

## SPICE PARAMETER

### EMD29

```
* EMD29_NPN NPN DT model
* Date: 2007/01/11
* BJT with resistors
*****C B E
.SUBCKT EMD29_NPN 1 2 3
R1 2 Base Rb 10k
R2 Base 3 Re 10k
Q1 1 Base 3 QDTC1
.MODEL Rb RES
+ R=1
.MODEL Re RES
+ R=1
.MODEL QDTC1 NPN
+ IS=20.000E-15
+ BF=198.80
+ VAF=15
+ IKF=.28787
+ ISE=20.001E-15
+ NE=1.6289
+ BR=8.4556
+ VAR=100
+ IKR=.2645
+ ISC=8.0686E-12
+ NC=2.3678
+ NK=.75224
+ RE=.2
+ RB=10.670
+ RC=1.1274
+ CJE=11.342E-12
+ MJE=.38289
+ CJC=4.0230E-12
+ MJC=.34629
+ TF=500.00E-12
+ XTF=580.91
+ VTF=195.13
+ ITF=19.351
+ TR=200.00E-9
+ XTB=1.5000
.ENDS EMD29_NPN
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```
* EMD29_PNP PNP DT model
* Date: 2007/01/15
* BJT with resistors
*****C B E
.SUBCKT EMD29_PNP 1 2 3
R1 2 Base Rb 1k
R2 Base 3 Re 10k
Q1 1 Base 3 QDTB5
.MODEL Rb RES
+ R=1
.MODEL Re RES
+ R=1
.MODEL QDTB5 PNP
+ IS=110.00E-15
+ BF=288.55
+ VAF=10
+ IKF=.61845
+ ISE=110.00E-15
+ NE=1.7030
+ BR=43.855
+ VAR=100
+ IKR=.10511
+ ISC=123.24E-15
+ NC=3.3767
+ NK=.74543
+ RE=.1
+ RB=4.9250
+ RC=.20002
+ CJE=44.776E-12
+ MJE=.43395
+ CJC=8.9662E-12
+ MJC=.25891
+ TF=200.00E-12
+ XTF=7.1860
+ VTF=6.9454
+ ITF=2.1155
+ TR=5.0000E-9
+ XTB=1.5000
.ENDS EMD29_PNP
```