

JFET Amplifier

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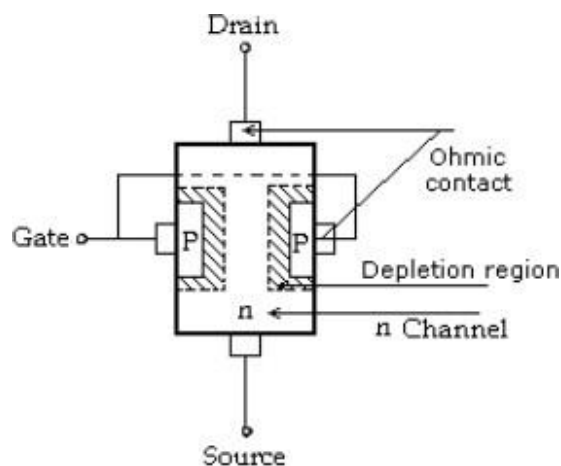
AIM: To study output and transfer characteristics of an n-channel Junction field effect Transistor (JFET) Amplifier

SOFTWARE TOOLS / OTHER REQUIREMENTS:

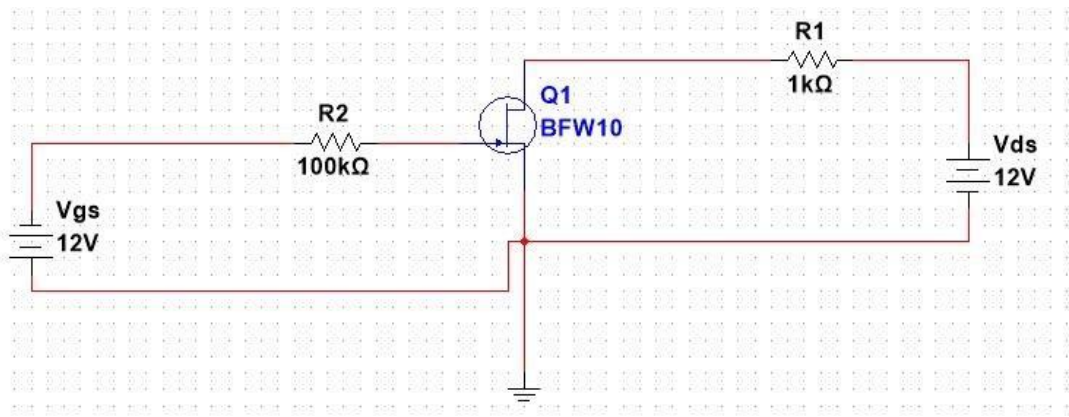
Multisim Simulator/Circuit Simulator

THEORY:

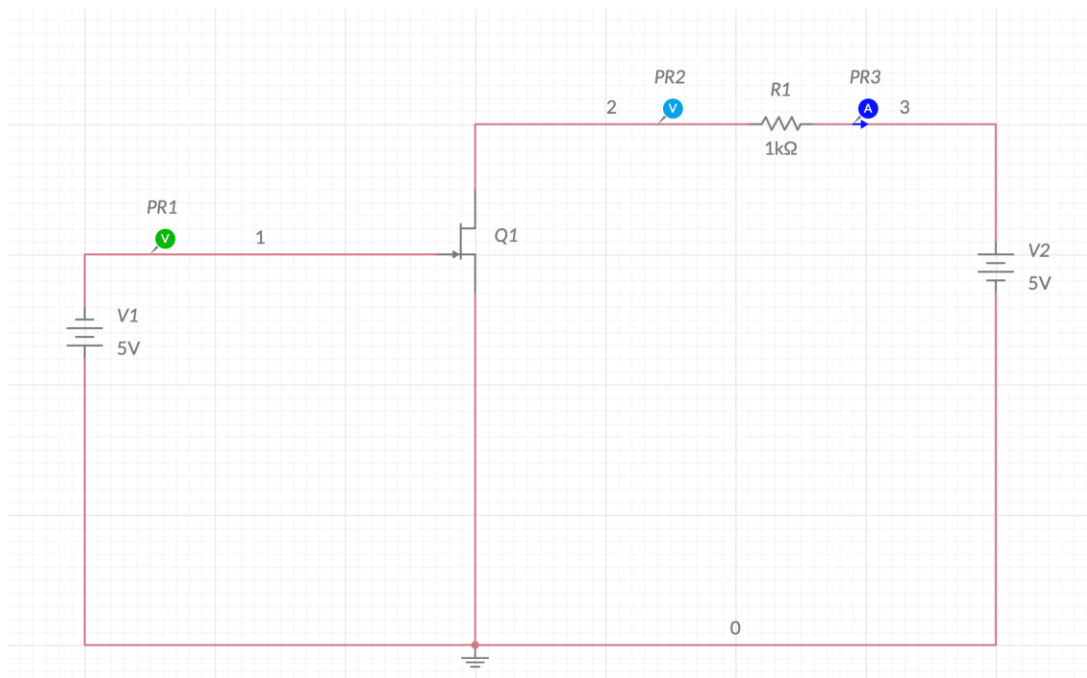
The basic construction of n-channel JFET is as shown in figure. The major part of JFET is the channel between embedded P types of material. The top of the n-channel is connected to an ohmic contact called as 'Drain' (D) & lower end of Channel is called as 'Source' (S). The two p types of materials are connected together & to the 'Gate' terminal (G).



CIRCUIT DIAGRAM:



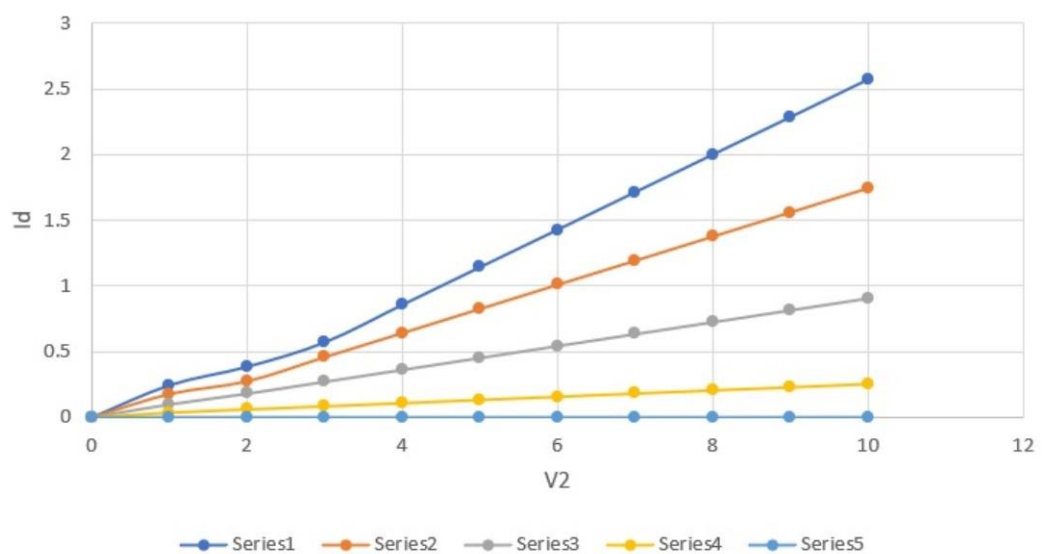
CIRCUIT DIAGRAM (FROM MULTISIM)



OUTPUT CHARACTERISTICS

	$V_1 = 0V$	$V_1 = -0.5V$	$V_1 = -1V$	$V_1 = -1.5V$	$V_1 = -2V$
$V_2 (V)$	$I_d (mA)$	$I_d (mA)$	$I_d (mA)$	$I_d (mA)$	$I_d (mA)$
0	0	0	0	0	0

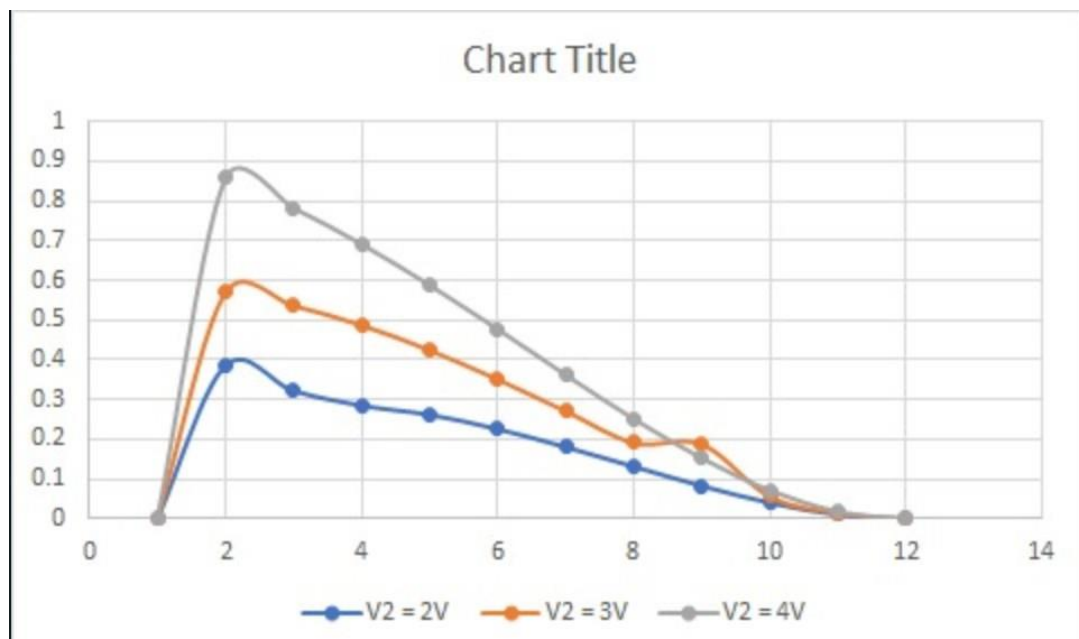
1	0.245	0.178	0.099	0.036	0
2	0.385	0.275	0.181	0.061	0
3	0.571	0.459	0.272	0.085	0
4	0.857	0.642	0.363	0.109	0
5	1.143	0.826	0.454	0.134	0
6	1.428	1.010	0.545	0.158	0
7	1.714	1.193	0.636	0.183	0
8	2	1.377	0.727	0.207	0
9	2.285	1.561	0.818	0.231	0
10	2.571	1.745	0.909	0.256	0



INPUT CHARACTERISTICS

	$V_2 = 2V$	$V_2 = 3V$	$V_2 = 4V$
$V_1 (V)$	$I_d (mA)$	$I_d (mA)$	$I_d (mA)$

0	0.385	0.571	0.857
-0.2	0.322	0.538	0.783
-0.4	0.285	0.489	0.692
-0.6	0.262	0.426	0.589
-0.8	0.226	0.352	0.478
-1.0	0.181	0.272	0.363
-1.2	0.132	0.192	0.252
-1.4	0.083	0.188	0.153
-1.6	0.041	0.056	0.072
-1.8	0.011	0.015	0.019
-2.0	0	0	0



Conclusions:

JFET IS A FIELD EFFECT TRANSISTOR WHICH IS A VOLTAGE CONTROLLED CURRENT SOURCE HAVING EXTREMELY HIGH INPUT IMPEDANCE. UNLIKE BJT, IT IS A UNIPOLAR JUNCTION TRANSISTOR WHICH IS USED IN MANY ELECTRONIC DEVICES AS AN AMPLIFIER.

