

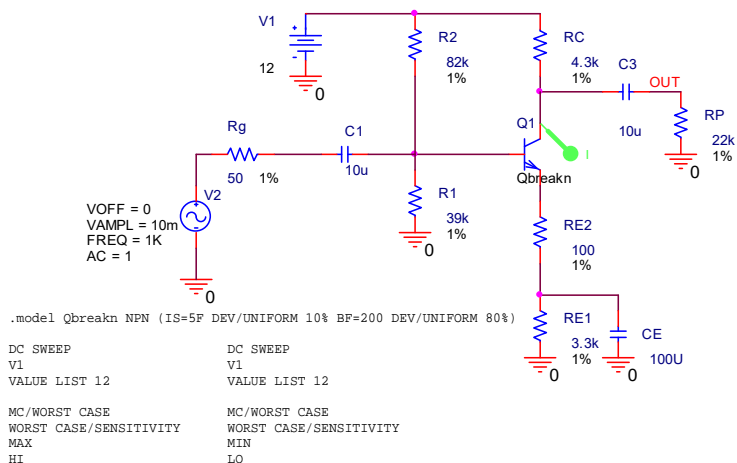
2017, LABOE, 6. čas

```

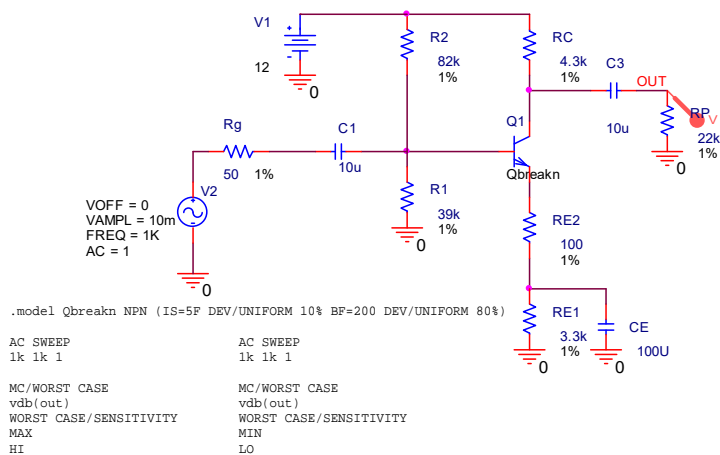
R3      R4
  \    /  \    /
   Rx    Ry
   1k    1k

.model Rx RES R=1 dev 10% lot 5%
.model Ry RES R=1 dev 5% lot 5%
    
```

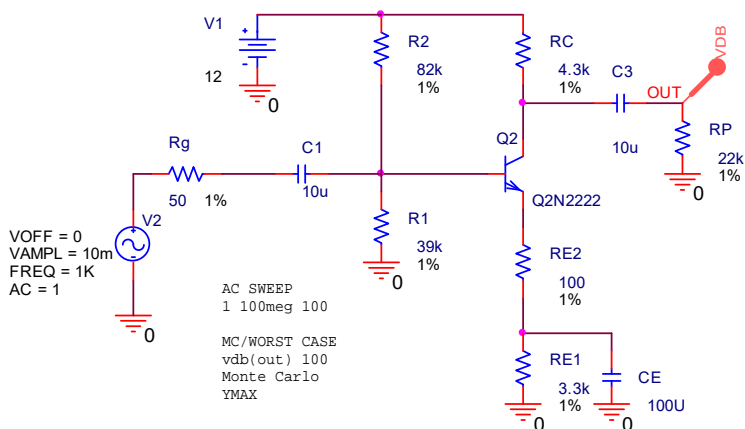
1. Model otpornika: zadavanje tolerancije



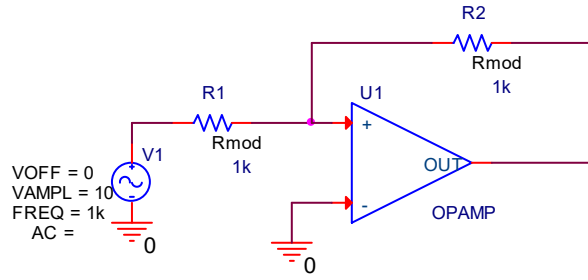
2. Worst Case (min i max struja kolektora)



3. Worst Case (min i max pojanje)

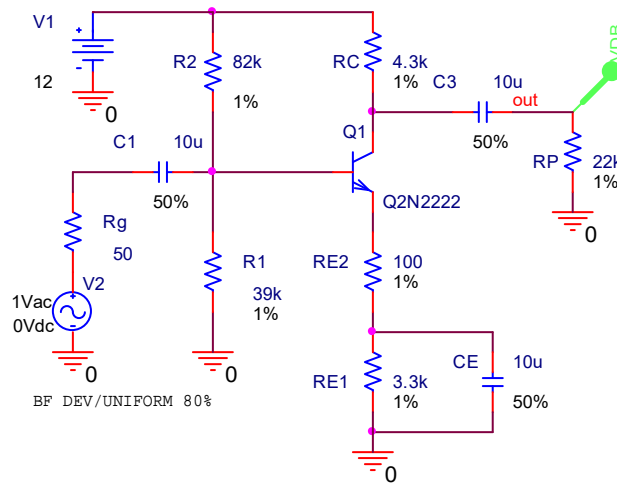


4. Monte Carlo - frekvencijska karakteristika jednog pojacavaca



```
.model Rmod RES R=1 DEV/UNIFORM 5%
```

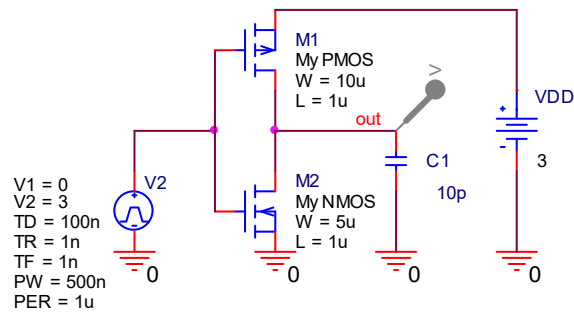
5. Monte Carlo - promena pragova komparatora



```
ac sweep 10 100meg 100
MC 100 vdb(out)
```

```
Goal Functions
HPBW(vdb(out), 3)
LPBW(vdb(out), 3)
Bandwidth(vdb(out), 3)
```

6. Performance Analysis – Amplifier Frequency Response



```
.model MyNMOS NMOS vto=0.7 dev/gauss 20% kp=100u dev/gauss 20% lambda=0.04
.model MyPMOS PMOS vto=-0.7 dev/gauss 20% kp=50u dev/gauss 20% lambda=0.05
```

```
tran 1.2u MC 100 Ymax
```

```
Goal Functions
Falltime(V(OUT))
Risetime(V(OUT))
```

7. Performance Analysis - Inverter Switching Speed