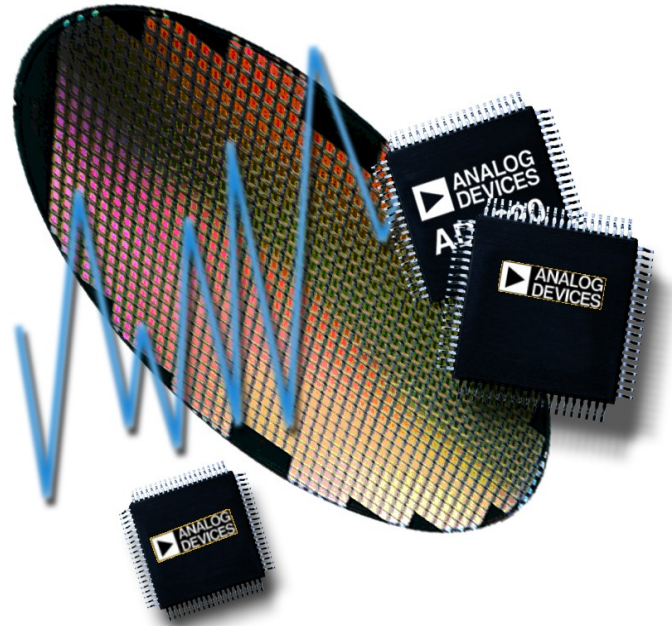




Reliability Report

Report Title: Qualification of ADI Camas Wafer
Fab BiMOS Process for Non-
Automotive Products

Report Number: 24699

Revision: A

Date: 17 October 2025

Summary

This report documents the reliability qualification requirements for the release of the BiMOS Process at Analog Devices Camas Wafer Fabrication Facility. The products listed below were selected to cover the technology being released.

The AD420 is a complete digital to current loop output converter, designed to meet the needs of the industrial control market. It provides a high precision, fully integrated, low cost single-chip solution for generating current loop signals in a compact 24-lead SOIC or PDIP package.

The AD677 is a multipurpose 16-bit serial output analog-to-digital converter which utilizes a switched-capacitor/charge redistribution architecture to achieve a 100 kSPS conversion rate (10 μ s total conversion time). Overall performance is optimized by digitally correcting internal nonlinearities through on-chip autocalibration.

The AD1674 is a complete, multipurpose, 12-bit analog-to-digital converter, consisting of a user-transparent onboard sample-and-hold amplifier (SHA), 10 volt reference, clock and three-state output buffers for microprocessor interface.

Die/Fab Product Characteristics

Table 1: Die/Fab Product Characteristics- BiMOS at ADI Camas

Product Characteristics	Product(s) to be qualified		
Generic/Root Part #	AD1674	AD420	AD677
Die Id	6W1674CV 01	6W420AV 01	6W18701BV 01
Die Size (mm)	4.32 x 5.13	3.15 x 6.38	3.33 x 5.41
Wafer Fabrication Site	ADI-Camas	ADI-Camas	ADI-Camas
Wafer Fabrication Process	BiMOS	BiMOS	BiMOS
Die Substrate	Si	Si	Si
Metallization / # Layers	AlCu(0.5%)/1	AlCu(1.0%)/2	AlCu(0.5%)/2
Polyimide	Yes	No	No
Passivation	doped-oxide/SiN	doped-oxide/SiN	doped-oxide/SiN

Die/Fab Test Results

Table 2: Die/Fab Test Results - BiMOS at ADI-Camas

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
High Temperature Operating Life (HTOL) ¹	JESD22-A108	125°C<Tj<135°C, Biased, 1,000 Hours	AD420	Q21310.1.HO1_RES	0/45
				Q21310.2.HO2_RES	0/45
				Q21310.3.HO3_RES	0/45
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	AD420	Q21310.1.HS1_RES	0/45
Highly Accelerated Temperature and Humidity Stress Test (HAST) ¹	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	AD420	Q21310.1.HA1_RES	0/45
				Q21310.2.HA2_RES	0/45
				Q21310.3.HA3_RES	0/45
Temperature Cycling (TC) ¹	JESD22-A104	-65°C/+150°C, 500 Cycles	AD420	Q21310.1.TC1_RES	0/45
				Q21310.2.TC2_RES	0/45
				Q21310.3.TC3_RES	0/45

¹ These samples were subjected to preconditioning at MSL 3 with 3x reflow peak temp of 260°C prior to the start of the stress test.

Package/Assembly Product Characteristics

Table 3: Package/Assembly Product Characteristics - 24-SOIC_W at ASE (AET)

Product Characteristics	Product(s) to be qualified
Generic/Root Part #	AD420
Package	24-SOIC_W
Body Size (mm)	15.60 x 7.60 x 2.60
Assembly Location	ASE (AET)
MSL/Peak Reflow Temperature(°C)	3 / 260°C
Mold Compound	Hitachi CEL 9240HF10AK
Die Attach	Hitachi EN 4900GC conductive
Leadframe Material	Copper
Lead Finish	100Sn
Wire Bond Material/Diameter (mils)	Heraeus AW7 4N Gold / 1.30

Package/Assembly Test Results

Table 4: Package/Assembly Product Characteristics - 24-SOIC_W at ASE (AET)

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
Solder Heat Resistance (SHR)	J-STD-020	MSL-3	AD420	Q21310.1.SH1_RES	0/11
				Q21310.2.SH2_RES	0/11
				Q21310.3.SH3_RES	0/11
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	AD420	Q21310.1.HS1_RES	0/45
Highly Accelerated Temperature and Humidity Stress Test (HAST) ¹	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	AD420	Q21310.1.HA1_RES	0/45
				Q21310.2.HA2_RES	0/45
				Q21310.3.HA3_RES	0/45
Unbiased HAST (UHST) ¹	JESD22-A118	130°C 85%RH 33.3 psia, 96 Hours	AD420	Q21310.1.UH1_RES	0/45
				Q21310.2.UH2_RES	0/45
				Q21310.3.UH3_RES ²	0/45
Temperature Cycling (TC) ¹	JESD22-A104	-65°C/+150°C, 500 Cycles	AD420	Q21310.1.TC1_RES	0/45
				Q21310.2.TC2_RES	0/45
				Q21310.3.TC3_RES	0/45

¹ These samples were subjected to preconditioning at MSL 3 with 3x reflow peak temp of 260°C prior to the start of the stress test.

² FA286447 – 1 unit failed at moisture precondition and passed bench testing during failure analysis.

ESD and Latch-Up Test Results

Table 5: ESD Test Result

ESD Model	Generic/Root Part #	Package	ESD Test Spec	RC Network	Highest Pass Level	Class
FICDM	AD677	16-SBDIP	JS-002	1Ω, Cpkg	±1250V	C3
	AD1674	28-SBDIP			±125V	C1
	AD420	24-SOIC_W			±250V	C2
HBM	AD677	16-SBDIP	JS-001	1.5kΩ, 100pF	±1500V	1C
	AD1674	28-SBDIP			±1000V	1C
	AD420	24-SOIC_W			±4000V	3A

Table 6: Latch Up Test Result

LU Test Spec	Generic/Root Part #	Passing Current	Passing Over-Voltage	Temperature (T _A)	Class
JESD78	AD1674	+100mA, -100mA	+22V; 22V; 7.5V;V	25°C	I
JESD78	AD420	+100mA, -100mA	+ 48V; 7.5VV	25°C	I
JESD78	AD677	+200mA, -200mA	+ 18.9V, -18.9V, 8.25VV	25°C	I

Approvals

Reliability Engineer: Charles Ryan Cabasa