AUDIO DSP WITH ANALOG INTERFACE

Manufacturer:	Texas Instruments, Inc
Package/Case:	QFP
Product Type:	Embedded Processors & Controllers
RoHS:	RoHS Compliant/Lead free
Lifecycle:	Active

Images are for reference only

Inquiry

General Description

The TAS3204 is a highly-integrated audio system-on-chip (SOC) consisting of a fully-programmable, 48-bit digital audio processor, a 3:1 stereo analog input MUX, four ADCs, four DACs, and other analog functionality. The TAS3204 is programmable with the graphical PurePath Studio suite of DSP code development software. PurePath Studio is a highly intuitive, drag-and-drop environment that minimizes software development effort while allowing the end user to utilize the power and flexibility of the TAS3204's digital audio processing core.

TAS3204 processing capability includes speaker equalization and crossover, volume/bass/treble control, signal mixing/MUXing/splitting, delay compensation, dynamic range compression, and many other basic audio functions. Audio functions such as matrix decoding, stereo widening, surround sound virtualization and psychoacoustic bass boost are also available with either third-party or TI royalty-free algorithms.

The TAS3204 contains a custom-designed, fully-programmable 135-MHz, 48-bit digital audio processor. A 76-bit accumulator ensures that the high precision necessary for quality digital audio is maintained during arithmetic operations.

Four differential 102 dB DNR ADCs and four differential 105 dB DNR DACs ensure that high quality audio is maintained through the whole signal chain as well as increasing robustness against noise sources such as TDMA interference.

The TAS3204 is composed of eight functional blocks:
Clocking System
Digital Audio Interface
Analog Audio Interface
Power supply
Clocks, digital PLL
I2C control interface
8051 MCUcontroller
Audio DSP – digital audio processing

Key Features

Digital Audio Processor
Fully Programmable With the Graphical, Drag-and-Drop PurePath Studio? Software Development Environment

135-MHz Operation

48-Bit Data Path With 76-Bit Accumulator

Hardware Single-Cycle Multiplier (28 × 48)

Five Simultaneous Operations Per Clock Cycle

Usable 768 Words Data RAM (48 Bit), Usable 1k Coefficient RAM (28 Bit)

Usable 2.5K Program RAM

122 ms at 48 kHz, 5.8k Words 24-Bit Delay Memory

Slave Mode Fs is 44.1 kHz and 48 kHz

Master Mode Fs is 48 kHz

Analog Audio Input/Output
Two 3:1 Stereo Analog Input MUXes

Four Differential ADCs (102 dB DNR, Typical)

Four Differential DACs (105 dB DNR, Typical)

Digital Audio Input/Output
Two Synchronous Serial Audio Inputs (Four Channels)

Two Synchronous Serial Audio Outputs (Four Channels)

Input and Output Data Formats: 16-, 20-, or 24-Bit Data Left, Right, and I2S

System Control Processor
Embedded 8051 WARP Microprocessor

Programmable Using Standard 8051 C Compilers

Up to Four Programmable GPIO Pins

General
Two I2C Ports for Slave or Master Download

Single 3.3-V Power Supply

Integrated Regulators

APPLICATIONS
MP3 Player/Music Phone Docks

Speaker Bars

Mini/Micro-Component Systems

Musical Instruments

Speaker Equalization

Studio Monitors

PurePath Studio Is a trademark of Texas Instruments
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Recommended For You

TAS5142DKD

Texas Instruments, Inc

HSSOP36

TAS5717PHPR

Texas Instruments, Inc

HTQFP48

TAS5411QPWPRQ1

Texas Instruments, Inc

HTSSOP16

TAS5342ADDVR

Texas Instruments, Inc

HTSSOP44

TAS5707PHPR

Texas Instruments, Inc

HTQFP48

TAS5760MDAPR

Texas Instruments, Inc

HTSSOP32

TAS5760MDCAR

Texas Instruments, Inc

HTSSOP48

TAS5414CTPHDRQ1

Texas Instruments, Inc

HTQFP-64

TAS2505IRGET

Texas Instruments, Inc

VQFN24

TAS2505IRGER

Texas Instruments, Inc

VQFN-24

TAS5086DBTR

Texas Instruments, Inc

TSSOP38

TAS3004PFB

Texas Instruments, Inc

QFP

TAS3004PFBR

Texas Instruments, Inc

TQFP-48

TAS5076PFC

Texas Instruments, Inc

QFP

TAS3108DCP

Texas Instruments, Inc

HTSSOP38