CAN Peripheral Products

In addition to microcontrollers with integrated CAN ports, Microchip offers peripherals designed to provide flexible, cost-effective options for implementing complete CAN nodes.

The 18-pin **MCP2515** is the easiest to use, most cost-effective, stand-alone controller on the market today. It features an industry standard SPI™ serial interface, enabling an easy connection to virtually any microcontroller. CAN communication can be added to existing systems through the simple SPI interface without requiring a complete system redesign. The MCP2515 is the successor to Microchip's first stand-alone CAN controller, the MCP2510. It is function and footprint compatible to the MCP2510 and provides additional enhancements like faster throughput.

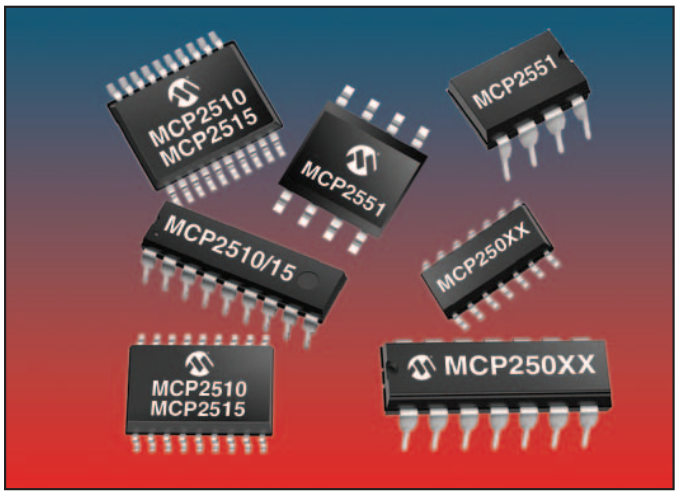
The **MCP25020, MCP25025, MCP25050** and **MCP25055** are a family of CAN I/O Expanders. These products connect to a CAN network and have input/output functionality that can be manipulated over the bus without a microcontroller in the system. This family of CAN I/O Expanders is targeted at thin client CAN nodes, where complex functionality is not required and affordable alternatives to microcontrollers with integrated CAN are provided. In small 14-pin PDIP and SOIC packages, these devices are ideal for enabling small, simple, remotely located CAN nodes.

The **MCP2551** is an ISO11898 compatible, high speed CAN transceiver. Its industry standard pinout and functionality allow it to be used in existing high speed CAN transceiver applications, while offering robust improvements for customers. These improvements include wider transient and short circuit voltage ranges and shorter propagation delays.

Suitable applicatons for these CAN products include, motor control, airbag control, remote sensors, remote actuators, remote valves, instrument clusters, security systems, elevator systems, medical equipment and robotics.

MCP2515/2510 Stand-Alone CAN Controller Key Features:

- Small footprint
- Simple SPI interface to any MCU
- Full CAN 2.0B Active implementation



MCP2515/2510 Stand-Alone CAN Controller Key Features: (Continued)

- Minimizes MCU overhead requirements
  - Multiple transmit and receive buffers
  - Masks and filters limit messages to be processed
- Buffered clock output
- Data byte filtering capability (MCP2515)

MCP2551 High Speed CAN Transciever Key Features:

- ISO11898 compatible
- Supports 1 Mbps CAN bus speeds
- Industry standard pinout
- Widest transient and short circuit voltage ranges
- Slope control input for reducing RFI
- Permanent dominant detection on TxD input

MCP250XX CAN I/O Expander Family Key Features:

- Smallest devices available to implement CAN nodes
- Input functionality includes digital and analog capability
- Output functionality includes digital and pulse width modulation (PWM) capability
- Automatic generation of CAN message on input changes
- In-Circuit Serial Programming™ (ICSP™) of default configuration
- Non-volatile user memory ideal for serialization

MICROCHIP

Interface Devices

Microchip Technology Inc.

Related Application Notes:

- AN212 Smart Sensor CAN Node Using the MCP2510 and a PIC16F876
- AN215 A Simple CAN Node Using the MCP2510 and a PIC12C67X
- AN713 Controller Area Network (CAN) Basics
- AN733 Using the MCP2510 CAN Developer's Kit
- AN739 An In-Depth Look at the MCP2510
- AN754 Understanding CAN Module Bit Timing
- AN815 Understanding the MCP250XX Devices
- AN816 A CAN System Using Multiple MCP25050 I/O Expanders
- AN872 Upgrading from the MCP2510 to the MCP2515

Additional Information:

- Microchip's web site: www.microchip.com
  – Connectivity Design Center: http://www.microchip.com/1010/suppdoc/design/netdez/index.htm
  – Controller Area Network: http://www.microchip.com/1010/suppdoc/design/can/index.htm
- *Stand-Alone Analog and Interface Solutions Flyer,* DS21060
- *Product Line Card*, Order No. DS00148
- MCP2510 Data Sheet - *Stand-Alone CAN Controller with SPI™ Interface*, DS21291
- MCP2515 Data Sheet - *Stand-Alone CAN Controller with SPI™ Interface,* DS21801
- MCP2551 Data Sheet - *High Speed CAN Transciever,* DS21667
- MCP2502X/2505X Data Sheet - *CAN I/O Expander Family,* DS21664
- Third Party Software and Hardware Support - *Third Party Guide*, DS00104

Development Tools Support:

MCP2515/2510 CAN Developer's Kit (DV251001): This kit includes everything needed to demonstrate, design and develop PICmicro® MCU firmware utilizing the MCP2515 controller. It also contains a target board with two MCP2515 devices, allowing the user to set up a CAN network.

MCP250XX CAN I/O Expanders Developer's Kit (DV250501): This kit includes everything needed to demonstrate, design and develop a CAN node using the MCP250XX CAN I/O Expander family. Additionally, this kit provides the ability to program the default device configuration.

CAN Peripheral Products

Product	Voltage Range	Temperature Range	CAN Version Supported	#Pins/Package	Unique Features
MCP2510[1]	2.7V to 5.5V	-40°C to 125°C	2.0B Active	18P, 18SO, 20ST	CAN controller with SPI™ interface to µC, 3 transmit buffers, 2 receive buffers, HW and SW message triggers
MCP2515	2.7V to 5.5V	-40°C to 125°C	2.0B Active	18P, 18SO, 20ST	Pin and function compatible upgrade to MCP2510, faster throughput, data byte filtering, SOF output
MCP2551	4.5V to 5.5V	-40°C to 125°C	N/A	8P, 8SO	High speed CAN transciever, ISO11898 compatible, permanent dominant detection on TxD input
MCP25020	2.7V to 5.5V	-40°C to 125°C	2.0B Active	14P, 14SO	CAN I/O Expander, configurable I/O, 2 PWM outputs
MCP25025	2.7V to 5.5V	-40°C to 125°C	2.0B Active	14P, 14SO	CAN I/O Expander, configurable I/O, 2 PWM outputs, one-wire CAN option
MCP25050	2.7V to 5.5V	-40°C to 125°C	2.0B Active	14P, 14SO	Mixed-Signal CAN I/O Expander, configurable I/O, 4 10-bit ADC's, 2 PWM outputs
MCP25055	2.7V to 5.5V	-40°C to 125°C	2.0B Active	14P, 14SO	Mixed-Signal CAN I/O Expander, configurable I/O, 4 10-bit ADC's, 2 PWM outputs, one-wire CAN option

Note 1. Not recommended for new designs.

Package Key: **P** = PDIP **SO** = SOIC **ST** = TSSOP

Visit our web site at www.microchip.com for additional product information and your local sales office.

Microchip Technology Inc. • 2355 W. Chandler Blvd. • Chandler, AZ 85224-6199 • (480) 792-7200 • Fax (480) 792-9210

Information subject to change. The Microchip name and logo and PICmicro are registered trademarks of Microchip Technology Inc. in the U.S.A. and other countries.
In-Circuit Serial Programming and ICSP are trademarks of Microchip in the U.S.A. and other countries. All other trademarks mentioned herein are property of their respective owners.
© 2003 Microchip Technology Inc. Printed in the U.S.A. All rights reserved. 8/2003 DS20055E