

.SUBCKT PUMT1 1 2 3 4 5 6

\*QTR1 PNP 6=C 2=B 1=E

\*QTR2 PNP 3=C 5=B 4=E

\*

Q1 6 2 1 QTR1

Q2 3 5 4 QTR2

\*

.MODEL QTR1 PNP(

+ IS=2.514E-14

+ NF=0.9978

+ ISE=5.697E-15

+ NE=1.421

+ BF=315.5

+ IKF=0.08039

+ VAF=40.01

+ NR=1.001

+ ISC=2.533E-14

+ NC=1.25

+ BR=9.217

+ IKR=0.047

+ VAR=32.02

+ RB=1

+ IRB=1E-06

+ RBM=1

+ RE=0.6308

+ RC=0.956

+ XTB=0

+ EG=1.11

+ XTI=3

+ CJE=1.17E-11

+ VJE=0.746

+ MJE=0.4143

+ TF=6.328E-10

+ XTF=6.555

+ VTF=2.416

+ ITF=0.129

+ PTF=0

+ CJC=6.96E-12

+ VJC=0.778

+ MJC=0.6596

+ XCJC=0.6288

+ TR=1E-32

+ CJS=0

+ VJS=0.75

+ MJS=0.333

+ FC=0.79 )

\*

.MODEL QTR2 PNP(

+ IS=2.514E-14

+ NF=0.9978

+ ISE=5.697E-15

+ NE=1.421

+ BF=315.5

+ IKF=0.08039

```
+ VAF=40.01
+ NR=1.001
+ ISC=2.533E-14
+ NC=1.25
+ BR=9.217
+ IKR=0.047
+ VAR=32.02
+ RB=1
+ IRB=1E-06
+ RBM=1
+ RE=0.6308
+ RC=0.956
+ XTB=0
+ EG=1.11
+ XTI=3
+ CJE=1.17E-11
+ VJE=0.746
+ MJE=0.4143
+ TF=6.328E-10
+ XTF=6.555
+ VTF=2.416
+ ITF=0.129
+ PTF=0
+ CJC=6.96E-12
+ VJC=0.778
+ MJC=0.6596
+ XCJC=0.6288
+ TR=1E-32
+ CJS=0
+ VJS=0.75
+ MJS=0.333
+ FC=0.79 )
.ENDS
*
```