NXP Announces Industry's First Digital Signal Controller with Both USB and CAN FD Support for Advanced Motor Control and Digital Power Applications

May 31, 2019

NXP Semiconductors today announced the next-generation MC56F83xxx digital signal controllers (DSC) family offering peripheral enhancements ideal for high performance digital power conversion and advanced motor control applications.
The MC56F83xxx DSC family is NXP's performance level digital signal controllers, extending the DSC products' feature integration to include support for dual partition Flash, Flash ECC, USB FS OTG, CAN FD and boot ROM. In addition, the MC56F83xxx DSC family offers enhanced DMA function (eDMA), inter-module crossbar (XBAR) with more flexible event generator (EVTG), low-power high-speed ADC, extended RAM size and up to 16-channels of high resolution PWM.
Target applications for the MC56F83xxx DSC family include:

- Digital power application, including switched mode power supply (SMPS), uninterruptable power supply (UPS), photovoltaic systems, power distribution systems
- Motor control applications, including industrial motor, appliance motor and general single/dual motor control (PMSM, BLDC, SR, Stepper)

Key features of the MC56F83xxx DSC family include:

- **Industry's first DSC family to support both USB and CAN FD**
  - One USB FS/LS 2.0 OTG controller supporting crystal-less operation helps to save on BOM cost
  - One FlexCAN module supporting Flexible Data Rate (CAN FD) and CAN 2.0 B protocol, enabling real-time and cost-effective field communication
- **High-performance core and system performance**
  - High performance 32-bit DSP core, with both core and bus speed up to 100 MHz
  - Enhanced direct memory access (eDMA) controller for more flexible two-level loop control, further reducing core interruption and increasing performance
  - Inter-module crossbar with more flexible event generator (EVTG) to support advanced trigger mode and logic operation
- **Memory size and functions**
  - Up to 256 KB dual partition flash to support live update function with integrate flash ECC
  - 64 KB SRAM allows more code to execute from SRAM for faster calculation speed
  - 32 KB boot ROM to support code update through I2C, UART and CAN
- **Advanced peripherals for high performance applications**
  - Up to 16-channels of high-resolution PWM with 312 picosecond resolution enables higher switching frequencies, reducing cost and increasing efficiency
  - Two 12-bit high-speed low-power ADCs each with up to 3MSPS sampling rate improve system accuracy by reducing jitter on input values
- **Compatible with the existing DSC families**
  - Pin-to-pin compatible with the MC56F84xxx and MC56F82xxx DSC families for performance and peripheral scalability
  - 5V-tolerant I/O provides design flexibility and system cost reduction

Product Availability and Support
The MC56F83xxx DSC family is now offering customer engineering samples in 100 LQFP, 80 LQFP and 64 LQFP packages. Global mass production is planned for September 2019 from NXP and its distribution partners with a suggested resale price starting at $2.93 (USD) for 10,000 unit quantities. NXP enables developers through its CodeWarrior software and tools ecosystem, along with its MC56F83000-EVK development platform with a suggested resale price of $37.99 (USD).
For more information, please visit www.nxp.com/MC56F83xxx.