



3/7/2009

RELIABILITY REPORT
FOR

DS1245Y, Rev B1

Maxim Integrated Products

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Conclusion:

The following qualification successfully meets the quality and reliability standards required of all Dallas Semiconductor products and processes:

DS1245Y, Rev B1

In addition, Dallas Semiconductor'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>.*

Module Description

A description of this Module 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:

A module device consists of one or more IC's in a single, upward integrated, package. This package is assembled to include batteries, crystals, and other piece parts that make up the configuration of the Module. Because of either the complexity of the package or the included piece parts, standard high temperature reliability testing is not possible. Therefore, in order to determine the reliability of module products, the reliability of each of the piece parts is individually determined, then summed to determine the reliability of the integrated module product. If there are "n" significant components in the module then:

$$Fr(\text{module}) = Fr(1) + Fr(2) + Fr(3) + \dots + Fr(n)$$

Fr (module) = Failure rate of module
Fr(n) = Failure rate of the nth component

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 module/assembly is:

<u>Module Device:</u>	<u>Module Units:</u>	<u>Quantity:</u>	<u>Fails:</u>	<u>Ea:</u>	<u>Beta:</u>	<u>MTTF (Yrs):</u>	<u>FITs:</u>
1 MEG SRAM 5V	1	1789	0	0.7	0.0	190662	0.6
BR1632	1	100	1	0.7	0.0	3591	31.8
DS13D12	1	6021	1	0.7	0.0	145899	0.8
Totals:						3441	33.2

The parameters used to calculate the module failure rate are as follows

Cf: 60% Tu: 25 °C Vu: 5.5 Volts

The reliability data follows. At the start of this data is the module assembly information. This is a description of the module. The next section is the detailed reliability data for each stress found in the qualification / monitor. If there are additional processes or assemblies used as part of this report, a description of each will follow which includes the respective reliability data for that process/ assembly. The reliability data section includes the latest data available. Some of this data may be generic with other packages or products.

* Some proprietary products may be excepted from this requirement

Assembly Information:

Assembly Site: Batangas Assembly
 Pin Count: 28
 Package Type: Module Thru Hole (Pb-Free)
 Body Size: 720
 Mold Compound: Amicon
 Lead Frame: PCB; FR4
 Lead Finish: Sn Dip 100%
 Die Attach: 84-1 LMISR4 Epoxy Silverfilled Ablebond
 Bond Wire / Size: /
 Flammability: UL 94-V0
 Moisture Sensitivity (JEDEC J-STD20A) NA
 Date Code Range: 0810 to 0810

DATE CODE: 0810 **LOT NUMBER:** MG362516AAA-QAL **VEHICLE:** DS1230

TEMPERATURE CYCLE

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE, 5' RAMP, 10' DWELL	0810	-40 TO 85C	1000 CYS	77	0	
Total:					0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
MOISTURE SOAK	0810	60C/90% R.H.	1000 HRS	77	0	
Total:					0	

DATE CODE: 0810 **LOT NUMBER:** MG362517AAA-QAL **VEHICLE:** DS1230

TEMPERATURE CYCLE

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE, 5' RAMP, 10' DWELL	0810	-40 TO 85C	1000 CYS	77	0	
Total:					0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
MOISTURE SOAK	0810	60C/90% R.H.	1000 HRS	77	0	
Total:					0	

Assembly Information:

Assembly Site: Batangas Assembly
Pin Count: 32
Package Type: Module Thru Hole (Pb-Free)
Body Size: 720
Mold Compound: Amicon
Lead Frame: PCB; FR4
Lead Finish: Sn Dip 100%
Die Attach: 84-1 LMISR4 Epoxy Silverfilled Ablebond
Bond Wire / Size: Au / 1.0 mil
Flammability: UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A) NA
Date Code Range: 0715 to 0818

DATE CODE: 0715 **LOT NUMBER:** MG360517-QUAL1 **VEHICLE:** DS1747

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	0715	85/85, 3.5 VOLTS	1000 HRS	77	0	
VISUAL INSPECTION	0715	WHISKERS < 50uM		76	0	
Total:					0	

STORAGE LIFE

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	0715	85 C	1000 HRS	77	0	
VISUAL INSPECTION	0715	WHISKERS < 50uM		77	0	
Total:					0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE, 5' RAMP, 10' DWELL	0715	-40 TO 85C	1000 CYS	77	0	
Total:					0	

DATE CODE: 0818 **LOT NUMBER:** M6362914EC **VEHICLE:** DS1747

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	0818	85/85, 3.5 VOLTS	1000 HRS	77	0	
VISUAL INSPECTION	0818	WHISKERS < 50uM		73	0	
Total:					0	

STORAGE LIFE

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	0818	85 C	1000 HRS	76	0	
VISUAL INSPECTION	0818	WHISKERS < 50uM		75	0	
Total:					0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE, 5' RAMP, 10' DWELL	0818	-40 TO 85C	1000 CYS	77	0	
VISUAL INSPECTION	0818	WHISKERS < 50uM		77	0	
Total:					0	

DATE CODE: 0818 LOT NUMBER: M6362915EC VEHICLE: DS1747

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	0818	85/85, 3.5 VOLTS	1000 HRS	77	0	
VISUAL INSPECTION	0818	WHISKERS < 50uM		72	0	
Total:					0	

STORAGE LIFE

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	0818	85 C	1000 HRS	77	0	
VISUAL INSPECTION	0818	WHISKERS < 50uM		77	0	
Total:					0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE, 5' RAMP, 10' DWELL	0818	-40 TO 85C	1000 CYS	77	0	
VISUAL INSPECTION	0818	WHISKERS < 50uM		77	0	
Total:					0	

DATE CODE: 0818 LOT NUMBER: M6362916EC VEHICLE: DS1747

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	0818	85/85, 3.5 VOLTS	1000 HRS	77	0	
VISUAL INSPECTION	0818	WHISKERS < 50uM		76	0	
Total:					0	

STORAGE LIFE

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	0818	85 C	1000 HRS	77	0	
VISUAL INSPECTION	0818	WHISKERS < 50uM		77	0	
Total:					0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CD	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE, 5' RAMP, 10' DWELL	0818	-40 TO 85C	1000 CYS	77	0	
VISUAL INSPECTION	0818	WHISKERS < 50uM		77	0	
Total:					0	