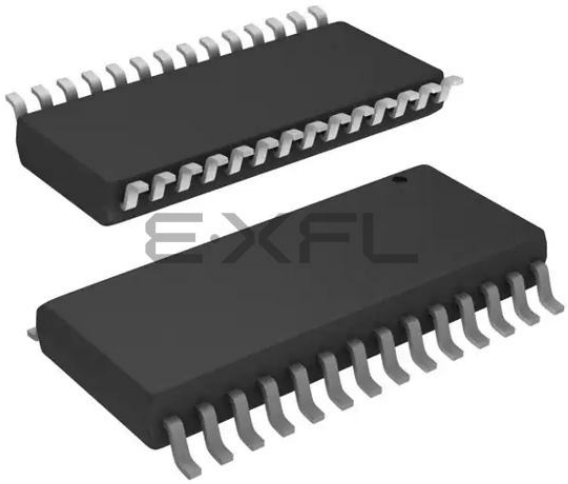

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What is "Embedded - Microcontrollers"?

"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Active
Core Processor	PIC
Core Size	8-Bit
Speed	20MHz
Connectivity	-
Peripherals	Brown-out Detect/Reset, POR, WDT
Number of I/O	24
Program Memory Size	3KB (2K x 12)
Program Memory Type	FLASH
EEPROM Size	64 x 8
RAM Size	132 x 8
Voltage - Supply (Vcc/Vdd)	2V ~ 5.5V
Data Converters	A/D 8x8b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 85°C (TA)
Mounting Type	Surface Mount
Package / Case	28-SOIC (0.295", 7.50mm Width)
Supplier Device Package	28-SOIC
Purchase URL	https://www.e-xfl.com/product-detail/microchip-technology/pic16f570-i-so

PIC16F570

28-Pin, 8-Bit ‘Enhanced Baseline’ Microcontroller Product Brief

Description:

This document describes the 28-pin ‘Enhanced Baseline’ device with Flash program memory self-write capability, interrupts and op amps.

Processor Features:

- Interrupt Capability
- PIC16F570 Operating Speed:
  - DC – 20 MHz Crystal oscillator
  - DC – 200 ns Instruction cycle
- High Endurance Program and Flash Data Memory Cells:
  - 2048 x 12 user execution memory
  - 64 x 8 self-writable data memory
  - 100,000 write program memory endurance
  - 1,000.000 write Flash data memory endurance
  - Program and Flash data retention: >40 years
- General Purpose Registers (SRAM):
  - 132 x 8 memory
- Only 36 Single-Word Instructions to Learn:
  - Modified baseline CPU
  - Added `RETURN` and `RETFIE` instructions
  - Added `MOVLB` instruction
- All Instructions are Single-Cycle except for Program Branches which are Two-Cycle
- Four-Level Deep Hardware Stack
- Direct, Indirect and Relative Addressing modes for Data and Instructions

Peripheral Features:

- Device Features:
  - 24 I/Os
  - Individual direction control
  - High-current source/sink
- 8-Bit Real-Time Clock/Counter (TMR0) with 8-Bit Programmable Prescaler
- In-Circuit Serial Programming™ (ICSP™) via Two External Pin Connections
- Analog Comparator (CMP):
  - Two analog comparators
  - Absolute and programmable references
- Analog-to-Digital Converter (ADC):
  - 8-bit resolution
  - 8 external input channels
  - 0.6V reference input
- Operational Amplifiers (op amps):
  - Two operational amplifiers
  - Fully-accessible visibility

Microcontroller Features:

- Brown-out Reset (BOR)
- Power-on Reset (POR)
- Device Reset Timer (DRT)
- Watchdog Timer (WDT) with its own on-chip RC Oscillator for Reliable Operation
- Programmable Code Protection (CP)
- Power-Saving Sleep mode with Wake-up on Change Feature
- Selectable Oscillator Options:
  - INTOSC: Precision 4 or 8 MHz internal oscillator
  - EXTRC: Low-cost external RC oscillator
  - LP: Power-saving, low-frequency crystal
  - XT: Standard crystal/resonator
  - HS: High-speed crystal/resonator
  - EC: High-speed external clock
- Variety of Packaging Options:
  - 28-Lead SPDIP, SOIC, SSOP, QFN

CMOS Technology:

- Low-Power, High-Speed CMOS Flash Technology
- Fully-Static Design
- Wide Operating Voltage and Temperature Range:
  - Industrial: 2.0V to 5.5V
  - Extended: 2.0V to 5.5V
- Operating Current:
  - 170 uA @ 2V, 4 MHz, typical
  - 15 uA @ 2V, 32 kHz, typical
- Standby Current:
  - 100 nA @ 2V, typical

PIC16F570 Family Types

Device	Pins/I/O Pins	Flash	Data EE (B)	SRAM (B)	8-Bit ADC Channels	Op Amp	Comparator	8-Bit Timers	BOR	Stack Levels	Interrupts	8 MHz Int. Osc.	Interrupt-on-change Pins	Weak Pull-up Pins
PIC16F570	28/24	2KW	64	132	8	2	2	1	Y	4	Y	Y	8	8

FIGURE 1: 28-PIN PDIP, SOIC, SSOP DIAGRAM FOR PIC16F570

28-pin SPDIP, SSOP, SOIC

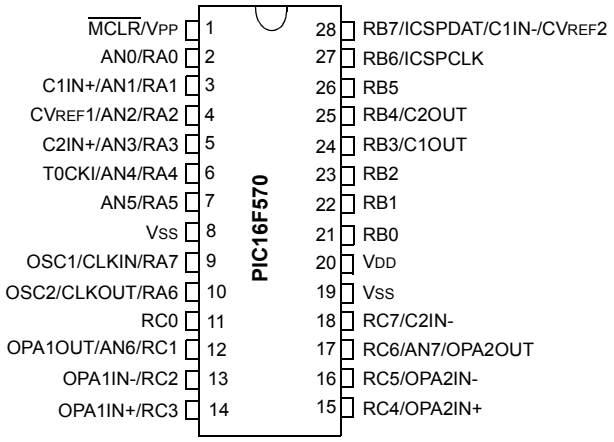

FIGURE 2: 28-PIN QFN DIAGRAM FOR PIC16F570

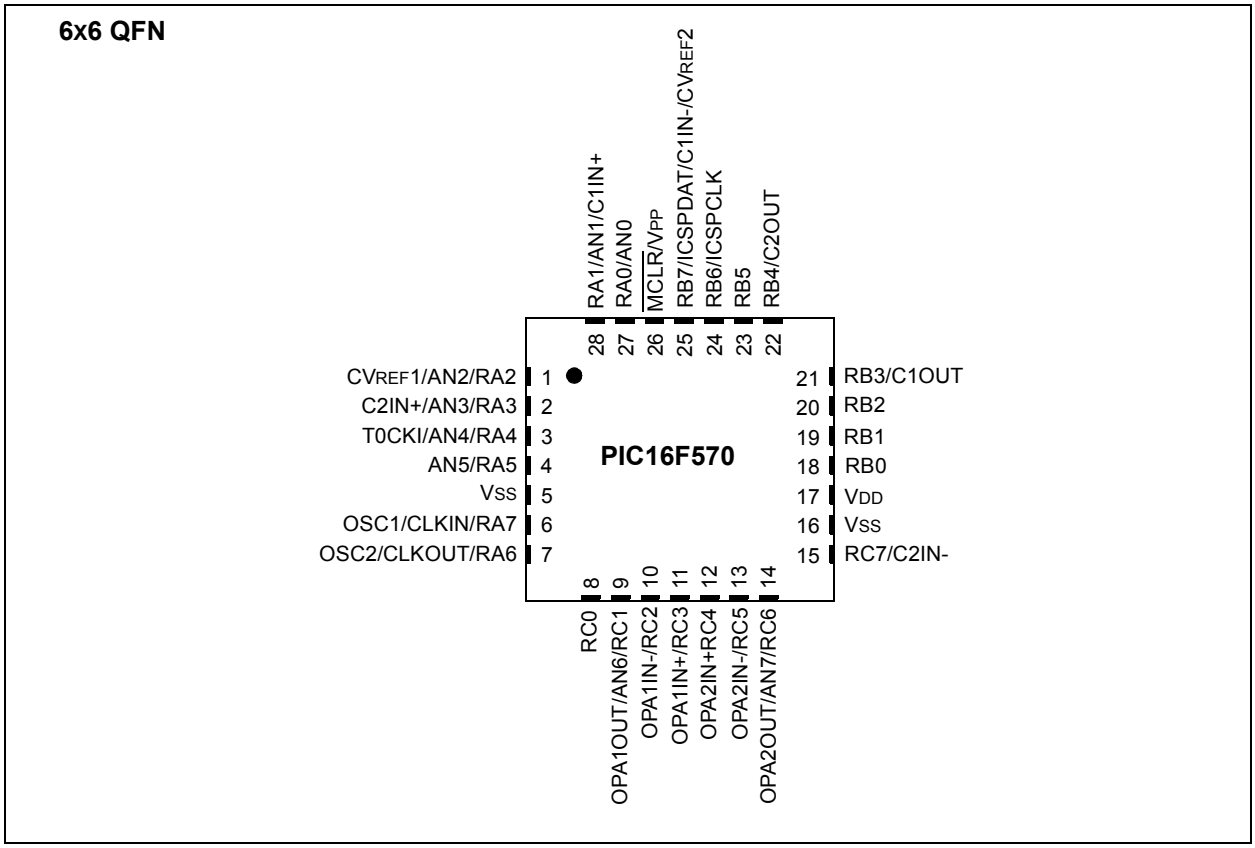

TABLE 1: PIC16F570 PIN SUMMARY

I/O	28-Pin SPDIP	28-Pin QFN	A/D	Reference	Comparator	Op Amp	Timers	IOC	Pull-up	Basic
$\overline{MCLR}$	1	26	—	—	—	—	—	N	Y	$\overline{MCLR}$ V_{PP}
RA0	2	27	AN0	—		—	—	N	N	—
RA1	3	28	AN1	—	C1IN+	—	—	N	N	—
RA2	4	1	AN2	$CV_{REF}1$	—	—	—	N	N	—
RA3	5	2	AN3	—	C2IN+	—	—	N	N	—
RA4	6	3	AN4	—	—	—	T0CKI	N	N	—
RA5	7	4	AN5	—	—	—	—	N	N	—
RA6	10	7	—	—	—	—	—	N	N	OSC2 CLKOUT
RA7	9	6	—	—	—	—	—	N	N	OSC1 CLKIN
RB0	21	18	—	—	—	—	—	Y	Y	—
RB1	22	19	—	—	—	—	—	Y	Y	—
RB2	23	20	—	—	—	—	—	Y	Y	—
RB3	24	21	—	—	C1OUT	—	—	Y	Y	—
RB4	25	22	—	—	C2OUT	—	—	Y	Y	—
RB5	26	23	—	—	—	—	—	Y	Y	—
RB6	27	24	—	—	—	—	—	Y	Y	ICSPCLK
RB7	28	25	—	$CV_{REF}2$	C1IN-	—	—	Y	Y	ICSPDAT
RC0	11	8	—	—	—	—	—	N	N	—
RC1	12	9	AN6	—	—	OPA1OUT	—	N	N	—
RC2	13	10	—	—	—	OPA1IN-	—	N	N	—
RC3	14	11	—	—	—	OPA1IN+	—	N	N	—
RC4	15	12	—	—	—	OPA2IN+	—	N	N	—
RC5	16	13	—	—	—	OPA2IN-	—	N	N	—
RC6	17	14	AN7	—	—	OPA2OUT	—	N	N	—
RC7	18	15	—	—	C2IN-	—	—	N	N	—
V_{DD}	20	17	—	—	—	—	—	—	—	V_{DD}
Vss	8, 19	5, 16	—	—	—	—	—	—	—	V_{SS}

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Printed on recycled paper.

ISBN: 9781620766255

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