



04/27/2005

RELIABILITY MONITOR REPORT
FOR

PLCC 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)	32	PLCC	ATK (Amkor, K)	68 PLCC
ATP (Amkor, PI)	28	PLCC	ATP (Amkor, PI)	32 PLCC
ATP (Amkor, PI)	44	PLCC	ATP (Amkor, PI)	52 PLCC
ATP (Amkor, PI)	68	PLCC	ATP (Amkor, PI)	28 PLCC (Pb-Free)
OSEP	28	PLCC	OSEP	44 PLCC
OSEP	52	PLCC	OSEP	44 PLCC (Pb-Free)

The calculated failure rate for this assembly is:

FAILURE RATE: MTTF (YRS): 30759 FITS: 3.7

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 04/01/2004 and 03/31/2005.

Assembly Information:

Package Type: PLCC 650 mil
 Flammability: UL 94-V0
 Moisture Sensitivity
 (JEDEC J-STD20A) Level 3
 Date Code Range: 0440 to 0444

OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0440	DS87C520	125C, 5.5 VOLTS	12 HRS	1000	0	
HIGH TEMP OP LIFE	0440	DS87C520	125C, 5.5 VOLTS	12 HRS	1000	0	
HIGH TEMP OP LIFE	0440	DS87C520	125C, 5.5 VOLTS	12 HRS	806	0	
HIGH TEMP OP LIFE	0440	DS87C520	125C, 5.5 VOLTS	988 HRS	75	0	
Total:						0	

PRECONDITIONING LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0444	DS80C320	J-STD-020		241	0	
STORAGE LIFE	0444	DS80C320	125C	24 HRS	241		
MOISTURE SOAK			30C/60% R.H.	192 HRS	241		
CONVECTION REFLOW			220C +/-0C	3 PASS	241	0	
PRECONDITION U/S	0444	DS80C320	J-STD-020		4	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0440	DS87C520	150C	1000 HRS	76	0	

STORAGE LIFE	0444	DS80C320	150C	500	HRS	50		
							Total:	0

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO	
TEMP CYCLE	0440	DS87C520	-55C TO 125C	1000	CYS	76	0	
TEMP CYCLE	0444	DS80C320	-55C TO 125C	500	CYS	50	0	
							Total:	0

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO	
HAST	0440	DS87C520	130C, 85%R.H.,5.5V	96	HRS	75	0	
HAST	0444	DS80C320	130C, 85%R.H.,5.5V	96	HRS	60	0	
							Total:	0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO	
AUTOCLAVE	0440	DS87C520	121C, 2 ATM STEAM, UNBIASED	168	HRS	76	0	
							Total:	0

Assembly Information:

Package Type: PLCC (Pb-Free)1 650 mil
 Flammability: UL 94-V0
 Moisture Sensitivity (JEDEC J-STD20A) Level 3
 Date Code Range: 0435 to 0435

MOISTURE SENSITIVITY LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO	
EXTERNAL VISUAL	0435	DS80C320	J-STD-020, 6.1a		8	0		
ULTRASOUND			J-STD-020		8	0		
STORAGE LIFE			125C	24	HRS	8		
MOISTURE SOAK			30C/60% R.H.	240	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	0435	DS80C320	J-STD-020, 6.1a		8	0		
ULTRASOUND			J-STD-020		8	0		
STORAGE LIFE			125C	24	HRS	8		
MOISTURE SOAK			30C/60% R.H.	240	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

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
VISUAL INSPECTION			WHISKERS < 50uM		3	0	

HIGH TEMP OP LIFE	0435	DS80C320	125C, 5.5 VOLTS	1000 HRS	77	0
VISUAL INSPECTION			WHISKERS < 50uM		3	0
Total:						0

PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
SOLDERABILITY (Sn/Pb)	0435	DS80C320	JESD22-B102, COND C		3	0	
X-RAY	0435	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)	0435	DS80C320	JESD22-B102, COND C		3	0	
X-RAY	0435	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	
Total:						0	

PRECONDITIONING LEVEL 3

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0435	DS80C320	125C	24 HRS	385		
MOISTURE SOAK			30C/60% R.H.	240 HRS	385		
CONVECTION REFLOW			260C +/-5C	3 PASS	385	0	
STORAGE LIFE	0435	DS80C320	125C	24 HRS	385		
MOISTURE SOAK			30C/60% R.H.	240 HRS	385		
CONVECTION REFLOW			260C +/-5C	3 PASS	385	0	
Total:						0	

STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0435	DS80C320	150C	1000 HRS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
STORAGE LIFE	0435	DS80C320	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	0435	DS80C320	-55C TO 125C	1000 CYS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
TEMP CYCLE	0435	DS80C320	-55C TO 125C	1000 CYS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	
Total:						0	

TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HAST	0435	DS80C320	130C, 85%R.H.,5.5V	96 HRS	77	0	
VISUAL INSPECTION			WHISKERS < 50uM		3	0	

HAST	0435	DS80C320	130C, 85%R.H.,5.5V	96	HRS	77	0
VISUAL INSPECTION			WHISKERS < 50uM			3	0
Total:							0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
AUTOCLAVE	0435	DS80C320	121C, 2 ATM STEAM, UNBIASED	168	HRS	77	0
VISUAL INSPECTION			WHISKERS < 50uM			3	0
AUTOCLAVE	0435	DS80C320	121C, 2 ATM STEAM, UNBIASED	168	HRS	76	0
VISUAL INSPECTION			WHISKERS < 50uM			3	0
Total:							0

FAILURE RATE: MTTF (YRS): 30759 FITS: 3.7