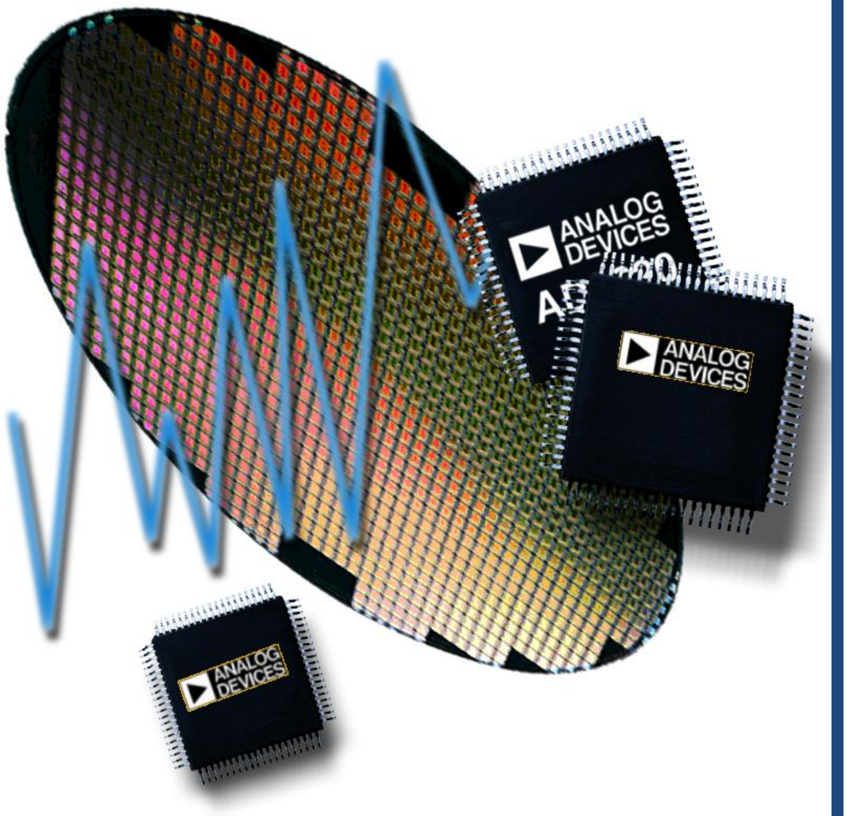
ANALOG
DEVICES



Reliability Report

Report Title: Reliability Report RQR08744 ADIS16487 New Product Qualification

Report Number: RQR08774

Revision: A

Date: 24-AUG-2017

Summary

This report documents the successful completion of the reliability qualification requirements for the release of the ADIS16487BMLZ-CP.

Product Description

This product is a 5g ADIS16485 variant with the inclusion of parylene coating, designed and manufactured suitable for DO-254 Avionics certification. Minor changes to the product printed circuit board were incorporated in this variant.

Table 1: Product Characteristics

Package/Assembly

Package (outer configuration)	Connectorized aluminum housing & base
Body Size (mm)	44 x 47 x 14 mm
Assembly Site	IMI, Laguna Phils
Parylene	Parylene C provided by SCS Singapore
SMT Solder	SAC305
Underfill	Hysol FP4545FC
Adhesive (Final Assembly Housing)	Loctite 3563
Lead Finish	Gold Plated 24-pin Connector

Description / Results of Tests Performed

Tables 2 and 3 provide a description of the qualification tests conducted and the associated test results for products manufactured on the same technologies as described in Table 1. All devices were electrically tested before and after each stress. Any device that did not meet all electrical data sheet limits following stressing would be considered a valid (stress-attributable) failure unless there was conclusive evidence to indicate otherwise.

Table 2: Qualification Test Results

Test Name	Specification	Conditions	Device	Lot #	Sample Size	Qty. Failures
High Temperature Operating Life Test	JESD22-A108	500 hrs. @ +110°C	ADIS16487BMLZ-CP	10156650 Datecode 1710	10	0
Temperature Cycling	JESD22-A104	1000	ADIS16487BMLZ-CP	10156650 Datecode 1720	10	0

Table 3: Qualification Extension Data

Test Name	Specification	Conditions	Device	Sample Size	Qty. Failures
High Temp Operating Life (HTOL)	JESD22-A108	500 Hrs. +110°C Ta	CLX-130818-100 ADIS16485 variant with 18g accelerometer, Parylene @ SCS USA	16	0
Temperature Cycle	JESD22-A104	1000 Cycles Condition A -55 to +85°C	CLX-130818-000 ADIS16485 variant (5g accelerometer Parylene @ SCS USA)	15	0
HTOL	JESD22-A108	500 Hrs. +110°C Ta		15	0
Mechanical Shock	MIL-STD-883, TM 2002	2000 g's		5	0
HTOL	JESD22-A108	500 Hrs. +85°C Ta	ADIS16485 Non-Parylene Variant	15	0
				10	0
Temperature Cycle	JESD22-A104	500 Cycles Condition N -40 to +85°C		10	0
				10	0
Mechanical Shock	MIL-STD-883, TM 2002	2000 g's		3	0
Random Vibration	MIL-STD-202, TM 214A	Condition C		6	0

Samples of the ADI internal component technologies contained herein are continuously undergoing reliability evaluation as part of the ADI Reliability Monitor Program. Additional qualification data is available on Analog Devices' web site.

ESD Test Results

The results of Human Body Model (HBM) and Field-Induced Charged Device Model (FICDM) ESD testing are summarized in Table 4. ADI measures ESD results using stringent test procedures based on the specifications listed. Any comparison with another supplier's results should ensure that the same ESD test procedures have been used. For further details, please see the EOS/ESD chapter of the ADI Reliability Handbook (available via the 'Quality and Reliability' link on Analog Devices' web site).

Table 4: ADI Silicon (Components) ESD Test Data

DIE ID	ESD Model	Package	ESD Test Spec	RC Network	Highest Pass Level	First Fail Level	Class
ADSP-BF512BBCZ-4	HBM	168-CSP_BGA	ANSI/ESDA/JEDEC JS-001-2010	1.5kΩ, 100pF	±2000V	±2500V	2
	FICDM	168-CSP_BGA	ANSI/ESDA/JEDEC JS-001-2010	1.5kΩ, 100pF	±2000V	±2500V	2
ADM6711RAKSZ	HBM	4-SC70	MIL-STD-883 Method 3015	1.5kΩ, 100pF	2500V	3000V	2
ADCMP350YKSZ	HBM	4-SC70	MIL-STD-883 Method 3015	1.5kΩ, 100pF	3500V	4000V	2
ADP2102YCPZ-1.37	HBM	8 LFCSP	ESD Assoc. STM5.1-2001	1.5kΩ, 100pF	2500V	3000V	2
	FICDM		ESD Assoc. STM5.3.1-1999	1Ω, Cpkg	2000V	NA	C6
ADG849YKSZ	HBM	6-SC70	MIL-STD-883 Method 3015	1.5kΩ, 100pF	6500V	NA	2
AD7689BCPZ	HBM	20 LFCSP	ESD Assoc. STM5.1-2001	1.5kΩ, 100pF	±1500V	±2000V	1C
	FICDM		ANSI/ESD STM5.3.1-1999	1Ω, Cpkg	±1500V	NA	C6
ADP121-ACBZ28	HBM	4 WLCSP	ESD Assoc. STM5.1-2001	1.5 kΩ, 100pF	2000V	NA	2
	FICDM		ESD Assoc. STM5.3.1-1999	1Ω, Cpkg	1000V	1500V	C5

Table 4B: ADI Silicon (Components) ESD Test Data

DIE ID	ESD Model	Package	ESD Test Spec	RC Network	Highest Pass Level	First Fail Level	Class
ADR361AUJZ	HBM	5-TSOT	ESD Assoc. STM5.1-1998	1.5kΩ, 100pF	3000V	3500V	2
	FICDM		ESD Assoc. STM5.3.1-1999	1Ω, Cpkg	1000V	1500V	C5
AD8629ARMZ	HBM	8-MSOP	ESD Assoc. STM5.1-1998	1.5kΩ, 100pF	1500V	2000V	1C
	FICDM		ESD Assoc. STM5.3.1-1999	1Ω, Cpkg	1000V	1500V	C4
ADW22293ZA	HBM	8-LCC	ESD Assoc. STM5.1-2007	1.5kΩ, 100pF	±2000V	±2500	2
	FICDM		ANSI/ESD STM5.3.1-1999	1Ω, Cpkg	±250V	±500V	C3
ADP3330ARTZ-5	HBM	6-SOT-23	MIL-STD-883 Method 3015	1.5kΩ, 100pF	2500V	3000V	2
AD22424BZ	HBM	32 CBGA	ESDA/JEDEC JS-001-2011	1.5kΩ, 100pF	±2000V	±2500V	2
	FICDM		JESD22-C101	1Ω, Cpkg	±500V	±750V	III

Approvals

Reliability Engineer: Elaine Trotter

Additional Information

Data sheets and other additional information are available on Analog Devices' web site