Signal Controllers

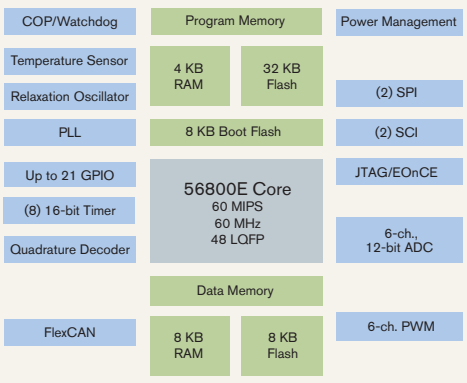
56F8322

Target Applications

- > Automotive control
- > Industrial control/networking
- > Motion control
- > Home appliances
- > General-purpose inverters
- > Smart sensors
- > Fire and security systems
- > Power management
- > Medical monitoring

Overview

The 56F8322 is further proof that good things come in small packages. Inside a compact 48-pin LQFP, this device packs 60 MIPS performance (at 60 MHz), along with 48 KB of on-chip Flash memory, a comprehensive assortment of sophisticated peripherals and more. Perfectly suited for applications requiring the computational power of a signal processor and the knack for "bit banging" of an embedded controller, the 56F8322 can satisfy all these needs and leave room for more. An extension of the industry-leading 56800E Family, the 56F8322 provides enhanced capabilities and an extensive upward migration path. The perfect device to get acquainted with a family destined to become the platform of choice for high-performance embedded applications.



56800E Core Features	Benefits
> Up to 60 MIPS at 60 MHz execution frequency	> Hybrid architecture facilitates implementation of both control and signal processing functions in a single device
> DSP and microcontroller (MCU) functionality in a unified, C-efficient architecture	> High-performance, secured Flash memory helps eliminate the need for external storage devices
> JTAG/enhanced on-chip emulation (EOnCE™) for unobtrusive, real-time debugging	> Extended temperature range allows for operation of nonvolatile memory in harsh environments
> Four 36-bit accumulators	> Flash memory emulation of EEPROM helps eliminate the need for external nonvolatile memory
> 16- and 32-bit bidirectional barrel shifter	> 32-bit performance with 16-bit code density
> Parallel instruction set with unique addressing modes	> On-chip voltage regulator and power management help reduce overall system cost
> Hardware DO and REP loops available	> Internal relaxation oscillator helps eliminate the need for external crystal
> Three internal address buses	> This device boots directly from Flash, providing additional application flexibility
> Four internal data buses	> High-performance pulse-width modulation (PWM) with programmable fault capability simplifies design and promotes compliance with safety regulations
> Architectural support for 8-, 16- and 32-bit single-cycle data fetches	> PWM and analog-to-digital converter (ADC) modules are tightly coupled to help reduce processing overhead
> MCU-style software stack support	> Low-voltage interrupts (LVIs) help protect the system from brownout or power failure
> Controller-style addressing modes and instructions	> Simple in-application Flash memory programming via EOnCE or serial communication
> 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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56F8322 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:

- 48 KB On-chip Flash
  - 32 KB of Program Flash
  - 8 KB of Boot Flash
  - 8 KB of Data Flash
- 4 KB of Program RAM
- 8 KB of Data RAM

> 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

56F8322 Peripheral Circuit Features

> One PWM module with six outputs and a programmable fault input

> Two serial peripheral interfaces (SPIs)

> Two serial communications interfaces (SCIs)

> I^2C communications master mode (emulated)

> Eight 16-bit timers with input and output compare capability

> One four-input quadrature decoder

> 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 six inputs, self-calibration and current injection capability

> Up to 21 general-purpose input/output (GPIO) pins

> External reset input pin for hardware reset

> Computer operating properly (COP)

> Integrated power-on reset and LVI module

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 technology, the CodeWarrior tool suite and EVMs create a comprehensive, scalable tools solution for easy, fast and efficient development.

Product Documentation

56F8300 Peripheral User Manual	Detailed peripheral descriptions of the 56F8300 family of devices ***Order Number:*** MC56F8300UM
56F8322/56F8122 Technical Data Sheet	Electrical and timing specifications, device-specific peripheral information, and package and pin descriptions ***Order Number:*** MC56F8322
56F8322 Product Brief	Summary description and block diagram of the 56F8322 core, memory, peripherals and interfaces ***Order Number:*** MC56F8322PB
DSP56800E Reference Manual	Detailed description of the DSP56800E architecture, 16-bit core processor and the instruction set ***Order Number:*** DSP56800ERM

Ordering Information

Part	MC56F8322
Package Type	Low-Profile Quad Flat Pack (LQFP)
Pin Count	48
Temperature Range	-40°C to +105°C
Order Number	MC56F8322VFA60

Part	MC56F8322
Package Type	Low-Profile Quad Flat Pack (LQFP)
Pin Count	48
Temperature Range	-40°C to +125°C
Order Number	MC56F8322MFA60

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