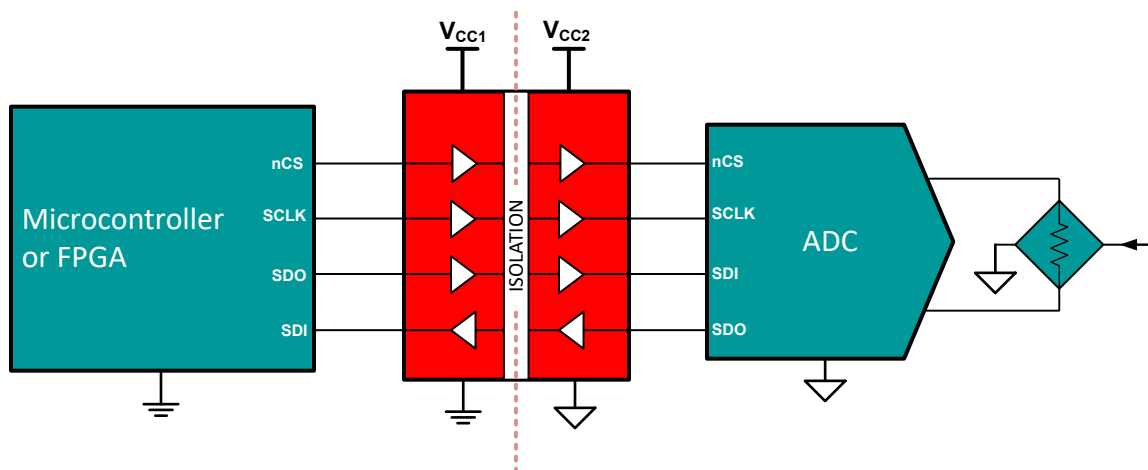


Product Overview

Isolating SPI Signals



Example Isolating SPI Signals Block Diagram

Design Considerations

- SPI requires a minimum of 3 channels: SCLK (SPI Clock), SDO (Serial Data Out) and SDI (Serial Data In). When used in bus format or with specific peripheral devices a chip select (nCS or CS) is required. Four or six channel digital isolator devices support SPI applications depending on the number of chip select signals needed. Six channel digital isolators or multiple digital isolators support SPI peripherals with additional IO lines needed for status or control in parallel to the SPI signals.
- Isolation prevents DC and unwanted AC currents between controller devices and peripheral ICs.
- Isolation protects low voltage parts in a system from high voltage circuits.
- Isolation diminishes the effect of ground potential difference and eliminates ground loops.
- Isolation devices with integrated isolated power provide signal and power transfer between controller devices and peripheral ICs.
- [\[FAQ\] How to connect SPI MCU to multiple isolated SPI nodes?](#)
- [\[FAQ\] How to calculate the maximum SPI speed supported by a digital isolator?](#)
- [Extending the SPI bus for long-distance communication](#)
- [Digital Isolator Design Guide](#)
- [Top Design Questions About Digital Isolators](#)
- Need additional assistance? Ask our engineers a question on the [TI E2E™ Isolation Support Forum](#)

Recommended Parts

Commercial Devices	Automotive AEC-Q100 Devices	V _{CC} Voltage Range	Maximum SPI Clock Frequency Supported at 5V	Features
ISO60xx		1.71 to 5.5V	27.75MHz	Highest bandwidth: 200Mbps, 1.2ns (max.) PWD and channel to channel skew Low power (I _{CC}) per Mbps (635μA/ch max. at 1Mbps) Reinforced isolation Small footprint package options
ISO64xx	ISO64xx-Q1	2.25 to 5.5V	25MHz	200kV/μs (min.) CMTI 150Mbps Reinforced and basic isolation Small footprint package options
ISOW64xx	ISOW64xx-Q1	2.25 to 5.5V	22.9MHz	100kV/μs (min.) CMTI Reinforced digital isolator with integrated DC/DC Low-emissions
ISO6163		2.5 to 5.5V	20.8MHz	Automatic STANDBY state for low power and energy efficiency Reinforced isolation
ISOS141-SEP		2.25 to 5.5V	15.6MHz	30krad (Si) Total Ionizing Dose (TID) 600V working voltage Space enhanced plastic
ISO7041	ISO7041-Q1	2.25 to 5.5V	1.4MHz	Ultra low power (I _{CC}), 3.5μA/channel quiescent current Basic isolation
ISO78xx		2.25 to 5.5V	15.6MHz	2000V _{RMS} working voltage 100kV/μs (min.) CMTI Reinforced isolation Extra-wide 14.5mm creepage and clearance package option
ISOW77xx	ISOW77xx-Q1	2.25 to 5.5V	15.9MHz	Reinforced and basic digital isolator with integrated DC/DC Low-emissions

For more devices, browse through the [online parametric tool](#) where you can sort by desired voltage, channel numbers, and other features.

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Last updated 10/2025