

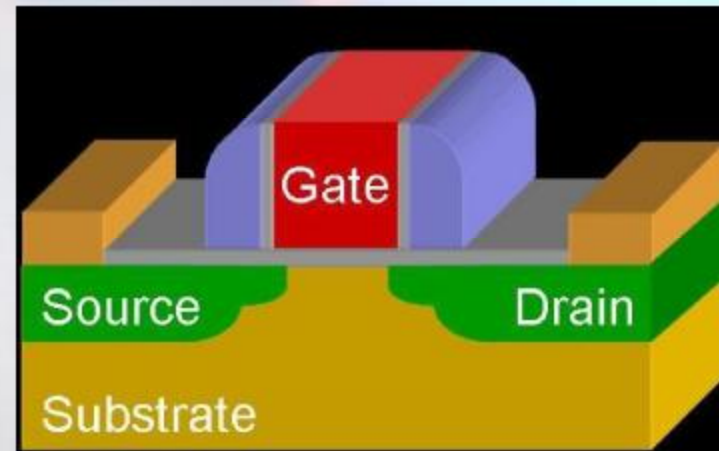


Metal Oxide Semiconductor FET (MOSFET)

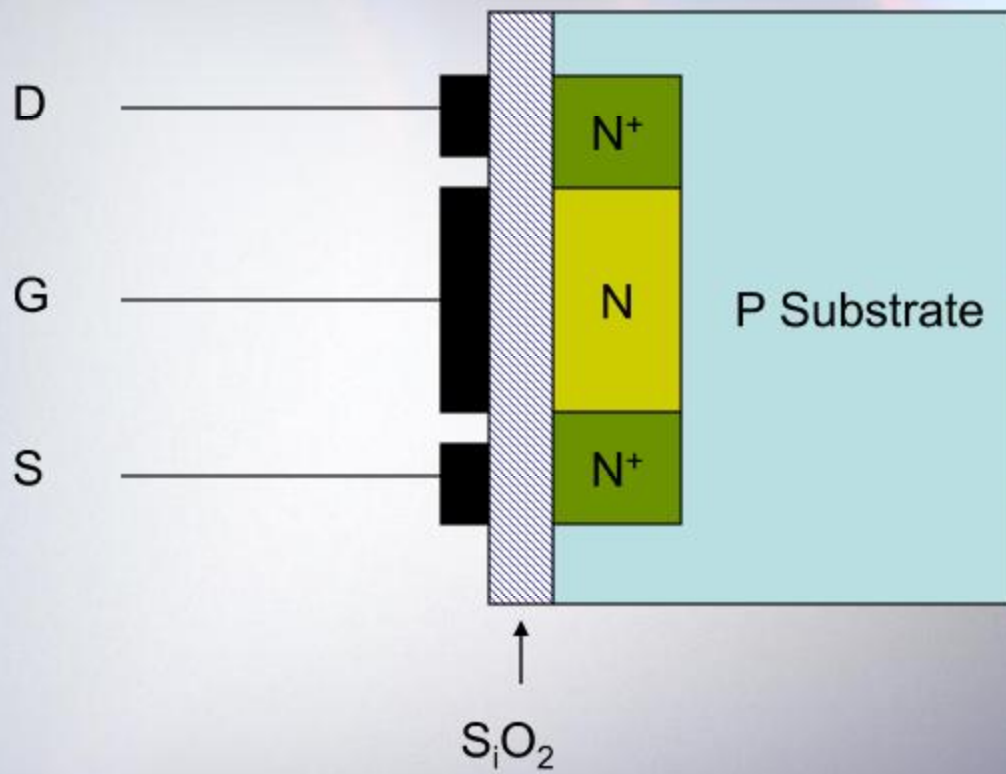
Depletion Type MOSFET

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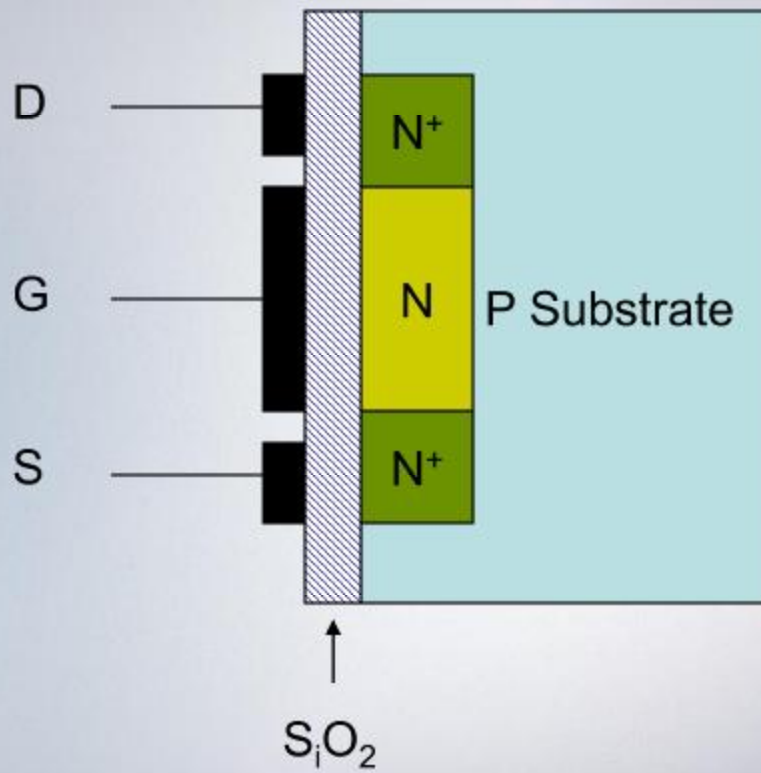
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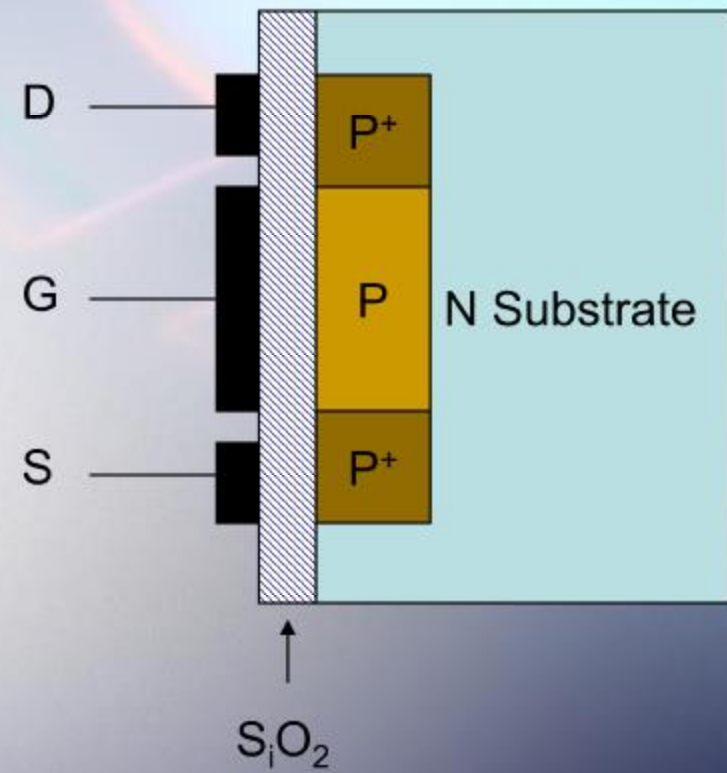
Construction



Types



N Channel MOSFET



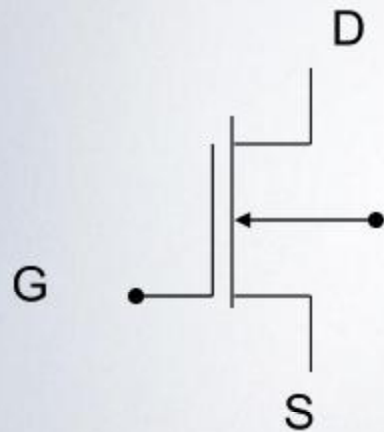
P Channel MOSFET

MOSFET Vs FET

- Same Terminals
- Same Characteristics
- Conductivity controlled by V_{GS}
- Gate in MOSFET is insulated from channel, while in FET it is attached to channel
- There is no reverse biased region in MOSFET
- MOSFET works in two modes
 1. Depletion Mode
 2. Enhancement Mode

Symbols

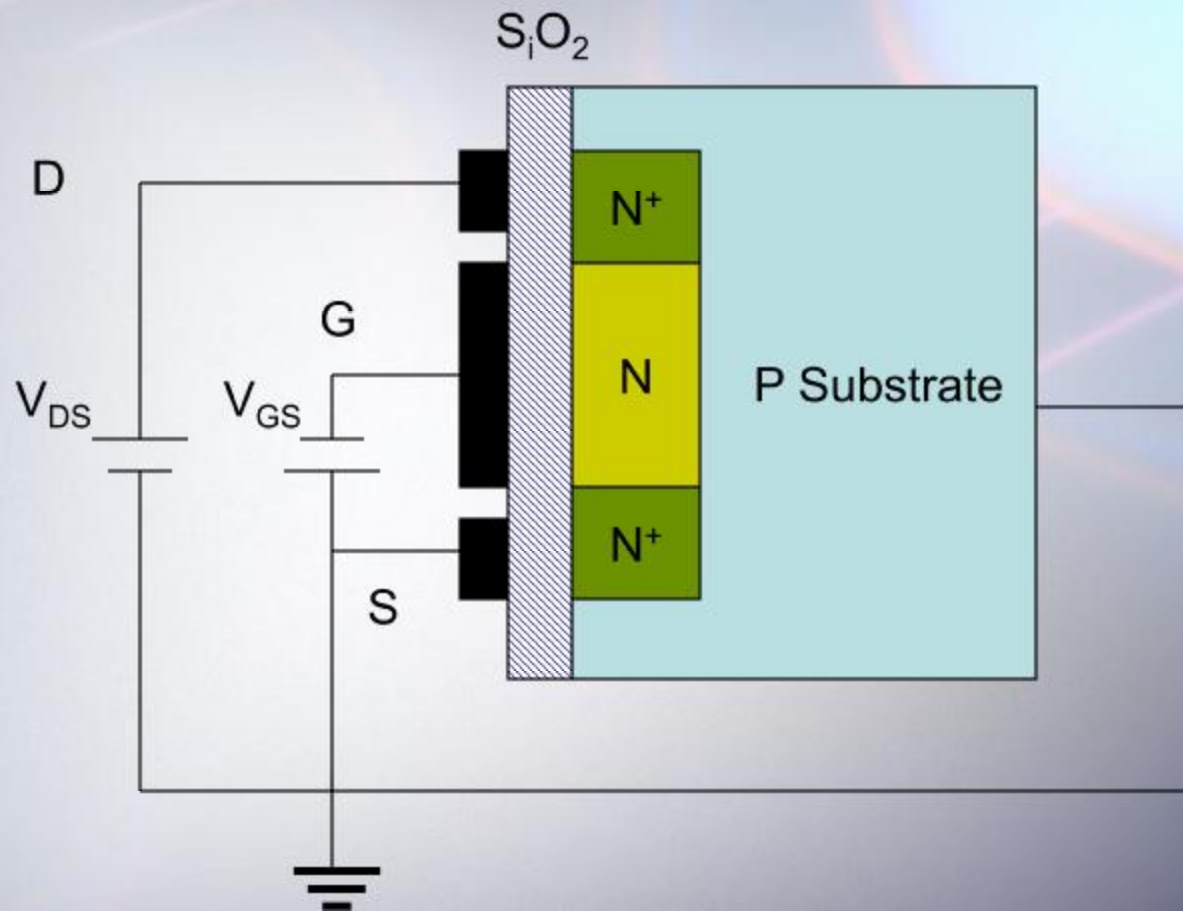
N Channel MOSFET



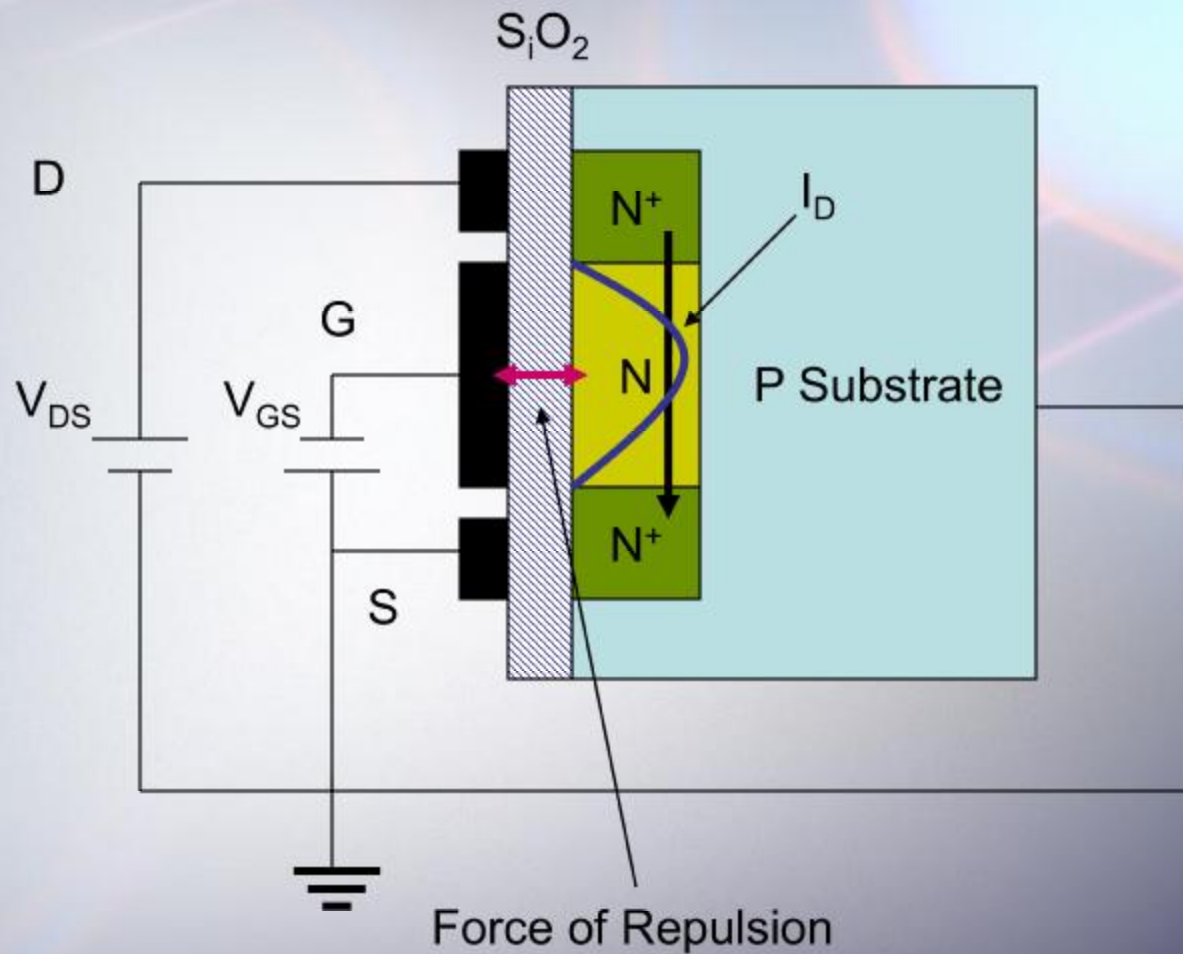
P Channel MOSFET



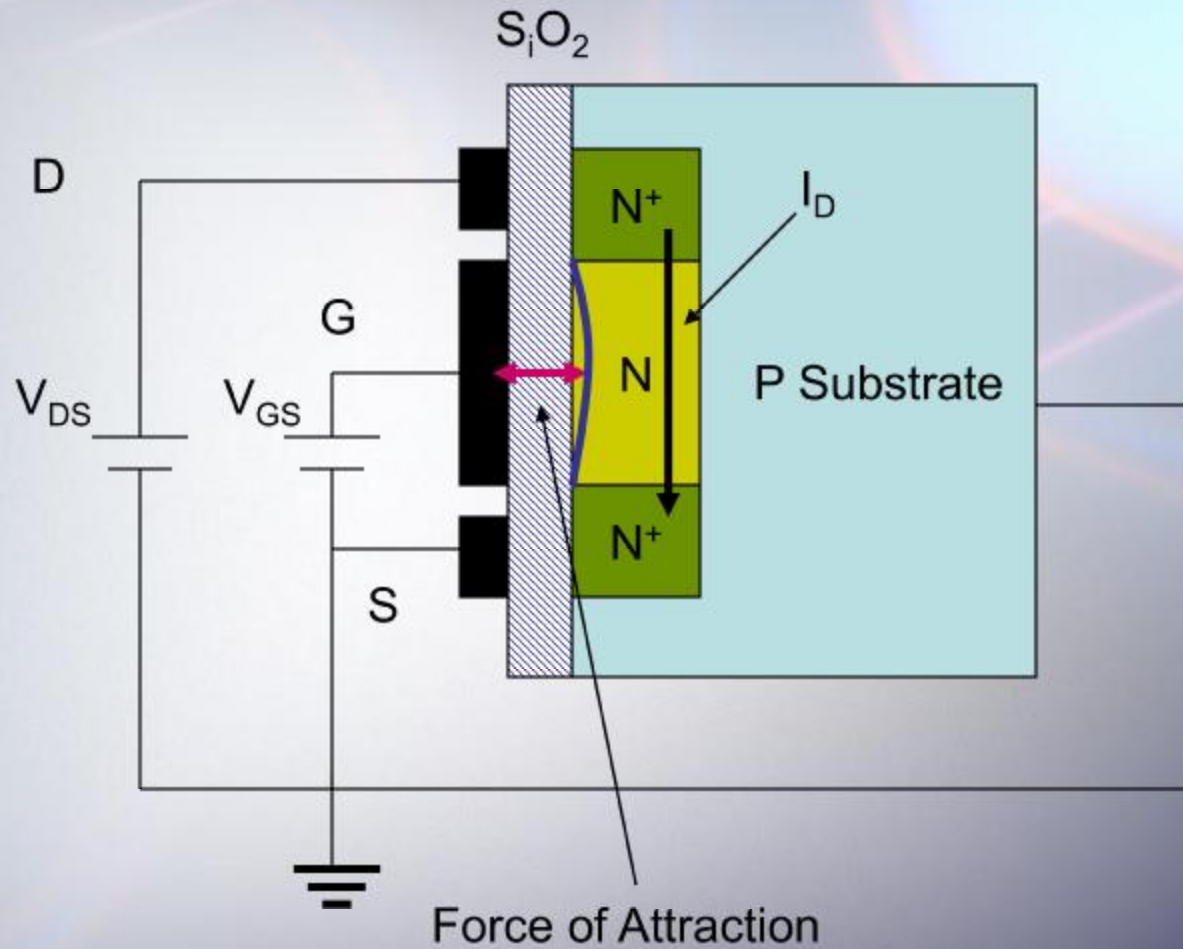
Biasing



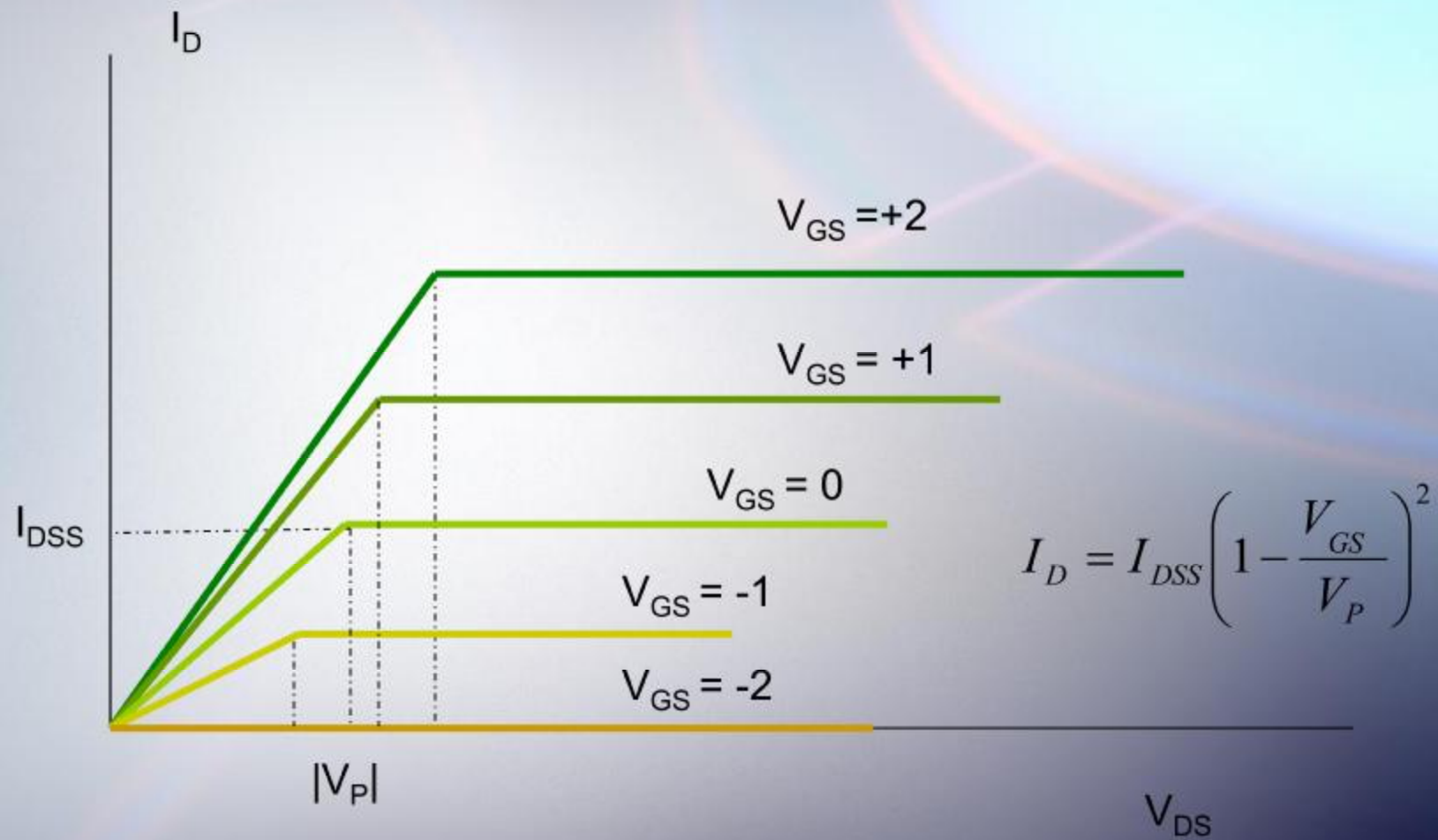
Depletion Mode Operation ($-V_{GS}$)



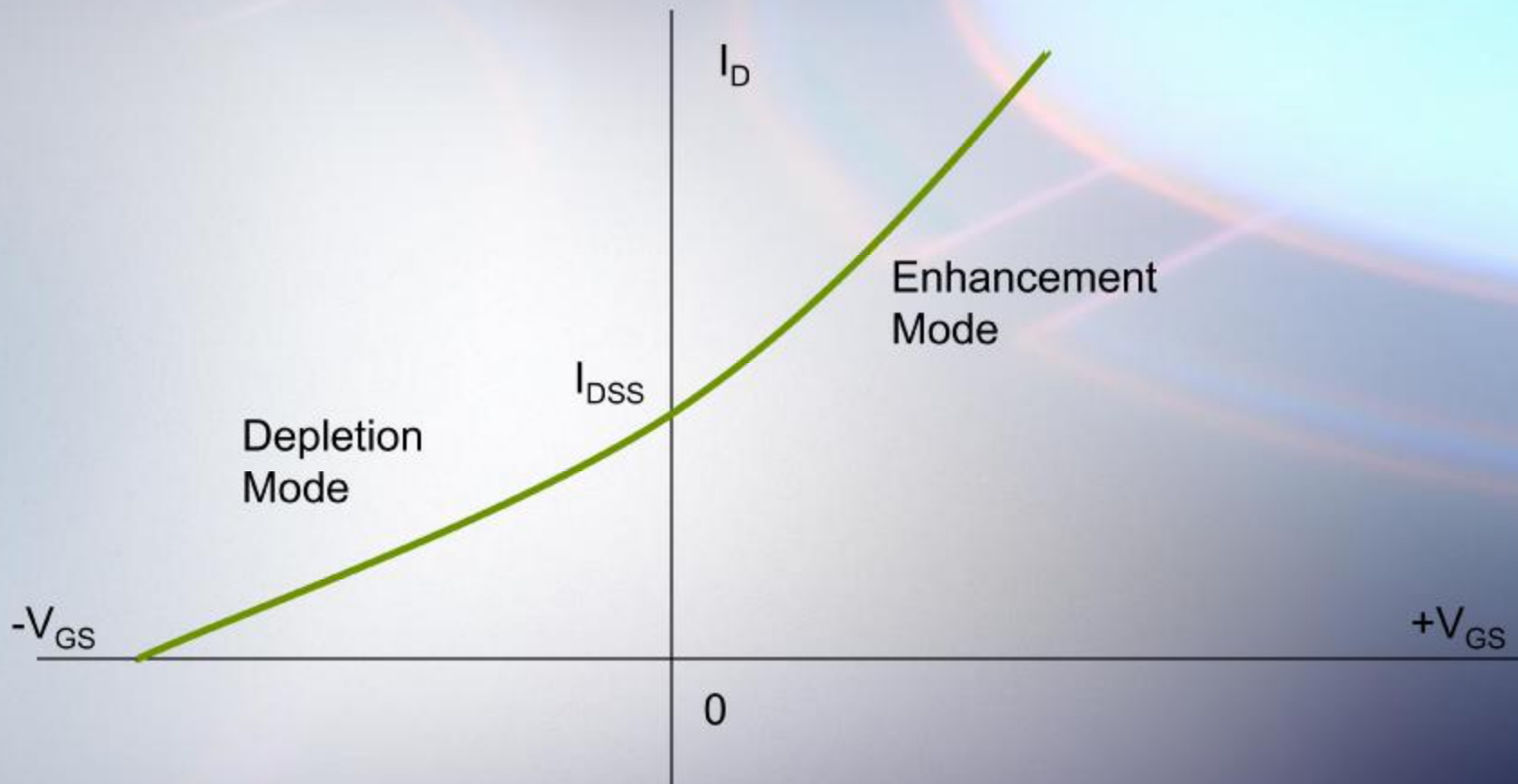
Enhancement Mode Operation (+ V_{GS})



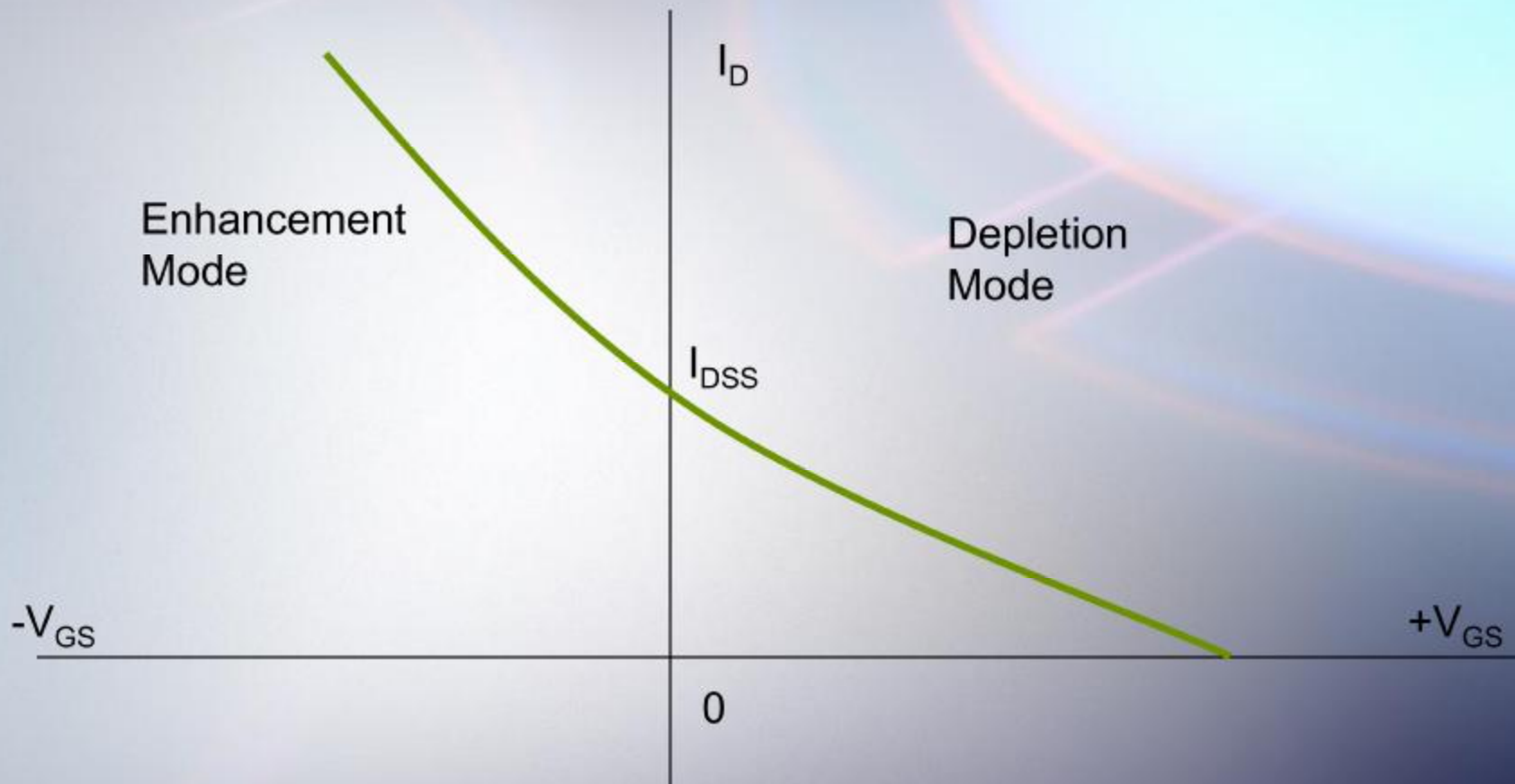
Drain Characteristics



Transfer Characteristics (N-Channel)



Transfer Characteristics (P-Channel)



Example

N-Channel MOSFET

$$I_{DSS} = 18 \text{ mA}$$

$$V_P = -5 \text{ V}$$

$$I_D = ?$$

1. $V_{GS} = -3 \text{ V}$

2. $V_{GS} = +2.5$

P-Channel MOSFET

$$I_{DSS} = 18 \text{ mA}$$

$$V_P = +5 \text{ V}$$

$$I_D = ?$$

1. $V_{GS} = -3 \text{ V}$

2. $V_{GS} = +2.5$