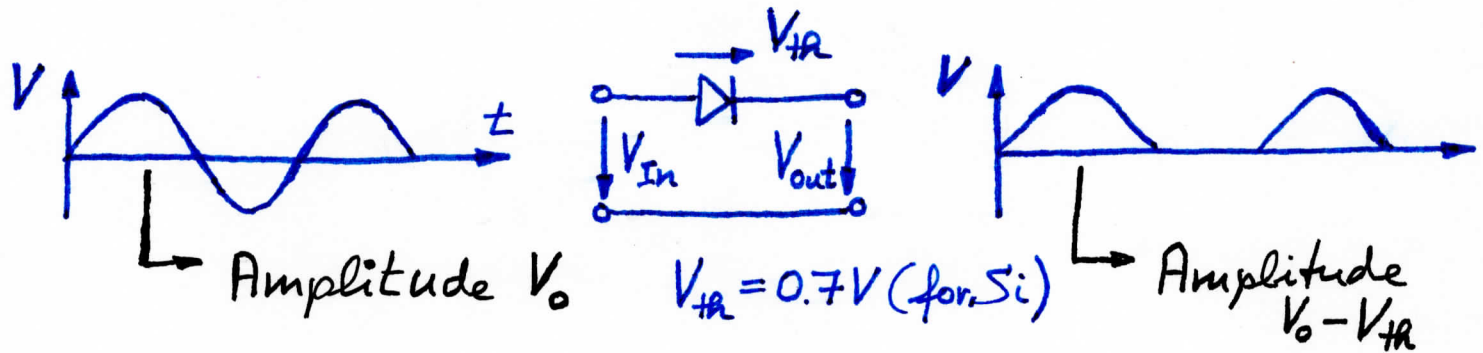


# Diode application: Rectification

One - diode rectification circuit



$$V_{In} = 120 V \Rightarrow V_{out} = ?$$

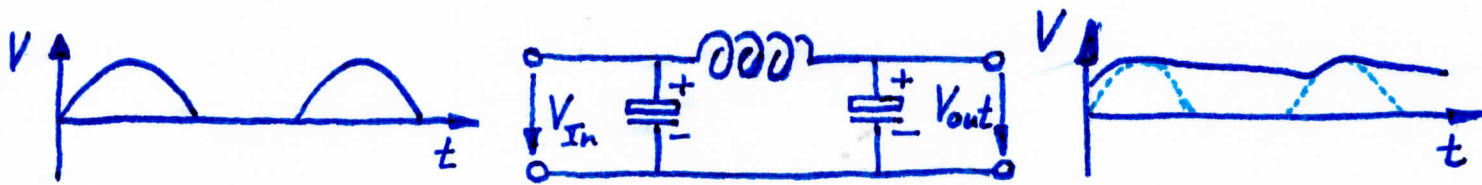
$$V_{In} = 5 V \Rightarrow V_{out} = ?$$

$$V_{In} = 0.5 V \Rightarrow V_{out} = ?$$

Power dissipated in diode:

$$P = V_{th} I$$

Smoothing stage



$\Rightarrow C$  resists changes of  $V$ . Why?

$\Rightarrow L$  resists changes in  $I$ . Why?

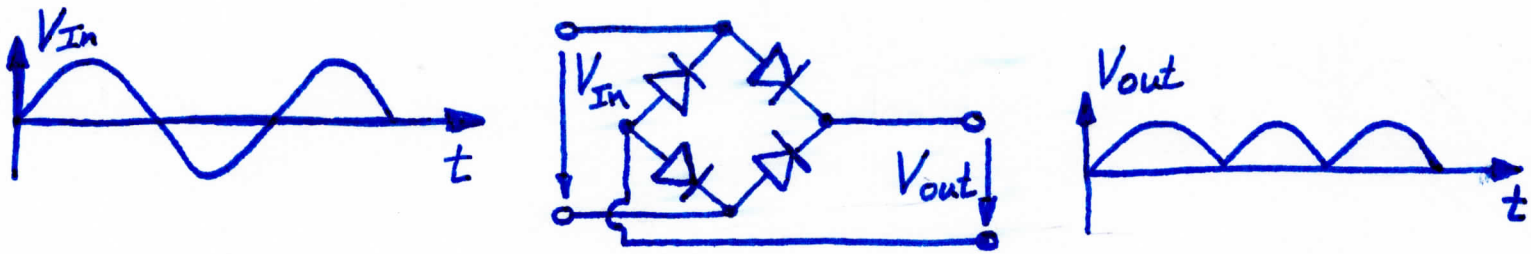
$\Rightarrow$  Output voltage is smoothed with only a small ripple remaining.

(2)

What are power supply voltages for typical electronic circuits?

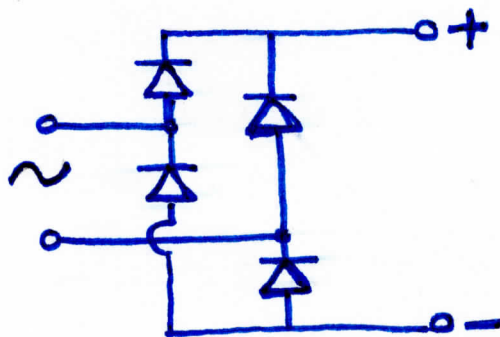
Would a power supply voltage of  $V = 0.5V$  be suitable for an electronic circuit?

### Four diode (bridge) rectification



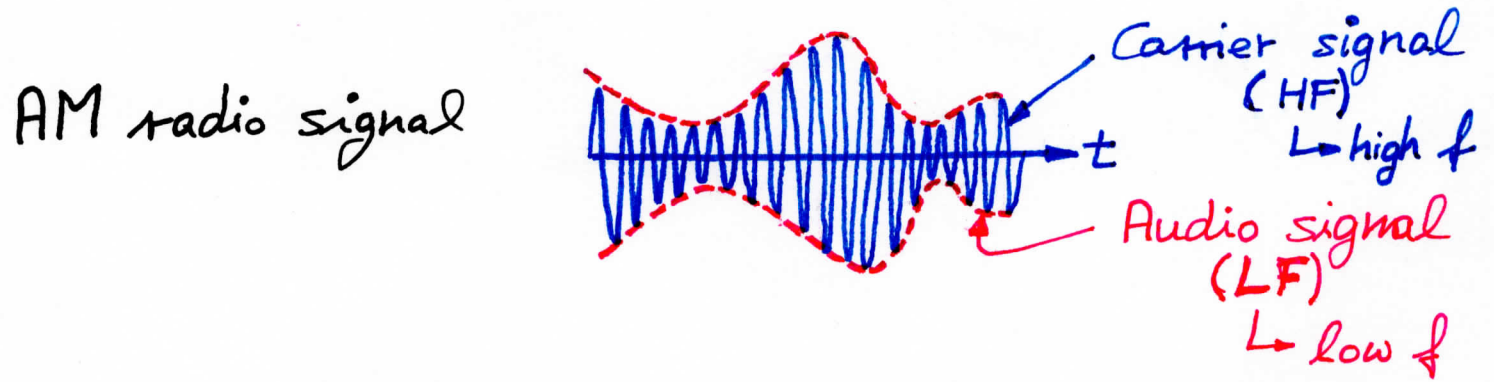
Why is bridge rectifier better than single-diode rectifier?

Is the following circuit different from the circuit above?

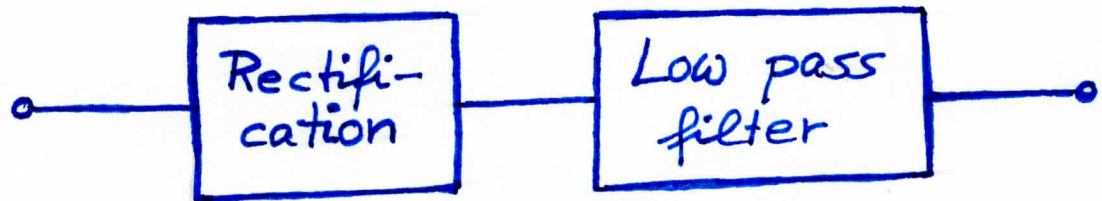
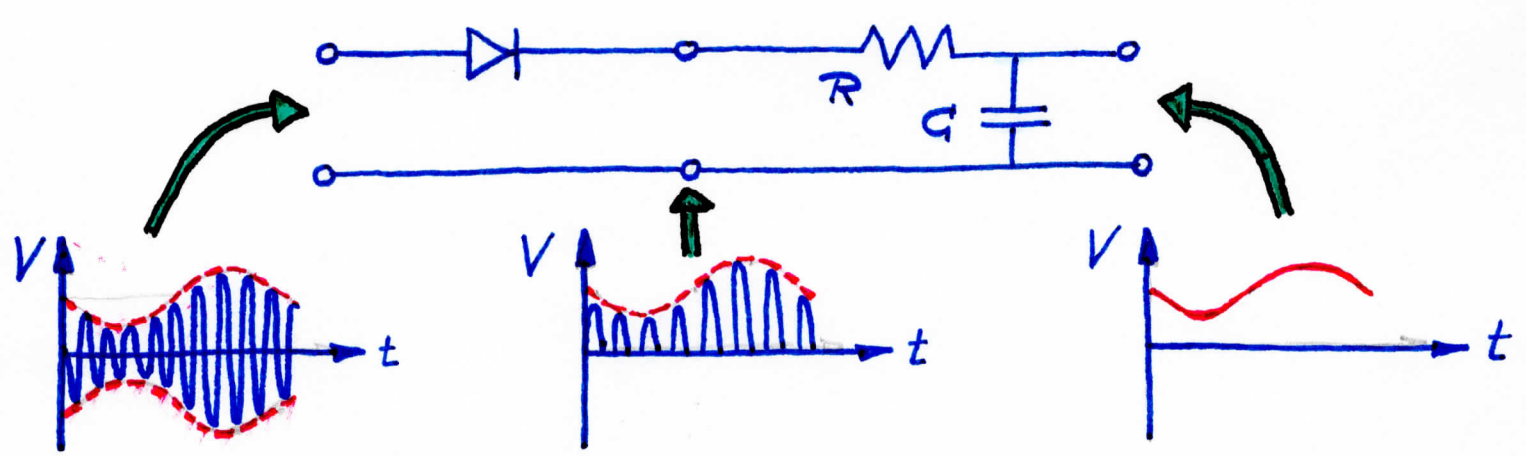


# Diode application : AM signal demodulation

AM = Amplitude modulation



AM demodulation circuit



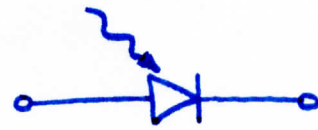
This is the associated block diagram

## Diode applications: LEDs and solar cells

Note that LEDs and solar cells (photo-voltaic cells) are also diodes.



LED



Solar cell  
Photodiode

However, this course concerns electronics, so, optoelectronic components are not part of this course.