



PIC16F87/88

18/20-Pin Low Power FLASH Microcontroller Product Brief

High Performance RISC CPU:

- Only 35 single word instructions to learn
- All single cycle instructions except for program branches, which are two-cycle
- Operating speed:
 - DC - 20 MHz clock input
 - DC - 200 ns instruction cycle
- Up to 4k x 14 words of FLASH Program Memory, 368 x 8 bytes of Data Memory (RAM), 256 x 8 bytes of EEPROM Data Memory
- 18-pin devices are pinout compatible to other 18-pin PIC16CXX and PIC16FXXX microcontrollers

Peripheral Features

- Timer0 module: 8-bit timer/counter with 8-bit prescaler
- Timer1 module: 16-bit timer/counter with prescaler, can be incremented during SLEEP via external crystal/clock
- Timer2 module: 8-bit timer/counter with 8-bit period register, prescaler and postscaler
- One Capture, Compare, PWM (CCP) module
- Synchronous Serial Port (SSP) module with two modes of operation:
 - 3-wire SPI™ (supports all four SPI modes)
 - I²C™ Slave mode
- High Sink/Source Current: 25 mA
- Addressable Universal Synchronous Asynchronous Receiver Transmitter (USART)

Analog Features:

- 10-bit 7-channel Analog-to-Digital (A/D) (PIC16F88 devices only)
- Analog Comparator Module with:
 - Two analog comparators
 - Programmable on-chip voltage reference
 - Programmable input multiplexing from device inputs and internal voltage reference
 - Comparator outputs are externally accessible
- Brown-out Reset (BOR)

Special Microcontroller Features:

- 100,000 erase/write cycle Enhanced FLASH program memory typical
- 1,000,000 erase/write cycle Data EEPROM memory typical
- Data EEPROM Retention > 40 years
- Self-reprogrammable under software control
- Selectable oscillator options including:
 - Internal Oscillator Block:
Frequency range of 125 kHz to 8 MHz
 - Internal RC oscillator of 31.25 kHz
 - Secondary oscillator (32 kHz) clock input
- In-Circuit Serial Programming™ (ICSP™) via two pins
- Single supply 5V In-Circuit Serial Programming
- Enhanced Low Current Watchdog Timer (WDT)
- Programmable code protection
- Power saving SLEEP mode
- MPLAB® In-Circuit Debug (ICD) via two pins
- Low voltage programming

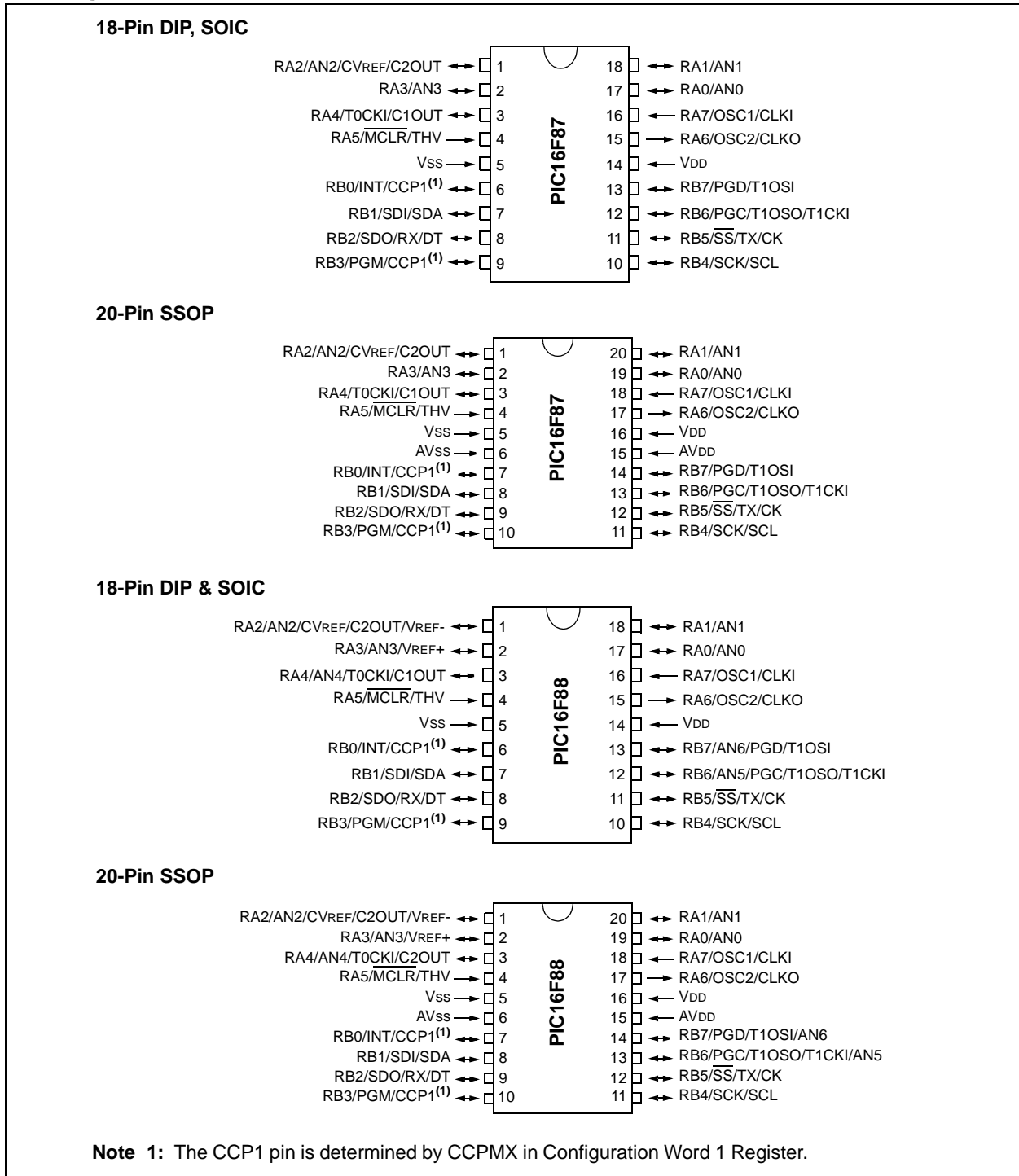
CMOS Technology:

- Low power, high speed FLASH/EEPROM technology
- Fully static design
- Wide operating voltage range (2.0V to 5.5V)
- Industrial temperature ranges
- Low power consumption
 - 3.0 μ A typical @ 3.0V, 32 kHz real-time clock

PIC16F87/88

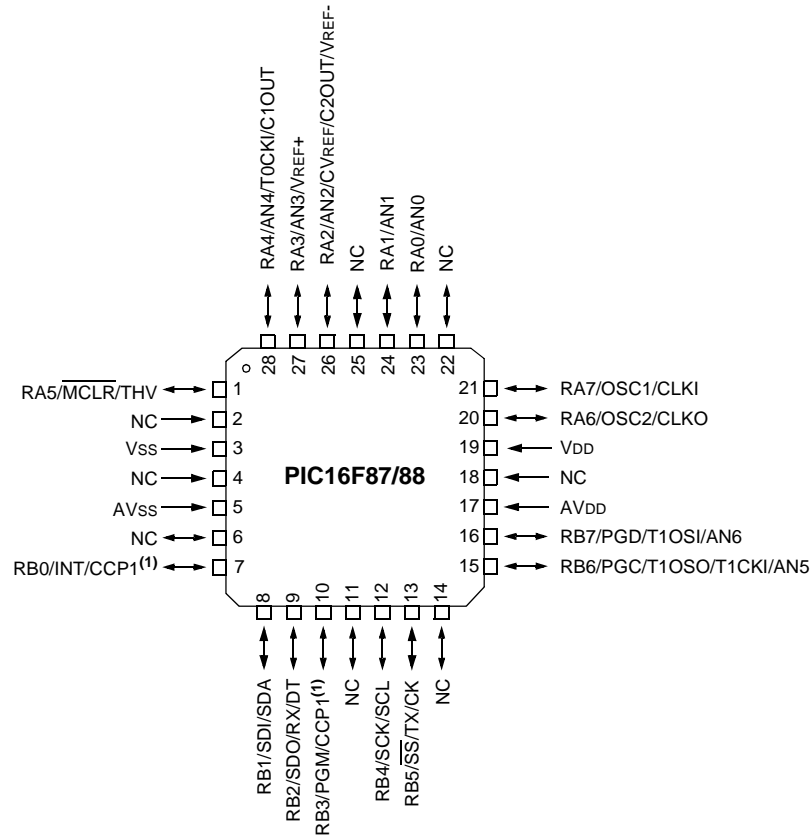
Device	Program Memory		Data SRAM (Bytes)	EEPROM (Bytes)	I/O	10-bit A/D (ch)	CCP (PWM)	USART SPI/I ² C	Timers 8/16-bit	Internal RC	Analog Comp.
	Bytes	# Single Word Instructions									
PIC16F87	7.2k	4096	368	256	16	No	1	Yes	2 / 1	Yes	2
PIC16F88	7.2k	4096	368	256	16	7	1	Yes	2 / 1	Yes	2

Pin Diagrams



Pin Diagrams (Continued)

28-Pin QFN



Note 1: The CCP1 pin is determined by CCPMX in Configuration Word 1 Register.

PIC16F87/88

NOTES:

Note the following details of the code protection feature on PICmicro® MCUs.

- The PICmicro family meets the specifications contained in the Microchip Data Sheet.
- Microchip believes that its family of PICmicro microcontrollers is one of the most secure products of its kind on the market today, when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the PICmicro microcontroller in a manner outside the operating specifications contained in the data sheet. The person doing so may be engaged in theft of intellectual property.
- Microchip is willing to work with the customer who is concerned about the integrity of their code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as “unbreakable”.
- Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our product.

If you have any further questions about this matter, please contact the local sales office nearest to you.

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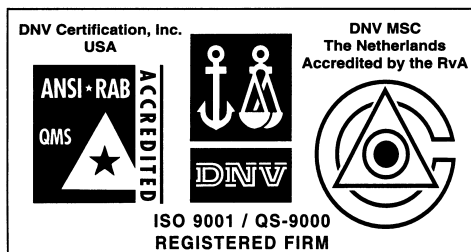
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