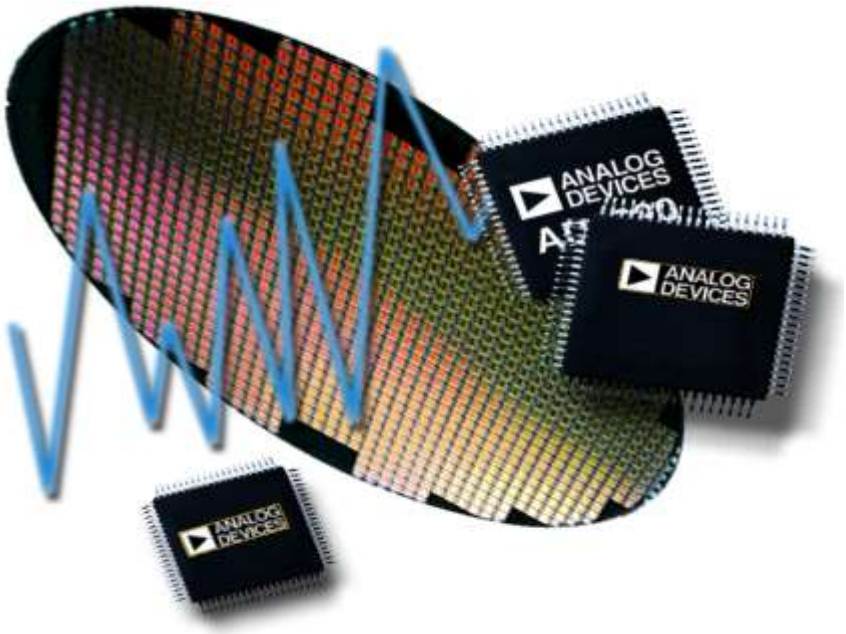

Reliability Report

Report Title: Reliability Report RQR08620
ADIS16489BMLZ-P
With Parylene coating.

Report Number: 08620

Revision: A

Date: 02/09/17

Summary

This report documents the successful completion of the reliability qualification requirements for the use of Parylene coating on the assembled PCB as a mitigation effort relative to tin whisker formation on ADIS16489 devices.

Product Description

Tactical grade 7 degrees of freedom MEMS inertial sensor.

.

Table 1: Product Characteristics

Package/Assembly

Package (outer configuration)	24-Lead Module with Connector Interface.
Body Size (mm)	47mm x 44mm x 14mm
Assembly Site	Engent
SMT Solder	Sn96.5/Ag3.0/0.5Cu
Underfill	Hysol 4545FC
Adhesive(s)	Loctite 3563
Lead Finish	Au plate
Coating material	Parylene C

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
Temperature Cycle	JESD22-A104	Condition N -40ºC to +85 ºC 1000 cycles	ADIS16489-P	AD00001566	16	0
HTOL	MIL-STD-883 TM1015	+110 ºC Ta 500 Hr.	ADIS16489-P	AD00001566	16	0
Mechanical Shock	MIL-STD-883 TM 2002	2000g.	ADIS16489-P	AD00001566	5	0

Table 3: Qualification Extension Data

Qual Test	Ref. Spec	Conditions	Duration	Device Type	Sample Size	# Rejects
HTOL	MIL-STD-883 TM1015	+85°C Ta	500 Hours	ADIS16488	15	0
Temperature Cycle	JESD22-A104	Condition N -40°C to +85°C	500 Cycles	ADIS16488	10	0
Handling Shock	MIL-STD-883 Mtd 2002.4	2000g	6 positions	ADIS16488	3	0
Random Vibration	MIL-STD-202 Mtd 214A	Condition C	8 hrs.	ADIS16488	6	0
ADIS16485 CLX-130818-000 with parylene coating.						
Temperature Cycle	JESD22-A104	Condition A -55°C to +85°C	1000 Cycles	CLX-130818-000	15	0
HTOL	MIL-STD-883 TM1015	+110°C Ta	500 Hours	CLX-130818-000	15	0
Mechanical Shock	MIL-STD-883 TM2002.4	2000g's		CLX-130818-000	5	0
ADIS16485 CLX-130818-100 with parylene coating.						

Qual Test	Ref. Spec	Conditions	Duration	Device Type	Sample Size	# Rejects
HTOL	MIL-STD-883 TM1015	+110°C Ta	500 Hours	CLX-130818-100	16	0

ESD Test Results

Data for ESD Characterization is extended from the ADW22037, ADSP-BF512, ADM6711, ADCMP350, ADP2102, ADG849, AD7689, ADR361, ADP121, ADP3330, AD8629 and ADXRS646 monolithic qualification data.

Table 4: QUALIFICATION EXTENSION DATA
ESD Characterization Results

DEVICE	TEST METHOD	HIGHEST PASS LEVEL	CLASS
ADXL203E (ADW22037Z)	ESD Assoc. STM5.1-1998	3500V	2
ADSP-BF512	ESD Assoc. STM5.1-1998	4000V	3A
ADM6711	ESD Assoc. STM5.1-1998	3000V	2
ADCMP350	ESD Assoc. STM5.1-1998	3500V	2
ADP2102	ESD Assoc. STM5.1-1998	2500V	2
ADG849	ESD Assoc. STM5.1-1998	2000V	2
AD7689	ESD Assoc. STM5.1-1998	1500V	1C
ADR361	ESD Assoc. STM5.1-1998	3000V	2
ADP121	ESD Assoc. STM5.1-1998	2000V	2
ADP3330	ESD Assoc. STM5.1-1998	2000V	2
AD8629	ESD Assoc. STM5.1-1998	1500V	1C
ADXRS646	ESD Assoc. STM5.1-1998	1500V	1C

Approvals

Reliability Engineer: *David Hensley*

Additional Information

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