Programming AVR Microcontrollers

05-EEPROM Memory.

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Lecture Notes:

- Set Your Phone To Vibration Mode.
- Ask any time.
- During labs, Feel Free To Check Any Materials or Internet.
- Slides are self content.
- Feel Free To Share This Materials With Your Friends.
- **Work Hard** For Achieving Most Of This Course.

Don't Forget !!!!

Any Expert Was Once A Beginner

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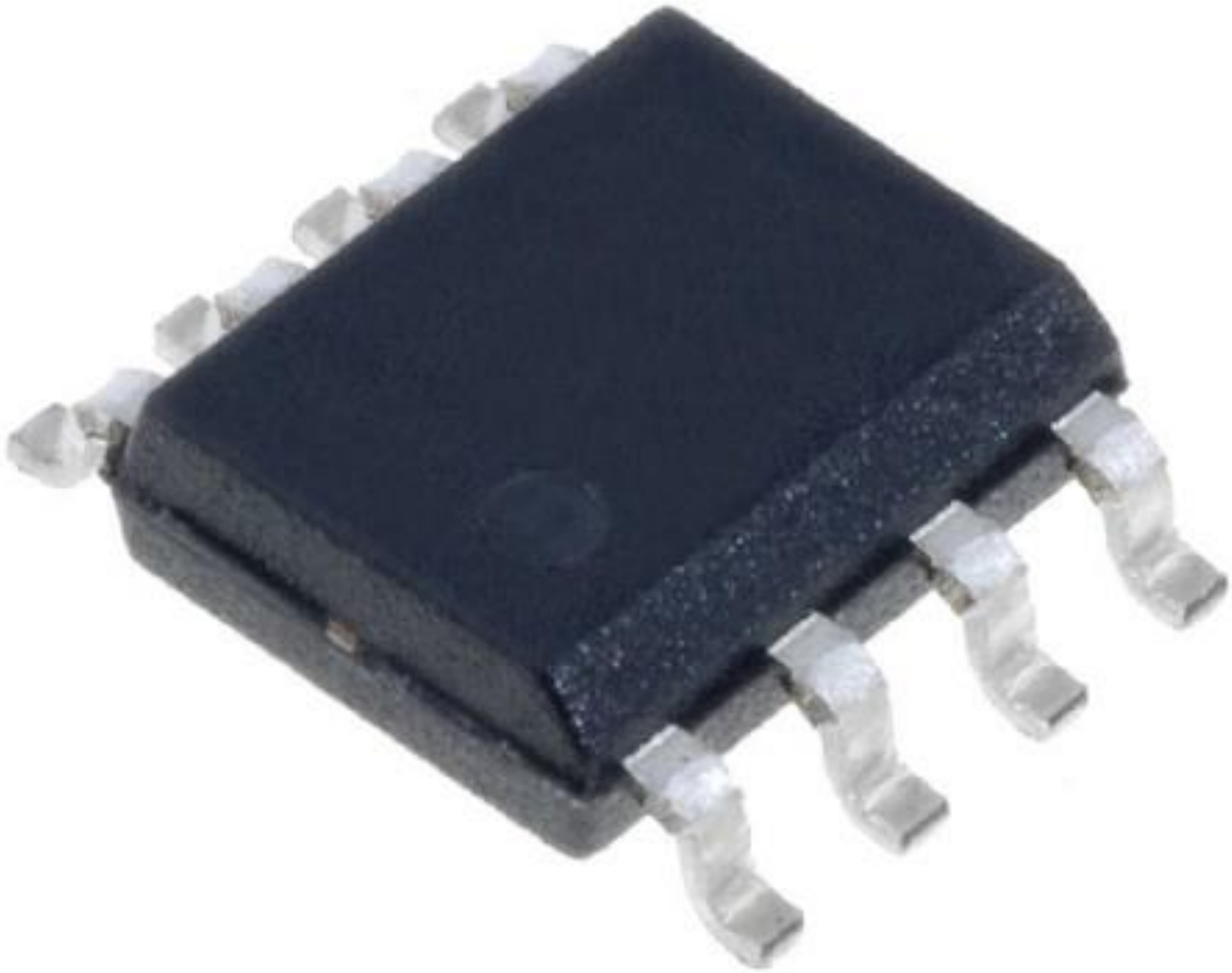
Lesson(11).



Lesson (11):
Using internal EEPROM.

Lesson (11) Topics.

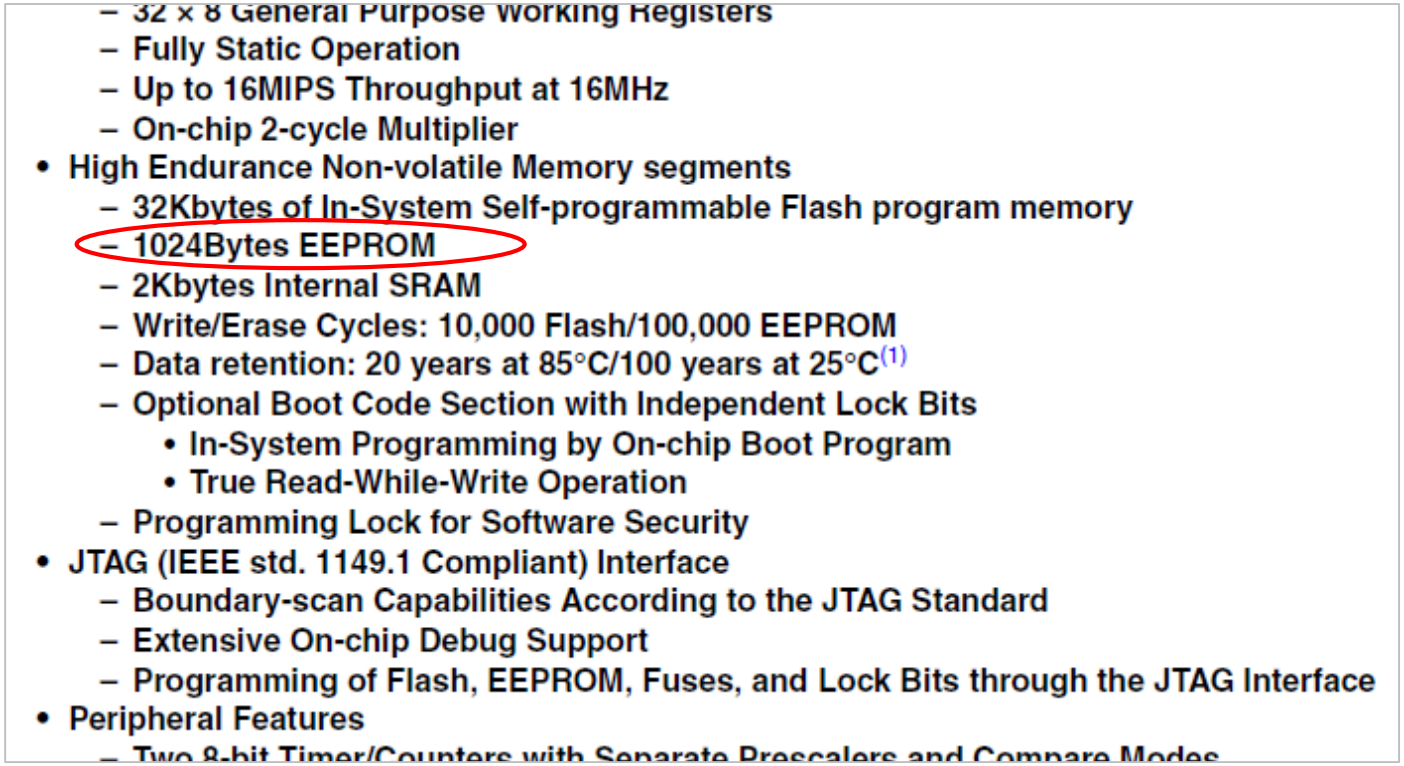
- What is EEPROM.
- EEPROM Applications.
- Accessing EEPROM in codevision AVR.

What is EEPROM?

- It's a non-volatile memory which keep holding data even if power is losses.
- The contents of the EEPROM may be changed during operation (similar to RAM), but remains permanently saved even upon the power supply goes off (similar to ROM).
- It can be founded inside microcontroller or on separate package.

EEPROM Applications.

- Password.
- Production Lines.
- Washing Machine.
- etc……



– 32 x 8 General Purpose Working Registers
– Fully Static Operation
– Up to 16MIPS Throughput at 16MHz
– On-chip 2-cycle Multiplier
• High Endurance Non-volatile Memory segments
– 32Kbytes of In-System Self-programmable Flash program memory
– 1024Bytes EEPROM
– 2Kbytes Internal SRAM
– Write/Erase Cycles: 10,000 Flash/100,000 EEPROM
– Data retention: 20 years at 85°C/100 years at 25°C(1)
– Optional Boot Code Section with Independent Lock Bits
• In-System Programming by On-chip Boot Program
• True Read-While-Write Operation
– Programming Lock for Software Security
• JTAG (IEEE std. 1149.1 Compliant) Interface
– Boundary-scan Capabilities According to the JTAG Standard
– Extensive On-chip Debug Support
– Programming of Flash, EEPROM, Fuses, and Lock Bits through the JTAG Interface
• Peripheral Features
– Two 8-bit Timer/Counters with Separate Prescalers and Compare Modes

Accessing EEPROM in CV AVR

Writing character to EEPROM:

```
eeprom_write_byte(address,value);
```

EX:

```
eeprom_write_byte(0,25);   //write value 25 in byte 0
```

Reading character from EEPROM:

```
eeprom_read_byte(address);
```

EX:

```
val=eeprom_read_byte(0);   //load variable val with
value stored in byte 0
```

NOTE

By default all EEPROM bytes holds 255.

Exercise

Try to write implementation of these two functions.

Questions:

Thank You All ☺☺☺☺

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