Features

- **Fast Read Access Time - 150 ns**
- **Fast Byte Write - 200 µs or 1 ms**
- **Self-Timed Byte Write Cycle**
    Internal Address and Data Latches
    Internal Control Timer
    Automatic Clear Before Write
- **Direct Microprocessor Control**
    DATA POLLING
- **Low Power**
    30 mA Active Current
    100 µa CMOS Standby Current
- **High Reliability**
    Endurance: 10^4 or 10^5 cycles
    Data Retention: 10 years
- **5 V ± 10% Supply**
- **CMOS & TTL Compatible Inputs and Outputs**
- **JEDEC Approved Byte Wide Pinout**
- **Full Military, Commercial, and Industrial Temperature Ranges**

**4K (512 x 8)
CMOS
E²PROM**

Description

The AT28C04 is a low-power, high-performance Electrically Erasable and Programmable Read Only Memory with easy to use features. The AT28C04 is a 4K memory organized as 512 words x 8 bits. The device is manufactured with Atmel's reliable nonvolatile CMOS technology.

The AT28C04 is accessed like a static RAM for the read or write cycles without the need of external components. During a byte write, the address and data are latched internally, freeing the microprocessor address and data bus for other operations. Following the initiation of a write cycle, the device will go to a busy state and automatically clear and write the latched data using an internal control timer. The end of a write cycle can be determined by DATA polling of I/O₇. Once the end of a write cycle has been detected, a new access for a read or a write can begin.
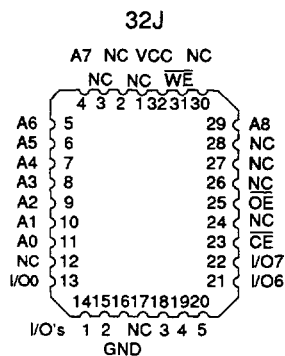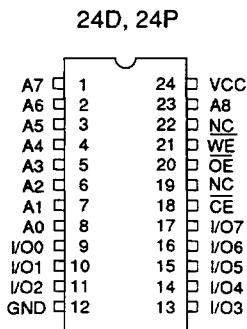
The CMOS technology offers fast access times of 150 ns at low power dissipation. When the chip is deselected the standby current is less than 100 µA.

Atmel's 28C04 has additional features to ensure high quality and manufacturability, including internal error correction for extended endurance and for improved data retention characteristics.

Pin Configurations

Pin Name	Function
A0 - A8	Addresses
$\overline{CE}$	Chip Enable
$\overline{OE}$	Output Enable
$\overline{WE}$	Write Enable
I/O0 - I/O7	Data Inputs/Outputs
NC	No Connect

24D, 24P

```
A7   1        24   VCC
A6   2        23   A8
A5   3        22   NC
A4   4        21   WE
A3   5        20   OE
A2   6        19   NC
A1   7        18   CE
A0   8        17   I/O7
I/O0 9        16   I/O6
I/O1 10       15   I/O5
I/O2 11       14   I/O4
GND  12       13   I/O3
```

32J

```
        A7  NC VCC  NC
       NC  NC   WE
       4  3  2  1 32 31 30
A6   5                29   A8
A5   6                28   NC
A4   7                27   NC
A3   8                26   NC
A2   9                25   OE
A1   10               24   NC
A0   11               23   CE
NC   12               22   I/O7
I/O0 13               21   I/O6
       14 15 16 17 18 19 20
     I/O's  1  2  NC  3  4  5
              GND
```

Note: PLCC package pins 1 and 17 are DON'T CONNECT.

Product Selection Guide

AT28C04

Part Number	Option	Speed	Package D	Package J	Package P	Temp Range	Access Time	Operating Temperature Range	Availability
AT28C04	E,F	-15	•	•	•	C	150	0°C to +70°C	NOW
AT28C04	E,F	-15	•	•	•	I	150	-40°C to +85°C	NOW
AT28C04	E,F	-15	•			M/883	150	-55°C to +125°C	NOW
AT28C04	E,F	-20	•	•	•	C	200	0°C to +70°C	NOW
AT28C04	E,F	-20	•	•	•	I	200	-40°C to +85°C	NOW
AT28C04	E,F	-20	•			M/883	200	-55°C to +125°C	NOW
AT28C04	E,F	-25	•	•	•	C	250	0°C to +70°C	NOW
AT28C04	E,F	-25	•	•	•	I	250	-40°C to +85°C	NOW
AT28C04	E,F	-25	•			M/883	250	-55°C to +125°C	NOW

Package descriptions on page 33.

AT28C04