

Exp. No.:

Date :

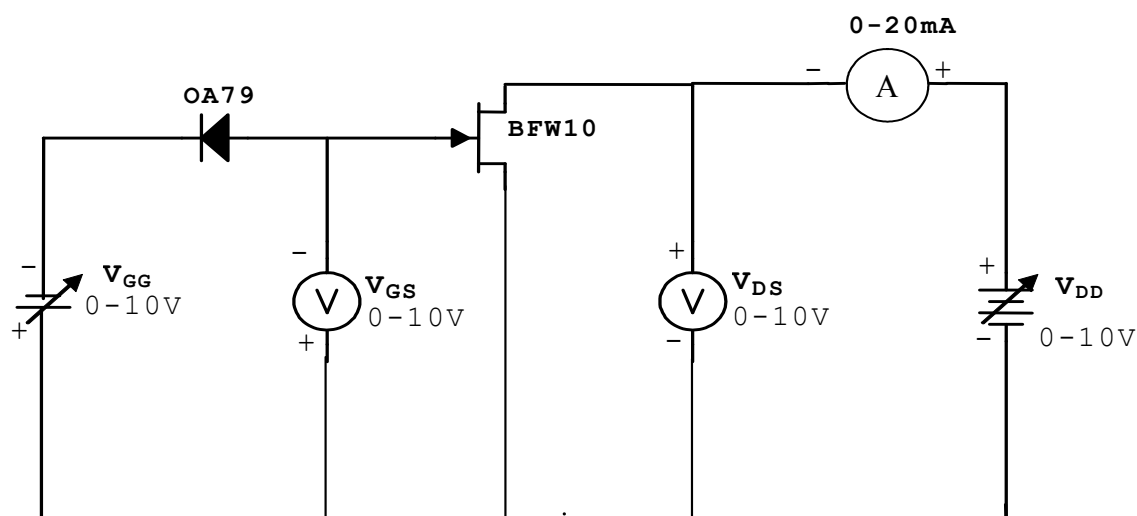
FET CHARACTERISTICS

AIM : To obtain the Drain and Transfer characteristics of JFET and also determine Transconductance(g_m), drain resistance(r_d) and amplification factor(μ).

APPARATUS :

S.No.	Name of the Apparatus	Range	Quantity
1.	BFW10, OA79	-	Each 1No.
2.	Power Supply	0-30V	2No.
3.	Ammeter	0-20mA	1No.
4.	Voltmeter	0-10V	2No.

CIRCUIT DIAGRAM:



PROCEDURE:

Drain Characteristics:

1. Connect the circuit as shown in figure.
2. Keep $V_{GS} = 0$, Vary V_{DD} and note down V_{DS} and I_D .
3. Repeat the above step for $V_{GS} = -1V$ and $-2V$.
4. Draw the drain characteristics by taking V_{DS} on X-axis and I_D on Y-axis

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Transfer Characteristics:

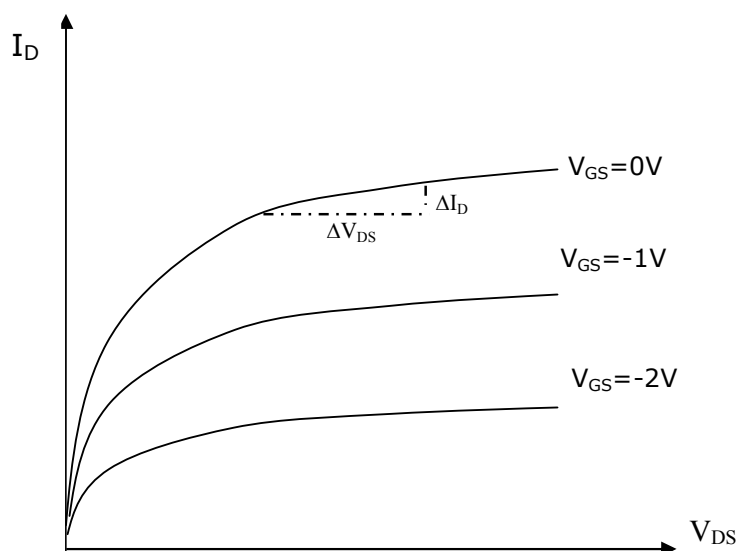
5. Fix V_{DS} at 2V, vary V_{GS} and note down V_{GS} and I_D .
6. Repeat the above step for $V_{DS} = 4V$.
7. Plot the transfer characteristics by taking V_{GS} on X-axis and I_D on Y-axis.

READINGS:**a. Drain Characteristics:**

$V_{GS}=0V$		$V_{GS}= -1V$		$V_{GS}= -2V$	
V_{DS} (V)	I_D (mA)	V_{DS} (V)	I_D (mA)	V_{DS} (V)	I_D (mA)

b. Transfer Characteristics:

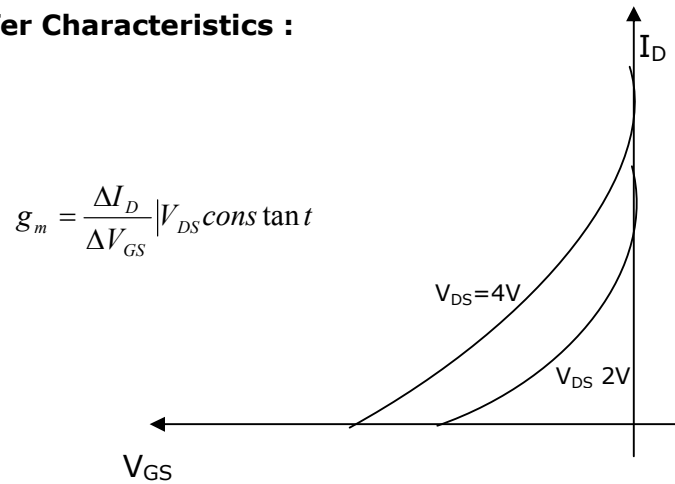
$V_{DS}=2V$		$V_{DS}=4V$	
V_{GS} (V)	I_D (mA)	V_{GS} (V)	I_D (mA)

MODEL WAVE FORMS: Drain Characteristics

$$r_d = \left. \frac{\Delta V_{DS}}{\Delta I_D} \right|_{V_{GS} \text{ constant}}$$

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Transfer Characteristics :

$$g_m = \left. \frac{\Delta I_D}{\Delta V_{GS}} \right|_{V_{DS} \text{ cons tan } t}$$

$$r_d = \left. \frac{\Delta V_{DS}}{\Delta I_D} \right|_{V_{GS} \text{ Cons tan } t} =$$

$$g_m = \left. \frac{\Delta I_D}{\Delta V_{GS}} \right|_{V_{DS} \text{ Cons tan } t} =$$

$$\text{Amplification factor } (\mu) = g_m \cdot r_d =$$

RESULTS:

1. Transconductance (g_m) =
2. Drain Resistance (r_d) =
3. Amplification Factor (μ) =