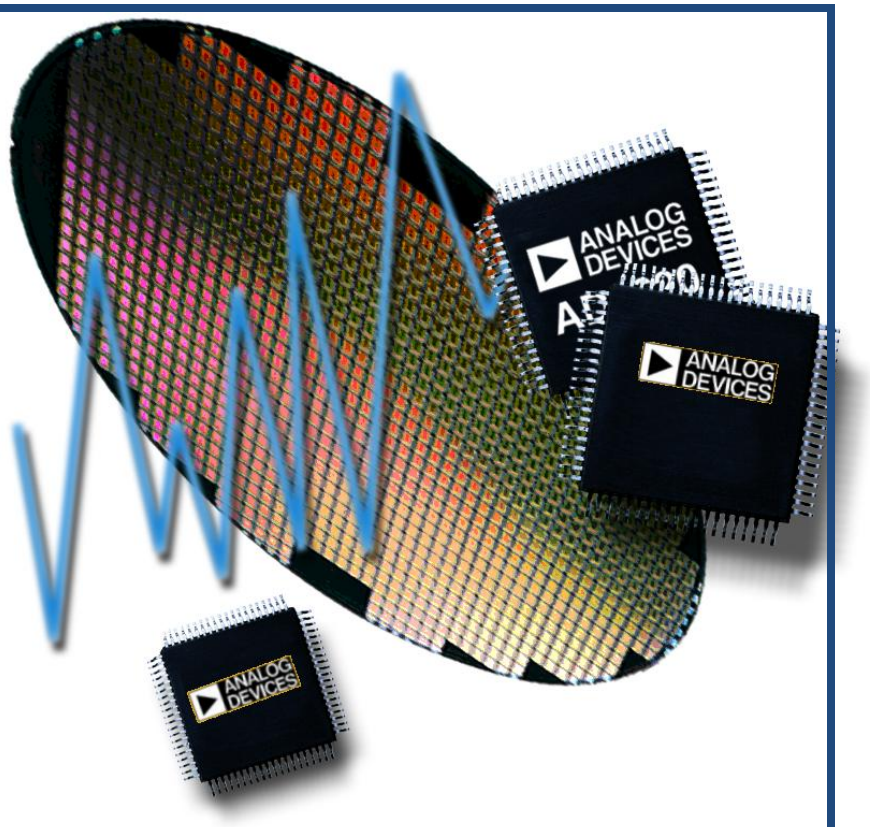

Reliability Report

Report Title: AD8629 Product Revision

Report Number: 7955

Revision: A

Date: 8 July 2009

Summary

This report documents the successful completion of the reliability qualification requirements for release of the AD8629 product in an 8-MINI_SO and an 8-SOIC_N package. The purpose of the revision was to improve the latch-up performance. The AD8629 is a wide bandwidth auto-zero amplifier featuring rail-to-rail input and output swing and low noise.

Table 1: AD8629 Product Characteristics

Die/Fab

Die ID	6498X
Die Size (mm)	1.30 x 1.56
Wafer Fabrication Site	TSMC Fab 9
Wafer Fabrication Process	0.6um, CMOS
Transistor Count	1 thousand
Passivation Layer	undoped-oxide/SiN
Bond Pad Metal Composition	AlSiCu

Package/Assembly

Available Package	8-MINI_SO	8-SOIC_N
Body Size (mm)	3.00 x 3.00 x 1.10	4.00 x 5.00 x 1.50
Assembly Location	Carsem-M	Amkor-P
Molding Compound	Sumitomo 6600H	Sumitomo 6600H
Wire Type	Gold Tanaka M3	Gold
Wire Diameter (mils)	1.00	1.00
Die Overcoat	NA	NA
Die Attach	Ablestik 84-1LMIS R4	Ablestik 84-1LMIS R4
Lead Frame Material	Copper	Copper Olin 194
Lead Finish	Tin Plate	Tin Plate
Moisture Sensitivity Level	1	1
Maximum Peak Reflow Temperature (°C)	260	260

Description / Results of Tests Performed

Tables 2 and 3 provide a description of the qualification tests conducted and the associated test results for products manufactured on the same technologies as described in Table 1. All devices were electrically tested before and after each stress. Any device that did not meet all electrical data sheet limits following stressing would be considered a valid (stress-attributable) failure unless there was conclusive evidence to indicate otherwise.

Table 2: Package Qualification Test Results

Test Name	Specification	Conditions	Device	Package	Lot #	Sample Size	Qty. Failures
Autoclave (AC)[1]	JESD22-A102	121°C 100%RH 2atm 168 hours	AD8599	Amkor-P 8-SOIC_N	939881.1	45	0
					939883.1	45	0
					939980.1	45	0
		121°C 100%RH 2atm 96 hours	AD8599		AB73284.1	77	0
			AD8667		Q6217.5	77	0
					Q6217.6	77	0
			ADA4692-2		Q7559.1	77	0
					Q7559.1	77	0
			AD8617	Carsem-M 8-MINI_SO	Q7277.1	77	0
			AD8656		Q7055.1	77	0
			AD8692		Q7248.2	77	0
					Q7248.3	77	0
					Q7248.4	77	0
			ADA4505-2		Q7200.10	77	0
					Q7200.8	77	0
					Q7200.9	77	0
			OP2177		AC80439.1	45	0
Biased HAST (HAST)[1]	JESD22-A110	130°C 85%RH 2atm, Biased 96 hours	AD8629	Amkor-P 8-SOIC_N	Q7100.5	77	0
			AD8512		R70109.1	77	0
			AD8629		Q7100.14	77	0
					Q7100.15	77	0
			AD623		AC81005.1	77	0
			AD8617	Carsem-M 8-MINI_SO	Q7277.2	77	0
			AD8656		Q7055.3	77	0
			AD8692		Q7248.8	77	0
					Q7248.9	77	0
			AD8216		Q7052.1	192	0
					Q7052.2	192	0
					Q7052.3	192	0
High Temperature Storage Life (HTSL)	JESD22-A103	150°C 1,000 hours	AD8206	Amkor-P 8-SOIC_N	Q6965.3	77	0
			AD8210		Q6106.27	77	0
					Q6106.44	77	0
			AD8512		R66760.1	77	0
			AD8599		939980.1	45	0
					AC82781.1	77	0
			AD8671		R66900.1	77	0
					R66901.1	77	0
			ADR02		Q6969.8	45	0
			AD8692	Carsem-M 8-MINI_SO	Q7248.12	77	0
					Q7248.13	77	0
			AD8617		Q7277.11	45	0
			AD8656		Q6888.14	44	0
			AD8692		Q7248.14	77	0
			ADA4505-2		Q7200.11	77	0
					Q7200.12	77	0
					Q7200.13	77	0

Test Name	Specification	Conditions	Device	Package	Lot #	Sample Size	Qty. Failures
Solder Heat Resistance (SHR)[1]	ADI-0049	See Below	AD8629	Amkor-P 8-SOIC_N	Q7955.3	30	0
				Carsem-M 8-MINI_SO	Q7955.2	30	0
Temperature Cycling (TC)[1]	JESD22-A104	-65°C / +150°C 1,000 cycles	AD8206	Amkor-P 8-SOIC_N	Q6965.4	77	0
		-65°C / +150°C 500 cycles	AD8599		AB73287.1	77	0
			AD8667		AC85402.1	45	0
					AC85403.1	45	0
			ADR02		Q6969.11	77	0
			ADR02		Q6969.19	77	0
			AD8617	Carsem-M 8-MINI_SO	Q7277.6	77	0
			AD8656		Q7055.10	45	0
			AD8692		Q7248.20	77	0
					Q7248.21	77	0
			ADA4505-2		Q7200.5	77	0
					Q7200.6	77	0
					Q7200.7	77	0
			OP2177		AC80440.1	45	0

[1] These Samples were subjected to preconditioning (per J-STD-020 Level 1) prior to the start of the stress test. Level 1 preconditioning consists of the following:

- Bake: 24 hrs @ 125ºC, Soak: Unbiased
- Soak: 168 hrs @ 85ºC, 85%RH,
- Reflow: 3 passes through an oven with a peak temperature of 260ºC.

Table 3: Process Qualification Test Results

Test Name	Specification	Conditions	Device	Fab Process	Lot #	Sample Size	Qty. Failures
Early Life Failure Rate (ELFR)	MIL-STD-883, Method 1015	125°C 48 hours	ADE7753	TSMC Fab 9 0.6um CMOS	AB63927.1	160	0
			ADE7753		AB63927.5	160	0
					AB63927.2	160	0
					AB63927.3	160	0
					AB63927.4	160	0
					AB63927.6	160	0
					AB63927.7	50	0
					AC79330.1	200	0
					AC79330.2	200	0
					AC79330.3	110	0
					AC80569.1	220	0
					AC80569.3	220	0
					AC80569.4	218	0
					AC80569.2	220	0
					AC80570.1	132	0
Biased HAST (HAST)	JESD22-A110	130°C 85%RH 2atm, Biased 96 hours	AD6421		119466.5	43	0
					F122280.8	45	0
					F122700.8	43	0
			AD8605		159715.1	45	0
					159715.1	45	0
Biased HAST (HAST)[1]			AD8692		Q7248.8	77	0
					Q7248.9	77	0
					Q7248.10	77	0
High Temperature Operating Life (HTOL)	JESD22-A108	125°C ‹ Tj ‹ 135°C, Biased 1,000 hours	AD8606		3673	99	0
					3673	100	0
			ADE7753		AC79339.1	50	0
					AB63928.1	50	0
					AC80728.1	50	0
		135°C ‹ Tj ‹ 150°C, Biased 500 hours	AD8515		3508	77	0
					3508	77	0
					3508	77	0
High Temperature Operating Life (HTOL)[1]		150°C ‹ Tj ‹ 175°C, Biased 500 hours	AD8605		Q6728.5	77	0

[1] These Samples were subjected to preconditioning (per J-STD-020 Level 1) prior to the start of the stress test. Level 1 preconditioning consists of the following:

- Bake: 24 hrs @ 125ºC, Soak: Unbiased
- Soak: 168 hrs @ 85ºC, 85%RH,
- Reflow: 3 passes through an oven with a peak temperature of 260ºC.

Samples of the many devices manufactured with these package and process technologies are continuously undergoing reliability evaluation as part of the ADI Reliability Monitor Program. Additional qualification data is available on Analog Devices' web site.

ESD Test Results

The results of ESD testing are summarized in the ESD Results Table. ADI measures ESD results using stringent test procedures based on the specifications listed in Table 4. Any comparison with another supplier's results should ensure that the same ESD test procedures have been used. For further details, please see the EOS/ESD chapter of the ADI Reliability Handbook (available via the 'Quality and Reliability' link at http://www.analog.com).

Table 4: ESD Test Results

ESD Model	Package	ESD Test Spec	RC Network	Highest Pass Level	First Fail Level	Class
FICDM	8-MINI_SO	ANSI/ESD STM5.3.1-1999	1Ω, Cpkg	±1500V	NA	C6
FICDM*	8-SOIC_N	ANSI/ESD STM5.3.1-1999	1Ω, Cpkg	±1000V	±1500V	C5
HBM*	8-SOIC_N	ANSI/ESD STM5.1-2007	1.5kΩ, 100pF	±4000V	NA	3A

*Results taken from report#7892

Latch-Up Test Results

Six samples of the AD8629 were Latch-up tested at T_A=25ºC per JEDEC Standard JESD78, Class I, Level A. All six devices passed.

Approvals

Reliability Engineer: Robert Yhap
This report has been approved by electronic means (4.0)

Additional Information

Data sheets and other additional information are available on Analog Devices' web site:
http://www.analog.com