HYBRID FLASH SOLUTION

56F8345

16-bit Hybrid Controller

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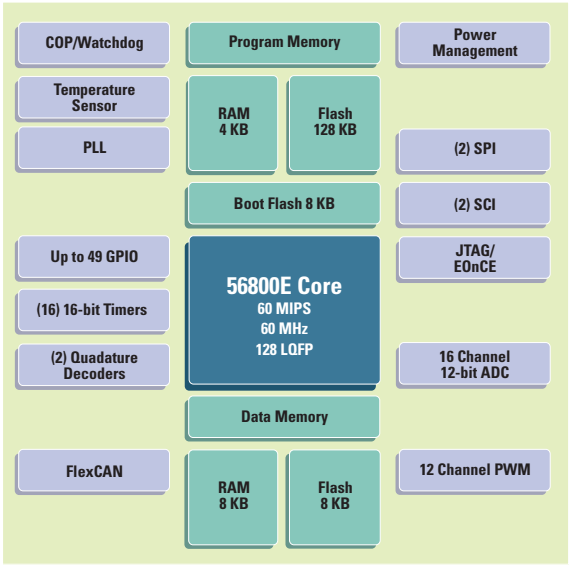
EXAMPLE APPLICATIONS

- Automotive control
- Industrial control/connectivity
- Advanced motion control
- Home appliances
- General-purpose inverters
- Smart relays
- Fire and security systems
- Power management
- Medical monitoring
- Multiphase inverters

Designers of the 56F8345 subscribe to the philosophy that you can never have enough of a good thing. That's why they've added more on-chip Flash memory (up to 156 KB), pulse width modulation (PWM) outputs, analog-to-digital converter (ADC) inputs, timer channels, and quadrature decoders to the peripherals found in smaller members of the device family. With these additions, an entirely different set of applications can now benefit from the hybrid MCU/DSP capabilities of the 56800E architecture. Imagine adding signal processing capabilities to a smart user interface, or adding sophisticated communication protocol to an industrial control application. The possibilities are endless, especially when you consider that you can have access to these advanced features at extreme temperatures.



BENEFITS

- Hybrid architecture facilitates implementation of both control and signal processing functions in a single device
- High-performance, secured Flash memory helps eliminate the need for external storage devices
- Extended temperature range allows for operation of nonvolatile memory in harsh environments
- Flash memory emulation of EEPROM helps eliminate the need for external nonvolatile memory
- 32-bit performance with 16-bit code density
- On-chip voltage regulator and power management help reduce overall system cost
- Diversity of peripheral configuration facilitates the elimination of external components, improving system integration and reliability
- This device boots directly from Flash, providing additional application flexibility
- High-performance PWM with programmable fault capability helps to simplify design and to promote compliance with safety regulations
- PWM and ADC modules are tightly coupled to help reduce processing overhead
- Low-voltage interrupts (LVIs) help protect the system from brownout or power failure
- Simple in-application Flash memory programming via Enhanced On-Chip Emulation (EOnCE) or serial communication

56800E CORE FEATURES

- Up to 60 MIPS at 60 MHz execution frequency
- DSP and MCU functionality in a unified, C-efficient architecture
- JTAG/EOnCE for unobtrusive, real-time debugging
- Four 36-bit accumulators
- 16- and 32-bit bidirectional barrel shifter
- Parallel instruction set with unique addressing modes
- Hardware DO and REP loops available
- Three internal address buses
- Four internal data buses
- Architectural support for 8-, 16- and 32-bit single-cycle data fetches
- MCU-style software stack support
- Controller-style addressing modes and instructions
- Single-cycle 16 x 16-bit parallel multiplier-accumulator (MAC)
- Proven to deliver more control functionality with a smaller memory footprint than competing architectures

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PRODUCT DOCUMENTATION

56F8300 Peripheral User Manual	Detailed peripheral descriptions of the 56F8300 family of devices Order Number: MC56F8300UM/D
56F8345 Technical Data Sheet	Electrical and timing specifications, pin descriptions and package descriptions Order Number: MC56F8345/D
56F8345 Product Brief	Summary description and block diagram of the 56F8345 core, memory, peripherals and interfaces Order Number: MC56F8345PB/D
DSP56800E Reference Manual	Detailed description of the DSP56800E architecture, 16-bit core processor and the instruction set Order Number: DSP56800ERM/D

AWARD-WINNING DEVELOPMENT ENVIRONMENT

- Processor Expert™ (PE) technology provides a rapid application design (RAD) tool that combines easy-to-use component-based software application creation with an expert knowledge system.
- The CodeWarrior™ Integrated Development Environment (IDE) is a sophisticated tool for code navigation, compiling and debugging. A comprehensive set of evaluation modules (EVMs) and development system cards will support concurrent engineering. Together, PE, the CodeWarrior tool suite and EVMs create a comprehensive, scalable tools solution for easy, fast and efficient development.

MEMORY FEATURES

- Architecture permits as many as three simultaneous accesses to program and data memory.
- On-chip memory includes high-speed volatile and nonvolatile components:
  - 128 KB of Program Flash
  - 4 KB of Program RAM
  - 8 KB of Data Flash
  - 8 KB of Data RAM
  - 8 KB of Boot Flash
- Memories operate at 60 MHz (zero wait-states) over temperature range (-40°C to +125°C) with no software tricks or hardware accelerators required.
- Flash security feature helps prevent unauthorized accesses to its content.

56F8345 PERIPHERAL CIRCUIT FEATURES

- Two PWM modules with 12 outputs and eight programmable fault inputs
- Two serial peripheral interfaces (SPIs)
- Two serial communication interfaces (SCIs)
- I^2C communications master mode (emulated)
- Sixteen 16-bit timers with input and output compare capability
- Two four-input quadrature decoders
- FlexCAN module, 2.0 A/B compatible
- Temperature sense diode to monitor the on-chip temperature
- On-chip 3.3V to 2.6V voltage regulator
- Software-programmable Phase Lock Loop (PLL)
- On-chip relaxation oscillator
- 12-bit ADCs with 16 inputs, self-calibration and current injection capability
- Up to 49 general-purpose I/O (GPIO) pins
- External reset input pin for hardware reset
- Computer operating properly (COP)
- Integrated power-on reset and LVI module

ORDERING INFORMATION

PART	PACKAGE	ORDER NUMBER	TEMPERATURE RANGE
MC56F8345	128 LQFP	MC56F8345VFG60	-40°C to +105°C
MC56F8345	128 LQFP	MC56F8345MFG60	-40°C to +125°C

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MC56F8345PB/D
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