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Microchip Launches New dsPIC® DSC-Based Integrated Motor Drivers that Bring Controllers, Gate Drivers and Communications to a Single Device

A corresponding ecosystem of support tools will help simplify motor control system development and accelerate time to market

CHANDLER, Ariz., Feb. 26, 2024 (GLOBE NEWSWIRE) -- To implement efficient, real-time embedded motor control systems in space-constrained applications, Microchip Technology (Nasdaq: MCHP) has launched a new family of [dsPIC® Digital Signal Controller \(DSC\)-based integrated motor drivers](#). These devices incorporate a dsPIC33 digital signal controller (DSC), a three-phase MOSFET gate driver and optional LIN or CAN FD transceiver into one package. A significant benefit of this integration is reduction in component count of the motor control system design, smaller printed circuit board (PCB) dimensions and reduced complexity. The devices are supported by development boards, reference designs, application notes and Microchip's field oriented control (FOC) software development suite, [motorBench® Development Suite V2.45](#).

"Automotive, consumer and industrial designs are evolving and require higher performance and reduced footprints. These expectations often come at a higher expense and increase in dimensional size," said Joe Thomsen, vice president of Microchip's digital signal controllers business unit. "By integrating multiple device functions into one chip, the dsPIC DSC-based integrated motor drivers can reduce system-level costs and board space."

The integrated motor driver devices can be powered by a single power supply up to 29V (operation) and 40V (transient). An internal 3.3V low dropout (LDO) voltage regulator powers the dsPIC DSC, which eliminates the need for an external LDO to power the device. Operating between 70—100 MHz, the dsPIC DSC-based integrated motor drivers provide high CPU performance and can support efficient deployment of FOC and other advanced motor control algorithms.

To learn more about Microchip's growing portfolio of integrated motor drivers visit the dsPIC DSC-Based [integrated motor drivers](#) webpage.

Development Tools

An extensive ecosystem of motor control software and hardware development tools help make the design process faster and easier, reducing the customer's time to market.

The dsPIC33CK [Motor Control Starter Kit \(MCSK\)](#) and the [MCLV-48V-300W](#) are two new dsPIC33-based integrated motor driver development boards that provide rapid prototyping solutions with flexible control options. The MCSK includes a dsPIC33CK low-voltage motor

control development board, a 24V three-phase BLDC motor, an AC/DC adapter, a USB cable and other accessories. This cost-effective kit supports fast prototyping of motor control applications that operate between 12 and 48 V_{DC} with up to 10 Amps of continuous current. The MCLV-48V-300W development board enables fast prototyping of three-phase permanent magnet synchronous motors that are rated between 12 and 48 V_{DC} and capable of delivering up to 25A RMS continuous current per phase. This inverter board introduces a new modular concept where a separate dual-in-line module (DIM) is inserted into the board to configure it for a particular dsPIC DSC or MCU.

The motorBench Development Suite is a free GUI-based software development tool for FOC that accurately measures critical motor parameters, automatically tunes feedback control gains and generates source code by utilizing the motor control application framework (MCAF). The latest version, v2.45, includes a powerful new feature called zero-speed/maximum torque (ZS/MT), which enables designers to eliminate Hall or magnetic sensors while maximizing the torque output from the motor, from start-up and at low speeds. This feature can be used in pumps, power tools, e-Mobility and many other applications.

MPLAB® Discover now contains many dsPIC DSC-based MATLAB® Simulink® models supporting various motor control algorithms and development boards. Microchip also provides free device blocks for Simulink that can be used to generate optimized code from models for dsPIC DSCs and other Microchip MCUs.

The growing number of dsPIC DSC-based [motor control reference designs](#) now includes an automotive cooling fan, low-voltage ceiling fan and a drone propeller controller. These reference designs shorten the time to market by providing a production-ready solution for various motor control applications. Typically, the board design files include schematics and a BOM, a board user's guide and motor control source code that are available for download.

Pricing and Availability

For additional information and to purchase, contact a Microchip sales representative, authorized worldwide distributor or visit Microchip's Purchasing and Client Services website, www.microchipdirect.com.

Resources

High-res images available through Flickr or editorial contact (feel free to publish):

- Application image:
<https://www.flickr.com/photos/microchiptechnology/53077288882/sizes/o/>
- Block diagram:
<https://www.flickr.com/photos/microchiptechnology/53078367608/sizes//>

About Microchip Technology:

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