

HYBRID FLASH SOLUTION

56F8346

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

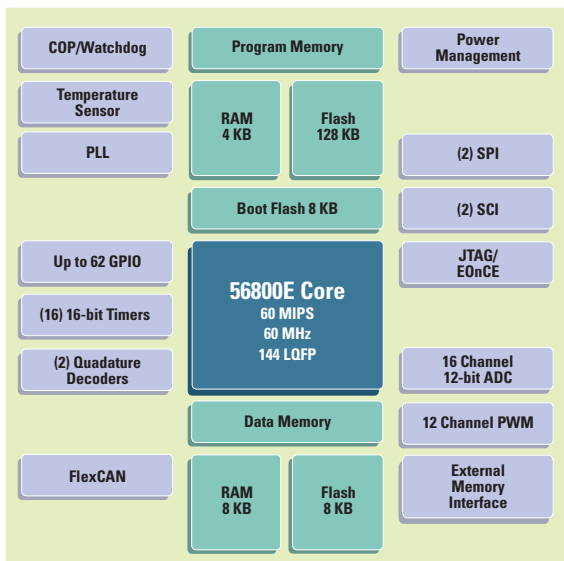
If you find yourself needing a little more memory than what the 56F8345 has to offer, or if you simply need to interface to other devices in your system in a parallel fashion, then the 56F8346 is the device for you. Moving to this 144-pin LQFP package allows you to take advantage of its external memory interface for these additional tasks. You will still enjoy 156 KB of on-chip Flash memory, pulse width modulation (PWM) outputs, analog-to-digital converter (ADC) inputs and timer channels, along with the capability of interfacing with other devices in your system. Whether you are adding performance to your control application, or control capabilities to your signal processing system, you can benefit from the flexibility and compatibility provided by the 56F8345 and 56F8346.

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
- Off-chip memory expansion capabilities allow for glueless interfacing with the additional memory of external devices without sacrificing performance
- This device boots directly from Flash, providing additional application flexibility
- High-performance PWM with programmable fault capability helps to simplify design and promotes 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



HYBRID FLASH SOLUTION

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PRODUCT DOCUMENTATION

56F8300
Peripheral User Manual

Detailed peripheral descriptions of the 56F8300 family of devices

Order Number: MC56F8300UM/D

56F8346
Technical Data Sheet

Electrical and timing specifications, pin descriptions and package descriptions

Order Number: MC56F8346/D

56F8346
Product Brief

Summary description and block diagram of the 56F8346 core, memory, peripherals and interfaces

Order Number: MC56F8346PB/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 prevents unauthorized accesses to its content.
- Off-chip memory expansion capabilities provide a simple method for interfacing additional external memory and/or peripheral devices.
 - Access up to 256 MB of external program memory or 256 MB of external data memory
 - External accesses supported at up to 60 MHz (zero wait-states)

56F8346 PERIPHERAL CIRCUIT FEATURES

- Two PWM modules with 12 outputs and seven programmable fault inputs
- Two serial peripheral interfaces (SPIs)
- Two serial communication interfaces (SCIs)
- I²C 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 62 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
MC56F8346	144 LQFP	MC56F8346V60	-40°C to +105°C
MC56F8346	144 LQFP	MC56F8346MFV60	-40°C to +125°C



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