# TLV320AIC12KIRHBT

**Voiceband Audio Codec 1ADC / 1DAC Ch Automotive 32-Pin VQFN EP T/R**

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| **Manufacturer:** | Texas Instruments, Inc |
| **Package/Case:** | VQFN-32 |
| **Product Type:** | Communication & Networking ICs |
| **RoHS:** | RoHS Compliant/Lead free |
| **Lifecycle:** | Active |

Images are for reference only

Inquiry

## General Description

The TLV320AIC1x is a true low-cost, low-power, high-integrated, high-performance, mono voice codec. It features one 16-bit analog-to-digital (A/D) channel and one 16-bit digital-to-analog (D/A) channel.

The TLV320AIC1x provides high-resolution signal conversion from digital-to-analog (D/A) and from analog-to-digital (A/D) using oversampling sigma-delta technology with programmable sampling rate.

The TLV320AIC1x implements the smart time division multiplexed serial port (SMARTDM). The SMARTDM port is asynchronous 4-wire serial port in TDM format for glue-free interface to TI DSPs (i.e. TMS320C5000, TMS320C6000) and microcontrollers. The SMARTDM supports both continuous data transfer mode and on-the-fly reconfiguration programming mode. The TLV320AIC1x can be gluelessly cascaded to any SMARTDM-based device to form multichannel codec and up to 16 TLV320AIC1x codecs can be cascaded to a single serial port.

The TLV320AIC1x also provides a flexible host port. The host port interface is a two-wire serial interface that can be programmed to be either an industrial standard I2C or a simple S2C (start-stop communication protocol).

The TLV320AIC1x also integrates all of the critical functions needed for most voice-band applications including MIC preamplifier, handset amplifier, headset amplifier, antialiasing filter (AAF), input/output programmable gain amplifier (PGA), and selectable low-pass IIR/FIR filters. The AIC12K also includes an 8-speaker driver.

The TLV320AIC1x implements an extensive power management; including device power-down, independent software control for turning off ADC, DAC, operational-amplifiers, and IIR/FIR filter (bypass) to maximize system power conservation. The TLV320AIC1x consumes only 11.2 mW at 3.3 V.

The TLV320AIC1x low power operation from 2.7 V to 3.6 V power supplies, along with extensive power management, make it ideal for portable applications including wireless accessories, hands free car kits, VOIP, cable modem, and speech processing. Its low group delay characteristic makes it suitable for single or multichannel active control applications.

The TLV320AIC1x is characterized for commercial operation from 0°C to 70°C and industrial operation from -40°C to 85°C. The TLV320AIC1xk is characterized for industrial operation from -40°C to 85°C.

## Key Features

Mono 16-Bit Oversampling Sigma-Delta A/D Converter

Mono 16-Bit Oversampling Sigma-Delta D/A Converter

Support Maximum Master Clock of 100 MHz to Allow the DSP Output Clock to be Used as a Master Clock

Selectable FIR/IIR Filter With Bypassing Option

Programmable Sampling Rate up to:

Max 26 Ksps With On-Chip IIR/FIR Filter

Max 104 Ksps With IIR/FIR Bypassed

On-Chip FIR Produced 84-dB SNR for ADC and 92-dB SNR for DAC

Smart Time Division Multiplexed (SMARTDM) Serial Port

Glueless 4-Wire Interface to DSP

Automatic Cascade Detection (ACD) Self-Generates Master/Slave Device Addresses

Programming Mode to Allow On-the-Fly Reconfiguration

Continuous Data Transfer Mode to Minimize Bit Clock Speed

Support Different Sampling Rate for Each Device

Turbo Mode to Maximize Bit Clock for Faster Data Transfer and Allow Multiple Serial Devices to Share the Same Bus

Allows up to 16 Devices to be Connected to a Single Serial Port

Host Port

2-Wire Interface

Selectable I2C or S2C

Differential and Single-Ended Analog Input/Output

Built-In Analog Functions:

Analog and Digital Sidetone

Antialiasing Filter (AAF)

Programmable Input and Output Gain Control (PGA)

Microphone/Handset/Headset Amplifiers

AIC12K has an 8- Speaker Driver

Power Management With Hardware/Software Power-Down Modes 30 μW

Separate Software Control for ADC and DAC Power Down

Fully Compatible With Common TMS320 DSP Family and Microcontroller Power Supplies

1.65 V - 1.95 V Digital Core Power

1.1 V - 3.6 V Digital I/O

2.7 V - 3.6 V Analog

Power Dissipation (PD)

11.2 mW at 3.3 V in Standard Operation

17.8 mW at 3.3 V With Headphone Drivers

Internal Reference Voltage (Vref)

2s Complement Data Format

Test Modes Which Include Digital Loopback and Analog Loopback

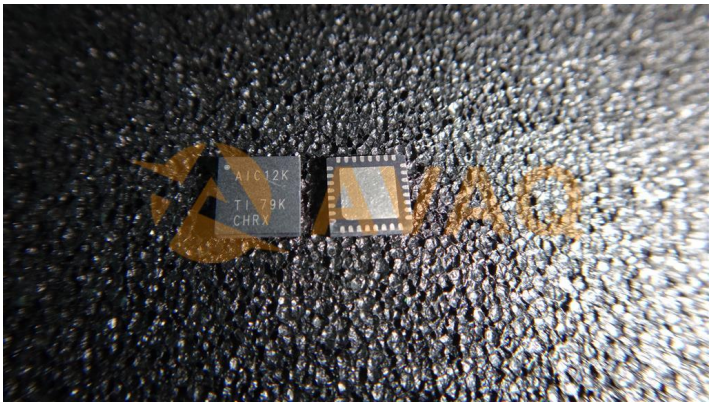
Digital Still Cameras

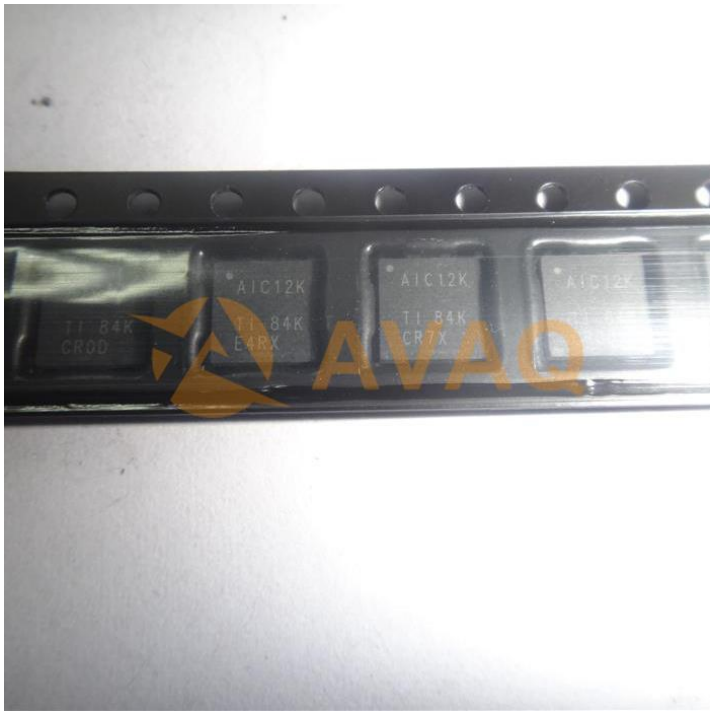
Wireless Accessories

Hands-Free Car Kits

VOIP

Cable Modem




## Recommended For You

**TLV320AIC23BIPWR**

Texas Instruments, Inc

TSSOP28

**TLV320AIC3104IRHBR**

Texas Instruments, Inc

QFN32

**TL16C554AIPN**

Texas Instruments, Inc

LQFP80

**TLV320AIC3101IRHBR**

Texas Instruments, Inc

QFN32

**TL16C554APN**

Texas Instruments, Inc

LQFP80

**TLV320AIC24KIPFBR**

Texas Instruments, Inc

TQFP-48

**TL16C554PN**

Texas Instruments, Inc

QFP

**TLV320AIC24KIPFB**

Texas Instruments, Inc

TQFP-48

**TL16C752BLPTREP**

Texas Instruments, Inc

LQFP-48

**TL16C550DIPFBR**

Texas Instruments, Inc

48-TQFP

**TLC320AC01CFN**

Texas Instruments, Inc

PLCC28

**TL16C552AFN**

Texas Instruments, Inc

PLCC

**TL16C450FN**

Texas Instruments, Inc

PLCC44

**TL16C554FN**

Texas Instruments, Inc

PLCC

**TLV320AIC311IRHBR**

Texas Instruments, Inc

VQFN32