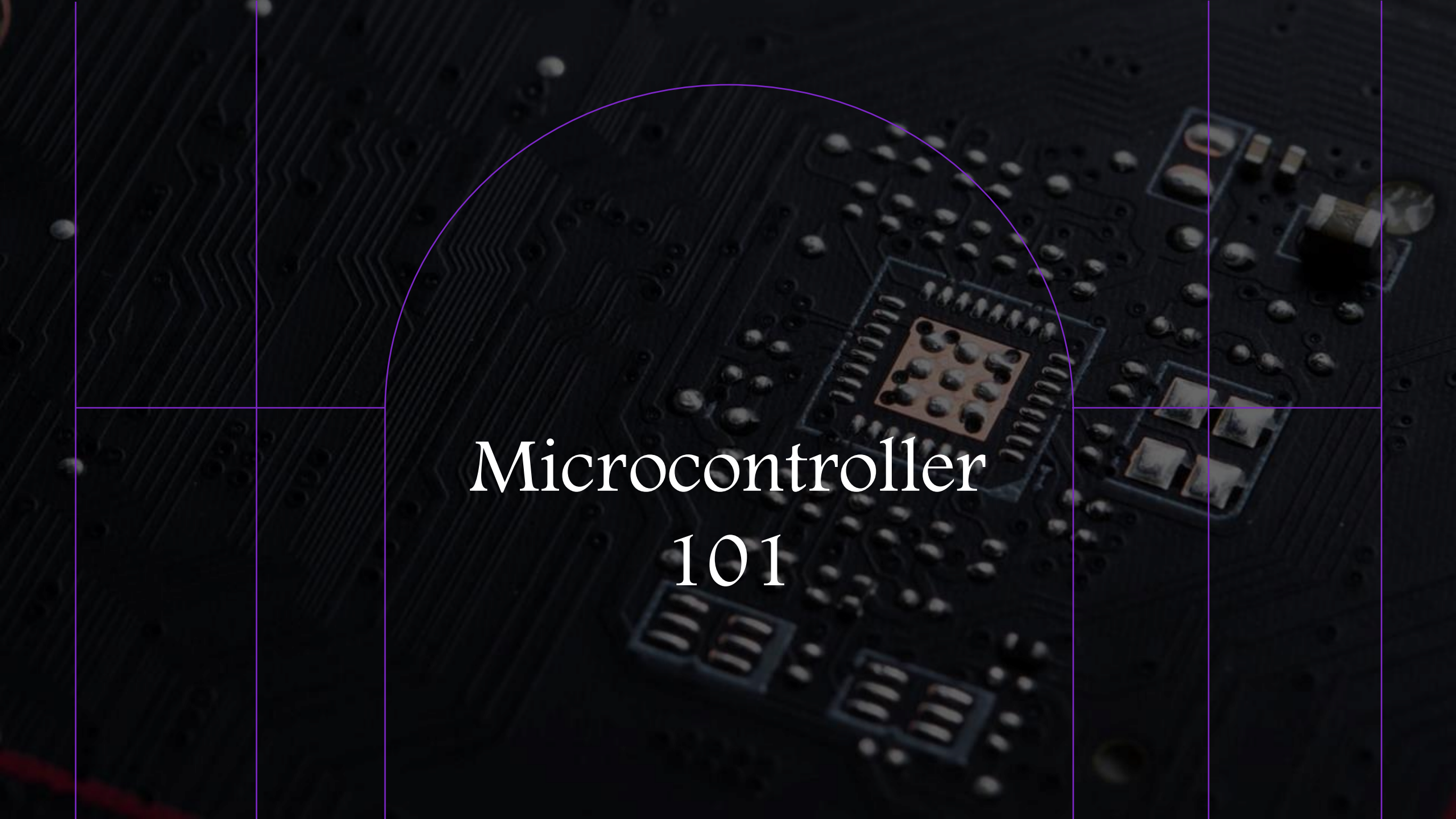
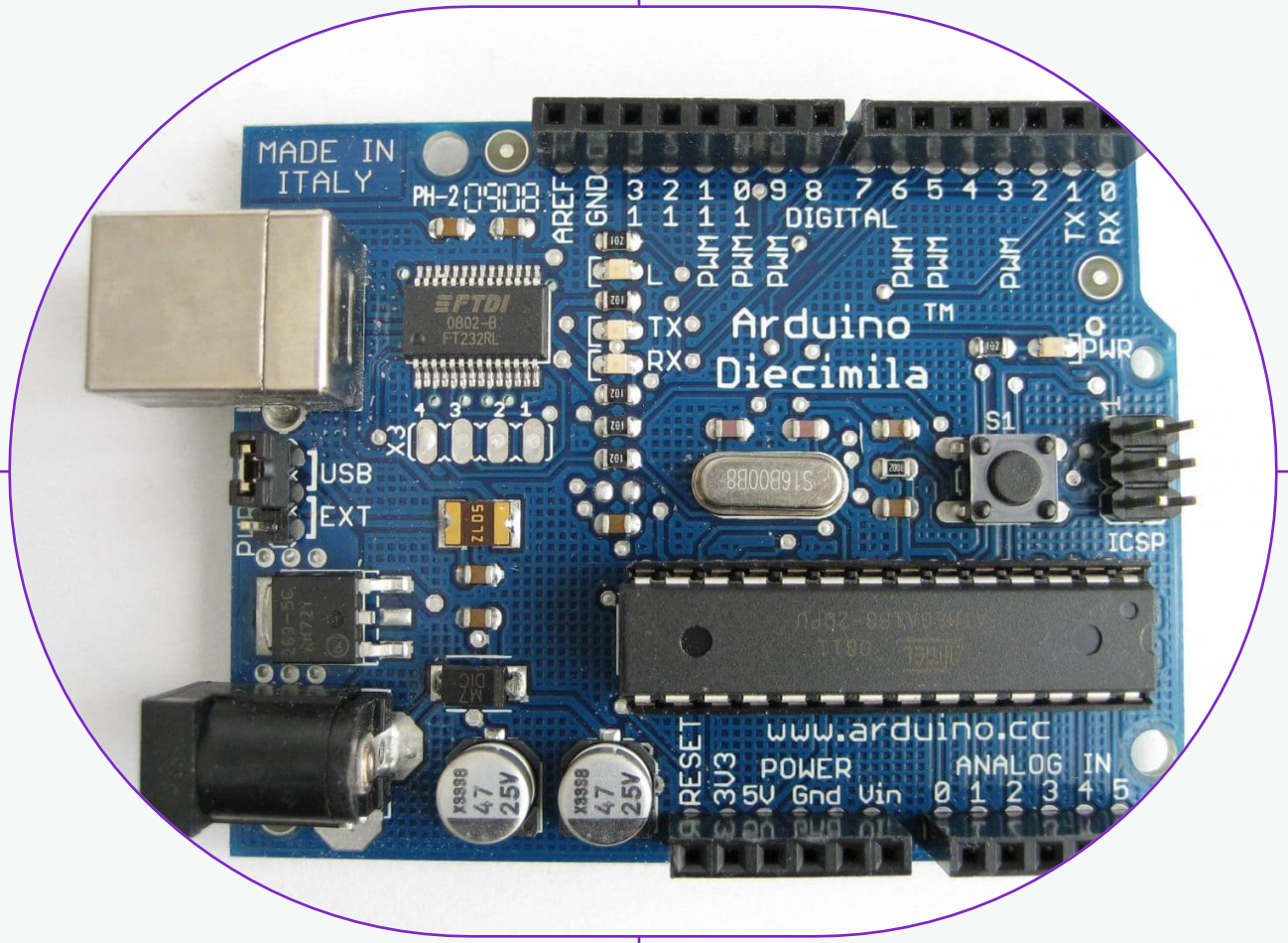
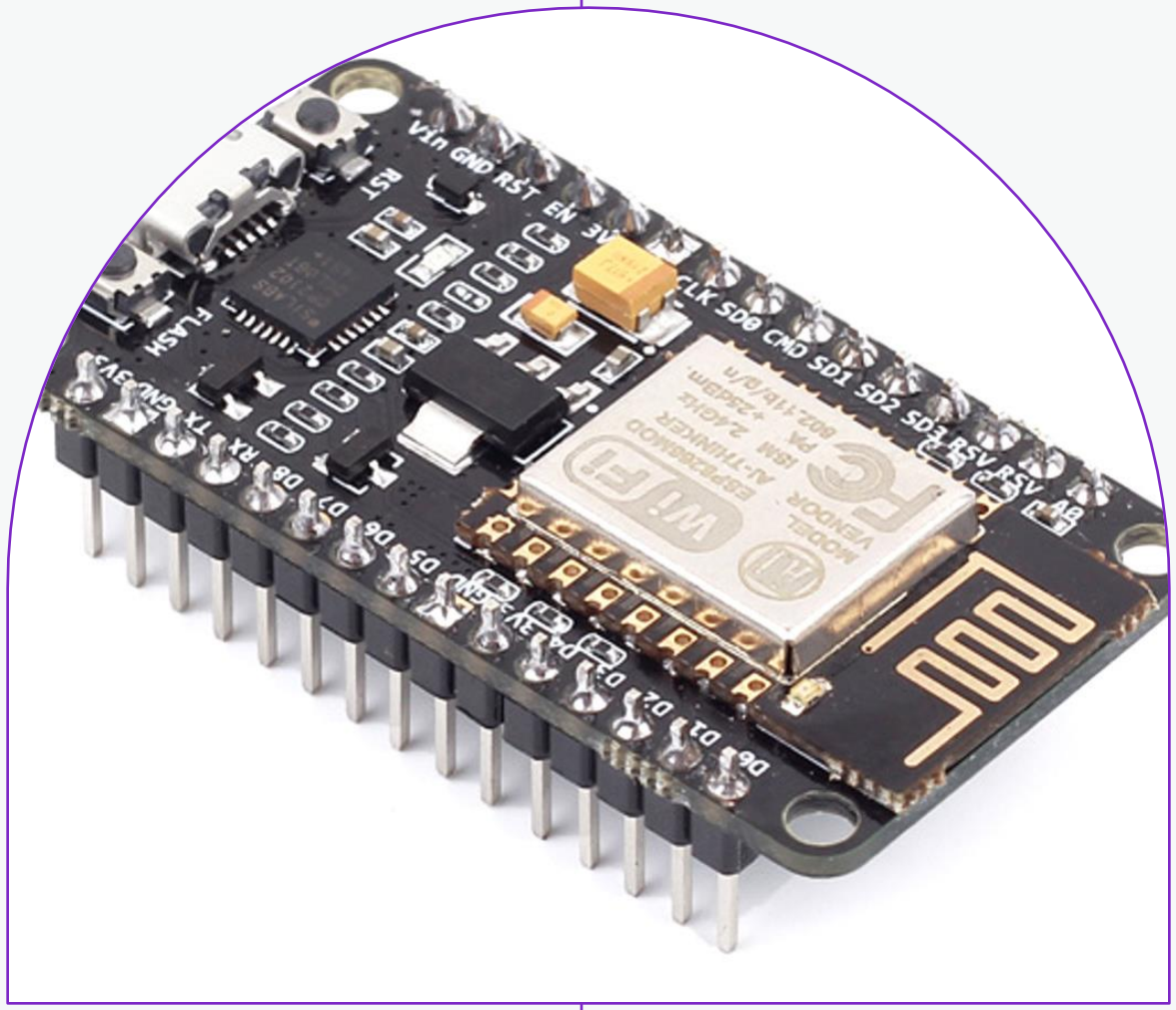

Microcontroller
101

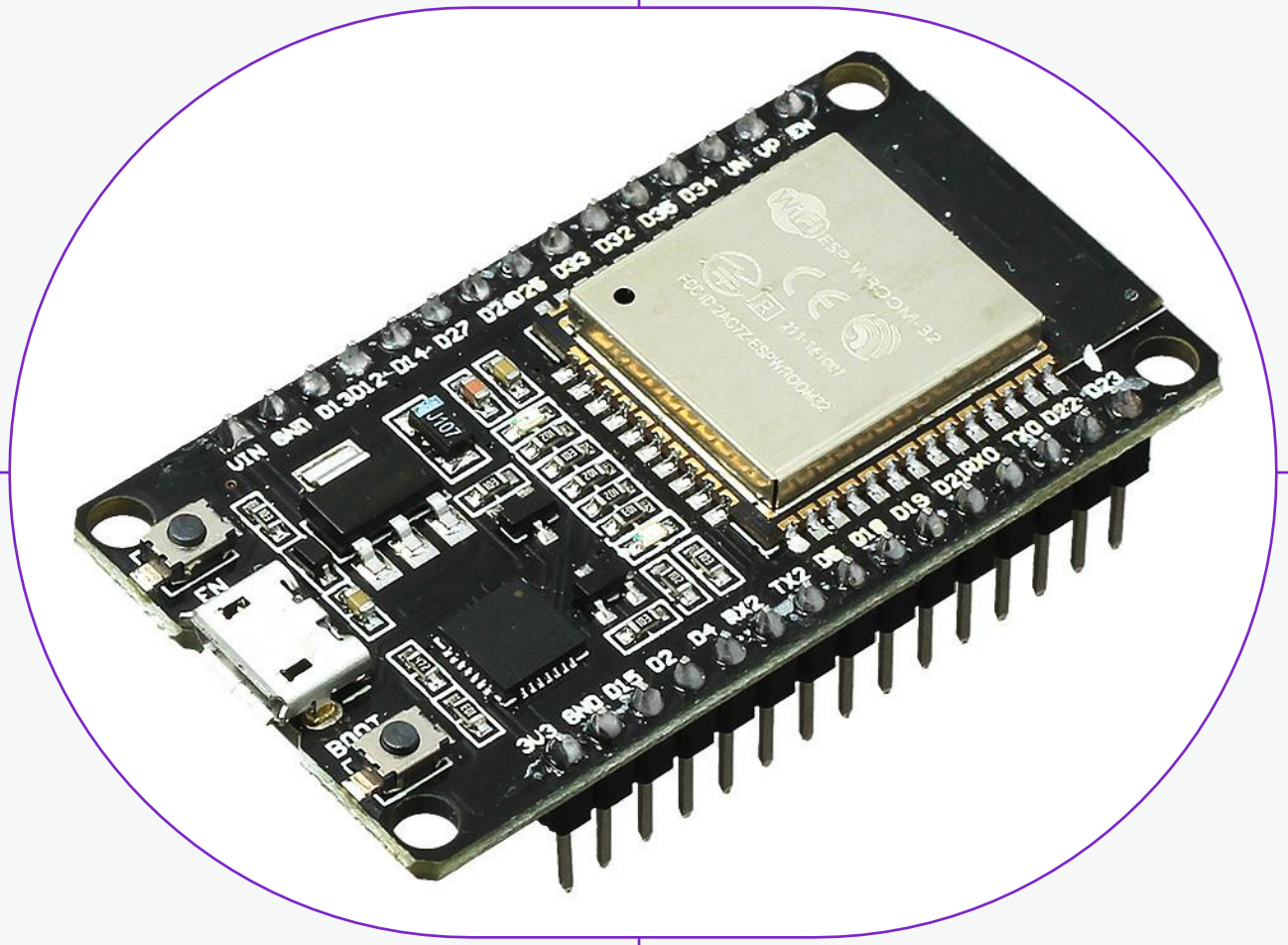
Arduino Uno R3



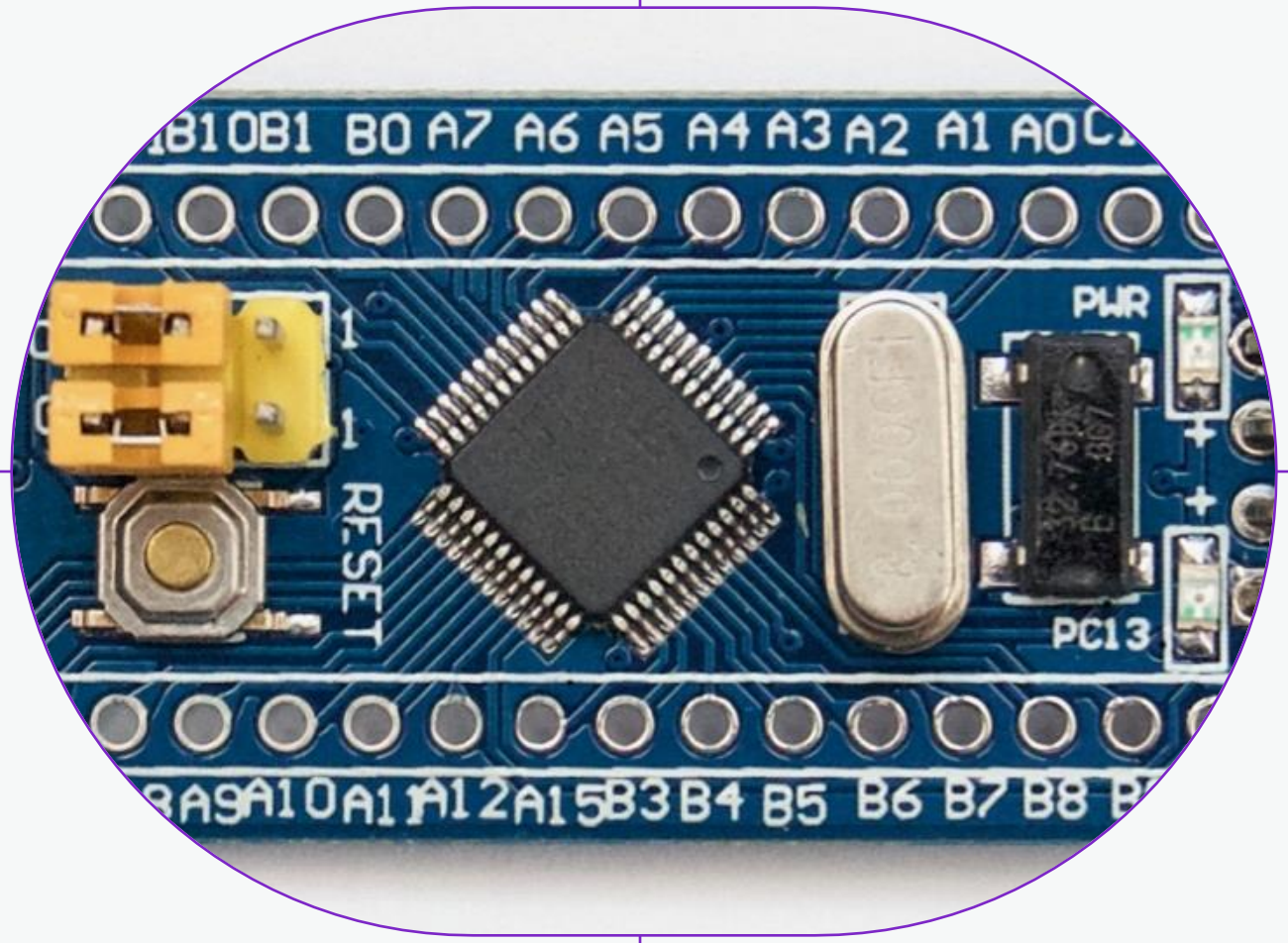
ESP8266


Vin GND RST EN 3V
RST
FLASH
CLK SD0 CMD SD1 SD2 SD3 Rsv Rsv
GND 3V3 TX RX D8 D7 D6 D5 3V3 D0 D4 D2 D1 D6

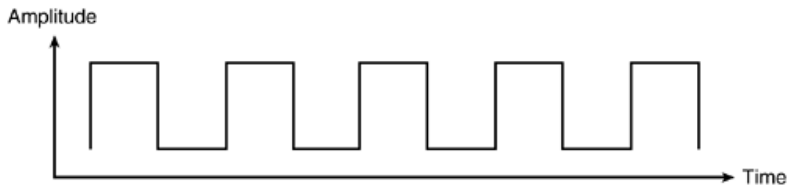
ESP32


VIN
GND
D13
D12
D14
D27
D26
D25
D33
D32
D35
D34
VN
VP
EN
EN
BOOT
3V3
GND
D15
D2
D4
RX2
TX2
D5
D18
D19
D21
RX0
TX0
D22
D23

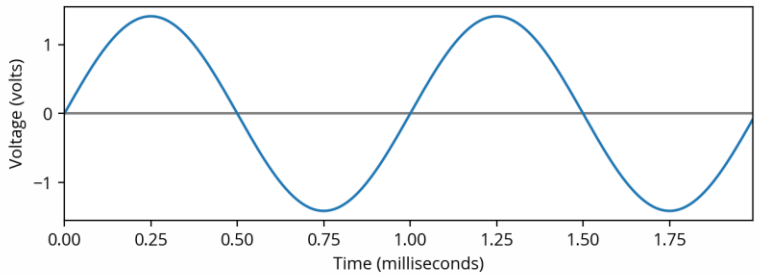
STM32


B10B1 B0 A7 A6 A5 A4 A3 A2 A1 A0
RESET
PWR
PC13
A9A10A11A12A15B3 B4 B5 B6 B7 B8

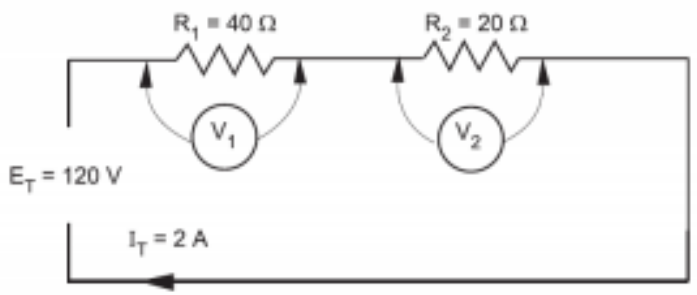
Digital Signal



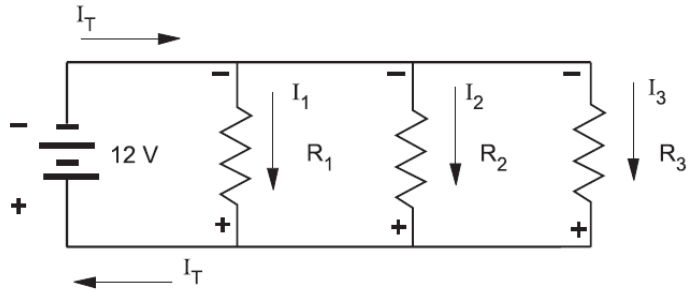
Analog Signal

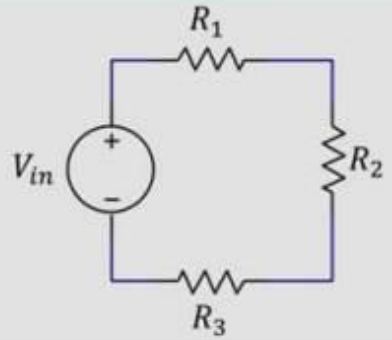
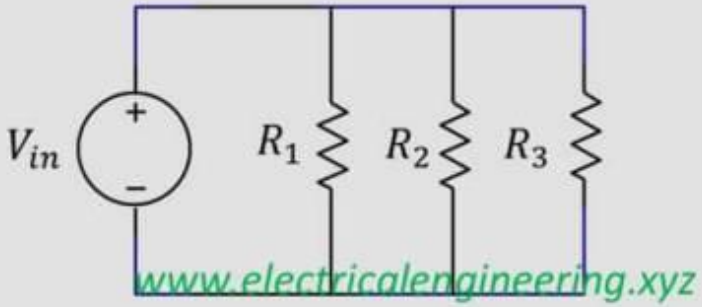


Series Circuit

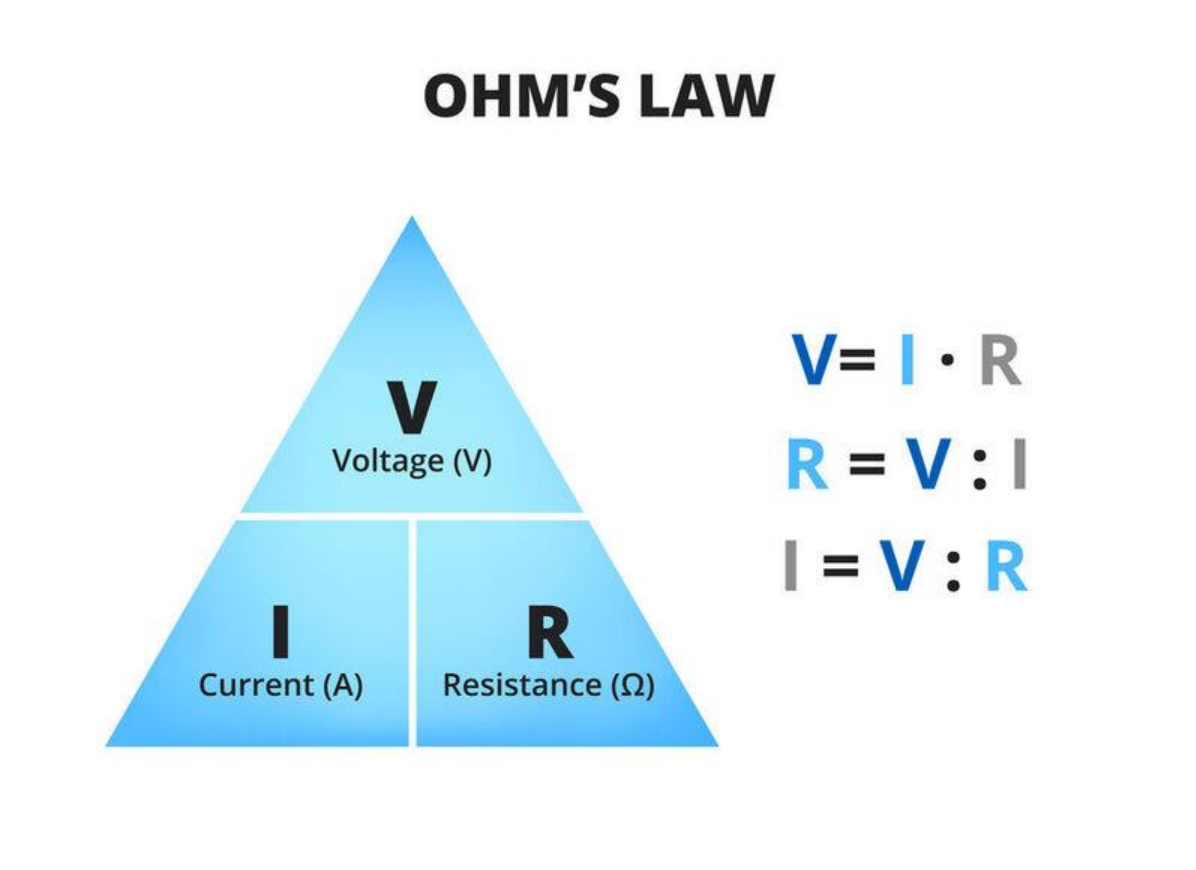


Parallel Circuit



	Series	Parallel
How it looks		
Voltage	$V_{in} = V_1 + V_2 + V_3$	$V_{in} = V_1 = V_2 = V_3$
Current	$I_{series} = I_1 = I_2 = I_3$	$I_{in} = I_1 + I_2 + I_3$
Resistance	$R_{eq} = R_1 + R_2 + R_3$	$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$
Features	If one components burns current becomes inactive	If one component burns current stops only through that branch rest part works fine

Ohm's Law



Breadboard

