Electronics I

University Electrical Engineering · Vocabulary in context

Word	Example
electronics I	**Electronics I** studies diode circuits, transistor amplifiers and feedback.
modelling /ˈmɒdəlɪŋ/	**Modelling** means choosing the simplest model that answers the question.
doping	**Doping** adds impurities to make n-type or p-type silicon.
pn junction	Forward bias allows current through this **pn junction**.
ideal model	The **ideal model** treats the diode as a perfect one-way valve.
constant-drop model	The **constant-drop model** treats a silicon diode as a fixed 0.7 V drop.
piecewise-linear model	The **piecewise-linear model** adds a small resistor to the diode's 0.7 V drop.
exponential model /ˌekspəˈnenʃl ˈmɒdl/	The **exponential model** links diode current and voltage with an exponential curve.
half-wave rectifier	A **half-wave rectifier** passes one polarity of an AC input.
bridge rectifier /brɪdʒ ˈrektɪfaɪə/	A **bridge rectifier** uses four diodes to conduct both half-cycles.
peak inverse voltage	Choose diode reverse-voltage ratings above the circuit's **peak inverse voltage**.

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filter capacitor	The **filter capacitor** holds the output between recharge peaks.
ripple /ˈrɪpl/	The output still has a small **ripple**.
zener diode	A **zener diode** regulates voltage within its specified breakdown-current range.
bipolar junction transistor	A **bipolar junction transistor** uses both electrons and holes.
active region	In the **active region**, collector current is beta times base current.
MOSFET	An ideal **MOSFET** gate draws no steady DC current.
saturation region	In the **saturation region**, a MOSFET's current hardly changes with drain voltage.
square-law model	The **square-law model** makes drain current proportional to the square of the overdrive.
threshold /ˈθreʃəʊld/	The alarm goes off above a **threshold** temperature.
bias point	Choose the amplifier's **bias point** inside its intended operating region.
negative feedback /ˈnegətɪv ˈfiːdbæk/	**Negative feedback** feeds part of the output back to reduce the gain and make it stable.
small-signal	Use a **small-signal** model for small changes around the bias point.
loop gain	For stable negative feedback, large **loop gain** reduces gain error.

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transimpedance amplifier	A **transimpedance amplifier** turns photodiode current into an output voltage.
gain-bandwidth product /ɡeɪn ˈbændwɪdθ ˈprɒdʌkt/	The **gain-bandwidth product** limits how fast a high-gain amplifier can work.
coupling capacitor	A **coupling capacitor** sets the low corner against the resistance it sees.
Miller capacitance	**Miller capacitance** makes a small feedback capacitor look much bigger at the input.
dominant pole	A well-separated **dominant pole** can approximate an amplifier's frequency response.

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