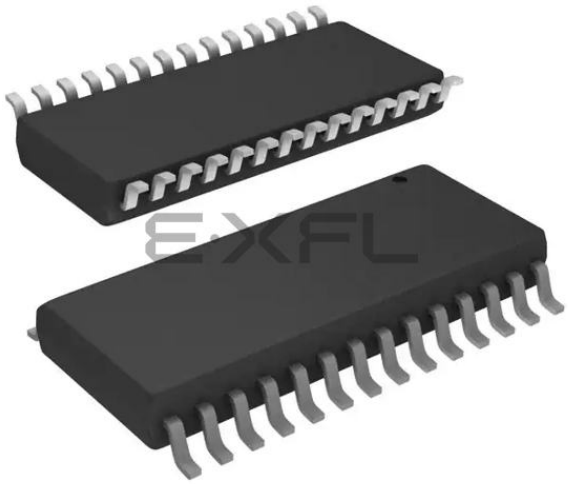

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What is "Embedded - Microcontrollers"?

"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	Obsolete
Core Processor	PIC
Core Size	16-Bit
Speed	32MHz
Connectivity	I²C, IrDA, LINbus, SPI, UART/USART
Peripherals	Brown-out Detect/Reset, HLVD, POR, PWM, WDT
Number of I/O	23
Program Memory Size	32KB (11K x 24)
Program Memory Type	FLASH
EEPROM Size	512 x 8
RAM Size	2K x 8
Voltage - Supply (Vcc/Vdd)	2V ~ 5.5V
Data Converters	A/D 13x12b
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/pic24fv32ka302t-i-so

NOTES:

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4.0 MEMORY ORGANIZATION

As Harvard architecture devices, the PIC24F microcontrollers feature separate program and data memory space and busing. This architecture also allows the direct access of program memory from the data space during code execution.

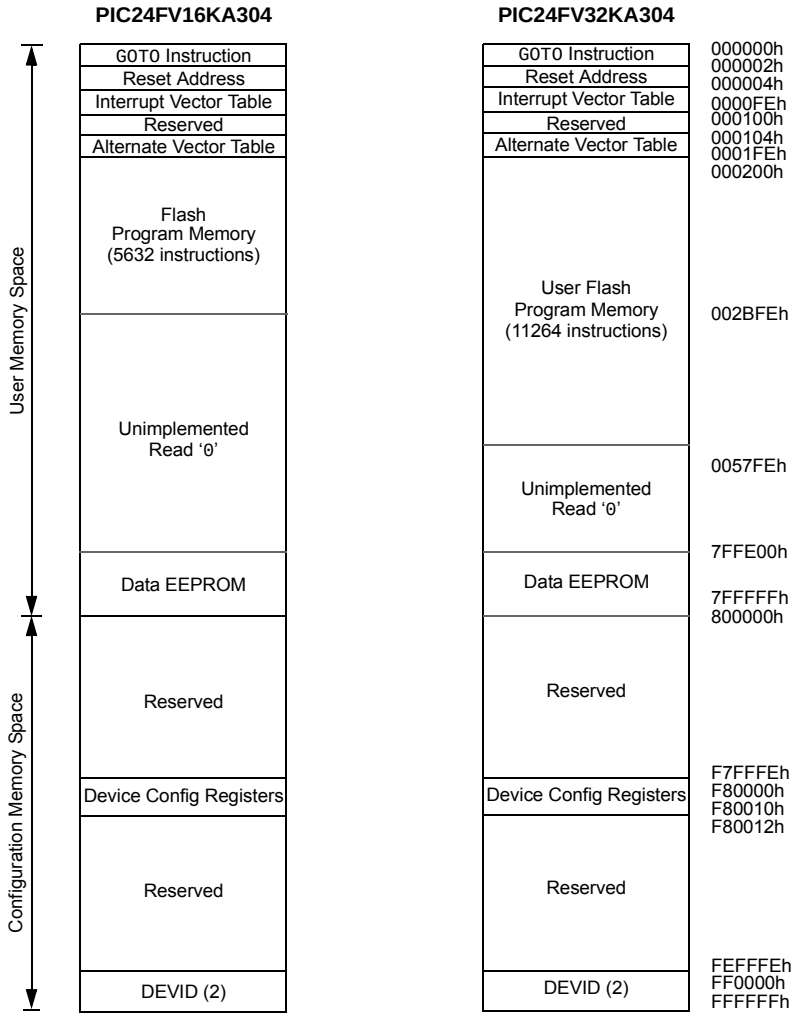
4.1 Program Address Space

The program address memory space of the PIC24FV32KA304 family is 4M instructions. The space is addressable by a 24-bit value derived from either the 23-bit Program Counter (PC) during program execution, or from a table operation or data space remapping, as described in **Section 4.3 "Interfacing Program and Data Memory Spaces"**.

User access to the program memory space is restricted to the lower half of the address range (000000h to 7FFFFFh). The exception is the use of `TBLRD/TBLWT` operations, which use TBLPAG<7> to permit access to the Configuration bits and Device ID sections of the configuration memory space.

Memory maps for the PIC24FV32KA304 family of devices are shown in Figure 4-1.

FIGURE 4-1: PROGRAM SPACE MEMORY MAP FOR PIC24FV32KA304 FAMILY DEVICES



Note: Memory areas are not displayed to scale.

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REGISTER 8-5: IFS0: INTERRUPT FLAG STATUS REGISTER 0

R/W-0, HS	U-0	R/W-0, HS	R/W-0, HS	R/W-0, HS	R/W-0, HS	R/W-0, HS	R/W-0, HS
NVMIF	—	AD1IF	U1TXIF	U1RXIF	SPI1IF	SPF1IF	T3IF
bit 15							bit 8

R/W-0, HS	R/W-0, HS	R/W-0, HS	U-0	R/W-0, HS	R/W-0, HS	R/W-0, HS	R/W-0, HS
T2IF	OC2IF	IC2IF	—	T1IF	OC1IF	IC1IF	INT0IF
bit 7							bit 0

Legend:	HS = Hardware Settable bit		
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as ‘0’	
-n = Value at POR	‘1’ = Bit is set	‘0’ = Bit is cleared	x = Bit is unknown

bit 15 **NVMIF:** NVM Interrupt Flag Status bit
1 = Interrupt request has occurred
0 = Interrupt request has not occurred

bit 14 **Unimplemented:** Read as ‘0’

bit 13 **AD1IF:** A/D Conversion Complete Interrupt Flag Status bit
1 = Interrupt request has occurred
0 = Interrupt request has not occurred

bit 12 **U1TXIF:** UART1 Transmitter Interrupt Flag Status bit
1 = Interrupt request has occurred
0 = Interrupt request has not occurred

bit 11 **U1RXIF:** UART1 Receiver Interrupt Flag Status bit
1 = Interrupt request has occurred
0 = Interrupt request has not occurred

bit 10 **SPI1IF:** SPI1 Event Interrupt Flag Status bit
1 = Interrupt request has occurred
0 = Interrupt request has not occurred

bit 9 **SPF1IF:** SPI1 Fault Interrupt Flag Status bit
1 = Interrupt request has occurred
0 = Interrupt request has not occurred

bit 8 **T3IF:** Timer3 Interrupt Flag Status bit
1 = Interrupt request has occurred
0 = Interrupt request has not occurred

bit 7 **T2IF:** Timer2 Interrupt Flag Status bit
1 = Interrupt request has occurred
0 = Interrupt request has not occurred

bit 6 **OC2IF:** Output Compare Channel 2 Interrupt Flag Status bit
1 = Interrupt request has occurred
0 = Interrupt request has not occurred

bit 5 **IC2IF:** Input Capture Channel 2 Interrupt Flag Status bit
1 = Interrupt request has occurred
0 = Interrupt request has not occurred

bit 4 **Unimplemented:** Read as ‘0’

bit 3 **T1IF:** Timer1 Interrupt Flag Status bit
1 = Interrupt request has occurred
0 = Interrupt request has not occurred

REGISTER 8-10: IFS5: INTERRUPT FLAG STATUS REGISTER 5

U-0	U-0	U-0	U-0	U-0	U-0	U-0	U-0
—	—	—	—	—	—	—	—
bit 15							bit 8

U-0	U-0	U-0	U-0	U-0	U-0	U-0	R/W-0, HS
—	—	—	—	—	—	—	ULPWUIF
bit 7							bit 0

Legend:	HS = Hardware Settable bit		
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as ‘0’	
-n = Value at POR	‘1’ = Bit is set	‘0’ = Bit is cleared	x = Bit is unknown

bit 15-1 **Unimplemented:** Read as ‘0’

bit 0 **ULPWUIF:** Ultra Low-Power Wake-up Interrupt Flag Status bit
1 = Interrupt request has occurred
0 = Interrupt request has not occurred

REGISTER 8-14: IEC3: INTERRUPT ENABLE CONTROL REGISTER 3

U-0	R/W-0	U-0	U-0	U-0	U-0	U-0	U-0
—	RTCIE	—	—	—	—	—	—
bit 15							bit 8

U-0	U-0	U-0	U-0	U-0	R/W-0	R/W-0	U-0
—	—	—	—	—	MI2C2IE	SI2C2IE	—
bit 7							bit 0

Legend:			
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as ‘0’	
-n = Value at POR	‘1’ = Bit is set	‘0’ = Bit is cleared	x = Bit is unknown

bit 15 **Unimplemented:** Read as ‘0’

bit 14 **RTCIE:** Real-Time Clock and Calendar Interrupt Enable bit
1 = Interrupt request is enabled
0 = Interrupt request is not enabled

bit 13-3 **Unimplemented:** Read as ‘0’

bit 2 **MI2C2IE:** Master I2C2 Event Interrupt Enable bit
1 = Interrupt request is enabled
0 = Interrupt request is not enabled

bit 1 **SI2C2IE:** Slave I2C2 Event Interrupt Enable bit
1 = Interrupt request is enabled
0 = Interrupt request is not enabled

bit 0 **Unimplemented:** Read as ‘0’

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INDEX

A

A/D
- Buffer Data Formats 222
- Control Registers 210
  - AD1CHITH/L 210
  - AD1CHS 210
  - AD1CON1 210
  - AD1CON2 210
  - AD1CON3 210
  - AD1CON5 210
  - AD1CSSH/L 210
  - AD1CTMUENH/L 210
- Result Buffers 210
- Sampling Requirements 220
- Transfer Function 221

AC Characteristics
- A/D Conversion 294
- A/D Module Specifications 293
- Capacitive Loading Requirements on Output Pins 276
- CLKO and I/O 279
- Comparator 280
- Comparator Voltage Reference Settling Time 280
- External Clock 277
- I^2C Bus Data (Master Mode) 284, 285
- I^2C Bus Data (Slave Mode) 286
- I^2C Bus Start/Stop Bits (Slave Mode) 287
- Internal RC Accuracy 278
- Internal RC Oscillator Specifications 278
- Load Conditions and Requirements 276
- PLL Clock Specifications 278
- Reset, Watchdog Timer. Oscillator Start-up Timer, Power-up Timer, Brown-out Reset Requirements 281
- SPIx Master Mode (CKE = 0) 289
- SPIx Master Mode (CKE = 1) 290
- SPIx Slave Mode (CKE = 0) 291
- SPIx Slave Mode (CKE = 1) 292
- Temperature and Voltage Specifications 276
- UARTx 288

Assembler
- MPASM Assembler 252

B

Baud Rate Generator
- Setting as a Bus Master 171

Block Diagrams
- 12-Bit A/D Converter 208
- 12-Bit A/D Converter Analog Input Model 220
- 16-Bit Asynchronous Timer3 and Timer5 143
- 16-Bit Synchronous Timer2 and Timer4 143
- 16-Bit Timer1 139
- Accessing Program Memory with Table Instructions 54
- CALL Stack Frame 51
- Comparator Voltage Reference 229
- Comparator x Module 225
- CPU Programmer's Model 31
- CRC Module 199
- CRC Shift Engine 199
- CTMU Connections and Internal Configuration for Capacitance Measurement 232
- CTMU Typical Connections and Internal Configuration for Pulse Delay Generation 233
- CTMU Typical Connections and Internal Configuration for Time Measurement 232
- Data Access from Program Space Address Generation 52
- Data EEPROM Addressing with TBLPAG and NVM Registers 65
- High/Low-Voltage Detect (HLVD) 205
- I^2C Module 170
- Individual Comparator Configurations 226
- Input Capture x 147
- $\overline{MCLR}$ Pin Connections 24
- On-Chip Regulator Connections 248
- Output Compare x (16-Bit Mode) 152
- Output Compare x (Double-Buffered, 16-Bit PWM Mode) 154
- PIC24F CPU Core 30
- PIC24FV32KA304 Family (General) 15
- PSV Operation 55
- Recommended Minimum Connections 23
- Reset System 69
- RTCC Module 185
- Serial Resistor 131
- Shared I/O Port Structure 135
- Simplified UARTx 177
- SPI1 Module (Enhanced Buffer Mode) 163
- SPI1 Module (Standard Buffer Mode) 162
- System Clock 115
- Table Register Addressing 57
- Timer2/3, Timer4/5 (32-Bit) 142
- Watchdog Timer (WDT) 249

C

C Compilers
- MPLAB XC Compilers 252

Charge Time Measurement Unit. *See* CTMU.

Code Examples
- Basic Sequence for Clock Switching 122
- Data EEPROM Bulk Erase 67
- Data EEPROM Unlock Sequence 63
- Erasing a Program Memory Row, 'C' Language 61
- Erasing a Program Memory Row, Assembly Language 60
- I/O Port Write/Read 138
- Initiating a Programming Sequence, 'C' Language 62
- Initiating a Programming Sequence, Assembly Language 62
- Loading the Write Buffers, 'C' Language 62
- Loading the Write Buffers, Assembly Language 61
- PWRSAV Instruction Syntax 125
- Reading the Data EEPROM Using the TBLRD Command 68
- Setting the RTCWREN Bit 186
- Single-Word Erase 66
- Single-Word Write to Data EEPROM 67
- Ultra Low-Power Wake-up Initialization 131
- Unlock Sequence 126

Code Protection 250

Comparator 225

Comparator Voltage Reference 229
- Configuring 229