# COMPUTER - READ ONLY MEMORY

ROM stands for Read Only Memory. The memory from which we can only read but cannot write on it. This type of memory is non-volatile. The information is stored permanently in such memories during manufacture. A ROM, stores such instructions that are required to start a computer. This operation is referred to as bootstrap. ROM chips are not only used in the computer but also in other electronic items like washing machine and microwave oven.
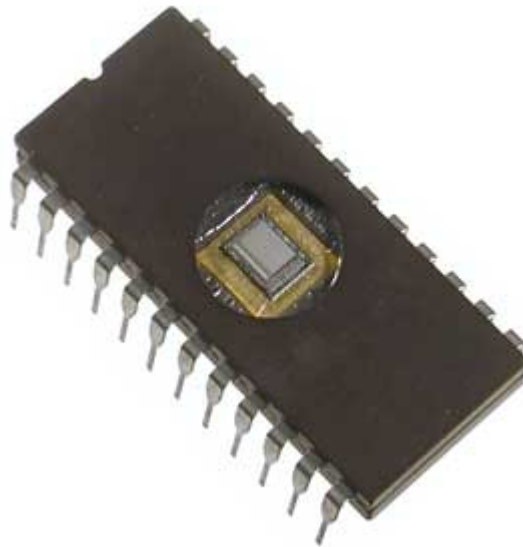


Following are the various types of ROM

## MROM *MaskedROM*

The very first ROMs were hard-wired devices that contained a pre-programmed set of data or instructions. These kind of ROMs are known as masked ROMs which are inexpensive.

## PROM *ProgrammableReadonlyMemory*

PROM is read-only memory that can be modified only once by a user. The user buys a blank PROM and enters the desired contents using a PROM program. Inside the PROM chip there are small fuses which are burnt open during programming. It can be programmed only once and is not erasable.

## EPROM *ErasableandProgrammableReadOnlyMemory*

The EPROM can be erased by exposing it to ultra-violet light for a duration of up to 40 minutes. Usually, an EPROM eraser achieves this function. During programming, an electrical charge is trapped in an insulated gate region. The charge is retained for more than ten years because the charge has no leakage path. For erasing this charge, ultra-violet light is passed through a quartz crystal window*lid*. This exposure to ultra-violet light dissipates the charge. During normal use the quartz lid is sealed with a sticker.

## EEPROM *ElectricallyErasableandProgrammableReadOnlyMemory*

The EEPROM is programmed and erased electrically. It can be erased and reprogrammed about ten thousand times. Both erasing and programming take about 4 to 10 ms *millisecond*. In EEPROM, any location can be selectively erased and programmed. EEPROMs can be erased one byte at a time, rather than erasing the entire chip. Hence, the process of re-programming is flexible but slow.

## Advantages of ROM

The advantages of ROM are as follows:

- Non-volatile in nature

- These cannot be accidentally changed

- Cheaper than RAMs

- Easy to test

- More reliable than RAMs

- These are static and do not require refreshing

- Its contents are always known and can be verified