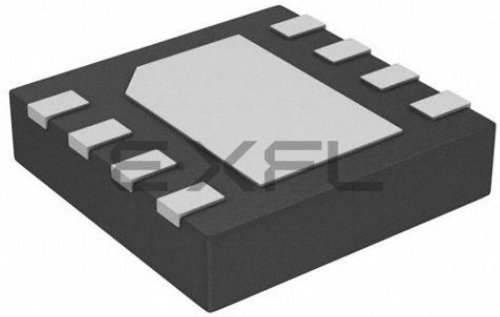

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What is "Embedded - Microcontrollers"?

"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, PWM, WDT
Number of I/O	5
Program Memory Size	1.75KB (1K x 14)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	64 x 8
Voltage - Supply (Vcc/Vdd)	2V ~ 5V
Data Converters	A/D 4x10b; D/A 1x5b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 125°C (TA)
Mounting Type	Surface Mount
Package / Case	8-VDFN Exposed Pad
Supplier Device Package	8-DFN (3x3)
Purchase URL	https://www.e-xfl.com/product-detail/microchip-technology/pic12hv752-e-mf

PIC16F753/HV753

14-Pin Flash-Based, 8-Bit CMOS Microcontrollers with Intelligent Analog

High-Performance RISC CPU:

- Only 35 Instructions to Learn
- All Single-Cycle Instructions except Branches
- Operating Speed:
  - DC – 20 MHz clock input
  - DC – 200 ns instruction cycle
- 2048 x 14 On-Chip Flash Program Memory
- Self Read/Write Program Memory
- Interrupt Capability with Automatic Context Saving
- 8-Level Deep Hardware Stack
- Direct, Indirect and Relative Addressing modes

Special Microcontroller Features:

- Precision Internal Oscillator:
  - Factory calibrated to ±1%, typical
  - Software selectable frequency: 8 MHz, 4 MHz, 1 MHz, or 31 kHz
- Power-Saving Sleep mode
- Operating Voltage Range (PIC16F753):
  - 2.0V-5.5V
- Shunt Voltage Regulator (PIC16HV753):
  - 5.0V regulation
  - 1 mA to 50 mA shunt range
  - 2.0V to user defined
- Multiplexed Master Clear with Pull-up/Input Pin
- Interrupt-on-Change Pins
- Individually Programmable Weak Pull-ups
- Power-on Reset (POR)
- Power-up Timer (PWRT)
- Brown-out Reset (BOR)
- Watchdog Timer (WDT) with Internal Oscillator for Reliable Operation
- Industrial and Extended Temperature Range
- High Endurance Flash/EEPROM Cell:
  - 100,000 write Flash endurance
  - Flash retention: >40 years
- Programmable Code Protection
- In-Circuit Serial Programming™ (ICSP™) via Two Pins
- In-Circuit Debug (ICD) via Two Pins

Low-Power Features:

- Standby Current:
  - 50 nA @ 2.0V, typical
- Operating Current:
  - 11 μA @ 32 kHz, 2.0V, typical
  - 260 μA @ 4 MHz, 2.0V, typical
- Watchdog Timer Current:
  - <1 μA @ 2.0V, typical

Peripheral Features:

- 11 I/O Pins (1 input-only pin):
- High Current Sink/Source:
  - 50 mA I/O (2 pins)
  - 25 mA I/O (9 pins)
- Two High-Speed Analog Comparator Modules:
  - 50 ns response time
  - Fixed Voltage Reference (FVR)
  - Programmable on-chip voltage reference via integrated 9-bit DAC
  - Internal/external inputs and outputs (selectable)
  - Built-in Hysteresis (software selectable)
- Analog-to-Digital Converter (ADC):
  - 10-bit resolution
  - Eight external channels
  - Two internal reference voltage channels
- Operational Amplifier:
  - Three terminal operation
  - Internal connections to DAC and FVR
- Digital-to-Analog Converter (DAC):
  - 9-bit resolution
  - Full range resolution
  - 4 mV steps at 2.0V
- Fixed Voltage Reference (FVR), 1.2V Reference
- Capture, Compare, PWM (CCP) Module:
  - 16-bit Capture, max. resolution 12.5 ns
  - 16-bit Compare, max. resolution 200 ns
  - 10-bit PWM, max. frequency 20 kHz
- Timer0: 8-Bit Timer/Counter with 8-Bit Programmable Prescaler
- Enhanced Timer1:
  - 16-bit timer/counter with prescaler
  - External Timer1 gate (count enable)
  - Four selectable clock sources
- Timer2: 8-Bit Timer/Counter with 8-Bit Period Register, Prescaler and Postscaler

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Peripheral Features (Continued):

- Complementary Output Generator (COG):
  - Slope Compensation Circuit for use with SMPS power supplies
  - Complementary Waveforms for Full and Half-Bridge topologies
  - Two I/O (50 mA) for direct MOSFET drive
  - Rising and/or Falling edge input sources for flexible control topologies
  - Phase, Blanking dead-band control
  - Auto-shutdown
  - Hardware Limit Timer (HLT)
  - 8-bit Timer with prescaler
  - 8-bit period register and postscaler
  - Asynchronous H/W Reset sources

PIC12F752/HV752/PIC16F753/HV753 Family Types

Device	Data Sheet Index	Program Memory Flash (words)	Self Read/Write Flash Memory	Data SRAM (bytes)	I/O's(2)	10-bit ADC (ch)	Comparators	Timers (8/16-bit)	CCP	Complementary Output Generator (COG)	DAC	Operational Amplifiers	Shunt Regulator	Debug(1)
PIC12F752	(1)	1K	Y	64	6	4	2	3/1	1	Y	5-bit	N	N	H
PIC12HV752	(1)	1K	Y	64	6	4	2	3/1	1	Y	5-bit	N	Y	H
PIC16F753	(2)	2K	Y	128	12	8	2	3/1	1	Y	9-bit	Y	N	I/H
PIC16HV753	(2)	2K	Y	128	12	8	2	3/1	1	Y	9-bit	Y	Y	I/H

Note 1: I - Debugging, Integrated on Chip; H – Debugging, Available using Debug Header

2: One pin is input-only.

Data Sheet Index:

1: DS41576 PIC12F752/HV752 Data Sheet, 8-Pin, Flash-Based 8-Bit CMOS Microcontrollers.

2: Future Release PIC16F753/HV753 Data Sheet, 14-Pin, Flash-Based 8-Bit CMOS Microcontrollers with Intelligent Analog.

Note: For other small form-factor package availability and marking information, please visit **http://www.microchip.com/packaging** or contact your local sales office.

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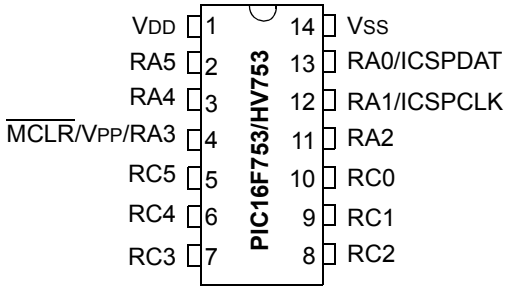
FIGURE 1: 14-PIN PDIP, SOIC, TSSOP DIAGRAM FOR PIC16F753/HV753

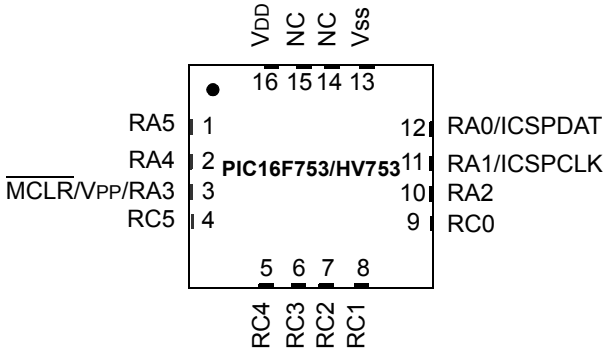
PDIP, SOIC, TSSOP



Note: See Table 1 for location of all peripheral functions.

FIGURE 2: 16-PIN QFN DIAGRAM FOR PIC16F753/HV753

QFN (4x4)



Note: See Table 1 for location of all peripheral functions.

TABLE 1: 14-PIN ALLOCATION TABLE (PIC16F753/HV753)

I/O	14-Pin PDIP/SOIC/TSSOP	16-Pin QFN	ADC	Reference	Op Amp	Comparator	Timer	CCP	Interrupt	Pull-Up	Basic
RA0	13	12	AN0	FVROUT DACOUT	—	C1IN0+	—	—	IOC	Y	ICSPDAT
RA1	12	11	AN1	VREF FVRIN	—	C1IN0- C2IN0-	—	—	IOC	Y	ICSPCLK
RA2	11	10	AN2	C0G1FLT	—	C1OUT	T0CKI	—	INT IOC	Y	—
RA3	4	3	—	—	—	—	T1G(2)	—	IOC	Y	$\overline{\text{MCLR}}$
RA4	3	2	AN3	—	—	—	T1G(1)	—	IOC	Y	CLKOUT
RA5	2	1	—	—	—	—	T1CKI	—	IOC	Y	
RC0	10	9	AN4	—	OPA1IN+	C2IN0+	—	—	IOC	—	—
RC1	9	8	AN5	—	OPA1IN-	C1IN1- C2IN1-	—	—	IOC	—	—
RC2	8	7	AN6	—	OPA1OUT	C1IN2- C2IN2-	—	—	IOC	—	—
RC3	7	6	AN7	—	—	C1IN3- C2IN3-	—	—	IOC	—	—
RC4	6	5	—	COG1OUT1	—	C2OUT	—	—	IOC	—	—
RC5	5	4	—	COG1OUT0	—	—	—	CCP1	IOC	—	—
VDD	1	16	—	—	—	—	—	—	—	—	VDD
VSS	14	13	—	—	—	—	—	—	—	—	VSS

Note 1: Default location for peripheral pin function. Alternate location can be selected using the APFCON register.
2: Alternate location for peripheral pin function selected by the APFCON register.

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