IGBT

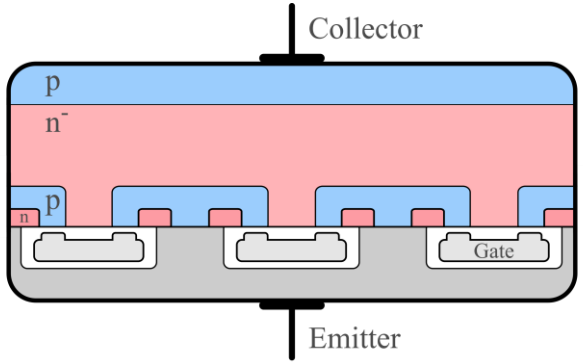
- What is an IGBT?
- How it operates?
- How do we address and use IGBTs in circuits?

SEMICONDUCTOR DEVICES

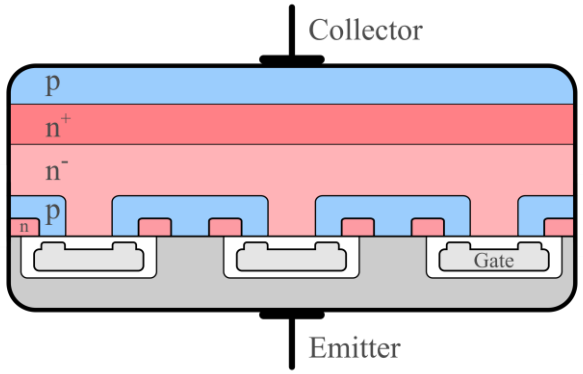
IGBT – Main characteristics

IGBT =
insulated-gate + bipolar transistor.
They are denoted as transconductance SC devices.
IGBT is also a “vertical” component.
IGBT is a minority carrier device.

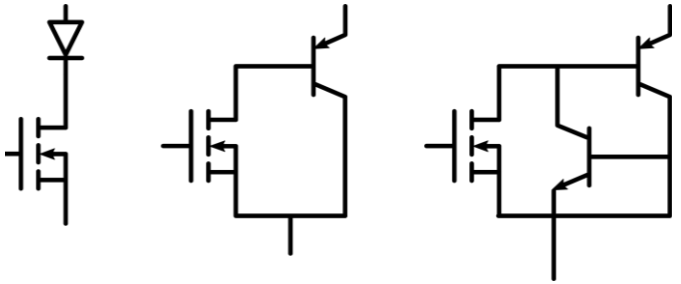
	NPT IGBT	PT IGBT
Switching speed		
Voltage rating		
Reverse blocking		
Short circuit rating		
Losses		



Non-punch through IGBT
(symmetrical)

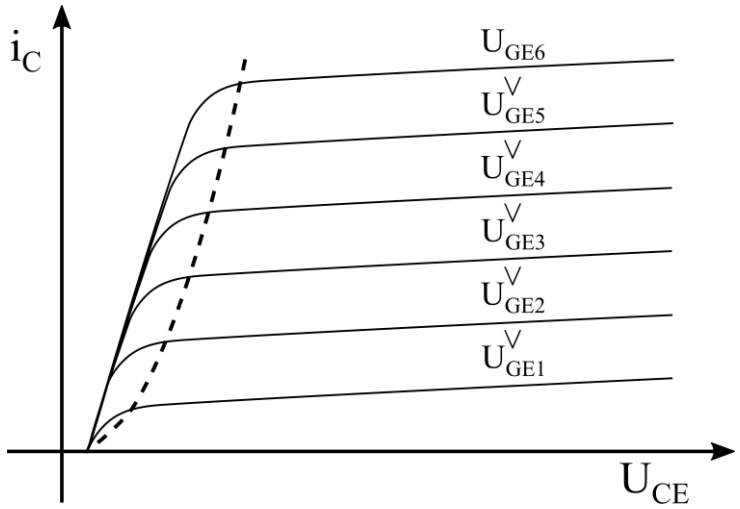


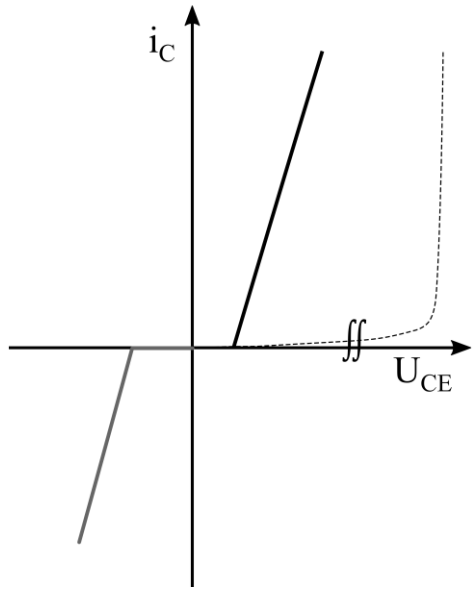
Punch through IGBT
(asymmetrical)



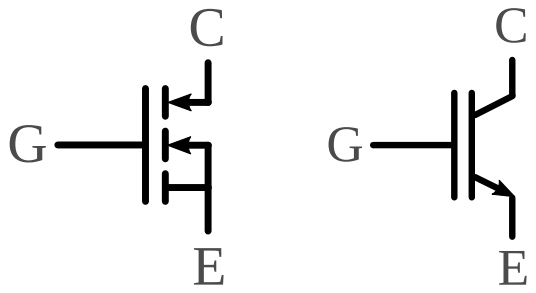
SEMICONDUCTOR DEVICES

IGBT – I-V curve (static)





IGBT – symbols/types



SEMICONDUCTOR DEVICES

IGBT – packages

IGBT – important notes

IGBTs:

- Are controllable semiconductor devices,
- Are turned ON and OFF by the dedicated (simple and low power) driver circuitry,
- Are minority carrier devices,
- Should be operated in the Saturation region,
- Smaller R_{on}, longer t_{off}.