The ColdFire V4 Core & Standard Product Platform (SPP) C1 (CFV4SPPC1) combines the ColdFire V4 Core with industry-proven platform peripherals to form a complete high-performance microcontroller subsystem supported by a vast ecosystem of development tools and runtime software. With the CFV4SPPC1, you get:

- Reliability—from processor and peripheral IP already deployed in millions of embedded systems worldwide
- Rapid time-to-market—in just a few hours you can be developing software on your own FPGA implementation of the CFV4SPPC1

**PERIPHERALS FEATURES**

On-board peripherals and their features include:

- **FlexBus Controller**
  - Connects up to 6 on-chip or off-chip memories/devices
  - Independently programmable transfer characteristics for each device (wait states, address setup/hold)

- **Enhanced DMA (eDMA) Controller**
  - 16 independently programmable DMA channels
  - Programmable channel arbitration modes
  - Support for channel linking and scatter/gather operation

Variations of the CFV4SPPC1 with different combinations of on-board peripherals are also available.

**COLDFIRE V4 PERFORMANCE**

The ColdFire V4 Core is a high-performance implementation of the ColdFire architecture with fast instruction throughput and high-speed Harvard local buses with tightly-coupled instruction and data caches and local SRAM. The ColdFire V4 Core also features an MMU for full operating system support plus special arithmetic hardware including a divider and enhanced MAC (EMAC) for faster execution of DSP algorithms, and an FPU for single and double-precision floating-point calculations.

Like all ColdFire architecture processors, the ColdFire V4 Core features a variable-length instruction set for maximum code density, industry-standard AMBA 2 AHB system bus interface for rapid system integration, and a wide selection of development tools, operating systems, drivers, and libraries from both commercial and open source providers.
The ColdFire architecture, including the ColdFire V2 Core, is supported by a vast assortment of development systems/tools and run-time software including libraries, stacks, drivers, and operating systems from providers such as NXP, Green Hills Software, Wind River Systems, and many more. A free version of the GNU compiler supporting ColdFire V2 targets is also available from www.gnu.org.

NXP offers development boards, software, and CodeWarrior Development Tools (including a free version. In addition, there are several operating systems supporting the ColdFire V2 architecture, including uClinux and several RTOS’s, such as the MQX RTOS from Embedded Access, Inc.

- Interrupt Controller
  - 64 programmable interrupt sources, 33 of which are available for external interrupts
- Unique vector for each interrupt source
- Support for low-power mode wake-up
- Queued SPI (QSPI) module
- Programmable queue for up to 16 SPI transfers
- Four chip-select lines for up to 16 devices
- Programmable baud rate, before-and-after transfer delays, clock phase and polarity
- I2C interface module
- Support for the original Philips I2C bus protocol
- Support for baud rates up to 3.4 Mbps
- 3 UARTS
  - Programmable clock source, data formats, and modes (normal/loopback)
  - Error detection
  - Four maskable interrupt conditions
- 4 DMA Timer modules
  - Programmable clock source
  - Programmable prescaler
  - Programmable interrupt or DMA request upon timer event
- Miscellaneous Control Module (MCM)
  - Software watchdog timer
  - Reset status, low-power mode control, and core fault status registers

**POWER SAVING FEATURES**

The CFV4SPPC1 features software-controlled shutdown of selected clocks to support a variety of chip-level low-power modes:

- Independent shutdown of selected peripheral clocks
- Shutdown of the ColdFire V4 Core CPU clock in response to a ColdFire STOP instruction; the ColdFire V4 Core local SRAM Controller clock may optionally be kept running in STOP mode to support access to local SRAM from external AHB masters

**DEBUG SUPPORT**

The CFV4SPPC1 supports ColdFire Debug Architecture Revision D+, including:

- Background Debug Mode (BDM)
- Real-Time Trace (RTT)
- Real-Time Debug (RTD)
- On-chip, 128-entry trace buffer for low-cost trace over BDM

**DEVELOPMENT SUPPORT**

The ColdFire architecture, including the ColdFire V2 Core, is supported by a vast assortment of development systems/tools and run-time software including libraries, stacks, drivers, and operating systems from providers such as NXP, Green Hills Software, Wind River Systems, and many more. A free version of the GNU compiler supporting ColdFire V2 targets is also available from www.gnu.org.

NXP offers development boards, software, and CodeWarrior Development Tools (including a free version. In addition, there are several operating systems supporting the ColdFire V2 architecture, including uClinux and several RTOS’s, such as the MQX RTOS from Embedded Access, Inc.

**DELIVERABLES**

- Verilog source code
- Integration testbench and tests
- Documentation
- Scripts for simulation and synthesis with commonly-used EDA tools

For more information, please contact us at ip@silvaco.com.