Polynomial Current Controlled Current Source (pcccs)

Description

A vector of coefficients specifies the polynomial function that defines the relationship between the output current and the controlling currents. You must specify at least one coefficient.

This device is not supported within altergroup.

For a polynomial in M variables a1, a2, ... am, the polynomial function F(a0,a1,...,am) is given by

F = c0 + c1 * a1 + c2 * a2 + ...

+ c(m+1) * a1^2 + c(m+2) * a1 * a2 +...

+ c(2m+1) * a2^2 + c(2m+2) * a2 * a3 +...

where the cs are coefficients of the polynomial terms.

Sample Instance Statement

```
vpc (net1 0) pcccs probes=[vb vc ve vlp vpn] coeffs=[0 8.8e6 -8.8e6 9e6 8e6 -9e6]
```

Instance Definition

```
Name  sink  src pcccs parameter=value ...
```

Instance Parameters

1	`file`	File that contains nonzero polynomial coefficients.
2	`coeffs=[...]`	Polynomial coefficients. At least one must be given.
3	`probes=[...]`	Devices through which the controlling currents flow.
4	`ports=[...]`	Indice of the probe ports through which the controlling currents flow.
5	`gain=1`	Gain Parameter.
6	`m=1`	Multiplicity factor.

7	`min (A)`	Minimum output current.
8	`max (A)`	Maximum output current.
9	`abs=off`	Absolute output current. Possible values are `off` or `on`.
10	`delta=0`	Smoothing parameter. This may lead to circuit convergency. The smaller the delta is, the sharper the corner is.

Temperature effects parameters

11	`tc1=0 1/C`	Linear temperature coefficient.
12	`tc2=0` C^{-2}	Quadratic temperature coefficient.

Operating-Point Parameters

1	`i (A)`	Output current.
2	`v (V)`	Output voltage.
3	`pwr (W)`	Power dissipation.

Parameter Index

In the following index, `I` refers to instance parameters, `M` refers to the model parameters section, `O` refers to the output parameters section, and `OP` refers to the operating point parameters section. The number indicates where to look in the appropriate section to find the description for that parameter. For example, a reference of `M-35` means the 35th model parameter.