Digital isolator reduces board space by up to 80%

Analog Devices, Inc. (ADI) is introducing the industry's first automotive grade products to provide true bidirectional isolation for the lower cost I2C serial bus. Based on ADI's proprietary iCoupler digital isolation technology, the ADuM1250W hot swappable, dual I2C digital isolator reduces board space by as much as 80 percent and greatly reduces the system cost associated with isolating I2C buses. This is accomplished by eliminating optocouplers and support circuitry previously required in isolated I2C interfaces. The ADuM1250W is the industry's first I2C digital isolator to carry an AEC-Q100 qualified1 –40°C to +125°C automotive temperature rating and is based on the award winning ADuM125x family of I2C isolators that have been in volume production for over three years in a wide range of industrial, instrumentation, networking and other applications.

The I2C bus is a cost-effective, two wire interface between controllers and peripheral devices such as data converters, memory products, switches, sensors and power supply ICs. The bus uses bidirectional lines to transmit and receive signals over the same wire, allowing two-wire signaling of clock and data. This reduces complexity and cost by eliminating extra wiring and components. In a variety of HEV and automotive applications, controllers or peripherals are isolated from the bus to avoid interference or harmful voltage levels. Typically, isolation has been achieved with optocouplers, but doing so increases the cost and complexity of the I2C interface because unidirectional optocouplers must be accommodated by separating each of the two bidirectional I2C channels into two unidirectional channels. The resultant four unidirectional channels are then each isolated with an optocoupler and recombined into two bidirectional channels. The additional circuitry associated with the bidirectional/unidirectional conversions and the isolation of the four unidirectional channels adds complexity and cost that offset the intended benefits of the I2C bus. With the ADuM1250W isolator, this complexity and cost is avoided as a single component directly provides bidirectional isolation to both of the I2C lines. This small, complete isolation device ensures the signal integrity of the bidirectional I2C bus while reducing component count, cost, board space, and complexity. To download the data sheet, visit: www.analog.com/pr/ADuM1250W/ds?ref=PR_9-10-10 [1]

ADuM1250W iCoupler Digital Isolator Key Features and Benefits:

•AEC-Q100 qualified, 125?C operation, supports the quality and reliability requirements of automotive applications
•Small surface mount 8-lead SOIC package saves up to 80% board space
•True bi-directional isolated data paths eliminate the need for buffers and other external components
•Industry standard I2C interface ensures reliable operation with I2C compliant peripherals
•1MHz operation provides ample bandwidth to operate with high performance

peripherals and devices
•3.0- to 5.5-V supply/logic levels enables flexible operation and level shifting

Pricing and Availability

Product	Sample Availability	Price in 10,000s	Packaging
ADuM1250W [2]	NOW	$2.21	8-lead SOIC_narrow

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Links:
[1] http://www.analog.com/pr/ADuM1250W/ds?ref=PR_9-10-10
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