EZ-USB™ FX2G3

Infineon

USB 2.0 high-speed peripheral controller

EZ-USB™ FX2G3 is a family of USB 2.0 device controllers targeting the established USB 2.0 applications in biometrics, scanner, camera, video and imaging markets. It is based on the MXS40-LP platform with Cortex®-M4 and M0+ MCUs, 512 KB Flash, 128 KB SRAM, 128 KB ROM, serial communication blocks (SCB) and a crypto engine to support various security features. A high bandwidth data subsystem provides DMA data transfers from LVCMOS input to USB output at speeds up to 480 Mbps, USB high-speed based host systems. A 1024 KB SRAM is included in the high bandwidth data subsystem to provide buffering for data.

Key features

- **USB interface**
    - USB 2.0 HS at 480 Mbps
    - Up to 32 endpoints, 16 IN and 16 OUT; each end point configured as Bulk, Isochronous or Interrupt type
- **Dual-core CPU subsystem**
    - 150 MHz Arm® Cortex®-M4F (CM4) CPU with single-cycle multiply, floating point (FP), and memory protection unit (MPU)
    - 100 MHz Arm® Cortex®-M0+ (CM0+) CPU with single-cycle multiply and memory protection unit (MPU)
- **Memory subsystem**
    - 512 KB built-in application flash, read-while-write (RWW) support
    - 128 KB SRAM with power and data retention control
    - 128 KB ROM for device initialization, flash write, security, eFuse programming
    - 1 MB SRAM for LVCMOS to USB data buffer
    - 1024 bits one-time programmable (OTP) eFuse array
- **General Programmable Interface (GPIF III)**
    - LVCMOS parallel-data bus transceiver mode
      - Consists of 16 data, one clock, and 10 control signals
      - 100 MHz SDR in TX and RX mode
- **Peripheral IO subsystem – total of 48 shared IOs**
    - Quad SPI (QSPI) configurable as single, dual, quad, dual-quad, and octal interfaces
    - Six Serial Communication Blocks (SCBs) configurable as I2C, UART, or SPI
    - Pulse-density modulation (PDM) to pulse-code modulation (PCM) converter for microphone
    - One USB Full-Speed (FS) device for virtual communication (COM) function
    - GPIOs: Each peripheral IO can be configured as GPIO
- **Ultra-low-power (ULP) with fine-grained power management**
    - 1.7 V to 3.6 V operation
    - Deep Sleep mode with SRAM retention
- **Flexible clocking options**
- **Security**
    - ROM-based root of trust via uninterrupted "Secure Boot"
    - Stepwise authentication of execution images
    - Secured execution of code in the execute-only mode for protected routines
    - All debug and test ingress paths can be disabled
    - Eight protection contexts
    - Cryptography accelerator
      - Hardware acceleration for symmetric and asymmetric cryptographic methods and hash functions
      - True random number generation (TRNG) function
- **Package information**
    - 8 mm × 8 mm 104-pin LGA

Applications

- Biometric devices
- Scanners
- Medical devices
- Video streaming cameras
- Audio devices
- Industrial automation
- Gaming controllers & AR/VR
- Data acquisition systems
- USB logic & protocol analysers, JTAG debuggers
- USB smartphone add-on accessories

Development tools

- Modus Toolbox™ software enables cross-platform code development platform
- EZ-USB™ Code Builder along with firmware code examples (including UVC, UAC, HID, CDC, and vendor-specific classes)
- EZ-USB™ GPIF III designer and EZ-USB™ FX Control center
- Infineon Developer Community connects you with fellow USB developers worldwide, 24/7.

Key benefits

- Faster, Scalable Data Transfers with 480Mbps speed
- Handles complex designs with enhanced power & memory
- Enables Future-ready connectivity with crypto security
- Optimized for consumer, industrial, automotive applications
- Accelerates development with Infineon's Software Development Platform

Block diagram
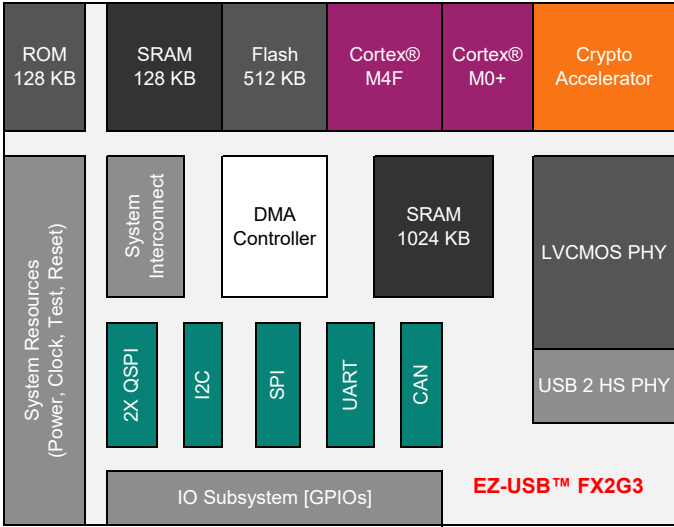
Ordering information

Part number	Package	Temp (DegC)	MCU	SRAM (KB)	FLASH (KB)	GPIF/ FIFO	No. of SCBs	I2C UART	SPI	CAN	QSPI	Crypto
CYUSB2315-BF104AXI(T)	104 LGA	-45 to 85	M0+	512	256	16-bit	1	Yes				
CYUSB2316-BF104AXI(T)	104 LGA	-45 to 85	M0+	512	256	16-bit	3	Yes	Yes	Yes		
CYUSB2317-BF104AXI(T)	104 LGA	-45 to 85	M0+	512	512	16-bit	6	Yes	Yes	Yes	Yes	
CYUSB2318-BF104AXI(T)	104 LGA	-45 to 85	M4/M0+	1024	512	16-bit	6	Yes	Yes	Yes	Yes	Yes

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