ABRIDGED DATA SHEET

EVALUATION KIT AVAILABLE

MAX32550

DeepCover Secure Cortex-M3 Flash Microcontroller

General Description

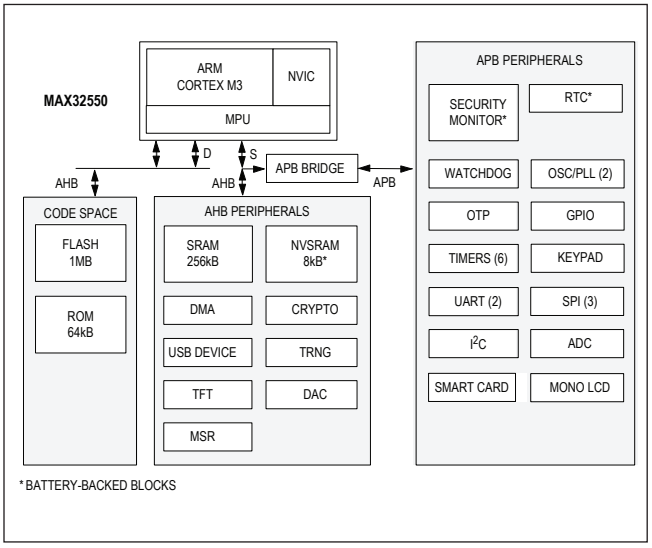
DeepCover® embedded security solutions cloak sensitive data under multiple layers of advanced physical security to provide the most secure key storage possible.

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 is based on a Cortex M3 processor with 1MB of embedded flash, 256KB of system RAM, 8KB of battery-backed AES self-encrypted NVSRAM. It includes all the essential functions of mobile POS terminal including a cryptographic engine, a true random number generator, battery-backed RTC, environmental and tamper detection circuitry, a magnetic stripe reader, a smart card controller with embedded transceiver to directly support 1.8V, 3.3V, and 5V cards, and an integrated secure keypad controller. It also provides a seamless interface to TFT displays and includes a vast array of peripherals, SPIs, UARTs, DMA, ADC, and DAC that add flexibility to control and differentiate the system design.

Applications

- PCI Mobile Payment Terminals (mPOS)
- ATM Keyboards
- EMV Card Reader

Functional Diagram



Benefits and Features

- Arm® Cortex® M3 Processor Core Allows for Easy Integration into Applications
  - 108MHz Core Operating Frequency Through PLL
  - 1MB Dual-Bank Flash Memory with Cache
  - 256KB System SRAM
  - 8KB AES Self-Encrypted NVSRAM
- Security Features Facilitate 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
  - One ISO 7816 Smart Card Interface with Integrated Transceiver (1.8V, 3V, and 5V)
  - USB 2.0 Device with Internal Transceiver and Dedicated PLL
  - 3 SPI Ports, 2 UART Ports, and 1 I2C Controller
  - 6 Timers, 4 with PWM Capability
  - Up to 70 General-Purpose I/O Pins
  - 2-Channel, 10-Bit ADC and 1-Channel, 8-Bit DAC
  - Color/Monochrome LCD TFT Controller
  - 4-Channel DMA Controller
- Power Management Optimizes Battery Life and Reduces Active Power Consumption
  - Single 3.3V Supply Operation*
  - Integrated Battery-Backup Switch
  - Clock Gating Function
  - Low-Current Battery-Backup Operation

**5V smart card support requires external 5.0V supply.*

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Additional Documentation

Designers must have the following documents to fully use all the features of this device. This data sheet contains pin descriptions, feature overviews, and electrical specifi-cations. Errata sheets contain deviations from published specifications. User guides contain detailed descriptions of device features and peripherals from a programming perspective.

- This MAX32550 data sheet, which contains electrical/timing specifications, package information, and pin descriptions.
- The MAX32550 revision-specific errata sheet.
- The MAX32550 User Guide, which contains detailed information and programming guidelines for core features and peripherals.

Development and Technical Support

Visit https://support.maximintegrated.com/micro for technical support.

Ordering Information

PART	PIN-PACKAGE	ICE
MAX32550-LNS+	121 CTBGA (8mm x 8mm, 0.65mm pitch)	No
MAX32550-LNJ+	121 CTBGA (8mm x 8mm, 0.65mm pitch)	Yes
MAX32550-LBS+	121 CTBGA (8mm x 8mm, 0.65mm pitch)	No
MAX32550-LBJ+	121 CTBGA (8mm x 8mm, 0.65mm pitch)	Yes
MAX32550-LCS+	121 CTBGA (8mm x 8mm, 0.65mm pitch)	No
MAX32550-LCJ+	121 CTBGA (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 CTBGA	X12188+2C	21-0680	90-0451

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at www.maximintegrated.com.

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