



Reliability Report

Report Title: ADV7674-8A / ADV7674-8D UTAC
Qualification

Report Number: 19289

Revision: A

Date: 23 January 2023

Summary

This report documents the successful completion of the reliability qualification requirements for the ADV7674-8A and ADV7674-8D in a 108-LFCSP package.

The ADV7674 product family is a next generation High-Definition Multimedia Interface 2.1 (HDMI®) Port Processor & eARC Switch with InstaPort-UHD™, EZ-Audio™, and High-bandwidth Digital Content Protection 2.3 (HDCP). This product is ideal for TV, AV Receiver, sound bar, and industrial markets to fully enable four HDMI 2.1/HDCP 2.3 capable input ports.

Die/Fab Product Characteristics

Table 1: Die/Fab Product Characteristics - 55nm CMOS

Product Characteristics	Products to be qualified		Products used for Substitution Data	
Generic/Root Part #	ADV7674-8A	ADV7674-8D	ADV7672	ADV7674-8D
Die Id	TMNF23 A	TMNF23 A	TMLL65 A	TMNF23 A
Die Size (mm)	5.26 x 5.26	5.26 x 5.26	6.2 x 6.2	5.26 x 5.26
Wafer Fabrication Site	TSMC Fab-14	TSMC Fab-14	TSMC Fab-14	TSMC Fab-14
Wafer Fabrication Process	55nm CMOS	55nm CMOS	55nm CMOS	55nm CMOS
Die Substrate	Si	Si	Si	Si
Metallization / # Layers	AlCu(0.5%)/8	AlCu(0.5%)/8	AlCu(0.5%)/8	AlCu(0.5%)/8
Polyimide	No	No	No	No
Passivation	undoped-oxide/SiN	undoped-oxide/SiN	undoped-oxide/SiN	undoped-oxide/SiN

Die/Fab Test Results
Table 2.1: Die/Fab Test Results - 55nm CMOS at TSMC Fab-14

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
Early Life Failure Rate (ELFR)	JESD22-A108 / JESD74	125°C, 48 Hours	ADV7674-8D	Q17890.1.ELFR1	667
				Q17890.1.ELFR2	667
				Q17890.1.ELFR3	667
High Temperature Operating Life (HTOL)	JESD22-A108	125°C<Tj<135°C, Biased, 1,000 Hours	ADV7672	Q19186.1.4	0/77
			ADV7674-8D	Q17890.1.HO1	0/77
				Q17890.2.HO2	0/77
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	ADV7672	Q19186.1.5	0/25
				Q19186.2.2	0/25
				Q19186.3.2	0/25
			ADV7674-8D	Q17890.1.HS1	0/32
				Q17890.2.HS2	0/32
				Q17890.3.HS3	0/32
				Q19289.1.4	0/32
Highly Accelerated Temperature and Humidity Stress Test (HAST) ¹	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	ADV7672	Q19186.1.3	0/25
				Q19186.2.1	0/25
				Q19186.3.1	0/25
		110C 85%RH 17.7 psia, Biased, 264 hours	ADV7674-8D	Q17890.1.1	0/32
				Q17890.2.1	0/32
				Q17890.3.1	0/32
				Q19289.1.1	0/32
				Q19289.2.1	0/32
				Q19289.3.1	0/32

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 - 108-LFCSP at UTAC (UT2)

Product Characteristics	Product(s) to be qualified	
Generic/Root Part #	ADV7674-8A	ADV7674-8D
Package	108-LFCSP	108-LFCSP
Body Size (mm)	12.00 x 12.00 x 0.85	12.00 x 12.00 x 0.85
Assembly Location	UTAC (UT2)	UTAC (UT2)
MSL/Peak Reflow Temperature(°C)	3 / 260°C	3 / 260°C
Mold Compound	Sumitomo G700LTD	Sumitomo G700LTD
Die Attach/Underfill/TIM	Atrox 558-2C31 electrically conductive and thermally high conductive	Atrox 558-2C31 electrically conductive and thermally high conductive
Leadframe Material	Copper	Copper
Lead Finish	Matte Sn	Matte Sn
Wire Bond Material/Diameter (mils)	PdCuAu 4N / 0.80	PdCuAu 4N / 0.80

Package/Assembly Test Results

Table 4: Package/Assembly Test Results - LFCSP at UTAC (UT2)

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	ADV7674	Q19289.1.4	0/32
Highly Accelerated Temperature and Humidity Stress Test (HAST) ¹	JESD22-A110	110C 85%RH 17.7 psia, PWR CYC, P264	ADV7674	Q19289.1.1	0/32
				Q19289.2.1	0/32
				Q19289.3.1	0/32
Solder Heat Resistance (SHR)	J-STD-020	MSL-3	ADV7674	Q19289.1.3	0/11
				Q19289.2.3	0/11
				Q19289.3.3	0/11
Temperature Cycling (TC) ¹	JESD22-A104	-55°C/+125°C, 1,000 Cycles	ADV7674	Q19289.1.2	0/32
				Q19289.2.2	0/32
				Q19289.3.2	0/32

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.

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	ADV7674-8D	108-LFCSP	JS-002	1Ω, Cpkg	±1250V	C3
HBM	ADV7674-8D	108-LFCSP	JS-001	1.5kΩ, 100pF	±5000V	3A

Table 6: Latch Up Test Result

LU Test Spec	Generic/Root Part #	Passing Current	Passing Over-Voltage	Temperature (T _A)	Class
JESD78	ADV7674-8D	+200mA, -200mA	+1.58V/5.19V/8.25V	85°C	II

Approvals

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