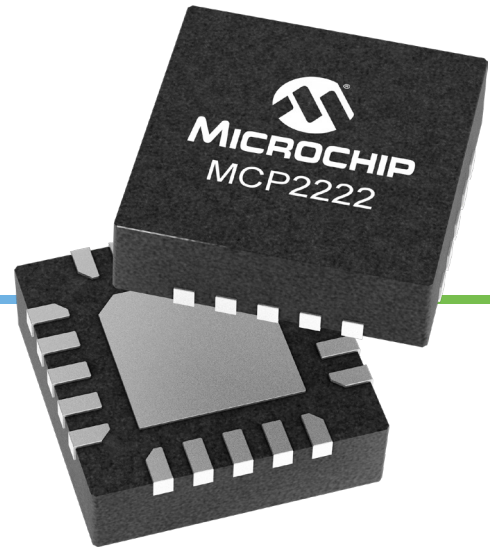


MCP2222

USB 2.0 to UART/I²C/SPI Protocol Converter With GPIO



Product Overview

The MCP2222 is a highly configurable USB-to-serial bridge that enables high-performance USB connectivity for systems using Universal Asynchronous Receiver Transmission (UART), I²C, Serial Peripheral Interface (SPI), and General-Purpose Input/Output (GPIO) interfaces. As the next-generation successor to the MCP2221A, MCP2222 adds improved performance and USB-to-SPI host capability while maintaining driver-free Communications Device Class (CDC) UART support across major operating systems.

Key Features

- USB 2.0 Full-Speed: 12 Mbps compliant
- Composite USB device: CDC (USB-to-UART) and vendor class communication (USB-to-I²C, USB-to-SPI, GPIO)
- UART: 2400 bps to 921.6 kbps with hardware flow control
- I²C/System Management Bus (SMBus) host: 100 kbps, 400 kbps, 1 Mbps
- SPI host: Up to 12 Mbps, Modes 0–3, up to four chip selects
- Multifunction I/O: Six pins supporting GPIO, chip select, alerts, indicators, and clock output
- Flexible power: Bus-powered or self-powered operation at 3.3V or 5V
- Integrated USB oscillator and termination resistors
- Electrically Erasable Programmable Read-Only Memory (EEPROM)-based configuration with Vendor ID/Product ID (VID/PID) and descriptor programmability
- OS support: Windows®, macOS® and Linux®

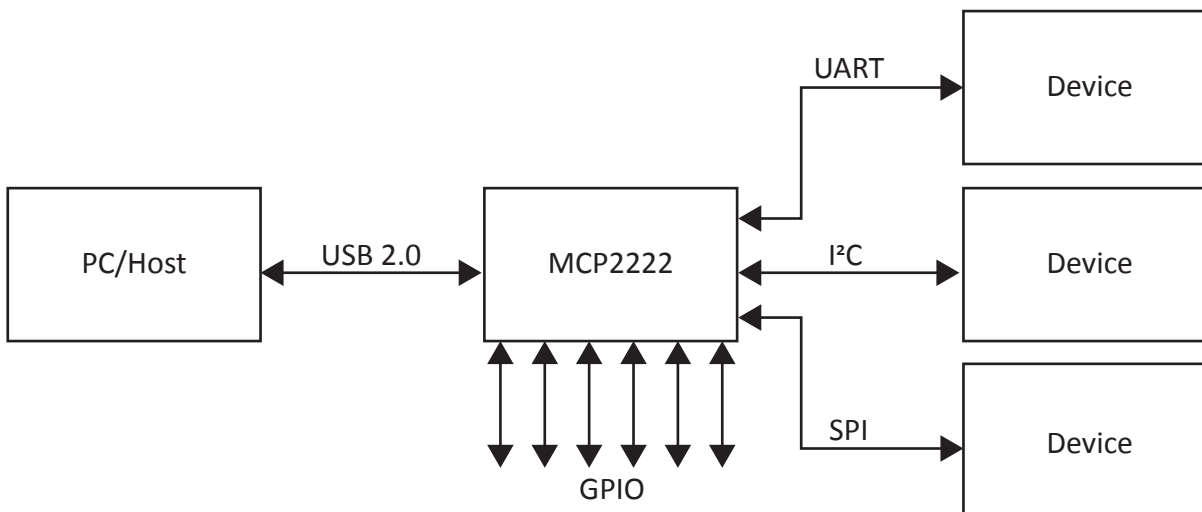
Key Benefits

- Single-Device Serial Consolidation: Consolidate UART, I²C, SPI, and GPIO into one compact device. The MCP2222 can reduce the need for multiple bridge ICs, reducing Bill of Materials (BOM) cost and Printed Circuit Board (PCB) complexity while supporting four distinct interface modes through a single USB connection.
- Driver-Free UART With High-Performance SPI and I²C: The MCP2222 enumerates as a CDC device for UART operation, requiring no custom drivers on major operating systems. At the same time, high-throughput SPI up to 12 Mbps and I²C operation up to 1 Mbps provide fast host-side peripheral access without adding operation system driver development.
- Secure and Configurable Production Deployment: EEPROM-based configuration allows complete customization of USB descriptors, VID/PID values, and pin behavior. Configuration locking supports secure and repeatable production programming for deployed systems.
- Reduced Design Effort with Integrated USB Functionality: Integrated USB oscillator and termination resistors help reduce external components. Available in a compact 3 mm×3 mm 20-pin VQFN package, the MCP2222 helps minimize board space while supporting full USB 2.0 Full-Speed performance. Standard Microchip development tools and a C library accelerate custom application development.

Target Applications

- USB-to-UART, USB-to-I²C, and USB-to-SPI bridges
- Sensor and memory interfacing
- Embedded system debug and test tools
- Industrial and instrumentation USB adapters
- Configuration and control interfaces

System Architecture



Development Ecosystem

- Standard CDC drivers with no custom UART driver required
- Microchip Configuration Utility Graphical User Interface (GUI)
- Command-line interface
- C library for custom applications
- MCP2222 Evaluation Breakout Board

Why Choose MCP2222?

- Proven Microchip USB and serial interface expertise
- Driver-free UART with high-performance SPI and I²C host capability
- Secure, configurable and production-ready USB bridge functionality
- Broad operating system support and long-term availability

Ordering Information

CPN	Package	Temperature Range
MCP2222-I/SS	20-pin SSOP	-40°C to +85°C
MCP2222T-I/SS	20-pin SSOP (Tape and Reel)	-40°C to +85°C
MCP2222-I/REB	3 mm × 3 mm 20-pin VQFN	-40°C to +85°C
MCP2222T-I/REB	3 mm × 3 mm 20-pin VQFN (Tape and Reel)	-40°C to +85°C