

RELIABILITY MONITOR REPORT  
FOR

**PDIP Package**

**Dallas Semiconductor**

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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)	18	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)	0 PDIP (Pb-Free)
ISPL (ATEC, PI)	24	PDIP (Pb-Free)	ISPL (ATEC, PI)	28 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): 59927                      FITS: 1.9**

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

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### Assembly Information:

Package Type:                      PDIP 300  
Flammability:                      UL 94-V0  
Moisture Sensitivity  
(JEDEC J-STD20A)                      NA  
Date Code Range:                      0511                      to 0511

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### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0511	DS1302	125C, 5.5 VOLTS	1000 HRS	80	0	
				<b>Total:</b>		<b>0</b>	

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### TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0511	DS1302	-55C TO 125C	1000 CYS	45	0	
				<b>Total:</b>		<b>0</b>	

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**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0511	DS1302	85/85, 5.5 VOLTS	1000 HRS	77	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	0511	DS1302	121C, 2 ATM STEAM, UNBIASED	96 HRS	45	0	
				<b>Total:</b>		<b>0</b>	

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**Assembly Information:**

Package Type: PDIP 600  
Flammability: UL 94-V0  
Moisture Sensitivity (JEDEC J-STD20A) NA  
Date Code Range: 0518 to 0547

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**OPERATING LIFE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0518	DS80C320	125C, 5.5 VOLTS	1000 HRS	77	0	
HIGH TEMP OP LIFE	0547	DS80C320	125C, 5.5 VOLTS	1000 HRS	77	0	
				<b>Total:</b>		<b>0</b>	

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**PACKAGE TESTS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
ULTRASOUND	0518	DS80C320	J-STD-020		25	0	
				<b>Total:</b>		<b>0</b>	

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**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0518	DS80C320	-55C TO 125C	1000 CYS	45	0	
TEMP CYCLE	0547	DS80C320	-55C TO 125C	1000 CYS	45	0	
				<b>Total:</b>		<b>0</b>	

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**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0518	DS80C320	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	0518	DS80C320	121C, 2 ATM STEAM, UNBIASED	168 HRS	45	0	
AUTOCLAVE	0547	DS80C320	121C, 2 ATM STEAM, UNBIASED	168 HRS	45	0	
				<b>Total:</b>		<b>0</b>	

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**Assembly Information:**

Package Type: PDIP (Pb-Free) 300  
Flammability: UL 94-V0  
Moisture Sensitivity (JEDEC J-STD20A) NA  
Date Code Range: 0512 to 0514

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**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	
<b>Total:</b>						<b>0</b>	

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**PACKAGE TESTS**

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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	
<b>Total:</b>						<b>0</b>	

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**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
<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	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	
<b>Total:</b>					<b>0</b>	<b>0</b>	

#### 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	
<b>Total:</b>					<b>0</b>	<b>0</b>	

#### 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	
<b>Total:</b>					<b>0</b>	<b>0</b>	

#### Assembly Information:

Package Type: PDIP (Pb-Free) 600  
 Flammability: UL 94-V0  
 Moisture Sensitivity (JEDEC J-STD20A) NA  
 Date Code Range: 0527 to 0549

#### OPERATING LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
HIGH TEMP OP LIFE	0549	DS80C320	125C, 5.5 VOLTS	1000 HRS	77	0	
<b>Total:</b>					<b>0</b>	<b>0</b>	

#### PACKAGE TESTS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
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SOLDERABILITY (Sn/Pb)	0527	DS80C320	JESD22-B102, COND C	10	0
SOLDERABILITY (Pb-Free)	0527	DS80C320	JESD22-B102, COND C	10	0
SOLDERABILITY (Sn/Pb)	0549	DS80C320	JESD22-B102, COND C	3	0
SOLDERABILITY (Pb-Free)			JESD22-B102, COND C	3	0
X-RAY	0549	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
<b>Total:</b>				<b>0</b>	<b>0</b>

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#### STORAGE LIFE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
STORAGE LIFE	0549	DS80C320	150C	1000 HRS	77	0	
<b>Total:</b>						<b>0</b>	

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#### TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
TEMP CYCLE	0549	DS80C320	-55C TO 125C	1000 CYS	77	0	
<b>Total:</b>						<b>0</b>	

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#### TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE CODE	TEST VEHICLE	CONDITION	READPOINT	QUANTITY	FAILS	FA NO
BIASED MOISTURE	0549	DS80C320	85/85, 5.5 VOLTS	1000 HRS	77	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	0549	DS80C320	121C, 2 ATM STEAM, UNBIASED	168 HRS	77	0	
<b>Total:</b>						<b>0</b>	

**FAILURE RATE:                    MTTF (YRS): 59927                    FITS: 1.9**