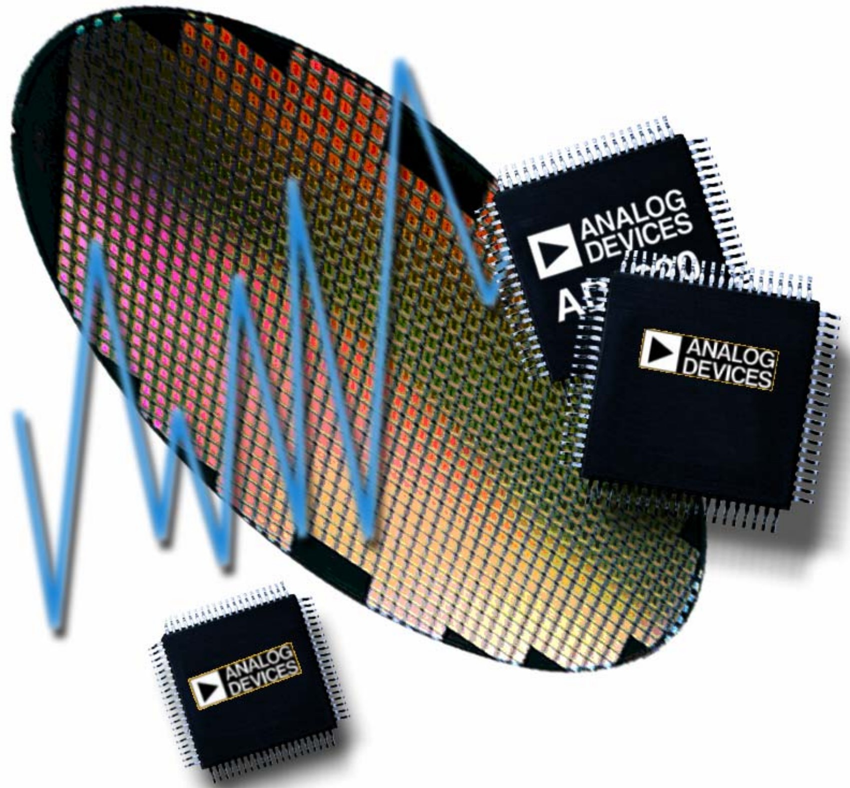
ANALOG DEVICES



Reliability Report

Report Title: ADLK Polyimide Qual, HD4110

Report Number: 6896

Date: 15/08/2008

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Summary

This report documents the successful completion of the reliability qualification requirements for release of the HD4110 Polyimide Process at ADLK Fab site for polyimide thicknesses of 10um and 18um. The Generics used for the qualification were AD7328, ADTL084, DAC8512, ADR127, AD8675, AD8667 product in a 20-TSSOP, 14-SOICnb, 8-SOICnb, 6-TSOT, 8-SOICnb and 8-SOICnb packages respectively.

Product Characteristics

AD7328

Die/Fab

Maximum Power Dissipation (W)	0.040
Device / Die ID	YG28B
Die Size (mm)	2.75 x 2.45
Wafer Fabrication Site	ADI-Limerick
Wafer Fabrication Process	H6DPDMIX
Transistor Count	11 thousand
Passivation Layer	undoped-oxide/SiN
Bond Pad Metal Composition	AlSiCu
Maximum Current Density (mA/µm)	0.04
Polyimide Layer	10um / 18um
Polyimide Layer Composition	HD4110

Package/Assembly

Available Package(s)	20-TSSOP
Body Size (mm)	4.40 x 6.50 x 1.05
Assembly Location	Carsem-S
Die Attach	Ablestik 84-1LMIS R4
Lead Frame Material	Copper
Bond Wire Type	Gold Tanaka GLD
Bond Wire Dia. (mils)	1.00
Mold Compound	Sumitomo 7351LS
Lead Finish	Tin Plate
Moisture Sensitivity Level	1
Maximum Peak Reflow (°C)	260 +0/-5C

ADTL084

Die/Fab

Maximum Power Dissipation (W)	0.180
Device / Die ID	8YJ04A
Die Size (mm)	1.41 x 1.36

Wafer Fabrication Site	ADI-Limerick
Wafer Fabrication Process	2um HVBP2, SP, DM
Transistor Count	150
Passivation Layer	undoped-oxide/OxyNitride
Bond Pad Metal Composition	AlCu
Polyimide Layer	10um/18um
Polyimide Layer Composition	HD4110

Package/Assembly

Available Package(s)	14-SOICnb
Body Size (mm)	3.81 x 6.56 x 1.37
Assembly Location	Carsem-S
Die Attach	Ablestik 84-1LMIS R4
Lead Frame Material	Copper
Bond Wire Type	Gold Tanaka M3
Bond Wire Dia. (mils)	1.00
Mold Compound	Sumitomo 6600H
Lead Finish	Tin Plate
Moisture Sensitivity Level	1
Maximum Peak Reflow (°C)	260 +0/-5C

DAC8512

Die/Fab

Device / Die ID	YJ01C
Die Size (mm)	1.21 x 1.61
Wafer Fabrication Site	ADI-Limerick
Wafer Fabrication Process	H6DPDMPNRBKX
Passivation Layer	undoped-oxide/SiN
Bond Pad Metal Composition	AlSiCu
Polyimide Layer	10um/18um
Polyimide Layer Composition	HD4110

Package/Assembly

Available Package(s)	8-SOICnb
Body Size (mm)	4.00 x 5.00 x 1.50
Assembly Location	Amkor-P
Die Attach	Ablestik 84-1LMIS R4
Lead Frame Material	Copper
Bond Wire Type	Gold
Bond Wire Dia. (mils)	1.00
Mold Compound	Sumitomo 6600H

Lead Finish	Tin Plate
Moisture Sensitivity Level	1
Maximum Peak Reflow (°C)	260 +0/-5C

ADR127

Die/Fab

Maximum Power Dissipation (W)	0.001
Device / Die ID	8YH77
Die Size (mm)	0.76 x 1.20
Wafer Fabrication Site	ADI-Limerick
Wafer Fabrication Process	2um HVBP2, SP, DM
Transistor Count	15
Passivation Layer	undoped-oxide/OxyNitride
Bond Pad Metal Composition	AlCu
Polyimide Layer	10um/18um
Polyimide Layer Composition	HD4110

Package/Assembly

Available Package(s)	6-TSOT
Body Size (mm)	1.60 x 2.90 x 0.87
Assembly Location	Carsem-M
Die Attach	Ablestik 84-1LMIS R4
Lead Frame Material	Copper
Bond Wire Type	Gold Tanaka GLD
Bond Wire Dia. (mils)	0.80
Mold Compound	NITTO MP 8000CSM
Lead Finish	Tin Plate
Moisture Sensitivity Level	1
Maximum Peak Reflow (°C)	260 +0/-5C

AD8675

Die/Fab

Maximum Power Dissipation (W)	0.135
Device / Die ID	8YH78
Die Size (mm)	1.32 x 1.32
Wafer Fabrication Site	ADI-Limerick
Wafer Fabrication Process	2um HVBP2, SP, DM
Transistor Count	49
Passivation Layer	undoped-oxide/OxyNitride
Bond Pad Metal Composition	AlCu
Polyimide Layer	10um/18um

Polyimide Layer Composition	HD4110

Package/Assembly

Available Package(s)	8-SOICnb
Body Size (mm)	4.00 x 5.00 x 1.50
Assembly Location	Amkor-P
Die Attach	Ablestik 84-1LMIS R4
Lead Frame Material	Copper
Bond Wire Type	Gold
Bond Wire Dia. (mils)	1.00
Mold Compound	Sumitomo 6600H
Lead Finish	Tin Plate
Moisture Sensitivity Level	1
Maximum Peak Reflow (°C)	260 +0/-5C

AD8667

Die/Fab

Maximum Power Dissipation (W)	0.004
Device / Die ID	YH65
Die Size (mm)	1.33 x 2.09
Wafer Fabrication Site	ADI-Limerick
Wafer Fabrication Process	H6_16VDPDMRIX
Transistor Count	2 thousand
Passivation Layer	undoped-oxide/SiN
Bond Pad Metal Composition	AlSiCu
Maximum Current Density (mA/µm)	0.40
Polyimide Layer	10um/18um
Polyimide Layer composition	HD4110

Package/Assembly

Available Package(s)	8-SOICnb
Body Size (mm)	4.00 x 5.00 x 1.50
Assembly Location	Amkor-P
Die Attach	Ablestik 84-1LMIS R4
Lead Frame Material	Copper
Bond Wire Type	Gold
Bond Wire Dia. (mils)	1.00
Mold Compound	Sumitomo 6600H
Lead Finish	Tin Plate
Moisture Sensitivity Level	1
Maximum Peak Reflow (°C)	260 +0/-5C

Package/Assembly Qualification Test Results

The below table provides a description of the Assembly/Package qualification tests conducted and the associated test results on the AD7328, AD8667, AD8675, ADR127, ADTL084, DAC8512.

Test Name	Conditions	Specification	Device	Polyimide Thickness	Package	Lot #	Sample Size	Qty. Rejects
Autoclave [1]	121C 100%RH 2atm 96hrs	JEDEC-STD-22, Method A102	AD7328	18um	20-TSSOP	AC25509.1	45	0
				10um	20-TSSOP	AC90671.1	45	0
			DAC8512	10um	8-SOICnb	AB68306.1	50	0
				18um		AC83396.1	45	0
HTS	150C 1000hrs	JEDEC-STD-22, Method A103	AD7328	18um	20-TSSOP	AC25505.1	45	0
				10um		AC89152.1	45	0
			DAC8512	10um	8-SOICnb	AB68305.1	50	0
				18um		AC85744.1	45	0
SHR [1]	See Below	ADI-0049	AD7328	18um	20-TSSOP	AC25511.1	30	0
				10um		AC90674.1	30	0
			AD8667	10um	8-SOICnb	AC85404.1	30	0
				18um		AC85405.1	30	0
			AD8675	10um	8-SOICnb	AC14839.1	30	0
				18um		AC14840.1	30	0
			ADR127	18um	6-TSOT	AC28412.1	30	0
				10um		AC83401.1	30	0
			ADTL084	18um	14-SOICnb	AC25514.1	30	0
				10um		AC83403.1	30	0
			DAC8512	10um	8-SOICnb	AB68309.1	30	0
				18um		AC83398.1	30	0
Temp Cycle [1]	-65C/+150C 500cycles	JEDEC-STD-22, Method A104	AD7328	18um	20-TSSOP	AC25512.1	45	0
				10um		AC90675.1	45	0
			AD8667	10um	8-SOICnb	AC85402.1	45	0
				18um		AC85403.1	45	0
			AD8675	18um	8-SOICnb	AC14837.1	45	0
				10um		AC14838.1	45	0
			ADR127	18um	6-TSOT	AC28411.1	45	0
				10um		AC83400.1	45	0
			ADTL084	18um	14-SOICnb	AC25513.1	45	0
				10um		AC83402.1	45	0
			DAC8512	10um	8-SOICnb	AB68310.1	50	0
				18um		AC83399.1	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 260+0/-5ºC.

Samples of the many devices manufactured with these 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

Process Qualification Test Results

The below table provides a description of the process qualification tests conducted and the associated test results on the AD7328, AD8667, AD8675, ADR127, ADTL084, DAC8512 and other products manufactured on the same technologies as described in the product characteristics table.

Test Name	Conditions	Specification	Device	Polyimide Thickness	Fab Process	Lot #	Sample Size	Qty. Rejects
ELF	125C 48hrs	MIL-STD-883, Method 1015	AD7328	18um	H6DPDMRIX	AC22778.1	300	0
				10um	H6DPDMRIX	AC89037.1	300	0
			DAC8512	10um	H6DPDMPNR BKX	AB73388.1	320	0
				18um		AB79237.1	300	0
HAST [1]	130C 85%RH 2atm, Biased 96hrs	JEDEC-STD-22, Method A110	AD7328	18um	H6DPDMRIX	AC25510.1	50	0
				10um		AC90672.1	45	0
HTOL [1]	125C<Tj<135C, Biased 1000hrs	JESD22-A108	AD7328	18um	H6DPDMRIX	AC25554.1	45	0
				10um		AC90673.1	46	0
			DAC8512	10um	H6DPDMPNR BKX	AB68308.1	55	0
				18um		AC83397.1	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 260+0/-5ºC.

Samples of the many devices manufactured with these 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

Approvals

Reliability Engineer: John Browne
This report has been approved by electronic means (3.6).

Additional Information

Data sheets and other additional information are available on Analog Devices' web site at the addresses shown below.

Home Page:	http://www.analog.com
Sales Info:	http://www.analog.com/world/corp_fin/sales_directory/distrib.html
Reliability Data:	http://www.analog.com/world/quality/read/1stpage.html
Reliability Handbook:	http://www.analog.com/corporate/quality/manuals/