

Group 6

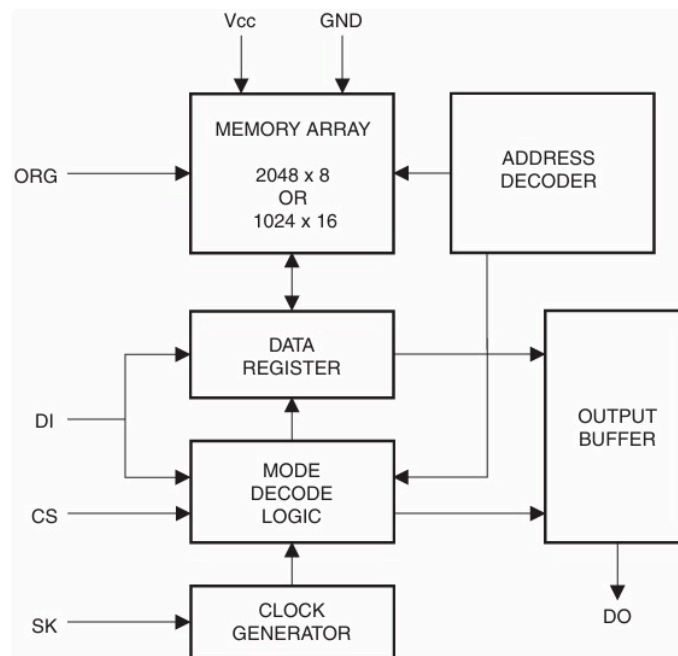
Task 18

Report on AT93C86A Capabilities, Features, and Applications

Introduction

The AT93C86A is a 16K three-wire serial EEPROM (Electrically Erasable Programmable Read-Only Memory) produced by Atmel. It is designed for a variety of industrial and commercial applications where low power and low voltage operations are essential. The EEPROM is organized as 1024 words of 16 bits each or 2048 words of 8 bits each, depending on the configuration of the ORG pin.

Block Diagram



Capabilities

1. **Memory Organization:** The AT93C86A offers flexible memory organization, allowing users to select between 2048 x 8-bit and 1024 x 16-bit configurations.
2. **Low Voltage Operation:** Operates efficiently at low voltage ranges, with support for 1.8V to 5.5V operation.

3. **High-Speed Operation:** The device supports a clock rate of up to 2 MHz at 5V, enabling fast data transfer.
4. **Data Integrity:** High endurance of 1 million write cycles and data retention for 100 years ensures reliable long-term storage.

Features

1. **Three-Wire Serial Interface:** Utilizes a simple three-wire interface (CS, SK, DI, and DO) for communication, which reduces the pin count and simplifies the design.
2. **Sequential Read Operation:** Allows for continuous reading of memory locations without the need to reissue commands.
3. **Self-Timed Write Cycle:** The device includes a self-timed write cycle with a maximum duration of 10 ms, eliminating the need for a separate erase cycle.
4. **Noise Suppression:** Schmitt trigger inputs and noise filtering enhance the reliability of data transfers in noisy environments.
5. **Ready/Busy Status Indication:** Provides status feedback during write operations to indicate the completion of write cycles.
6. **Package Options:** Available in several package types including 8-lead PDIP, 8-lead SOIC, 8-lead Ultra Thin Mini-MAP (MLP 2x3), and 8-lead TSSOP.
7. **Automotive Grade:** The device is available in automotive grade, ensuring high reliability under various environmental conditions.

Memory Size: 16 kbit

Interface Type: 3-Wire, Microwire

Maximum Clock Frequency: 1 MHz

Organisation: 2 k x 8/1 k x 16

Access Time: 250 ns

Supply Voltage - Min: 2.7 V

Supply Voltage - Max: 5.5 V

Mounting Style: SMD/SMT

Data Retention: 100 Year

Minimum Operating Temperature: - 40 C

Maximum Operating Temperature: + 85 C

Active Read Current - Max: 2 mA

Moisture Sensitive: Yes

Applications

Industrial Automation: Suitable for use in control systems and machinery that require reliable data storage and low power consumption.

Consumer Electronics: Ideal for devices like remote controls, TVs, and other consumer gadgets that benefit from non-volatile memory.

Automotive Systems: Can be used in automotive electronics for storing configuration settings and calibration data due to its high reliability and endurance.

Medical Devices: The low power consumption and long data retention make it suitable for medical devices that require reliable performance over extended periods. In a digital thermometer, the AT93C86A might be used to store calibration data that adjusts the sensor readings to ensure accurate temperature measurements

Data Logging: Useful in applications that require periodic data recording and retrieval, such as environmental monitoring systems and data loggers.

Conclusion

The AT93C86A EEPROM is a versatile and reliable memory solution for a wide range of applications. Its combination of flexible memory organization, low voltage operation, high endurance, and multiple package options make it a suitable choice for industrial, commercial, and automotive applications.

Reference

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