AT24C01A EEPROM Device

The AT24C01A is a specific model of EEPROM (Electrically Erasable Programmable Read-Only Memory) manufactured by Microchip Technology (previously Atmel Corporation). It follows a simple and widely used serial protocol called I2C (Inter-Integrated Circuit) or Two-Wire Interface.

The I2C protocol is a synchronous, two-wire, serial communication protocol that allows multiple devices to communicate with each other using only two wires: a data line (SDA) for bidirectional data transfer and a clock line (SCL) for synchronizing the data transfer.

In the context of the AT24C01A EEPROM:

1. Data Line (SDA): This bidirectional line is used for transmitting both control information and actual data between the EEPROM and the external microcontroller or device.

2. Clock Line (SCL): This line carries the clock signal generated by the microcontroller, which synchronizes the data transfer on the SDA line.

The I2C protocol uses a master-slave architecture, where the microcontroller acts as the master and controls the data transfers to and from the EEPROM as the slave device.

For writing data to the AT24C01A EEPROM, the microcontroller sends a sequence of start conditions, device address (including read/write bit), memory address (for the specific location in the EEPROM), and the data to be written.

For reading data from the AT24C01A EEPROM, the microcontroller again sends a start condition, device address (with the read/write bit set to read), memory address (to specify the location to read from), and then receives the data from the EEPROM.

The AT24C01A operates at low supply voltages and offers a range of memory sizes, including 1 Kbit, organized as 128 x 8 bits.