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PRODUCT RELIABILITY REPORT
FOR

DS2788, Rev A2

Maxim Integrated Products

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Conclusion:

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

DS2788, Rev A2

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):**	**104206**	**FITS:**	**1.1**
	DEVICE HOURS:	**799192**	**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: 4.2** **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:	E35X-3P3M,DPE2,CrSi,DSD,PDESD,PDRES,Cap,ENPN,DPT,HTO,SgHalo
Passivation:	TEOS Ox-Nit Passivation for E35X; Full BEOL at SA; PT only in Dallas
Die Size:	105 x 108
Number of Transistors:	0
Interconnect:	Aluminum / 0.5% Copper
Gate Oxide Thickness:	120 Å

DATA RETENTION

DESCRIPTION	DATE CODE	PRODUCT	LOT	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	0618	DS2746	QJ626604B	150C	1000 HRS	77	0	
STORAGE LIFE	0629	DS2745	QD635241	150C	1000 HRS	77	0	
					Total:		**0**	

ELECTRICAL CHARACTERIZATION

DESCRIPTION	DATE CODE	PRODUCT	LOT	CONDITION	READPOINT	QTY	FAILS	FA#
ESD SENSITIVITY	0736	**DS2788**	QK718177	EOS/ESD S5.1 HBM 500 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0736	**DS2788**	QK718177	EOS/ESD S5.1 HBM 1000 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0736	**DS2788**	QK718177	EOS/ESD S5.1 HBM 2000 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0736	**DS2788**	QK718177	EOS/ESD S5.1 HBM 3000 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0736	**DS2788**	QK718177	EOS/ESD S5.1 HBM 4000 VOLTS	1 PUL'S	3	0	
LATCH-UP	0736	**DS2788**	QK718177	JESD78, I-TEST 125C		6	0	
LATCH-UP	0736	**DS2788**	QK718177	JESD78, V-SUPPLY TEST 125C		6	0	
					Total:		**0**	

OPERATING LIFE

DESCRIPTION	DATE CODE	PRODUCT	LOT	CONDITION	READPOINT		QTY	FAILS	FA#
HIGH TEMP OP LIFE	0601	DS3908	QE614607	125C, 5.5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0617	DS4420	QJ633620B	125C, 5.5 VOLTS	1000	HRS	45	0	
HIGH VOLTAGE LIFE	0618	DP20	DRI0CA006	135C, 5.0 V	1000	HRS	45	0	
HIGH VOLTAGE LIFE	0618	DP20	DRI0CA006	135C, 5.0 V	1000	HRS	45	0	
HIGH VOLTAGE LIFE	0618	DP20	DRI0CA006	135C, 5.0 V	1000	HRS	45	0	
HIGH TEMP OP LIFE	0618	DS2746	QJ626604B	125C, 5.5 VOLTS	1000	HRS	45	0	
HIGH TEMP OP LIFE	0626	DS1863	QM623600	125C, 5.5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0629	DS2745	QD635241	125C, 5.5 VOLTS	1000	HRS	77	0	
HIGH TEMP OP LIFE	0640	DS2756	QK621609	125C, 5.5 VOLTS	1000	HRS	45	0	
HIGH TEMP OP LIFE	0642	DS2786	QJ652645A	125C, 5.5 VOLTS	1000	HRS	45	0	
HIGH TEMP OP LIFE	0714	DS2784	QJ714637A	125C, 5.5 V (PSA) & 15.0 V (PSB)	1000	HRS	77	0	
HIGH TEMP OP LIFE	0723	DS2786	QJ801005B	125C, 5.5 VOLTS	192	HRS	45	0	
HIGH TEMP OP LIFE	0727	DS2781	QK738184	125C, 5.5 VOLTS	192	HRS	77	0	
HIGH TEMP OP LIFE	0732	DS2784	QJ738201B	125C, 5.5 V (PSA) & 15.0 V (PSB)	1000	HRS	77	0	
HIGH TEMP OP LIFE	0732	DS1099	IJ611604AF	125C, 5.5 VOLTS	408	HRS	45	0	
HIGH TEMP OP LIFE	0732	DS1099	IJ611604AF	125C, 5.5 VOLTS	408	HRS	32	0	
HIGH TEMP OP LIFE	0736	**DS2788**	QK718177	125C, 5.5 VOLTS	192	HRS	77	0	
HIGH TEMP OP LIFE	0744	DS2745	QD801003	125C, 5.5 VOLTS	192	HRS	77	0	
HIGH TEMP OP LIFE	0749	DS2782	QK805005	125C, 5.5 VOLTS	192	HRS	77	0	
					Total:			**0**	

W/E ENDURANCE AND DATA RET'N

DESCRIPTION	DATE CODE	PRODUCT	LOT	CONDITION	READPOINT		QTY	FAILS	FA#
WRITE CYCLE STRESS (KCYS)	0601	DS3908	QE614607	70 C, 5.5 VOLTS	50	KCYS	77	0	
STORAGE LIFE	0601	DS3908	QE614607	150C	1000	HRS	76	0	
WRITE CYCLE STRESS (KCYS)	0626	DS1863	QM623600	85 C, 5.5 VOLTS	50	KCYS	77	0	
STORAGE LIFE	0626	DS1863	QM623600	150C	1000	HRS	77	0	
WRITE CYCLE STRESS (KCYS)	0640	DS2756	QK621609	70 C, 5.5 VOLTS	50	KCYS	77	0	
STORAGE LIFE	0640	DS2756	QK621609	150C	1000	HRS	77	0	
WRITE CYCLE STRESS (KCYS)	0642	DS2786	QJ652645A	50 C, 5.5 VOLTS (PSA), 15.0 VOLTS (PSB)	10	KCYS	77	0	
STORAGE LIFE	0642	DS2786	QJ652645A	150C	1000	HRS	77	0	
WRITE CYCLE STRESS (KCYS)	0642	DS2786	QJ652645A	50 C, 5.5 VOLTS (PSA), 15.0 VOLTS (PSB)	1	KCYS	77	0	
STORAGE LIFE	0642	DS2786	QJ652645A	150C	1000	HRS	77	0	
WRITE CYCLE STRESS (CYS)	0642	DS2786	QJ652645A	50 C, 5.5 VOLTS (PSA), 15.0 VOLTS (PSB)	100	CYS	77	0	
STORAGE LIFE	0642	DS2786	QJ652645A	150C	1000	HRS	77	0	

WRITE CYCLE STRESS (KCYS)	0714	DS2784	QJ714637A	50 C, 5.5 V (PSA) & 15.0 V (PSB)	50	KCYS	77	0
STORAGE LIFE	0714	DS2784	QJ714637A	150C	1000	HRS	77	0
WRITE CYCLE STRESS (KCYS)	0732	DS2784	QJ738201B	50 C, 5.5 V (PSA) & 15.0 V (PSB)	50	KCYS	77	0
STORAGE LIFE	0732	DS2784	QJ738201B	150C	1000	HRS	77	0
WRITE CYCLE STRESS (KCYS)	0736	**DS2788**	QK718177	50 C, 5.5 VOLTS	50	KCYS	77	0
STORAGE LIFE	0736	**DS2788**	QK718177	150C	96	HRS	77	0
WRITE CYCLE STRESS (KCYS)	0749	DS2782	QK805005	50 C, 5.5 VOLTS	50	KCYS	77	0
STORAGE LIFE	0749	DS2782	QK805005	150C	96	HRS	77	0
					Total:			**0**

FAILURE RATE:	**MTTF (YRS):**	**104206**	**FITS:**	**1.1**	
	DEVICE HOURS:	**799192**	**FAILS:**	**0**	