



PIC10(L)F320/322

PIC10(L)F320/322 Product Brief

High-Performance RISC CPU:

- Only 35 Instructions to Learn:
 - All single-cycle instructions, except branches
- Operating Speed:
 - DC – 16 MHz clock input
 - DC – 250 ns instruction cycle
- Up to 500 Words of Flash Program Memory
- Up to 64 Bytes Data Memory
- Eight-level Deep Hardware Stack
- Interrupt Capability
- Processor Self-Write/Read access to Program Memory
- Pinout Compatible to other 6-Pin PIC10FXXX Microcontrollers

Special Microcontroller Features:

- Low-Power 16 MHz Internal Oscillator:
 - Factory calibrated to $\pm 10\%$, typical
 - Software selectable frequency range from 16 MHz to 31 kHz
- Wide Operating Range:
 - 1.8V to 3.6V (PIC10LF32X)
 - 2.3V to 5.5V (PIC10F32X)
- Power-on Reset (POR)
- Power-up Timer (PWRT)
- Brown-out Reset (BOR)
- Ultra Low-Power Sleep Regulator
- Extended Watchdog Timer (WDT)
- Programmable Code Protection
- Power-Saving Sleep mode
- Selectable Oscillator options (EC mode or Internal Oscillator)
- In-Circuit Serial Programming™ (ICSP™) (via Two Pins)
- In-Circuit Debugger Support
- Fixed Voltage Reference (FVR) with 1.024V, 2.048V and 4.096V ('F' variant only) Output Levels
- Integrated Temperature Indicator
- 100K Read/Write Endurance
- 40-year Flash Data Retention

勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-34970699
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Low-Power Features (PIC10LF32X):

- Standby Current:
 - 20 nA @ 1.8V, typical
- Operating Current:
 - 25 μ A @ 1 MHz, 1.8V, typical
- Watchdog Timer Current:
 - 500 nA @ 1.8V, typical

Peripheral Features:

- 4 I/O Pins:
 - 1 input-only pin
 - High current sink/source for LED drivers
 - Individually selectable weak pull-ups
 - Interrupt-on-Change
- Timer0: 8-Bit Timer/Counter with 8-Bit Programmable Prescaler
- Timer2: 8-Bit Timer/Counter with 8-Bit Period Register, Prescaler and Postscaler
- Two PWM modules:
 - 10-bit PWM, max. frequency 16 kHz
 - Combined to single 2-phase output
- A/D Converter:
 - 8-bit resolution with 3 channels
- Configurable Logic Cell (CLC):
 - 8 selectable input source signals
 - Two inputs per module
 - Software control of combinational/sequential logic/state/clock functions
 - AND/OR/XOR/XOD/SR/JK
 - External or internal inputs/outputs
 - Operation while in Sleep
- Numerically Controlled Oscillator (NCO):
 - 20-bit accumulator
 - 16-bit addend
 - True linear frequency control
 - High-speed clock input
 - Selectable Output modes
 - Fixed Duty Cycle (FDC)
 - Pulse Frequency Modulation (PFM)
- Complementary Waveform Generator (CWG):
 - 4 selectable signal sources
 - Selectable falling and rising edge dead-band control
 - Polarity control
 - 2 auto-shutdown sources
 - Multiple input sources: PWM, CLC, NCO

PIC10(L)F320/322

TABLE 1: PIC10(L)F320/322 FEATURE SUMMARY

Device	Program Memory Flash (words)	SRAM (bytes)	I/O ⁽¹⁾	8-bit A/D (ch)	CLC	10-bit PWM	Timers 8-bit	NCO	CWG
PIC10F320	256	32	4	3	1	2	2	1	1
PIC10LF320	256	32	4	3	1	2	2	1	1
PIC10F322	512	64	4	3	1	2	2	1	1
PIC10LF322	512	64	4	3	1	2	2	1	1

Note 1: One pin is input-only.

Note: Pin details are subject to change.

FIGURE 1: 6-PIN DIAGRAM, PIC10(L)F320/322

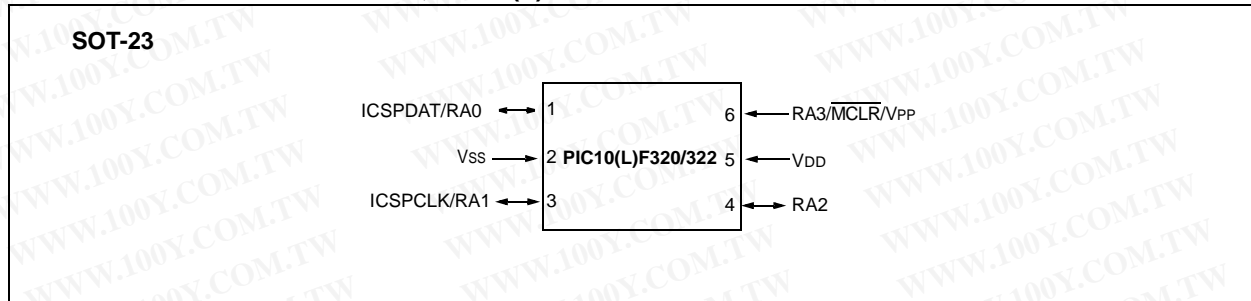


FIGURE 2: 8-PIN DIAGRAM, PIC10(L)F320/322

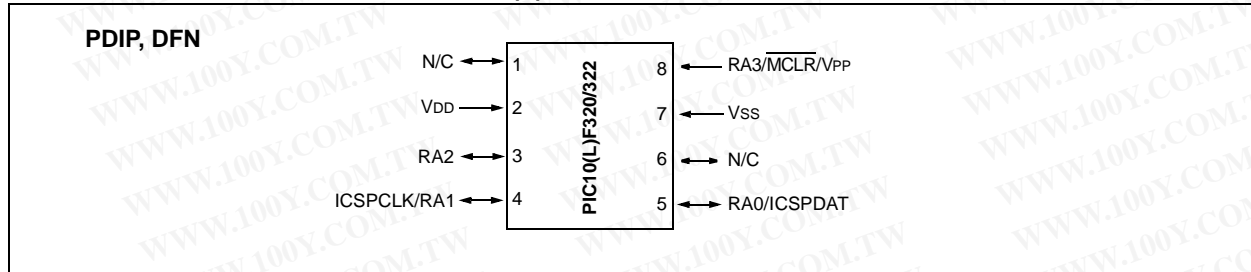


TABLE 2: 6 AND 8-PIN ALLOCATION TABLE (PIC10(L)F320/322)

I/O	6-Pin	8-Pin	Analog	Timer	CCP	Interrupts	Pull-ups	CWG	NCO	CLC	Basic	ICSP
RA0	1	5	AN0	—	PWM1	IOC0	Y	CWG1OUT0	—	CLC1IN1	—	ICSPDAT
RA1	3	4	AN1	—	PWM2	IOC1	Y	CWG1OUT1	—	CLC1OUT	CLKIN	ICSPCLK
RA2	4	3	AN2	T0CKI	—	INT/IOC2	Y	—	NCOxOUT	CLC1IN2	CLKR	—
RA3	6	8	—	—	—	IOC3	Y	—	—	—	MCLR	VPP
N/C	—	—	—	—	—	—	—	—	—	—	—	—
N/C	—	—	—	—	—	—	—	—	—	—	—	—
VDD	5	2	—	—	—	—	—	—	—	—	—	—
Vss	2	7	—	—	—	—	—	—	—	—	—	—

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is one of the most secure families of its kind on the market today, when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is engaged in theft of intellectual property.
- Microchip is willing to work with the customer who is concerned about the integrity of their code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as "unbreakable."

Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE. Microchip disclaims all liability arising from this information and its use. Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights.

勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-34970699
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Trademarks

The Microchip name and logo, the Microchip logo, dsPIC, KEELOQ, KEELOQ logo, MPLAB, PIC, PICmicro, PICSTART, PIC³² logo, rPIC and UNI/O are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.


FilterLab, Hampshire, HI-TECH C, Linear Active Thermistor, MXDEV, MXLAB, SEEVAL and The Embedded Control Solutions Company are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Analog-for-the-Digital Age, Application Maestro, chipKIT, chipKIT logo, CodeGuard, dsPICDEM, dsPICDEM.net, dsPICworks, dsSPEAK, ECAN, ECONOMONITOR, FanSense, HI-TIDE, In-Circuit Serial Programming, ICSP, Mindi, MiWi, MPASM, MPLAB Certified logo, MPLIB, MPLINK, mTouch, Omniclient Code Generation, PICC, PICC-18, PICDEM, PICDEM.net, PICKIT, PICtail, REAL ICE, rfLAB, Select Mode, Total Endurance, TSHARC, UniWinDriver, WiperLock and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

All other trademarks mentioned herein are property of their respective companies.

© 2011, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

 Printed on recycled paper.

ISBN: 978-1-61341-205-3

Microchip received ISO/TS-16949:2002 certification for its worldwide headquarters, design and wafer fabrication facilities in Chandler and Tempe, Arizona; Gresham, Oregon and design centers in California and India. The Company's quality system processes and procedures are for its PIC[®] MCUs and dsPIC[®] DSCs, KEELOQ[®] code hopping devices, Serial EEPROMs, microperipherals, nonvolatile memory and analog products. In addition, Microchip's quality system for the design and manufacture of development systems is ISO 9001:2000 certified.

QUALITY MANAGEMENT SYSTEM
CERTIFIED BY DNV
== ISO/TS 16949:2009 ==