

CAN Newsletter Online

DUAL-CORE MCU

Master core provides CAN FD connectivity

Microchip has introduced the dsPIC33CH dual-core micro-controller optimized for motion control applications. This includes drones as well as automotive fans and pumps.



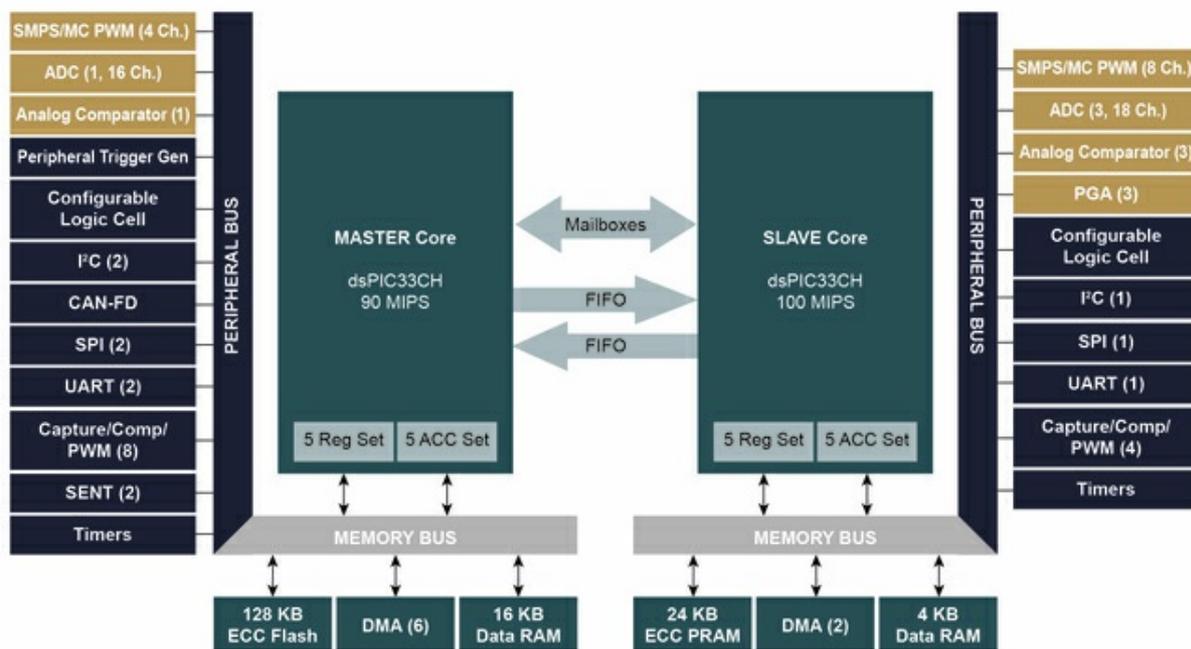
The dual-core MCU is intended for high-end embedded control applications (Photo: Microchip)

The dsPIC33CH has one core that is designed to function as a master while the other is designed as a slave. The slave core is useful for executing dedicated, time-critical control code while the master core is busy running the user interface, system monitoring, and communications functions, customized for the end application. The chip is optimized for high-performance digital power, motor control, and other applications requiring sophisticated algorithms.

In an automotive fan or pump, the slave core is managing time-critical speed and torque control while the master handles the CAN-FD communications, system monitoring, and diagnostics tasks. "Customers tell us one of their biggest challenges is integrating software from multiple teams where one team is focused on the time-critical control code and another is working on the rest of the application," said Joe Thomsen from Microchip. "We created this dual-core product to simplify that software integration and optimize the performance for math-intensive applications." The flash memory ranges from 64 KiB to 128 KiB.



dsPIC33CH128MP508 Block Diagram



Operating Temperature: -40 to 125°C

Master and slave core provide dedicated peripherals (Photo: Microchip)

To reduce system costs and board size, advanced peripherals are available to each core including high-speed A/D and D/A converters with waveform generation, analog comparators, analog programmable gain amplifiers and PWM (pulse width modulation) hardware. Having two cores, with dedicated peripherals, allows the cores to be programmed to monitor each other for functional safety reasons, facilitating robust system design. The MCU family comes in packages with 28 to 80 pins depending on the integrated peripherals. The smallest housing measures 5 mm x 5 mm.

The products are supported by the supplier's MPLAB development ecosystem including the MPLAB X Integrated Development Environment (IDE), and the MPLAB Code Configurator. Microchip also offers several development boards.

