

**DALLAS**  
SEMICONDUCTOR

**DS1287**  
Real Time Clock

**FEATURES**

- Drop-in replacement for IBM AT computer clock/calendar
- Pin compatible with the MC146818A
- Totally nonvolatile with over 10 years of operation in the absence of power
- Self-contained subsystem includes lithium, quartz, and support circuitry
- Counts seconds, minutes, hours, day of the week, date, month, and year with leap year compensation
- Binary or BCD representation of time, calendar, and alarm
- 12- or 24-hour clock with AM and PM in 12-hour mode
- Daylight Savings Time option
- Selectable between Motorola and Intel bus timing
- Multiplex bus for pin efficiency
- Interfaced with software as 64 RAM locations
  - 14 bytes of clock and control registers
  - 50 bytes of general purpose RAM
- Programmable square wave output signal
- Bus-compatible interrupt signals ( $\overline{IRQ}$ )
- Three interrupts are separately software-maskable and testable
  - Time-of-day alarm once/second to once/day
  - Periodic rates from 122  $\mu$ s to 500 ms
  - End of clock update cycle

**PIN ASSIGNMENT**

MOT	1	24	V <sub>CC</sub>
NC	2	23	SQW
NC	3	22	NC
AD0	4	21	NC
AD1	5	20	NC
AD2	6	19	$\overline{IRQ}$
AD3	7	18	$\overline{RESET}$
AD4	8	17	DS
AD5	9	16	NC
AD6	10	15	$\overline{R/W}$
AD7	11	14	AS
GND	12	13	$\overline{CS}$

24 PIN ENCAPSULATED PACKAGE

**PIN DESCRIPTION**

AD0–AD7	- Multiplexed address/data bus
NC	- No connection
MOT	- Bus type selection
$\overline{CS}$	- Chip select
AS	- Address strobe
$\overline{R/W}$	- Read/write input
DS	- Data strobe
$\overline{RESET}$	- Reset input
$\overline{IRQ}$ (drain)	- Interrupt request output (open
SQW	- Square wave output
V <sub>CC</sub>	- +5 volt supply
GND	- Ground

**DESCRIPTION**

The DS1287 Real Time Clock is designed to be a direct replacement for the MC146818A. For a complete description of operating conditions, electrical and

mechanical characteristics, bus timing, and pin descriptions see the DS12887 data sheet.