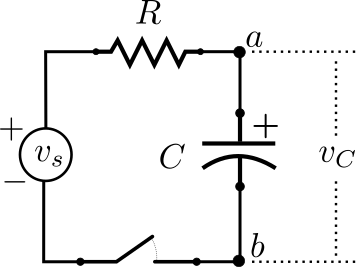
Challenge 4 Background

RC circuit diagram



Suggested Breadboard Configuration

A picture containing text, electronics

Description automatically generated

Suggested Capacitor Rapid Discharge Method

A picture containing text, electronics

Description automatically generated

Note: The electrolytic capacitor must be placed in the circuit with the correct polarity.

Ideal Circuit Model and Voltage Response to Step Input

Dynamic Model:

Step input:

System Response:

Time Constant:

– Resistance, – Capacitance

– Source Voltage, – Capacitor Voltage, – Unit Step Function

– Source Voltage Amplitude, – Initial Capacitor Voltage Amplitude