DALLAS SEMICONDUCTOR MAXIM

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PACKAGE RELIABILITY REPORT
FOR

DS2761, Flip Chip RDL, RoHS Compliant Assembly

Dallas Semiconductor

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Conclusion:

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

DS2761, Flip Chip RDL, RoHS Compliant Assembly

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): 9048 FITS: 12.6

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:	Dallas-8"
Pin Count:	14
Package Type:	Flip Chip, RDL, underfill, resistor (RoHS)
Body Size:	60
Mold Compound:	?
Lead Frame:	95Pb:5Sn Solder
Lead Finsh:	High Pb Ball
Die Attach:	Underfill FP4527, Dexter Hysol
Bond Wire / Size:	/
Flammability:	UL 94-V0
Theta JA:	
Theta JC:	
Moisture Sensitivity (JEDEC J-STD20A)	Level 1
Date Code Range:	0513 to 0513

DATE CODE: 0513 **LOT NUMBER:** VW451574ABB

OPERATING LIFE

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

STORAGE LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	125C	1000 HRS	77	0	
		Total:		**0**	

TEMPERATURE CYCLE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	-40 TO 85C	1000 CYS	77	0	
TEMP CYCLE, SLOW	-40C 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#
AUTOCLAVE	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
		Total:		**0**	

FAILURE RATE: **MTTF (YRS): 9048** **FITS: 12.6**