

Introduction to Electronics



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An introduction to electronic components and a study of circuits containing such devices.

A photograph of a building's facade at night. A large, illuminated sign spells out "TECH" in white, block letters. The building has a prominent, pointed roof structure with a small spire. The scene is lit with warm, golden light, likely from streetlights or building lights, creating a glow on the roof and the sign.

TECH

MOSFET Switches



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Introduce the use of MOSFETs as switches in circuits

TECH

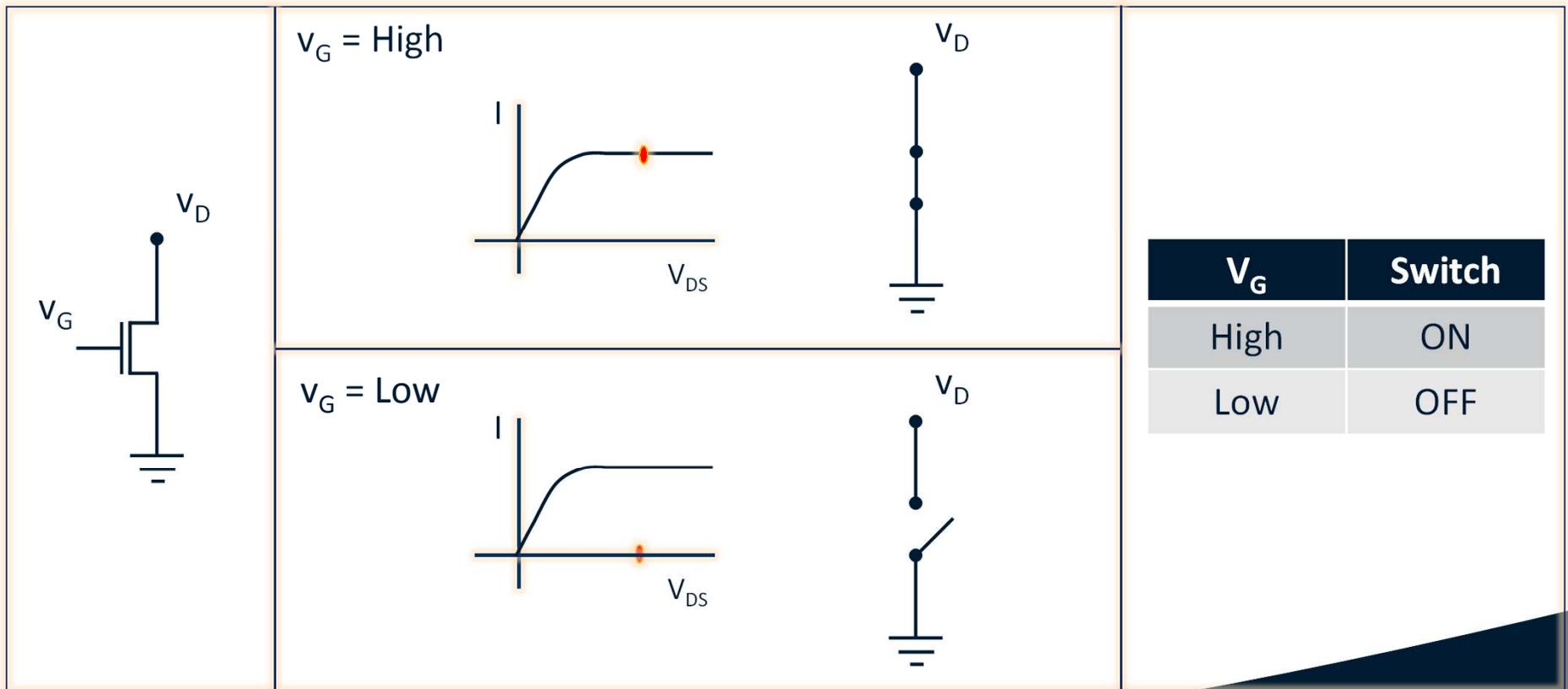
Previous Lesson

- ⦿ Introduction to MOSFETs
- ⦿ The physics of MOSFETs

Lesson Objectives

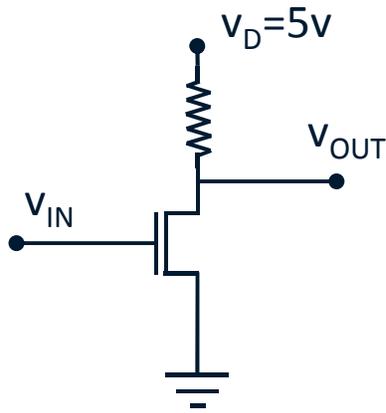
- ⦿ Examine the use of MOSFET as a switch in a circuit
- ⦿ Introduce CMOS devices

NMOS Switch Behavior

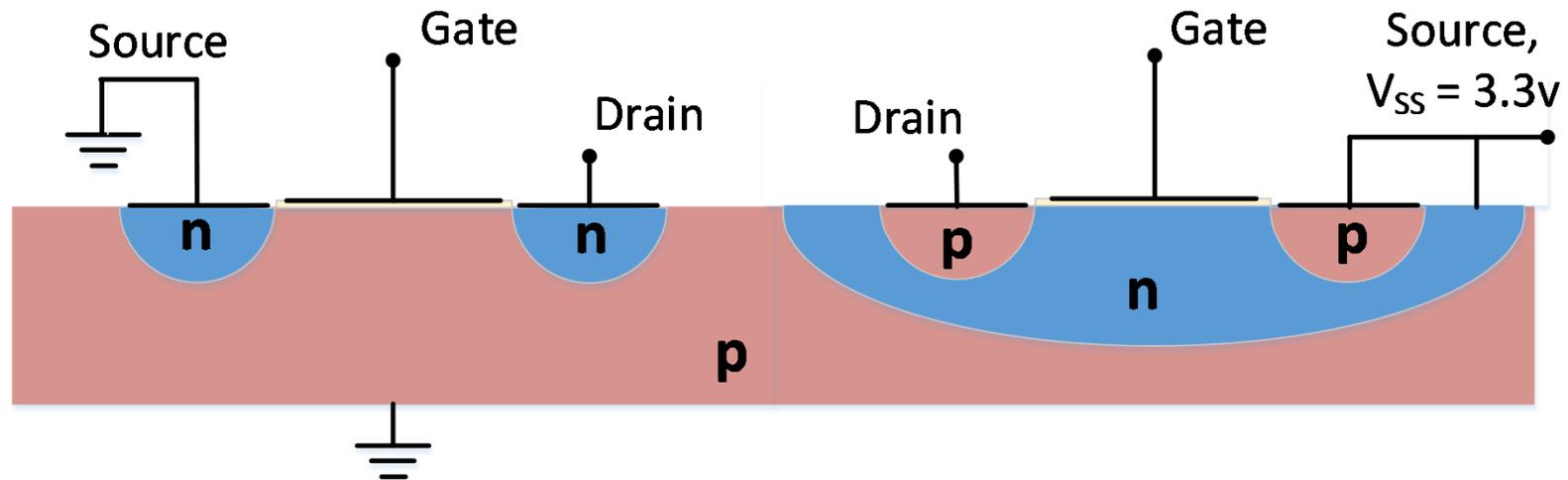


V_G	Switch
High	ON
Low	OFF

Simple NMOS Inverter Circuit



CMOS Devices



NMOS:

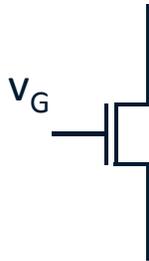
V_G	Switch
High	ON
Low	OFF

PMOS:

V_G	Switch
High	OFF
Low	ON

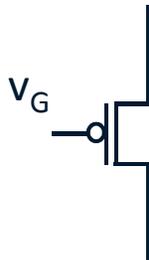
Summary of Switch Behavior

NMOS



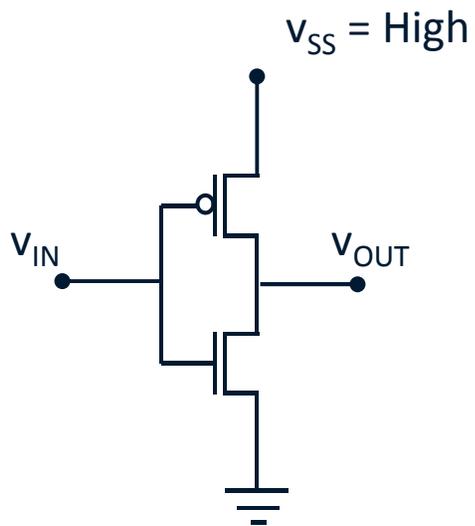
V_G	Switch
High	ON
Low	OFF

PMOS



V_G	Switch
High	OFF
Low	ON

CMOS Inverter Circuit



V_{IN}	V_{OUT}
High	Low
Low	High

Summary

- ⦿ Examine the use of MOSFET as an electrically controlled switch in a circuit
- ⦿ Introduced CMOS for complementary p-type and n-type transistor behavior
- ⦿ Introduced inverter circuits

Next Lesson

- ◉ CMOS Logic Gates