TEST PRODUCT QUALIFICATION REPORT

TITLE:
AD2426W, AD2427W, AD2428W (LFCSP)
Test Second Source UTAC (Singapore) Qualification

PCN NUMBER:
22_0178

REVISION:
A

DATE:
15 Jul 2022

PROJECT BACKGROUND

Test correlation is carried out to qualify UTAC Singapore (UT1) as an additional final test site for ADI devices to support production.

SUMMARY

AD2426W, AD2427W, and AD2428W LFCSP will be released at UT1 as 2nd source test solution.

There is no change to the form, fit, function, quality or reliability between platforms.

This report documents the successful completion of the product test correlation requirements of AD2428W LFCSP between primary site SCS and second site UT1.

All references to AD2428W in this report, apply to all AD2426W, AD2427W, and AD2428W products.

Test product qualification was performed according to Analog Devices Specification

TEST AND PRODUCT INFORMATION

Device	AD2428W
Package	32-LFCSP-SS-5X5X0.75
Tester Platform	HP93K_15
Handler	HT1028C

Description and Test Results

Table 1 provides a description of the qualification tests conducted and corresponding test results for AD2428W. All the units have undergone electrical tests on both the sending and receiving sites on the same test platform. Any device that did not meet the electrical qualification requirements without further analysis and data to prove passing, the qualification would be considered failed.

Table 1. Test Product Transfer Qualification Criteria

Generic	Package	Lot Size	Sending Site	Receiving Site	Mean Shift =< 5%	Sigma Ratio =< 1.3
AD2428W	32-LFCSP-SS-5X5X0.75	100	SCS	UT1	Passed	Passed

The AD2428W was qualified by running a qualification lot with 100 units both in SCS and UT1. Data between sites were analyzed as summarized in Table 1.

A passing result was recorded when the yield from receiving site met or exceeded yield from sending site as summarized in Table 2. Succeeding lots with increased quantity will be closely monitored once the device has started production run at UT1.

Table 2. Test Product Transfer Qualification Lot Run

GENERIC	Package	Lot Size	Test Site	Results
AD2428W	32-LFCSP-SS-5X5X0.75	100	UT1	Passed

No valid rejects were encountered during the said evaluation in both sending and receiving sites.

Rejects Verifications

5 valid rejects tested in SCS and UT1 having the same result.

Table 3. Setup verification using Reject units.

Unit #	SCS	UT1
1	Failed	Failed
2	Failed	Failed
3	Failed	Failed
4	Failed	Failed
5	Failed	Failed

Conclusion

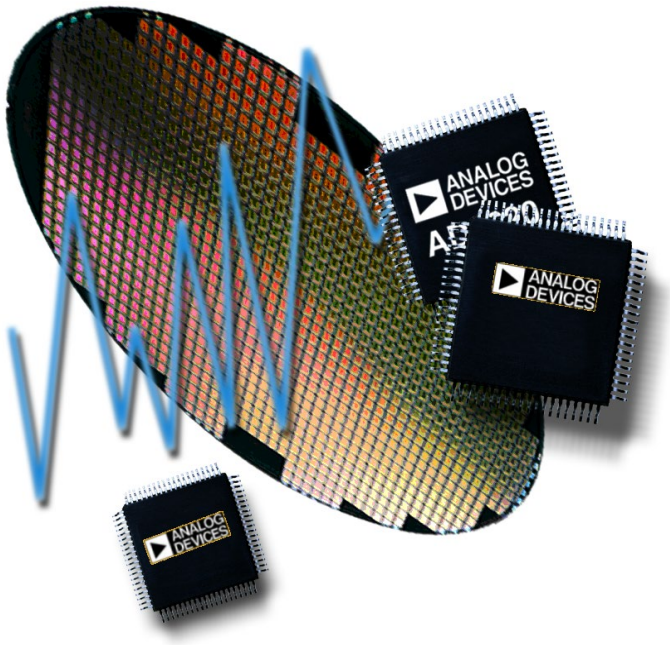
AD2428W LFCSP handler correlation data on both sites are correlated. Data are already approved by PL, it is acceptable. AD2426W, AD2427W, and AD2428W LFCSP devices are now ready to release at UT1.

Approvals

TRB-65396
Test Product Engineer: Xin Li
Technical Review Board

Supporting Documents

Technical Review Board: TRB-65396



Reliability Report

Report Title: AD2428W UTAC Assembly Automotive Grade 2 Qualification

Report Number: 19769

Revision: C

Date: 29 November 2022

Summary

This report documents the successful completion of the reliability qualification requirements for the release of the products AD2426W, AD2427W, AD2428W in a 32-LFCSP_SS package assembled at UTAC. This product is an audio bus which provides a multi-channel link over distances.

Revision B adjusts the ETest Temperatures

Die/Fab Product Characteristics

Table 1: Die/Fab Product Characteristics- 0.18um DMOS

Product Characteristics	Product(s) to be qualified
Generic/Root Part #	AD2428W
Die Id	TMJR79A
Die Size (mm)	3.09 x 3.09
Wafer Fabrication Site	TSMC Fab-8B
Wafer Fabrication Process	0.18um DMOS
Die Substrate	Si
Metallization / # Layers	AlCu(0.5%)/6
Polyimide	yes
Passivation	undoped-oxide/SiN

Die/Fab Test Results

Table 2: Die/Fab Test Results - 0.18um BCD at TSMC Fab-8B

Test Name	AEC #	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS	eTest Temp
High Temperature Storage Life (HTSL)	A6	JESD22-A103	150°C, 1,000 Hours	AD2428W	Q19769.1.5	0/45	RH[2]
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	A2	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	AD2428W	Q19769.1.1	0/77	RH[2]
					Q19769.2.1	0/77	RH[2]
					Q19769.3.1	0/77	RH[2]

[1] These samples were subjected to preconditioning (per J-STD-020 Level 3) prior to the start of the stress test. Level 3 preconditioning consists of the following: Bake: 24 hrs @ 125°C, Unbiased Soak: 192 hrs @ 30°C, 60%RH, Reflow: 3 passes through an oven with a peak temperature of 260°C.

[2] Pre- and post-stress electrical test was performed at room and hot temperatures.

Package/Assembly Product Characteristics

Table 3: Package/Assembly Product Characteristics - 32-LFCSP_SS at UTAC

Product Characteristics	Product(s) to be qualified
Generic/Root Part #	AD2428W
Package	32-LFCSP_SS
Body Size (mm)	5.00 x 5.00 x 0.75
Assembly Location	UTAC
MSL/Peak Reflow Temperature(°C)	3 / 260°C
Mold Compound	Sumitomo G770LTD
Die Attach	Ablestik 8600 conductive
Leadframe Material	Copper
Lead Finish	Matte Sn
Wire Bond Material/Diameter (mils)	GMG 4N Gold / 1.00

Package/Assembly Test Results

Table 4: Package/Assembly Test Results - LFCSP_SS at UTAC

Test Name	AEC #	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS	eTest Temp
High Temperature Storage Life (HTSL)	A6	JESD22-A103	150°C, 1,000 Hours	AD2428W	Q19769.1.5	0/45	RH[2]
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	A2	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	AD2428W	Q19769.1.1	0/77	RH[2]
					Q19769.2.1	0/77	RH[2]
					Q19769.3.1	0/77	RH[2]
Solder Heat Resistance (SHR)[1]	A1	J-STD-020	MSL-3	AD2428W	Q19769.1.4	0/11	R[3]
					Q19769.2.4	0/11	R[3]
					Q19769.3.4	0/11	R[3]
Temperature Cycling (TC)[1]	A4	JESD22-A104	-65°C/+150°C, 1,000 Cycles	AD2428W	Q19769.1.2	0/77	RH[2]
					Q19769.2.2	0/77	RH[2]
					Q19769.3.2	0/77	RH[2]
Unbiased HAST (UHST)[1]	A3	JESD22-A118	130C 85%RH 33.3 psia, 96 Hours	AD2428W	Q19769.1.3	0/77	R[3]
					Q19769.2.3	0/77	R[3]
					Q19769.3.3	0/77	R[3]

[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] Pre- and post-stress electrical test was performed at room and hot temperatures.
[3] Pre- and post-stress electrical test was performed at room temperature.

Approvals

Reliability Engineer: Bobby Brown