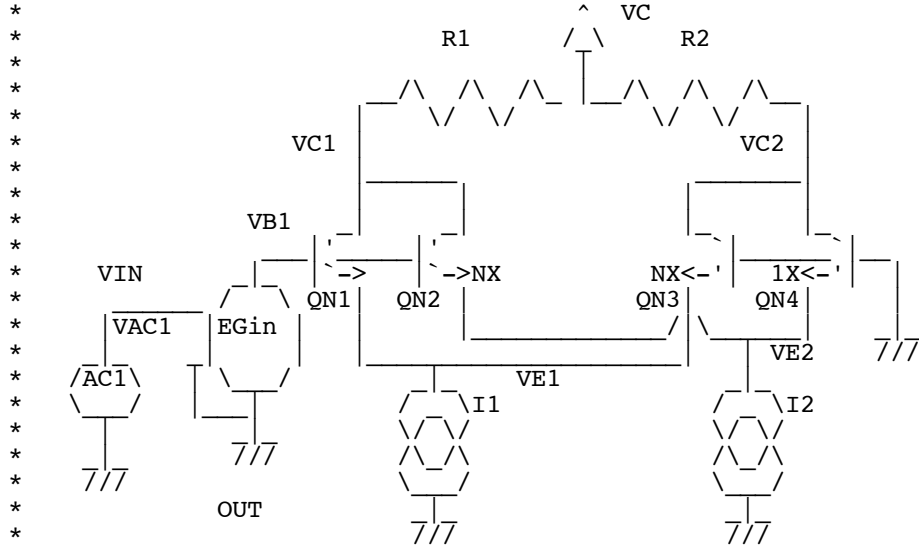


DUAL_DIFF_Thd_Temp



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```
.OPTIONS GMIN=1e-18 METHOD=trap srcsteps = 1 gminsteps = 1
=====
VCC      VC      0      DC      10
VAC1     VIN     0      DC      0      SIN( 0      1  1000 )
I1       VE1     0      1u
I2       VE2     0      1u
QN1      VC1     VB1     VE1     NPN1   1.00
QN2      VC1     VB1     VE2     NPN1   4.25
QN3      VC2     0       VE1     NPN1   4.25
QN4      VC2     0       VE2     NPN1   1.00
R1       VC1     VC      52K
R2       VC2     VC      52K
E_GAIN1  OUT     0       VC1     VC2     1
E_GAININ VB1     0       VIN     0       1m
```

```
.control
tran          25u          5m          0      1u
plot          out
echo         "THD% versus VIN_vpk "
setplot      new
set          NameList = (          Nx4 Nx4pt25 Nx4pt5 Nx5 )
compose     NxVals      values    4      4.25      4.5      5
compose     VinVals     values    10m 15m 20m 22m 25m 30m 32m 35m 40m 43m 45m 50m 55m
60m 70m 80m 90m
settype     voltage     VinVals
let         NoOfNx      = length(NxVals)
let         NoOfVin     = length(VinVals)

begin
unset      interrupt
* =====Loop_Nx=====
let        j           = 1
while     (j           <= NoOfNx )
let       Nx           = NxVals[j-1]
alter    QN2 area     = $&Nx
alter    QN3 area     = $&Nx
set      thisName     = $NameList[$&j]
let      $thisName    = 0*vector(NoOfVin)
```

```

* =====Loop_Vin=====
let      k          = 1
while    (k          <= NoOfVin )
let      Vin        = VinVals[k-1]
alter    e_gainin gain = $&Vin
tran     25u        5m          0      1u
linearize
set      specwindow= "blackman"
spec     200      8k          200      v(out)
let      thdsq      =mag(out[9])^2 +mag(out[14])^2 +mag(out[19])^2 +mag(out[24])^2
let      thd_percent= 100*sqrt(thdsq)/mag(out[4])
echo     "$&unknown.Vin      $&thd_percent"
let      unknown.{thisName}[unknown.k-1] = thd_percent
repeat  3
destroy
end
if      ($?interrupt)
goto    bail
endif
let      k          =      k + 1
endwhile
setscale VinVals
plot    $NameList loglog title "DUAL_DIFF THD_% vs Vin_pK and Nx"
let      j          =      j + 1
endwhile
label   bail
echo    "Done."
end
.endc

```

```

*=====
.model  NPN1  NPN(  BF=2100 VAF=216 )
.model  PNP1  PNP(  BF=2100 VAF=21 )
.end

```

=====END_OF_SPICE=====

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Graph 133 - unknown1452: DUAL_DIFF THD_% vs Vin_pK and Nx

