Features

- **128K x 8-bit Write/64K x 16-bit Read EEPROM Cell**
- **Fast Read Access Time: 70 ns Worst Case (Process, Voltage, Temperature)**
- **Supply Voltage: 1.5V to 2.0V**
- **Page and Byte Write Operation**
  - **Internal Address and Data Latches From 1 to 128 Bytes**
  - **Read Capability During Data Load**
- **Write Cycle Time: 8 ms Including Auto-erase For 1 to 128 Bytes**
- **External Clock For Programming Write Time Tuning**
- **Analog Output For Internal High Voltage Measurement**
- **Read Access By 16 Bits, Write Access by 8 Bits**
- **Low Power Dissipation**
  - **4 mA Active Current**
- **High Reliability CMOS Technology**
  - **Typical Endurance: 100K Write/Word**
  - **Data Retention: 10 Years**
- **Erased State (Charged Gate) Is a Logic "1"**

Description

The 128K x 8-bit write/64K x 16-bit read EEPROM cell is an embedded 1-Mbit electrically erasable and programmable read-only memory (EEPROM) with a power supply of 1.5V to 2.0V. The memory is organized as 1024 pages of 128 bytes each. The device uses the Atmel ATC18 0.18 µm silicon process. For easy reprogrammability, it does not require a high input voltage for programming: the embedded EEPROM cell can be operated with a single 1.5V to 2.0V power supply.

Programming the memory is performed on a page basis: the bytes to be written (from a minimum of 1 byte to a maximum of 128 bytes) are loaded into the device and then simultaneously written into the targeted page after the auto-erase phase. Only the bytes to be written are erased during the auto-erase. The unwritten (unloaded) words in the page are not affected and unstressed. The programming granularity of this architecture is the byte. Reading the memory is performed on a 16-bit word mode and is allowed during data loading, forbidden once the write cycle (including auto-erase) has been started. The signal rdybsyn pulses low at the beginning of the write cycle to indicate that the memory is not ready for a read operation. At the end of each write cycle, the rdybsyn signal goes high to indicate that the programming sequence is completed and the memory is available for a new program or read cycle.

Embedded ASIC Memory Cell

ATC18 128K x 8-bit EEPROM

Advance Information

Rev. 2681A–CASIC–11/02

DC and AC Operating Range

Conditions are:

- Operating Temperature: -40°C to 85°C

Table 1. Parameters

Symbol	Parameter	Min	Typ	Max	Units
V_{DD}	Power Supply	1.5	1.8	2.0	V
t_{ACC}	Read Access Time			70	ns
t_{WC}	Write Cycle Time			8	ms

Table 2. DC Characteristics

Symbol	Parameter	Condition	Max
I_{SB}	Standby Current	V_{DD} = 2.0V	20 uA
I_{CC}	Active Current	Read: Clock Frequency = 10 MHz V_{DD} = 2.0V	3.0 mA
		Write: V_{DD} = 2.0V	4.0 mA

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