Electronic Circuits II - Tutorial 03

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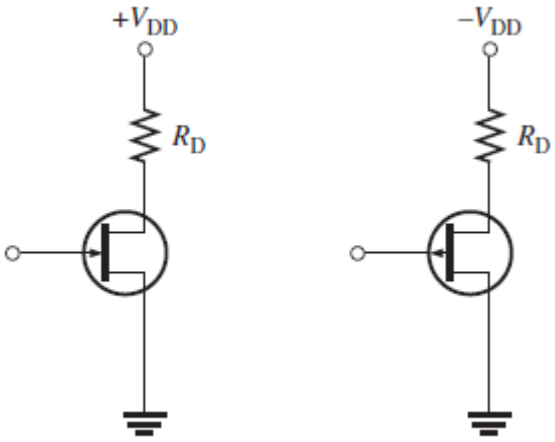
MCQ

#	Question	Answer
1	**1.** The JFET is **(a)** a unipolar device **(b)** a voltage-controlled device **(c)** a current-controlled device **(d)** answers (a) and (c) **(e)** answers (a) and (b)	e
2	The channel of a JFET is between the **(a)** gate and drain **(b)** drain and source **(c)** gate and source **(d)** input and output	b
3	A JFET always operates with **(a)** the gate-to-source *pn* junction reverse-biased **(b)** the gate-to-source *pn* junction forward-biased **(c)** the drain connected to ground **(d)** the gate connected to the source	a
4	I_{DSS} is **(a)** the drain current with the source shorted **(b)** the drain current at cutoff **(c)** the maximum possible drain current **(d)** the midpoint drain current	c
5	Drain current in the constant-current region increases when **(a)** the gate-to-source bias voltage decreases **(b)** the gate-to-source bias voltage increases **(c)** the drain-to-source voltage increases **(d)** the drain-to-source voltage decreases	a
6	A certain JFET datasheet gives $V_{GS(off)} = -4$ V. The pinch-off voltage, V_P, (a) cannot be determined (b) is -4 V (c) depends on V_{GS} (d) is $+4$ V	d
7	The JFET in Question 6 (a) is an *n* channel (b) is a *p* channel (c) can be either	a
8	For a certain JFET, $I_{GSS} = 10$ nA at $V_{GS} = 10$ V. The input resistance is (a) 100 MΩ (b) 1 MΩ (c) 1000 MΩ (d) 1000 MΩ	c

Problems

Q1	Why must the gate-to-source voltage of an *n*-channel JFET always be either 0 or negative?
Sol 1	.....

Q2	Show how to connect bias voltages between the gate and source of the JFETs in Figure  (a) (b)
Sol 2	…… …… …… …… …… …… …… …… …… …… …… …… …… …… …… …… …… ……

Q3	A certain n-channel JFET is biased such that $V_{GS} = -2$ V. What is the value of $V_{GS(off)}$ if V_P is specified to be 6 V? Is the device on?
Sol 3	.....

Q4	A certain p-channel JFET has a $V_{GS(off)} = 6$ V. What is I_D when $V_{GS} = 8$ V?
Sol 4	.....