

# Qualification Results Summary for ADuM3400/ADuM3401/ADuM3402 Die Revision, Data Sheet Change and High Voltage Test Platform Migration

QUALIFICATION PLAN / STATUS			
TEST	SPECIFICATION	SAMPLE SIZE	RESULTS
High Temperature Operating Life (HTOL)*	JEDEC <i>JESD22-A108</i>	<b>9x77</b>	<b>Pass</b>
Highly Accelerated Stress Test (HAST)*	JEDEC <i>JESD22-A110</i>	<b>9x77</b>	<b>Pass</b>
Temperature Cycle (TC)*	JEDEC <i>JESD22-A104</i>	<b>9x77</b>	<b>Pass</b>
Autoclave (AC)*	JEDEC <i>JESD22-A102</i>	<b>9x77</b>	<b>Pass</b>
High Temperature Storage Life (HTSL)	JEDEC <i>JESD22-A103</i>	<b>2x77</b>	<b>Pass</b>
Solder Heat Resistance (SHR)*	JEDEC/IPC <i>J-STD-020</i>	<b>1x30</b>	<b>Pass</b>
Latch-Up	JEDEC <i>JESD78</i>	<b>1x9</b>	<b>Pass ±200mA @ +8.25V</b>
Electrostatic Discharge <i>Human Body Model</i>	ESDA/JEDEC <i>JS-001</i>	<b>1x18</b>	<b>Pass ±4000V</b>
Electrostatic Discharge <i>Field-Induced Charged Device Model</i>	JEDEC <i>JESD22-C101</i>	<b>1x18</b>	<b>Pass ±1250V</b>

\*Preconditioned per JEDEC/IPC J-STD-020

# TEST PRODUCT QUALIFICATION REPORT

**TITLE:**

ADuM3400/ADuM3401/ADuM3402 SOIC\_W  
High Voltage Test Platform Migration from Harris-  
Tuvey to MPS at ADGT

**PCN NUMBER:**

**16\_0268**

**REVISION:**

A

**DATE:** November 11, 2016

## SUMMARY

The **ADuM3400/ADuM3401/ADuM3402** are quad-channel digital isolators based on Analog Devices, Inc., *iCoupler*® technology. Combining high speed CMOS and monolithic air core transformer technology, these isolation components provide outstanding performance characteristics superior to alternatives, such as optocoupler devices. In accordance with UL and VDE standards, these products are high voltage tested using the Harris-Tuvey 9464 test platform, an aging and limited manufacturing test platform. The proposed change is to add new high voltage test capability using the MPS PD test platform manufactured by MPS Mess-& Prüfsysteme GmbH.

There is no change to the form, fit, function, quality or reliability of product when tested on the new test platform.

This report documents the result of the evaluations done to qualify the MPS PD tester as an additional high voltage test platform for the **ADuM3400/ADuM3401/ADuM3402**.

Test product qualification was performed according to Analog Devices Specifications (TST00094/TST00095 – Test Platform Migration Specification).

## TEST AND PRODUCT INFORMATION

Device(Generic):	ADuM3400	ADuM3401	ADuM3402
Package:	SOIC_W	SOIC_W	SOIC_W
Leads:	16	16	16
Parts Affected:	ADUM3400ARWZ ADUM3400ARWZ-RL ADUM3400BRWZ ADUM3400BRWZ-RL ADUM3400CRWZ ADUM3400CRWZ-RL	ADUM3401ARWZ ADUM3401ARWZ-RL ADUM3401BRWZ ADUM3401BRWZ-RL ADUM3401CRWZ ADUM3401CRWZ-RL	ADUM3402ARWZ ADUM3402ARWZ-RL ADUM3402BRWZ ADUM3402BRWZ-RL ADUM3402CRWZ ADUM3402CRWZ-RL
Current Platform:	Harris-Tuvey with Atrium 5050FHV handler	Harris-Tuvey with Atrium 5050FHV handler	Harris-Tuvey with Atrium 5050FHV handler
New Platform:	MPS with Atrium VMAX handler	MPS with Atrium VMAX handler	MPS with Atrium VMAX handler

## Description and Test Results

The high voltage test platform is required to proof test the insulation performance of our products to the regulatory agency standards. The tests conducted on the high voltage test platform are:

### Dielectric Insulation Test

In accordance with **UL 1577**, each ADuM3400/ADuM3401/ADuM3402 is proof tested by applying an insulation test voltage  $\geq 3000$  Vrms for 1 sec (current leakage detection limit = 5  $\mu$ A).

### Partial Discharge Test

In accordance with **DIN V VDE V 0884-10** (VDE V 0884-10):2006-12, each ADuM3400/ADuM3401/ADuM3402 is proof tested by applying an insulation test voltage  $\geq 1050$  V peak for 1 sec (partial discharge detection limit = 5 pC).

The Harris-Tuvey high voltage test platform does not provide data logs for units tested; only a pass or fail result is provided. The MPS test platform will provide data logs for leakage current and partial discharge measurements that will be recorded and maintained over time.

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The **ADuM3400, ADuM3401, and ADuM3402** quad-channel digital isolators are manufactured using the same package, the same transformer technology and on the same high voltage isolation process. The five lots listed below, along with additional test results from multiple products using the 16-lead SOIC\_W package, were used to qualify the three generics on the MPS test platform.

Table 1: Shows results of the qualification lot run for the **ADuM340x** family. The qualification lots have undergone high voltage testing on both Harris-Tuvey and MPS test platforms. Any deviation on the lot qualification run criteria, without further analysis and data to prove a passing qualification would be considered a failed qualification lot run.

As shown in Table 1, all units that passed on the Harris-Tuvey platform also passed on the MPS platform and all units rejected by the Harris-Tuvey platform were also rejected by the MPS test platform thereby demonstrating correlation of both good and bad units between platforms.

**Table 1: Test Product Qualification Lot Run**

Generic <sup>(1)</sup>	Package	Lot number	Lot Size	Good units passed on both test platforms?	Reject units failed on the same test parameter for both test platforms?
ADUM3400	SOIC_W	AM15442.3	100	<b>Yes</b>	<b>Yes</b>
ADUM3401	SOIC_W	AM15446.4	100	<b>Yes</b>	<b>Yes</b>
ADUM3402	SOIC_W	AM15449.4	100	<b>Yes</b>	<b>Yes</b>
ADUM3300	SOIC_W	AM15434.3	100	<b>Yes</b>	<b>Yes</b>
ADUM3301	SOIC_W	AM15437.3	100	<b>Yes</b>	<b>Yes</b>

<sup>1.</sup> The ADuM3300/01 triple-channel digital isolators are manufactured using the same package and the same transformer die as the ADuM3400/01/02.

**Approvals**

Product Line Manager  
Test Development Manager  
Test Product Manager  
Quality Manager

**Supporting Document**

Technical Review Board: TRB #21744 – ADuM3400/ADuM3401/ADuM3402 MPS Migration

**Additional Information**

Homepage: <http://www.analog.com/en/index.html>

Datasheet: [http://www.analog.com/media/en/technical-documentation/data-sheets/ADUM3400\\_3401\\_3402.pdf](http://www.analog.com/media/en/technical-documentation/data-sheets/ADUM3400_3401_3402.pdf)