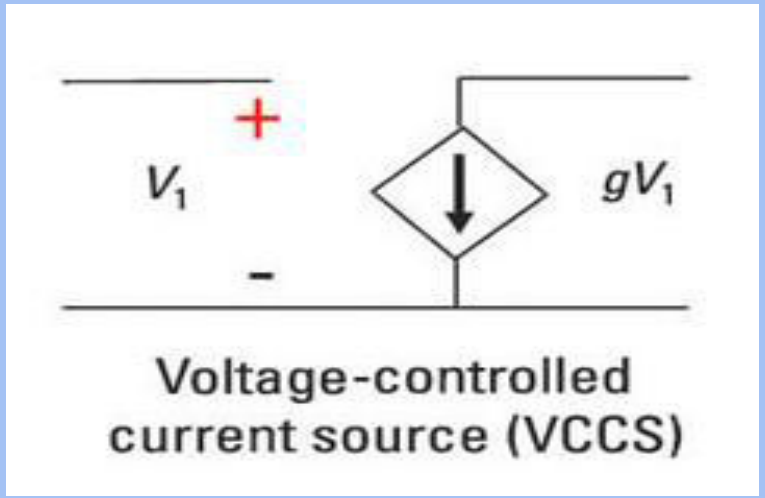
SUBJECT: BASIC ELECTRONICS

Voltage-Controlled Current Source

Elementrix Classes

Voltage-Controlled Current Source

With a voltage across the input, you can control the amount of current output.



The VCCS dependent source has a proportionality constant **g**, called the **transconductance (ratio of the change in the output current to the change in the input voltage).**

Example:

Let's assume some values for the components:

Input Voltage (V_{in}): 10 volts

Transconductance (g): 0.002 Siemens (2 mS)

Calculations:

Using the formula for the VCCS:

$$I_{out}=g \cdot V_c$$

Substitute the given values:

$I_{out}=(0.002S)\cdot(10V)$

$I_{out}=0.02A$

Therefore, with an input voltage of 10 volts and a VCCS transconductance (g) of 0.002 Siemens, the output current (I_{out}) would be 0.02 amperes in this example.

This example demonstrates how a Voltage-Controlled Current Source can generate an output current that is proportional to a controlling voltage. The transconductance (g) represents the proportionality constant in this context.

पढ़िए और पढ़ाइये

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