

RELIABILITY MONITOR REPORT  
FOR

**CSP Package**

**Dallas Semiconductor**

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Dallas, TX 75244-3292

This Report was prepared by  
Dallas Semiconductor Reliability Engineering

**Summary:**

The data in the tables that follow was generated as the result of an on-going Package Reliability Monitor. The assemblies covered by this package monitor are:

ASSY SITE	PINS	PACKAGE		
Dallas-8"	4	CSP20, RDL	Dallas-8"	6 CSP20, RDL
Dallas-8"	6	CSP20, RDL (Hi Pb)	Dallas-8"	6 CSP20, RDL (Pb-Free)

The calculated failure rate for this assembly is:

**FAILURE RATE:**                      **MTTF (YRS): 18801**                      **FITS: 6.1**

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. 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. The reliability data section includes the latest data available. This report covers data between 10/1/2005 and 9/30/2006.

**Assembly Information:**

Package Type: CSP RDL (Solder Bump) (Pb-Free) 3x3 Ay x 0.71 mm DNP  
 Flammability: UL 94-V0  
 Moisture Sensitivity (JEDEC J-STD20A) Level 1  
 Date Code Range: 0634 to 0634

**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0634	DS2431	-40C TO +125C	1500 CYS	80	0	
TEMP CYCLE, SLOW	0634	DS2431	-40C TO +125C	1500 CYS	80	0	
TEMP CYCLE	0634	DS2431	-40C TO +125C	1000 CYS	80	0	
TEMP CYCLE, SLOW	0634	DS2431	-40C TO +125C	1500 CYS	80	0	
<b>Total:</b>						<b>0</b>	

**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0634	DS2431	85/85, 5.5 VOLTS	1000 HRS	80	0	
BIASED MOISTURE	0634	DS2431	85/85, 5.5 VOLTS	1000 HRS	80	0	
<b>Total:</b>						<b>0</b>	

**Assembly Information:**

Package Type: CSP20 (Hi-Pb) 3x3 Ay x 0.71 mm DNP  
 Flammability: UL 94-V0  
 Moisture Sensitivity (JEDEC J-STD20A) Level 1  
 Date Code Range: 0638 to 0639

**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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HIGH TEMP REVERSE BIAS	0639	DS2431	125C, 5.25 VOLTS	1000 HRS	80	0
HIGH TEMP REVERSE BIAS	0639	DS2431	125C, 5.25 VOLTS	1000 HRS	80	0
<b>Total:</b>						<b>0</b>

**PRECONDITIONING LEVEL 1**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0638	DS2431	125C	24 HRS	154		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	154		
CONVECTION REFLOW			235C +5/-0C	3 PASS	154	0	
<b>Total:</b>						<b>0</b>	

**STORAGE LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0638	DS2431	150C	1000 HRS	77	0	
<b>Total:</b>						<b>0</b>	

**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE, SLOW	0638	DS2431	-40C TO +125C	1000 CYS	77	0	
TEMP CYCLE, SLOW	0639	DS2431	-40C TO +125C	1000 CYS	80	0	
TEMP CYCLE, SLOW	0639	DS2431	-40C TO +125C	1500 CYS	80	0	
<b>Total:</b>						<b>0</b>	

**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0639	DS2431	85/85, 5.5 VOLTS	1000 HRS	80	0	
BIASED MOISTURE	0639	DS2431	85/85, 5.5 VOLTS	1000 HRS	80	0	
<b>Total:</b>						<b>0</b>	

**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0638	DS2431	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
<b>Total:</b>						<b>0</b>	

**FAILURE RATE: MTTF (YRS): 18801 FITS: 6.1**