

## Linear Voltage Controlled Current Source (vccs)

Positive current exits the source node and enters the sink node.

This device can also model ideal digital gates, voltage controlled resistors and voltage controlled capacitors.

Type of vccs:

You can use vccs to model three types of devices.

When `type=vccs`, the device is a regular voltage controlled current source. This is also the default type. When `type=vcr`, the device is a voltage controlled resistor. When `type=vccap`, the device is a voltage controlled capacitor.

Input type of vccs:

You can use vccs to model ideal digital gates. Ideal digital gates have more than one inputs. The parameter `inputtype` is used to specify which input is going to control the vccs (or vcr, or vccap, specified by parameter `type`).

When `inputtype=single`, the device has only one input. This is also the default `inputtype`. When `inputtype=and/nand`, the smallest input controls the device. When `inputtype=or/nor`, the largest input controls the device. When `inputtype=npwl`, node `ns` should be connected to either `src` or `sink`. if  $v(\text{src},\text{sink}) > 0$ , then the controlling voltage would be  $v(\text{ps},\text{sink})$ . Otherwise, the controlling voltage is  $v(\text{ps},\text{src})$ . When `inputtype=ppwl`, node `ns` should be connected to either `src` or `sink`. if  $v(\text{src},\text{sink}) > 0$ , then the controlling voltage would be  $v(\text{ps},\text{src})$ . Otherwise, the controlling voltage is  $v(\text{ps},\text{sink})$ . If `inputtype` is `npwl` or `ppwl` but node `ns` is not connected to `src` or `sink`, then spectre change `inputtype` to `pwl`.

When you are using regular vccs, you can specify `and/nand/or/nor` in either `type` parameter or `inputtype` parameter.

**Note:** Spectre does not check if the gate behaves like an and or an nand, it just takes the smallest input as the controlling voltage. And so is the case for or/nor.

This device is supported within `altergroups`.

### Sample Instance Statement

```
v1 (1 0 2 3) gm=-1 m=2
```

**Edit Object Properties**

Apply To:

Show:  system  user  CDF

Property	Value	Display
Library Name	analogLib	<input type="button" value="off"/>
Cell Name	vccs	<input type="button" value="off"/>
View Name	symbol	<input type="button" value="off"/>
Instance Name	G0	<input type="button" value="off"/>

User Property	Master Value	Local Value	Display
IvsIgnore	TRUE		<input type="button" value="off"/>

**CDF Parameter**

CDF Parameter	Value	Display
Type of transfer char	<input type="radio"/> Linear <input checked="" type="radio"/> PWL	<input type="button" value="off"/>
Specification of PWL Vector	<input checked="" type="radio"/> DataFile <input type="radio"/> PwlVect	<input type="button" value="off"/>
Smoothing Factor		<input type="button" value="off"/>
Multiplier		<input type="button" value="off"/>
Temperature coefficient 1		<input type="button" value="off"/>
Temperature coefficient 2		<input type="button" value="off"/>
File containing PWL Vectors		<input type="button" value="off"/>
Scale for Output		<input type="button" value="off"/>
Scale for Controlling Input		<input type="button" value="off"/>
Type of Source	vcr	<input type="button" value="off"/>
Type of input of source		<input type="button" value="off"/>