RELIABILITY REPORT
FOR

DS1286, 24 Pin Module w/Bent Frame

Dallas Semiconductor

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Conclusion:

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

<div align="center">DS1286, 24 Pin Module w/Bent Frame</div>

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:
BR1225	1	100	1	1.0	175984	0.6
CRYSTAL	1	100	0	0.7	12463	9.2
DS1284	1	2087	0	0.7	72177	1.6
Totals:					10022	11.4

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:	24
Package Type:	Module w/Bent Frame
Body Size:	720
Mold Compound:	Amicon
Lead Frame:	Stamped Alloy 42
Lead Finsh:	
Die Attach:	84-1 LMISR4 Epoxy Silverfilled Ablebond
Bond Wire / Size:	/
Flammability:	UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A)	
Date Code Range:	0027 to 0415

PACKAGE TESTS

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
SOLDERABILITY	0027	MIL-STD-883-2003	1	DYS	3	0	
PHYSICAL DIMENSIONS	0027	MIL-STD-883-2016	1	DYS	6	0	
SOLDERABILITY	0040	MIL-STD-883-2003	1	DYS	3	0	
PHYSICAL DIMENSIONS	0040	MIL-STD-883-2016	1	DYS	6	0	
SOLDERABILITY	0043	MIL-STD-883-2003	1	DYS	3	0	
PHYSICAL DIMENSIONS	0043	MIL-STD-883-2016	1	DYS	6	0	
SOLDERABILITY	0102	MIL-STD-883-2003	1	DYS	3	0	
PHYSICAL DIMENSIONS	0102	MIL-STD-883-2016	1	DYS	6	0	
SOLDERABILITY	0121	JESD22-B102	1	DYS	3	0	
PHYSICAL DIMENSIONS	0121	JESD22-B100	1	DYS	6	0	
MARK PERMANENCY	0136	JESD22-B107		DYS	49	0	
MARK PERMANENCY	0136	JESD22-B107		DYS	20	0	
SOLDERABILITY	0137	JESD22-B102	1	DYS	3	0	
PHYSICAL DIMENSIONS	0137	JESD22-B100	1	DYS	6	0	
SOLDERABILITY	0219	JESD22-B102	1	DYS	3	0	
PHYSICAL DIMENSIONS	0219	JESD22-B100	1	DYS	6	0	
SOLDERABILITY	0227	JESD22-B102	1	DYS	3	0	
PHYSICAL DIMENSIONS	0227	JESD22-B100	1	DYS	6	0	

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
SOLDERABILITY	0231	JESD22-B102	1	DYS	3	0	
PHYSICAL DIMENSIONS	0231	JESD22-B100	1	DYS	6	0	
SOLDERABILITY	0311	JESD22-B102	1	DYS	3	0	
PHYSICAL DIMENSIONS	0311	JESD22-B100	1	DYS	6	0	
SOLDERABILITY	0318	JESD22-B102	1	DYS	3	0	
PHYSICAL DIMENSIONS	0318	JESD22-B100	1	DYS	6	0	
SOLDERABILITY	0323	JESD22-B102	1	DYS	3	0	
PHYSICAL DIMENSIONS	0323	JESD22-B100	1	DYS	6	0	
SOLDERABILITY	0415	JESD22-B102	1	DYS	3	0	
PHYSICAL DIMENSIONS	0415	JESD22-B100	1	DYS	6	0	
				Total:		**0**	

STORAGE LIFE

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
INFANT LIFE	0027	85 C	48	HRS	200	0	
INFANT LIFE	0040	85 C	48	HRS	200	0	
INFANT LIFE	0043	85 C	48	HRS	200	0	
INFANT LIFE	0102	85 C	48	HRS	200	0	
INFANT LIFE	0121	85 C	48	HRS	200	0	
INFANT LIFE	0137	85 C	48	HRS	200	0	
STORAGE LIFE	0415	70 C	500	HRS	77	0	
				Total:		**0**	

TEMPERATURE CYCLE

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
TEMP CYCLE	0027	0C TO 70C	1000	CYS	100	0	
TEMP CYCLE	0040	0C TO 70C	1000	CYS	100	0	
TEMP CYCLE	0043	-40 TO 85C	300	CYS	100	0	
TEMP CYCLE	0102	-40 TO 85C	300	CYS	100	0	
TEMP CYCLE	0121	-40 TO 85C	300	CYS	100	0	
TEMP CYCLE	0137	-40 TO 85C	300	CYS	100	0	
TEMP CYCLE	0219	-40 TO 85C	300	CYS	100	0	
TEMP CYCLE	0227	-40 TO 85C	300	CYS	100	0	
TEMP CYCLE	0231	-40 TO 85C	300	CYS	100	0	
TEMP CYCLE	0311	-40 TO 85C	300	CYS	100	0	
TEMP CYCLE	0318	-40 TO 85C	300	CYS	100	0	
TEMP CYCLE	0323	-40 TO 85C	300	CYS	100	0	
TEMP CYCLE	0415	0C TO 70C	1000	CYS	77	0	

			Total:			0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CD	CONDITION	READPOINT		QTY	FAILS	FA#
BIASED MOISTURE	0027	85/85, 5.5 VOLTS	959	HRS	100	0	
BIASED MOISTURE	0040	85/85, 5.5 VOLTS	959	HRS	100	0	
BIASED MOISTURE	0043	85/85, 5.5 VOLTS	959	HRS	100	0	
BIASED MOISTURE	0102	85/85, 5.5 VOLTS	959	HRS	100	1	NO FA
BIASED MOISTURE	0121	85/85, 5.5 VOLTS	959	HRS	100	0	
BIASED MOISTURE	0137	85/85, 5.5 VOLTS	959	HRS	99	0	
BIASED MOISTURE	0219	85/85, 5.5 VOLTS	959	HRS	100	0	
BIASED MOISTURE	0227	85/85, 5.5 VOLTS	1000	HRS	100	0	
BIASED MOISTURE	0231	85/85, 5.5 VOLTS	1000	HRS	100	0	
BIASED MOISTURE	0311	85/85, 5.5 VOLTS	1000	HRS	100	0	
BIASED MOISTURE	0318	85/85, 5.5 VOLTS	1000	HRS	100	0	
BIASED MOISTURE	0323	85/85, 5.5 VOLTS	1000	HRS	100	0	
BIASED MOISTURE	0415	85/85, 5.5 VOLTS	500	HRS	77	0	
				Total:		1	