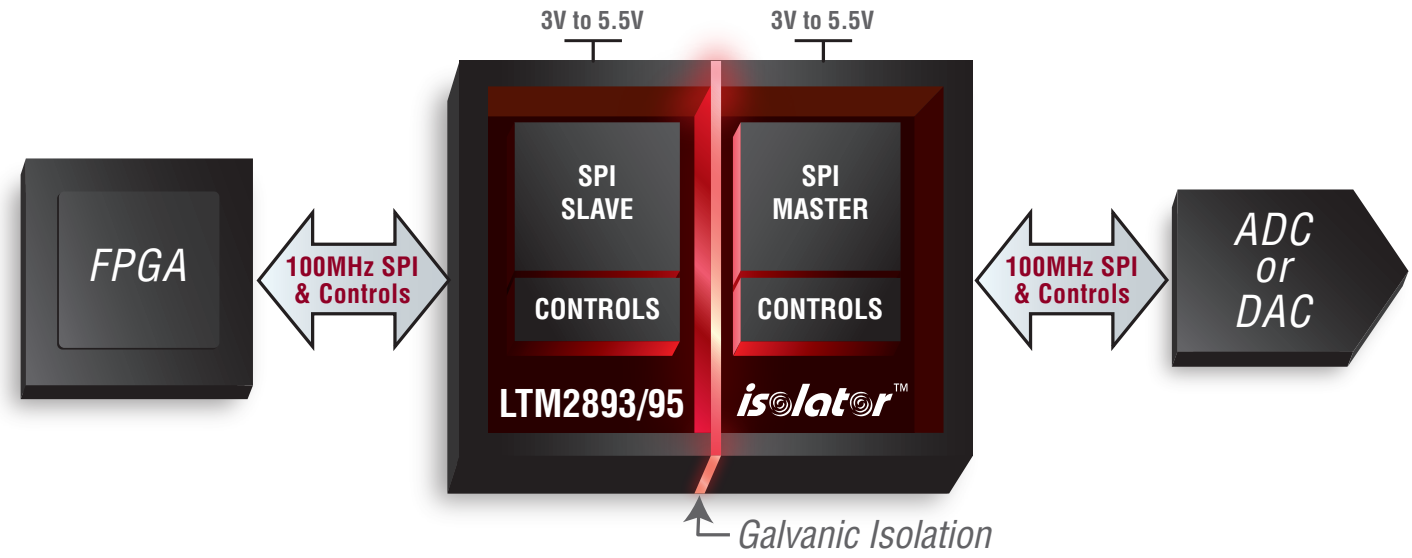
Isolated Data Conversion



Rugged 6000V_{RMS} µModule Isolator with 100MHz ADC or DAC SPI Interface

The LTM®2893 and LTM2895 are robust SPI µModule® isolators that provide a fast, no latency, isolated interface between precision data converters and the host processor. The LTM2893 (read only) and LTM2893-1 (read/write) are optimized for Linear Technology's successive approximation register (SAR) analog-to-digital converters (ADCs), while the LTM2895 is optimized for Linear's precision digital-to-analog converters (DACs). With a fast 100MHz SPI interface, 6,000V_{RMS} of galvanic isolation, and low jitter control signals, the LTM2893 and LTM2895 require no external components, providing a comprehensive solution for high speed isolated data converter communications.

Features

- 6,000V_{RMS} Isolated SPI Interface
- Up to 100MHz SPI Compatible I/O
- Configurable SPI Word Length: 8 to 32 Bits
- Low 30ps_{RMS} Jitter Conversion Start (LTM2893) and /LOAD (LTM2895) Signals
- Three Isolated Control or Multiplexer Select Signals
- 15mm × 6.25mm BGA Package

LTM2893 ADC Recommendations

Part	Description
LTC®2328	16-, 18-Bit 1Msps ±10.24V True Bipolar SAR ADC
LTC2348	16-, 18-Bit Octal 200ksps Simultaneous Sampling SAR ADC
LTC2378	16-, 18-, 20-Bit 1Msps SAR ADC

LTM2895 DAC Recommendations

Part	Description
LTC2641	12-, 14-, 16-Bit Unipolar V_{OUT} DAC
LTC2642	12-, 14-, 16-Bit Bipolar V_{OUT} DAC
LTC2758	18-Bit Dual Serial SoftSpan™ I_{OUT} DAC

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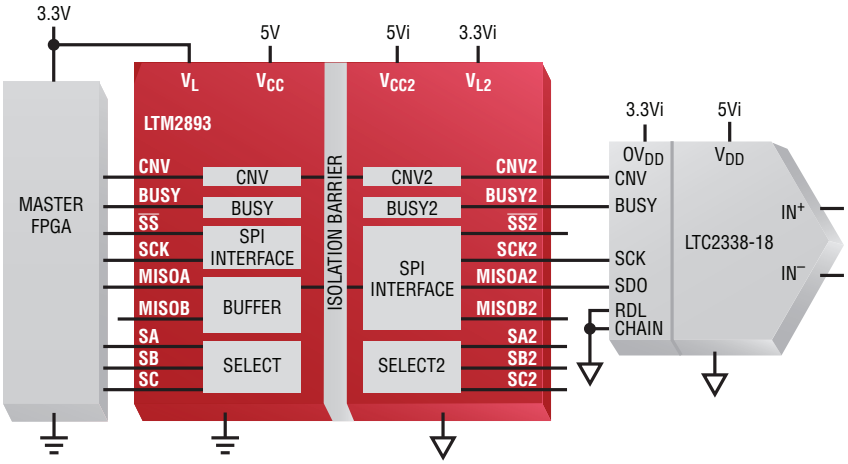
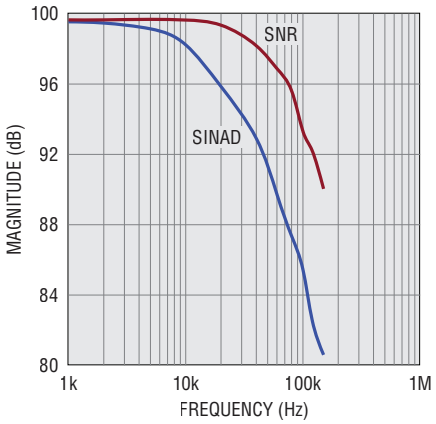
Data Conversion Performance

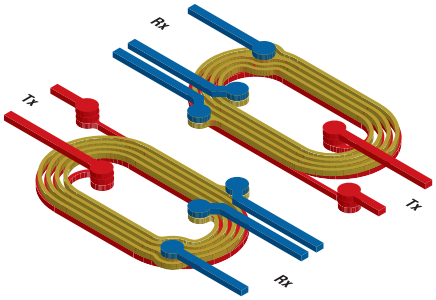


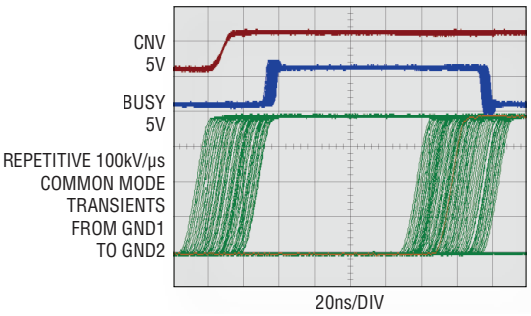


The LTM2893 and LTM2895 provide up to 10 isolated logic channels to support the most demanding data converters, as well dual data converter configurations, analog multiplexers and programmable gain amplifiers. Ideal for breaking ground loops, noise isolation, protecting equipment, or level shifting to a different ground reference, the LTM2893 and LTM2895 physically separate data converter circuitry and support SPI read/write speeds of up to 100MHz, while maintaining crucial data converter specifications, like high signal-to-noise ratio (SNR) or low jitter.

µModule isolator™

Linear Technology µModule isolators use embedded, inductively coupled coils to pass data differentially across the isolation boundary, resulting in an extremely robust communications scheme. Simple isolated solutions result from the integration of isolated data, isolated power and all passive components, including bypass capacitors, in a single package. High distance through-insulation ultimately translates to higher ESD protection and reliability.





Common Mode Transient Immunity

A differential signaling scheme enables communication through common mode transient events greater than 50kV/µs, unaffected by the transient and avoiding any priority data jitter or data corruption. The system includes data refresh, error checking and safe shutdown for robust digital communications.

RF and Magnetic Field Immunity

The LTM2893 and LTM2895 pass independent RF and magnetic field immunity test requirements per European Standard EN 55024, in accordance with the following test standards: EN 61000-4-3 for radiated, radio frequency, electromagnetic field immunity; EN 61000-4-8 for power frequency magnetic field immunity; and EN 61000-4-9 for pulsed magnetic field immunity.

Test	Frequency	Field Strength
EN 61000-4-3 Annex D	80MHz to 1GHz	10V/m
	1.4MHz to 2GHz	3V/m
	2GHz to 2.7GHz	1V/m
EN 61000-4-8 Level 4	50Hz and 60Hz	30A/m
EN 61000-4-8 Level 5	60Hz	100A/m*
EN 61000-4-9 Level 5	Pulse	1000A/m

*Non IEC method