

HS32F7D377PDI Dual-core MCU

Key Feature

Dual-core architecture

- Two Arm® Cortex®-M7 CPU cores
- Each core operates at 300MHz
- IEEE754 single-precision Floating-point unit (FPU) support
- 128KB ITCM per CPU
- 128KB DTCM per CPU

On-chip memory

- 1MB eFlash x2
- 256KB Global Shared SRAM
- Unique Identification Number

Clock and System Control

- Two internal zero-pin 10MHz oscillators
- On-chip crystal oscillator
- Windowed Watchdog Timer module
- Missing Clock detection circuitry

1.1-V core, 3.3-V I/O design

System Peripherals

- Support for ASRAM and SDRAM external memory interface (EMIF)
- Dual 6-channel DMA controllers
- Up to 97 individually, programmable, multiplexed General-purpose Input/Output (GPIO) with input filtering
- Multiple Low-power Mode support with external wake-up

Communication Peripherals

- USB2.0
- Three CAN interfaces (pin-bootable)
- Three SPI interfaces (pin-bootable)
- Four UART interfaces (pin-bootable)
- Two I2C interfaces (pin-bootable)

Analog Subsystem

- Four ADC
 - 16-bit mode
 - Sampling rate: 3.5 MSPS
 - Differential input / Single-ended input
 - Up to 10 channels in differential mode / 20 channels in single-ended mode
 - 12-bit mode
 - Sampling rate: 7 MSPS
 - Single-ended input
 - 20 channels
- Single Sample-and-Hold (S/H) on each ADC
- Four Digital post-processing hold on each ADC
 - Offset calibration
 - Reference value comparison calculation
 - High, low, and zero-crossing comparison
 - Trigger to sample delay capture
- Eight comparators (CMPSS) with 12-bit DAC
- Three 12-bit Buffered DACs

Enhanced Control Peripherals

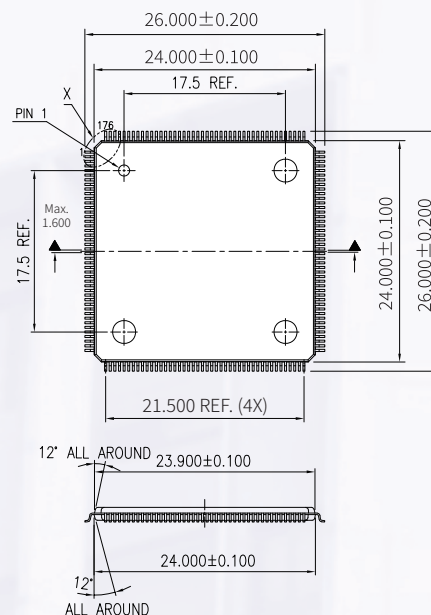
- 24-PWM channels
- 16-HRPWM (High Resolution PWM) channels
 - High-resolution capability on both A and B channels of 8 PWM modules
 - Support for Dead-band (available for both normal and high-resolution PWM)
- Six Enhanced CAP Modules
- Three Enhanced QEP Modules
- Eight SDFM(Σ-ΔModulator) modules, each channel with 2 parallel filters per channel
 - Standard SDFM data filtering
 - Comparator filter for fast action to out-of-range conditions

Configurable Logic Block (CLB)

- Enhanced existing peripheral functionality

Temperature

- -40°C to 125°C junction



Package



Applications

- Traction inverter motor control
- HVAC (Heating, Ventilation, and Air Conditioning) large commercial motor control
- Automated sorting equipment
- CNC (Computer Numerical Control) control
- AC charging (station)
- DC charging (station)
- Electric vehicle (EV) charging station power module
- Energy storage power conversion system (PCS)
- Central inverter
- Solar power optimizer
- String inverter
- Inverter and motor control
- On-board charger (OBC) and wireless charger
- Linear motor segmentation controller
- Servo drive control module
- AC input BLDC motor drive
- DC input BLDC motor drive
- Industrial AC/DC converter
- Three-phase UPS (Uninterruptible Power Supply)

Block Diagram

