

**Features**

- **Fast Read Access Time - 120 ns**
- **Five-Volt-Only Reprogramming**
- **Sector Program Operation**
  - Single Cycle Reprogram (Erase and Program)
  - 2048 Sectors (256 bytes/sector)
  - Internal Address and Data Latches for 256 Bytes
- **Internal Program Control and Timer**
- **Hardware and Software Data Protection**
- **Two 16KB Boot Blocks with Lockout**
- **Fast Sector Program Cycle Time - 10 ms**
- **DATA Polling for End of Program Detection**
- **Low Power Dissipation**
  - 40 mA Active Current
  - 100 µA CMOS Standby Current
- **Typical Endurance > 10,000 Cycles**
- **Single 5 V ± 10% Supply**
- **CMOS and TTL Compatible Inputs and Outputs**

**Description**

The AT29C040A is a five-volt-only in-system Flash Programmable and Erasable Read Only Memory (PEROM). Its four megabit of memory is organized as 524,288 words by 8 bits. Manufactured with Atmel's advanced nonvolatile CMOS EEPROM technology, the device offers access times up to 120 ns, and a low 220 mW power dissipation. When the device is deselected, the CMOS standby current is less than 100 µA. The device endurance is such that any sector can typically be written to in excess of 10,000 times. The programming algorithm is compatible with other devices in Atmel's five-volt-only Flash PEROM family.

The AT29C040A has the same read and A.C. timing specifications as the AT29C040 but with a smaller sector size, 256 bytes instead of 512 bytes and lower active power dissipation. A four

*(continued)*

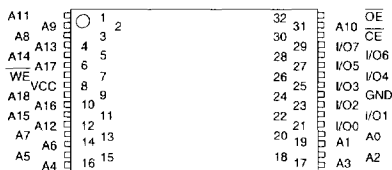
**4 Megabit  
(512K x 8)  
5-Volt Only  
256 Byte Sector  
CMOS Flash  
PEROM**

**Preliminary**

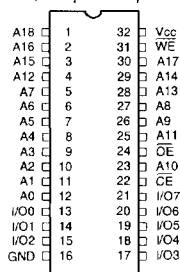
**Pin Configurations**

Pin Name	Function
A0 - A18	Addresses
$\overline{CE}$	Chip Enable
$\overline{OE}$	Output Enable
$\overline{WE}$	Write Enable
I/O0 - I/O7	Data Inputs/Outputs
NC	No Connect

TSOP Top View  
Type 1



DIP, Flatpack Top View



## Ordering Information

t <sub>ACC</sub> (ns)	I <sub>CC</sub> (mA)		Ordering Code	Package	Operation Range
	Active	Standby			
120	40	0.1	AT29C040A-12DC AT29C040A-12PC AT29C040A-12TC	32D6 32P6 32T	Commercial (0° to 70°C)
120	40	0.3	AT29C040A-12DI AT29C040A-12PI AT29C040A-12TI	32D6 32P6 32T	Industrial (-40° to 85°C)
150	40	0.1	AT29C040A-15DC AT29C040A-15PC AT29C040A-15TC	32D6 32P6 32T	Commercial (0° to 70°C)
150	40	0.3	AT29C040A-15DI AT29C040A-15FI AT29C040A-15PI	32D6 32F 32P6	Industrial (-40° to 85°C)
200	40	0.1	AT29C040A-20DC AT29C040A-20PC	32D6 32P6	Commercial (0° to 70°C)
200	40	0.3	AT29C040A-20DI AT29C040A-20FI AT29C040A-20PI	32D6 32F 32P6	Industrial (-40° to 85°C)

Package Type	
<b>32D6</b>	32 Lead, 0.600" Wide, Non-Windowed, Ceramic Dual Inline Package (Cerdip)
<b>32F</b>	32 Lead, Non-Windowed, Ceramic Bottom-Brazed Flat Package (Flatpack)
<b>32P6</b>	32 Lead, 0.600" Wide, Plastic Dual Inline Package (PDIP)
<b>32T</b>	32 Lead, Thin Small Outline Package (TSOP)