

28/40-Pin, Standard FLASH Microcontrollers with 10-bit A/D and nanoWatt Technology

High Performance RISC CPU:

- C compiler optimized architecture/instruction set
- Linear program memory addressing to 64 Kbytes
- Linear data memory addressing of 4 Kbytes
- Up to 10 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:

- Four Crystal modes up to 40 MHz
- 4X Phase Lock Loop
- Two External Clock modes up to 40 MHz
- Internal oscillator block:
 - 8 user selectable frequencies: 31 kHz to 8 MHz
 - OSCTUNE can compensate for frequency drift
- Secondary oscillator using Timer1 @ 32 kHz
- Fail-Safe Clock Monitor:
 - Allows for safe shutdown of device if clock fails

Peripheral Features:

- High current sink/source 25 mA/25 mA
- Three external interrupt pins
- Four Timer modules (Timer0 - Timer3)
- Secondary low power oscillator clock option - Timer1/Timer3
- Up to two Capture/Compare/PWM (CCP) modules, one with Auto-Shutdown
- Enhanced Capture/Compare/PWM (ECCP) module with Auto-Shutdown and up to 4 PWM outputs (PIC18F4515 and PIC18F4610 only)
- Master Synchronous Serial Port (MSSP) module with two modes of operation:
 - 3-wire SPI™ (supports all 4 SPI modes)
 - I²C™ Master and Slave mode
- Addressable USART module:
 - LIN bus support

Special Microcontroller Features:

- 100 erase/write cycle Standard FLASH program memory typical
- Power-on Reset (POR), Power-up Timer (PWRT) and Oscillator Start-up Timer (OST)
- Watchdog Timer (WDT) with its own on-chip RC oscillator for reliable operation
- Programmable code protection
- Wide operating voltage range (2.0V to 5.5V)
- 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
- IDLE mode currents down to 5.8 µA typical
- SLEEP current down to 0.1 µA typical
- Timer1 oscillator 1.1 µA typical, 32 kHz, 2V
- Watchdog Timer 2.1 µA typical
- Two-Speed Oscillator Start-up

Analog Features:

- 10-bit Analog-to-Digital Converter module (A/D)
 - Auto-acquisition capability
 - Conversion available during SLEEP
- Programmable 16-level Low Voltage Detection (LVD) module
 - Supports Interrupt-on-Low Voltage Detection
- Programmable Brown-out Reset (BOR)
- Two Analog comparators with input multiplexing

Device ⁽¹⁾	Program Memory	Data Memory	Pins	I/O	10-bit A/D Channels	Comparators	CCP/ ECCP	BOR/LVD	PSP	MSSP	LIN/USART	Timers 8-bit/16-bit
PIC18F2515	48K x 8	4K x 8	28	25	10-ch	2	2/0	Yes	No	1	1	1 / 3
PIC18F2610	64K x 8	4K x 8	28	25	10-ch	2	2/0	Yes	No	1	1	1 / 3
PIC18F4515	48K x 8	4K x 8	40/44	36	13-ch	2	1/1	Yes	Yes	1	1	1 / 3
PIC18F4610	64K x 8	4K x 8	40/44	36	13-ch	2	1/1	Yes	Yes	1	1	1 / 3

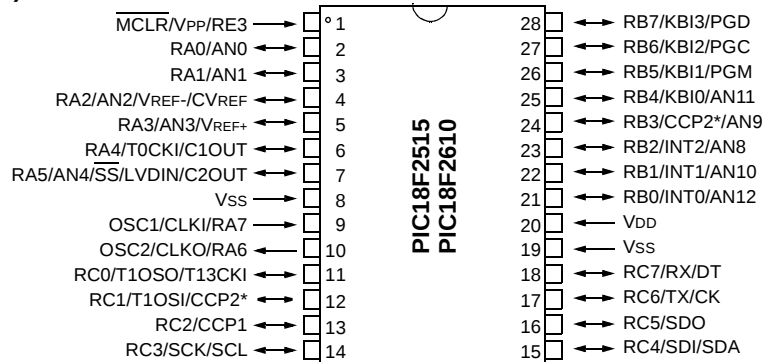
Note 1: These devices do not provide User mode program/erase features of the program memory.

PIC18FX515/X610

Pin Diagrams

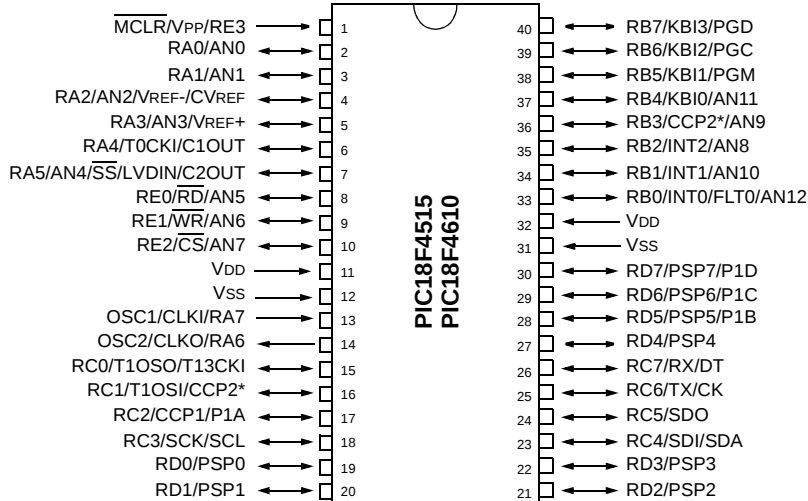
SDIP (300 MIL)

SOIC



* Pin feature is dependent on device configuration.

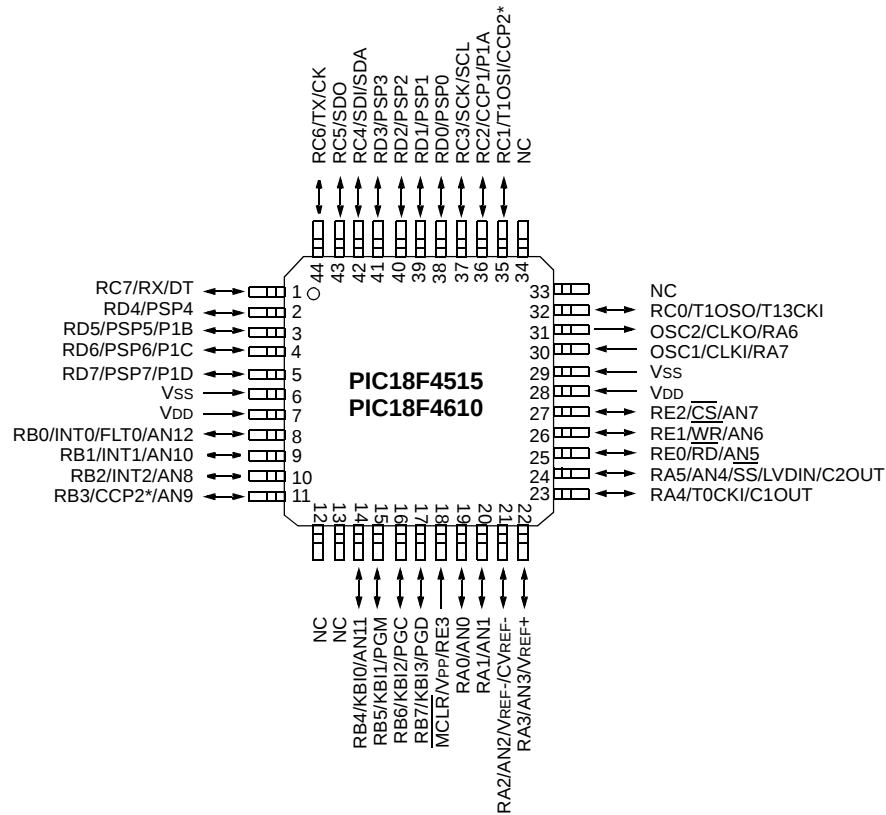
PDIP (600 MIL)



* Pin feature is dependent on device configuration.

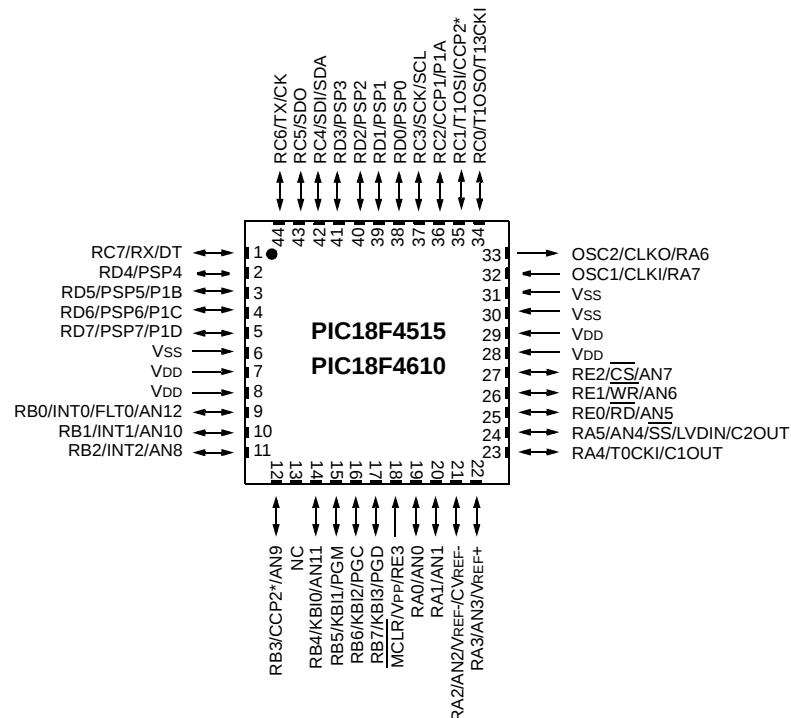
Pin Diagrams (Cont'd)

TQFP



* Pin feature is dependent on device configuration.

QFN



* Pin feature is dependent on device configuration.

PIC18FX515/X610

NOTES:

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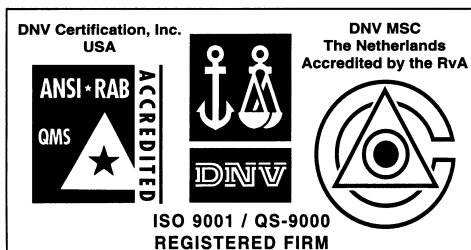
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