09/16/2004

RELIABILITY REPORT
FOR

DS1245W, 32 Pin Module w/SMT

Dallas Semiconductor

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Prepared by:

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Conclusion:

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

DS1245W, 32 Pin Module w/SMT

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 (module) = Fr (1) + Fr (2) + Fr (3) + ... + 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:

Module Device:	Module Units:	Quantity:	Fails:	Ea:	MTTF (Yrs):	FITs:
1 MEG SRAM 3V	**1**	**3175**	**3**	**0.7**	**64196**	**1.8**
BR1632	**1**	**100**	**1**	**1.0**	**47996**	**2.4**
DS13D14	**1**	**6021**	**1**	**0.7**	**145899**	**0.8**
Totals:					**23112**	**4.9**

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

Cf: 60% **Tu: 25** **°C**

The reliability data follows. A 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:	Fastech
Pin Count:	28
Package Type:	Module w/SMT
Body Size:	720
Mold Compound:	Amicon
Lead Frame:	PCB; FR4
Lead Finsh:	
Die Attach:	?
Bond Wire / Size:	/
Flammability:	UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A)	
Date Code Range:	9917 to 0201

PACKAGE TESTS

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
SOLDERABILITY	9917	MIL-STD-883-2003	2	DYS	8	0	
X-RAY	9917	MIL-STD-883-2012 : TOP & SIDE VIEW	2	DYS	8		
PHYSICAL DIMENSIONS		MIL-STD-883-2016	4	DYS	8		
LEAD INTEGRITY		MIL-STD-883-2004 : COND B2	6	DYS	8	0	
CONSTRUCTION ANALYSIS	9917	SENT TO OUTSIDE SOURCE	2	WKS	5	0	
SOLDERABILITY	9952	MIL-STD-883-2003	1	DYS	3	0	
PHYSICAL DIMENSIONS	9952	MIL-STD-883-2016	1	DYS	6	0	
SOLDERABILITY	0005	MIL-STD-883-2003	1	DYS	3	0	
PHYSICAL DIMENSIONS	0005	MIL-STD-883-2016	1	DYS	6	0	
SOLDERABILITY	0019	MIL-STD-883-2003	1	DYS	3	0	
PHYSICAL DIMENSIONS	0019	MIL-STD-883-2016	1	DYS	6	0	
SOLDERABILITY	0039	MIL-STD-883-2003	1	DYS	3	0	
PHYSICAL DIMENSIONS	0039	MIL-STD-883-2016	1	DYS	6	0	
SOLDERABILITY	0045	MIL-STD-883-2003	1	DYS	3	0	
PHYSICAL DIMENSIONS	0045	MIL-STD-883-2016	1	DYS	6	0	
SOLDERABILITY	0101	MIL-STD-883-2003	1	DYS	3	0	
PHYSICAL DIMENSIONS	0101	MIL-STD-883-2016	1	DYS	6	0	
SOLDERABILITY	0119	JESD22-B102	1	DYS	3	0	

PHYSICAL DIMENSIONS	0119	JESD22-B100	1	DYS	6	0	
SOLDERABILITY	0201	JESD22-B102	1	DYS	3	0	
PHYSICAL DIMENSIONS	0201	JESD22-B100	1	DYS	6	0	
				Total:		**0**	

STORAGE LIFE

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
STORAGE LIFE	9917	85 C	1000	HRS	22	0	
STORAGE LIFE	9917	85 C	1000	HRS	78	0	
STORAGE LIFE	9952	85 C	48	HRS	200	0	
STORAGE LIFE	0005	85 C	48	HRS	200	0	
STORAGE LIFE	0019	85 C	48	HRS	200	0	
STORAGE LIFE	0039	85 C	48	HRS	200	0	
STORAGE LIFE	0045	85 C	48	HRS	200	0	
STORAGE LIFE	0101	85 C	48	HRS	200	0	
STORAGE LIFE	0119	85 C	48	HRS	200	1	30001743
STORAGE LIFE	0201	85 C	48	HRS	200	0	
				Total:		**1**	

TEMPERATURE CYCLE

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
TEMP CYCLE	9917	-40 TO 85C	1000	CYS	100	0	
TEMP CYCLE	9952	0C TO 70C	1000	CYS	100	0	
TEMP CYCLE	0005	0C TO 70C	1000	CYS	100	0	
TEMP CYCLE	0019	0C TO 70C	1000	CYS	100	0	
TEMP CYCLE	0039	0C TO 70C	1000	CYS	100	0	
TEMP CYCLE	0045	0C TO 70C	1000	CYS	100	0	
TEMP CYCLE	0101	-40 TO 85C	300	CYS	100	3	30000665
TEMP CYCLE	0119	-40 TO 85C	300	CYS	99	1	30002104
TEMP CYCLE	0201	-40 TO 85C	300	CYS	100	0	
				Total:		**4**	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
BIASED MOISTURE	9917	85/85, 5.5 VOLTS	959	HRS	100	0	
				Total:		**0**	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
MOISTURE SOAK	9917	60C/90% R.H.	960	HRS	78	0	
MOISTURE SOAK	9917	60C/90% R.H.	960	HRS	22	0	

MOISTURE SOAK	9952	60C/90% R.H.	960	HRS	100	0
MOISTURE SOAK	0005	60C/90% R.H.	960	HRS	100	0
MOISTURE SOAK	0019	60C/90% R.H.	960	HRS	100	0
MOISTURE SOAK	0039	60C/90% R.H.	960	HRS	100	0
MOISTURE SOAK	0045	60C/90% R.H.	960	HRS	100	0
MOISTURE SOAK	0101	60C/90% R.H.	960	HRS	100	0
MOISTURE SOAK	0119	60C/90% R.H.	960	HRS	100	0
MOISTURE SOAK	0201	60C/90% R.H.	960	HRS	100	0
				Total:		**0**

Assembly Information:

Assembly Site:	Fastech
Pin Count:	32
Package Type:	Module w/SMT
Body Size:	720
Mold Compound:	Amicon
Lead Frame:	PCB; FR4
Lead Finsh:	
Die Attach:	?
Bond Wire / Size:	/
Flammability:	UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A)	
Date Code Range:	9933 to 9933

PACKAGE TESTS

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
SOLDERABILITY	9933	MIL-STD-883-2012 : TOP & SIDE VIEW	5	DYS	3	0	
X-RAY	9933	MIL-STD-883-2012 : TOP & SIDE VIEW	5	DYS	6	0	
				Total:		**0**	

TEMPERATURE CYCLE

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
TEMP CYCLE	9933	-40 TO 85C	1000	CYS	77	0	
				Total:		**0**	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
MOISTURE SOAK	9933	60C/90% R.H.	960	HRS	77	0	
				Total:		**0**	