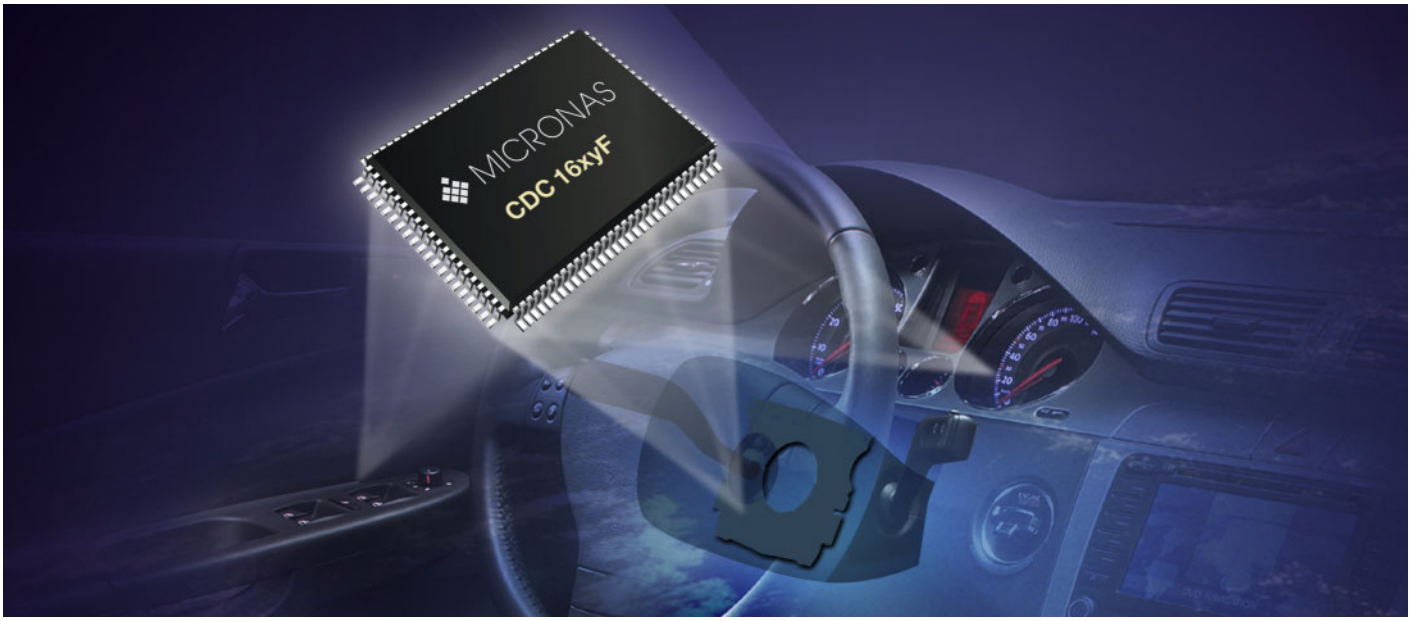
CDC 1651F-E

Aug/2005



CDC 1651F-E
16-Bit Automotive CAN Controller

The CDC 1651F-E is a pin-compatible mask ROM derivative of Micronas' 16-bit Car Dashboard Controller family based on a WDC 65C816 CPU core.

The CDC 1651F-E offers 4 Kbytes of RAM and 128 Kbytes of ROM and 2 Kbytes of Special Function ROM. The device can be operated with an external quartz, at clock frequencies from 4 to 12 MHz. Communication is possible via one FullCAN module according to Bosch specification V2.0B. Only one single 5 V power supply is needed. Two low-power modes are available to reduce power consumption significantly.

The device also contains the patented built-in ERM (EMI Reduction Module).

Features

- 128 Kbytes Mask ROM
- 4 Kbytes SRAM
- 2 Kbytes Special Function ROM
- Three CPU operation modes (Fast, Slow, Deep Slow)
- Two low-power modes (Idle and Wake)
- RTC delivering hours, minutes, seconds
- Polling/Flash timer output
- 4- to 12-MHz oscillator
- EMI reduction module (ERM)
- Digital watchdog
- Central clock divider
- Interrupt controller with 16 inputs and 16 priority levels
- Four port interrupts
- Regulator input supervision for reset/ alarm (alarm comparator)
- Clock and supply supervision
- 9-channel 10-bit ADC
- One comparator
- 48×4 LCD module
- DMA
- Two UARTs
- Two SPIs
- One CAN module with 256 bytes of object RAM according to Bosch specification V2.0B (16 message objects)
- Five stepper motor drivers
- Five PWM modules
- Sound generator with auto decay
- Two SW-selectable clock outputs
- 16-bit free-running counter with three capture/compare modules
- Patch module (up to 10 cells)
- 1×16-bit timer and 2×8-bit timer
- –40 to +105 °C case temperature range
- Single 5 V supply voltage
- Up to 85 GPIOs
- 100-pin PQFP package, 0.65 mm pin pitch

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Development Tools

- Evaluation chip CDC 1605F-E featuring ROM/Flash emulation with external RAM (up to 16 Mbyte)
- Emulator and POD with analyzer or trace functionality from 3rd party vendor
- Application Board (APB) for Flash memory programming
- Software environment (compiler, linker, assembler) from 3rd party vendors
- RTOS from 3rd party vendors

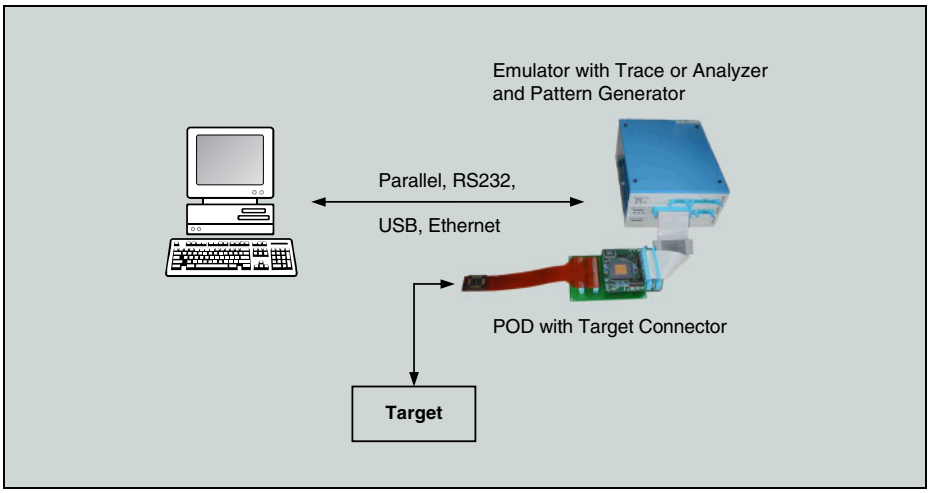

Fig. 1: Development tool setup

System Architecture

The Car Dashboard Controller CDC 1651F-E contains a WDC 65C816 processor which operates at a maximum clock frequency of 12 MHz. An internal RC oscillator can provide an alternative clock signal to the RTC during power saving modes.

All I/O ports have multiple functions to obtain utmost flexibility. A total of 85 GPIOs can be selected.

The built-in ERM delivers superb EMI results reducing the peak values by up to 10 dBmV.

The CDC 1651F-E is fully pin- and software compatible to all other members of the CDC 16xyF family.

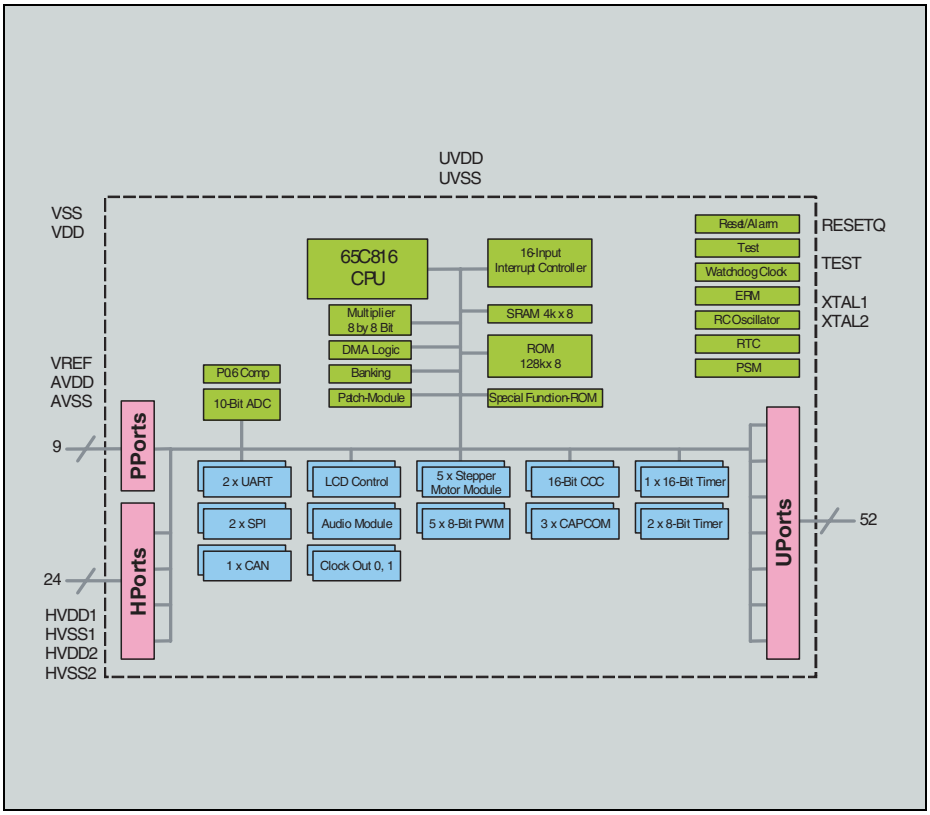

Fig. 2: Block diagram of the CDC 1651F-E

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