OPA1632DR

Audio Amp Speaker 1-CH Mono/2-CH Stereo/4-CH Stereo Class-AB 8-Pin SOIC T/R

Images are for reference only

Inquiry

Manufacturer:	Texas Instruments, Inc
Package/Case:	SOP8
Product Type:	Amplifier ICs
RoHS:	RoHS Compliant/Lead free
Lifecycle:	Active

General Description

The TMS320F28002x (F28002x) is a member of the C2000 real-time microcontroller family of scalable, ultra-low latency devices designed for efficiency in power electronics, including but not limited to: high power density, high switching frequencies, and supporting the use of GaN and SiC technologies.

These include such applications as:
Industrial motor drives
Motor control
Solar inverters
Digital power
Electrical vehicles and transportation
Sensing and signal processing

The real-time control subsystem is based on TI's 32-bit C28x DSP core, which provides 100 MHz of signal-processing performance for floating- or fixed-point code running from either on-chip flash or SRAM. The C28x CPU is further boosted by the Trigonometric Math Unit (TMU) and VCRC (Cyclical Redundancy Check) extended instruction sets, speeding up common algorithms key to real-time control systems.

High-performance analog blocks are integrated on the F28002x real-time microcontroller (MCU) and are closely coupled with the processing and PWM units to provide optimal real-time signal chain performance. Fourteen PWM channels, all supporting frequency-independent resolution modes, enable control of various power stages from a 3-phase inverter to advanced multi-level power topologies.

The inclusion of the Configurable Logic Block (CLB) allows the user to add custom logic and potentially integrate FPGA-like functions into the C2000 real-time MCU.

Interfacing is supported through various industry-standard communication ports (such as SPI, SCI, I2C, PMBus, LIN, and CAN) and offers multiple pin-muxing options for optimal signal placement. The Fast Serial Interface (FSI) enables up to 200 Mbps of robust communications across an isolation boundary.

New to the C2000 platform is the Host Interface Controller (HIC), a high-throughput interface that allows an external host to access the resources of the TMS320F28002x directly.

Want to learn more about features that make C2000 MCUs the right choice for your real-time control system Check out *The Essential Guide for Developing With C2000 Real-Time Microcontrollers* and visit the C2000 real-time control MCUs page.

Ready to get started Check out the TMDSCNCD280025C evaluation board and download C2000Ware.

Key Features

TMS320C28x 32-bit DSP core at 100 MHz
IEEE 754 Floating-Point Unit (FPU)
Support for Fast Integer Division (FINTDIV)

Trigonometric Math Unit (TMU)
Support for Nonlinear Proportional Integral Derivative (NLPID) control

CRC Engine and Instructions (VCRC)

Ten hardware breakpoints (with ERAD)

On-chip memory
128KB (64KW) of flash (ECC-protected)

24KB (12KW) of RAM (ECC or parity-protected)

Dual-zone security

Clock and system control
Two internal zero-pin 10-MHz oscillators

On-chip crystal oscillator or external clock input

Windowed watchdog timer module

Missing clock detection circuitry

Dual-clock Comparator (DCC)

Single 3.3-V supply
Internal VREG generation

Brownout reset (BOR) circuit

System peripherals
6-channel Direct Memory Access (DMA) controller

39 individually programmable multiplexed General-Purpose Input/Output (GPIO) pins

16 digital inputs on analog pins

Enhanced Peripheral Interrupt Expansion (ePIE)

Multiple low-power mode (LPM) support

Embedded Real-time Analysis and Diagnostic (ERAD)

Unique Identification (UID) number

Communications peripherals
One Power-Management Bus (PMBus) interface

Two Inter-integrated Circuit (I2C) interfaces

One Controller Area Network (CAN) bus port

Two Serial Peripheral Interface (SPI) ports

One UART-compatible Serial Communication Interface (SCI)

Two UART-compatible Local Interconnect Network (LIN) interfaces

Fast Serial Interface (FSI) with one transmitter and one receiver (up to 200Mbps)

Analog system
Two 3.45-MSPS, 12-bit Analog-to-Digital Converters (ADCs)
Up to 16 external channels

Four integrated Post-Processing Blocks (PPB) per ADC

Four windowed comparators (CMPSS) with 12-bit reference Digital-to-Analog Converters (DACs)
Digital glitch filters

Enhanced control peripherals
14 ePWM channels with eight channels that have high-resolution capability (150-ps resolution)
Integrated dead-band support

Integrated hardware trip zones (TZs)

Three Enhanced Capture (eCAP) modules
High-resolution Capture (HRCAP) available on one of the three eCAP modules

Two Enhanced Quadrature Encoder Pulse (eQEP) modules with support for CW/CCW operation modes

Configurable Logic Block (CLB)
Augments existing peripheral capability

Supports position manager solutions

Host Interface Controller (HIC)
Access to internal memory from an external host

Background CRC (BGCRC)
One cycle CRC computation on 32 bits of data

Diagnostic features
Memory Power On Self Test (MPOST)

Hardware Built-in Self Test (HWBIST)

Package options:
80-pin Low-profile Quad Flatpack (LQFP) [PN suffix]

64-pin LQFP [PM suffix]

48-pin LQFP [PT suffix]

Temperature options:
S: –40°C to 125°C junction

Q: –40°C to 125°C free-air (AEC Q100 qualification for automotive applications)

Recommended For You

LM833N/NOPB

Texas Instruments, Inc

DIP-8

OPA2134PA

Texas Instruments, Inc

DIP8

OPA1642AIDR

Texas Instruments, Inc

SOP8

LM4808MM/NOPB

Texas Instruments, Inc

MSOP8

LM4667MM/NOPB

Texas Instruments, Inc

TSSOP

OPA1642AIDGKR

Texas Instruments, Inc

MSOP8

OPA1612AID

Texas Instruments, Inc

SOP8

OPA1622IDRCR

Texas Instruments, Inc

VSON10

OPA1622IDRCT

Texas Instruments, Inc

VSON10

OPA1602AID

Texas Instruments, Inc

SOIC-8

LM4871MX/NOPB

Texas Instruments, Inc

SOP8

OPA1612AIDRGR

Texas Instruments, Inc

SON8

LM4890M/NOPB

Texas Instruments, Inc

SOP8

OPA1632DGN

Texas Instruments, Inc

MSOP8

LM4890MM/NOPB

Texas Instruments, Inc

MSOP8