Analog Electronic Circuits

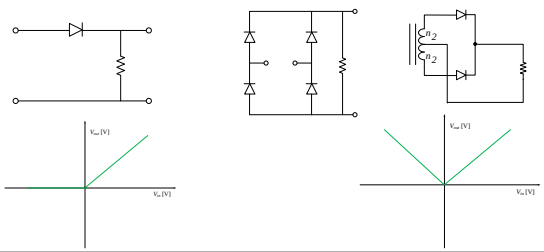
Prof. Mor M. Peretz

The Center for Power Electronics and Mixed-Signal IC
Department of Electrical and Computer Engineering
Ben-Gurion University of the Negev, *ISRAEL*
Emails: morp@bgu.ac.il
Website: http://www.ee.bgu.ac.il/~pemic
http://www.ee.bgu.ac.il/~analog

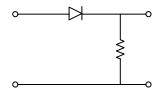
Lesson #8
Outline

- Rectifiers
  - Rectification basics
  - Precision rectifiers
  - Half-wave
  - Full-wave
- Linear regulation
  - Protection stage
- Datasheet

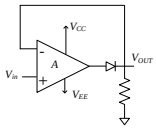
Rectification



Half-wave

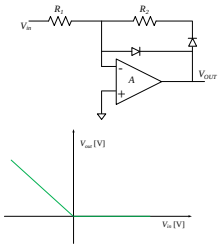


Diode voltage drop

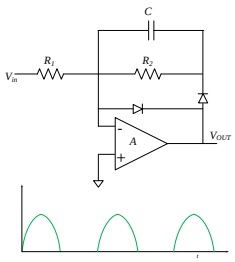


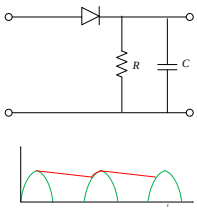
"Super-diode"

Half-wave

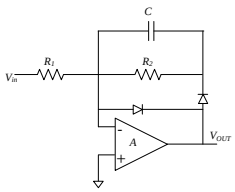


Half-wave





Half-wave

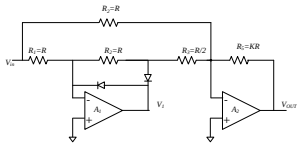


$$I_{av} = \frac{V_{in\_pk}}{R_1}\frac{1}{\pi}$$

$$V_{out} = I_{av}R_2 = \frac{V_{in\_pk}}{R_1}\frac{1}{\pi}R_2$$

$$\Delta V_{out} = \frac{V_{in\_pk}}{R_1}\frac{1}{2\pi fC}$$

Full-wave



Linear regulation

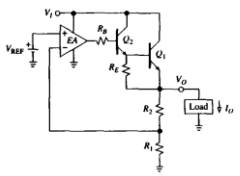


FIGURE 11.19
Basic series voltage regulator.

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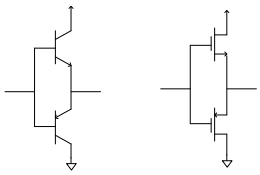
Output stage



Push-pull

Protection – sourcing current

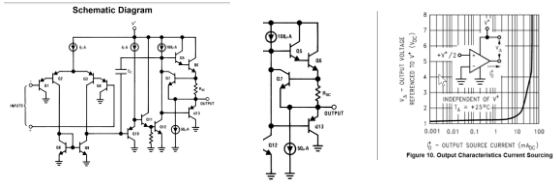


Figure 10. Output Characteristics Current Sourcing

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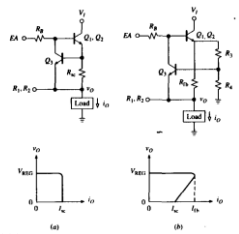
Protection – sourcing current



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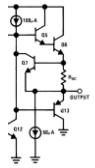
Protection – sinking current



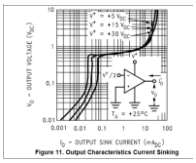


Figure 11. Output Characteristics Current Sinking

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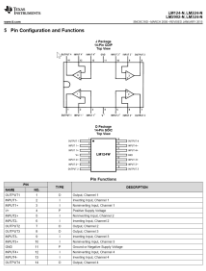
Datasheet


LM124-N, LM224-N Low-Power, Quad-Operational Amplifiers


5 Pin Configuration and Functions

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