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Introduction to Electronics

An introduction to electronic components and a study of circuits containing such devices.

TECH



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Envelope Detector Demonstration

Demonstrate demodulation of an amplitude modulated waveform



Previous Lesson

- Introduced voltage regulators

Lesson Objectives

- Introduce amplitude modulation and demodulation
- Introduce envelope detector circuit

Amplitude Modulation (AM)

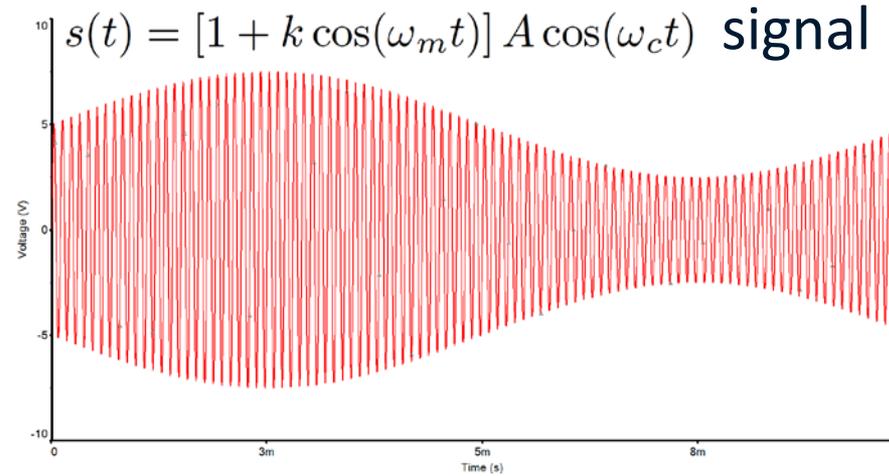
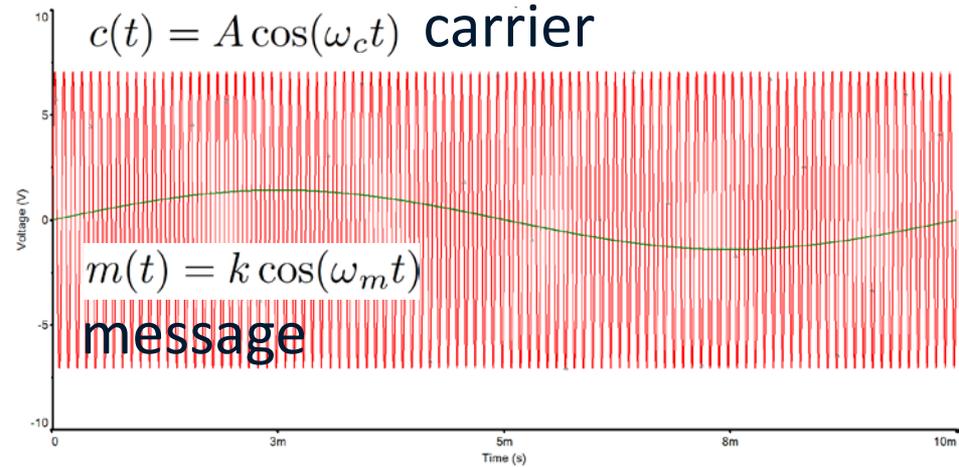
- Modification of the amplitude of a waveform by variation of a second waveform

$$c(t) = A \cos(\omega_c t) \quad \text{carrier}$$

$$m(t) = k \cos(\omega_m t) \quad \text{message}$$

$$s(t) = [1 + k \cos(\omega_m t)] A \cos(\omega_c t) \quad \text{signal}$$

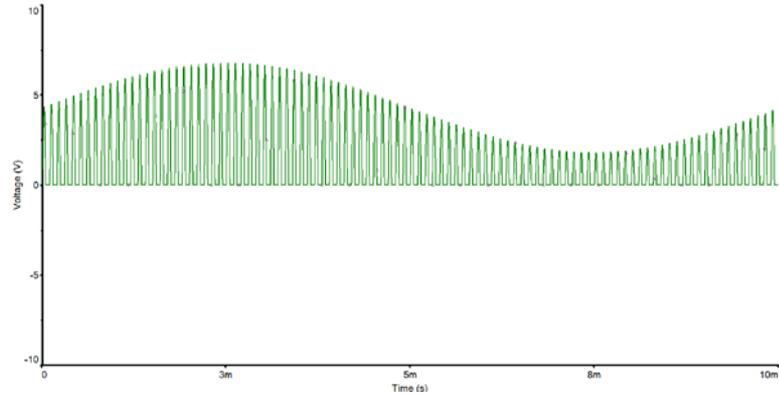
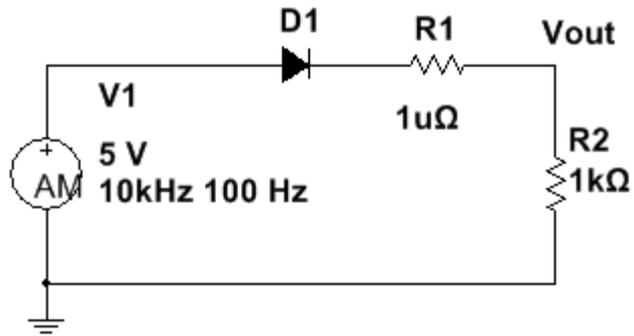
Waveforms



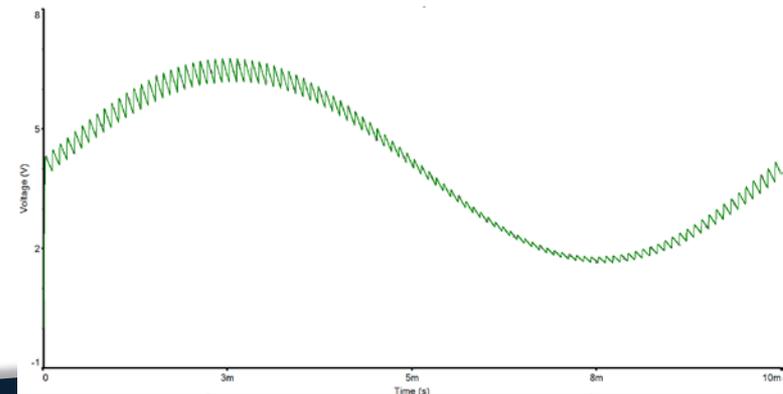
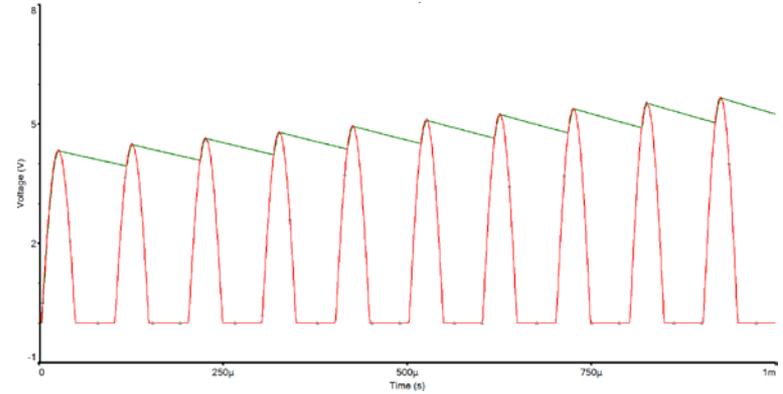
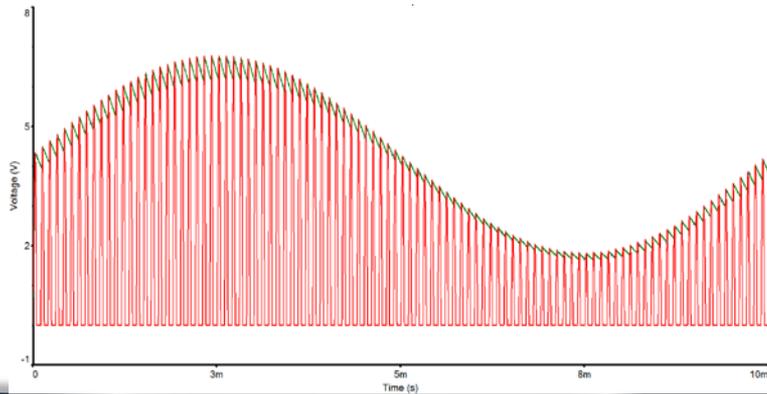
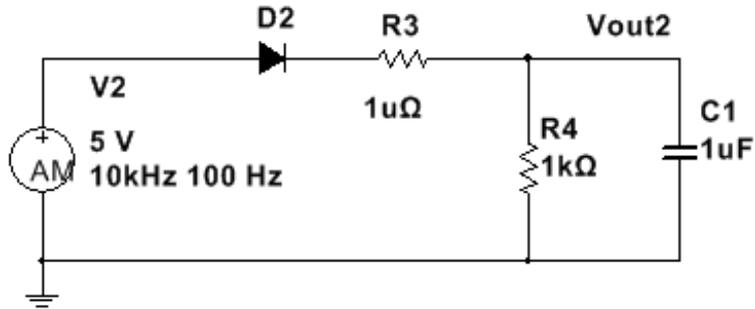
AM Uses

- ⦿ Transmitting information (AM Radio)
- ⦿ Creating sound effects

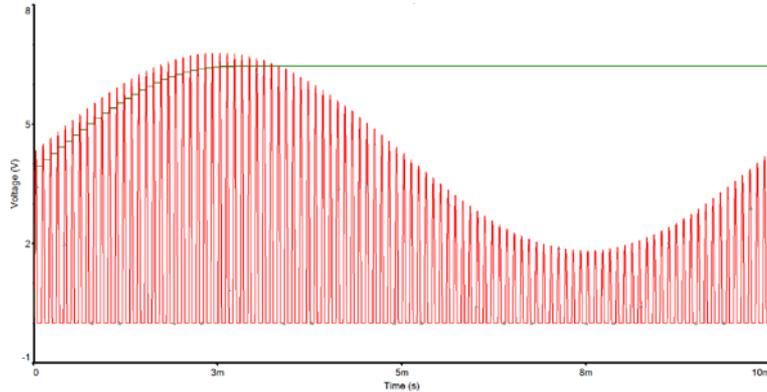
Envelope Detector (AM Demodulator)



Envelope Detector (AM Demodulator)



AC to DC Conversion



Summary

- ⦿ Introduced amplitude modulation and demodulation
- ⦿ Examined diode envelope detector circuit

Next Lesson

- Diode Wrap-Up