



**LinearDimensions**  
SEMICONDUCTOR

**LND3045**

*Analog Sensor Interface Chip- SAR ADC with SPI Interface, Speed Sensor & PTAT*

## GENERAL DESCRIPTION

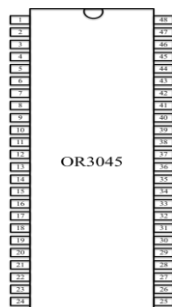
LND3045 is an analog chip prototype, which consists of five 12-bit and one 16-bit Successive Approximation Register (SAR) analog-to-digital converters (ADC) with SPI Interface, a speed sensor and a Proportional To Absolute Temperature (PTAT) circuit. LND3045 provides a complete front-end solution for high temperature sensor applications including LVDTs and Resolvers.

Analog input range to SAR ADC can vary from  $V_{DD}$  to  $V_{SS}$ . ADC normally remains in shutdown mode, powering up only for the conversions. This process of conversion is controlled by enable pin of the ADC and this results in a lot of power saving.

All the bias voltages required for proper functioning of various internal components are generated inside the chip which eliminates the use of external voltage references.

LND3045 provides a serial interface, which is compatible with SPI. Proportional to absolute temperature (PTAT) circuit acts as a temperature sensor that monitors the ambient temperature. Output of PTAT circuit is connected to one of the 12-bit SAR ADC. Speed sensor generates a pulse each time when a peak is detected in the applied differential input.

LND3045 is available in a 48-pin DIP package, and it operates over a temperature range of 27°C to 200°C.



## FEATURES

- Complete Front-End for LVDTs and Resolvers up to 16-bit data collection
- Includes four 12-bit resolution SAR ADCs and one 16-bit resolution SAR ADC with differential inputs
- On-chip bias voltage references
- Built-in PTAT which acts as temperature sensor
- SPI standard interface
- Operating temperature range of 27°C to 200°C
- Clock Speed of 1MHz or Higher
- Maximum power dissipation of 23 mW under a supply voltage of 3.3V
- 48-pin DIP package
- Excellent Monotonicity and Linearity over Temperature

## APPLICATIONS

- LVDT & Resolver Front-End Interface
- Digital Signal Processing
- Industrial Process Control
- Battery Powered Systems

## PRODUCT HIGHLIGHTS

- Five analog differential input channels for SAR ADCs
- SPI serial interface
- On-chip temperature sensor
- Bias voltages derived inside the chip
- Temperature insensitive operation