

RELIABILITY MONITOR REPORT
FOR

PDIP 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		
ATP (Amkor, PI)	14	PDIP	ATP (Amkor, PI)	16 PDIP
ATP (Amkor, PI)	18	PDIP	ATP (Amkor, PI)	20 PDIP
ATP (Amkor, PI)	24	PDIP	ATP (Amkor, PI)	28 PDIP
ATP (Amkor, PI)	40	PDIP	ATP (Amkor, PI)	8 PDIP
ATP (Amkor, PI)	14	PDIP (Pb-Free)	ATP (Amkor, PI)	16 PDIP (Pb-Free)
ATP (Amkor, PI)	20	PDIP (Pb-Free)	ATP (Amkor, PI)	24 PDIP (Pb-Free)
ATP (Amkor, PI)	28	PDIP (Pb-Free)	ATP (Amkor, PI)	40 PDIP (Pb-Free)
ATP (Amkor, PI)	8	PDIP (Pb-Free)	Carsem	14 PDIP
Carsem	16	PDIP	Carsem	24 PDIP
Carsem	14	PDIP (Pb-Free)	ISPL (ATEC, PI)	24 PDIP
ISPL (ATEC, PI)	28	PDIP	ISPL (ATEC, PI)	40 PDIP
ISPL (ATEC, PI)	24	PDIP (Pb-Free)	ISPL (ATEC, PI)	40 PDIP (Pb-Free)
NSEB	8	PDIP	NSEB	8 PDIP (Pb-Free)
OSEP	14	PDIP	OSEP	16 PDIP
OSEP	8	PDIP	OSEP	14 PDIP (Pb-Free)
OSEP	16	PDIP (Pb-Free)	OSEP	8 PDIP (Pb-Free)

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 74262 FITS: 1.5

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: PDIP 300 mil
 Flammability: UL 94-V0
 Moisture Sensitivity NA
 (JEDEC J-STD20A)
 Date Code Range: 0447 to 0447

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0447	DS1302	125C, 5.5 VOLTS	1000 HRS	80	0	
Total:						0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0447	DS1302	-55C TO 125C	1000 CYS	45	0	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0447	DS1302	85/85, 5.5 VOLTS	1000 HRS	77	0	

Total: 0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0447	DS1302	121C, 2 ATM STEAM, UNBIASED	96	HRS	45	0
						Total:	0

Assembly Information:

Package Type: PDIP 600 mil
Flammability: UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A) NA
Date Code Range: 0435 to 0450

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0435	DS80C320	125C, 5.5 VOLTS	1000	HRS	77	0
HIGH TEMP OP LIFE	0450	DS80C320	125C, 5.5 VOLTS	1000	HRS	77	0
						Total:	0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0435	DS80C320	J-STD-020		244	0	
ULTRASOUND	0450	DS80C320	J-STD-020		244	0	
						Total:	0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0435	DS80C320	-55C TO 125C	1000	CYS	45	0
TEMP CYCLE	0450	DS80C320	-55C TO 125C	1000	CYS	45	0
						Total:	0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0435	DS80C320	85/85, 5.5 VOLTS	1000	HRS	77	0
BIASED MOISTURE	0450	DS80C320	85/85, 5.5 VOLTS	1000	HRS	77	4 30038863
						Total:	4

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0435	DS80C320	121C, 2 ATM STEAM, UNBIASED	96	HRS	45	0
AUTOCLAVE	0450	DS80C320	121C, 2 ATM STEAM, UNBIASED	96	HRS	45	0
						Total:	0

Assembly Information:

Package Type: PDIP (Pb-Free) 300 mil
Flammability: UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A) NA
Date Code Range: 0442 to 0514

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0512	DS1669	125C, 5.5 VOLTS	1000 HRS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
HIGH TEMP OP LIFE	0513	DS1669	125C, 5.5 VOLTS	1000 HRS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
HIGH TEMP OP LIFE	0514	DS1669	125C, 5.5 VOLTS	1000 HRS	45	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
Total:						0	

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
PLATING THICKNESS	0442	DS1236	>300 U"		10	0	
LEAD INTEGRITY			JESD22-B105, COND B		10	0	
SOLDERABILITY (Sn/Pb)			JESD22-B102, COND C		10	0	
SOLDERABILITY (Pb-Free)			JESD22-B102, COND C		10	0	
SOLDER HEAT	0442	DS1236	260 C, 10SEC	1 PASS	10	0	
SOLDERABILITY (Pb-Free)	0512	DS1669	JESD22-B102, COND C		3	0	
SOLDERABILITY (Sn/Pb)			JESD22-B102, COND C		3	0	
X-RAY	0512	DS1669	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 (Pb-Free)	0513	DS1669	JESD22-B102, COND C		3	0	
SOLDERABILITY (Sn/Pb)			JESD22-B102, COND C		3	0	
X-RAY	0513	DS1669	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 (Pb-Free)	0514	DS1669	JESD22-B102, COND C		3	0	
SOLDERABILITY (Sn/Pb)			JESD22-B102, COND C		3	0	
X-RAY	0514	DS1669	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	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0512	DS1669	150C	1000 HRS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
STORAGE LIFE	0513	DS1669	150C	1000 HRS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
STORAGE LIFE	0514	DS1669	150C	1000 HRS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
					Total:	0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0512	DS1669	-55C TO 125C	1000 CYS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
TEMP CYCLE	0513	DS1669	-55C TO 125C	1000 CYS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
TEMP CYCLE	0514	DS1669	-55C TO 125C	1000 CYS	76	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
					Total:	0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0512	DS1669	85/85, 5.5 VOLTS	1000 HRS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
BIASED MOISTURE	0513	DS1669	85/85, 5.5 VOLTS	1000 HRS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
BIASED MOISTURE	0514	DS1669	85/85, 5.5 VOLTS	1000 HRS	45	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
					Total:	0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0512	DS1669	121C, 2 ATM STEAM, UNBIASED	168 HRS	82	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
AUTOCLAVE	0513	DS1669	121C, 2 ATM STEAM, UNBIASED	168 HRS	83	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
AUTOCLAVE	0514	DS1669	121C, 2 ATM STEAM, UNBIASED	168 HRS	66	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
					Total:	0	

Assembly Information:

Package Type: PDIP (Pb-Free) 600 mil
Flammability: UL 94-V0
Moisture Sensitivity (JEDEC J-STD20A) NA
Date Code Range: 0432 to 0527

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0432	DS12885	125C, 5.0 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0432	DS12885	125C, 5.0 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0433	DS80C320	125C, 5.5 VOLTS	1000 HRS	45	0	
					Total:	0	

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
SOLDERABILITY (Sn/Pb)	0432	DS12885	JESD22-B102, COND C		3	0	
X-RAY	0432	DS12885	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)	0432	DS12885	JESD22-B102, COND C		3	0	
X-RAY	0432	DS12885	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	
X-RAY	0433	DS80C320	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)	0527	DS80C320	JESD22-B102, COND C		10	0	
SOLDERABILITY (Pb-Free)	0527	DS80C320	JESD22-B102, COND C		10	0	
					Total:	0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0432	DS12885	150C	1000 HRS	77	0	
STORAGE LIFE	0432	DS12885	150C	1000 HRS	77	0	
STORAGE LIFE	0433	DS80C320	150C	1000 HRS	55	0	
					Total:	0	

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0432	DS12885	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0432	DS12885	-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0433	DS80C320	-55C TO 125C	1000 CYS	60	0	
					Total:	0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0432	DS12885	85/85, 5.5 VOLTS	1000 HRS	77	0	

BIASED MOISTURE	0432	DS12885	85/85, 5.5 VOLTS	1000 HRS	77	0
BIASED MOISTURE	0433	DS80C320	85/85, 5.5 VOLTS	1000 HRS	45	0
Total:					0	0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0432	DS12885	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0432	DS12885	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
AUTOCLAVE	0433	DS80C320	121C, 2 ATM STEAM, UNBIASED	168 HRS	58	0	
Total:					0	0	

FAILURE RATE: **MTTF (YRS): 74262** **FITS: 1.5**