

METAL-OXIDE- SEMICONDUCTOR FIELD-EFFECT TRANSISTOR (MOSFET)

- *Extremely popular device* - has almost pushed BJTs out of the market
- *Three-Layer Device* (*Metal*, *Dielectric*, and *Semiconductor*)
- *Four-Terminal Device* [*Drain* (D), *Source* (S), *Gate* (G), and *Body/Substrate* (B)]
- *Current* through two terminals (D and S) can be *controlled* by the *voltages* applied at G and B
 - *Voltage Controlled Device*

- *Unipolar device*
 - Either *electrons* or *holes* participate in *current conduction*
- *Active device*
 - Capable of producing *voltage/current/power gain*
- *Two basic usage:*
 - *Amplification* (*Analog Circuits*)
 - *Switching* (*Digital Circuits*)
- *Two Types: NMOS and PMOS*

NMOS Structure

