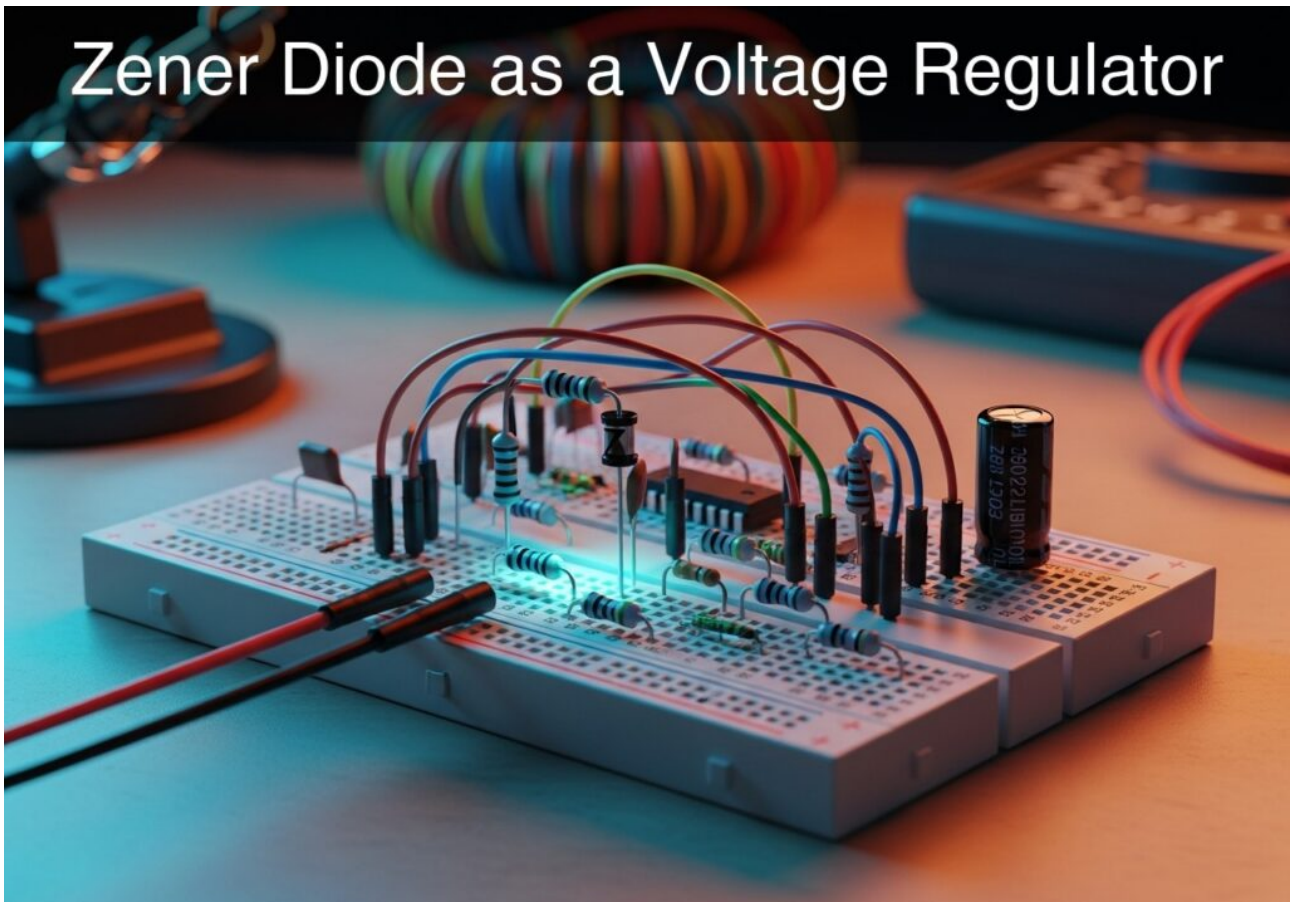


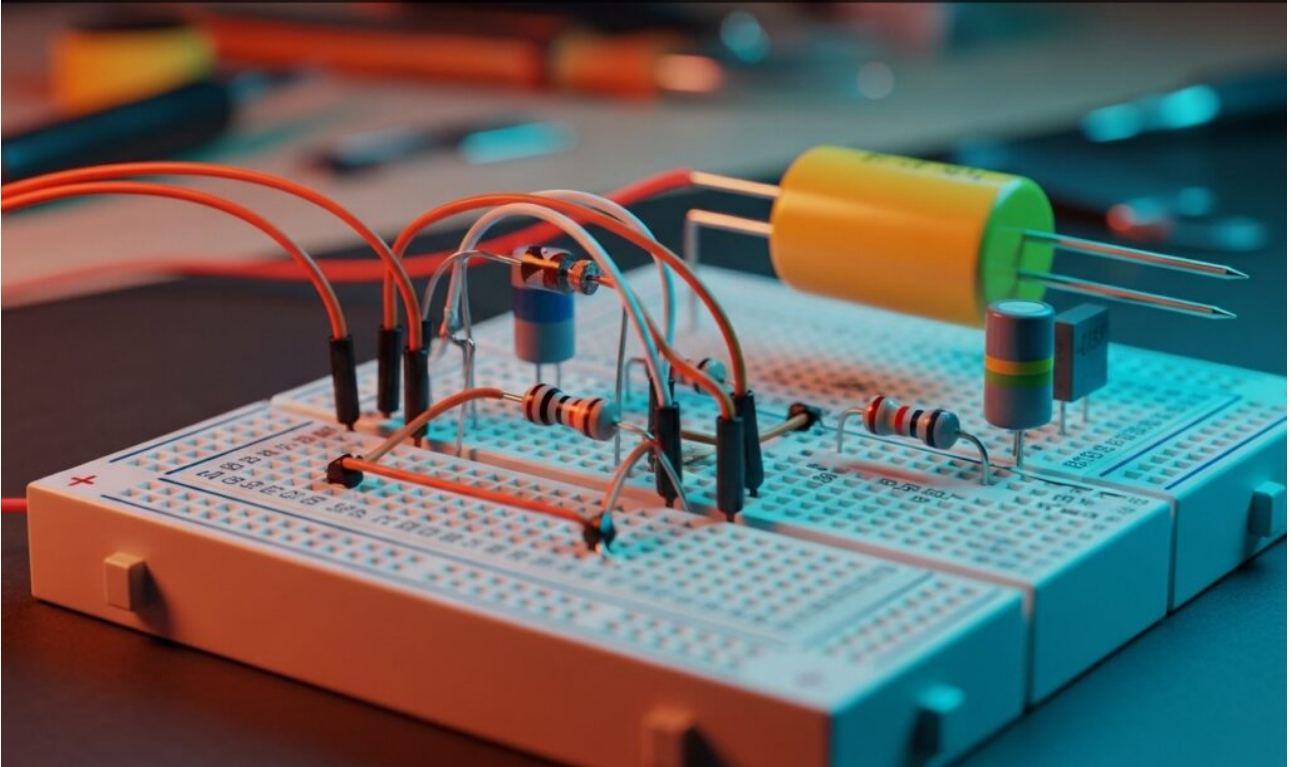
Practical case: Zener Diode as a Voltage Regulator



Master Analog Electronics by designing a Zener Diode voltage stabilizer. Build a circuit to clamp output at 5.1V and protect loads from voltage spikes.

Practical case: Full-wave bridge rectifier

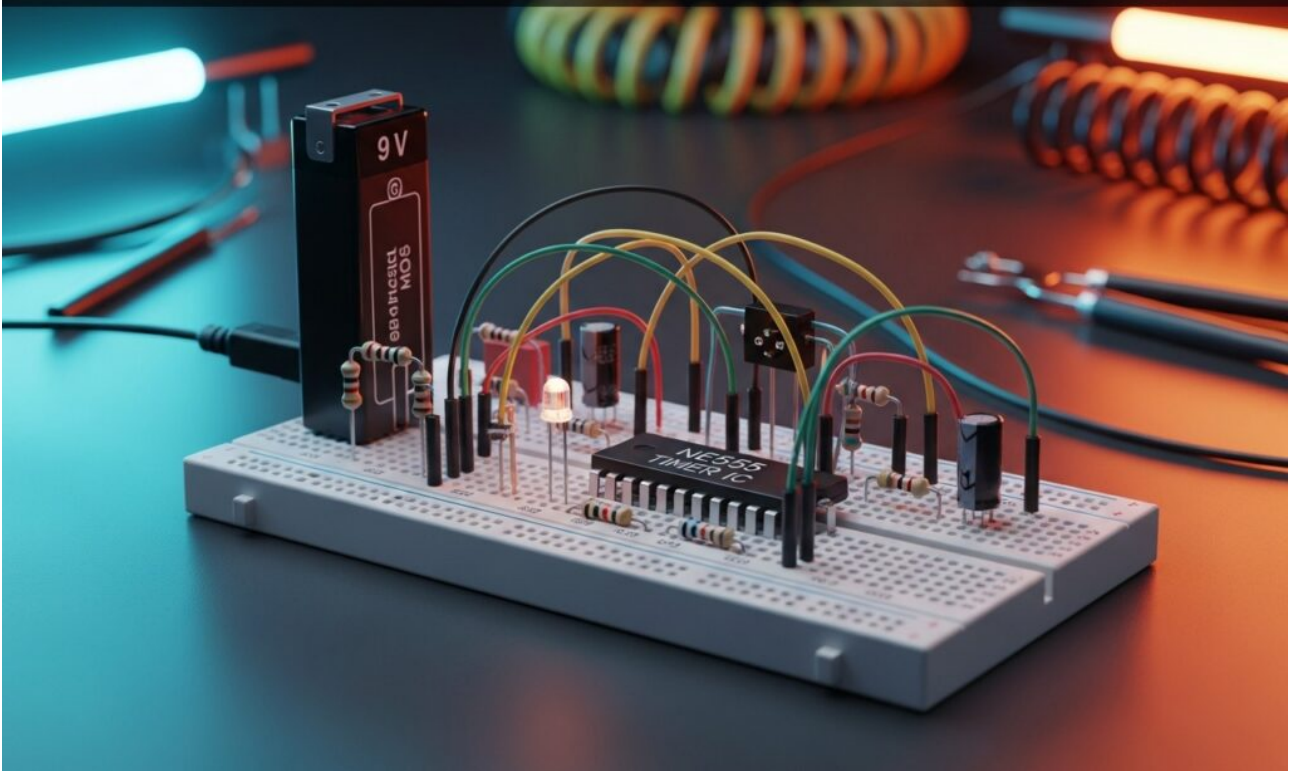
Full-wave bridge rectifier



Master Analog Electronics by building a Diode Graetz bridge. Convert AC to pulsating DC, double the frequency to 120Hz, and measure real voltage drops.

Practical case: Adaptive Screen Brightness Regulator

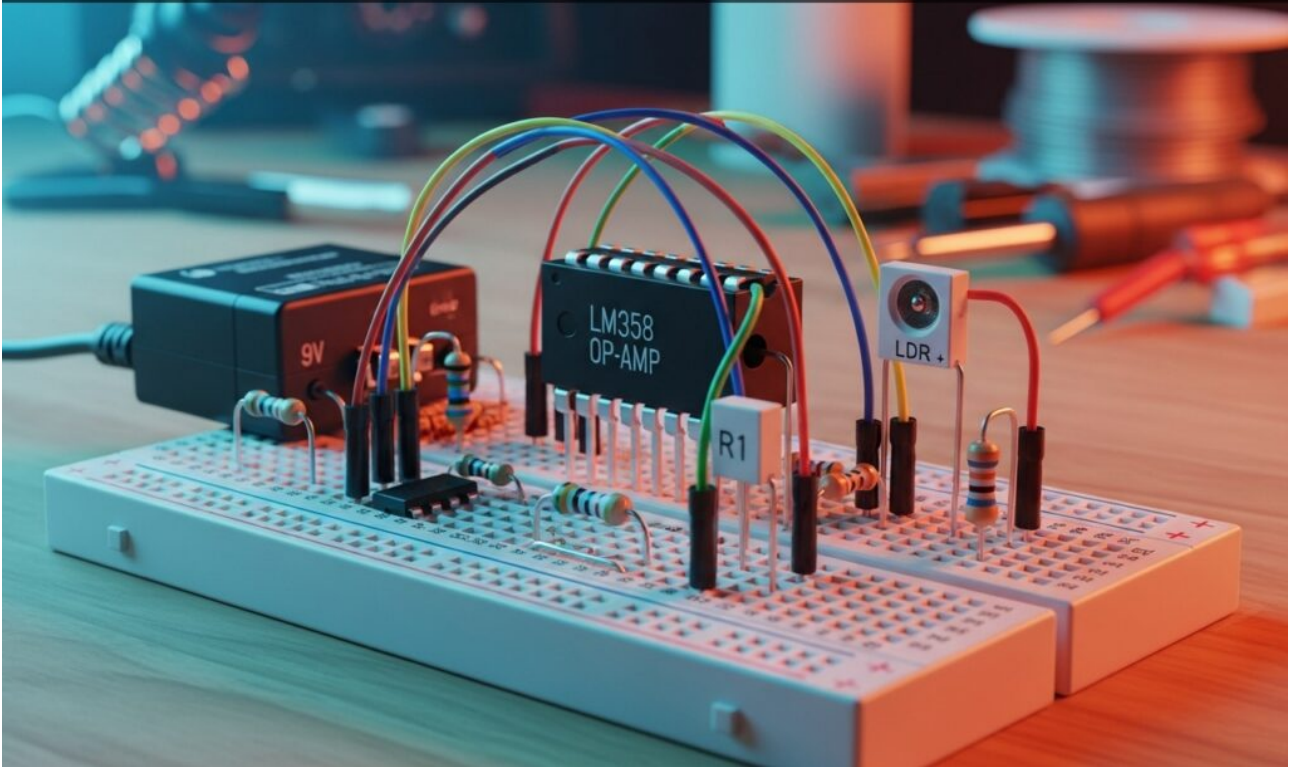
Adaptive Screen Brightness Regulator



Master Analog Electronics by building a smart dimmer. Use a Photoresistor and 555 timer to auto-adjust LED brightness via PWM based on ambient light levels.

Practical case: Single-axis solar tracker

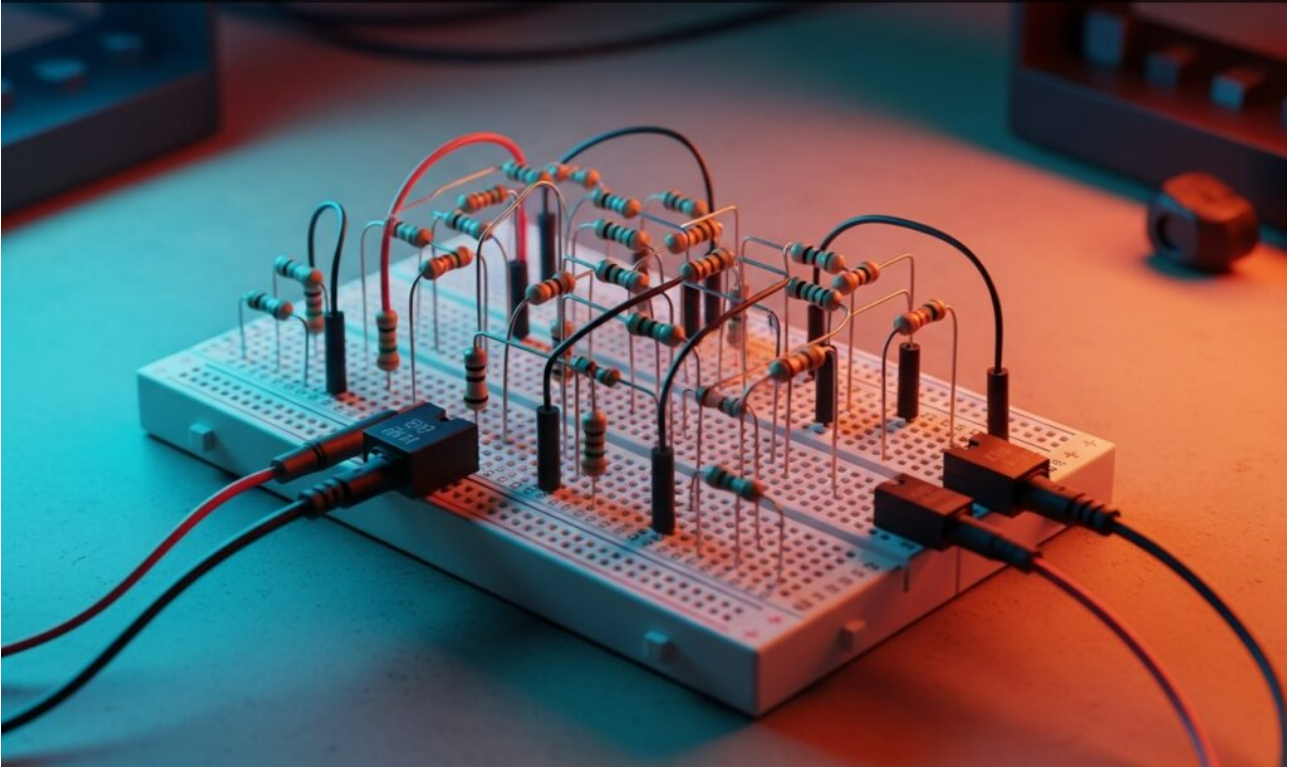
Single-axis solar tracker



Master Analog Electronics by building a sun seeker circuit. Use a Photoresistor pair to drive a motor that actively tracks the brightest light source.

Practical case: R-2R Resistor Network (Simple DAC)

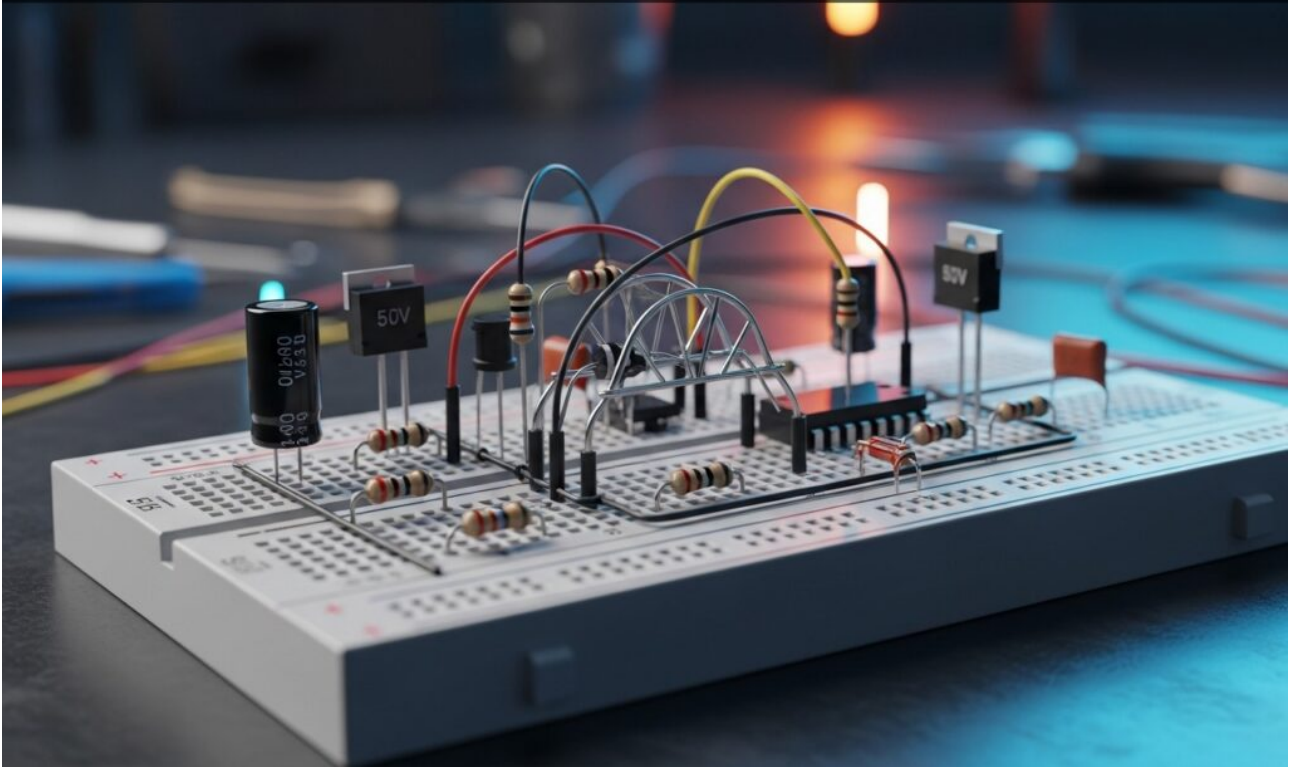
R-2R Resistor Network (Simple DAC)



Master Analog Electronics by building a 4-bit DAC using a Resistor ladder. Create precise voltage steps from binary signals for audio synthesis and control.

Practical case: Unbalanced Wheatstone Bridge

Unbalanced Wheatstone Bridge



Master Analog Electronics by building a Wheatstone bridge with a Resistor sensor. Measure precise differential voltage changes and calibrate zero-point offsets.