



IoT OG EMBEDDEDE SYSTEMER 1

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IoT faget

- Hardware
 - Arduino
 - chipsæt
 - komponenter
- Software
 - Programmering med microcontroller
 - C/C++
 - interrupts
- Kommunikations teknologier
 - Serial
 - I2C
 - Wifi
 - Zigbee

Hvad er IoT og IIoT?

Hvorfor Embedded?

- Hvad bruger man det til?
 - Billig
 - Mindre størrelse
 - Strømbesparende

Case: Automatisk plante passning system

- Hvad skal produktet måle på?
- Hvad for nogle krav vil i stille til den?
- Hvordan skal den lave målingerne?



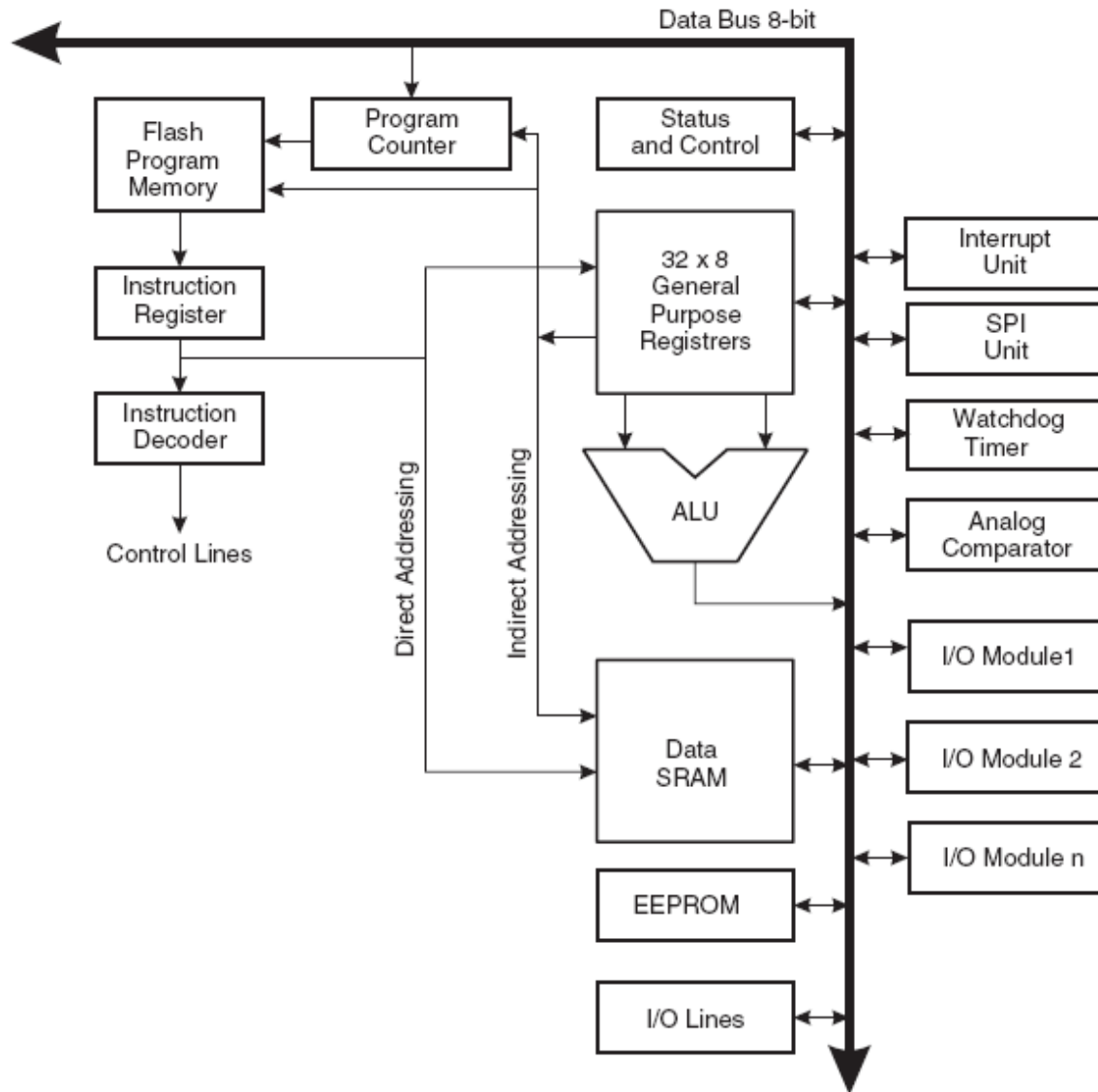
Hukommelses forskel

	ATMega 168	Almen computer
Program memory (Sekundær)	16KB	500-2000GB
RAM (Primer)	1024Byte Static	8-32GB Dynamic
Processor frequency	16Mhz	~2Ghz

Kilo(10^3) Mega(10^6)

Giga(10^9)

ATMega xx, 8 bit Microcontroller



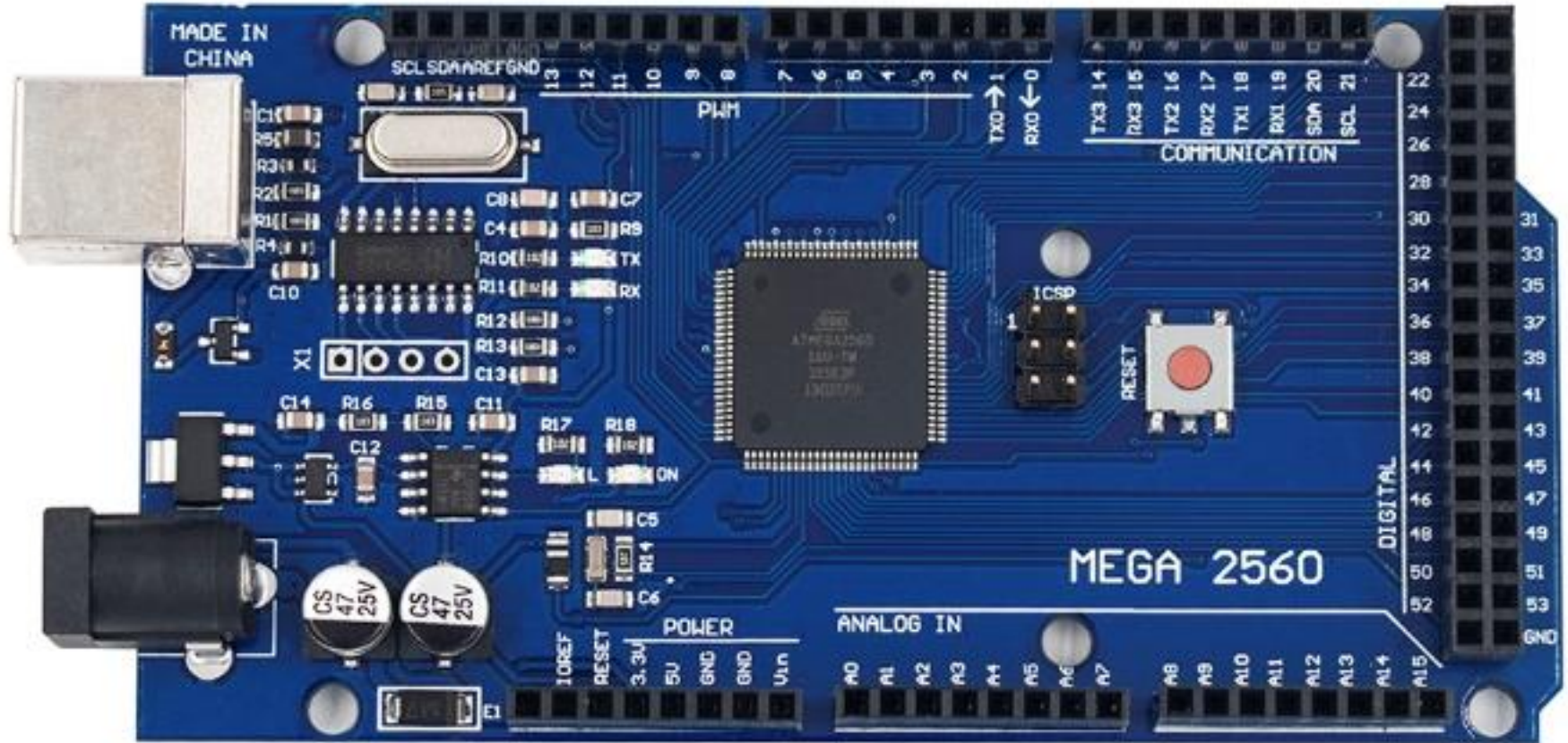
ATMega xx, Statusregister

The 8-bit status register contains these bits:

7	6	5	4	3	2	1	0
I	T	H	S	V	N	Z	C

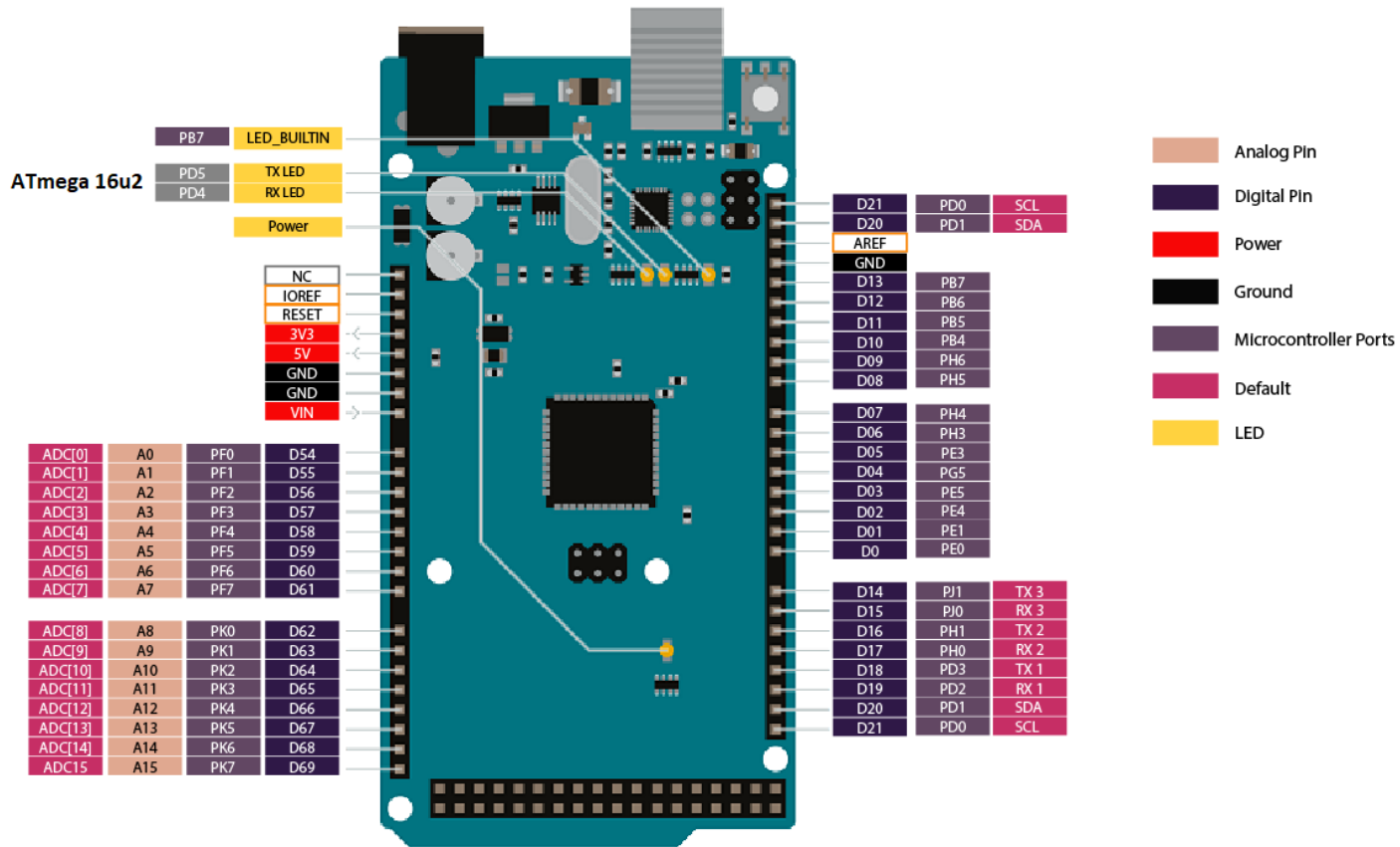
- . I: interrupt enable/disable flag
- . T: transfer bit for BLD and BST instructions
- . H: half carry - useful for decimal arithmetic
- . S: signed tests
- . V: two's complement overflow
- . N: set for if result < 0
- . Z: set for if result $== 0$
- . C: useful for multi-byte operations

Arduino Mega - ATmega2560



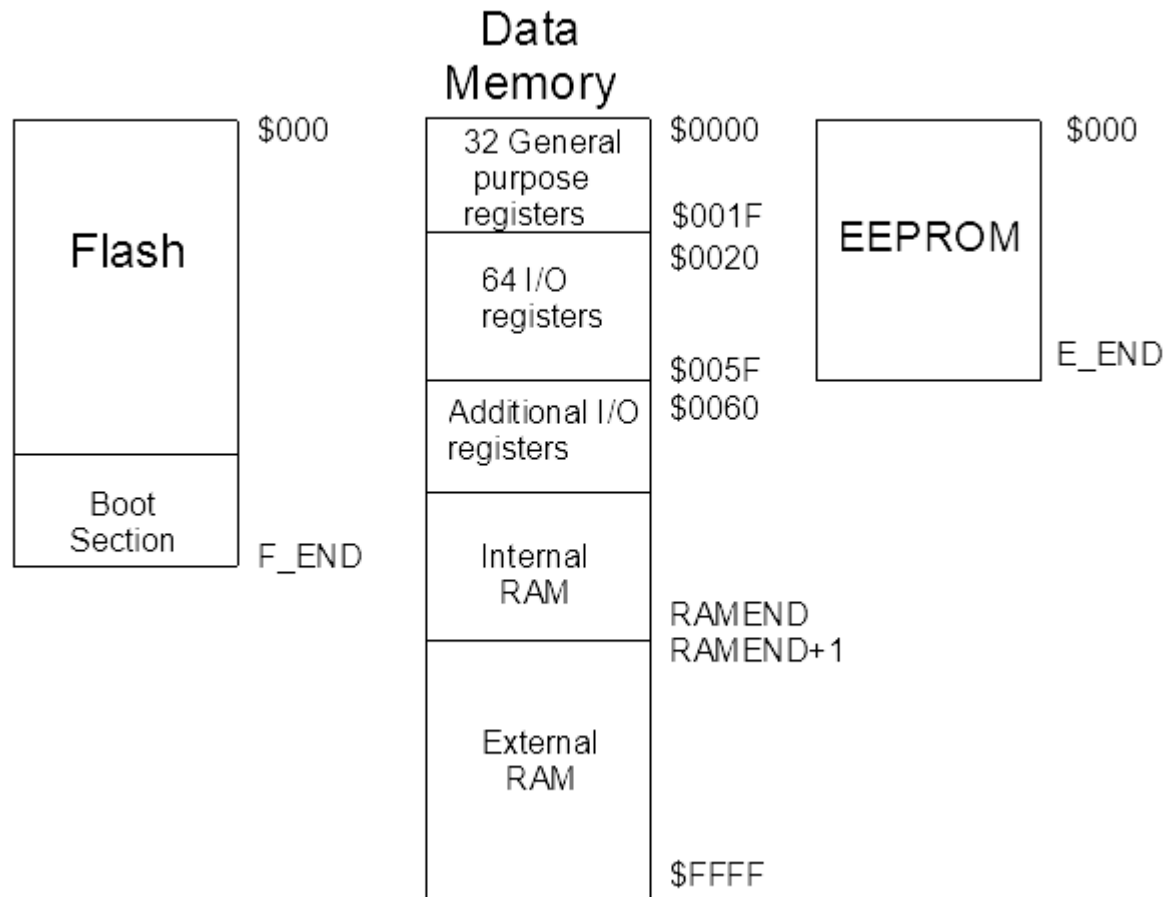
Arduino Mega - Pinout

www.theengineeringprojects.com

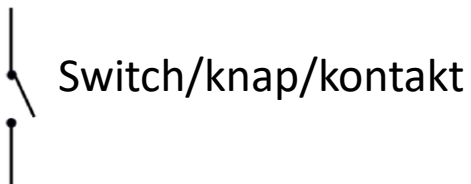
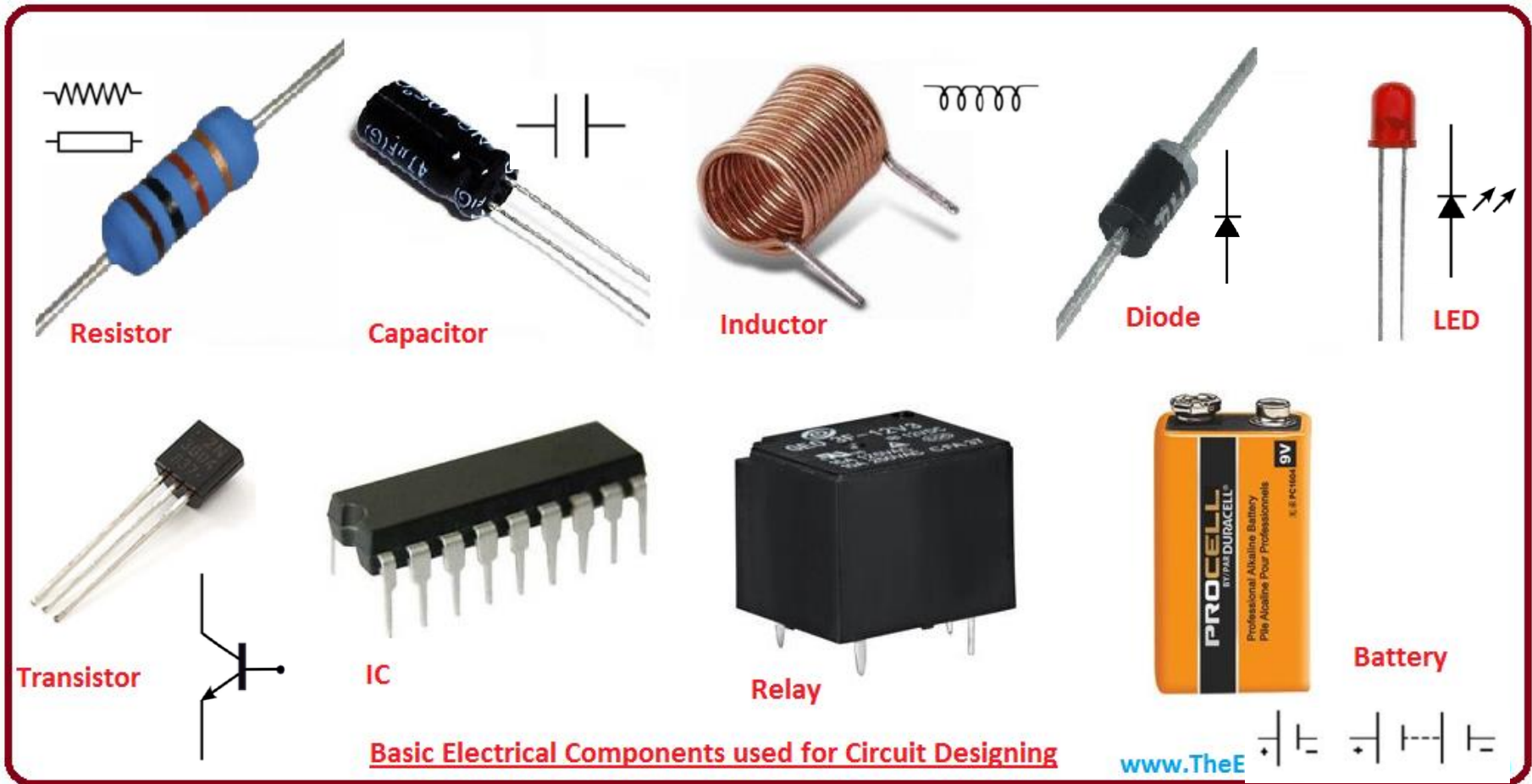


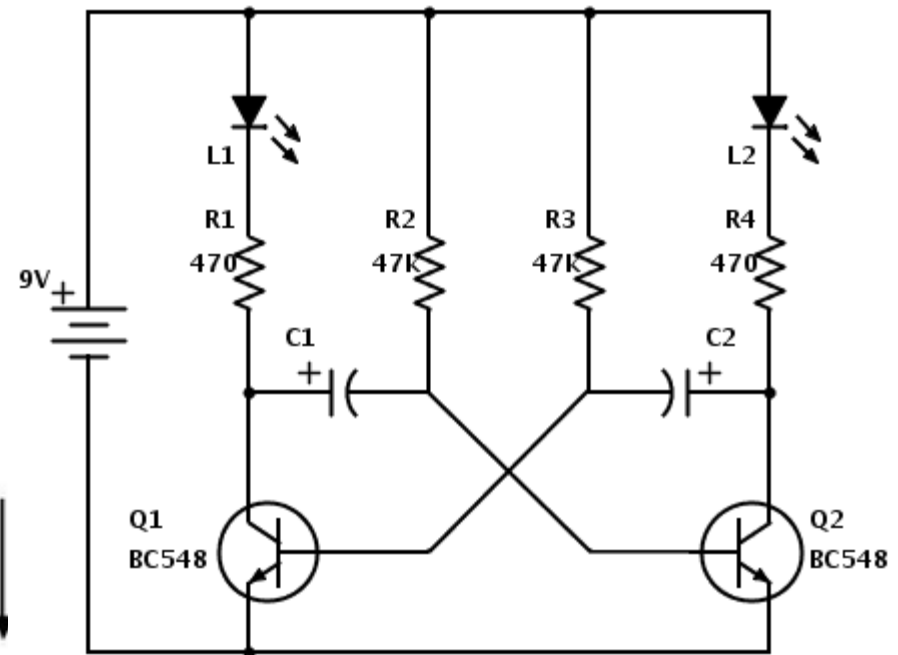
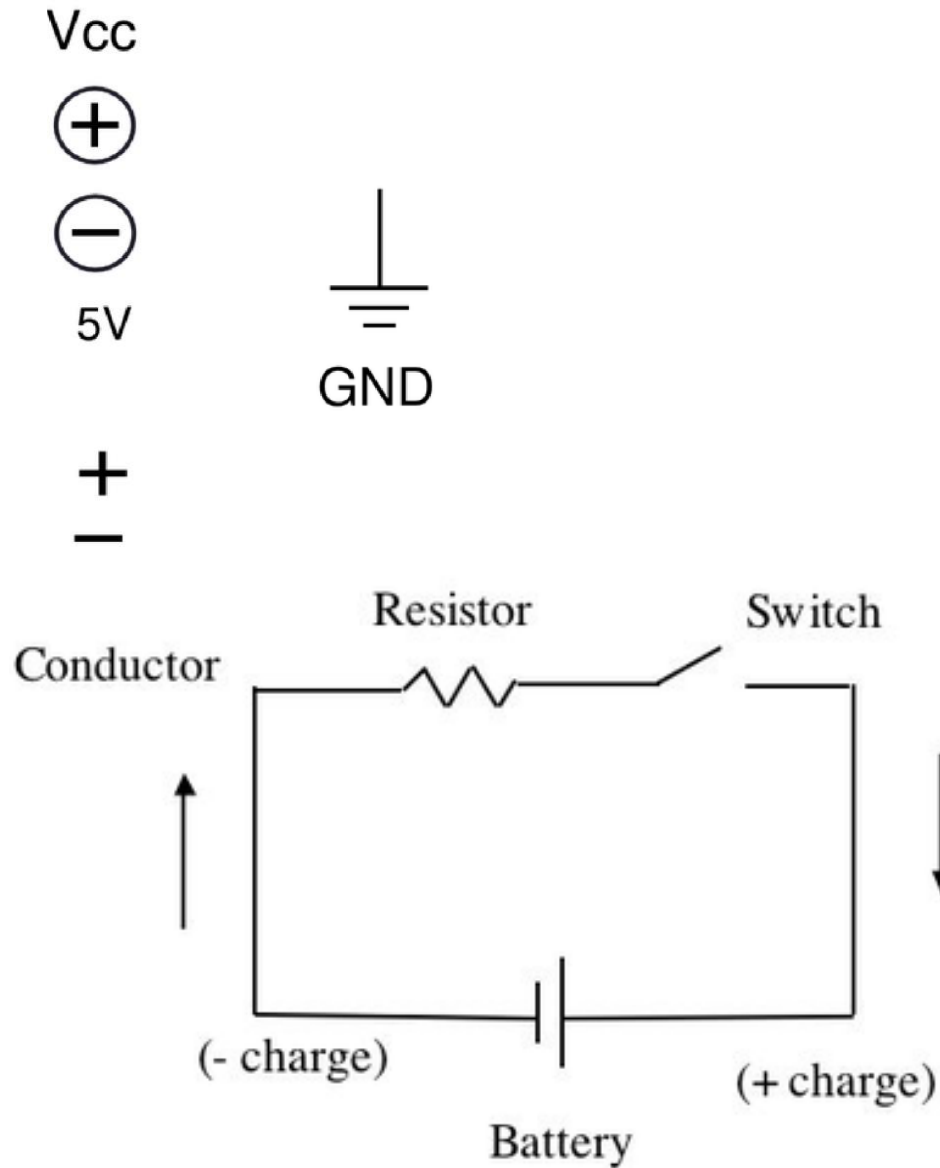
Arduino Mega 2560 Rev3 Pinout

ATMega2560 Memory map



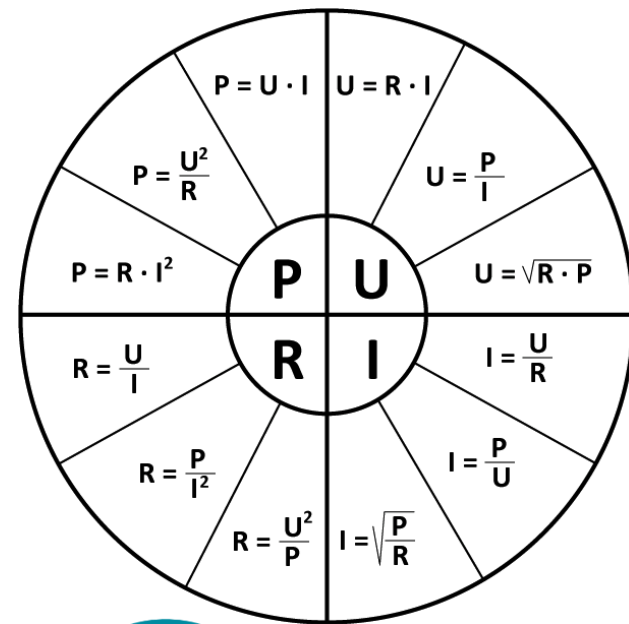
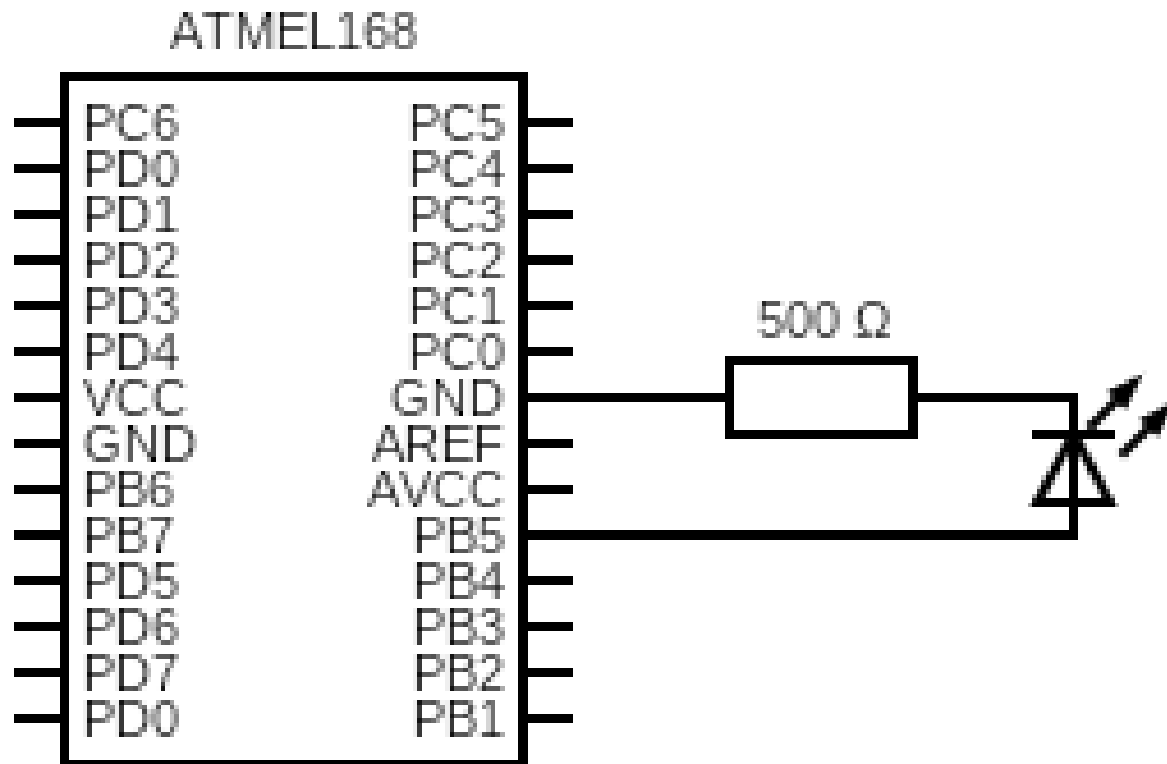
komponenter





Elektriske kredsløb

- Modstande
- Ohms lov (spænding = modstand * strømmen)



Domæne

- Hvad har problemet?
- Hvad vælger man?
- Hvilke data skal bruges?