Microwave Diode — diode

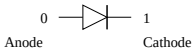

Figure 1: diode — Microwave Diode Element.

Form: `diode:`⟨`instance name`⟩ n_1 n_2 ⟨`parameter list`⟩

n_1 is the positive (anode) diode voltage,

n_2 is the negative (cathode) diode voltage.

Parameters:

Parameter	Type	Default value	Required?
js: Saturation current (A)	DOUBLE	1e-16	yes
alfa: Slope factor of conduction current (1/V)	DOUBLE	38.696	no
jb: Breakdown saturation current (A)	DOUBLE	1e-05	no
vb: Breakdown voltage (V)	DOUBLE	-1e+20	no
e: Power-law parameter of breakdown current	DOUBLE	10	no
ct0: Zero-bias depletion capacitance (F)	DOUBLE	0	no
fi: Built-in barrier potential (V)	DOUBLE	0.8	no
gama: Capacitance power-law parameter	DOUBLE	0.5	no
cd0: Zero-bias diffusion capacitance (F)	DOUBLE	0	no
afac: Slope factor of diffusion capacitance (1/V)	DOUBLE	38.696	no
r0: Bias-dependent part of series resistance in forward-bias(Ohms)	DOUBLE	0	no
t: Intrinsic time constant of depletion layer (s)	DOUBLE	0	no
area: Area multiplier	DOUBLE	1	no
imax: Maximum forward and reverse current (A)	DOUBLE	0	no
eg: Barrier height at 0 K (eV)	DOUBLE	0.8	no
m: Grading coefficient	DOUBLE	0.5	no
aro: r0 linear temperature coefficient($\frac{1}{K}$)	DOUBLE	0	no
bro: r0 quadratic temperature coefficient($\frac{1}{K^2}$)	DOUBLE	0	no
afag: Temperature-related coefficient	DOUBLE	1	no
xti: Js temperature exponent	DOUBLE	2	no

Example:

```
diode:d1 2 0 js=2.24e-12 alfa=21.13 e=10 ct0=1.32767e-15 r0=171.9 fi=1.27517
gama=0.810205 jb=1.e-5 vb=-16
diode:d2 102 0 model="newdiode" area=34.56
```

Notes:

There is no `SPICE` compatible element for the microwave diode.

Version:

2001.09.01

Credits:

Name	Affiliation	Date	Links
Carlos E. Christofferson	NC State University	May 2001	NC STATE UNIVERSITY
cechrist@ieee.org			www.ncsu.edu