NPN_Ftau_15uu_CJE

```
*
*
*
*
*                              _________
*                              |       |
*                              |       |
*                              |C     /VCC\
*              R1              |       \___/
*       ____/\  /\  /\____|'QN1       |
*     _|_      \/  \/   B  |`->      _|_
*    ///                     |E      ///
*                             |
*                             |
*                            /_\
*                       1I  \/ \/
*                           /\_/\
*                           \___/
*                             |
*                            ///
.OPTIONS    GMIN=1e-15   METHOD=gear   ABSTOL=1e-15  TEMP=27 srcsteps = 1  gminsteps = 1
VCC    C    0     DC     5V
QN1    C    B     E      NPNV
R1     0    B            1
I1     E    0     DC     100u    AC    .01u
.control
echo             "15um^2 Ftau vs IE and CJE"
setplot          new
set NameList =   ( CJE_37fF CJE_77fF CJE_17fF )
compose CjeVals  values  37f 77f 17f
compose IbiasVals values 10u 100u 1m 10m 30m 60m 100m
settype current  IbiasVals
let NoOfCje   =  length(CjeVals)
let NoOfIbias =  length(IbiasVals)
begin
unset            interrupt
* ================Loop_CJE============
let j =          1
while            ( j <= NoOfCje )
let cje =        CjeVals[j-1]
altermod         npnv cje = $&cje
echo             "=>Ibias = Ftau@CJE=$&cje"
set thisName =   $NameList[$&j]
let $thisName =  0*vector(NoOfIbias)
* ================Loop_Ibias==============
let k =          1
while            ( k <= NoOfIbias )
let Ibias =      IbiasVals[k-1]
alter I1 dc =    $&Ibias
alter I1 ac =    .01u
ac               dec 30 .0001GHz 100GHz
* ================Find_Ftau============ Use
let g =          (-db(b) - 160)
let f =          3.16*mag(frequency[ sortorder( abs(g-10.0) )[0] ] )
echo             "$&unknown.Ibias   $&f"
let              unknown.{$thisName}[unknown.k-1] = f
destroy
if               ($?interrupt)
goto             bail
endif
let k =          k + 1
endwhile
let j =          j + 1
endwhile
setscale         IbiasVals
plot             $NameList loglog title "15um^2 Ftau vs IE and CJE"
label            bail
echo             "Done."
end
.endc
```

```
.MODEL  NPNV       NPN(
+ IS=10.15e-18     NF=1.0        BF=89         VAF=107      IKF=.4
+                  NR=1.006      BR=0.4822     VAR=4.286    IKR=0.0002472
+ ISE=9.15E-17     NE=2
+ ISC=1E-21        NC=2
+ RB=12            RBM=3                                    IRB=.1
+ RE=2             RC=33
+ CJE=37e-15       VJE=0.75      MJE=0.35
+ CJC=45E-15       VJC=0.6399    MJC=0.3531
+ CJS=2.939E-15    VJS=0.3488    MJS=0.1813   XCJC=0.4201
+ TF=1e-12         XTF=1         VTF=1.5      ITF=.8
+ TR=5.9e-9        FC=0.5        PTF=30
+ KF=1.000E-16     AF=1
+ XTB=2            EG=1.11       XTI=5        TNOM=25       )

.end
```

==========END_OF_SPICE==========

To Covert PDF to plain text click below
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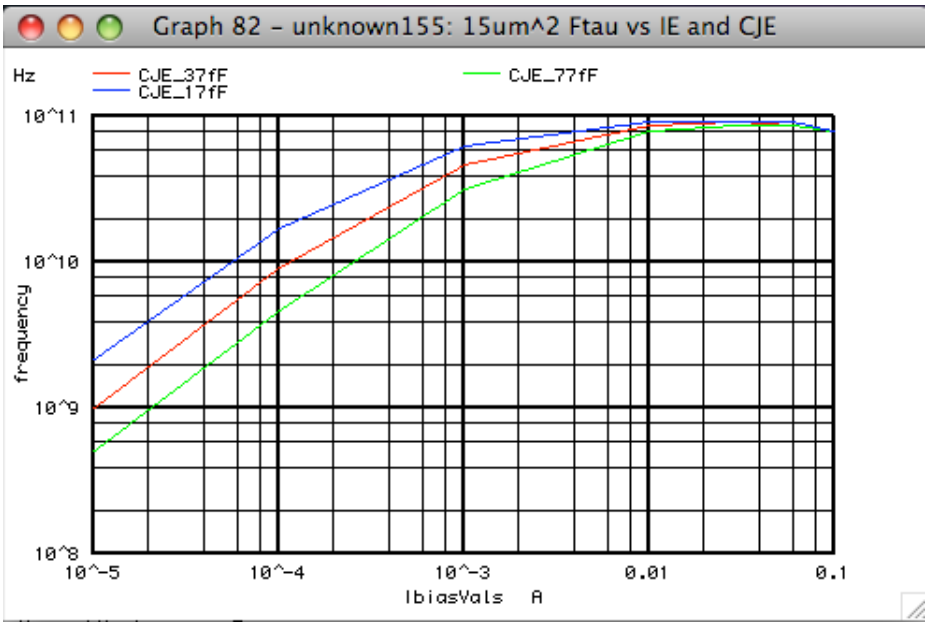
```
**
**
**                                  (C)     NPN
**     SPICE MODEL
**
**                                   |
**                                   / RC 33ohms    VAF=107
**                                   \
**                                   /                    3fF
**                                   |
**        |                          |                    |
**        |        45fF              |    Ir/BR  Irn  /_\   ___
**        |                       /  |_    _|_   \/ \/    |gnd!
**      _|_Cjcx _|_Cjc _|_Cdc     \   ^     ^   /\_/\   _|_
**      ___     ___     ___       /   /_\    /_\   \___/ \sub/
**        |   Rbb'        |  gmin \    |      |     Ic     \ /
**  (B)|_|_/\   __|_______|_______|____|_______|            V
**     |     \/            |                 |            V (hidden)
**     12ohms            _|_Cje _|_Cde     \   \ /    \ /
**     BF=89             ___    ___       /   _v_    _v_
**                       |37fF  |  gmin \    |If/Bf  |Ifn
**                       |______|_______|____|_______|_______|
**                                   |
**                    TF=8ps         / RE 2ohms
**                                   \
**                                   /
**                                   |
**                                  (E)
**
```


Graph 82 - unknown155: 15um^2 Ftau vs IE and CJE
Hz
CJE_37fF
CJE_17fF
CJE_77fF
10^11
10^10
10^9
10^8
frequency
10^-5
10^-4
10^-3
0.01
0.1
IbiasVals A

=