

RELIABILITY REPORT  
FOR

**DS1411**

**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:

DS1411

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](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:

<b>Module Device:</b>	<b>Quantity:</b>	<b>MTTF (Yrs):</b>	<b>FITs:</b>
<b>DS2480</b>	<b>1</b>	<b>63267</b>	<b>1.8</b>
<b>Totals:</b>		<b>63267</b>	<b>2</b>

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

**Cf: 60%**      **Ea: 0.7**      **B: 0**      **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 proprietary products may be excepted from this requirement.

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**Assembly Information:**

Qualification Vehicle: DS1411  
 Assembly Site: Fastech  
 Pin Count: 0  
 Package Type: BRICK  
 Body Size: 0  
 Mold Compound: ?  
 Lead Frame: ?  
 Lead Finsh:  
 Die Attach: ?  
 Bond Wire / Size: /  
 Flammability: UL 94-V0  
 Moisture Sensitivity  
 (JEDEC J-STD20A)  
 Date Code Range: 9942 to 9942

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**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QUANTITY	FAILS
TEMP CYCLE	9942	-40 TO 85C	1500 CYS	65	0
<b>Total:</b>					<b>0</b>

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QUANTITY	FAILS
MOISTURE SOAK	9942	60C/90% R.H.	960 HRS	60	1
<b>Total:</b>					<b>1</b>