

**DALLAS**  
SEMICONDUCTOR

## DS1486 RAMified Watchdog Timekeeper

### FEATURES

- 128K bytes of user NV RAM
- Real time quartz clock/calendar keeps track of hundredths of seconds, seconds, minutes, hours, days, date of the month, months, and years with leap year compensation valid up to 2100
- Will operate in 32-pin JEDEC footprint
- Watchdog timer restarts an out-of-control processor
- Alarm function schedules real-time related activities such as system wakeup
- Embedded lithium energy cell maintains time, watchdog, user RAM, and alarm information
- Programmable interrupts and square wave outputs
- All registers are individually addressable via the address and data bus
- Accuracy is better than  $\pm 1$  minute/month at 25°C
- Greater than 10 years of timekeeping in the absence of  $V_{CC}$  @ 25°C
- Interrupt signals active in power-down mode

### ORDERING INFORMATION

DS1486-XXX	RTC and 128K x 8 NVSRAM
	-120 120 ns access
	-150 150 ns access

### DESCRIPTION

The DS1486 RAMified Timekeeper is a self-contained real time clock (RTC), alarm, watchdog timer, and interval timer in a 32-pin JEDEC DIP package. The DS1486 contains an embedded lithium energy source and a quartz crystal which eliminates the need for any external circuitry. Data contained within 128K by 8-bit memory and the timekeeping registers can be read or written in the same manner as bitwise static RAM. The timekeeping registers are located in the first 14 bytes of memory space. Data is maintained in the RAMified

### PIN ASSIGNMENT

INTB	1	32	$V_{CC}$
A16	2	31	A15
A14	3	30	$\overline{INTA/SQW}$
A12	4	29	$\overline{WE}$
A7	5	28	A13
A6	6	27	A8
A5	7	26	A9
A4	8	25	A11
A3	9	24	$\overline{OE}$
A2	10	23	A10
A1	11	22	$\overline{CE}$
A0	12	21	DQ7
DQ0	13	20	DQ6
DQ1	14	19	DQ5
DQ2	15	18	DQ4
GND	16	17	DQ3

DS1486 128K x 8  
32-PIN ENCAPSULATED  
PACKAGE

### PIN DESCRIPTION

$\overline{INTB}$ (INTB)	- Interrupt Output B (open drain)
A0-A16	- Address Inputs
DQ0-DQ7	- Data Input/Output
$\overline{CE}$	- Chip Enable
$\overline{OE}$	- Output Enable
$\overline{WE}$	- Write Enable
$V_{CC}$	- +5 Volts
GND	- Ground
$\overline{INTA/SQW}$	- Interrupt Output A/Square Wave Output (INTA is open drain)

Timekeeper by intelligent control circuitry which detects the status of  $V_{CC}$  and write protects memory when  $V_{CC}$  is out of tolerance. The lithium energy source can maintain data and real time for over ten years in the absence of  $V_{CC}$ . Timekeeper information includes hundredths of seconds, seconds, minutes, hours, day, date, month, and year. The date at the end of the month is automatically adjusted for months with less than 31 days, including correction for leap year. The RAMified Timekeeper operates in either 24 hour or 12 hour format with an AM/