

Department Of electrical and computer Engineering

ENEE2103 CIRCUITS AND ELECTRONICS LABORATORY

Experiment No.6 Prelab

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***I. CHARACTERESTICS OF AN N-CHANNEL JFET.***

IDS as function of VDS



The graph of it simulating from 0-20 volts



1. From your graph, above which values of VDS is ID almost unaffected by VDS when VGS=0?

Almost from 2 volts and up

1. For a given value of VDS, (say 10 V), do equal changes of VGS cause equal changes of ID?

No

1. Can you measure IG or is it too small?

It’s almost zero

1. From your graph, estimate the change in ID for 0.5 change in VGS when VDS =10 V, and VGS -1.0 V, then find the transconductance of the transistor(gm).

when VDS =10 V 🡪 Id = 4 mA , gm= ∆Id/ ∆Vds = (2.4754- 655.738m /3.7018m 2.0172m)=1.08

***II. COMMON DRAIN AMPLIFIER.***













voltage gain= Vo/Vi =0.2/8.18=40.9V

from the graph the phase shift =0 as seen

Zin =33

Zout = 50M ohm

By putting V test and I test from the output side and by the formula theoretically

***III. CONSTANT CURRENT SOURCE.***



|  |  |  |
| --- | --- | --- |
| **RL(KΩ)** | **VL(V)** | **ID(mA)** |
| **0.1** | **1.2** | **12** |
| **0.22** | **2.63** | **11.97** |
| **0.33** | **3.85** | **11.93** |
| **0.47** | **5.6** | **11.89** |
| **0.56** | **6.7** | **11.86** |
| **1** | **11.8** | **11.73** |
| **1.5** | **13.6** | **8.96** |
| **2** | **14** | **6.951** |
| **3** | **14.1** | **4.767** |

Table 8.2