

PIC16F19197 Family of Microcontrollers

Simplifying the Design of Low-Power LCD Applications

Summary

The PIC16(L)F19197 product family is a line of eXtreme Low Power (XLP) microcontrollers for driving Liquid Crystal Displays (LCD) that features Core Independent Peripherals and Intelligent Analog. The nine-member family includes a battery-friendly LCD drive charge pump, 12-bit ADC with Computation (ADC²), low-power comparator and active clock tuning of its high-frequency oscillator. These devices are an ideal solution for low-power and battery-powered touch-enabled LCD applications. The family consists of 28- to 64-pin devices with up to 56 KB of Flash and 4 KB of RAM.



LCD Enhancements

To support battery applications, the products feature a charge pump that ensures LCD screens maintain consistent contrast even as battery voltage drops. High-current I/O pins also provide the ability to directly drive LCD backlighting. Each of these features is offered along with the ability to drive up to 360 LCD segments.

Intelligent Analog

The 12-bit ADC² automates signal acquisition and processing tasks making robust touch buttons and sliders easy to implement. Additional analog features include a low-power comparator, Zero Cross Detect (ZCD) and a 5-bit Digital-to-Analog Converter (DAC).

Low Power Features

Power saving functions such as IDLE and DOZE low-power modes allow applications to optimize device performance and power consumption. IDLE mode is a power-saving mode that puts the CPU core to sleep while the internal peripherals continue to operate from the system clock and DOZE mode enables the CPU core to run at a slower speed compared to the system clock used by the internal peripherals. The Peripheral Module Disable (PMD) allows unused peripherals to be turned off individually, further reducing power consumption. Extended battery life is achieved with XLP technology.

Development Made Easy

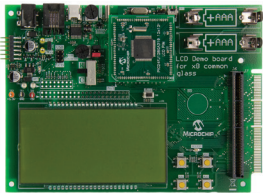
The PIC16(L)F19197 family is supported by MPLAB Code Configurator (MCC), a free software plug-in that provides a graphical interface to configure peripherals and functions specific to your application. MCC is incorporated into Microchip's award-winning development environments, the downloadable MPLAB® X IDE and the cloud-based MPLAB Xpress IDE.



Key Features

- 32 MHz internal oscillator
- Up to 56 KB Flash program memory
- Up to 4 KB RAM
- 256B of Data EEPROM
- 12-bit ADC², up to 45 channels
- Integrated LCD control for up to 360 segments
- Four 10-bit PWMs
- Two Capture, Compare, PWMs (CCP)
- Two comparators (1 low power, 1 high speed)
- Four Configurable Logic Cells (CLC)
- 5-bit DAC
- Complementary Waveform Generator (CWG)
- Communication: SPI/I²C and EUSART
- mTouch® capacitive sensing
- Peripheral Pin Select (PPS)
- Available in 28 to 64 pins

Develop with the LCD Explorer XLP Development Board



The LCD Explorer XLP Development Board (DM240314) supports Microchip's ×8 common segment LCD drivers. It is an ideal platform to evaluate the PIC16F19197 family with its 38-segment ×8 common LCD display. Additional features include external and internal resistor ladders, charge pump biasing capacitor, four push buttons, one mTouch capacitive sensing button, analog potentiometer and temperature sensor.

Products

Product	Program Flash (KB)	Data EEPROM (B)	RAM (B)	I/O Pins	12-bit ADC ² (ch.)	Comparators	8-/16-bit Timer	Windowed WDT	CCP/10-bit PWM	ZCD/CWG	CLC	EUART/I ² C/SPI	PPS/PMD/MAP	LCD Segments	Packages
PIC16(L)F19155	14/8	256	1,024	24	20	2	2/2	Y	2/2	1/1	4	2/1/1	Y/Y/Y	96	SPDIP, SOIC, SSOP, UQFN
PIC16(L)F19156	28/16	256	2,048	24	20	2	2/2	Y	2/2	1/1	4	2/1/1	Y/Y/Y	96	SPDIP, SOIC, SSOP, UQFN
PIC16(L)F19175	14/8	256	1,024	31	35	2	2/2	Y	2/2	1/1	4	2/1/1	Y/Y/Y	184	PDIP, UQFN, TQP, QFN
PIC16(L)F19176	28/16	256	2,048	31	35	2	2/2	Y	2/2	1/1	4	2/1/1	Y/Y/Y	184	PDIP, UQFN, TQP, QFN
PIC16(L)F19185	14/8	256	1,024	39	43	2	2/2	Y	2/2	1/1	4	2/1/1	Y/Y/Y	248	UQFN, TQFP
PIC16(L)F19186	28/16	256	2,048	39	43	2	2/2	Y	2/2	1/1	4	2/1/1	Y/Y/Y	248	UQFN, TQFP
PIC16(L)F19195	14/8	256	1,024	59	45	2	2/2	Y	2/2	1/1	4	2/1/1	Y/Y/Y	360	QFN, TQFP
PIC16(L)F19196	28/16	256	2,048	59	45	2	2/2	Y	2/2	1/1	4	2/1/1	Y/Y/Y	360	QFN, TQFP
PIC16(L)F19197	56/32	256	4,096	59	45	2	2/2	Y	2/2	1/1	4	2/1/1	Y/Y/Y	360	QFN, TQFP

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