

## 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 up to 54MHz frequency
  - Support for dead-time generation
- Timer 2 Capture/Compare Unit(T2CCU)
  - 6 compare channels
  - 4 capture channels multiplexed with compare channels
  - 16-bit resolution and up to 54MHz frequency
  - Applications: LED control, Stepper motors, frequency generators

#### Key Features (cont'd)

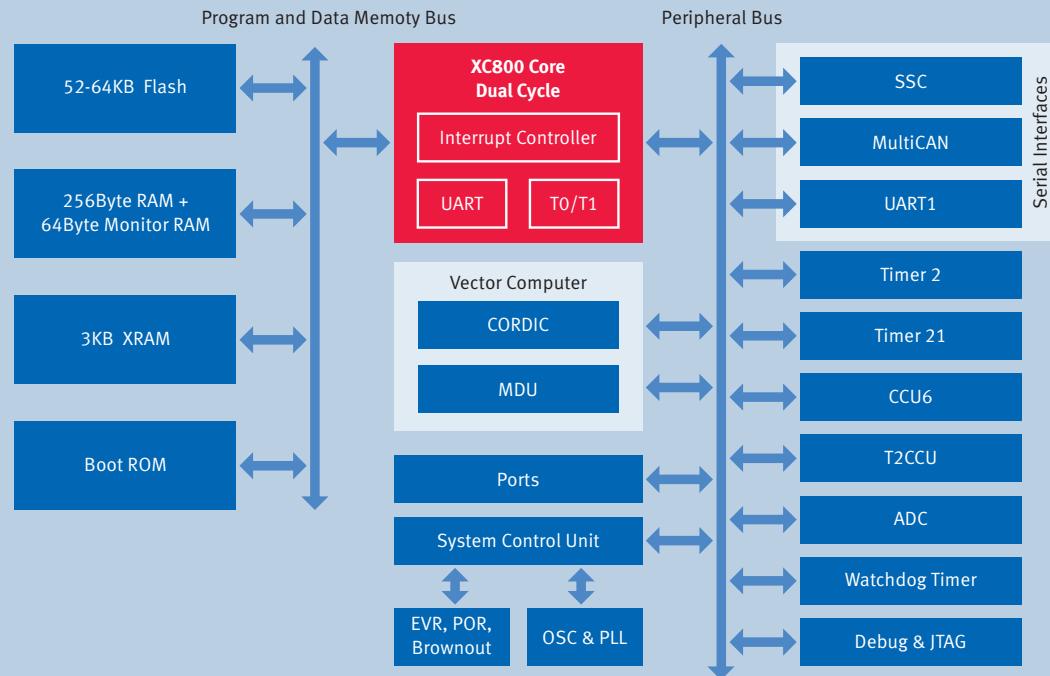
- 10-bit ADC with high accuracy (8-channels)
  - Fast conversion in 1µs
  - Auto-scan, Injection and Comparator Modes to reduce CPU load
  - Hardware synchronisation to PWM units
- 16-bit Vector Computer (MDU+CORDIC) running at 54MHz for Field Oriented Control
  - Multiplication/Division Unit (MDU) for high-speed 16- and 32-bit multiplication, division and shift operations
  - CORDIC (CORDinate 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)

# XC87x – Family

## New 64KB Flash 8-bit Microcontroller Series

### extends XC800 8-bit MCU Family

XC87x-Series Block Diagram



XC87x-Series Product Summary

Product Type	Max Clock Frequency [MHz]	Program Memory [KB]	SRAM (incl. Cache) [KB]	Co-Processor <sup>1)</sup>	Digital I/O Lines	Number of ADC Channels	Timed I/O Channels (PWM, CAPCOM, GPTA)	External Bus Interface	CAN Nodes	Serial Interfaces <sup>2)</sup>	Temperature Ranges <sup>3)</sup>	Packages
<b>XC878</b>												
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
<b>XC874</b>												
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, SCC = Synchronous Serial Channel, ASC = Asynchronous Serial Channel, SPI = Serial Peripheral Interface

3) Ambient Temperature Range, F = –40 ... 85°C, K = –40 ... 125°C

Published by  
Infineon Technologies AG  
85579 Neubiberg, Germany

© 2011 Infineon Technologies AG.  
All Rights Reserved.

Visit us:  
[www.infineon.com](http://www.infineon.com)

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

#### ATTENTION PLEASE!

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie"). With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

#### INFORMATION

For further information on technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies Office ([www.infineon.com](http://www.infineon.com)).

#### WARNINGS

Due to technical requirements components may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies Office. Infineon Technologies Components may only be used in life-support devices or systems with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body, or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Infineon:

[SAF-XC878-16FFI 5V AC](#) [SAF-XC878CM-13FFI 5V AC](#) [SAF-XC878CM-16FFI 3V3 AC](#) [SAF-XC878M-13FFI 3V3 AC](#)  
[SAF-XC878M-16FFI 3V3 AC](#) [SAF-XC878M-16FFI 5V AC](#) [SAX-XC878LM-16FFA 5V AC](#) [SAF-XC878-16FFI3V3AA](#)  
[SAF-XC878CM-13FFI5VAA](#) [SAF-XC878CM-16FFI5VAA](#) [SAX-XC878C-16FFA5VAA](#) [SAX-XC878-13FFA5VAA](#) [SAF-XC878CM-13FFI3V3AA](#)  
[SAF-XC878M-16FFI3V3AA](#) [SAF-XC878M-13FFI3V3AA](#) [SAX-XC878L-16FFA5VAA](#) [SAX-XC878C-13FFA5VAA](#)  
[SAF-XC878CM-16FFI3V3AA](#) [SAF-XC878-13FFI5VAA](#) [SAX-XC878L-13FFA5VAA](#) [SAF-XC878-16FFI5VAA](#)  
[SAF-XC878M-13FFI5VAA](#) [SAF-XC878M-16FFI5VAA](#) [SAX-XC878-16FFA5VAA](#) [SAF-XC878-16FFI 3V3 AC](#)