11/22/2005

PACKAGE RELIABILITY REPORT
FOR

NSEB, 2 SFN, 6x6x0.88um, Pb-Free

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 packages:

NSEB, 2 SFN, 6x6x0.88um, Pb-Free

In addition, Dallas Semiconductor's continuous reliability monitor program ensures that all outgoing assemblies 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.

Package Description:

A description of this assembly 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:

The Arrhenius model will be used to determine the acceleration factor for failure mechanisms that are temperature accelerated.

AfT = exp((Ea/k)*(1/Tu - 1/Ts)) = tu/ts
AfT = Acceleration factor due to Temperature
tu = Time at use temperature (e.g. 55°C)
ts = Time at stress temperature (e.g. 125°C)
k = Boltzmann's Constant (8.617 x 10-5 eV/°K)
Tu = Temperature at Use (°K)
Ts = Temperature at Stress (°K)
Ea = Activation Energy (e.g. 0.7 ev)

The activation energy of the failure mechanism is derived from either internal studies or industry accepted standards, or activation energy of 0.7ev will be used whenever actual failure mechanisms or their activation energies are unknown. All deratings will be done from the stress ambient temperature to the use ambient temperature.

An exponential model will be used to determine the acceleration factor for failure mechanisms, which are voltage accelerated.

AfV = exp(B*(Vs - Vu))
AfV = Acceleration factor due to Voltage
Vs = Stress Voltage (e.g. 7.0 volts)
Vu = Maximum Operating Voltage (e.g. 5.5 volts)
B = Constant related to failure mechanism type (e.g. 1.0, 2.4, 2.7, etc.)

The Constant, B, related to the failure mechanism is derived from either internal studies or industry accepted standards, or a B of 1.0 will be used whenever actual failure mechanisms or their B are unknown. All deratings will be done from the stress voltage to the maximum operating voltage. Failure rate data from the operating life test is reported using a Chi-Squared statistical model at the 60% or 90% confidence level (Cf).

The failure rate, Fr, is related to the acceleration during life test by:

Fr = X/(ts * AfV * AfT * N * 2)
X = Chi-Sq statistical upper limit
N = Life test sample size

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 device/process is:

FAILURE RATE:	**MTTF (YRS):**	**27848**	**FITS:**	**4.1**
	DEVICE HOURS:	**223530606**	**FAILS:**	**0**

Only data from Operating Life or similar stresses are used for this calculation.

The parameters used to calculate this failure rate are as follows:

Cf: 60% **Ea: 0.7** **B: 0** **Tu: 25** **°C** **Vu: 5.5** **Volts**

The reliability data follows. Some of the data in this report may be generic. At the start of this data is a description of the assembly vehicle used to generate this reliability data. The next section is the detailed reliability data for each stress. If there are additional assemblies used as part of this report, a description of each will follow which includes the respective reliability data for that assembly. The reliability data section includes the latest data available.

Assembly Information:

Assembly Site:	NSEB
Pin Count:	2
Package Type:	SFN (Pb-Free)
Body Size:	6x6x0.88
Mold Compound:	Sumitomo G770HC/ HCD
Lead Frame:	Stamped Copper CDA194
Lead Finsh:	NiPdAu
Die Attach:	8200T Ablebond Silverfiled Epoxy
Bond Wire / Size:	Au / 1.0 mil
Flammability:	UL 94-V0
Theta JA:	
Theta JC:	
Moisture Sensitivity (JEDEC J-STD20A)	NA
Date Code Range:	0525 to 0527

DATE CODE: 0525 **LOT NUMBER:** QJ533120ABA

OPERATING LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
HIGH TEMP REVERSE BIAS	125C, 5.5 VOLTS	1000 HRS	77	0	
		Total:		**0**	

PACKAGE TESTS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
X-RAY	MIL-STD-883-2012 : TOP & SIDE VIEW		6	0	
PHYSICAL DIMENSIONS	JESD22-B100		6	0	
MARK PERMANENCY	JESD22-B107		6	0	
LEAD INTEGRITY	JESD22-B105, COND B		6	0	
		Total:		**0**	

STORAGE LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	150C	1000 HRS	77	0	
		Total:		**0**	

TEMPERATURE CYCLE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	-55C TO 125C	1000 CYS	77	0	
		Total:		**0**	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	85/85, 5.5 VOLTS	1000 HRS	77	0	
		Total:		**0**	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
MOISTURE SOAK	85 C/85% R.H.	1000 HRS	77	0	
		Total:		**0**	

DATE CODE: 0526 **LOT NUMBER:** QJ533120ACA

OPERATING LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
HIGH TEMP REVERSE BIAS	125C, 5.5 VOLTS	1000 HRS	77	0	
		Total:		**0**	

PACKAGE TESTS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
X-RAY	MIL-STD-883-2012 : TOP & SIDE VIEW		6	0	
PHYSICAL DIMENSIONS	JESD22-B100		6	0	
MARK PERMANENCY	JESD22-B107		6	0	
LEAD INTEGRITY	JESD22-B105, COND B		6	0	
		Total:		**0**	

STORAGE LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	150C	1000 HRS	77	0	
		Total:		**0**	

TEMPERATURE CYCLE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	-55C TO 125C	1000 CYS	77	0	
		Total:		**0**	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	85/85, 5.5 VOLTS	1000 HRS	77	0	
		Total:		**0**	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
MOISTURE SOAK	85 C/85% R.H.	1000 HRS	77	0	
		Total:		**0**	

DATE CODE: 0527 **LOT NUMBER:** ZJ442773AB-NPI

OPERATING LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
HIGH TEMP REVERSE BIAS	125C, 5.5 VOLTS	1000 HRS	83	0	
		Total:		**0**	

PACKAGE TESTS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
X-RAY	MIL-STD-883-2012 : TOP & SIDE VIEW		6	0	
PHYSICAL DIMENSIONS	JESD22-B100		6	0	
MARK PERMANENCY	JESD22-B107		6	0	
LEAD INTEGRITY	JESD22-B105, COND B		6	0	
		Total:		**0**	

STORAGE LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	150C	1000 HRS	77	0	
		Total:		**0**	

TEMPERATURE CYCLE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	-55C TO 125C	1000 CYS	77	0	
		Total:		**0**	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	85/85, 5.5 VOLTS	1000 HRS	82	0	
		Total:		**0**	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
MOISTURE SOAK	85 C/85% R.H.	1000 HRS	77	0	
		Total:		**0**	

FAILURE RATE: **MTTF (YRS):** **27848** **FITS:** **4.1**

DEVICE HOURS: **223530606** **FAILS:** **0**