XC87x – Family
New 64KB Flash 8-bit Microcontroller Series extends XC800 8-bit MCU Family

XC87x - series expands Infineon's 8-bit XC800 microcontroller (MCU) family to provide more scalable performance and up to 64KB Flash memory for cost-sensitive industrial and automotive applications. Operating at up to 26.7MHz and equipped with a 16-bit vector computer XC87x MCUs offers 16-bit performance at 8-bit costs. This exceptional performance, coupled with 2 independent PWM units with up to 10 PWM outputs and a 10-bit Analog-to-Digital Converter (ADC), makes these devices ideal for implementing Field Oriented Control (FOC) and Power Factor Correction (PFC) at the lowest system cost. The devices also are designed to enable simplified development of CAN (Controller Area Network) systems through an on-chip MultiCAN interface. The XC87x - series provides two package options XC878 in LQFP-64 and XC874 in VQFN-48 package.

Applications
- HVAC systems
- Motor control
- Pumps and fans
- LED control
- Roof module
- Seat module
- Center stack
- Low cost BCM module

Key Features
- High performance 8051 core running at 26.7MHz
- 64KByte of Flash memory
  - Built-in Error Correction
  - Protection against invalid code execution
  - 4KByte Data Flash ideal for EEPROM usage
- 3KByte RAM
- Capture/Compare Unit (CCU6) dedicated for flexible PWM signal generation for any kind of motor control
  - 3-phase PWM generation
  - 16-bit resolution and upto 54MHz frequency
  - Support for dead-time generation
- Timer 2 Capture/Compare Unit(T2CCU)
  - 6 compare channels
  - 4 capture channels mutiplexed with compare channels
  - 16-bit resolution and up to 54MHz frequency
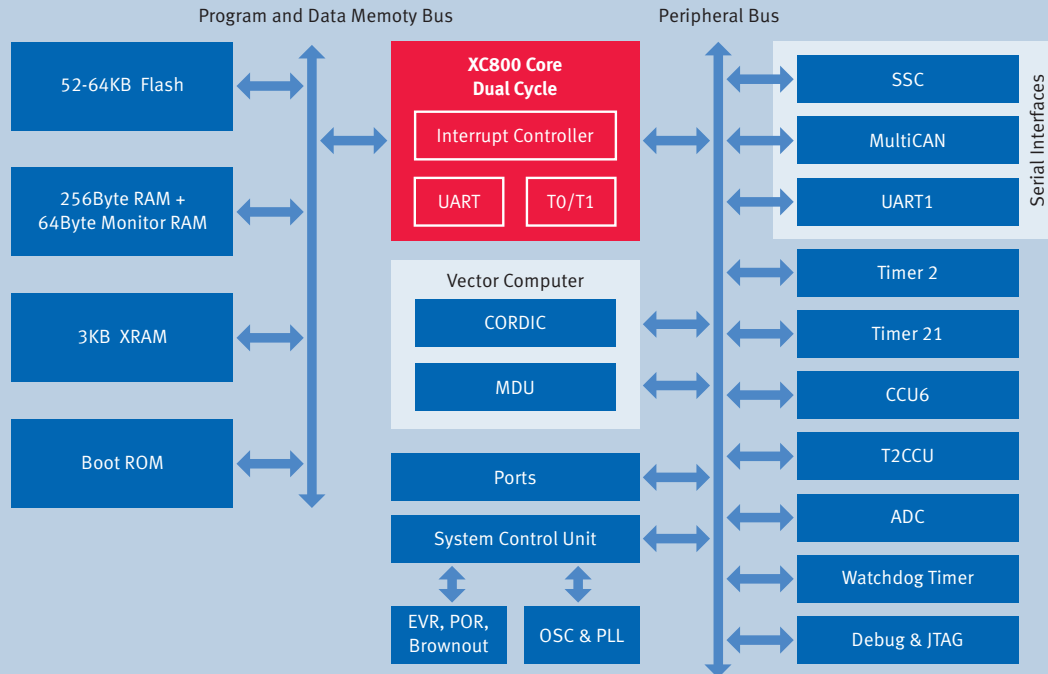 - Applications: LED control, Stepper motors, frequency generators

Key Features (cont'd)
- 10-bit ADC with high accuracy (8-channels)
  - Fast conversion in 1µs
  - Auto-scan, Injection and Comparator Modes to reduce CPU load
  - Hardware synchronisation to PWM units
- 16-bit Vector Computer (MDU+CORDIC) running at 54MHz for Field Oriented Control
  - Multiplication/Division Unit (MDU) for high-speed 16- and 32-bit multiplication, division and shift operations
  - CORDIC (COordinate Rotation DIgital Computer) Unit for Vector rotation and transformations
- 2 CAN nodes
  - 32 message objects shared between both nodes
  - Automatic FIFO and gateway mode support
- Two Full duplex UART interfaces
- LIN master and slave support for each UART
- High-Speed SPI Compatible Synchronous Serial Interface (SSC)
- Integrated safety features
  - Brown-out detection
  - Power-on reset
  - Voltage and Clock supervisory
  - Window Watchdog Timer
  - I/O protection circuitry
- On-chip clock generation unit with high accuracy
- 4 general purpose 16-bit timers
- 14 interrupt vectors with 4 priority levels
- Multiple power saving modes available
- On-chip debug support
- JTAG based non-intrusive debugging
- Flexible single voltage supply of 3.3V or 5.0V
- 48 General purpose I/O Ports
- LQFP-64 package (12mm x 12mm)
- VQFN-48 package (7mm x 7mm)
- Temperature range:
  - SAF (-40°C to 85°C)
  - SAK (-40°C to -125°C)

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XC87x-Series Block Diagram

Program and Data Memoty Bus | Peripheral Bus

- 52-64KB Flash
- 256Byte RAM + 64Byte Monitor RAM
- 3KB XRAM
- Boot ROM

XC800 Core Dual Cycle
- Interrupt Controller
- UART
- T0/T1

Vector Computer
- CORDIC
- MDU

- Ports
- System Control Unit
- EVR, POR, Brownout
- OSC & PLL

Serial Interfaces
- SSC
- MultiCAN
- UART1

- Timer 2
- Timer 21
- CCU6
- T2CCU
- ADC
- Watchdog Timer
- Debug & JTAG

XC87x-Series Product Summary

Product Type	Max Clock Frequency [MHz]	Program Memory [KB]	SRAM (incl. Cache) [KB]	Co-Processor[1]	Digital I/O Lines	Number of ADC Channels	Timed I/O Channels (PWM, CAPCOM, GPTA)	External Bus Interface	CAN Nodes	Serial Interfaces[2]	Temperature Ranges[3]	Packages
XC878												
XC878-13FFA	27	52	3	–	48	8	10	Yes	–	2xUART, 1xSCC	F, K	PG-LQFP-64
XC878CM-13FFA	27	52	3	VC	48	8	10	Yes	2	2xUART, 1xSCC	F, K	PG-LQFP-64
XC878LM-13FFA	27	52	3	VC	48	8	10	Yes	–	2xUART, 1xSCC, LIN	F, K	PG-LQFP-64
XC878-16FFA	27	64	3	–	48	8	10	Yes	–	2xUART, 1xSCC	F, K	PG-LQFP-64
XC878CM-16FFA	27	64	3	VC	48	8	10	Yes	2	2xUART, 1xSCC	F, K	PG-LQFP-64
XC878LM-16FFA	27	64	3	VC	48	8	10	Yes	–	2xUART, 1xSCC, LIN	F, K	PG-LQFP-64
XC874												
XC874-13FFA	27	52	3	–	48	8	10	Yes	–	2xUART, 1xSCC	F, K	PG-VQFN-48
XC874CM-13FFA	27	52	3	VC	48	8	10	Yes	2	2xUART, 1xSCC	F, K	PG-VQFN-48
XC874LM-13FFA	27	52	3	VC	48	8	10	Yes	–	2xUART, 1xSCC, LIN	F, K	PG-VQFN-48
XC874-16FFA	27	64	3	–	48	8	10	Yes	–	2xUART, 1xSCC	F, K	PG-VQFN-48
XC874CM-16FFA	27	64	3	VC	48	8	10	Yes	2	2xUART, 1xSCC	F, K	PG-VQFN-48
XC874LM-16FFA	27	64	3	VC	48	8	10	Yes	–	2xUART, 1xSCC, LIN	F, K	PG-VQFN-48

1) eVC = enhanced Vector Computer (MDU + CORDIC), MDU = Multiply Divide Unit
2) UART = Universal Asynchronous Receiver Transmitter, SSC = Synchronous Serial Channel, ASC = Asynchronous Serial Channel, SPI = Serial Peripheral Interface
3) Ambient Temperature Range, F = −40 ... 85ºC, K = −40 ... 125ºC

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Order Number: B158-H9228-G1-X-7600
Date: 02 / 2011

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