MOTOROLA intelligence everywhere™ | digital dna™

HYBRID FLASH SOLUTION

56F8355

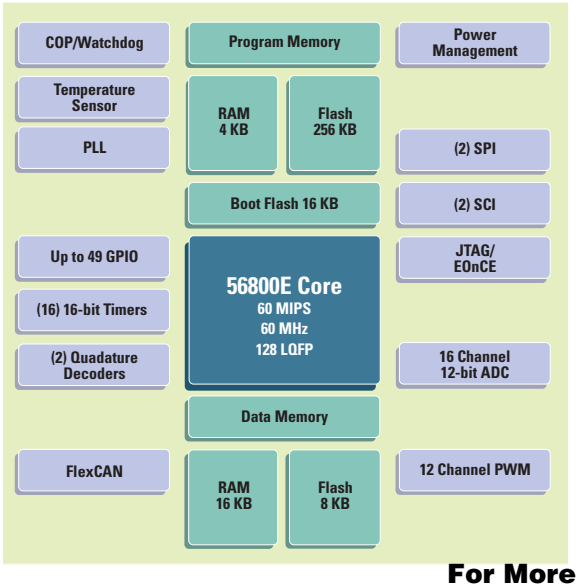
16-bit Hybrid Controller

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

Are features being added to your design as you get ready to begin production? Ever dream of the day you would have an easy solution for this dilemma? Dream no more!

The 56F8355 offers twice as much Program Flash, Data RAM and Boot Flash as the 56F8345 while providing full pin-for-pin compatibility. Doubling your applications memory has never been so easy! Continue to enjoy all the benefits of using a hybrid architecture and sophisticated peripherals with the additional memory you require to expand the capabilities of your product.



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 pulse width modulation (PWM) with programmable fault capability helps to simplify design and promotes compliance with safety regulations
- PWM and analog-to-digital converter (ADC) modules are tightly coupled to 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
56F8355 Technical Data Sheet	Electrical and timing specifications, pin descriptions and package descriptions Order Number: MC56F8355/D
56F8355 Product Brief	Summary description and block diagram of the 56F8355 core, memory, peripherals and interfaces Order Number: MC56F8355PB/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:
  - 256 KB of Program Flash
  - 4 KB of Program RAM
  - 8 KB of Data Flash
  - 16 KB of Data RAM
  - 16 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 prevents unauthorized accesses to its content.

56F8355 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
MC56F8355	144 LQFP	MC56F8355VFG60	-40°C to +105°C
MC56F8355	144 LQFP	MC56F8355MFG60	-40°C to +125°C

MOTOROLA

56F8355FS/D
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Freescale Semiconductor, Inc.