

# PIC1XF150X 8-bit Microcontrollers

*Next Generation Integrated Peripherals Enable Unique New Applications*

## Summary

PIC1XF150X family brings the next generation of integrated peripherals to broaden the 8-bit microcontroller market, while enabling non-traditional and innovative new applications. These peripherals bring various new capabilities to the microcontrollers that usually requires external components and/or software overhead.

The PIC1XF150X family consists of five new microcontrollers in 8-, 14- and 20- pin count, and it is based on Microchip's Enhanced Mid-Range 8-bit Core. The combination of high levels of integration via new peripherals, low power, low cost, and efficient architecture makes this family suitable for various general-purpose applications.

- **Configurable Logic Cell (CLC)** – Create custom combinational and sequential logic using this integrated configurable logic cell module. Using CLC, designers can also bring external gates and state functions within the MCU itself.
- **Numerically Controlled Oscillator (NCO)** – Generate linear frequency output with very fine step size. NCO provides high-resolution oscillator capabilities to control applications such as, ballast, radio and tone generator.
- **Complementary Waveform Generator (CWG)** – Generate complementary output waveforms with enhanced features like dead-band control, auto-shutdown, for applications such as motor control and LEDs. CWG provides the flexibility of using any of the various available input source options.
- **4x Pulse Width Modulator (PWM)** – PWM modules provide flexibility to designers working on lighting, power, motor control or any general-purpose application. Four PWM modules are available, even for the 8-pin parts.
- **Integrated Temperature Indicator** – Use the integrated temperature indicator module for quick and low cost temperature measurements, without the need of any external hardware.

In addition to these new modules, the PIC1XF150X family also offers traditional peripherals, such as, 10-bit ADC, up to 2x Comparators, up to 1x EUSART, I<sup>2</sup>C™, SPI and a 5-bit DAC.

PIC® Microcontrollers with the Enhanced Mid-Range core are denoted as PIC1XF1XXX.



## Why PIC1XF150X?

- ✓ **New Peripherals** – New integrated peripherals along with traditional modules to take your design to next level.
- ✓ **Easy Migration** – Pin compatibility with other Microchip 8-bit MCUs, means drop in replacement on your existing board.
- ✓ **Various Applications in a Variety of Market Segments** – Wide array of peripherals to enable many applications in consumer electronics, automotive, medical, home appliance and other markets.
- ✓ **Low Power Performance** – With less than 20 nA standby current and < 30 µA/MHz active current, these MCUs are highly suitable for battery-powered applications.
- ✓ **Low Cost** – Designed to enable highly efficient applications while promoting cost savings.



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## Additional Information

- PIC12(L)F1501/PIC16(L)F150X Product Brief, DS41454
- PIC16(L)F1507 Data Sheet, DS41586
- PIC16(L)F1503 Data Sheet, DS41607
- PIC16(L)F1508/9 Data Sheet, (Available Q4'11)
- PIC12(L)F1501 Data Sheet, (Available Q1'12)
- PIC1XF1XXX Software Migration, DS41375
- Next Generation Peripherals for 8-bit PIC® Microcontrollers, DS41565

- 8-bit PIC® Microcontroller Solutions Brochure, DS39630
- Focus Product Selector Guide, DS01308
- Quick Guide to Microchip Development Tools Brochure, DS51894

## Sample Information

On-line Sampling: [sample.microchip.com](http://sample.microchip.com)

### PIC1XF150X Flash Microcontrollers

Device	Pins	I/O	Flash (KB)	Data RAM (Bytes)	Operating Voltage	10-bit ADC ch	Comp	DAC	PWM	EUSART	SPI/I <sup>2</sup> C™	CLC	CWG	NCO	PWM	Timers 8-bit/16-bit	Packages
PIC12F1501 PIC12LF1501	8	6	1.75	64	2.3-5.5 1.8-3.6	4	1	1	4	-	-	2	1	1	4	2/1	MSOP, SOIC, PDIP, 2x3 DFN, 3x3 DFN
PIC16F1503 PIC16LF1503	14	12	3.5	128	2.3-5.5 1.8-3.6	8	2	1	4	-	1/1	2	1	1	4	2/1	TSSOP, SOIC, PDIP, 3x3 QFN
PIC16F1507 PIC16LF1507	20	18	3.5	128	2.3-5.5 1.8-3.6	12	-	-	4	-	-	2	1	1	4	2/1	SSOP, SOIC, PDIP, 4x4 QFN
PIC16F1508 PIC16LF1508	20	18	7	256	2.3-5.5 1.8-3.6	12	2	1	4	1	1/1	4	1	1	4	2/1	SSOP, SOIC, PDIP, 4x4 QFN
PIC16F1509 PIC16LF1509	20	18	14	512	2.3-5.5 1.8-3.6	12	2	1	4	1	1/1	4	1	1	4	2/1	SSOP, SOIC, PDIP, 4x4 QFN

## Development Made Easy

The PIC1XF150X family provides a low-cost development experience from code creation to integration into the end application.

### Development Tools from Microchip

Part Number	Development Tool
PG164130	PICkit™ 3 In-Circuit Debugger
DV164035	MPLAB® ICD 3 In-Circuit Debugger
DM164130-1	F1 Evaluation Platform
DV164132	F1 Evaluation Kit
DM164120-1	PICkit™ Low Pin Count Demonstration Board
DM163045	PICDEM™ Lab Development Kit
DM163022-1	PICDEM™ 2 Plus Demonstration Board
DV007004	MPLAB® PM3 Universal Device Programmer



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