

.SUBCKT PZTM1102 1 2 3 4

*QTr PNP 2=B 3=E 4=C

*SBD1 Schottky 4=A 1=C

*SBD2 Schottky 4=C 1=A

*

Q1 4 2 3 QTr

D1 4 1 SBD1

D2 1 4 SBD2

*

.MODEL QTr PNP(

+ IS=9.273E-15

+ NF=1.012

+ ISE=1.01E-13

+ NE=1.6

+ BF=153.6

+ IKF=0.09

+ VAF=30.8

+ NR=0.9988

+ ISC=1.117E-12

+ NC=1.43

+ BR=6.25

+ IKR=0.09

+ VAR=10.97

+ RB=1

+ IRB=1E-06

+ RBM=1

+ RE=0.1244

+ RC=1.375

+ XTB=0

+ EG=1.11

+ XTI=3

+ CJE=7.897E-12

+ VJE=0.69

+ MJE=0.3628

+ TF=5.9E-10

+ XTF=2.5

+ VTF=3.8

+ ITF=0.07

+ PTF=0

+ CJC=6.755E-12

+ VJC=0.37

+ MJC=0.2096

+ XCJC=0.864

+ TR=4.7E-8

+ CJS=0

+ VJS=0.75

+ MJS=0.333

+ FC=0.5)

*

.MODEL SBD1 D(

+ IS=4.752E-6

+ N=1

+ BV=35

+ IBV=2E-5

```
+ RS=1.165
+ CJO=3.285E-10
+ VJ=0.225
+ M=0.5376
+ FC=0.5
+ TT=0
+ EG=0.69
+ XTI=2)
*
.MODEL SBD2 D(
+ N=1
+ IS=6.178E-5
+ RS=1.077E6
+ EG=0.69
+ XTI=2)
.ENDS
*
```