

- 1 Test board
- 2 PCBs for two different DC/DC converters

## A UNIVERSAL TEST SYSTEM FOR DC/DC CONVERTERS

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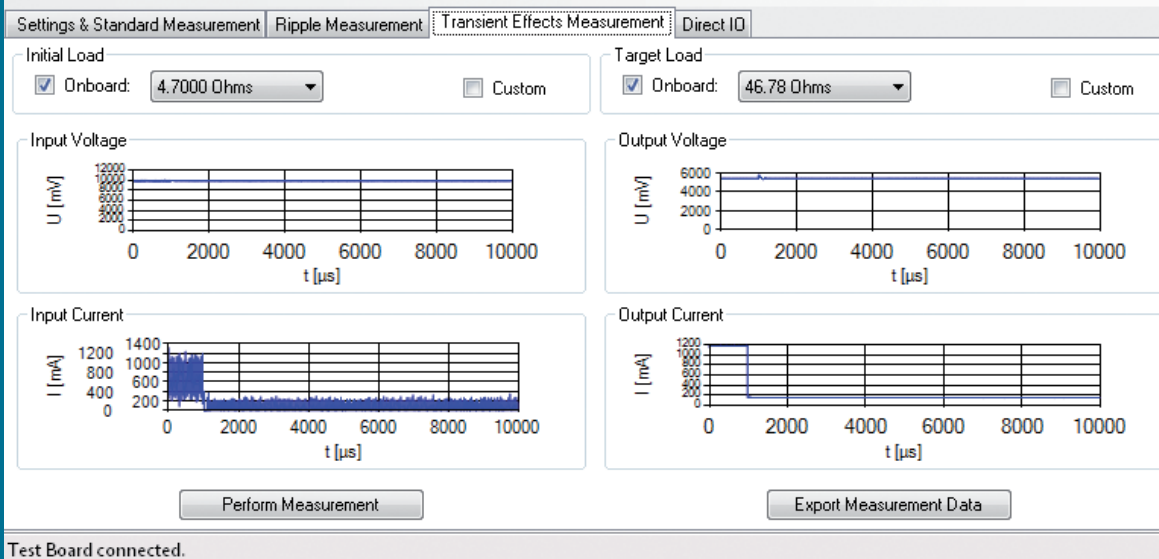
For modern electronic devices, system designers require power supply circuits to be compact and highly energy efficient – especially for mobile battery operated systems. For realizing such a power supply circuit, a large number of different DC/DC converter chips is already available on the market and new devices are still under development. To help designers evaluate possible solutions for new products, Altis Semiconductor and Fraunhofer IMS developed a modular test and evaluation system suitable for both high and low-complexity DC/DC converters.

### Modular Concept

As illustrated by the block diagram (fig. 4), the test system consists of three individual components:

### Universal Test Board

The test board contains all the electronics necessary for supplying the device under test (DUT) with power and for attaching different load resistors to the output of the device. Furthermore, the board performs parallel measurements for four different channels at a sample rate of one MSPS so that not only the static but also the dynamic and transient behaviour of the device can be measured. For devices that can be controlled via a digital communication interface, the test board acts as a bus master on an I<sup>2</sup>C or SPI bus. This way, the test board supports standard protocols like PMBus™ as well as proprietary variants. Additionally, 16 general purpose I/O lines are available for controlling digital inputs and reading digital outputs.



## DUT Board

The DUT board is a small printed circuit board that connects the DUT to the test board. The DUT board features a temperature sensor close to the voltage converter to be evaluated, enabling the user to monitor the DUT temperature for different load conditions. For evaluating a new converter chip, developers only need to create a new DUT board according to the interface specification and attach it to the existing universal test board.

## Windows Application

The Windows PC application enables its user to control the input and output conditions of the device under test. Furthermore, measurement results like the DC/DC converter's response to fast load switches (transient effects) can be visualized and exported as CSV files.

## Summary

The universal DC/DC converter test system developed by Altis Semiconductor and Fraunhofer IMS enables system developers to quickly and easily evaluate new converter chips for their designs.

