

# Homework for Chapter 4

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April 3, 2020

**4.2.2** 测量某 MOSFET 的漏源电压、栅源电压值如下,其  $V_T$  或  $V_P$  值也已知,试判断该管工作在什么区域(饱和区、可变电阻区、预夹断临界点或截止)。

(3)  $V_{DS} = 3 \text{ V}$ ,  $V_{GS} = 1 \text{ V}$ ,  $V_{TN} = 1.5 \text{ V}$

(5)  $V_{DS} = -3 \text{ V}$ ,  $V_{GS} = -2 \text{ V}$ ,  $V_{TP} = -1 \text{ V}$

(提示:  $V_{TN}$ 、 $V_{TP}$  分别为增强型 MOS 管 N 沟道和 P 沟道的开启电压,  $V_{PN}$  为耗尽型 N 沟道 MOS 管夹断电压。)

**Problem (3)** Since  $V_{GS} < V_{TN}$ , the MOSFET is working in cut-off mode.

**Problem (4)** Since  $V_{GS} < V_{TP}$ ,  $V_{DS} = V_{GS} + V_{TP}$ , the MOSFET is working in active mode at onset of pinch-off.