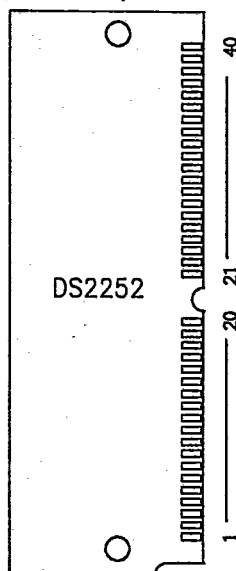DS2252

PRODUCT PREVIEW

DALLAS
SEMICONDUCTOR

DS2252
Secure Micro Stik

T-46-23-37

FEATURES

- Secure Micro Stik provides up to 128K bytes of lithium-backed NV SRAM for program/data storage

- Enhanced security features (over DS5000 Soft Microcontroller):
    - Stronger address/data encryptor
    - 64-bit encryption key word
    - Automatic true random key generation
    - SDI (Self-Destruct Input)
    - Top coating defeats microprobe attack
    - Customer-specific encryption versions available

- Reprogrammable Peripheral Controller (RPC) mode emulates 8042 for PC bus applications

- Optional DS1283 Watchdog Timekeeper Chip allows wakeup from Stop mode (DS2252T)

- 100% compatible with 8051 instruction set

- 40-pin SIMM connection scheme

PACKAGE OUTLINE

DS2252

40

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40-Pin SIP Stik

DESCRIPTION

The DS2252 Secure Micro Stik is a complete microcontroller subsystem based on the DS5002FP Secure Micro Chip and packaged in an extremely small form factor. The DS2252 incorporates the DS5002FP and, as a result, offers the most sophisticated security features available in any microcontroller.

The DS2252 incorporates up to 128K bytes of lithium-backed nonvolatile RAM onboard. This RAM is accessed by the DS5002FP's byte-wide bus and is used to store both program and data memory. The 128K byte NV SRAM can be initially loaded by the DS5002's on-chip boot-strap loader via the serial port and can be dynamically partitioned to fit changing program

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and data storage requirements of a particular task.

The DS2252 offers all of the security features implemented within the DS5002FP. The entire 128K byte NV SRAM is stored and accessed in encrypted form, using the DS5002FP's advanced encryption algorithm. Customer-specific versions of the DS2252 are also available which incorporate one-of-a-kind encryption algorithms. An input to the DS5002FP's Self-Destruct Input pin is provided so that external detection circuitry can be used to trigger the erasure of the security lock in the event that an attempt is made to tamper with the system. When implemented as a part of a secure system design, the DS2252 can typically provide a level of security which requires more time and resources to defeat than it is worth to unauthorized individuals who have reason to try.

The DS2252 also incorporates the DS5002's Reprogrammable Peripheral Controller (RPC) mode which allows the DS2252 to perform peripheral tasks as a slave processor with a high-speed interface to a host system such as a PC bus. The RPC mode brings the benefits of up to 128K nonvolatile RAM to the design of intelligent and flexible peripheral controllers through hardware emulation of the popular 8042 slave interface.

A permanently powered timekeeping feature, which is the functional equivalent of the DS1286 Watchdog Timekeeper, is available as an option (DS2252T). This real time clock is driven by an internal quartz crystal and keeps time to a hundredth of a second. In addition, the date is automatically adjusted at the end of the month, including those months with fewer than 31 days. Compensation is also performed automatically for a leap year. Access to the timekeeping is performed entirely on the DS5002FP's bytewide bus. As a result, none of the valuable I/O port resources are consumed in the interface. The timekeeper allows the processor to be reset at a pre-determined time via a user programmable alarm. In this way, the processor can remain in an ultra-low power state until the wakeup time. A second interrupt which occurs at a user defined periodic interval (up to 99 seconds) is also available.

The DS2252 is designed to provide 10 years of timekeeping and data retention in its NV RAM, in the absence of V_{CC}. In addition, a user-programmable freshness seal is available to shut down lithium backup when it is not required.

FOR FURTHER INFORMATION
Consult the DS5002FP data sheet for further information on the Secure Micro Chip. Complete data sheets for both the DS2252 and the DS5002FP are available on request to customers who have a signed non-disclosure agreement on file with Dallas Semiconductor.

ORDERING   INFORMATION
The following versions of the DS2252 are available as standard products from Dallas Semiconductor.

DS2252 08-08	Secure Micro Stik - 8K RAM 8 MHz
DS2252 32-12	Secure Micro Stik - 32K RAM 12 MHz
DS2252T 32-12	Secure Micro Stik - 32K RAM 12 MHz with Real Time Clock
DS2252T 64-12	Secure Micro Stik - 64K RAM 12 MHz with Real Time Clock
DS2252T 128-16	Secure Micro Stik - 128K RAM 16 MHz with Real Time Clock

Other versions are available by special order. Please contact Dallas Semiconductor for ordering information on customer-specific versions of the DS2252.

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