PIC1XF150X/155X 8-bit Microcontrollers
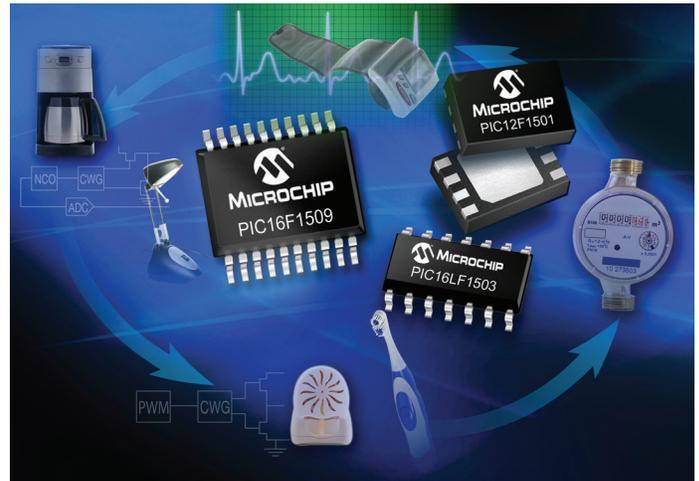## Core Independent Peripherals Enable Unique New Applications

Summary

PIC1XF150X/155X family brings integrated core independent peripherals to broaden the 8-bit microcontroller portfolio, 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 six 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 core independent 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.
- **Hardware Capacitive Voltage Divider (CVD):** Implement mTouch™ capacitive touch sensing with automated touch sampling that reduces software size and lower CPU usage. It also provides automatic control of guard-ring drive and a programmable sample and hold capacitance to better match larger touch or proximity sensors.
- **4× 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 the core independent peripherals, the PIC1XF150X family also offers traditional peripherals, such as, 10-bit ADC, up to 2× Comparators, up to 1× EUSART, I²C™, SPI and a 5-bit DAC.

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

Features

- *Core Independent Peripherals:* Integrated CLC, NCO, CWG 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*, DS41609A
- *PIC12(L)F1501 Data Sheet*, DS41615A
- *PIC1XF1XXX Software Migration*, DS41375
- *Core Independent Peripherals Brochure*, DS41565

- *8-bit PIC Microcontroller Solutions Brochure*, DS39630
- *Focus Product Selector Guide*, DS01308
- *Quick Guide to Microchip Development Tools Brochure*, DS51894
- *PIC12LF1552 Data Sheet*, DS41674B

Sample Information

On-line Sampling: 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/ I²C™	CLC	CWG	NCO	PWM	Timers 8-bit/ 16-bit	Packages
PIC12LF1552	8	6	3.5	256	1.8–3.6	5	–	–	–	–	1/1	–	–	–	–	1/0	MSOP, SOIC, PDIP, 2 × 3 UDFN
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, 2 × 3 DFN, 3 × 3 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, 3 × 3 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, 4 × 4 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, 4 × 4 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, 4 × 4 QFN

Development Made Easy

The PIC1XF150X/155X family provides a low-cost development experience from code creation to integration into the end application.

Development Tools from Microchip

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

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www.microchip.com/8bit

Visit our web site for additional product information and to locate your local sales office.

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