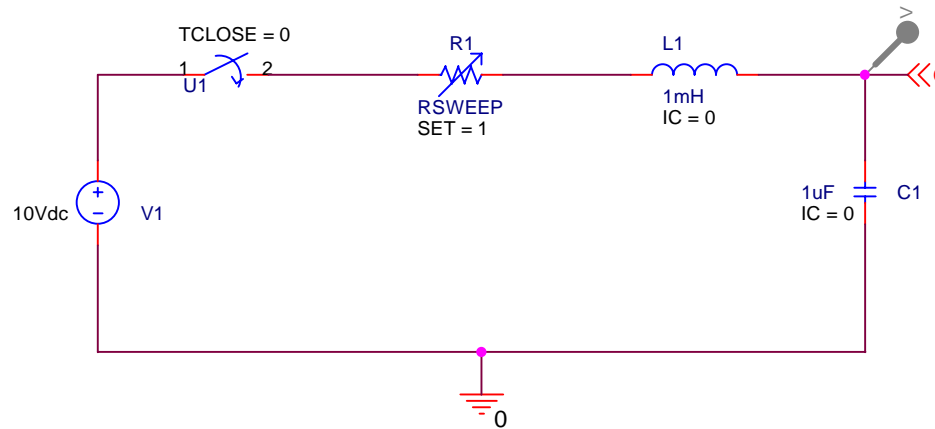


Parametric and Transient Analysis of a Second-Order Circuit

Purpose: Graph the capacitor voltage as the resistance varies from 15 ohms (underdamped circuit) to 150 ohms (overdamped circuit)

Analysis: A transient analysis from 0 to $5RC$ is performed using the largest value of R (150). So $5RC = 750\mu\text{s}$.
A parametric analysis is used to vary R from 15 to 150 in steps of 15 ohms.



PARAMETERS:

RSWEEP = 15

Place the part PARAM in the schematic from the SPECIAL library.

Edit the properties of PARAM and ADD a property named RSWEEP (for example). Right-click on RSWEEP (while still in the property editor) and change the DISPLAY FORMAT so that both the name and the value will be displayed. Go back to the schematic and double-click on RSWEEP and give it the value 15 (for example).

Note that the part R_var from the ANALOG library was used for the variable resistor. A regular resistor (part R) would work as well.

Be sure to change the variable resistor's attribute SET to 1 or else the resistor values will be multiplied by the default SET value of 0.5.

An OFFPAGE symbol was used to label the node as C above the capacitor.
A voltage marker was added so that $V(C)$ will be automatically graphed after analysis.

The part Sw_tClose from the EVAL library was used to model the closing switch.

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Size	Document Number	Rev
A	<Doc>	<RevCode>
Date:	Friday, January 28, 2000	Sheet 1 of 1

