

RELIABILITY MONITOR REPORT
FOR

SOT 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			
Carsem	3	SOT223	Carsem	3	SOT23
Carsem	5	SOT23	Carsem	8	SOT23
Carsem	3	SOT23 (Pb-Free)	Carsem	5	SOT23 (Pb-Free)
Fastech	3	SOT23	Fastech	5	SOT23
Hana	3	SOT223	Hana	3	SOT223 (Pb-Free)
ISPL (ATEC, PI)	3	SOT23	ISPL (ATEC, PI)	5	SOT23
ISPL (ATEC, PI)	3	SOT23 (Pb-Free)	ISPL (ATEC, PI)	5	SOT23 (Pb-Free)
ISPL (ATEC, PI)	3	SOT23 ATEC	NSEB	3	SOT23
NSEB	5	SOT23	NSEB	3	SOT23 (Pb-Free)
NSEB	5	SOT23 (Pb-Free)	NSEB	8	SOT23 (Pb-Free)

The calculated failure rate for this assembly is:

FAILURE RATE: **MTTF (YRS): 40891** **FITS: 2.8**

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 7/1/04 and 6/30/05 .

Assembly Information:

Package Type: SOT223 140 mil
 Flammability: UL 94-V0
 Moisture Sensitivity
 (JEDEC J-STD20A) Level 1
 Date Code Range: 0421 to 0444

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0421	DS1233	125C, 5.5 VOLTS	1000 HRS	61	0	
HIGH TEMP OP LIFE	0436	DS1233	125C, 5.5 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0444	DS1233	125C, 5.5 VOLTS	500 HRS	80	0	
Total:						0	

PRECONDITIONING LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0421	DS1233	J-STD-020		4	0	
STORAGE LIFE	0421	DS1233	125C	24 HRS	196		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	196		
CONVECTION REFLOW			235C +/-0C	3 PASS	196	0	
PRECONDITION U/S	0421	DS1233	J-STD-020		4	0	
ULTRASOUND	0436	DS1233	J-STD-020		241	0	
STORAGE LIFE	0436	DS1233	125C	24 HRS	241	0	

MOISTURE SOAK	0436	DS1233	85 C/85% R.H.	168	HRS	241	0
CONVECTION REFLOW			235C +5/-0C	3	PASS	241	0
PRECONDITION U/S	0436	DS1233	J-STD-020			4	0
ULTRASOUND	0444	DS1233	J-STD-020			241	
STORAGE LIFE	0444	DS1233	125C	24	HRS	241	
MOISTURE SOAK			85 C/85% R.H.	168	HRS	241	
CONVECTION REFLOW			235C +5/-0C	3	PASS	241	0
PRECONDITION U/S	0444	DS1233	J-STD-020			4	
Total:							0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0421	DS1233	-55C TO 125C	1000	CYS	35	0
TEMP CYCLE	0436	DS1233	-55C TO 125C	1000	CYS	40	0
TEMP CYCLE	0444	DS1233	-55C TO 125C	500	CYS	40	0
Total:							0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST	0421	DS1233	130C, 85%R.H.,5.5V	96	HRS	61	0
HAST	0436	DS1233	130C, 85%R.H.,5.5V	96	HRS	77	0
HAST	0444	DS1233	130C, 85%R.H.,5.5V	96	HRS	77	0
Total:							0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0421	DS1233	121C, 2 ATM STEAM, UNBIASED	168	HRS	35	0
AUTOCLAVE	0436	DS1233	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0
AUTOCLAVE	0444	DS1233	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0
Total:							0

Assembly Information:

Package Type: SOT223 (Pb-Free) 140 mil
 Flammability: UL 94-V0
 Moisture Sensitivity (JEDEC J-STD20A) Level 1
 Date Code Range: 0430 to 0430

MOISTURE SENSITIVITY LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
EXTERNAL VISUAL	0430	DS1233	J-STD-020, 6.1a			8	0
ULTRASOUND			J-STD-020			8	0
STORAGE LIFE			125C	24	HRS	8	
MOISTURE SOAK			85 C/85% R.H.	168	HRS	8	
CONVECTION REFLOW			260C +0/-5C	3	PASS	8	0
EXTERNAL VISUAL			J-STD-020, 6.1a			8	0
PRECONDITION U/S			J-STD-020			8	0

EXTERNAL VISUAL	0430	DS1233	J-STD-020, 6.1a			8	0
ULTRASOUND			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, 6.1a			8	0
PRECONDITION U/S			J-STD-020			8	0
EXTERNAL VISUAL	0430	DS1233	J-STD-020, 6.1a			8	0
ULTRASOUND			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, 6.1a			8	0
PRECONDITION U/S			J-STD-020			8	0
Total:						0	0

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0430	DS1233	125C, 5.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0430	DS1233	125C, 5.5 VOLTS	1000 HRS	45	0	
HIGH TEMP OP LIFE	0430	DS1233	125C, 5.5 VOLTS	1000 HRS	45	0	
Total:						0	0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
SOLDERABILITY (Sn/Pb)	0430	DS1233	JESD22-B102, COND C		3	0	
X-RAY	0430	DS1233	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)	0430	DS1233	JESD22-B102, COND C		3	0	
X-RAY	0430	DS1233	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)	0430	DS1233	JESD22-B102, COND C		3	0	
X-RAY	0430	DS1233	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	0

PRECONDITIONING LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0430	DS1233	125C	24 HRS	385		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	385		
CONVECTION REFLOW			260C +/-5C	3 PASS	385	0	
STORAGE LIFE	0430	DS1233	125C	24 HRS	385		

MOISTURE SOAK	0430	DS1233	85 C/85% R.H.	168	HRS	385	
CONVECTION REFLOW			260C +0/-5C	3	PASS	385	0
STORAGE LIFE	0430	DS1233	125C	24	HRS	385	
MOISTURE SOAK			85 C/85% R.H.	168	HRS	385	
CONVECTION REFLOW			260C +0/-5C	3	PASS	385	0
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0430	DS1233	150C	1000 HRS	77	0	
STORAGE LIFE	0430	DS1233	150C	1000 HRS	77	0	
STORAGE LIFE	0430	DS1233	150C	1000 HRS	77	0	
Total:						0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0430	DS1233	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0430	DS1233	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0430	DS1233	-55C TO 125C	1000 CYS	77	0	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST	0430	DS1233	130C, 85%R.H.,5.5V	96 HRS	77	0	
HAST	0430	DS1233	130C, 85%R.H.,5.5V	96 HRS	76	0	
HAST	0430	DS1233	130C, 85%R.H.,5.5V	96 HRS	77	0	
Total:						0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0430	DS1233	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0430	DS1233	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0430	DS1233	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
Total:						0	

FAILURE RATE: **MTTF (YRS): 40891** **FITS: 2.8**