Rev 0; 3/09

EVALUATION KIT AVAILABLE

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Zatara High-Performance, Secure, 32-Bit ARM Microcontroller

ZA9L0

General Description

The Zatara® ZA9L0 is a highly integrated system-on-chip (SoC) microcontroller based on the ARM922T™ 32-bit/16-bit core and tailored to the specific requirements of point-of-sale (POS) terminal design and meet the strict security requirements of the Payment Card Industry (PCI) Security Standards Council 2.0 specification. Running at 180MHz, the ZA9L0 is one of the fastest high-security microcontrollers available. The ZA9L0 provides a rich set of features on a single chip that reduces the manufacturing cost and time-to-market for secure transaction products such as POS terminals, vending machines, and security panels. The Zatara ZA9L0 includes the essential security features required of a POS terminal. It also provides seamless interfaces to LCD displays and keypads, and includes a wide array of peripherals such as an ADC, DMAs, UARTs, GPIOs, and timers that add flexibility to control and differentiate the system design.

System security is enhanced by a number of physical and logical protection mechanisms including environmental sensors (temperature, voltage, and frequency), true hardware random-number generator (RNG), real-time clock (RTC), and 4KB of secure nonvolatile SRAM storage with fast erase capability upon tampering. On power-up, application code is first cryptographically verified for authenticity to ensure that attackers cannot insert their own application code.

The ZA9L0 provides extensive communication support with three UARTs, two independent SPI™ ports, and ample GPIO pins to implement any communication interface. The ZA9L0 also has a targeted set of peripherals to support PIN pad applications, including an LCD interface, multiple timers with PWM, watchdog, and a 6-channel, 10-bit ADC.

Applications

EFTPOS	Healthcare Reader
PIN Pads	Metering
EPP	

Features

♦ **32-Bit ARM922T CPU Core**
　8KB/8KB I/D-Caches
　MMU Supporting Linux® and Windows®
　　Embedded CE Operating Systems
　180MHz Performance
　JTAG Embedded ICE Support

Zatara is a registered trademark of Maxim Integrated Products, Inc.
ARM922T is a trademark of ARM Limited.
SPI is a trademark of Motorola, Inc.
Linux is a registered trademark of Linus Torvalds.
Windows is a registered trademark of Microsoft Corp.

♦ **64KB Embedded Zero-Wait-State SRAM**

♦ **Vectored Interrupt Controller**

♦ **External Bus Interface**
　Dual External Bus Architecture (Primary and Secondary)
　24-Bit Address, 16-Bit Data
　Synchronous Flash
　SDRAM in 16MB to 512MB Configurations

♦ **Power Management Unit**
　14MHz to 40MHz Oscillator and Phase-Locked
　　Loop (PLL)-Generated System Clocks
　32.768kHz Oscillator for RTC
　Clock Disable on a Peripheral-by-Peripheral Basis
　Three Modes: Active, Idle, and Battery Backup

♦ **Real-Time Clock**

♦ **Watchdog Timer (WDT)**

♦ **Two Dedicated SPI Interfaces**

♦ **Nine Timer/Counters**

♦ **Three UARTs**
　1 x 8-Wire Interface
　2 x 4-Wire Interface

♦ **POS Security Features for PCI Compliance**
　Voltage and Temperature Sensors
　Sensors for Tamper Switches and Wire Mesh
　Clock Frequency and Glitch Protection
　Battery-Backed Secure Memory with Active
　　Zeroization

♦ **Embedded Boot ROM**

♦ **32-Bit Unique ID Number**

♦ **NIST 800-22-Compliant Random-Number Generator**

♦ **FIPS 180-2-Compliant SHA-1 Hash Generator**

♦ **Display Controller Interface**

♦ **Up to 76 General-Purpose Input/Output (GPIO) Pins**

♦ **10-Bit ADC, 6-Channel, 45ksps**

♦ **Eight Independent DMA Channels**

♦ **Voltage: Dual 1.8V and 3.3V Supplies**

♦ **3.3V I/O Pins with 5V Tolerant I/O for UART and SPI**

♦ **256-Pin BGA (1.0mm Ball Pitch) Package**

Ordering Information

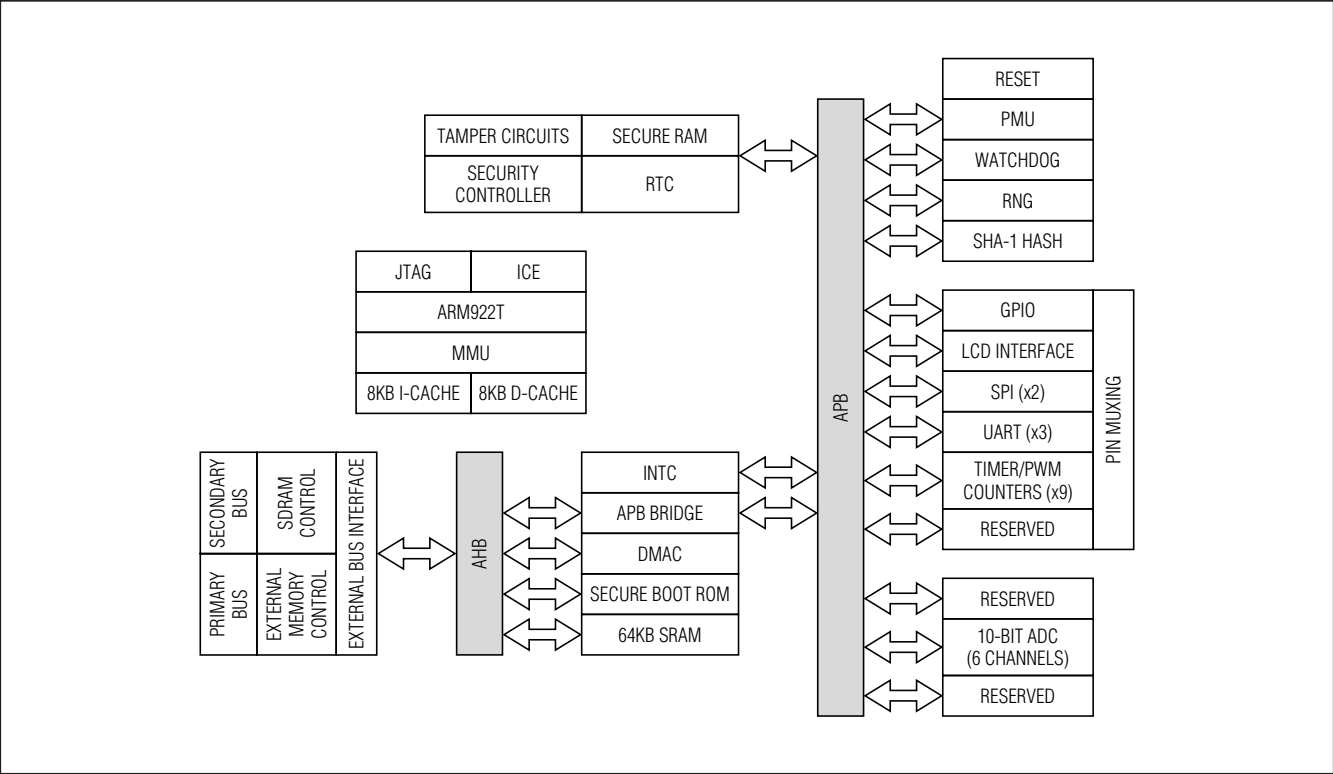| PART	TEMP RANGE	PIN-PACKAGE	JTAG
ZA9L0xxxx+	-40°C to +85°C	256 LFBGA	Yes

Note: *The secure boot ROM in the device uses customer-unique keys to verify the application image, so there is a unique part number per customer. Contact the factory for more information and to obtain samples for application development.*
+Denotes a lead(Pb)-free/RoHS-compliant package.

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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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Functional 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/ZA9L0** and click on **Request Full Data Sheet**.

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