

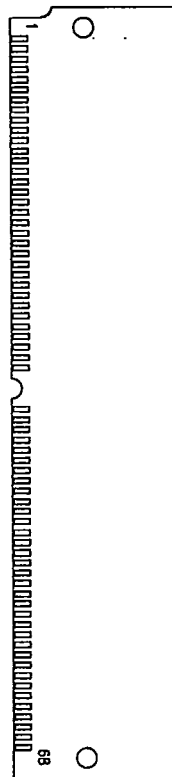
T-49-19-08

DS2256

Power Miser Micro Stik

**DALLAS
SEMICONDUCTOR****FEATURES**

- Complete system core for remote or hand-held instrument applications:
 - Buttonless execution of low-power microcontroller tasks
 - Data recording with time stamp and date
 - Sensor processing with DS2255 Instrumentation Stik
- Based on the DS5001FP 128K Micro Chip
- Includes up to 128K bytes of nonvolatile CMOS SRAM for program/data storage
- Permanently powered timekeeping and periodic interval alarms with the DS1283 Watchdog Timekeeper Chip
- Kickstarts system power in response to external events such as:
 - Sensor trip (e.g., photodiode)
 - Clock/calendar alarm
 - Any low-level logic signal
 - Incoming RS-232 activity
- Power conservation with Microenergy Management of the DS1227 Kickstarter Chip
- Complete +5V regulated power supply accepts +3V input
- Switchable auxiliary power supply output lines for external circuits
- 29 bits of user-definable port I/O
- Byte-wide address and data bus for memory-mapped peripheral circuits
- 68-pin SIMM connection scheme

PACKAGE DESCRIPTION

68-Pin SIP Stik

DESCRIPTION

The DS2256 Power Miser Micro Stik provides the lowest power microcontroller solution for remote or handheld instruments. Designed as a

complete core which serves all of the basic requirements of such applications, it includes a microcontroller, nonvolatile memory, timekeep-

ing, and I/O functions which are commonly required in an instrument. Power management and kickstarting features allow buttonless operation in remote systems, and maximize the life of a power source when an operator interface is required. A block diagram of the system is shown in Figure 1.

The DS2256 delivers unprecedented end-system flexibility by incorporating the DS5001FP 128K Micro Chip. Unlike rigid ROM or EPROM-based microcontrollers, all of the Micro Chip memory is flexible, read/write, and nonvolatile for more than 10 years. The DS5001FP is equipped with up to 128K bytes of nonvolatile SRAM which can be used for program and data storage requirements. A major benefit resulting from its RAM architecture is that the DS5001FP allows program memory to be changed at any time, even after the device has been installed in the end system. An onboard, line-powered RS232 transceiver allows serial bootstrap loading of the application software, as well as direct communication with a host PC by the instrument.

A permanently powered timekeeping feature, which is the functional equivalent of the DS1286 Watchdog Timekeeper, is incorporated into the DS2256. 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. Leap year compensation is also performed automatically. Access to the timekeeping is performed entirely on the DS5001FP's byte-wide address and data bus. As a result, none of the valuable I/O port resources are consumed in the interface. The timekeeper allows the system to be powered up at a pre-determined time via a user programmable alarm. In this way, the instrument remains in an ultra-low power state until the "wake up time". A second interrupt which occurs at a user defined periodic interval

is also available.

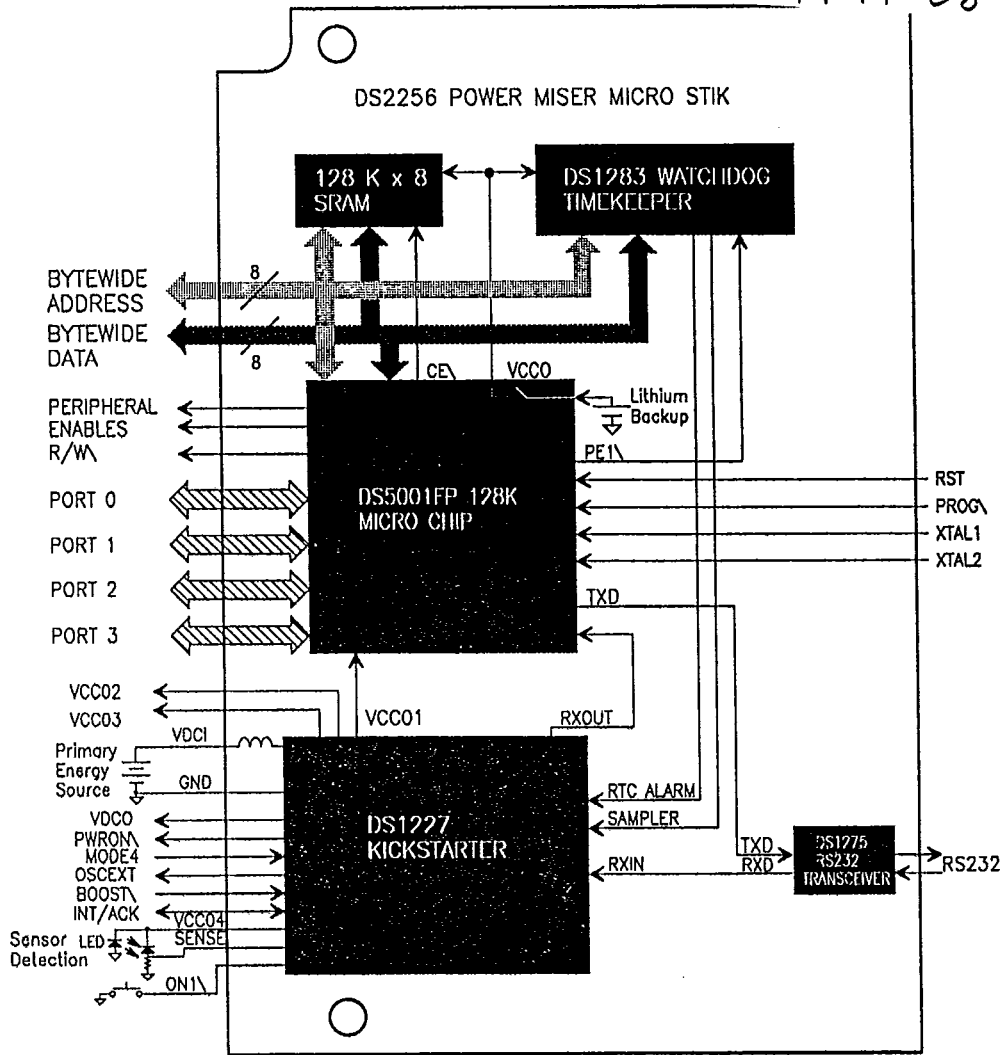
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Achieving the lowest power operation requires more sophistication than simply using low-power CMOS circuits. To minimize the operating current profile, the Power Miser Micro Stik incorporates the DS1227 Kickstarter circuit. Using its integral DC-DC converter, the DS1227 provides +5V to the onboard components from a +3 volt external power source. In +5V or +6V supply systems, the DC-DC converter can be bypassed. Most importantly, the DS1227 gives the DS2256 the ability to wake up from an ultra-low power retention state, perform a task, and then go back to sleep until the next task needs to be processed. This wakeup, or kickstarting action, can be performed in response to practically any type of low-level stimulus such as an incoming logic signal, RS232 data, or an alarm from the onboard clock/calendar. The DS5001FP can then instruct the Kickstarter to switch on (and off) two external power lines for user circuitry. When a task is complete, the DS5001FP can power itself down via the Kickstarter. In this manner, power can be selectively applied to different sections of circuitry for only the amount of time that their function is required. By reacting to its environment, the DS2256 facilitates "buttonless" instrument operation free of human intervention, and consequently uses less power. This micro-energy management technique allows the life of a primary power source to be maximized by minimizing the time when operating power is consumed.

Application flexibility is further enhanced by the substantial I/O resources of the DS2256. Twenty-nine port pins are provided for user-definable I/O functions. These are identical in function to those provided by the DS5001FP (or 8051). Although the DS5001FP has 32 port pins, three are committed to onboard functions. In addition, the embedded address and data bus is available for memory mapped control of external peripherals.

DS2256 BLOCK DIAGRAM Figure 1

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ORDERING INFORMATION

Standard Configurations

DS2256-08-08	Power Miser Micro Stik	8K RAM 8 MHz
DS2256-32-12	Power Miser Micro Stik	32K RAM 12MHz
DS2256-64-12	Power Miser Micro Stik	64K RAM 12 MHz
DS2256-28-16	Power Miser Micro Stik	128K RAM 16 MHz

Other versions are available by special order.