

# SPICE PARAMETER

## EMD2

```
* EMD2_NPN NPN DT model
* Date: 2007/01/11
* BJT with resistors
*****C B E
.SUBCKT EMD2_NPN 1 2 3
R1 2 Base Rb 22k
R2 Base 3 Re 22k
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 EMD2_NPN
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* EMD2_PNP PNP DT model
* Date: 2007/01/06
* BJT with resistors
*****C B E
.SUBCKT EMD2_PNP 1 2 3
R1 2 Base Rb 22k
R2 Base 3 Re 22K
Q1 1 Base 3 QDTA1
.MODEL Rb RES
+ R=1
.MODEL Re RES
+ R=1
.MODEL QDTA1 PNP
+ IS=20.000E-15
+ BF=187.64
+ VAF=10
+ IKF=.21074
+ ISE=20.000E-15
+ NE=1.5456
+ BR=13.699
+ VAR=100
+ IKR=1.2543
+ ISC=17.145E-12
+ NC=1.4944
+ NK=.98507
+ RE=.5
+ RB=14.057
+ RC=1.2972
+ CJE=22.937E-12
+ MJE=.58268
+ CJC=11.613E-12
+ MJC=.43988
+ TF=500.00E-12
+ XTF=582.01
+ VTF=194.23
+ ITF=18.786
+ TR=300.00E-9
+ XTB=1.5000
.ENDS EMD2_PNP
```