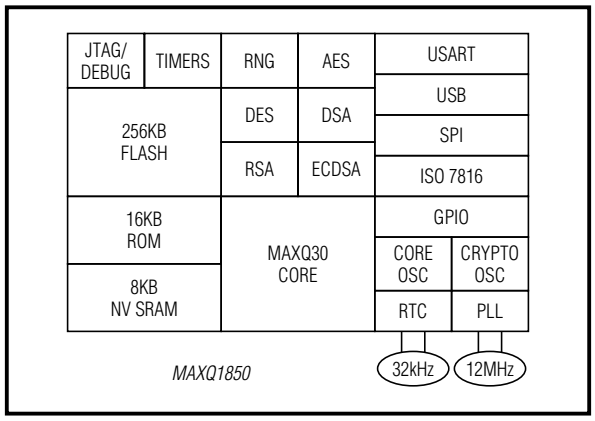
MAXQ1850

DeepCover Secure Microcontroller with Rapid Zeroization Technology and Cryptography

Block Diagram



NOTE: THE BLOCK DIAGRAM SHOWS A TYPICAL SYSTEM CLOCK USED TO SUPPORT USB OPERATION AT 12MHz. MULTIPLE EXTERNAL CRYSTAL/CLOCK OPTIONS ARE AVAILABLE.

Detailed Features

- **High-Performance, Low-Power, 32-Bit MAXQ30 RISC Core**
- **Single 3.3V Supply Enables Low Power/Flexible Interfacing**
- **DC to 16MHz Code Execution Across Entire Operating Range**
- **65MHz Cryptography Engine Execution to Reduce Processing Time**
- **On-Chip 2x/4x Clock Multiplier**
- **33 Instructions**
- **Three Independent Data Pointers Accelerate Data Movement with Automatic Increment/Decrement**
- **16-Bit Instruction Word, 32-Bit Internal Data Bus**
- **16 x 32-Bit Accumulators**
- **Up to 16 General-Purpose I/O Pins**
- **5V Tolerant I/O**
- **Virtually Unlimited Software Stack**
- **Optimized for C-Compiler (High-Speed/Density Code)**
- **Memory Features**
  - 256KB Flash, Composed of 2048 Byte Sectors (1K Erase/Write Cycles per Sector)
  - 8KB Battery-Backed Data SRAM
  - Dedicated Cryptographic Memory Space
- **Security Features**
  - Unique ID
  - Tamper Detection with Rapid Key/Data Destruction
  - Four Self-Destruct Inputs
  - Hardware AES and DES Engines
  - Public Key Cryptographic Accelerator for DSA, ECDSA, and RSA
  - Supports SHA-1, SHA-224, and SHA-256
  - Real Hardware RNG and PRNG
  - Hardware CRC-32/16
  - Unalterable, Battery-Backed Real-Time Clock
- **Additional Peripherals**
  - Power-Fail Warning
  - Power-On Reset/Brownout Reset
  - JTAG I/F for System Programming and Accessing On-Chip Debugger
  - USB I/F with Four End-Point Buffers
  - ISO 7816 Smart Card UART with FIFO
  - Four 16-Bit Timer/Counters, Two with PWM Function
  - SPI and USART Communication Ports
  - Programmable Watchdog Timer
- **Low-Power Consumption**
  - 150nA Typical Current Draw in Battery-Backed Mode, Preserving 8KB NV SRAM and with Security Sensors Active (460nA with RTC Active)

Note to readers: This document is an abridged version of the full data sheet. To request the full data sheet, go to www.maximintegrated.com/MAXQ1850 and click on **Request Full Data Sheet**.