

TC340X Sigma-Delta A/D Converter Family

Product Information

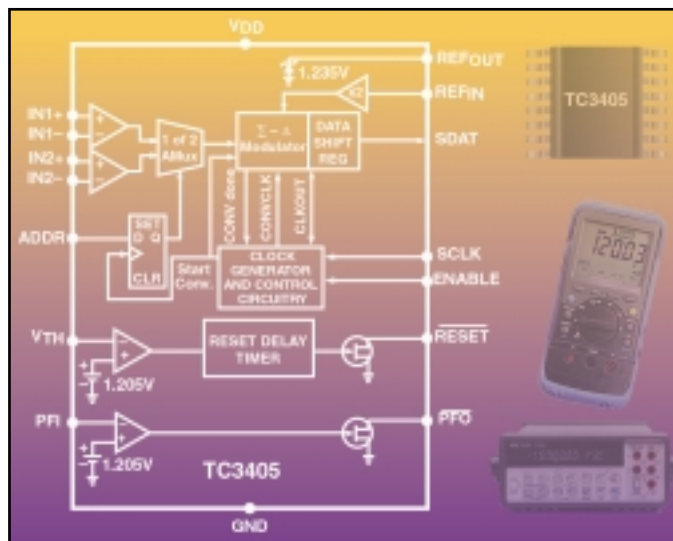
The **TC340X** family of Sigma-Delta A/D Converters is optimized for use with a microcontroller in low cost, battery-operated systems. These data converters are based on Microchip's Sigma-Delta technology and perform 16-bit conversions (15-bit plus sign) at up to eight per second or adjustable down to 10-bit resolution at 512 conversions per second.

The TC340X family can operate from +1.8V to +5.5V while dissipating only 300 μ A during normal operation over the 0°C to +85°C temperature range. A voltage reference is included, or an external reference can be used. The TC340X sigma-delta A/D converters have a 2-wire microPort™ digital interface, which can be used for starting conversions and for reading out the data.

These A/D converters have either a differential input, single-ended input, or contain both differential and single-ended within the same device. The TC3400 has one differential input. The TC3401 and T3402 have multiple differential inputs, while the TC3403 has four single-ended inputs. TC3404 has two single-ended and two differential inputs, and the TC3405 has three single-ended inputs and one differential input.

The TC3401 has a V_{DD} monitor with a reset generator that provides Power-On RESET and brown-out protection while an extra threshold detector is suitable for use as an early warning power fail detector, or as a wake-up timer.

All of the sigma-delta A/D converters in the TC340X family are offered in either a 16-pin PDIP or SOIC package except the TC3400, which comes in either 8-pin PDIP or SOIC. Typical applications are data loggers, thermostats, humidity meters, security sensors, and other consumer electronics and portable equipment.



Features:

- 16-Bit resolution at eight conversions per second
- Adjustable conversion rates up to 512 per second at 10-Bit resolution
- Single supply voltage from +1.8V to +5.5V
- Low operating power: $I_{DD} = 300\mu A$
- Low power shutdown mode decreases I_{DD} to less than 50 μA
- The microPort™ serial interface bus requires only two interface lines
- Uses internal or external reference
- True differential inputs with built-in mux provide ratiometric conversions (except TC3403)
- V_{DD} monitor and reset generator operational in shutdown mode
- Early warning power fail detector, also suitable as wake-up timer
- Automatically enters shutdown mode when not in use

TC340X Sigma-Delta A/D Converter Family *Continued*

Additional Information:

- Microchip's web site: www.microchip.com
- Microchip's *Technical Library CD-ROM*, Order No. DS00161
- *Analog Interface Handbook*, Order No. DS00207
- Product Line Card, Order No. DS00148
- *Analog Design Pack CD-ROM*, Order No. DS51205

TC340X Sigma-Delta A/D Converters

Device	Maximum Resolution (Bits) (°C)	Input Sampling Rate (Conv./s)	Output Channels	Input Interface	Typical Voltage Range	Typical Supply Current (µA)	INL (%FSR)	Features	# of Pins/Packages
TC3400	10 to 16	512	1 Diff.	2-wire	1.8V to 5.5V	260	0.0038		8P, 8SN
TC3401	10 to 16	512	2 Diff.	2-wire	1.8V to 5.5V	300	0.0038	Enable, RESET and Power-fail monitors	16P, 16QR
TC3402	10 to 16	512	4 Diff.	2-wire	1.8V to 5.5V	250	0.0038		16P, 16QR
TC3403	10 to 16	512	4 SE	2-wire	1.8V to 5.5V	280	0.0038	RESET and Power-fail monitors	16P, 16QR
TC3404	10 to 16	512	2 SE, 2 Diff.	2-wire	1.8V to 5.5V	280	0.0038	Power-fail monitor	16P, 16QR
TC3405	10 to 16	512	3 SE, 1 Diff.	2-wire	1.8V to 5.5V	250	0.0038	Enable, RESET monitor	16P, 16QR

Note: All TC340X are Sigma-Delta Converters that can use the internal V_{REF} or an external V_{REF} and have adjustable resolution.

Package Key: P = PDIP, SN = SOIC, QR = QSOP

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