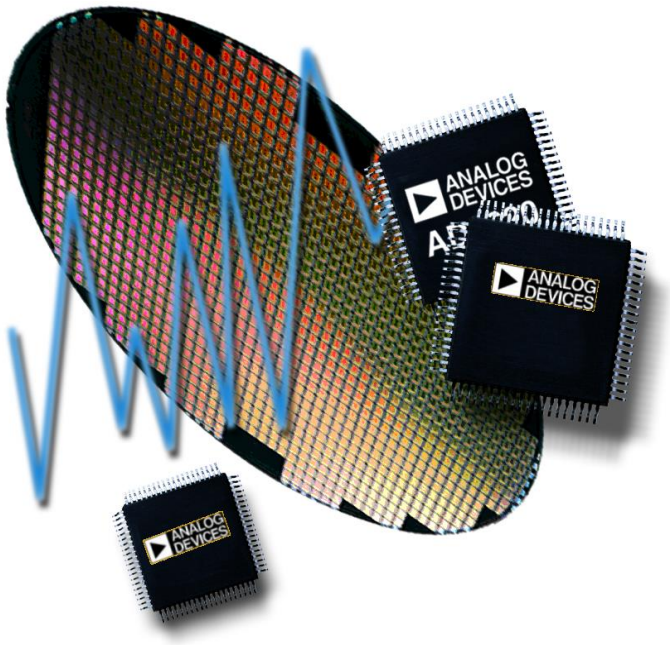

Reliability Report

Report Title: SO Package Material Set Change at CRM Qualification

Report Number: 22743

Revision: A

Date: 21 October 2025

Summary

This report documents the successful completion of the reliability qualification requirements for the release of Non-automotive Devices in TSSOP and MSOP packages using Copper Wire Bonding assembled in Carsem.

- The AD8629 is a wide bandwidth auto-zero amplifier featuring rail-to-rail input and output swing and low noise. This amplifier has ultralow offset, drift, and bias current. Operation is fully specified from 2.7 V to 5 V single supply (±1.35 V to ±2.5 V dual supply).
- The AD7708 is a complete analog front-end for low frequency measurement applications. The AD7708 contains a 16-bit Σ-Δ ADC with PGA and can be configured as 4/5 fully differential input channels or 8/10 pseudo-differential input channels. Two pins on the device are configurable as analog inputs or reference inputs.

Die/Fab Product Characteristics

Table 1: Die/Fab Product Characteristics

Product Characteristics	Product(s) to be qualified	
Generic/Root Part #	AD8629	AD7708
Die Id	TMY847 B	TMB441
Die Size (mm)	1.32 x 1.58	2.38 x 3.17
Wafer Fabrication Site	TSMC Fab-9	TSMC Fab-2B
Wafer Fabrication Process	0.60um CMOS	0.50um CMOS
Die Substrate	Si	Si
Metallization / # Layers	AlSi(1.0%)Cu(0.5%)/2	AlSi(1.0%)Cu(0.5%)/3
Passivation	undoped-oxide/SiN	undoped-oxide/SiN

Package/Assembly Product Characteristics

Table 2: Package/Assembly Product Characteristics – MINI_SO at CARSEM (CRM)

Product Characteristics	Product(s) to be qualified
Generic/Root Part #	AD8629
Package	8-MINI_SO
Body Size (mm)	3.00 x 3.00 x 1.10
Assembly Location	CARSEM (CRM)
MSL/Peak Reflow Temperature(°C)	1 / 260°C
Mold Compound	Hitachi CEL 8240HF10LXC
Die Attach	Hysol QMI 519 conductive
Leadframe Material	Copper
Lead Finish	100Sn
Wire Bond Material/Diameter (mils)	PdCuAu 4N / 1.00

Package/Assembly Test Results

Table 3: Package/Assembly Test Results - MINI_SO at CARSEM (CRM)

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	AD8629	Q22743.1.HTS1_CuW	0/77
				Q22743.2.HTS2_CuW	0/77
				Q22743.3.HTS3_CuW	0/77
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	AD8629	Q22743.1.HA1_CuW	0/77
				Q22743.2.HA2_CuW	0/77
				Q22743.3.HA3_CuW	0/77
Solder Heat Resistance (SHR)	J-STD-020	MSL-1	AD8629	Q22743.1.SH1_CuW	0/11
				Q22743.2.SH2_CuW	0/11
				Q22743.3.SH3_CuW	0/11
Temperature Cycling (TC)[1]	JESD22-A104	-65°C/+150°C, 500 Cycles	AD8629	Q22743.1.TC1_CuW	0/77
				Q22743.2.TC2_CuW	0/77
				Q22743.3.TC3_CuW	0/77
Unbiased HAST (UHST)[1]	JESD22-A118	130C 85%RH 33.3 psia, 96 Hours	AD8629	Q22743.1.UH1_CuW	0/77
				Q22743.2.UH2_CuW	0/77
				Q22743.3.UH3_CuW	0/77

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

Package/Assembly Product Characteristics

Table 4: Package/Assembly Product Characteristics - TSSOP_4.4 at CARSEM (CRM)

Product Characteristics	Product(s) to be qualified
Generic/Root Part #	AD7708
Package	28-TSSOP_4.4
Body Size (mm)	9.70 x 4.40 x 1.10
Assembly Location	CARSEM (CRM)
MSL/Peak Reflow Temperature(°C)	1 / 260°C
Mold Compound	Sumitomo G700HA
Die Attach	Hysol QMI 519 conductive
Leadframe Material	Copper
Lead Finish	100Sn
Wire Bond Material/Diameter (mils)	PdCuAu 4N / 1.00

Package/Assembly Test Results

Table 5: Package/Assembly Test Results - TSSOP_4.4 at CARSEM (CRM)

Test Name	Spec	Conditions	Generic/Root Part #	Lot #	Fail/SS
High Temperature Storage Life (HTSL)	JESD22-A103	150°C, 1,000 Hours	AD7708	Q22746.1.HTS1_CuW	0/77
Highly Accelerated Temperature and Humidity Stress Test (HAST)[1]	JESD22-A110	130C 85%RH 33.3 psia, Biased, 96 Hours	AD7708	Q22746.1.HA1_CuW	0/77
				Q22746.3.HA3_CuW	0/77
Solder Heat Resistance (SHR)	J-STD-020	MSL-1	AD7708	Q22746.1.SH1_CuW	0/11
				Q22746.2.SH2_CuW	0/11
				Q22746.3.SH3_CuW	0/11
Temperature Cycling (TC)[1]	JESD22-A104	-65°C/+150°C, 500 Cycles	AD7708	Q22746.1.TC1_CuW	0/77
				Q22746.2.TC2_CuW	0/77
				Q22746.3.TC3_CuW	0/77
Unbiased HAST (UHST)[1]	JESD22-A118	130C 85%RH 33.3 psia, 96 Hours	AD7708	Q22746.1.UH1_CuW	0/77
				Q22746.2.UH2_CuW	0/77
				Q22746.3.UH3_CuW	0/77

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

Approvals

Reliability Engineer: Pernell Marc Mosuela