

## Analog Devices' Digital Isolation Update

Welcome to another edition of the Analog Devices' Digital Isolation Update. Whether you are already using *iCoupler*® technology or still designing with optocouplers, this Digital Isolation Update will keep you posted as we continue to introduce a wide array of new isolation products, including gate drivers, transceivers, and multi-channel digital isolators with *isoPower*® isolated, integrated DC/DC converters.

This Digital Isolation Update includes a look at [New Products](#), an [iCoupler News Update](#), a special application note we call "[NAppkin Notes](#)," and a feature filled with insights and interesting facts that we call [Inside iCoupler Technology](#).

We are always looking for feedback, so please feel free to e-mail us at:

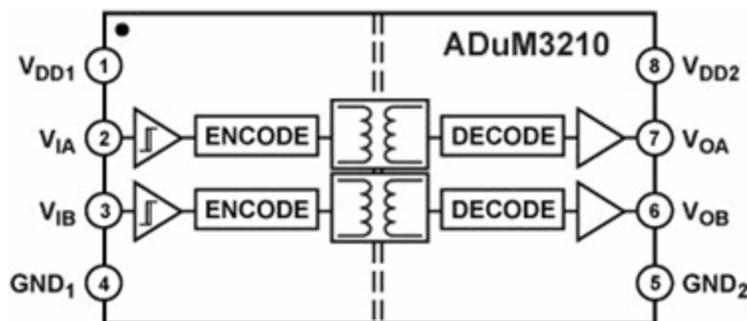
[iCoupler\\_Isolation@analog.com](mailto:iCoupler_Isolation@analog.com).

### New iCoupler Products

#### **Dual-Channel Digital Isolator with Enhanced System-Level ESD Reliability**

The ADuM3210 isolator provides two independent isolation channels which operates with the supply voltage on either side ranging from 2.7V to 5.5V, providing capability with lower voltage systems as well as enabling voltage translation functionality across the isolation barrier. The ADuM3210 has a default output low and temperature operation up to 125°C.

[Learn more about the ADuM3210 here.](#)



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### iCoupler News

#### **iCoupler Team Represented at 1st International Workshop on Power Supply on Chip**

Recently, *iCoupler* design engineer Baoxing Chen presented at the 1st International Workshop on Power Supply on Chip in Cork, Ireland. Among the discussed topics were: integrated signal and power isolation needs, power converter architecture, transformer structure, converter performance, and half-bridge gate driver architecture.

[View his detailed presentation here.](#)

#### **Power Electronics Magazine Promotes iCoupler Technology for Power Supply and Motor Control Applications**

Power Electronics Magazine recently published an article written by *iCoupler* design engineer Baoxing Chen. Entitled "Microtransformer Isolation Benefits Digital Control," the piece discusses how integrated microtransformer isolators eliminate digitally controlled design constraints caused by the use of optocouplers and discrete pulse transformers, particularly in power supply and motor control applications.

[Read full article here.](#)

## NAppkin Note



*NAppkin Notes* – written expressly for the Digital Isolation Update – are ideas, hints, and tips for building with iCoupler technology.

### **NAppkin Note: Isolating USB with SPI**

By: Mark Cantrell, Applications Engineer

Currently, iCoupler digital isolation technology can be used for low (1.5 Mbps) and full (12 Mbps) speed modes of USB. Referring to Figure 1, there are three places where isolation could be introduced, in the differential transmission lines D+/D-, between the controller and the transceiver, and between the controller and the system controller. Unfortunately, the trend toward higher levels of integration incorporates the transceiver and controller interfaces into the system controller, leaving only D+/D- data lines available outside of the controller for isolation. This is an extremely challenging place to try isolation because there are no flow of control signals, and data is a combination of single ended and digital signaling.

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## Inside iCoupler Technology

### ***iCoupler High Voltage Endurance***

By Baoxing Chen, Design Engineer

As discussed in a previous Digital Isolation Update, the polyimide insulation used in iCoupler digital isolators provides high breakdown strength and ESD performance, thermal and mechanical stability, excellent chemical resistance, and low relative permittivity. This letter, reviews the high voltage (HV) lifetime characteristics and how they differ from other insulation materials, such as SiO<sub>2</sub>, that may also be used for high voltage insulation. Using demonstrated models and empirical data, the HV lifetime of iCoupler products is greater than 65 years at working voltages up to 400 V rms.

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