

Chapter 8: Elements

Passive Elements

```
.param rx=100
R3 2 3 RX TC1=0.001 TC2=0
RP X1.A X2.X5.B .5
.MODEL RVAL R
```

In the example above, R1 is a simple 10Ω linear resistor and Rload calls a resistor model named RVAL, which is defined later in the netlist.

Note: If a resistor calls a model, then you do not need to specify a constant resistance, as you do with R1.

- R3 takes its value from the RX parameter, and uses the TC1 and TC2 temperature coefficients, which become 0.001 and 0, respectively.
- RP spans across different circuit hierarchies, and is 0.5Ω

Behavioral Resistors in HSPICE or HSPICE RF

```
Rxxx n1 n2 . . . [R=] 'equation' . . .
```

Note: The equation can be a function of any node voltage or branch current, and any independent variables such as time, hertz, or temper.

Example

```
R1 A B R='V(A) + I(VDD)'
```

Frequency-Dependent Resistors

```
Rxxx n1 n2 [R=] 'equation' [CONVOLUTION=[0|1|2]]
+ [FBASE=value] [FMAX=value]
```

Parameter	Description
CONVOLUTION	Indicates which method is used (at the instance level only). <ul style="list-style-type: none"> ▪ 0: Acts the same as the conventional method. This is the default. ▪ 1 : Applies recursive convolution, and if the rational function is not accurate enough, it switches to linear convolution. ▪ 2 : Applies linear convolution.