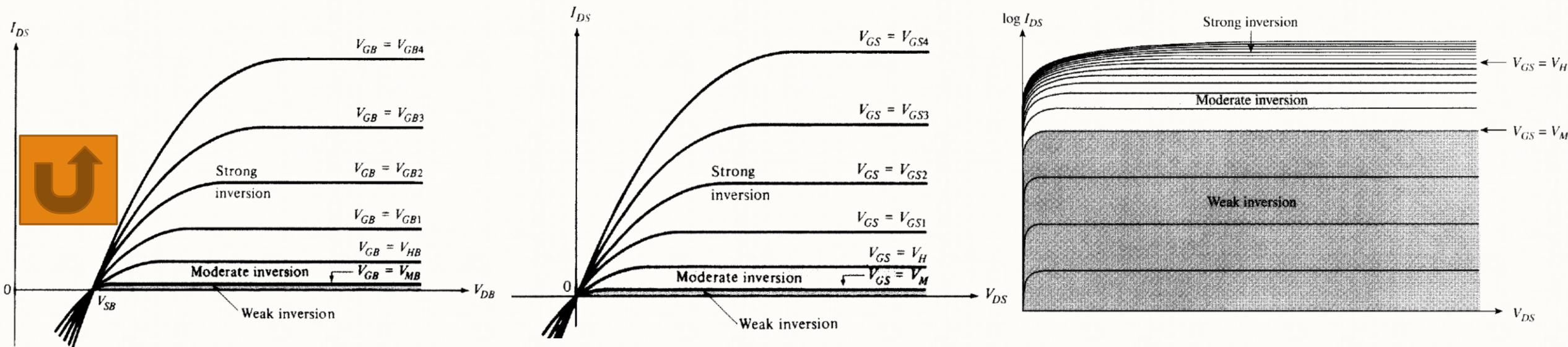


Transistor Regions of Operation



Transistor Regions of Operation

- Typical sets of de current-voltage characteristics for an nMOS transistor are shown in below Figs. Corresponding to previous operation mechanisms shown in [fig](#).
- Nonsaturation region: Sloped part
- Saturation region: Flatten part, high drain voltage



Transistor Regions of Operation...

- Drain current depends on the terminal voltages, in a *complicated* manner. However, for certain combinations of terminal voltages, *simplifications* become possible and relatively simple expressions can be developed for the current.
- **The name of an inversion region coincides with the level of inversion at the more heavily inverted channel end.**
- We will be *assuming* that the *more heavily inverted channel end* is the one next to the *source*, unless noted otherwise.

Region	Channel condition
Strong inversion	The more heavily inverted channel end is in strong inversion
Moderate inversion	The more heavily inverted channel end is in moderate inversion
Weak inversion	The more heavily inverted channel end is in weak inversion

