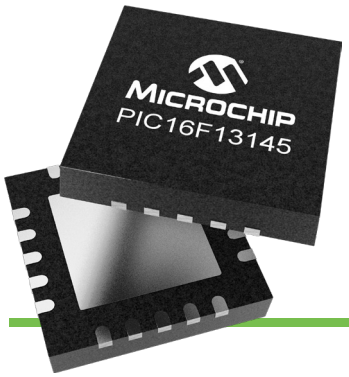
PIC16F13145 Product Family

The Next Step in Customizable Logic



New Realm of Flexible, Customizable Logic

Create complex logic functions in hardware with the PIC16F13145's on-chip Configurable Logic Block (CLB) module. This module allows designers to build custom circuits and customize their applications to fit their needs better. The Configurable Logic Cell (CLC) module is popular for its ability to create logic functions. The CLB evolved from the CLC due to the increasing demand for complex logic in applications. The CLB has a graphical interface tool that helps build and synthesize custom logic designs without having the overhead of firmware development. The CLB module reduces BOM cost by eliminating the need for external logic components and lowering the power consumption of the overall system.

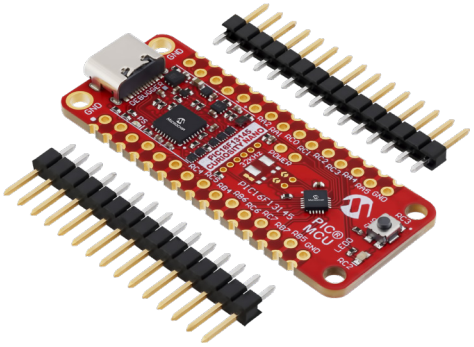
Low Power Consumption

Consuming the lowest amount of power is always important, especially in battery-operated applications. The PIC16F13145 family of MCUs is designed with low power consumption in mind. The Core Independent Peripherals (CIPs) can handle operations without consuming CPU cycles, reducing power consumption. The CLB can operate while the CPU is in sleep mode and can help process inputs from external and internal sources and respond with minimal power consumption. The CLB can be combined with other on-board CIPs to reduce power, including 8- and 16-bit timers, the Analog-to-Digital Converter (ADC), PWM modules and more. This device offers heightened design flexibility through its integrated on-chip peripherals.

Add Features Easily

Embedded engineers and developers frequently encounter design creep, which occurs when they discover valuable features to incorporate into a design after the initial scoping is completed. Fortunately, the PIC16F13145 MCU simplifies the process by enabling designers to integrate these enhancements without having to overhaul their entire design and start from scratch. MPLAB® Code Configurator (MCC) Melody empowers designers to prototype their designs rapidly, eliminating the need for extensive coding. This MCU family contains a range of peripherals that facilitate these enhancements, including a fast 10-bit ADC with built-in computation, an 8-bit Digital-to-Analog Converter (DAC), rapid comparators, 8- and 16-bit timers and communication modules like Inter-Integrated Circuit (I2C) and Serial Peripheral Interface (SPI). Furthermore, the family offers diverse package options, starting from 8 pins and extending to 20 pins.

Development Tools With CLB Graphical Tool Feature



MPLAB Code Configurator (MCC) is a free software plug-in within MPLAB X IDE that provides an easy GUI-based interface to configure the device and on-board peripherals, including the CLB. This interface reduces development time because the desired custom logic can be designed schematically with options for any advanced user to use Hardware Description Language (HDL). The brand new synthesizer is available in two options: an online-only version that can be found at logic.microchip.com or a version that is integrated into MCC Melody. The PIC16F13145 Curiosity Nano Evaluation Kit (EV06M52A) offers complete support for designing with the PIC16F13145 family. These features contribute to a seamless embedded development experience and reduced time to market.

Key Features

- One CLB module with 32 BLE and built-in counter
- Up to 14 kB Flash program with independent control for code protection
  - Includes configurable boot memory and SAF area for storing data
  - Includes Device Information Area (DIA) and Device Configuration Information (DCI)
- Up to 1 kB User SRAM
- 32-bit CRC with built-in memory scanner that can operate core independently.
- 10-bit single-ended ADC with computation (300 ksps) and channel grouping, which allows multiple, simultaneous input connections to the ADC
- One 8-bit programmable DAC with two buffered outputs
- Two high-speed comparators
- Fixed Voltage Reference (FVR)
- Temperature sensor with factory calibration
- High-precision internal oscillator (+/- 2% accuracy) with clock switching
- Capabilities for external crystal oscillators and external clock
- One MSSP module that can be configured as SPI or I2C (up to 400 KHz)
- One EUSART with auto baud
- One Timer0 (8/16-bit mode of operation)
- One 8-bit timer with Hardware Limit Timer (TMR2)
- One 16-bit timer (TMR1)

Device	Program Flash Memory (bytes)	Data SRAM (bytes)	Memory Access Partition/ Device Information Area	32-Bit CRC with NVM Scanner	I/O Pins/Peripheral Pin Select	8-Bit Timers with HLT/ 16-bit Timers	10-Bit PWM/CCP	10-Bit ADC Channels (External/Internal)	I2C/SPI	EUSART	CLB	CLC	FVR	CMP	8-bit DAC	External Interrupt Pins	Interrupt-on-Change Pins	Windowed Watchdog Timer
PIC16F13113	3.5k	256	Y/Y	Y	6/Y	1/1	2/2	5/5	1/1	1	1	4	2	2	1	1	6	Y
PIC16F13114	7k	512	Y/Y	Y	6/Y	1/1	2/2	5/5	1/1	1	1	4	2	2	1	1	6	Y
PIC16F13115	14k	1024	Y/Y	Y	6/Y	1/1	2/2	5/5	1/1	1	1	4	2	2	1	1	6	Y
PIC16F13123	3.5k	256	Y/Y	Y	12/Y	1/1	2/2	11/5	1/1	1	1	4	2	2	1	1	12	Y
PIC16F13124	7k	512	Y/Y	Y	12/Y	1/1	2/2	11/5	1/1	1	1	4	2	2	1	1	12	Y
PIC16F13125	14k	1024	Y/Y	Y	12/Y	1/1	2/2	11/5	1/1	1	1	4	2	2	1	1	12	Y
PIC16F13143	3.5k	256	Y/Y	Y	18/Y	1/1	2/2	17/5	1/1	1	1	4	2	2	1	1	18	Y
PIC16F13144	7k	512	Y/Y	Y	18/Y	1/1	2/2	17/5	1/1	1	1	4	2	2	1	1	18	Y
PIC16F13145	14k	1024	Y/Y	Y	18/Y	1/1	2/2	17/5	1/1	1	1	4	2	2	1	1	18	Y