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RELIABILITY REPORT
FOR

Dallas, no underfill, 144 Chip Scale BGA Interposer

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:

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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:	Quantity:	MTTF (Yrs):	FITs:
DS21348	**1**	**27143**	**4.2**
Totals:		**27143**	**4**

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. 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 proprietary products may be excepted from this requirement.

Assembly Information:

Qualification Vehicle:	DS21Q348
Assembly Site:	Dallas
Pin Count:	144
Package Type:	CSBGA Interposer
Body Size:	17x17X1.6
Mold Compound:	Nitto HC-100-XG-BF1
Lead Frame:	Printed Crt Brd; BT
Lead Finsh:	
Die Attach:	No Underfill
Bond Wire / Size:	/
Flammability:	UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A)	Level 4
Date Code Range:	0305 to 0309

CONSTRUCTION ANALYSIS

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
PACKAGE, ASSEMBLY P	0309	TO BE DONE BY F/A	2	WKS	5	0
				Total:		**0**

PACKAGE TESTS

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
X-RAY	0305	MIL-STD-883-2012 : TOP & SIDE VIEW	6	DYS	6	0
PHYSICAL DIMENSIONS		JESD22-B100	6	DYS	6	0
BALL SHEAR		JESD22-B117	6	DYS	6	0
		JESD22-B117	12	DYS	6	0
X-RAY	0309	MIL-STD-883-2012 : TOP & SIDE VIEW	6	DYS	6	0
PHYSICAL DIMENSIONS		JESD22-B100	6	DYS	6	0
BALL SHEAR		JESD22-B117	6	DYS	6	0
		JESD22-B117	12	DYS	6	0
X-RAY	0309	MIL-STD-883-2012 : TOP & SIDE VIEW	6	DYS	6	0
PHYSICAL DIMENSIONS		JESD22-B100	6	DYS	6	0
BALL SHEAR		JESD22-B117	6	DYS	6	0
		JESD22-B117	12	DYS	6	0
				Total:		**0**

PRECONDITIONING LEVEL 4

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
STORAGE LIFE	0305	125C	24	HRS	135	
MOISTURE SOAK		30C/60% R.H.	96	HRS	135	

CONVECTION REFLOW	0305	220C	3	PASS	135	0
STORAGE LIFE	0309	125C	24	HRS	135	
MOISTURE SOAK		30C/60% R.H.	96	HRS	135	
CONVECTION REFLOW		220C	3	PASS	135	0
STORAGE LIFE	0309	125C	24	HRS	135	
MOISTURE SOAK		30C/60% R.H.	96	HRS	135	
CONVECTION REFLOW		220C	3	PASS	135	0
				Total:		**0**

STORAGE LIFE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
STORAGE LIFE	0305	125C	1000	HRS	45	0
STORAGE LIFE	0309	125C	1000	HRS	45	0
STORAGE LIFE	0309	125C	1000	HRS	45	0
				Total:		**0**

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
TEMP CYCLE	0305	-55C TO 125C	1000	CYS	45	0
TEMP CYCLE	0309	-55C TO 125C	1000	CYS	45	0
TEMP CYCLE	0309	-55C TO 125C	1000	CYS	45	0
				Total:		**0**

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
MOISTURE SOAK	0305	85 C/85% R.H.	1000	HRS	45	0
MOISTURE SOAK	0309	85 C/85% R.H.	1000	HRS	45	0
MOISTURE SOAK	0309	85 C/85% R.H.	1000	HRS	45	0
				Total:		**0**