12853									
Interconnect:		Aluminun	n / 0.5% Co	pper							
Gate Oxide Thick	ness:	150 Å									
OPERATING LIFE											
DESCRIPTION	DATE	CODE/PRODUCT	ſ/LOT	CONDITION	READ	POIN	QTY	FAILS	FA#		
HIGH TEMP OP LIFE	0434	DS12R887	ZM430720B	C 85 C, 3.3 VOLTS	1000	HRS	45	0			
HIGH TEMP OP LIFE	0440	DS12R887	ZM430720B	D 85 C, 3.3 VOLTS	1000	HRS	45	0			
HIGH TEMP OP LIFE	0440	DS12R887	ZM430720B	E 85 C, 3.3 VOLTS	1000	HRS	45	0			
HIGH TEMP OP LIFE	0522	DS12R887	ZM430720A	D 85 C, 3.3 VOLTS	1000	HRS	45	0			
HIGH TEMP OP LIFE	0527	DS12R887	ZM430720A	E 85 C, 3.3 VOLTS	1000	HRS	45	0			
HIGH TEMP OP LIFE	0527	DS12R887	ZM430720A	F 85 C, 3.3 VOLTS	1000	HRS	45	0			
HIGH TEMP OP LIFE	0710	DS1722	QJ725607A	C 125C, 5.5 VOLTS	1000	HRS	77	0			

0

0

0

0

0

0

HIGH TEMP OP LIFE	0732	DS1722	QJ740133AB	125C, 5.5 VOLTS	1000	HRS	77
HIGH TEMP OP LIFE	0750	DS12R887	QM748219A	85 C, 3.3 VOLTS	500	HRS	45
HIGH TEMP OP LIFE	0832	DS12R887	DM547055A	85 C, 3.3 VOLTS	1000	HRS	46
HIGH TEMP OP LIFE	0912	DS12R887	QM748219A	J 85 C, 3.3 VOLTS	1000	HRS	45
HIGH TEMP OP LIFE	0912	DS12R887	QM748219A	85 C, 3.3 VOLTS	1000	HRS	45
HIGH TEMP OP LIFE	0912	DS12R887	QM748219AL	_ 85 C, 3.3 VOLTS	1000	HRS	45

HIGH TEMP OP LIFE	0912	DS12R887	VM748219A	85 C, 3.3 VOLTS	1000 HRS	45	0	
					Total:		0	