



```

* =====Loop_Temp=====
let          j          = 1
while        (j         <= NoOfTemp )
let          tmp         = TempVals[j-1]
set          temp        = $&tmp
set          thisName    = $NameList[$&j]
let          $thisName   = 0 * vector(NoOfVin)
echo        "$&j $&tmp    $temp $thisName "

* =====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 "THD_% vs Vin_pK and Temp_C"
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=====

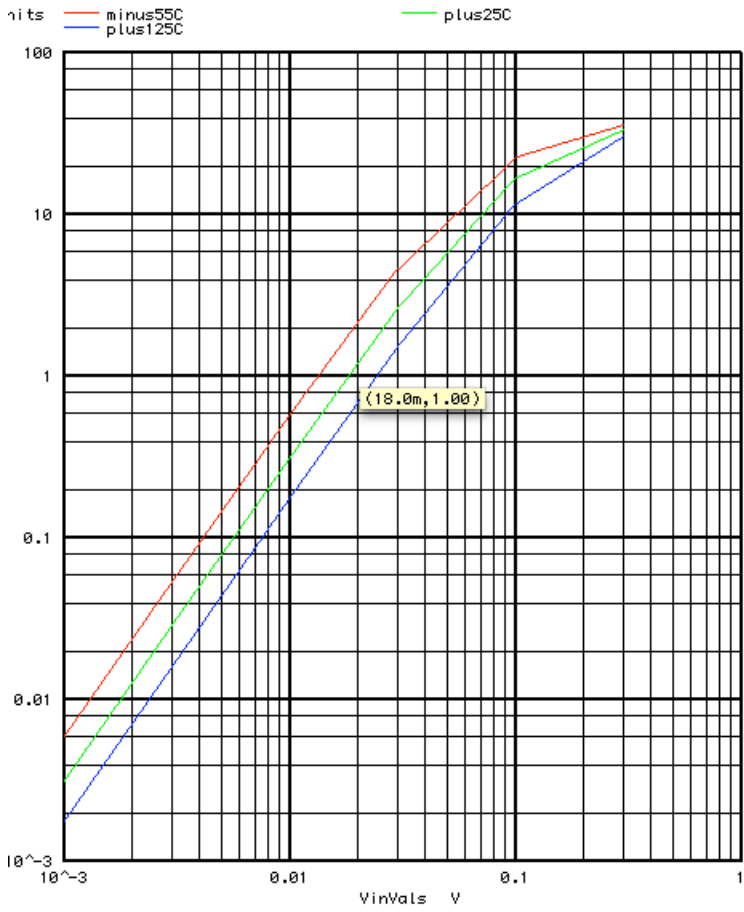
This simulation only works on MacSpice for now.  
Data in spice apparently gets stored in vectors which  
are ready to be plotted.

This is a classical plot of the distortion versus differential  
input voltage. The distortion often limits the practical magnitude  
of the input signal to less than ideal signal to noise ratio levels.  
For instance the 1% distortion level is at a 18mV peak level.  
At this input voltage, the output current is at 35% of the  
maximum available output.

The distortion simulation does a transient analysis at various  
input levels and temperatures. The distortion is found by  
doing an RMS sum of the harmonics and then dividing by the  
fundamental.

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Graph 4 - unknown331: THD\_% vs Vin\_pK and Temp\_C



Plotting distortion versus input level shows that the distortion is constant in shape and is scaled to absolute temperature.