

LVDS Transceiver 200Mbps 0.65V 8-Pin SOIC T/R



Images are for reference only

[Inquiry](#)

Manufacturer: [Texas Instruments, Inc](#)

Package/Case: SOIC-8

Product Type: Drivers

RoHS: RoHS Compliant/Lead free 

Lifecycle: Active

General Description

The TMS320F28003x (F28003x) 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:

- Motor drives
- Appliances
- Hybrid, electric & powertrain systems
- Solar & EV charging
- Digital power
- Body electronics & lighting
- Test & measurement

The real-time control subsystem is based on TI's 32-bit C28x DSP core, which provides 120 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 Floating-Point Unit (FPU), Trigonometric Math Unit (TMU), and VCRC (Cyclical Redundancy Check) extended instruction sets, speeding up common algorithms key to real-time control systems.

The CLA allows significant offloading of common tasks from the main C28x CPU. The CLA is an independent 32-bit floating-point math accelerator that executes in parallel with the CPU. Additionally, the CLA has its own dedicated memory resources and it can directly access the key peripherals that are required in a typical control system. Support of a subset of ANSI C is standard, as are key features like hardware breakpoints and hardware task-switching. The F28003x supports up to 384KB (192KW) of flash memory divided into three 128KB (64KW) banks, which enable programming and execution in parallel. Up to 69KB (34.5KW) of on-chip SRAM is also available to supplement the flash memory.

The Live Firmware Update hardware enhancements on F28003x allow fast context switching from the old firmware to the new firmware to minimize application downtime when updating the device firmware.

High-performance analog blocks are integrated on the F28003x real-time microcontroller (MCU) and are closely coupled with the processing and PWM units to provide optimal real-time signal chain performance. Sixteen PWM channels, all supporting frequency-independent resolution modes, enable control of various power stages from a 3-phase inverter to power factor correction and advanced multilevel 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, CAN and CAN FD) and offers multiple pin-muxing options for optimal signal placement. The Fast Serial Interface (FSI) enables up to 200Mbps 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 TMS320F28003x directly.

Want to learn more about features that make C2000 Real-Time 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.

The *Getting Started With C2000 Real-Time Control Microcontrollers (MCUs) Getting Started Guide* covers all aspects of development with C2000 devices from hardware to support resources. In addition to key reference documents, each section provides relevant links and resources to further expand on the information covered.

Ready to get started Check out the TMDSCNCD280039C evaluation board and download C2000Ware.

Key Features

TMS320C28x 32-bit DSP core at 120 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)

Programmable Control Law Accelerator (CLA)
120 MHz

IEEE 754 single-precision floating-point instructions

Executes code independently of main CPU

On-chip memory
384KB (192KW) of flash (ECC-protected) across three independent banks

69KB (34.5KW) of RAM (ECC-protected)

Dual-zone security

Secure Boot and JTAG Lock

Clock and system control
Two internal 10-MHz oscillators

Crystal oscillator or external clock input

Windowed watchdog timer module

Missing clock detection circuitry

Dual-clock Comparator (DCC)

3.3-V I/O design
Internal VREG generation allows for single-supply design

Brownout reset (BOR) circuit

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

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

23 digital inputs on analog pins

2 digital inputs/outputs on analog pins (AGPIO)

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/DCAN) bus port

One Controller Area Network with Flexible Data-Rate (CAN FD/MCAN) bus port

Two Serial Peripheral Interface (SPI) ports

Two 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

Three 4-MSPS, 12-bit Analog-to-Digital Converters (ADCs)

Up to 23 external channels (includes the two gpdac outputs)

Four integrated Post-Processing Blocks (PPB) per ADC

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

Digital glitch filters

Two 12-bit buffered DAC outputs

Enhanced control peripherals

16 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

Eight Sigma-Delta Filter Module (SDFM) input channels (two parallel filters per channel)

Standard SDFM data filtering

Comparator filter for fast action for overvalue or undervalue condition

Embedded Pattern Generator (EPG)

Configurable Logic Block (CLB)

4 tiles

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

Advanced Encryption Standard (AES) accelerator

Live Firmware Update (LFU)

~~Fast context switching from old to new firmware~~

Flash bank erase time improvements

Diagnostic features

Memory Power On Self Test (MPOST)

Hardware Built-in Self Test (HWBIST)

Functional Safety-Compliant targeted

Developed for functional safety applications

Documentation available to aid ISO 26262 and IEC 61508 system design

Systematic capability up to ASIL D and SIL 3 targeted

Hardware capability up to ASIL B and SIL 2 targeted

Safety-related certification

ISO 26262 certification up to ASIL B and SIL 2 by TÜV SÜD planned

Package options:

100-pin Low-profile Quad Flatpack (LQFP) [PZ suffix]

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

64-pin (LQFP) [PM suffix]

48-pin (LQFP) [PT suffix]

Temperature options:

Free-air (T_A): -40°C to 125°C

Junction (T_J): -40°C to 150°C

Recommended For You

SN65LVDS3486D

Texas Instruments, Inc

SOP-16

SN65LVDS3487D

Texas Instruments, Inc

SOP16

DS90C032TM

Texas Instruments, Inc

SOP16

DS90C031BTM

Texas Instruments, Inc

SOP16

SN65LVDS31PW

Texas Instruments, Inc

TSSOP-16

SN65LVDS33D

Texas Instruments, Inc

SOP-16

SN65LVDS32D

Texas Instruments, Inc

SOP-16

SN65LVDS31D

Texas Instruments, Inc

SOP

SN65LVDS32PW

Texas Instruments, Inc

TSSOP16

DS90UB954TRGZIQ1

Texas Instruments, Inc

QFN48

DS90UB954TRGZRQ1

Texas Instruments, Inc

VQFN48

SN65DSI83TPAPRQ1

Texas Instruments, Inc

HTQFP-64

DS90UB947TRGCTQ1

Texas Instruments, Inc

VQFN-64

DS90LV011AQMF/NOPB

Texas Instruments, Inc

SOT23-5

DS90UB924TRHSTQ1

Texas Instruments, Inc

WQFN-48