MICROCHIP MCP2200-I/SO

MCP2200-I/SO USB to UART Serial Converter
INSTRUCTION MANUAL

1. Introduction

This manual provides essential information for the proper use, installation, and maintenance of the MICROCHIP MCP2200-I/SO USB to UART Serial Converter. The MCP2200 is a highly integrated circuit designed to provide a simple and cost-effective solution for adding USB connectivity to applications that traditionally use UART (Universal Asynchronous Receiver/Transmitter) communication.

Key features include:

- Data Rate: Up to 12 Mbps (USB Full-Speed)
- Number of Channels: 8 (GPIO pins configurable for various functions)
- Supply Voltage: 2.7 V to 5.5 V
- Operating Temperature Range: -40°C to +85°C
- Package: SOIC-20LD (Surface Mount Technology)

2. Product Overview

The MCP2200-I/SO is a compact integrated circuit, typically black in color, with metal pins extending from its sides for surface mounting onto a printed circuit board (PCB). It acts as a bridge, converting data between a USB interface and a standard UART serial interface.
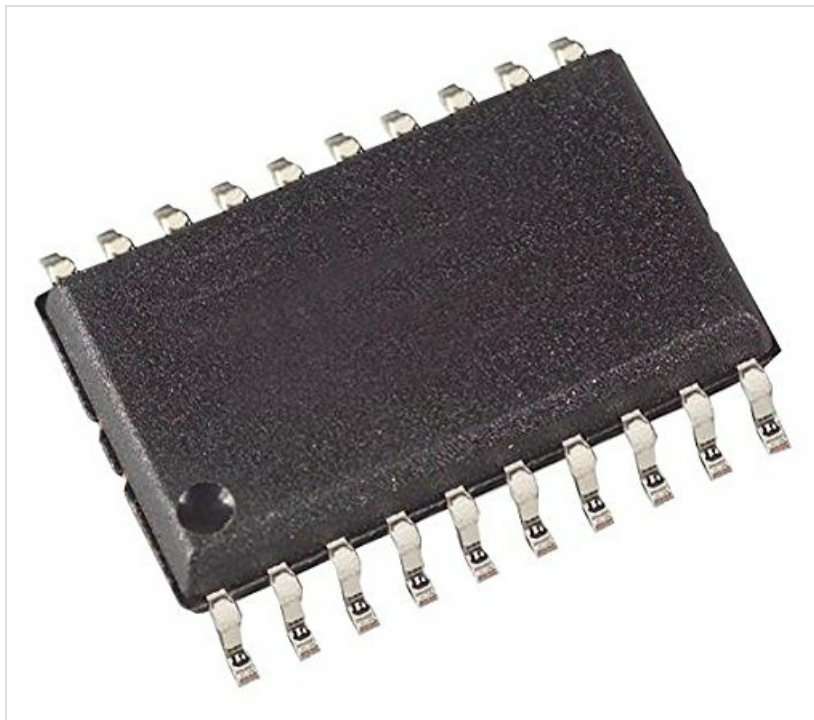
Figure 2.1: An image showing the black rectangular body of the MCP2200-I/SO integrated circuit with metal pins extending from both long sides, designed for surface mount applications. A small circular indentation marks pin 1, indicating orientation.

3. Setup and Integration

The MCP2200-I/SO is a surface-mount component requiring integration into a larger electronic circuit. Proper setup involves:

1. **PCB Design:** Design a printed circuit board (PCB) that accommodates the SOIC-20LD package. Ensure correct pin assignments for USB (D+, D-), UART (TX, RX), power (VCC, GND), and any desired GPIO functionality. Refer to the official Microchip datasheet for detailed pinout and recommended circuit diagrams.

2. **Power Supply:** Provide a stable power supply within the specified range of 2.7 V to 5.5 V. Decoupling capacitors are recommended near the VCC pins to ensure stable operation.

3. **USB Connection:** Connect the USB D+ and D- pins to a standard USB connector (e.g., USB Type-B or Micro-USB) on your PCB. External pull-up resistors may be required depending on the USB host configuration.

4. **UART Connection:** Connect the UART TX and RX pins to the corresponding UART interface of your target microcontroller or device. Ensure voltage level compatibility.

5. **Driver Installation:** Once the hardware is assembled and connected to a computer via USB, the necessary drivers for the MCP2200 will typically be installed automatically by modern operating systems. If not, drivers can be downloaded from the official Microchip website.

Note: This device is intended for integration by experienced electronics engineers. Refer to the complete datasheet for detailed electrical characteristics and application notes.

4. Operation

Once the MCP2200-I/SO is correctly integrated into a circuit and connected to a host computer via USB, it will enumerate as a standard COM port. This allows software applications on the host computer to communicate with a UART device connected to the MCP2200's serial pins.

- **Serial Communication:** Use any standard serial terminal program (e.g., PuTTY, Tera Term, Arduino Serial

Monitor) or custom software to open the virtual COM port associated with the MCP2200.

- **Baud Rate Configuration:** Configure the baud rate, data bits, parity, and stop bits in your software to match the settings of the UART device connected to the MCP2200. The MCP2200 supports common baud rates.
- **Data Flow:** Data sent from the host computer to the virtual COM port will be converted by the MCP2200 and transmitted via its UART TX pin. Data received on the UART RX pin will be converted and sent back to the host computer via USB.
- **GPIO Control:** The MCP2200 also features 8 General Purpose Input/Output (GPIO) pins. These can be configured and controlled via specific USB commands or through a dedicated utility provided by Microchip, allowing for additional control over the connected device.

5. Maintenance and Care

The MCP2200-I/SO is a robust integrated circuit designed for long-term operation. Minimal maintenance is required, but adherence to the following guidelines will ensure optimal performance and longevity:

- **Environmental Conditions:** Operate the device within its specified operating temperature range (-40°C to +85°C) and avoid exposure to excessive humidity, dust, or corrosive substances.
- **Power Supply Stability:** Ensure a clean and stable power supply. Voltage fluctuations or overvoltage can damage the component.
- **Physical Handling:** Handle the IC with care during assembly to prevent damage to the pins or the package. Use anti-static precautions when working with electronic components.
- **Cleaning:** If cleaning is necessary, use a soft, dry brush or compressed air to remove dust. Avoid liquid cleaners unless specifically designed for electronics and applied sparingly.

6. Troubleshooting

If you encounter issues with the MCP2200-I/SO, consider the following troubleshooting steps:

- **Device Not Recognized by PC:**

  - Verify USB cable connection.
  - Check power supply to the MCP2200.
  - Ensure correct driver installation. Check Device Manager for unrecognized devices or COM ports.
  - Test with a different USB port or computer.

- **No Data Transmission/Reception:**

  - Confirm correct UART TX/RX connections between MCP2200 and target device (TX to RX, RX to TX).
  - Verify baud rate, data bits, parity, and stop bits settings in your serial terminal software match the target device.
  - Check voltage levels on UART lines for compatibility.
  - Ensure the target device is powered on and functioning correctly.

- **Intermittent Communication:**

  - Check for loose connections or cold solder joints on the PCB.
  - Ensure adequate power supply stability; add or check decoupling capacitors.
  - Minimize electrical noise in the environment.

For more advanced troubleshooting, consult the official Microchip MCP2200 datasheet and application notes.

7. Technical Specifications

Parameter	Value
Model Number	MCP2200-I/SO
Manufacturer	MICROCHIP TECHNOLOGY
Data Rate (USB)	12 Mbps (Full-Speed)
Number of Channels (GPIO)	8
Supply Voltage	2.7 V to 5.5 V
Operating Temperature Range	-40°C to +85°C
Package Type	SOIC-20LD (Surface Mount)
ASIN	B071FZ2YLD

8. Warranty and Support

As an electronic component, the MCP2200-I/SO is typically covered by the manufacturer's standard warranty for integrated circuits. For specific warranty terms and conditions, please refer to the official documentation provided by MICROCHIP TECHNOLOGY or visit their official website.
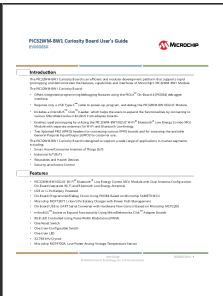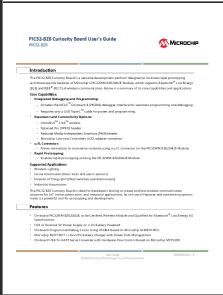
For technical support, datasheets, application notes, and driver downloads, please visit the official MICROCHIP TECHNOLOGY website. You may also contact their customer support for assistance with product-related inquiries.
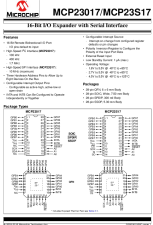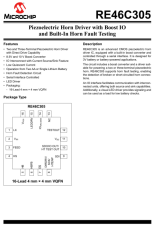
Manufacturer: MICROCHIP TECHNOLOGY

Product Page (Amazon): View on Amazon.com

Related Documents - MCP2200-I/SO

[PIC32WM-BW1 Curiosity Board User's Guide - Microchip](#)
Comprehensive user guide for the Microchip PIC32WM-BW1 Curiosity Board (EV60G68A), detailing its features, hardware, connectivity, out-of-the-box demo, and regulatory information for IoT development.

[PIC32-BZ6 Curiosity Board User's Guide](#)
This user guide provides comprehensive information on the PIC32-BZ6 Curiosity Board, a development platform for Microchip's PIC32WM-BZ6204UE Module. It details the board's features, capabilities, and supported applications, including Bluetooth Low Energy (BLE) and IEEE 802.15.4 wireless communication, integrated debugging, and various expansion and connectivity options. The guide is intended for developers working on IoT, home automation, and industrial applications.

[Microchip MCP23017/MCP23S17 16-Bit I/O Expander Datasheet](#)

Datasheet for Microchip's MCP23017 (I2C) and MCP23S17 (SPI) 16-bit I/O expanders. Details features, electrical characteristics, pinouts, serial interfaces, interrupt logic, register maps, and packaging information.

[Microchip 14-Pin SOIC/DIP/TSSOP Evaluation Board User's Guide](#)

User's guide for the Microchip 14-Pin SOIC/DIP/TSSOP Evaluation Board, detailing its features, installation, operation, schematics, BOM, and compatible devices for system designers.

[Microchip 14-Pin SOIC/DIP/TSSOP Evaluation Board User's Guide](#)

User's guide for the Microchip 14-Pin SOIC/DIP/TSSOP Evaluation Board, detailing its features, installation, operation, schematics, layouts, bill of materials, and device compatibility for evaluating various Microchip components.

[RE46C305: Piezoelectric Horn Driver with Boost IO and Built-In Horn Fault Testing](#)

Explore the Microchip RE46C305, an advanced CMOS piezoelectric horn driver IC featuring a built-in boost converter, serial interface control, and integrated horn fault testing for 3V battery-powered applications. Ideal for smoke and CO detection products.