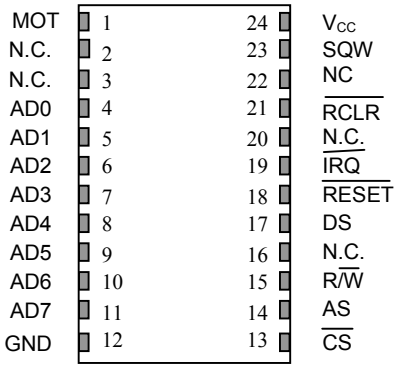
DS12887A
Real-Time Clock

www.maxim-ic.com

FEATURES

- Drop-in replacement for IBM AT computer clock/calendar
- Pin compatible with the MC146818B and DS1287A
- 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, days, day of the week, date, month, and year with leap-year compensation valid up to 2100
- Binary or BCD representation of time, calendar, and alarm
- 12-hour 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 128 RAM locations
  - 14 bytes of clock and control registers
  - 114 bytes of general-purpose RAM
- Programmable square-wave output signal
- Bus-compatible interrupt signals (IRQ)
- Three interrupts are separately software-maskable and testable
  - Time-of-day alarm once/second to once/day
  - Periodic rates from 122µs to 500ms
  - End-of-clock update cycle
- Underwriters Laboratory (UL) recognized

PIN ASSIGNMENT (Top View)



DS12887A
24 PDIP Module (700mil)

Package Dimension Information

http://www.maxim-ic.com/TechSupport/DallasPackInfo.htm

PIN DESCRIPTION

AD0–AD7	-	Multiplexed Address/Data Bus
N.C.	-	No Connect
MOT	-	Bus Type Selection
$\overline{CS}$	-	RTC Chip-Select Input
AS	-	Address Strobe
R/$\overline{W}$	-	Read/Write Input
DS	-	Data Strobe
$\overline{RESET}$	-	Reset Input
$\overline{IRQ}$	-	Interrupt Request Output
SQW	-	Square-Wave Output
V_{CC}	-	+5V Main Supply
$\overline{RCLR}$	-	RAM Clear
GND	-	Ground

ORDERING INFORMATION

PART	PIN-PACKAGE	TOP MARK	TEMP RANGE
DS12887A	24 PDIP Module	DS12887A	0°C to +70°C

Note: *Some revisions of this device may incorporate deviations from published specifications known as errata. Multiple revisions of any device may be simultaneously available through various sales channels. For information about device errata, click here: http://www.maxim-ic.com/errata.*

DESCRIPTION

The DS12887A real-time clock plus RAM is designed to be a direct replacement for the DS1287A. The DS12887A is identical in form, fit, and function to the DS1287A, and includes additional 64 bytes of general-purpose RAM. Access to this additional RAM space is determined by the logic level presented on AD6 during the address portion of an access cycle. The $\overline{RCLR}$ pin is used to clear (set to logic 1) all 114 bytes of general-purpose RAM but does not affect the RAM associated with the real-time clock. In order to clear the RAM, $\overline{RCLR}$ must be forced to an input logic 0 (-0.3V to +0.8V) during battery-backup mode when V_{CC} is not applied. The $\overline{RCLR}$ function is designed to be used by human interface (shorting to ground manually or by switch) and not to be driven with external buffers.

For a complete description of operating conditions, electrical characteristics, bus timing and pin descriptions other than $\overline{RCLR}$, refer to the DS12887 data sheet.

Note: *Pins 2, 3, 16, 20, and 22 are missing by design. This device cannot be stored or shipped in conductive material that will give a continuity path between the RAM clear pin and ground.*

TYPICAL OPERATING CIRCUIT