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

CDC 1651F-E

Aug/2005

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
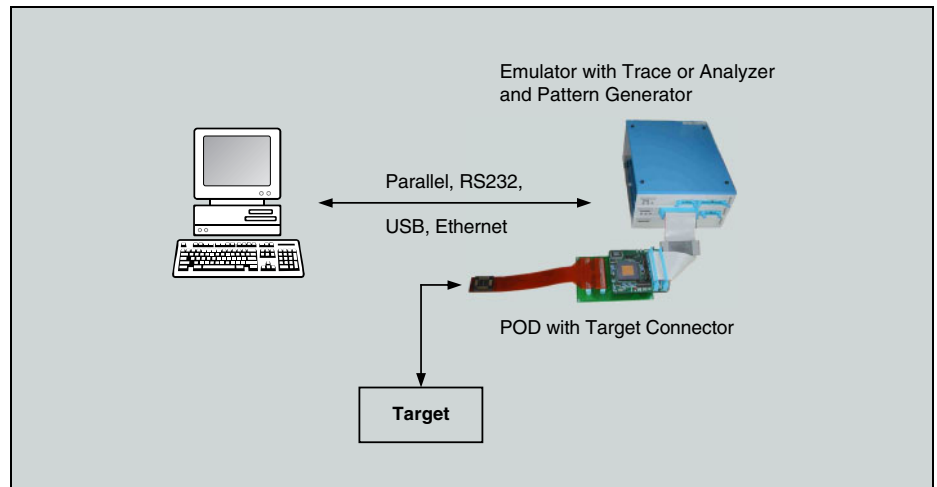
◆ RTOS from 3rd party vendors

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.

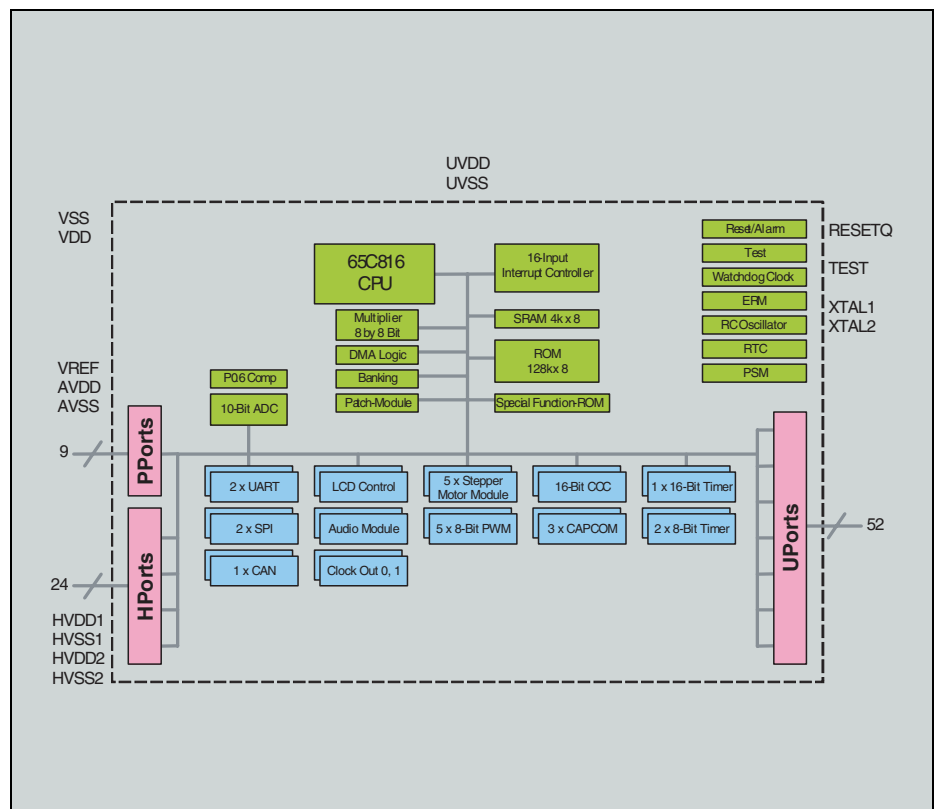The CDC 1651F-E is fully pin- and software compatible to all other members of the CDC 16xyF family.

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