



FACULTY OF ENGINEERING & TECHNOLOGY

SEMI-CONDUCTOR MEMORIES

EPROM

Erasable Programmable Read Only Memory

- It is an array of floating-gate transistors individually programmed by an electronic device that supplies higher voltages than those normally used in electronic circuits. Once programmed, an EPROM can be erased only by exposing it to strong ultraviolet light.
- Working with ROMs and PROMs can be a wasteful business. Even though they are inexpensive per chip, the cost can add up over time. **Erasable programmable read-only memory** (EPROM) addresses this issue. EPROM chips can be rewritten many times. Erasing an EPROM requires a special tool that emits a certain frequency of ultraviolet (UV) light. EPROM's are configured using an EPROM programmer that provides voltage at specified levels depending on the type of EPROM used.
- EPROM's are easily recognizable by the transparent fused quartz window in the top of the package, through which the silicon chip can be seen, and which permits UV light during erasing.

EEPROM

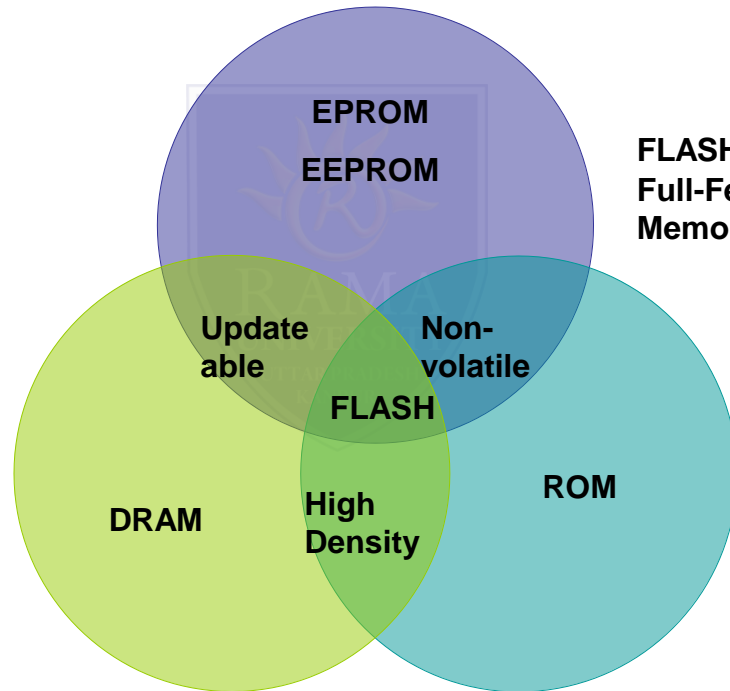
Electrically Erasable Programmable Read Only Memory

- Though EPROMs are a big step up from PROMs in terms of reusability, they still require dedicated equipment and a labor-intensive process to remove and reinstall them each time a change is necessary. Also, changes cannot be made incrementally to an EPROM; the whole chip must be erased. **Electrically erasable programmable read-only memory** (EEPROM) chips remove the biggest drawbacks of EPROMs. In EEPROMs
- The chip does not have to be removed to be rewritten.
- The entire chip does not have to be completely erased to change a specific portion of it.
- Changing the contents does not require additional dedicated equipment.
- Here are different types of electrical interfaces to EEPROM devices. Main categories of these interface types are
Serial bus & Parallel bus

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Comparison

- EEPROM**
- Electrically byte-erasable
 - Lower reliability
 - Higher cost
 - Lower density



FLASH
Full-Feature
Memory Solution

- DRAM**
- High density
 - Low cost
 - High speed
 - High power

- Flash Memory**
- Low-cost, high density
 - High speed architecture
 - Lower power
 - High reliability

- ROM**
- High density
 - Reliable
 - Low cost
 - Suitable for stable code production