

RELIABILITY REPORT
FOR

DS1201, Rev D1 w/Ag Filled E4110 Epoxy

Dallas Semiconductor

4401 South Beltwood Parkway
Dallas, TX 75244-3292

Prepared by:

Ken Wendel
Reliability Engineering Manager
Dallas Semiconductor
4401 South Beltwood Pkwy.
Dallas, TX 75244-3292
Email : ken.wendel@dalsemi.com
ph: 972-371-3726
fax: 972-371-6016
mbl: 214-435-6610

Conclusion:

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

DS1201, Rev D1 w/Ag Filled E4110 Epoxy

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:

Module Device:	Module Units:	Quantity:	Fails:	Ea:	MTTF (Yrs):	FITs:
BR1225	1	100	1	1.0	175984	0.6
DS1200	1	6387	1	0.7	133149	0.9
Totals:					<u>75799</u>	<u>1.5</u>

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

Cf: 60% **Tu: 25 °C**

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: Fastech
 Pin Count: 10
 Package Type: Module w/Bent Frame
 Body Size: 450
 Mold Compound: Amicon
 Lead Frame: Stamped Alloy 42
 Lead Finish: SnPb Plate
 Die Attach: E4110 Ag Filled Epoxy
 Bond Wire / Size: Au / 1.3 mil
 Flammability: UL 94-V0
 Moisture Sensitivity (JEDEC J-STD20A)
 Date Code Range: 0432 to 0432

STORAGE LIFE

DESCRIPTION	DATE	CD	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	0432		85 C	336 HRS	77	0	
				Total:		0	

TEMPERATURE CYCLE

DESCRIPTION	DATE	CD	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	0432		0C TO 70C	300 CYS	77	0	
				Total:		0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE	CD	CONDITION	READPOINT	QTY	FAILS	FA#
MOISTURE SOAK	0432		60C/90% R.H.	336 HRS	77	0	
				Total:		0	