DS89C430/DS89C440/DS89C450
Ultra-High-Speed Flash Microcontrollers

GENERAL DESCRIPTION

The DS89C430, DS89C440, and DS89C450 offer the highest performance available in 8051-compatible microcontrollers. They feature newly designed processor cores that execute instructions up to 12 times faster than the original 8051 at the same crystal speed. Typical applications will experience a speed improvement up to 10x. At 1 million instructions per second (MIPS) per megahertz, the microcontrollers achieve 33 MIPS performance from a maximum 33MHz clock rate.

The *Ultra-High-Speed Flash Microcontroller User's Guide* should be used in conjunction with this data sheet. **Download it at www.maxim-ic.com/microcontrollers.**

ORDERING INFORMATION

PART	FLASH MEMORY SIZE	PIN-PACKAGE
DS89C430-MNL	16kB	40 PDIP
DS89C430-MNL+	16kB	40 PDIP
DS89C430-QNL	16kB	44 PLCC
DS89C430-QNL+	16kB	44 PLCC
DS89C430-ENL	16kB	44 TQFP
DS89C430-ENL+	16kB	44 TQFP
DS89C440-MNL	32kB	40 PDIP
DS89C440-MNL+	32kB	40 PDIP
DS89C440-QNL	32kB	44 PLCC
DS89C440-QNL+	32kB	44 PLCC
DS89C440-ENL	32kB	44 TQFP
DS89C440-ENL	32kB	44 TQFP
DS89C450-MNL	64kB	40 PDIP
DS89C450-MNL+	64kB	40 PDIP
DS89C450-QNL	64kB	44 PLCC
DS89C450-QNL+	64kB	44 PLCC
DS89C450-ENL	64kB	44 TQFP
DS89C450-ENL+	64kB	44 TQFP

+ Denotes a lead-free/RoHS-compliant device.

Complete Selector Guide appears at end of data sheet.
Pin Configurations appear at end of data sheet.

FEATURES

- **High-Speed 8051 Architecture**
  One Clock-Per-Machine Cycle
  DC to 33MHz Operation
  Single Cycle Instruction in 30ns
  Optional Variable Length MOVX to Access
      Fast/Slow Peripherals
  Dual Data Pointers with Automatic
      Increment/Decrement and Toggle Select
  Supports Four Paged Memory-Access Modes

- **On-Chip Memory**
  16kB/32kB/64kB Flash Memory
  In-Application Programmable
  In-System Programmable Through Serial Port
  1kB SRAM for MOVX

- **80C52 Compatible**
  8051 Pin and Instruction Set Compatible
  Four Bidirectional, 8-Bit I/O Ports
  Three 16-Bit Timer Counters
  256 Bytes Scratchpad RAM

- **Power-Management Mode**
  Programmable Clock Divider
  Automatic Hardware and Software Exit

- **ROMSIZE Feature**
  Selects Internal Program Memory Size from
      0 to 64kB
  Allows Access to Entire External Memory Map
  Dynamically Adjustable by Software

- **Peripheral Features**
  Two Full-Duplex Serial Ports
  Programmable Watchdog Timer
  13 Interrupt Sources (Six External)
  Five Levels of Interrupt Priority
  Power-Fail Reset
  Early Warning Power-Fail Interrupt
  Electromagnetic Interference (EMI) Reduction

APPLICATIONS

Data Logging	Telephones	Building Energy Control and Management	Uninterruptible Power Supplies	Automotive Text Equipment	Industrial Control and Automation
White Goods	HVAC				
Motor Control	Vending	Programmable Logic Controllers	Building Security and Door Access Control	Consumer Electronics	
Magstripe Reader/Scanner	Gaming Equipment				

Note: *Some revisions of this device may incorporate deviations from published specifications known as errata. Multiple revisions of any device may be simultaneously available through various sales channels. For information about device errata, click here: www.maxim-ic.com/errata.*

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