TinyFPGA BX – ICE40 FPGA Development Board with USB

PRODUCT ID: 4038

Wanna dip your toes into the world of digital logic design – but a little intimidated of the complexity? You may find a friend in the TinyFPGA BX, a FPGA development board that is designed from the ground up to be easy to use. Designed for makers and hobbyists, TinyFPGA BX puts you in control and takes the headache out of power delivery, clocking, configuration flash, and more. Its small form factor fits easily on a breadboard for learning or prototyping.
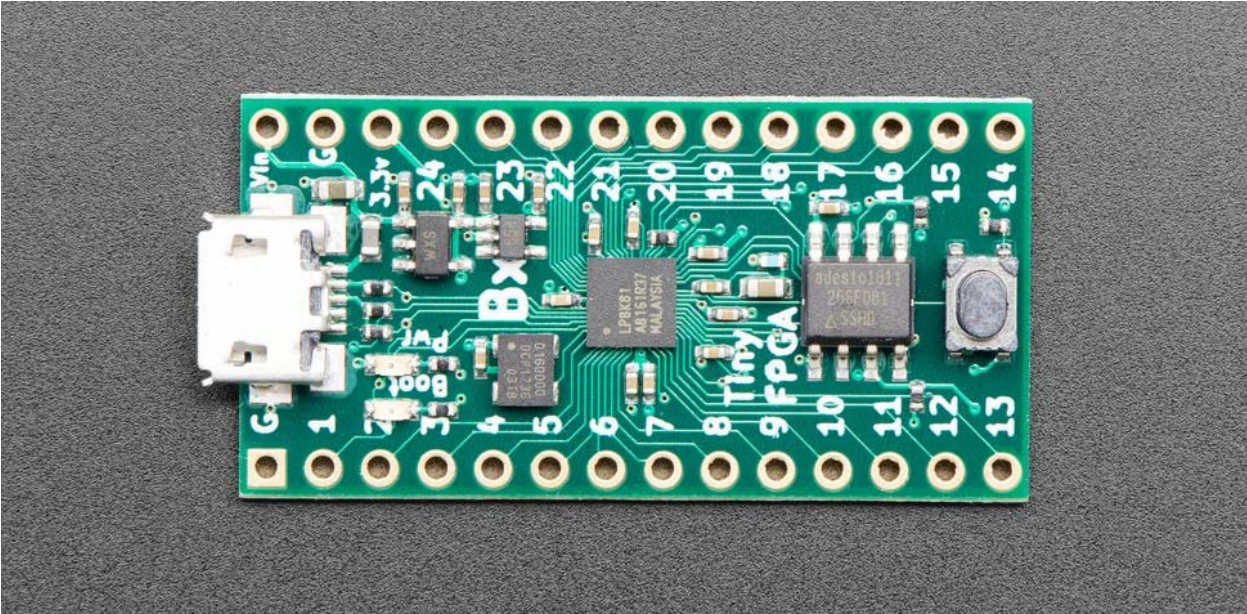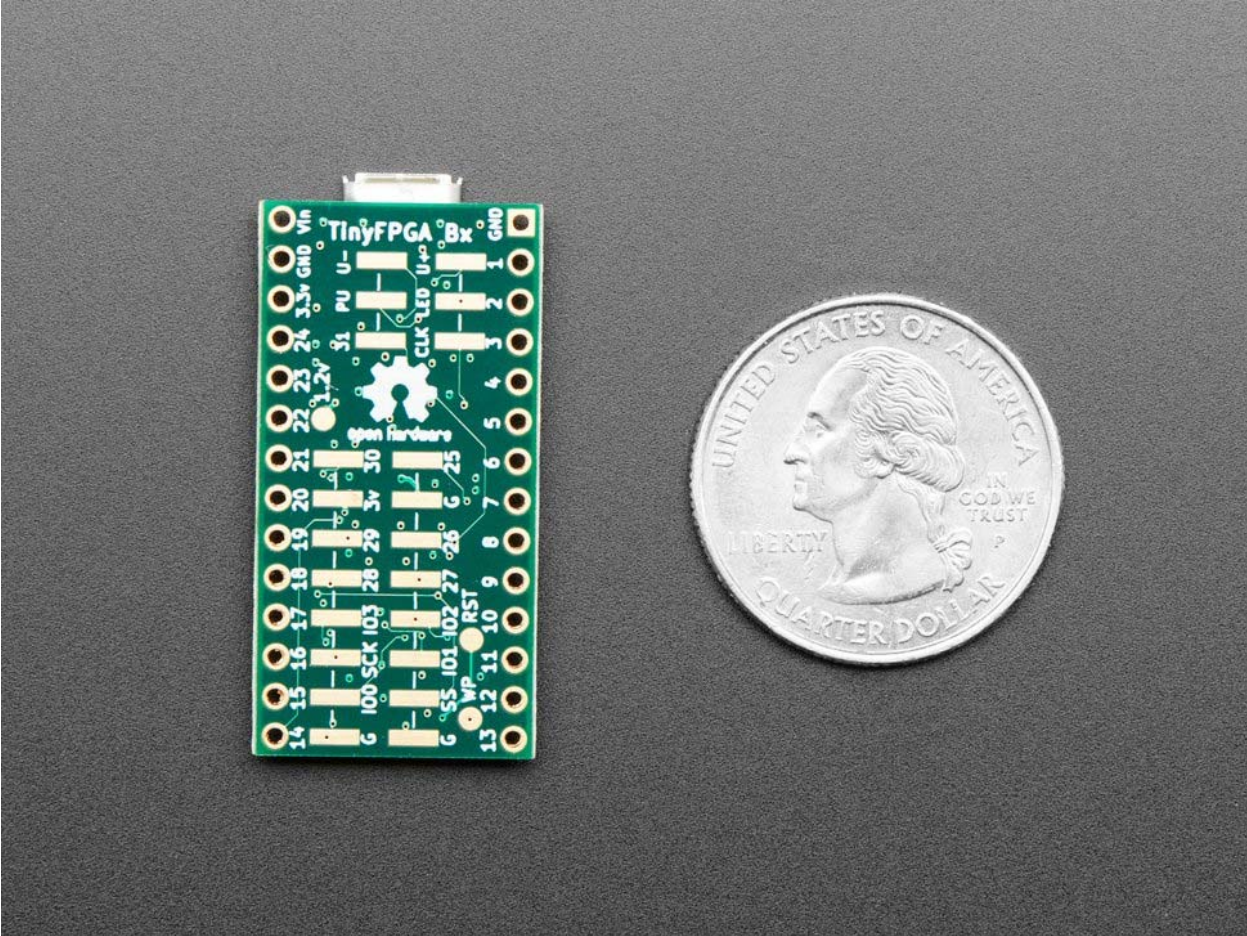
This board is all-in-one, with a USB bootloader so you don't need any external programmer dongles. The ICE40 FPGA chip is supported by open source tools, so you can develop on any operating system. There's documentation and getting started guides, so you can make your first FPGA project, or maybe just your tiniest one? Check out the website at tinyfpga.com

TinyFPGA BX features include:

- Programming interface: USB 2.0 full-speed with bootloader
- ICE40LP8K FPGA
    - 7,680 four-input look-up-tables
    - 128 KBit block RAM
    - Phase Locked Loop
    - 41 user IO pins
- 8 MBit of SPI Flash (1 MByte)
- Onboard 3.3 V (300 mA) and 1.2 V (150 mA) LDO regulators
- Low-Power 16 MHz MEMS Oscillator
    - 1.3 mA power when active
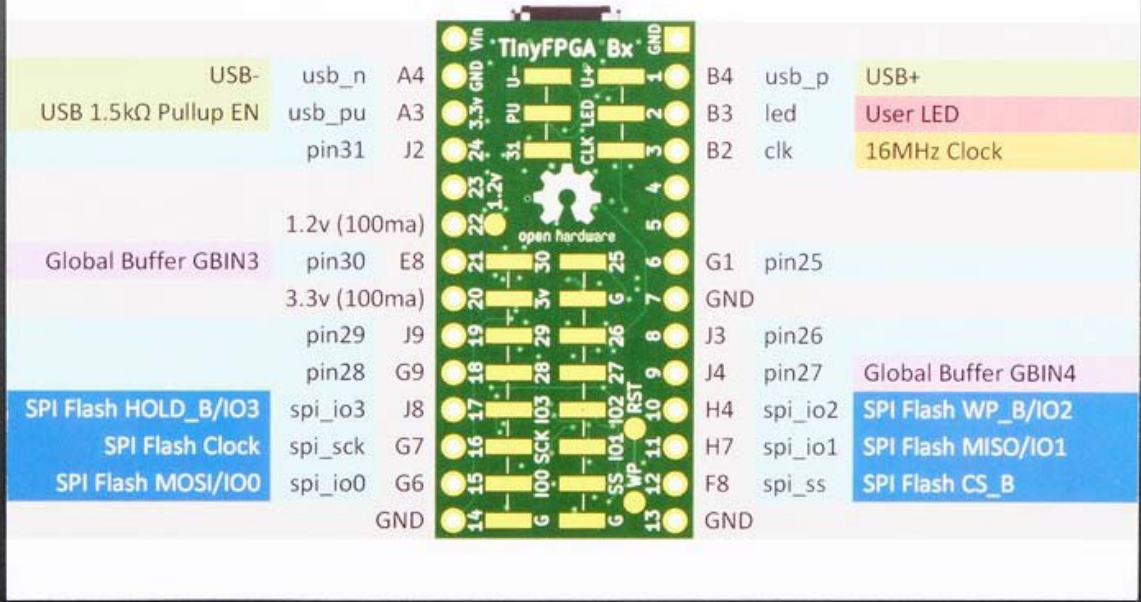   - 50 ppm stability

TECHNICAL DETAILS

- Board dimensions: 36 x 18 x 4mm
- GitHub repository
- Hobbyists Guide to FPGAs
- Specifications:
    - FPGA Chip: ICE40LP8K
    - Logic Cells: 7680
    - Block RAM: 128 KBit
    - User Flash: 6000 KBit
    - Phase Lock Loops: 1
    - User IO Pins (dedicated + shared): 31 + 10

TinyFPGA BX Bottom
Inner Pads

USB-	usb_n	A4		B4	usb_p	USB+
USB 1.5kΩ Pullup EN	usb_pu	A3		B3	led	User LED
	pin31	J2		B2	clk	16MHz Clock
	1.2v (100ma)					
Global Buffer GBIN3	pin30	E8		G1	pin25	
	3.3v (100ma)			GND		
	pin29	J9		J3	pin26	
	pin28	G9		J4	pin27	Global Buffer GBIN4
SPI Flash HOLD_B/IO3	spi_io3	J8		H4	spi_io2	SPI Flash WP_B/IO2
SPI Flash Clock	spi_sck	G7		H7	spi_io1	SPI Flash MISO/IO1
SPI Flash MOSI/IO0	spi_io0	G6		F8	spi_ss	SPI Flash CS_B
	GND			GND		

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	GND				Vin (3.5 – 5.5v)	
	pin1	A2			GND	
	pin2	A1			3.3v (100ma)	
Differential IO 3A	pin3	B1		A6	pin24	
	pin4	C2		B6	pin23	
Differential IO 3B	pin5	C1		A7	pin22	
	pin6	D2		B7	pin21	
Differential IO 10A	pin7	D1		A8	pin20	
	pin8	E2		B8	pin19	
Differential IO 10B	pin9	E1		A9	pin18	
Differential IO 26A	pin10	G2		C9	pin17	
	pin11	H1		D8	pin16	Global Buffer GBIN2
	pin12	J1		D9	pin15	
Differential IO 26B	pin13	H2		H9	pin14	