ABRIDGED DATA SHEET

EVALUATION KIT AVAILABLE

MAX32550

DeepCover Secure Cortex-M3 Flash Microcontroller

General Description

DeepCover® embedded security solutions cloak sensitive data under multiple layers of advanced physical security to provide the most secure key storage possible.

The DeepCover Secure microcontroller (MAX32550) provides an interoperable, secure, and cost-effective solution to build new generations of trusted devices such as mobile chip and pin pads. The MAX32550 integrates a Cortex-M3 processor, 1MB of flash, 256KB of system RAM, 4KB of one-time-programmable (OTP) memory, 64KB of boot ROM, 8KB of battery-backed AES self-encrypted NVSRAM.

In addition to hardware crypto functions, the MAX32550 provides a true random number generator, battery-backed RTC, environmental and tamper detection circuitry to facilitate system-level security for the application.

The MAX32550 microcontroller includes multiple communication interfaces. One USB device controller with its respective USB transceiver, one Smart Card controller with an embedded transceiver to directly support 1.8V, 3V, and 5V cards, three SPI ports, two UARTs, and an I²C bus are also provided. The six on-chip timers also support PWM output generation for direct control of external devices. An integrated Secure Keypad, magnetic stripe reader controller, mono LCD interface, color TFT controller, 2-channel 10-bit ADC and one channel 8-bit DAC provide an integrated solution for mobile chip and pin pads.

Applications

- Electronic Commerce
- Mobile Payment Terminals
- Secure Access Control
- PCI Terminals
- ATM Keyboards
- EMV Card Reader
- Chip and Pin Pads

Ordering Information ***appears at end of data sheet.***

**5V Smart Card support requires external 5.0V supply.*

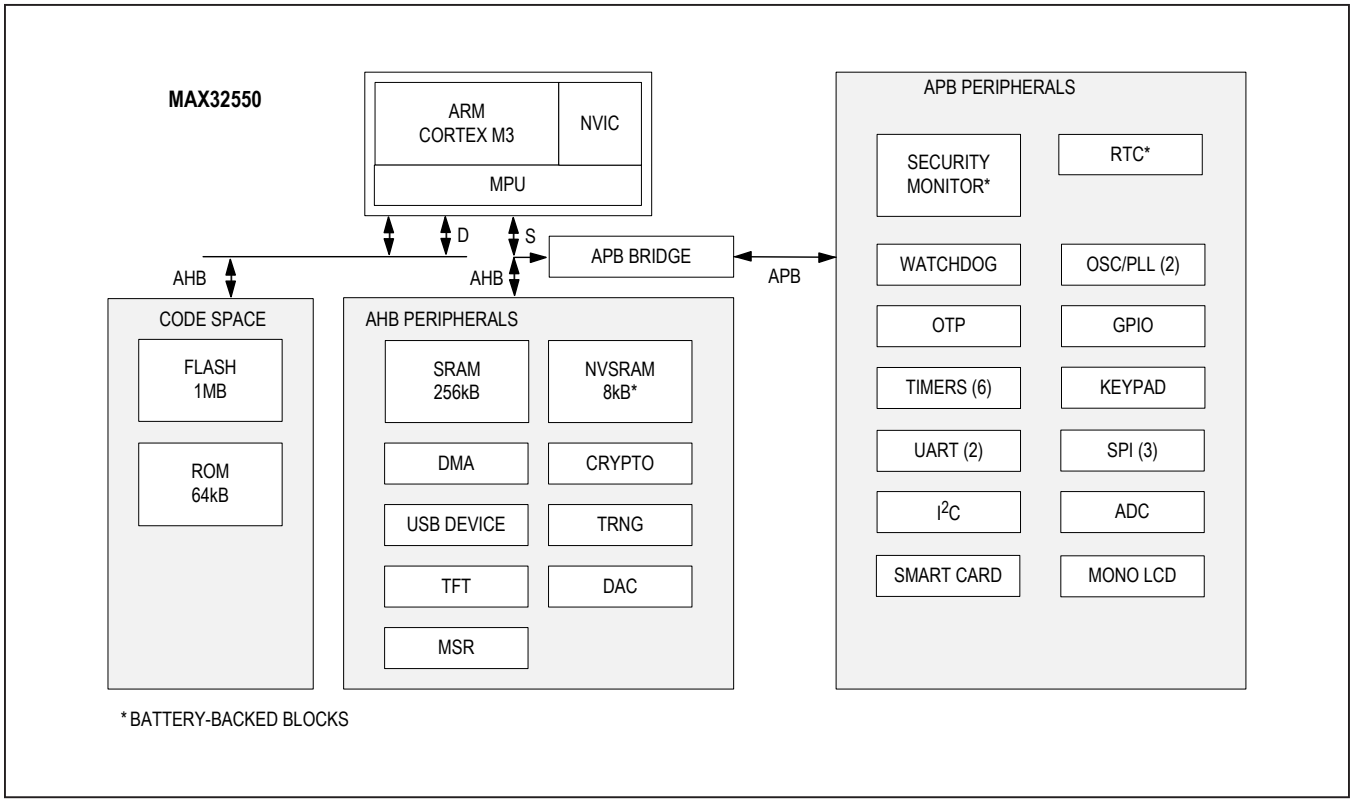
Features and Benefits

- ARM® Cortex® M3 Processor Core Allows for Easy Integration into Applications
  - 108MHz Core Operating Frequency Through PLL
  - 108MHz Multilayer AHB Bus Matrix
  - 1MB Dual-Bank Flash Memory with Cache
  - 256KB System SRAM
  - 8KB AES Self-Encrypted NVSRAM
  - 4KB User-Programmable OTP
- Security Features Fascilitate System-Level Protection
  - Secure Boot Loader with Public Key Authentication
  - AES, DES and SHA Hardware Accelerators
  - Modulo Arithmetic Hardware Accelerator (MAA) Supporting RSA, DSA, and ECDSA
  - 8-Line Secure Keypad Controller
  - Hardware True Random Number Generator
  - Die Shield with Dynamic Fault Detection
  - 6 External Tamper Sensors with Independent Random Dynamic Patterns
  - 256-Bit Flip-Flop Based Battery-Backup AES Key Storage
  - Temperature and Voltage Tamper Monitor
  - Real-Time Clock
- Integrated Peripherals Reduce External Component Count
  - Triple-Track Magnetic Stripe Head Interface
  - USB 2.0 Device with Internal Transceiver and Dedicated PLL
  - Two UART Ports
  - One I²C Controller
  - Three SPI Ports
  - One ISO 7816 Smart Card Interface with Integrated Transceiver (1.8V, 3V, and 5V)
  - Six Timers, Four with PWM Capability
  - Up to 70 General-Purpose I/O Pins
  - Two-Channel, 10-Bit ADC
  - One-Channel, 8-Bit DAC
  - Monochrome LCD Controller
  - Color LCD Controller Supporting STN and TFT Displays
  - 4-Channel DMA Controller
  - Advanced Interrupt Controller
  - 5-Pin JTAG
- Power Management Optimizes Battery Life and Reduces Active Power Consumption
  - Single 3.3V Supply Operation*
  - Flexible Clock Prescalers
  - Integrated Battery Backup Switch
  - Clock Gating Function
  - Low-Current Battery-Backup Operation

19-7145; Rev 0; 9/14

maxim integrated™

Functional Diagram



Ordering Information

PART	PIN-PACKAGE	ICE
MAX32550-LNS+	121 CSBGA (8mm x 8mm, 0.65mm pitch)	No
MAX32550-LNJ+	121 CSBGA (8mm x 8mm, 0.65mm pitch)	Yes

+Denotes a lead(Pb)-free/RoHS-compliant package.

Package Information

For the latest package outline information and land patterns (footprints), go to **www.maximintegrated.com/packages**. Note that a "+", "#", or "-" in the package code indicates RoHS status only. Package drawings may show a different suffix character, but the drawing pertains to the package regardless of RoHS status.

PACKAGE TYPE	PACKAGE CODE	OUTLINE NO.	LAND PATTERN NO.
121 CSBGA	X12188+2C	21-0680	90-0451