# PRODUCT BRIEF

**The C167CS-32FM** is a new high end derivative of the Infineon C166 Family of full featured single-chip CMOS microcontrollers. The C167CS-32FM features additionally 256 KByte on-chip Flash for program memory and 4 KByte Data Flash with EEPROM functionality, internal units like two CAN modules (V2.0 B active), ADC, CAPCOM, XRAM, IRAM, PLL, watchdog, RTC, GPT, power management control and 25 MHz performance. This microcontroller fulfills the requirements of highly sophisticated automotive and industrial control applications.

| Device | ROM/FLASH | EEPROM |
|---|---|---|
| C167CS-32FM | 256 KB FLASH | 4 KB |
| C167CS-4RM | 32 KB | – |
| C167CS-LM | 33 MHz | 3.3 V/16 MHz |

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## KEY FEATURES

- High Performance 16-bit CPU with 4-Stage Pipeline
- 80 ns Instruction Cycle Time at 25 MHz CPU Clock
- Up to 12.5 million instructions per second
- 400 ns Multiplication (16 x 16 bit), 800 ns Division (32/16 bit)
- Enhanced Boolean Bit Manipulation Facilities
- Additional Instructions to Support HLL and Operating Systems
- Register-Based Design with Multiple Variable Register Banks
- Single-Cycle Context Switching Support
- Clock Generation via on-chip PLL or via Direct Clock Input
- Up to 16 MBytes Linear Address Space for Code and Data
- 3 KByte On-Chip Dual Port Internal RAM
- 8 KByte On-Chip Extension RAM
- 256 KByte Internal Program Flash with 32-Bit Read Access
- 4 KByte Internal Data Flash (XFlash) with EEPROM functionality
- Two On-Chip CAN modules operating on one or two CAN Buses (30 or 2x15 Message Objects) Version 2.0B active

- Programmable External Bus Characteristics for Different Address Ranges
- 8-bit or 16-bit External Data Bus
- Multiplexed or Demultiplexed External Address/Data Buses
- Five Programmable Chip-Select Signals
- Hold and Hold-Acknowledge Bus Arbitration Support
- 1024 Byte On-Chip Special Function Register Area
- Idle, Power Down Modes and Power Saving Features
- 8-Channel Interrupt-Driven Single-Cycle Data Transfer Facilities via Peripheral Event Controller (PEC)
- 16-Priority-Level Interrupt System with 56 Sources, Sample-Rate down to 40 ns
- 24-Channel 10-bit A/D Converter with ‹10µs Conversion Time (7.76 µs for 25 MHz)
- Two 16-Channel Capture/Compare Units with Bidirectional I/O Port Pins for all 32 Channels
- 4-Channel PWM Unit
- Two Multi-Functional General Purpose Timer Units with five 16-bit Timers

- Two Serial Channels (Synchronous/ Asynchronous and High-Speed-Synchronous)
- Programmable Watchdog Timer
- Real Time Clock
- Oscillator Watchdog for Direct Drive Operation or Prescaler (without PLL)
- Up to 111 General Purpose I/O Lines, partly with Selectable Input Thresholds and Hysteresis
- Identification Register Support
- Optimized EMC Behavior
- Exit/Wakeup from Power Down with External Interrupt or RTC Interrupt
- single Chip Reset
- Flexible Pin Routing (use Address Pins while CAN is active)
- Compatible in Pins, Timing and Code to existing C167CR Derivatives
- Supported by a Wealth of Development Tools like C-Compilers, Macro-Assembler Packages, Emulators, Evaluation Boards, HLL-Debuggers, Simulators, Logic Analyzer Disassemblers
- On-Chip Bootstrap Loader
- 144-Pin MQFP Package (EIAJ)
- Full Automotive Temperature Range: −40°C to 125°C

www.infineon.com

# C167CS-32FM

## High Performance Microcontroller with On-chip Memory and TWO-CAN-Modules

Never stop thinking.