

RELIABILITY MONITOR REPORT
FOR

SOIC 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		
ATK (Amkor, K)	14	SOIC	ATK (Amkor, K)	16 SOIC
ATK (Amkor, K)	20	SOIC	ATK (Amkor, K)	24 SOIC
ATK (Amkor, K)	28	SOIC	ATK (Amkor, K)	8 SOIC
ATP (Amkor, PI)	14	SOIC	ATP (Amkor, PI)	16 SOIC
ATP (Amkor, PI)	20	SOIC	ATP (Amkor, PI)	24 SOIC
ATP (Amkor, PI)	28	SOIC	ATP (Amkor, PI)	8 SOIC
ATP (Amkor, PI)	16	SOIC w/CRYSTAL	Carsem	14 SOIC
Carsem	16	SOIC	Carsem	20 SOIC
Carsem	24	SOIC	Carsem	28 SOIC
Carsem	8	SOIC	Hana	8 SOIC
NSEB	8	SOIC	OSEP	14 SOIC
OSEP	16	SOIC	OSEP	20 SOIC
OSEP	24	SOIC	OSEP	28 SOIC
OSEP	8	SOIC		

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 121064 FITS: 0.9

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 10/1/03 and 9/30/04 .

Assembly Information:

Package Type: SOIC 150 mil
 Flammability: UL 94-V0
 Moisture Sensitivity Level 1
 (JEDEC J-STD20A)
 Date Code Range: 0333 to 0435

MOISTURE SENSITIVITY LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0409	DS2129	J-STD-020		8	0	
STORAGE LIFE			125C	24 HRS	8		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	8		
CONVECTION REFLOW			235C +5/-0C	3 PASS	8	0	
EXTERNAL VISUAL			J-STD-020, 6.1a		8	0	
PRECONDITION U/S			J-STD-020		8	0	
Total:						0	

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0333	DS1100	125C, 5.5 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0345	DS2502	125C, 6.0 VOLTS	1000 HRS	77	0	

HIGH TEMP OP LIFE	0345	DS1621	125C, 5.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0345	DS1803	125C, 5.25 VOLTS	1000	HRS	80	0
HIGH TEMP OP LIFE	0348	DS1086L	125C, 3.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0403	DS1232	125C, 5.5 VOLTS	1000	HRS	80	0
HIGH TEMP OP LIFE	0403	DS1803	125C, 5.25 VOLTS	1000	HRS	75	0
HIGH TEMP OP LIFE	0406	DS1232	125C, 5.5 VOLTS	500	HRS	80	0
HIGH TEMP OP LIFE	0408	DS2502	125C, 6.0 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0409	DS2505	125C, 6.0 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0409	DS2129	125C, 5.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0411	DS2431	125C, 5.25 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0414	DS4302	125C, 5.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0426	DS1310	125C, 3.6 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0428	DS2482-100	125C, 5.5 VOLTS	1000	HRS	45	0
HIGH TEMP OP LIFE	0429	DS1232	125C, 5.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0432	DS28E04-100	125C, 5.25 VOLTS	192	HRS	77	0
HIGH TEMP OP LIFE	0435	DS620	125C, 3.5 VOLTS	192	HRS	77	0
Total:						0	0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
SOLDERABILITY	0409	DS2129	JESD22-B102		3	0	
X-RAY	0409	DS2129	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 TEST CONDITION B		6	0	
Total:						0	0

PRECONDITIONING LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0333	DS1100	J-STD-020		4	0	
STORAGE LIFE	0333	DS1100	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	0333	DS1100	J-STD-020		4	0	
ULTRASOUND	0345	DS1621	J-STD-020		4	0	
STORAGE LIFE	0345	DS1621	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	0345	DS1621	J-STD-020		4	0	
ULTRASOUND	0345	DS1803	J-STD-020		4	0	
STORAGE LIFE	0345	DS1803	125C	24	HRS	241	
MOISTURE SOAK			85 C/85% R.H.	168	HRS	241	

CONVECTION REFLOW	0345	DS1803	235C +5/-0C	3	PASS	241	0
PRECONDITION U/S	0345	DS1803	J-STD-020			3	0
STORAGE LIFE	0348	DS1086L	125C	24	HRS	400	
MOISTURE SOAK			85 C/85% R.H.	168	HRS	400	
CONVECTION REFLOW			235C +5/-0C	3	PASS	400	0
ULTRASOUND	0403	DS1232	J-STD-020			4	0
STORAGE LIFE	0403	DS1232	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	0403	DS1232	J-STD-020			4	0
ULTRASOUND	0403	DS1803	J-STD-020			4	0
STORAGE LIFE	0403	DS1803	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	0403	DS1803	J-STD-020			3	0
ULTRASOUND	0406	DS1232	J-STD-020			4	0
STORAGE LIFE	0406	DS1232	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	0406	DS1232	J-STD-020			4	0
STORAGE LIFE	0409	DS2129	125C	24	HRS	199	
MOISTURE SOAK			85 C/85% R.H.	168	HRS	199	
CONVECTION REFLOW			235C +5/-0C	3	PASS	199	0
Total:						0	0

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0345	DS2502	150C	1000 HRS	77	0	
STORAGE LIFE	0345	DS1621	150C	1000 HRS	43	0	
STORAGE LIFE	0408	DS2502	150C	1000 HRS	77	0	
STORAGE LIFE	0409	DS2505	150C	1000 HRS	77	0	
Total:						0	0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0333	DS1100	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0345	DS2502	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0345	DS1621	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0345	DS1803	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0348	DS1086L	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0403	DS1232	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0403	DS1803	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0406	DS1232	-55C TO 125C	1000 CYS	40	0	

TEMP CYCLE	0409	DS2129	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0411	DS2431	-55C TO 125C	1000	CYS	77	0
TEMP CYCLE	0429	DS1232	-55C TO 125C	1000	CYS	77	0
Total:							0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0333	DS1100	85/85, 5.5 VOLTS	1000	HRS	77	0
BIASED MOISTURE	0345	DS2502	85/85, 5.5 VOLTS	1000	HRS	77	0
BIASED MOISTURE	0345	DS1621	85/85, 5.5 VOLTS	1000	HRS	70	0
BIASED MOISTURE	0345	DS1803	85/85, 5.5 VOLTS	1000	HRS	77	0
HAST	0348	DS1086L	130C, 85%R.H.,5.5V	96	HRS	77	0
BIASED MOISTURE	0403	DS1803	85/85, 5.5 VOLTS	1000	HRS	70	0
HAST	0411	DS2431	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	0333	DS1100	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0
AUTOCLAVE	0345	DS2502	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0345	DS1803	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0
AUTOCLAVE	0348	DS1086L	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0403	DS1232	121C, 2 ATM STEAM, UNBIASED	96	HRS	40	0
AUTOCLAVE	0403	DS1803	121C, 2 ATM STEAM, UNBIASED	168	HRS	40	0
AUTOCLAVE	0409	DS2129	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0411	DS2431	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
AUTOCLAVE	0429	DS1232	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
Total:							0

Assembly Information:

Package Type: SOIC 208 mil
 Flammability: UL 94-V0
 Moisture Sensitivity (JEDEC J-STD20A) Level 1
 Date Code Range: 0334 to 0430

MOISTURE SENSITIVITY LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0430	DS1624	J-STD-020		22	0	
STORAGE LIFE			125C	24	HRS	22	
MOISTURE SOAK			85 C/85% R.H.	168	HRS	22	
CONVECTION REFLOW			235C +5/-0C	3	PASS	22	0
EXTERNAL VISUAL			J-STD-020, 6.1a		22	0	
Total:							0

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0334	DS1620	125C, 5.5 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0350	DS1620	125C, 5.5 VOLTS	1000 HRS	80	0	
HIGH TEMP OP LIFE	0430	DS1624	125C, 5.5 VOLTS	1000 HRS	77	0	
					Total:	0	

PRECONDITIONING LEVEL 1

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0334	DS1620	J-STD-020		4	0	
STORAGE LIFE	0334	DS1620	125C	24 HRS	244		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	244		
CONVECTION REFLOW			235C +5/-0C	3 PASS	244	0	
PRECONDITION U/S	0334	DS1620	J-STD-020		4	0	
ULTRASOUND	0350	DS1620	J-STD-020		4	0	
STORAGE LIFE	0350	DS1620	125C	24 HRS	244		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	244		
CONVECTION REFLOW			235C +5/-0C	3 PASS	244	0	
PRECONDITION U/S	0350	DS1620	J-STD-020		4	0	
STORAGE LIFE	0430	DS1624	125C	24 HRS	385		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	385		
CONVECTION REFLOW			235C +5/-0C	3 PASS	385	1	30027057
					Total:	1	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0334	DS1620	150C	1000 HRS	50	0	
STORAGE LIFE	0350	DS1620	150C	1000 HRS	50	0	
STORAGE LIFE	0430	DS1624	150C	1000 HRS	77	0	
					Total:	0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0334	DS1620	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0350	DS1620	-55C TO 125C	1000 CYS	40	0	
TEMP CYCLE	0430	DS1624	-55C TO 125C	1000 CYS	77	0	
					Total:	0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0334	DS1620	85/85, 5.5 VOLTS	1000 HRS	70	0	
BIASED MOISTURE	0350	DS1620	85/85, 5.5 VOLTS	1000 HRS	70	0	
HAST	0430	DS1624	130C, 85%R.H.,5.5V	96 HRS	76	0	
					Total:	0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0430	DS1624	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
				Total:		0	

Assembly Information:

Package Type: SOIC 300 mil
Flammability: UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A) Level 1
Date Code Range: 0340 to 0427

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0340	DS2422	125C, 5.5V (PSA) & 3.0V (PSB)	1000 HRS	77	0	
HIGH TEMP OP LIFE	0403	DS12R885-5	125C, 5.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0427	DS2422	125C, 5.5V (PSA) & 3.0V (PSB)	1000 HRS	77	0	
				Total:		0	

FAILURE RATE: MTTF (YRS): 121064 FITS: 0.9