

20-Pin High-Performance Flash Microcontrollers

High Performance RISC CPU:

- C Compiler optimized architecture/instruction set
- 256 bytes data EEPROM
- Linear program memory addressing to 16 Kbytes
- Linear data memory addressing to 512 bytes
- Up to 16 MIPS operation
- 16-bit wide instructions, 8-bit wide data path
- Priority levels for interrupts
- 31-level, software accessible hardware stack
- 8 x 8 single-cycle hardware multiplier

Flexible Oscillator Structure:

- Precision 16 MHz internal oscillator block:
 - Factory calibrated to $\pm 1\%$
 - Software selectable frequencies range of 31 kHz to 16 MHz
 - 64 MHz performance available using PLL – no external components required
- Four crystal modes up to 64 MHz
- Two external clock modes up to 64 MHz
- 4X Phase Lock Loop (PLL)
- Secondary oscillator using Timer1 @ 32 kHz
- Fail-Safe Clock Monitor
 - Allows for safe shutdown if peripheral clock stops
- Two-Speed Oscillator Start-up

Special Microcontroller Features:

- Full 5.5V operation
- Low voltage option available for 1.8V-3.6V operation
- Self-reprogrammable under software control
- Power-on Reset (POR), Power-up Timer (PWRT) and Oscillator Start-up Timer (OST)
- Programmable Brown-out Reset (BOR)
- Extended Watchdog Timer (WDT) with on-chip oscillator and software enable
- Programmable code protection
- In-Circuit Serial Programming™ (ICSP™) via two pins
- In-Circuit Debug via two pins

Power Managed Modes:

- RUN – CPU on, peripherals on
- IDLE – CPU off, peripherals on
- Sleep – CPU off, peripherals off
- Sleep – current down to 300 nA, typical @ 3.0V
- Watchdog Timer – 1.0 μ A typical @ 3.0V
- Timer1 oscillator – 1 μ A typical @ 3.0V with 32 kHz crystal

Analog Features:

- Analog-to-Digital (A/D) Converter module
 - 10-bit resolution
 - 12 analog input channels
 - Auto acquisition capability
 - Conversion available during Sleep
- Analog Comparator module with:
 - Two rail-to-rail analog comparators
 - Comparator inputs and outputs externally accessible and configurable
- Voltage Reference module with:
 - Programmable on-chip voltage reference (CVREF) module (% of VDD)
 - Fixed voltage reference (FVR) with multiple reference voltages

Peripheral Features:

- 17 I/O pins and 1 input only pin:
 - High current sink/source 25 mA/25 mA
 - Individually programmable weak pull-ups
 - Individually programmable interrupt-on-pin change
- Three external interrupt pins
- Four Timer modules:
 - 3 16-bit timers/counters with prescaler
 - 1 8-bit timer/counter with 8-bit period register, prescaler and postscaler
 - Dedicated, low-power Timer1 oscillator
- Enhanced Capture/Compare/PWM (ECCP) module with:
 - One, two or four PWM outputs
 - Selectable polarity
 - Programmable dead time
 - Auto-shutdown and Auto-restart
 - PWM output steering control
- Master Synchronous Serial Port (MSSP) module with Two Modes of Operation:
 - 3-wire SPI (supports all 4 SPI modes)
 - I²C™ Master and Slave modes (Slave mode with address masking)
- Enhanced Universal Synchronous Asynchronous Receiver Transmitter module (EUSART)
 - Supports RS-232, RS-485 and LIN 2.0
 - Auto-Baud Detect
 - Auto Wake-up on Start bit
- SR Latch (555 Timer) module with:
 - Configurable inputs and outputs
 - Supports mTouch™ capacitive sensing applications

PIC18F1XK22

TABLE 1: DEVICE OVERVIEW

Device	Program Memory		Data Memory		Pins	I/O	10-bit A/D Channels	Comparators	Timers 8-bit/16-bit	ECCP	MSSP	EUSART	SR Latch
	Bytes	Words	SRAM (bytes)	Data EEPROM (bytes)									
PIC18F13K22	8K	4K	256	256	20	18	12-ch	2	1 / 3	1	1	1	Yes
PIC18F14K22	16K	8K	512	256	20	18	12-ch	2	1 / 3	1	1	1	Yes

FIGURE 1: PIC18F1XK22 20-PIN PDIP (300 MIL), SSOP AND SOIC

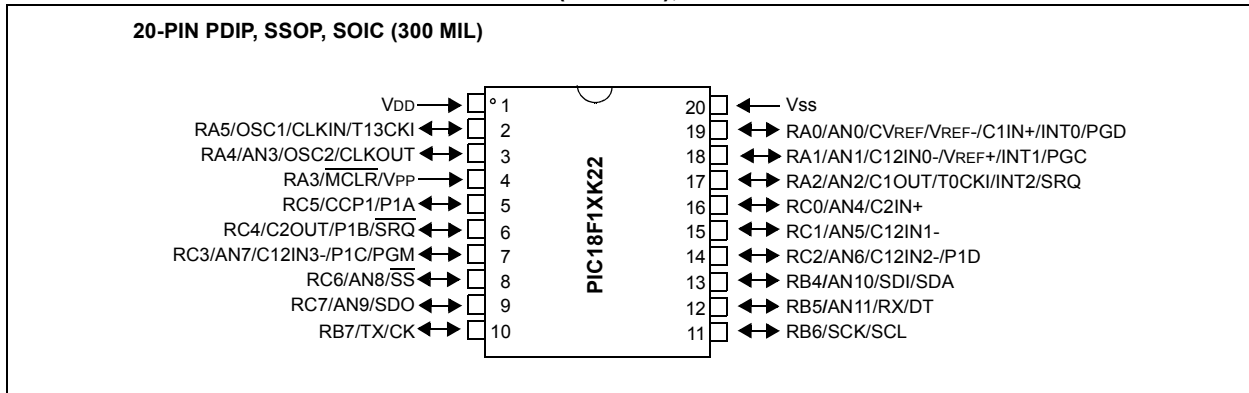
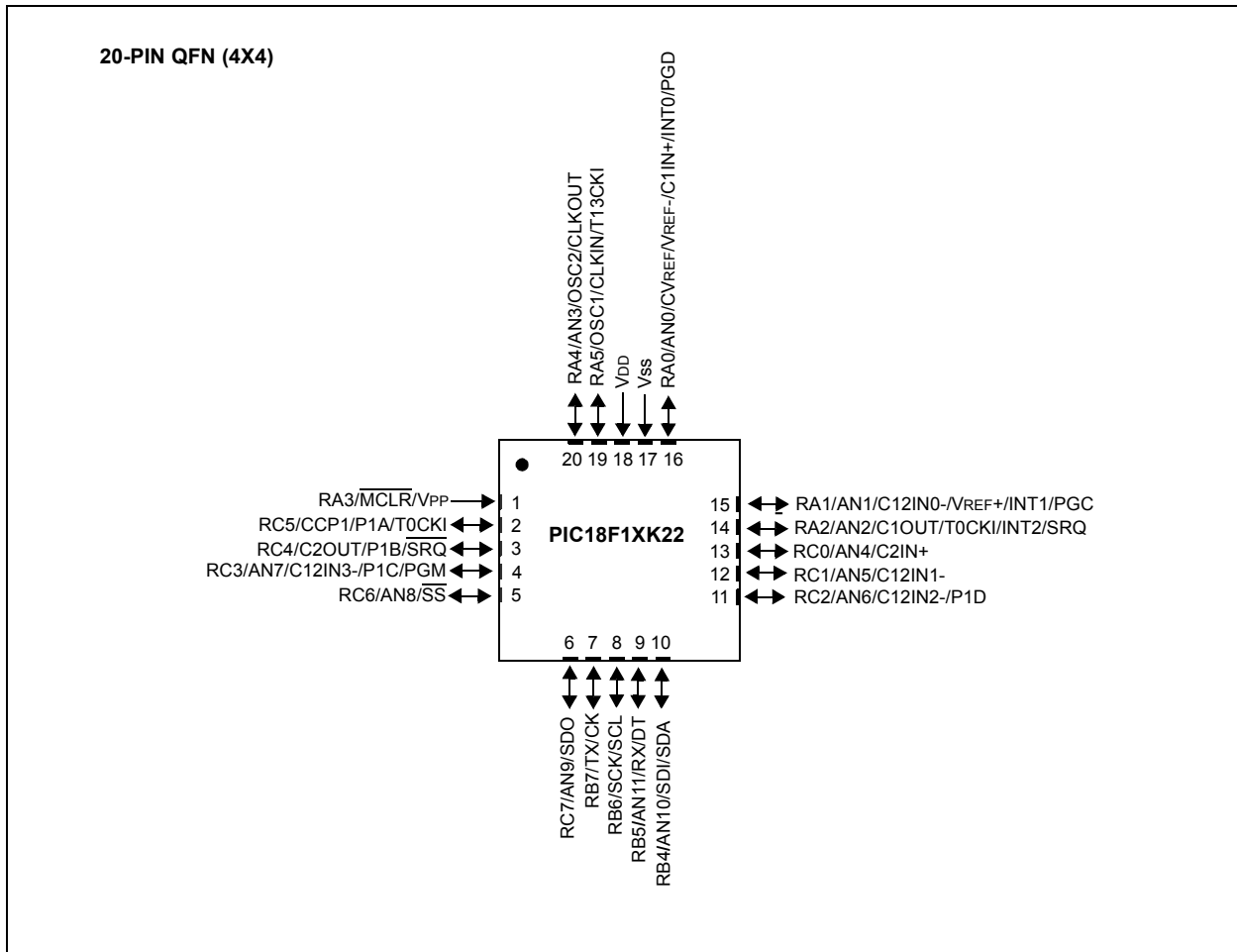


FIGURE 2: PIC18F1XK22 20-PIN QFN



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