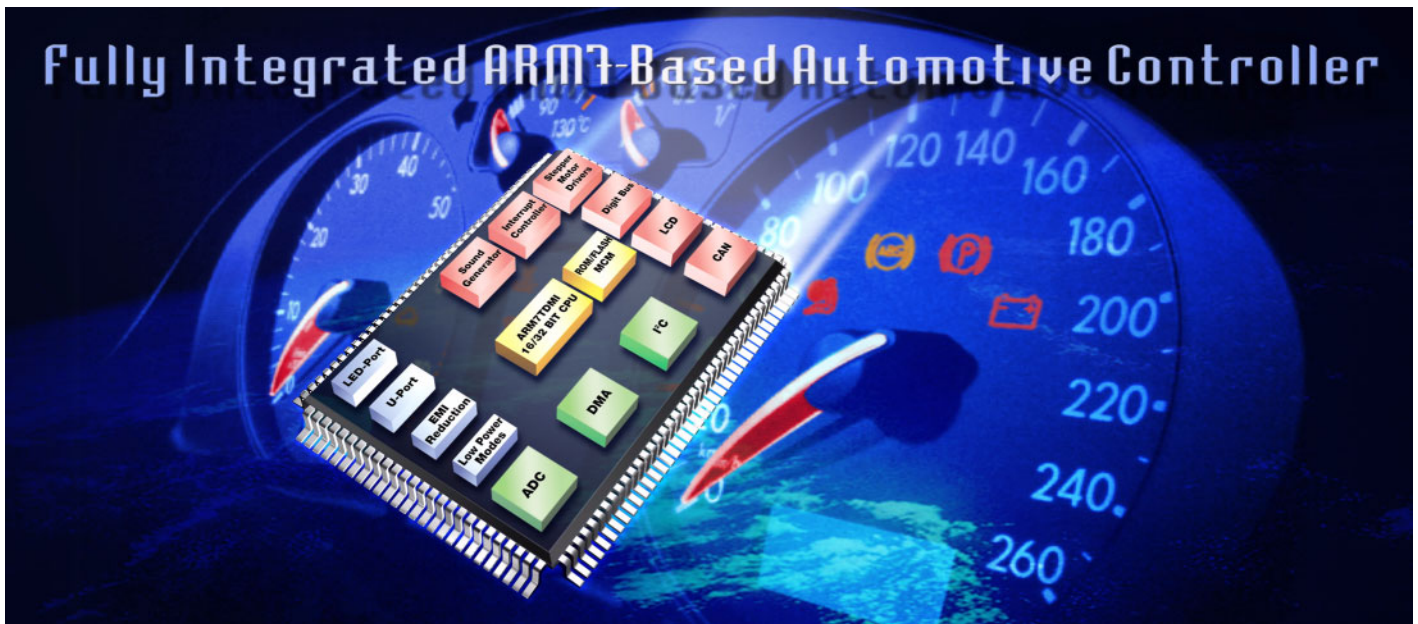


CDC 3231G

April/2003



CDC 3231G ARM7-Based Car Dashboard Controller

The new CDC 3231G-Cx is a pin-compatible mask ROM derivative of Micronas' 32-bit Car Dashboard Controller family based on an ARM7TDMI CPU core (CDC 32xxG).

The new device comes along with additional features of the Cx platform like a superior power saving module (PSM), one high-speed CAN module (Bosch V2.0B), and an optional device lock module to inhibit Flash access. Main characteristics of the PSM are three additional low-power modes (IDLE, WAKE, and STANDBY), an internal RC oscillator, a polling/Flash timer output, as well as an RTC (Real Time Clock).

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

Features

- ◆ 128 KB mask ROM
- ◆ 6 KB SRAM
- ◆ Four CPU operation modes (Deep Slow, Slow, Fast, PLL)
- ◆ Three low-power modes (Idle, Wake, Standby)
- ◆ RTC delivering hours, minutes, seconds
- ◆ Polling/Flash timer output
- ◆ PLL circuitry delivering up to 50 MHz
- ◆ 4- to 5-MHz oscillator
- ◆ EMI reduction module (ERM)
- ◆ Digital watchdog
- ◆ Central clock divider
- ◆ Interrupt controller with 26 inputs and 16 priority levels
- ◆ Five port interrupts
- ◆ Regulator input supervision for reset/ alarm (alarm comparator)
- ◆ Clock and supply supervision
- ◆ 16-channel 10-bit ADC
- ◆ Two comparators
- ◆ ADC reference (1 internal, 3 external)
- ◆ 46x4 LCD module
- ◆ One UARTs, two SPIs
- ◆ DigitBus master module
- ◆ One CAN module with 512 Bytes of object RAM according to Bosch specification V2.0B (32 message objects)
- ◆ One I²C master module
- ◆ Four stepper motor drivers
- ◆ Five PWM modules (configurable as 2x8 bit or 1x16 bit)
- ◆ Sound generator with auto decay
- ◆ Two SW-selectable clock outputs
- ◆ 16-bit free-running counter with six capture/compare modules
- ◆ 1x16-bit timer and 4x8-bit timer
- ◆ Patch module (up to 10 cells)
- ◆ JTAG interface
- ◆ -40 to +105 °C case temperature range
- ◆ Single 3.5 V to 5.5 V supply voltage (limited I/O performance below 4.5 V)
- ◆ Up to 91 GPIOs
- ◆ 128-pin PQFP package, 0.5 mm pin pitch

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Development Tools

- ◆ Evaluation chip CDC 3205G featuring
 - ETM via embedded emulation JTAG
 - ROM/Flash emulation with external SRAM (up to 8 MBytes)
- ◆ Evaluation Board (EVB) including the CDC 3205G for evaluation and debugging of embedded systems
- ◆ Application Board (APB) for Flash memory programming
- ◆ Probe for PQFP128
- ◆ Software environment (compiler, linker, assembler) from 3rd party vendors
- ◆ RTOS from 3rd party vendors
- ◆ CAN protocol stacks

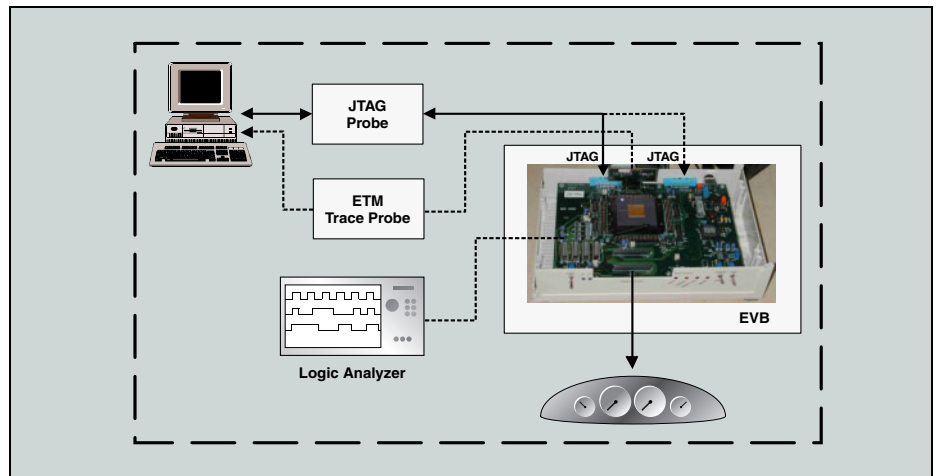


Fig. 1: Development tool setup

System Architecture

The Car Dashboard Controller CDC 3231G contains an embedded ARM7TDMI processor which operates at a maximum clock frequency of 50 MHz.

The internal high-speed bus connects the following peripherals to the ARM7TDMI processor:

- ◆ ICU (Interrupt Control Unit)
- ◆ SRAM
- ◆ DMA

The 16/32-bit bus connects to the mask ROM. All other peripherals are connected to the I/O bus. All I/O ports have multiple functions to obtain utmost flexibility. A total of 91 GPIOs can be selected.

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

The CDC 3231G is fully pin- and software-compatible with all other members of the CDC 32xxG family.

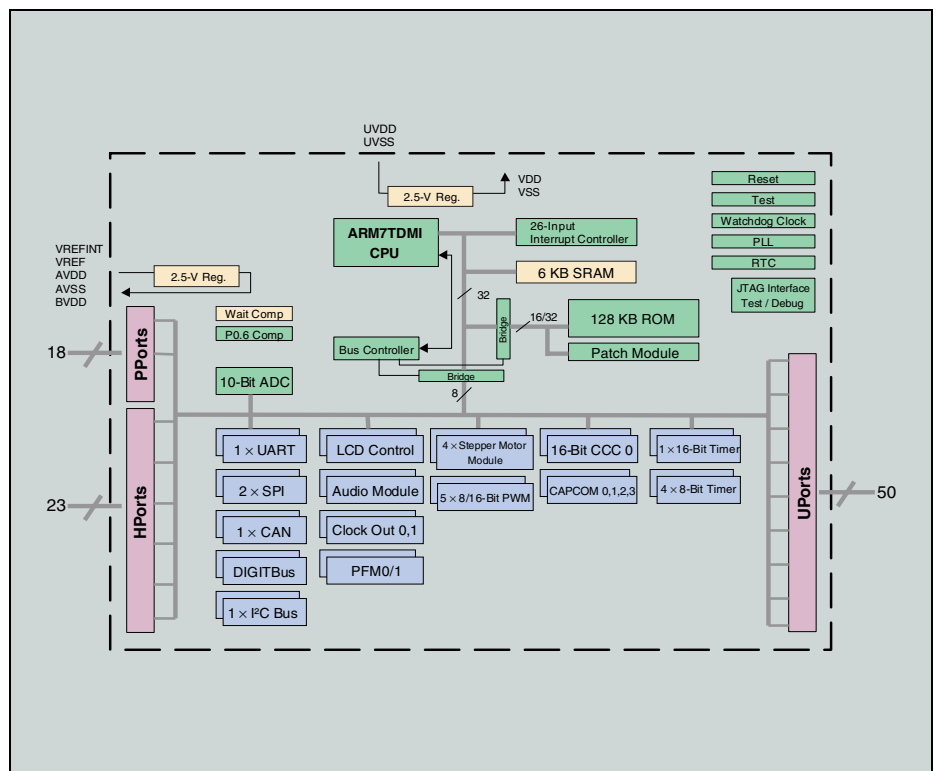


Fig. 2: Block diagram of the CDC 3231G

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Edition April 1, 2003; Order No. 6251-609-1PI