

DSCs Expand Feature Set To Support More Complex Digital Power Apps

Microchip Technology, has expanded its 16-bit dsPIC GS series of [digital signal controllers \(DSCs\)](#) for digital power-conversion applications, adding eight new DSCs that offer more memory, PWM and ADC channels, GPIO, and a CAN module. These additional features aid the development of more complex power systems based on digital power control. Like previous members of the GS series, these DSCs can be configured for a variety of topologies, giving power-supply designers the complete freedom to optimize for specific product applications.

The new DSCs provide up to four times the memory, compared to Microchip's existing SMPS & Digital Power Conversion families. Additionally, the new DSCs offer up to 18 channels of pulse-width-modulators (PWMs) with 1 nanosecond resolution, versus just 8 channels for previously introduced members of the GS series.

"The extra PWM and ADC channels provide the resources needed for more independent control loops," comments Bill Hutchings, product marketing manager, for Microchip's High-Performance Microcontroller Division. "For example, more independent voltage levels can be output from a supply, or more independent LED strings can be controlled from the device."

The newly expanded dsPIC33F 'GS' family supports applications such as induction cooking, uninterruptable power supplies, solar and pure sine-wave inverters, intelligent battery chargers, power factor correction, HID lighting, fluorescent lighting, LED lighting, and ac-dc and dc-dc power converters. While these are all applications that are supported by the existing DSCs, the extra capabilities of the new DSCs are beneficial. As Hutchings observes, "Customers are typically in need of more memory for products that have more sophisticated communication needs. The extra memory and communication options provide customers with the resources they need to implement more extensive communication protocol processing."

The eight new dsPIC33F 'GS' series digital-power DSCs enable digital control loops with 12 to 18 high-speed, 1-ns resolution PWMs and one or two 10-bit, on-chip ADCs, providing 2 to 4 MSPS for low latency and high-resolution control. They range from 64 to 100 pins and 32 to 64 KB Flash memory. These DSCs feature interactive peripherals that both minimize the intervention of the processor and are able to handle the real-time needs of high-speed current-mode control.

The dsPIC33F "GS" series DSCs are supported by the MPLAB Integrated Development Environment, MPLAB C Compiler for dsPIC DSCs, MPLAB SIM 30 Software Simulator, MPLAB ICD 3 In-Circuit Debugger and MPLAB REAL ICE In-Circuit Emulation System.

For advanced development, Microchip's [Explorer 16 Development Board](#) (part # DM240001, \$129.99) can be used with the [Buck/Boost Converter PICtail Plus Daughter Board](#) (part # AC164133, \$ 9.99). A new [dsPIC33F "GS" series Plug-in Module](#) (part # MA330024, \$25.00) is available today for the Explorer 16, which enables development with this new DSC family; specifically, the 100-pin dsPIC33FJ64GS610.

The eight new DSCs start at \$2.93 each in 10,000-unit quantities with packaging in TQFPs and QFNs. Samples are available at <http://www.microchip.com/get/R4BV>, and volume-production orders can be placed today at <http://www.microchip.com/get/E4P9> or via authorized Microchip distributors.



Figure. Microchip Technology's 16-bit dsPIC GS series of digital signal controllers (DSCs) for digital power-conversion adds eight new DSCs that offer more memory, PWM and ADC channels, and GPIO, as well as a CAN module.