

RELIABILITY MONITOR REPORT  
FOR

**TSOC Package**

**Dallas Semiconductor**

4401 South Beltwood Parkway  
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		
Hana	6	TSOC	Hana	6 TSOC (Pb-Free)
OSEP	6	TSOC	OSEP	6 TSOC (Pb-Free)

The calculated failure rate for this assembly is:

**FAILURE RATE:**                      **MTTF (YRS): 5288**                      **FITS: 21.6**

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. 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 04/01/2005 and 03/31/2006 .

**Assembly Information:**

Package Type:                      TSOC 150  
 Flammability:                      UL 94-V0  
 Moisture Sensitivity  
 (JEDEC J-STD20A)                      Level 1  
 Date Code Range:                      0512      to      0521

**PACKAGE TESTS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
SOLDERABILITY (Sn/Pb)	0512	DS2430	JESD22-B102, COND C		3	0	
SOLDERABILITY (Sn/Pb)	0521	DS2430	JESD22-B102, COND C		15	0	
<b>Total:</b>						<b>0</b>	

**Assembly Information:**

Package Type:                      TSOC (Pb-Free) 150  
 Flammability:                      UL 94-V0  
 Moisture Sensitivity  
 (JEDEC J-STD20A)                      Level 1  
 Date Code Range:                      0512      to      0512

**MOISTURE SENSITIVITY LEVEL 1**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0512	DS2430	J-STD-020		8	0	
STORAGE LIFE			125C	24 HRS	8		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	8		
CONVECTION REFLOW			260C +/-5C	3 PASS	8	0	
EXTERNAL VISUAL			J-STD-020		8	0	
PRECONDITION U/S			J-STD-020		8	0	
ULTRASOUND	0512	DS2430	J-STD-020		8	0	
STORAGE LIFE			125C	24 HRS	8		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	8		

CONVECTION REFLOW	0512	DS2430	260C +/-5C	3	PASS	8	0
EXTERNAL VISUAL			J-STD-020			8	0
PRECONDITION U/S			J-STD-020			8	0
<b>Total:</b>						<b>0</b>	<b>0</b>

### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0512	DS2430	125C, 6.0 VOLTS	1000 HRS	45	0	
<b>Total:</b>						<b>0</b>	<b>0</b>

### PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
SOLDERABILITY (Sn/Pb)	0512	DS2430	JESD22-B102, COND C		3	0	
SOLDERABILITY (Pb-Free)			JESD22-B102, COND C		3	0	
X-RAY	0512	DS2430	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	
SOLDERABILITY (Sn/Pb)	0512	DS2430	JESD22-B102, COND C		3	0	
SOLDERABILITY (Pb-Free)			JESD22-B102, COND C		3	0	
X-RAY	0512	DS2430	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	
<b>Total:</b>						<b>0</b>	<b>0</b>

### PRECONDITIONING LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0512	DS2430	125C	24 HRS	321		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	321		
CONVECTION REFLOW			260C +/-5C	3 PASS	321	0	
STORAGE LIFE	0512	DS2430	125C	24 HRS	321		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	321		
CONVECTION REFLOW			260C +/-5C	3 PASS	321	0	
<b>Total:</b>						<b>0</b>	<b>0</b>

### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0512	DS2430	150C	1000 HRS	77	0	
STORAGE LIFE	0512	DS2430	150C	1000 HRS	77	0	
<b>Total:</b>						<b>0</b>	<b>0</b>

### TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0512	DS2430	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0512	DS2430	-55C TO 125C	1000 CYS	77	0	
<b>Total:</b>						<b>0</b>	<b>0</b>

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**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0512	DS2430	85/85, 5.5 VOLTS	1000 HRS	45	0	
BIASED MOISTURE	0512	DS2430	85/85, 5.5 VOLTS	1000 HRS	45	0	
				<b>Total:</b>		<b>0</b>	

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0512	DS2430	121C, 2 ATM STEAM, UNBIASED	168 HRS	75	0	
AUTOCLAVE	0512	DS2430	121C, 2 ATM STEAM, UNBIASED	168 HRS	76	0	
				<b>Total:</b>		<b>0</b>	

**FAILURE RATE:****MTTF (YRS): 5288****FITS: 21.6**