ISOSD61
ISOLATED SIGMA-DELTA

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16-bit modulator for accurate sensing in industrial applications

Noise immunity and reliability in harsh application environments

The galvanically isolated ISOSD61/ISOSD61L second order Sigma-Delta modulator, based on the highly successful ST transformer coupling technology, is available in either the single-ended (ISOSD61) and differential (ISOSD61L) signaling versions. It converts analog input signals into high-speed single-bit digital data streams, from which analog information can be recovered by a low-pass filter and further processed by a host controller. The modulator protects the output peripheral interface with a galvanic isolation barrier that separates low and high voltage domains and blocks stray currents between different grounds. The silicon-based isolation technology offers a number of advantages over traditional opto-coupling, including significantly lower power consumption, higher data transfer rates and greater reliability for longer device lifetime.

KEY FEATURES & BENEFITS

- ±250 mV linear input signal range for wide input dynamic
- 16-bit converter with 86 dB SNR for high accuracy
- Up to 25 MHz clock for high frequency sampling
- 30 kV/µs CMTI for reliability against fast noise transient
- 6 kV galvanic isolation
- UL1577 and VDE0884-11 certification
- Full development tool set for technical support and fast time to market

KEY APPLICATIONS

- Servo drives
- Industrial motor control
- Solar inverters
- UPS
- EV charging
- Telecom and server power supply

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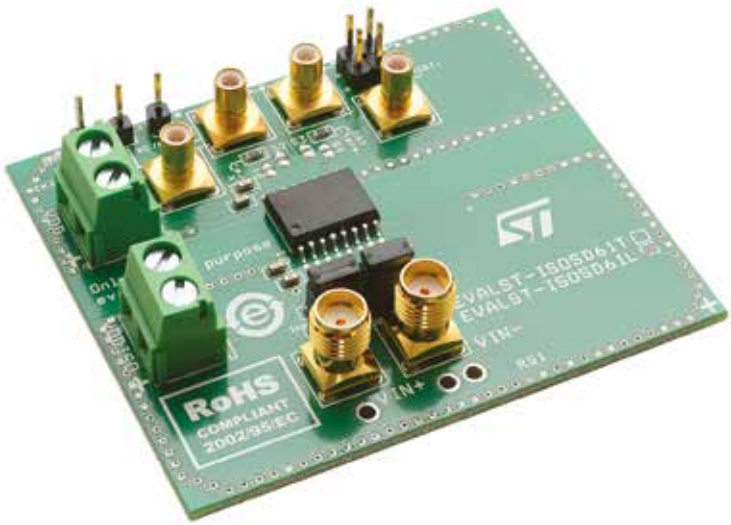
Overview and ecosystem

The Sigma-Delta modulator product family offers ISOSD61 (TTL/CMOS) or ISOSD61L (LVDS) solutions according to the appropriate clock input and data output signal protocol for a given application. The recently qualified device delivers excellent conversion accuracy through high resolution 16-bit analog current and voltage sensing, as well as robust 6kV galvanic isolation for safe operation in critical industrial applications such as servo drives, UPS, EV charger and solar inverters. It is a key element for ensuring compliance with international regulations and standards governing functional or safety isolation in order to safeguard equipment and, more importantly, humans, from electrical discharges and shock.
ST offers comprehensive support in the form of evaluation boards and reference designs for servo drives and motor control applications to lower development time and effort. They allow application designers to gauge the full benefits of these devices in terms of increased lifetime and reliability, as well as exploit the accurate, real-time data post-processing in tight synchronization with a microcontroller through an external clock.
The high-frequency sampling rate allows a very wide input signal bandwidth and renders the ISOSD61 modulators the perfect companion chips for high frequency switches. Indeed, all manner of industrial applications are witnessing a surge in the use of new Silicon-Carbide switches due to their superior switching performance in high resolution PWM current control, while reducing losses, energy dissipation and overheating. The key features of the modulator also mean the device represents a viable alternative to discrete sensors like Hall Effect trasducers, for a much smaller form factor and lower cost.
The fine accuracy, rugged isolation and broad flexibility of the ISOSD61 product family ensures system reliability even in the most demanding performance scenarios, while offering a high level of integration in a small outline package that will allow compact designs and significantly reduced cost of ownership for market solutions.

EVALST-ISOSD61T/L: fully featured ISOSD61/ISOSD61L Sigma-Delta modulator board



Product table

Part number	Version	Linear input range	Max. clock frequency	Resolution	SNR	Isolation	CMTI	Package & packing
ISOSD61	TTL/CMOS	±250 mV	25 MHz	16-bit	86 dB	6 kV	30 kV/us	SO16W Tray
ISOSD61TR	TTL/CMOS							SO16W Tape & Reel
ISOSD61L	LVDS							SO16W Tray
ISOSD61LTR	LVDS							SO16W Tape & Reel