



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



A large, light blue, semi-transparent graphic element consisting of a thick, curved line that forms a partial circle, with a small circle at its top end, resembling a stylized 'C' or a partial orbit.

**8-Bit**

**XC87xCLM**

**8-Bit Single-Chip Microcontroller**

**Data Sheet**

V1.5 2011-03

**Microcontrollers**

**Edition 2011-03**

**Published by  
Infineon Technologies AG  
81726 Munich, Germany  
© 2011 Infineon Technologies AG  
All Rights Reserved.**

#### **Legal Disclaimer**

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. 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 the 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 the nearest Infineon Technologies Office.

Infineon Technologies components may be used in life-support devices or systems only 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.

# 8-Bit

# XC87xCLM

## 8-Bit Single-Chip Microcontroller

### Data Sheet

V1.5 2011-03

# Microcontrollers

---

**XC87x Data Sheet****Revision History: V1.5 2011-03**

Previous Versions: V1.4

Page	Subjects (major changes since last revision)
------	--

Changes from V1.4 2010-08 to V1.5 2011-03

<b>Page 3</b>	A new variant, SAF-XC874CM-13FVA 5V, has been added in Table 2.
---------------	---

**We Listen to Your Comments**

Any information within this document that you feel is wrong, unclear or missing at all?  
Your feedback will help us to continuously improve the quality of this document.

Please send your proposal (including a reference to this document) to:

[mcdocu.comments@infineon.com](mailto:mcdocu.comments@infineon.com)



**Table of Contents**

<b>1</b>	<b>Summary of Features</b>	<b>1</b>
<b>2</b>	<b>General Device Information</b>	<b>6</b>
2.1	Block Diagram	6
2.2	Logic Symbol	7
2.3	Pin Configuration	8
2.4	Pin Definitions and Functions	10
<b>3</b>	<b>Functional Description</b>	<b>21</b>
3.1	Processor Architecture	21
3.2	Memory Organization	22
3.2.1	Memory Protection Strategy	24
3.2.1.1	Flash Memory Protection	24
3.2.2	Special Function Register	26
3.2.2.1	Address Extension by Mapping	26
3.2.2.2	Address Extension by Paging	28
3.2.3	Bit Protection Scheme	32
3.2.3.1	Password Register	33
3.2.4	XC87x Register Overview	34
3.2.4.1	CPU Registers	34
3.2.4.2	MDU Registers	35
3.2.4.3	CORDIC Registers	36
3.2.4.4	System Control Registers	37
3.2.4.5	WDT Registers	40
3.2.4.6	Port Registers	40
3.2.4.7	ADC Registers	43
3.2.4.8	Timer 2 Compare/Capture Unit Registers	47
3.2.4.9	Timer 21 Registers	49
3.2.4.10	CCU6 Registers	50
3.2.4.11	UART1 Registers	54
3.2.4.12	SSC Registers	54
3.2.4.13	MultiCAN Registers	55
3.2.4.14	OCDS Registers	55
3.2.4.15	Flash Registers	57
3.3	Flash Memory	58
3.3.1	Flash Bank Pagination	60
3.4	Interrupt System	61
3.4.1	Interrupt Source	61
3.4.2	Interrupt Source and Vector	67
3.4.3	Interrupt Priority	69
3.5	Parallel Ports	70
3.6	Power Supply System with Embedded Voltage Regulator	72

**Table of Contents**

3.7	Reset Control . . . . .	73
3.7.1	Module Reset Behavior . . . . .	73
3.7.2	Bootling Scheme . . . . .	74
3.8	Clock Generation Unit . . . . .	75
3.8.1	Recommended External Oscillator Circuits . . . . .	77
3.8.2	Clock Management . . . . .	79
3.9	Power Saving Modes . . . . .	82
3.10	Watchdog Timer . . . . .	83
3.11	Multiplication/Division Unit . . . . .	86
3.12	CORDIC Coprocessor . . . . .	87
3.13	UART and UART1 . . . . .	88
3.13.1	Baud-Rate Generator . . . . .	88
3.13.2	Baud Rate Generation using Timer 1 . . . . .	91
3.14	Normal Divider Mode (8-bit Auto-reload Timer) . . . . .	91
3.15	LIN Protocol . . . . .	92
3.15.1	LIN Header Transmission . . . . .	92
3.16	High-Speed Synchronous Serial Interface . . . . .	94
3.17	Timer 0 and Timer 1 . . . . .	96
3.18	Timer 2 and Timer 21 . . . . .	97
3.19	Timer 2 Capture/Compare Unit . . . . .	98
3.20	Capture/Compare Unit 6 . . . . .	99
3.21	Controller Area Network (MultiCAN) . . . . .	101
3.22	Analog-to-Digital Converter . . . . .	103
3.22.1	ADC Clocking Scheme . . . . .	103
3.22.2	ADC Conversion Sequence . . . . .	104
3.23	On-Chip Debug Support . . . . .	106
3.23.1	JTAG ID Register . . . . .	107
3.24	Chip Identification Number . . . . .	108
<b>4</b>	<b>Electrical Parameters . . . . .</b>	<b>108</b>
4.1	General Parameters . . . . .	108
4.1.1	Parameter Interpretation . . . . .	108
4.1.2	Absolute Maximum Rating . . . . .	109
4.1.3	Operating Conditions . . . . .	110
4.2	DC Parameters . . . . .	111
4.2.1	Input/Output Characteristics . . . . .	111
4.2.2	Supply Threshold Characteristics . . . . .	114
4.2.3	ADC Characteristics . . . . .	115
4.2.3.1	ADC Conversion Timing . . . . .	117
4.2.4	Power Supply Current . . . . .	118
4.3	AC Parameters . . . . .	122
4.3.1	Testing Waveforms . . . . .	122
4.3.2	Output Rise/Fall Times . . . . .	123

---

**Table of Contents**

4.3.3	Power-on Reset and PLL Timing .....	124
4.3.4	On-Chip Oscillator Characteristics .....	125
4.3.5	External Data Memory Characteristics .....	126
4.3.6	External Clock Drive XTAL1 .....	128
4.3.7	JTAG Timing .....	129
4.3.8	SSC Master Mode Timing .....	131
<b>5</b>	<b>Package and Quality Declaration .....</b>	<b>133</b>
5.1	Package Parameters .....	133
5.2	Package Outline .....	134
5.3	Quality Declaration .....	136

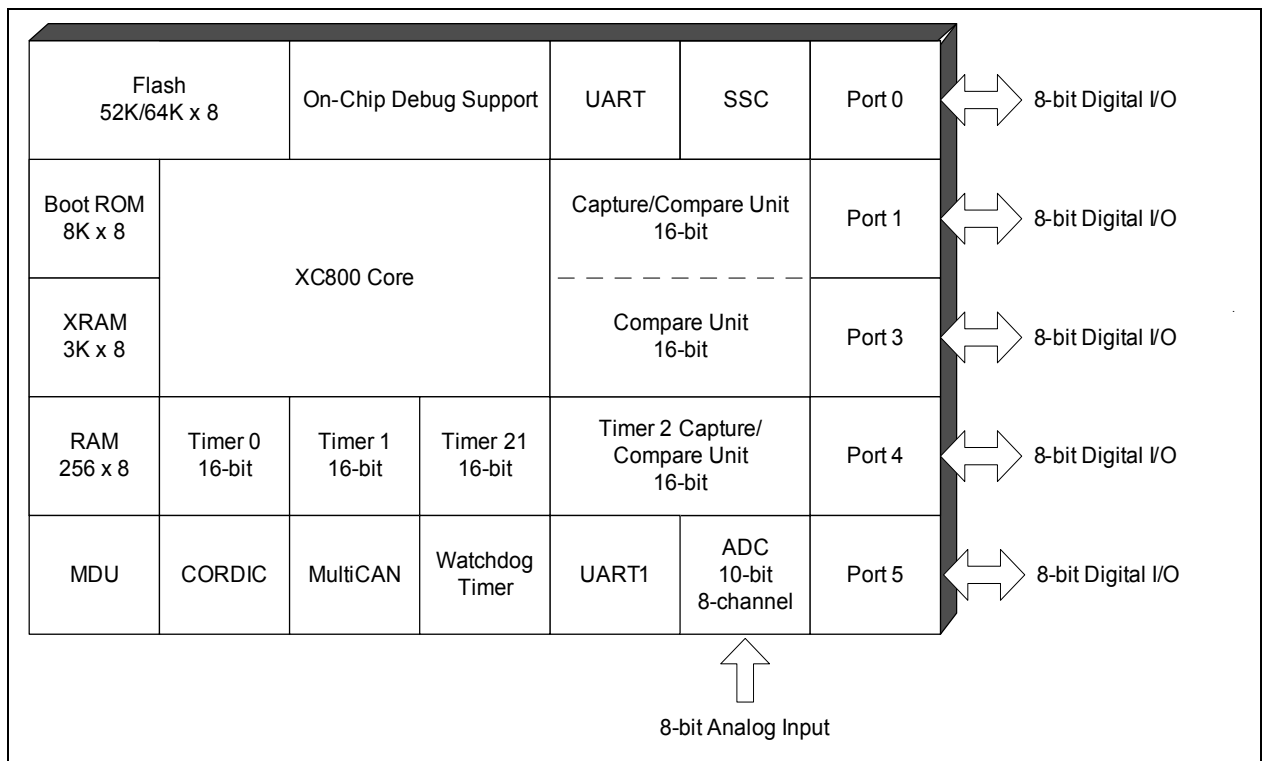


# 1 Summary of Features

The XC87x has the following features:

- High-performance XC800 Core
  - compatible with standard 8051 processor
  - two clocks per machine cycle architecture (for memory access without wait state)
  - two data pointers
- On-chip memory
  - 8 Kbytes of Boot ROM
  - 256 bytes of RAM
  - 3 Kbytes of XRAM
  - 64/52 Kbytes of Flash; (includes memory protection strategy)
- I/O port supply at 3.3 V or 5.0 V and core logic supply at 2.5 V (generated by embedded voltage regulator)

(more features on next page)



**Figure 1 XC87x Functional Units**

## Features: (continued)

- Power-on reset generation
- Brownout detection for core logic supply
- On-chip OSC and PLL for clock generation
  - Loss-of-Clock detection
- Power saving modes
  - slow-down mode
  - idle mode
  - power-down mode with wake-up capability via RXD or EXINT0<sup>1)</sup>
  - clock gating control to each peripheral
- Programmable 16-bit Watchdog Timer (WDT)
- Five ports
  - Up to 40 pins as digital I/O
  - 8 dedicated analog inputs used as A/D converter input
- 8-channel, 10-bit ADC
- Four 16-bit timers
  - Timer 0 and Timer 1 (T0 and T1)
  - Timer 2 and Timer 21 (T2 and T21)
- Multiplication/Division Unit for arithmetic operations (MDU)
- CORDIC Coprocessor for computation of trigonometric, hyperbolic and linear functions
- MultiCAN with 2 nodes, 32 message objects
- Two Capture/compare units
  - Capture/compare unit 6 for PWM signal generation (CCU6)
  - Timer 2 Capture/compare unit for various digital signal generation (T2CCU)
- Two full-duplex serial interfaces (UART and UART1)
- Synchronous serial channel (SSC)
- On-chip debug support
  - 1 Kbyte of monitor ROM (part of the 8-Kbyte Boot ROM)
  - 64 bytes of monitor RAM
- Packages:
  - PG-LQFP-64
  - PG-VQFN-48
- Temperature range  $T_A$ :
  - SAF (-40 to 85 °C)
  - SAX (-40 to 105 °C)
  - SAK (-40 to 125 °C)

---

1) SAK product variant does not support power-down mode.

**Summary of Features**
**XC87x Variant Devices**

The XC87x product family features devices with different configurations, program memory sizes, package options, power supply voltage, temperature and quality profiles (Automotive or Industrial), to offer cost-effective solutions for different application requirements.

The list of XC87x device configurations are summarized in [Table 1](#). 2 types of packages are available :

- PG-LQFP-64, which is denoted by XC878 and;
- PG-VQFN-48, which is denoted by XC874

**Table 1 Device Configuration**

Device Name	CAN Module	LIN BSL Support	MDU Module
XC87x	No	No	No
XC87xM	No	No	Yes
XC87xCM	Yes	No	Yes
XC87xLM	No	Yes	Yes
XC87xCLM	Yes	Yes	Yes

From these 5 different combinations of configuration, each are further made available in many sales types, which are grouped according to device type, program memory sizes, power supply voltage, temperature and quality profiles (Automotive or Industrial), as shown in [Table 2](#).

**Table 2 Device Profile**

Sales Type	Device Type	Program Memory (Kbytes)	Power Supply (V)	Temperature (°C)	Quality Profile
SAF-XC878-13FFI 5V	Flash	52	5.0	-40 to 85	Industrial
SAF-XC878M-13FFI 5V	Flash	52	5.0	-40 to 85	Industrial
SAF-XC878CM-13FFI 5V	Flash	52	5.0	-40 to 85	Industrial
SAF-XC878-16FFI 5V	Flash	64	5.0	-40 to 85	Industrial
SAF-XC878M-16FFI 5V	Flash	64	5.0	-40 to 85	Industrial
SAF-XC878CM-16FFI 5V	Flash	64	5.0	-40 to 85	Industrial
SAF-XC878-13FFI 3V3	Flash	52	3.3	-40 to 85	Industrial
SAF-XC878M-13FFI 3V3	Flash	52	3.3	-40 to 85	Industrial

**Summary of Features**
**Table 2 Device Profile (cont'd)**

Sales Type	Device Type	Program Memory (Kbytes)	Power Supply (V)	Temperature (°C)	Quality Profile
SAF-XC878CM-13FFI 3V3	Flash	52	3.3	-40 to 85	Industrial
SAF-XC878-16FFI 3V3	Flash	64	3.3	-40 to 85	Industrial
SAF-XC878M-16FFI 3V3	Flash	64	3.3	-40 to 85	Industrial
SAF-XC878CM-16FFI 3V3	Flash	64	3.3	-40 to 85	Industrial
SAF-XC878-13FFA 5V	Flash	52	5.0	-40 to 85	Automotive
SAF-XC878CM-13FFA 5V	Flash	52	5.0	-40 to 85	Automotive
SAF-XC878LM-13FFA 5V	Flash	52	5.0	-40 to 85	Automotive
SAF-XC878CLM-13FFA 5V	Flash	52	5.0	-40 to 85	Automotive
SAF-XC878-16FFA 5V	Flash	64	5.0	-40 to 85	Automotive
SAF-XC878CM-16FFA 5V	Flash	64	5.0	-40 to 85	Automotive
SAF-XC878LM-16FFA 5V	Flash	64	5.0	-40 to 85	Automotive
SAF-XC878CLM-16FFA 5V	Flash	64	5.0	-40 to 85	Automotive
SAX-XC878-13FFA 5V	Flash	52	5.0	-40 to 105	Automotive
SAX-XC878CM-13FFA 5V	Flash	52	5.0	-40 to 105	Automotive
SAX-XC878LM-13FFA 5V	Flash	52	5.0	-40 to 105	Automotive
SAX-XC878CLM-13FFA 5V	Flash	52	5.0	-40 to 105	Automotive
SAX-XC878-16FFA 5V	Flash	64	5.0	-40 to 105	Automotive
SAX-XC878CM-16FFA 5V	Flash	64	5.0	-40 to 105	Automotive
SAX-XC878LM-16FFA 5V	Flash	64	5.0	-40 to 105	Automotive
SAX-XC878CLM-16FFA 5V	Flash	64	5.0	-40 to 105	Automotive
SAK-XC878-13FFA 5V	Flash	52	5.0	-40 to 125	Automotive
SAK-XC878CM-13FFA 5V	Flash	52	5.0	-40 to 125	Automotive
SAK-XC878LM-13FFA 5V	Flash	52	5.0	-40 to 125	Automotive
SAK-XC878CLM-13FFA 5V	Flash	52	5.0	-40 to 125	Automotive
SAK-XC878-16FFA 5V	Flash	64	5.0	-40 to 125	Automotive
SAK-XC878CM-16FFA 5V	Flash	64	5.0	-40 to 125	Automotive
SAK-XC878LM-16FFA 5V	Flash	64	5.0	-40 to 125	Automotive
SAK-XC878CLM-16FFA 5V	Flash	64	5.0	-40 to 125	Automotive
SAF-XC874LM-16FVA 5V	Flash	64	5.0	-40 to 85	Automotive

**Summary of Features**
**Table 2 Device Profile (cont'd)**

<b>Sales Type</b>	<b>Device Type</b>	<b>Program Memory (Kbytes)</b>	<b>Power Supply (V)</b>	<b>Temperature (°C)</b>	<b>Quality Profile</b>
SAF-XC874CM-16FVA 5V	Flash	64	5.0	-40 to 85	Automotive
SAF-XC874CM-13FVA 5V	Flash	52	5.0	-40 to 85	Automotive
SAK-XC874LM-16FVA 5V	Flash	64	5.0	-40 to 125	Automotive
SAK-XC874CM-16FVA 5V	Flash	64	5.0	-40 to 125	Automotive
SAK-XC874-16FVA 5V	Flash	64	5.0	-40 to 125	Automotive
SAK-XC874LM-13FVA 5V	Flash	52	5.0	-40 to 125	Automotive
SAK-XC874CM-13FVA 5V	Flash	52	5.0	-40 to 125	Automotive
SAK-XC874-13FVA 5V	Flash	52	5.0	-40 to 125	Automotive

As this document refers to all the derivatives, some description may not apply to a specific product. For simplicity, all versions are referred to by the term XC87x throughout this document.

**Ordering Information**

The ordering code for Infineon Technologies microcontrollers provides an exact reference to the required product. This ordering code identifies:

- The derivative itself, i.e. its function set, the temperature range, and the supply voltage
- The package and the type of delivery

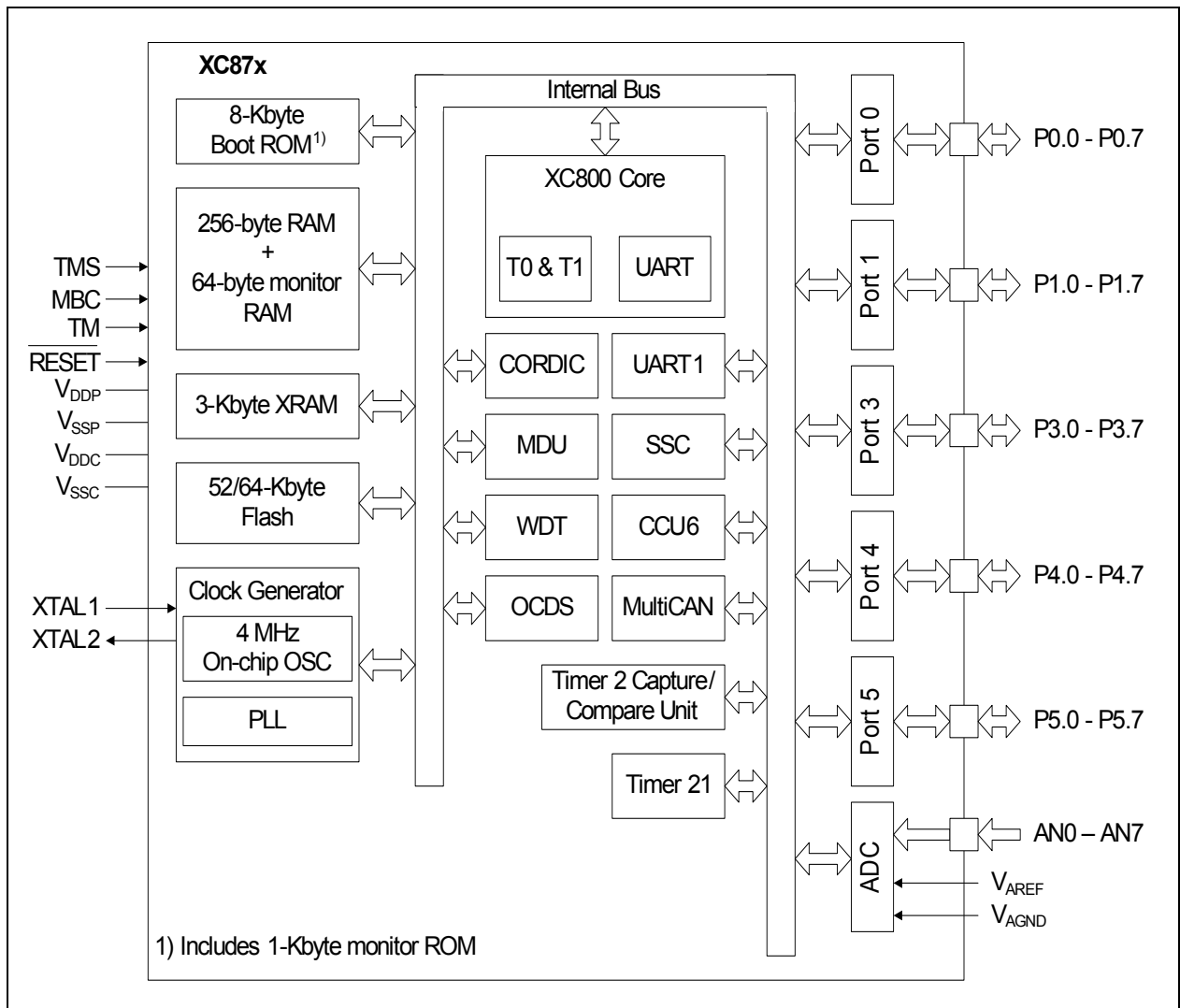
For the available ordering codes for the XC87x, please refer to your responsible sales representative or your local distributor.

## 2 General Device Information

**Chapter 2** contains the block diagram, pin configurations, definitions and functions of the XC87x.

### 2.1 Block Diagram

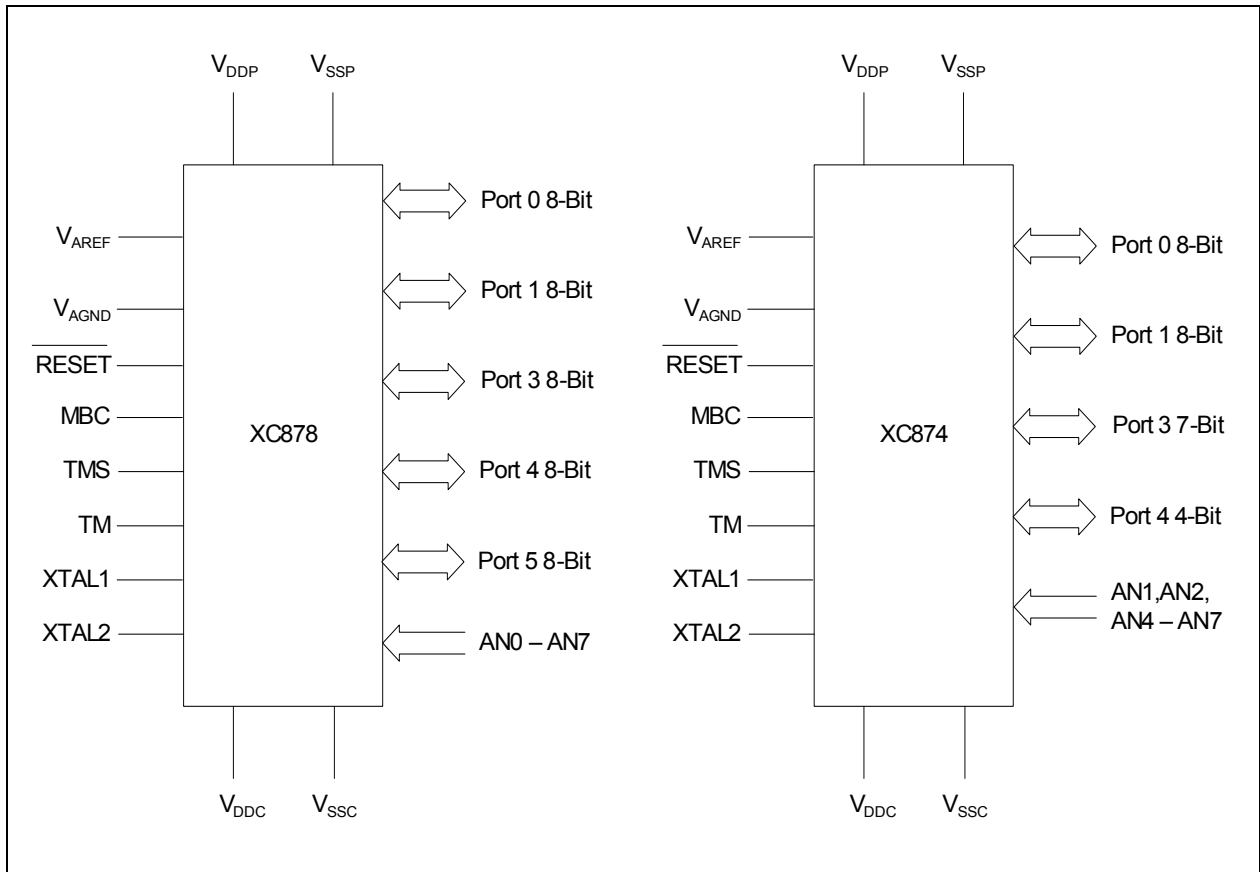
The block diagram of the XC87x is shown in **Figure 2**.



**Figure 2 XC87x Block Diagram**

## 2.2 Logic Symbol

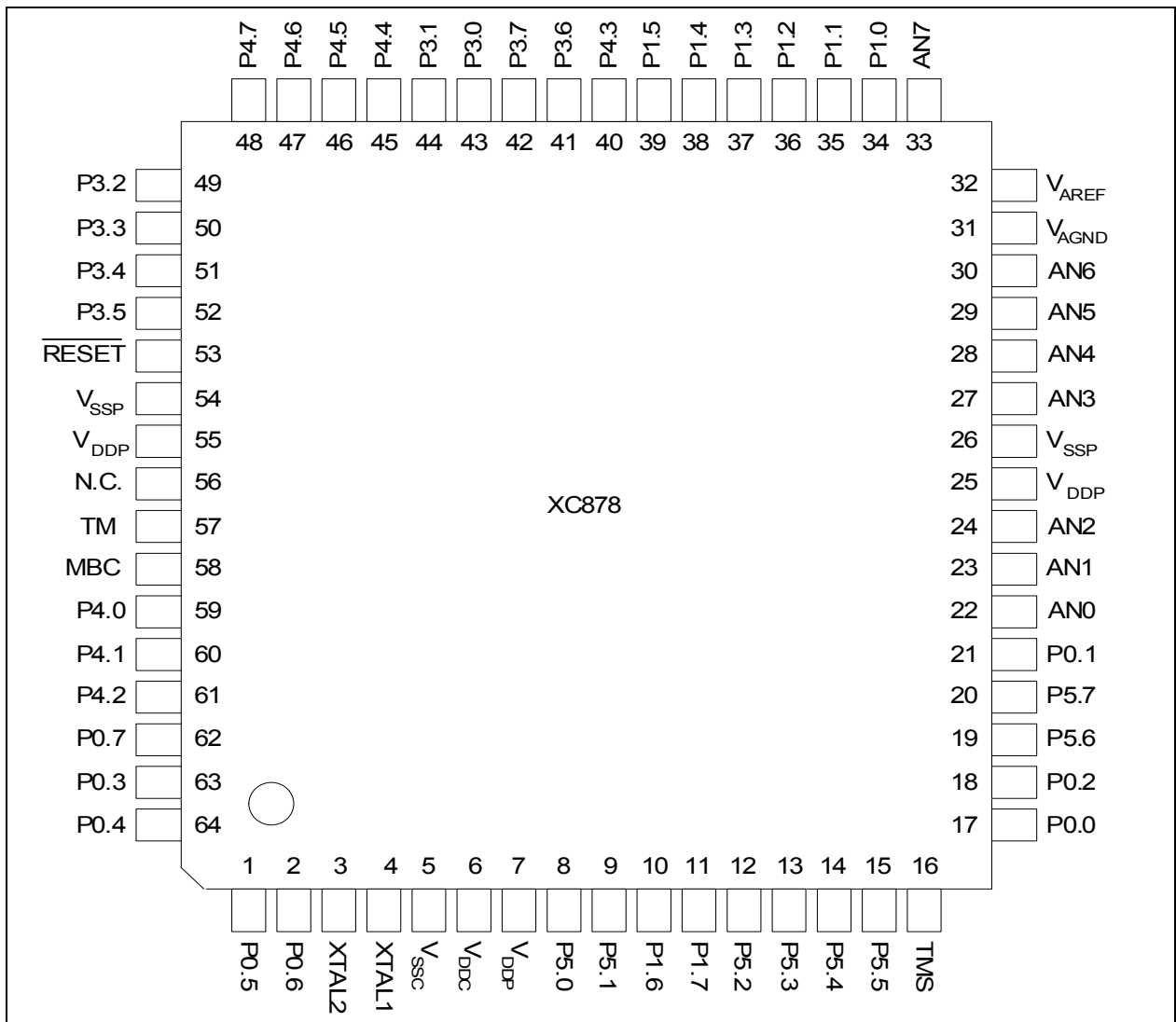
The logic symbols of the XC878 and XC874 are shown in [Figure 3](#).



**Figure 3 XC878 and XC874 Logic Symbol**

### 2.3 Pin Configuration

The pin configuration of the XC878, which is based on the PG-LQFP-64, is shown in **Figure 4**, while that of the XC874, which is based on the PG-VQFN-48 package, is shown in **Figure 5**.



**Figure 4** XC878 Pin Configuration, PG-LQFP-64 Package (top view)



General Device Information

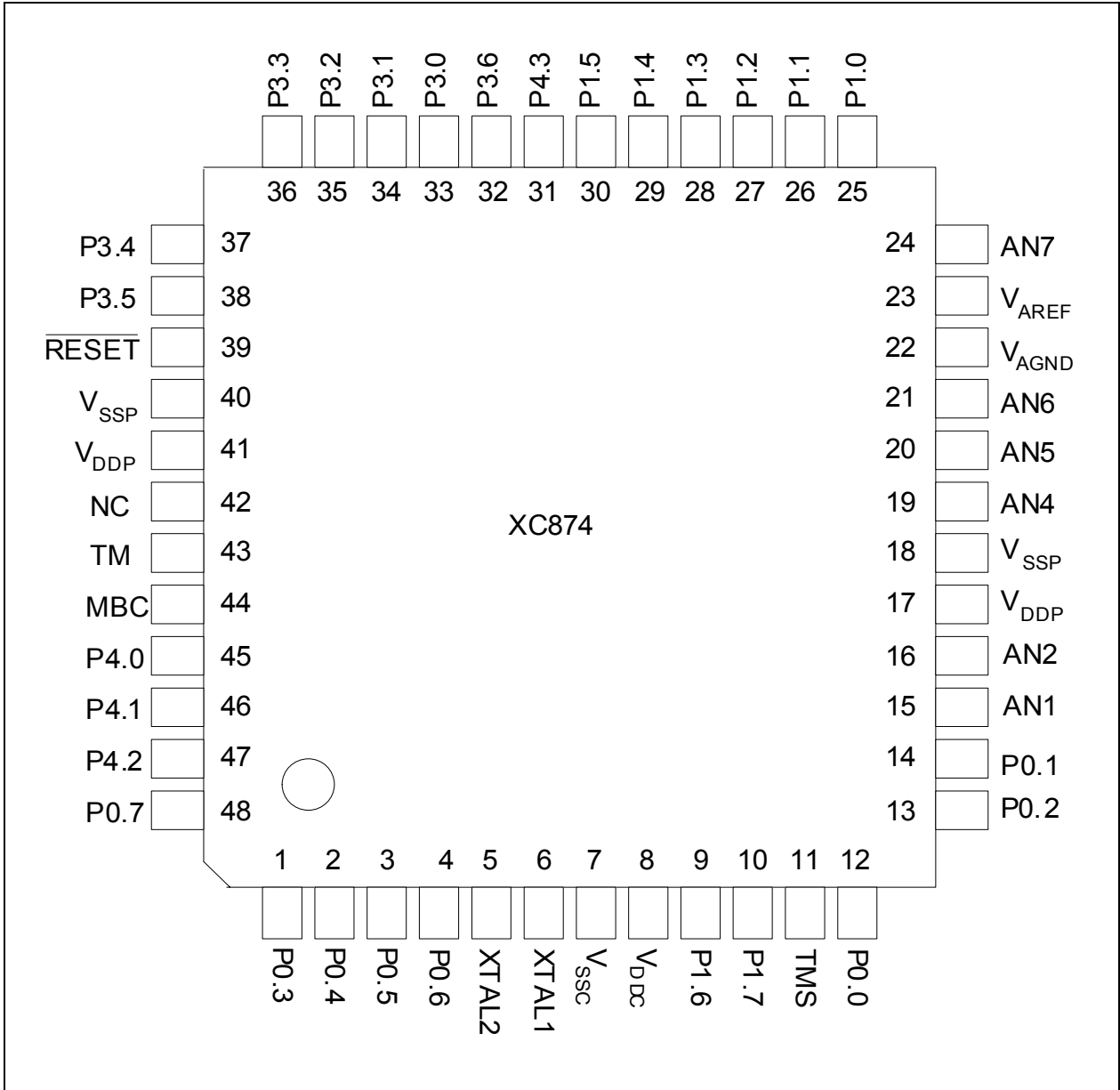


Figure 5 XC874 Pin Configuration, PG-VQFN-48 Package (top view)

## 2.4 Pin Definitions and Functions

The functions and default states of the XC87x external pins are provided in [Table 3](#).

**Table 3 Pin Definitions and Functions**

Symbol	Pin Number (LQFP-64 / VQFN-48)	Type	Reset State	Function
<b>P0</b>		I/O		<b>Port 0</b> Port 0 is an 8-bit bidirectional general purpose I/O port. It can be used as alternate functions for the JTAG, CCU6, UART, UART1, T2CCU, Timer 21, MultiCAN, SSC and External Bus Interface.  <i>Note: External Bus Interface is not available in XC874.</i>
P0.0	17/12		Hi-Z	TCK_0 JTAG Clock Input T12HR_1 CCU6 Timer 12 Hardware Run Input CC61_1 Input/Output of Capture/Compare channel 1 CLKOUT_0 Clock Output RXDO_1 UART Transmit Data Output
P0.1	21/14		Hi-Z	TDI_0 JTAG Serial Data Input T13HR_1 CCU6 Timer 13 Hardware Run Input RXD_1 UART Receive Data Input RXDC1_0 MultiCAN Node 1 Receiver Input COUT61_1 Output of Capture/Compare channel 1 EXF2_1 Timer 2 External Flag Output
P0.2	18/13		PU	CTRAP_2 CCU6 Trap Input TDO_0 JTAG Serial Data Output TXD_1 UART Transmit Data Output/Clock Output TXDC1_0 MultiCAN Node 1 Transmitter Output

**General Device Information**
**Table 3 Pin Definitions and Functions (cont'd)**

Symbol	Pin Number (LQFP-64 / VQFN-48)	Type	Reset State	Function
P0.3	63/1		Hi-Z	SCK_1 SSC Clock Input/Output COUT63_1 Output of Capture/Compare channel 3 RXDO1_0 UART1 Transmit Data Output A17 Address Line 17 Output
P0.4	64/2		Hi-Z	MTSR_1 SSC Master Transmit Output/ Slave Receive Input CC62_1 Input/Output of Capture/Compare channel 2 TXD1_0 UART1 Transmit Data A18 Output/Clock Output Address Line 18 Output
P0.5	1/3		Hi-Z	MRST_1 SSC Master Receive Input/Slave Transmit Output EXINT0_0 External Interrupt Input 0 T2EX1_1 Timer 21 External Trigger Input RXD1_0 UART1 Receive Data Input COUT62_1 Output of Capture/Compare channel 2 A19 Address Line 19 Output
P0.6	2/4		PU	T2CC4_1 Compare Output Channel 4 WR External Data Write Control Output
P0.7	62/48		PU	CLKOUT_1 Clock Output T2CC5_1 Compare Output Channel 5 RD External Data Read Control Output

**General Device Information**
**Table 3 Pin Definitions and Functions (cont'd)**

Symbol	Pin Number (LQFP-64 / VQFN-48)	Type	Reset State	Function
P1		I/O		<b>Port 1</b> Port 1 is an 8-bit bidirectional general purpose I/O port. It can be used as alternate functions for the JTAG, CCU6, UART, Timer 0, Timer 1, T2CCU, Timer 21, MultiCAN, SSC and External Bus Interface.  <i>Note: External Bus Interface is not available in XC874.</i>
P1.0	34/25		PU	RXD_0      UART Receive Data Input T2EX_0     Timer 2 External Trigger Input RXDC0_0    MultiCAN Node 0 Receiver Input A8           Address Line 8 Output
P1.1	35/26		PU	EXINT3_0   External Interrupt Input 3 T0_1        Timer 0 Input TXD_0       UART Transmit Data Output/Clock Output TXDC0_0    MultiCAN Node 0 Transmitter Output A9           Address Line 9 Output
P1.2	36/27		PU	SCK_0       SSC Clock Input/Output A10         Address Line 10 Output
P1.3	37/28		PU	MTSR_0     SSC Master Transmit Output/Slave Receive Input SCK_2       SSC Clock Input/Output TXDC1_3    MultiCAN Node 1 Transmitter Output A11         Address Line 11 Output
P1.4	38/29		PU	MRST_0     SSC Master Receive Input/ Slave Transmit Output EXINT0_1   External Interrupt Input 0 RXDC1_3    MultiCAN Node 1 Receiver Input MTSR_2     SSC Master Transmit Output/Slave Receive Input A12         Address Line 12 Output

**General Device Information**
**Table 3 Pin Definitions and Functions (cont'd)**

Symbol	Pin Number (LQFP-64 / VQFN-48)	Type	Reset State	Function
P1.5	39/30		PU	CCPOS0_1 CCU6 Hall Input 0 EXINT5_0 External Interrupt Input 5 T1_1 Timer 1 Input MRST_2 SSC Master Receive Input/ Slave Transmit Output EXF2_0 Timer 2 External Flag Output RXDO_0 UART Transmit Data Output
P1.6	10/9		PU	CCPOS1_1 CCU6 Hall Input 1 T12HR_0 CCU6 Timer 12 Hardware Run Input EXINT6_0 External Interrupt Input 6 RXDC0_2 MultiCAN Node 0 Receiver Input T21_1 Timer 21 Input
P1.7	11/10		PU	CCPOS2_1 CCU6 Hall Input 2 T13HR_0 CCU6 Timer 13 Hardware Run Input T2_1 Timer 2 Input TXDC0_2 MultiCAN Node 0 Transmitter Output  P1.5 and P1.6 can be used as a software chip select output for the SSC.

**General Device Information**
**Table 3 Pin Definitions and Functions (cont'd)**

Symbol	Pin Number (LQFP-64 / VQFN-48)	Type	Reset State	Function
<b>P3</b>		I/O		<b>Port 3</b> Port 3 is an 8-bit bidirectional general purpose I/O port. It can be used as alternate functions for CCU6, UART1, T2CCU, Timer 21, MultiCAN and External Bus Interface. <i>Note: External Bus Interface is not available in XC874.</i>
P3.0	43/33		Hi-Z	CCPOS1_2 CCU6 Hall Input 1 CC60_0 Input/Output of Capture/Compare channel 0 RXDO1_1 UART1 Transmit Data Output T2CC0_1/ EXINT3_2 External Interrupt Input 3/T2CCU Capture/Compare Channel 0
P3.1	44/34		Hi-Z	CCPOS0_2 CCU6 Hall Input 0 CC61_2 Input/Output of Capture/Compare channel 1 COUT60_0 Output of Capture/Compare channel 0 TXD1_1 UART1 Transmit Data Output/Clock Output
P3.2	49/35		Hi-Z	CCPOS2_2 CCU6 Hall Input 2 RXDC1_1 MultiCAN Node 1 Receiver Input RXD1_1 UART1 Receive Data Input CC61_0 Input/Output of Capture/Compare channel 1 T2CC1_1/ EXINT4_2 External Interrupt Input 4/T2CCU Capture/Compare Channel 1
P3.3	50/36		Hi-Z	COUT61_0 Output of Capture/Compare channel 1 TXDC1_1 MultiCAN Node 1 Transmitter Output T2CC2_1/ EXINT5_2 External Interrupt Input 5/T2CCU Capture/Compare Channel 2 A13 Address Line 13 Output

**General Device Information**
**Table 3 Pin Definitions and Functions (cont'd)**

Symbol	Pin Number (LQFP-64 / VQFN-48)	Type	Reset State	Function
P3.4	51/37		Hi-Z	CC62_0 Input/Output of Capture/Compare channel 2 RXDC0_1 MultiCAN Node 0 Receiver Input T2EX1_0 Timer 21 External Trigger Input T2CC3_1/ External Interrupt Input 6/T2CCU EXINT6_3 Capture/Compare Channel 3 A14 Address Line 14 Output
P3.5	52/38		Hi-Z	COU62_0 Output of Capture/Compare channel 2 EXF21_0 Timer 21 External Flag Output TXDC0_1 MultiCAN Node 0 Transmitter Output A15 Address Line 15 Output
P3.6	41/32		PU	$\overline{\text{CTRAP}}_0$ CCU6 Trap Input
P3.7	42/-		Hi-Z	EXINT4_0 External Interrupt Input 4 COU63_0 Output of Capture/Compare channel 3 A16 Address Line 16 Output

**General Device Information**
**Table 3 Pin Definitions and Functions (cont'd)**

Symbol	Pin Number (LQFP-64 / VQFN-48)	Type	Reset State	Function
<b>P4</b>		I/O		<b>Port 4</b> Port 4 is an 8-bit bidirectional general purpose I/O port. It can be used as alternate functions for CCU6, Timer 0, Timer 1, T2CCU, Timer 21, MultiCAN and External Bus Interface. <i>Note: External Bus Interface is not available in XC874.</i>
P4.0	59/45		Hi-Z	RXDC0_3 MultiCAN Node 0 Receiver Input CC60_1 Output of Capture/Compare channel 0 T2CC0_0/ External Interrupt Input 3/T2CCU EXINT3_1 Capture/Compare Channel 0 D0 Data Line 0 Input/Output
P4.1	60/46		Hi-Z	TXDC0_3 MultiCAN Node 0 Transmitter Output COUT60_1 Output of Capture/Compare channel 0 T2CC1_0/ External Interrupt Input 4/T2CCU EXINT4_1 Capture/Compare Channel 1 D1 Data Line 1 Input/Output
P4.2	61/47		PU	EXINT6_1 External Interrupt Input 6 T21_0 Timer 21 Input D2 Data Line 2 Input/Output
P4.3	40/31		Hi-Z	T2EX_1 Timer 2 External Trigger Input EXF21_1 Timer 21 External Flag Output COUT63_2 Output of Capture/Compare channel 3 D3 Data Line 3 Input/Output
P4.4	45/-		Hi-Z	CCPOS0_3 CCU6 Hall Input 0 T0_0 Timer 0 Input CC61_4 Output of Capture/Compare channel 1 T2CC2_0/ External Interrupt Input 5/T2CCU EXINT5_1 Capture/Compare Channel 2 D4 Data Line 4 Input/Output



**General Device Information**
**Table 3 Pin Definitions and Functions (cont'd)**

Symbol	Pin Number (LQFP-64 / VQFN-48)	Type	Reset State	Function
P4.5	46/-		Hi-Z	CCPOS1_3 CCU6 Hall Input 1 T1_0 Timer 1 Input COUT61_2 Output of Capture/Compare channel 1 T2CC3_0/ EXINT6_2 External Interrupt Input 6/T2CCU Capture/Compare Channel 3 D5 Data Line 5 Input/Output
P4.6	47/-		Hi-Z	CCPOS2_3 CCU6 Hall Input 2 T2_0 Timer 2 Input CC62_2 Output of Capture/Compare channel 2 T2CC4_0 Compare Output Channel 4 D6 Data Line 6 Input/Output
P4.7	48/-		Hi-Z	CTRAP_3 CCU6 Trap Input COUT62_2 Output of Capture/Compare channel 2 T2CC5_0 Compare Output Channel 5 D7 Data Line 7 Input/Output

**General Device Information**
**Table 3 Pin Definitions and Functions (cont'd)**

Symbol	Pin Number (LQFP-64 / VQFN-48)	Type	Reset State	Function
<b>P5</b>		I/O		<b>Port 5</b> Port 5 is an 8-bit bidirectional general purpose I/O port. It can be used as alternate functions for UART, UART1, T2CCU, JTAG and External Interface.
P5.0	8/-		PU	EXINT1_1 External Interrupt Input 1 A0 Address Line 0 Output
P5.1	9/-		PU	EXINT2_1 External Interrupt Input 2 A1 Address Line 1 Output
P5.2	12/-		PU	RXD_2 UART Receive Data Input T2CC2_2/ External Interrupt Input 5/T2CCU EXINT5_3 Capture/Compare Channel 2 A2 Address Line 2 Output
P5.3	13/-		PU	CCPOS0_0 CCU6 Hall Input 0 EXINT1_0 External Interrupt Input 1 T12HR_2 CCU6 Timer 12 Hardware Run Input CC61_3 Input of Capture/Compare channel 1 TXD_2 UART Transmit Data Output/Clock Output T2CC5_2 Compare Output Channel 5 A3 Address Line 3 Output
P5.4	14/-		PU	CCPOS1_0 CCU6 Hall Input 1 EXINT2_0 External Interrupt Input 2 T13HR_2 CCU6 Timer 13 Hardware Run Input CC62_3 Input of Capture/Compare channel 2 RXDO_2 UART Transmit Data Output T2CC4_2 Compare Output Channel 4 A4 Address Line 4 Output