Perform Under Pressure Using dsPIC® DSCs

Summary
Relieve your deadline pressure and get your next design done on schedule using Microchip’s family of dsPIC® DSCs. These dsPIC DSCs also perform well in harsh environments like extended temperature or varying voltage ranges, making them ideal for high-pressure applications.

The dsPIC DSC family has four key features to help you perform under pressure to meet your deadlines and application requirements. As a hybrid architecture, the dsPIC DSC incorporates the mathematical power of a true DSP with the simplicity and bit manipulation of a MCU. Devices are available in an extremely broad-range of package options in many different pin-outs and package sizes. Also, this family has specialized peripherals which are optimized for real-time response and tight control loops. The very large dsPIC DSC portfolio includes over 1,500 product variants, so you are sure to find the perfect match for your specific application.

Performance: A True DSP with MCU Simplicity
- Designed for real-time control
- Executes up to eight operations in one instruction
- Fixed point math manages overflow and rounding
- Zero-cycle looping
- 40-bit accumulators for high-precision results
- Up to 70 MIPS performance

Packaging: More Package Options
- 18 to 144-pin options
- Use the same 28-pin package from 6 KB to 512 KB of Flash
- Small-pincount and form-factor packages

Peripherals: The Right Mix of Integration
- CAN, Dual CAN and USB
- Op amps and fast comparators
- ADCs with multiple sample and holds
- Peripheral Trigger Generator (PTG) for scheduling complex, high-speed peripheral operations
- Sophisticated PWMs with application-specific modes

Portfolio: Scalable and Flexible Family
- Over 1,500 dsPIC DSC product variants
- Support for both 3V and 5V operation
- Extended (125°C) and high-temperature (150°C) options
- Flash Memory ranging from 6 KB to 512 KB

dsPIC DSCs help you perform, even in harsh environments, to meet your deadlines and application requirements.
dsPIC DSC Target Applications

dsPIC DSC products can resolve a wide variety of “pressure points” in embedded applications, especially in systems that must operate reliably in extreme or challenging conditions. They are well-suited for designs where extreme temperatures are a challenge, such as DC/DC converter applications which run hot without the benefit of a cooling fan. They can be found in HVAC systems, automotive fans and pumps, all of which need to operate at temperatures up to 150°C. Our dsPIC DSCs have even been used in sensors bolted to automotive exhaust manifolds, which experience extreme temperatures generated by the engine.

Varying environmental conditions can also test an embedded design. Applications which are designed for a factory environment—for example, automotive or CNC machinery—need to be able to withstand a variety of conditions including noise and vibration. Designs intended to be used in the outside world, such as solar inverters, face a range of other environmental pressures. Offering both 3V and 5V options, dsPIC DSCs can meet a wide range of requirements to create a robust design that is able to withstand the environment. Requirements for high reliability and low power add a different type of pressure to applications. Using dsPIC DSCs in data center servers can help ensure that downtime is minimized. For battery-operated products, such as power tools or medical equipment, a dsPIC DSC can help squeeze every bit of energy out of the battery.

dsPIC DSC devices can even be used in applications like blood pressure meters, which require DSP instructions to perform the complex math computations needed to measure the amount of pressure in a system. No matter what type of pressure relief your application needs, our dsPIC DSCs can rise to the challenge of meeting your specific requirements.

Motor Control
- HVAC
- Pumps, compressors, fans
- Appliances

Consumer
- Power tools
- Cameras
- Projectors

Medical
- Pulse oximeters
- Blood pressure meters
- Portable O₂ concentrators

Industrial
- 3D printers
- Sewing machines
- CNC machines

Automotive
- Fans
- Sensors
- Fuel pumps

Digital Power
- Solar inverters
- AC/DC power supplies
- DC/DC converters

Featured Starter Kits

dsPIC33E USB Starter Kit (DM330012)
The dsPIC33E USB Starter Kit provides a low-cost method for the development and testing of USB OTG, host and device applications on the 60 MIPS dsPIC33E DSC family. The Starter Kit comes preloaded with basic Communication Device Class (CDC) demonstration software.

Microstick II (DM330013-2)
Microstick II delivers a complete development hardware platform for Microchip’s 16-bit and 32-bit microcontrollers and digital signal controllers. It’s the perfect solution to those looking for a low-cost, easy-to-use development platform. The USB-powered kit includes an on-board debugger/programmer, a DUT socket for easy device swapping, a user LED and a reset button.

MPLAB® Starter Kit for Digital Power (DM330017)
This kit allows you to easily explore the capabilities and features of the dsPIC33F GS Digital Power Conversion family. It is a digitally-controlled power supply board that consists of one independent DC/DC synchronous Buck converter and one independent DC/DC Boost converter. Each power stage includes a MOSFET-controlled 5W resistive load.

Motor Control Starter Kit (DM330015)
The Motor Control Starter Kit with mTouch® sensing is a complete hardware and software tool suite for evaluating Microchip’s ultra-low-cost motor control family of dsPIC DSCs. It contains a single board with a BLDC motor, capacitive-touch sliders and a built-in debugger.