

Data and Power Isolation in One Package Provides Total Isolation Solution

A common challenge in designing systems that require galvanic isolation is finding a cost-effective, space-efficient way to isolate both power and data. While many commercially available solutions exist for isolating data, isolating power often requires the unsatisfactory choice between designing a custom, isolated supply or using costly discrete isolated dc-to-dc converters. This challenge arises because traditional isolators, such as optocouplers, can isolate data but cannot generate power, whereas transformers can isolate power but are neither space nor cost-effective for isolating most data channels.

Custom isolated supplies can be cost-effective at high volumes, and they can deliver just the right level of performance for the given application. However, they require both design expertise and separate safety approvals, which add development time and cost. The second option, discrete isolated dc-to-dc converters reduce development time and consume less space; however, they are often more than twice the cost of custom supplies, and they have limited isolation ratings.

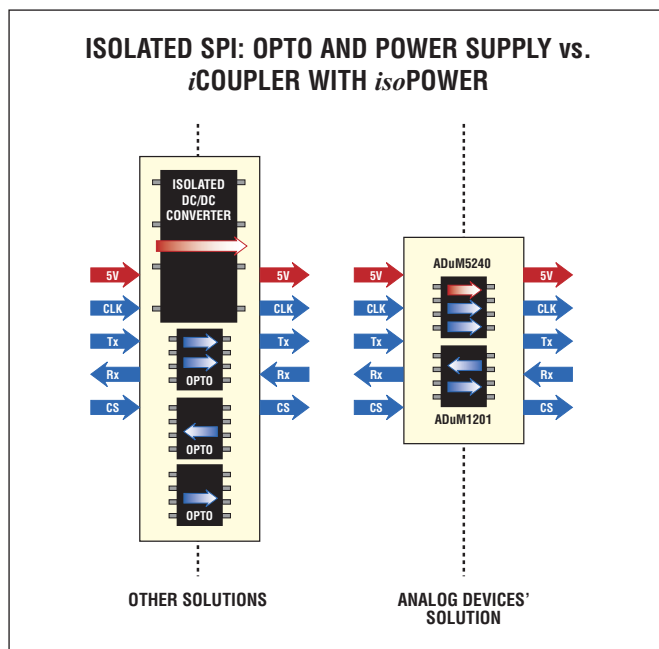
Analog Devices *iCoupler*[®] products with *isoPower*[™] technology offer a new approach that greatly reduces size and cost without compromising on data rate and isolation rating. It starts with *iCoupler* digital isolators that employ chip scale microtransformers in contrast to LEDs and photodiodes used in optocouplers. Compared to optocouplers, *iCoupler* products consume less power, achieve higher data rates and provide more precise timing; yet still provide isolation ratings of up to 5 kV. With the introduction of *iCoupler* technology more than five years ago, safe, reliable data transfer has been provided by over 50 million channels of digital isolation.

The same transformers in these devices can be used to make an isolated dc-to-dc converter, creating a total isolation solution in one surface-mount package. Using Analog Devices' *isoPower* technology, a new family of devices integrates 50 mW of isolated power and two 10 Mbps data channels with 2.5 kV isolation, providing a total solution in one package.

Analog Devices' ADuM524x products provide galvanic isolation by transmitting data across an isolated transformer, using integrated CMOS electronics for signal conditioning. The same chip scale transformers are used to generate isolated power, but the CMOS electronics drive the primary side, and then rectify and regulate the supply on the isolated secondary side. The resulting internal dc-to-dc converter supplies

power to the isolated side of the ADuM524x and makes available up to 10 mA of current at 5 V for use in a variety of applications.

The figure below compares SPI buses that are isolated by optocouplers and a discrete dc-to-dc converter with Analog Devices' solution that uses one ADuM5240 dual-channel *iCoupler* with *isoPower* and one ADuM1201 dual-channel *iCoupler*. The Analog Devices' solution reduces solution size and cost by more than 50%.



Analog Devices' solution reduces size and cost by over 50%.

The ADuM524x *iCoupler* products with *isoPower* technology, available in 8-lead SOIC packages and priced at \$2.95 per unit in 1k quantity, provide a simple, low cost, space-saving isolation solution. In addition, Analog Devices offers a wide range of 2.5 kV standard isolators, and the ADuM240x family of 5 kV quad-channel isolators, plus a range of application focused devices, for example, the ADuM1230 isolated gate driver. For datasheets, free samples, and more information, visit www.analog.com/iCoupler-tech. ▀

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