Rev 0; 5/08

EVALUATION KIT AVAILABLE

MAXIM

IP Security Microcontroller

DS5230

General Description

The DS5230 is a highly secure, four clocks-per-machine cycle, 100% 8051-instruction-set-compatible microprocessor in the secure microcontroller family from Maxim Integrated Products. It is a feature-reduced and cost-reduced version of the popular DS5250 high-speed secure microcontroller. Its proven architecture protects embedded application software and data against reverse engineering or cloning. A key feature of the device is that it encrypts its program memory with a hardware-based single- or triple-DES (data encryption standard) algorithm and provides optional data memory encryption, making it almost impossible to extract information. It also implements block cipher encoding that uses block addresses to modify the encrypted data, further strengthening security. This makes the device ideal for storage and transmission of passwords, personal identification numbers, encryption keys, and other highly confidential information.

Applications

PIN Pads

Gaming Machines

Software-Protection Applications

Ordering Information

PART	TEMP RANGE	MAX CLOCK SPEED (MHz)	PIN-PACKAGE
DS5230F+825	0°C to +70°C	25	80 MQFP
DS5230F+8N5	-40°C to +85°C	25	80 MQFP

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

Pin Configuration appears at end of data sheet.

Features

♦ **Feature-Rich, 8051-Compatible Microprocessor**
   Accesses Up to 64KB Program and 64KB Data Memory (All Nonvolatile)
   In-System Programmable Through Serial Port
   Three 16-Bit Timer/Counters
   256 Bytes of Scratchpad RAM

♦ **Advanced Features**
   CRC-16/32 Generator
   2KB Battery-Backed (Nonvolatile) Internal SRAM
   Dedicated Single DES or 3DES Engine for Automatic Program Memory Encryption

♦ **High-Speed Architecture**
   Four Clocks-per-Machine Cycle
   DC-to-25MHz Operation
   Single-Cycle Instruction in 160ns
   Dual Data Pointers Can Increment or Decrement Independently
   Automatic Data Pointer (DPTR) Selection Available
   Programmable Speed MOVX Instructions
   1KB On-Chip Instruction Cache

♦ **High-Reliability Operation**
   Power-Fail/Overvoltage Reset
   Early Warning Power-Fail Interrupt
   Watchdog Timer

♦ **Security Features**
   Executes Single/3DES-Encrypted Programs to Prevent Observation
   One Self-Destruct Input
   Tamper-Sensing Mesh Detects Probe Attacks
   Programmable Attack Countermeasures
   True Random-Number Generator (RNG)
   Program Memory Integrity Checking

♦ **DS5230 Evaluation Kit Available (DS5230-KIT)**

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, contact the factory.*

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim's website at www.maxim-ic.com.
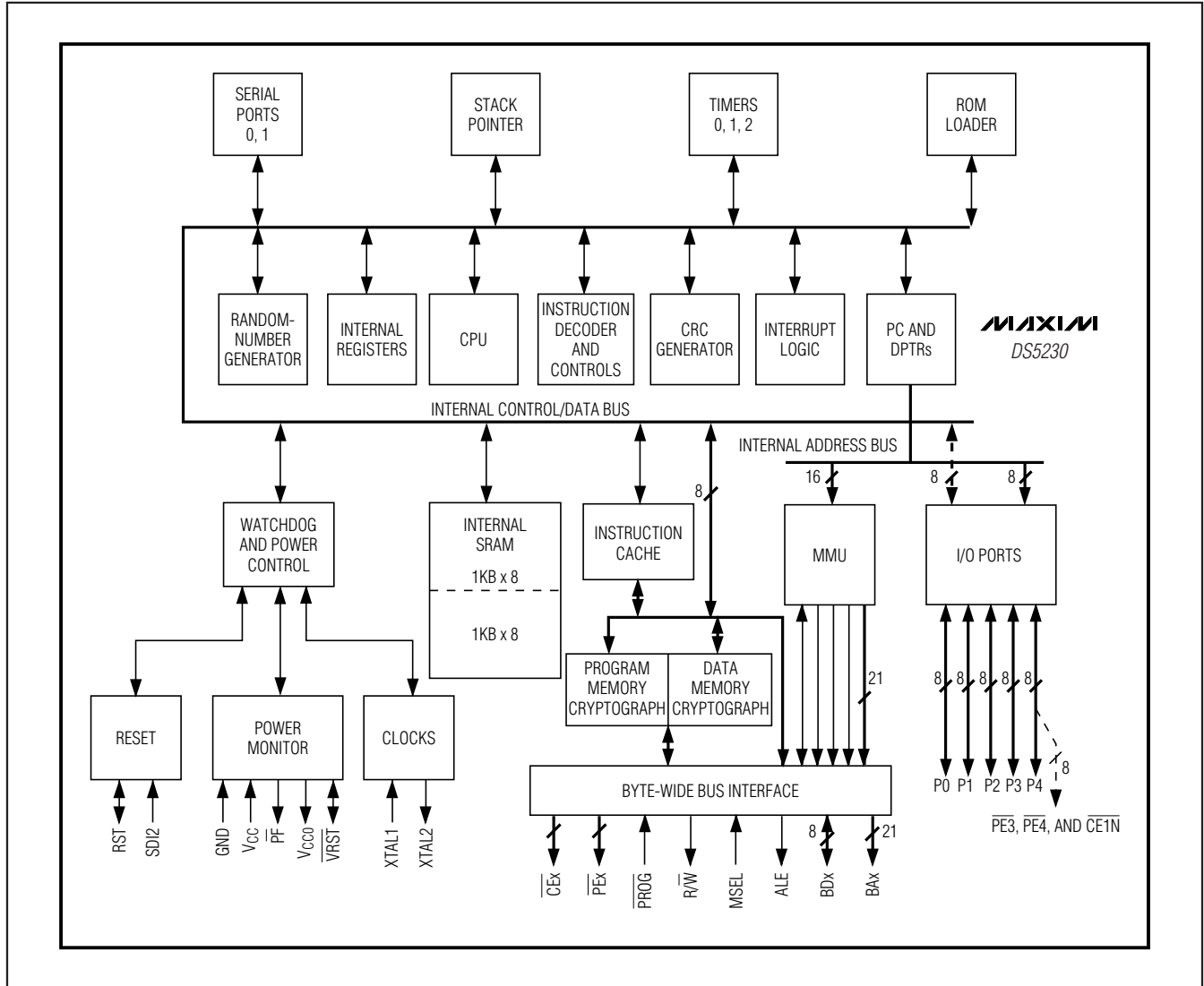
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Figure 4. Block Diagram

Note to readers: This document is an abridged version of the full data sheet. To request the full data sheet, go to **www.maxim-ic.com/DS5230** and click on **Request Full Data Sheet**.

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