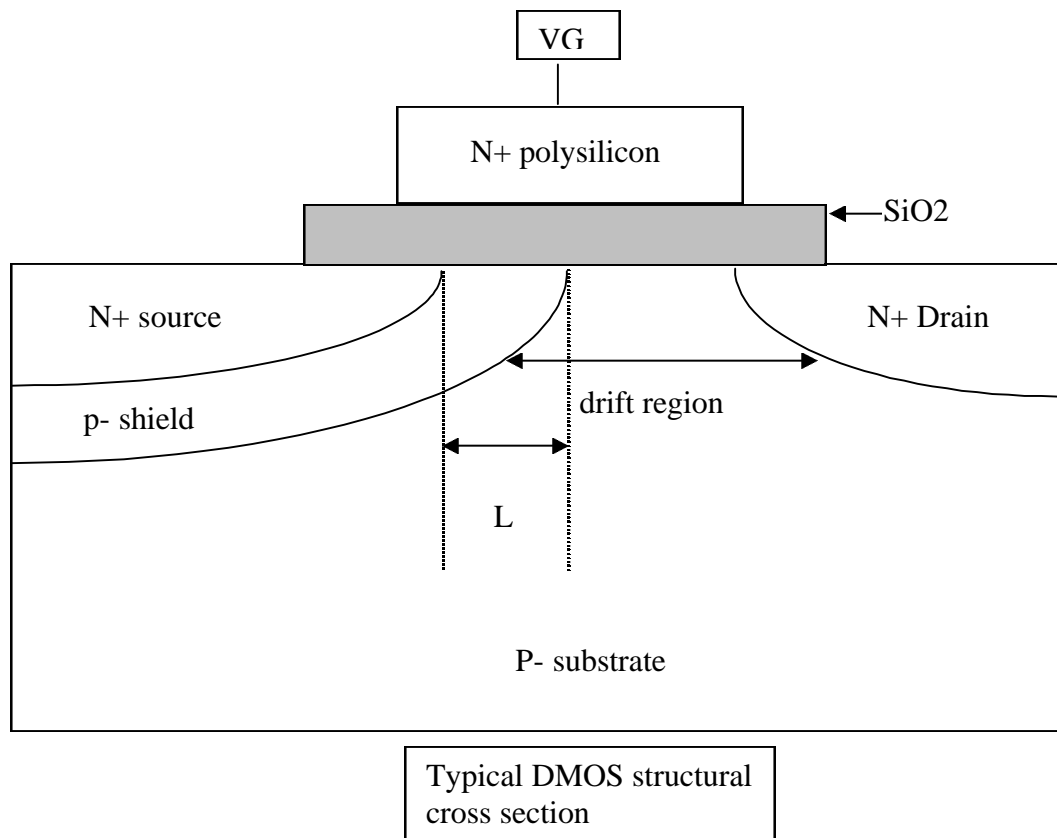


DMOS basics: A tutorial



Note:

The channel length of the transistor is determined by the higher rate of diffusion of p – dopant compared to the N+ dopant of the source. The channel is followed by a lightly doped drift region. DMOS transistors can have very short channel lengths which makes them fast switchers or higher frequency devices (depending on application). As can be seen the length L does not depend on the lithography to determine channel length.

There is good punch through control because of the heavily doped p – shield. The lightly doped drift region minimizes the voltage drop across the region by maintaining a uniform field ($> 10^4$ V/CM) to achieve velocity saturation of the carriers. The field near the drain is the same as in the drift region, so avalanche breakdown, multiplication, and oxide charging are lessened compared to conventional MOSFETs.

V_T , the threshold voltage is more difficult to control..