



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF MECHATRONICS

19MCB302– INDUSTRIAL ELECTRONICS & APPLICATION III YEAR V SEM

UNIT 1 – Overview of Power Electronics

TOPIC –Introduction to Power Electronics Devices

Mr. M.Anand., M.E.,(Ph.D.,)

ASSISTANT PROFESSOR,

DEPARTMENT OF MECHATRONICS,

SNSCT, Coimbatore.





Introduction to Power Electronics

Solid State Devices:

Electronic equipment using semiconductor devices such as transistors, diodes and integrated circuits





Power Electronics Device or Solid state devices

Power Electronics Devices are used to



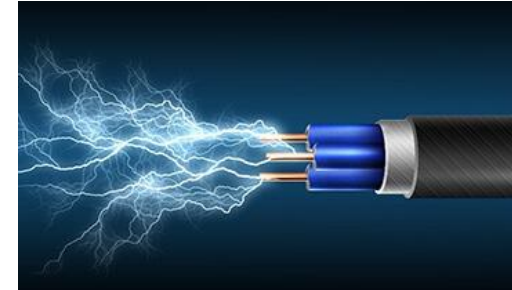
Control

&



Convert

Electrical Power





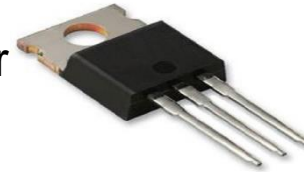
Power Electronics Device or Solid state devices

Power Electronics Devices are



Current Control

SCR- Silicon controlled rectifier

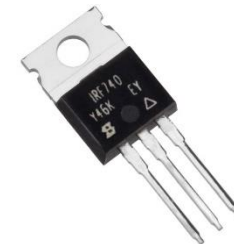


TRIAC- Triode for AC



Voltage Control

MOSFET- metal-oxide-semiconductor field-effect transistor

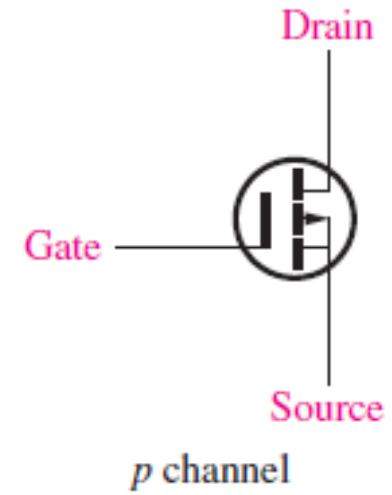
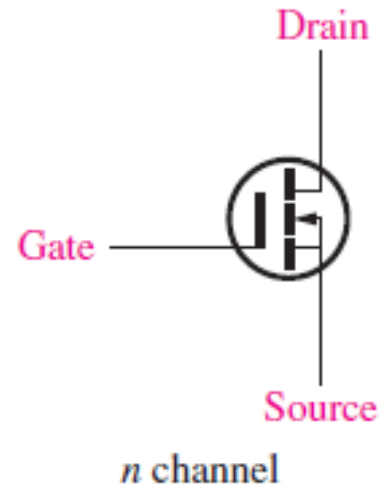
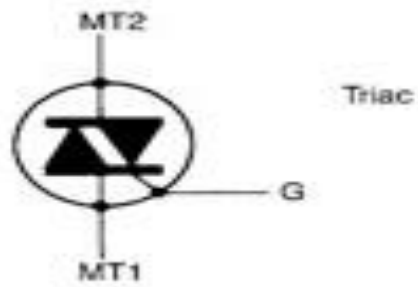
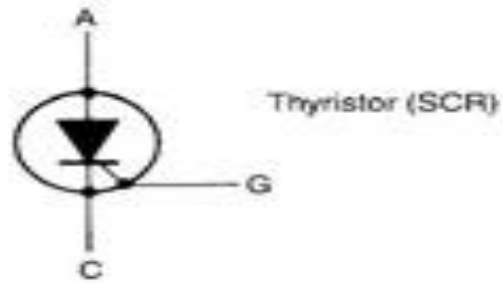
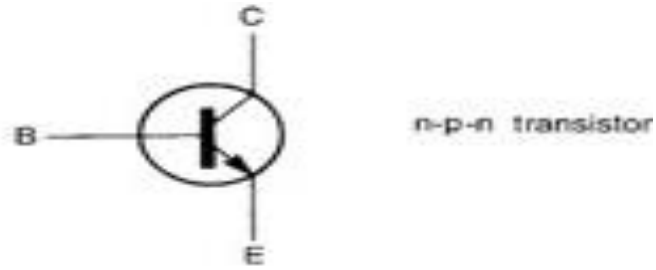


IGBT- Insulated-gate bipolar transistor





Power Electronics Device- Symbol





Power Conversion:

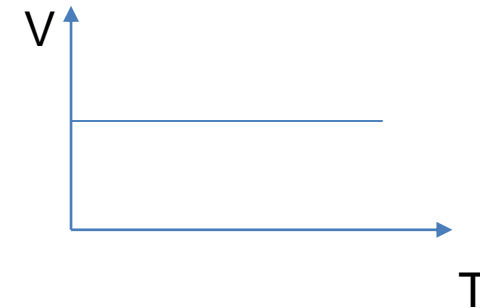
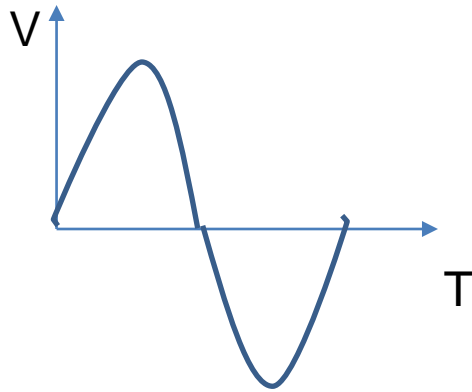
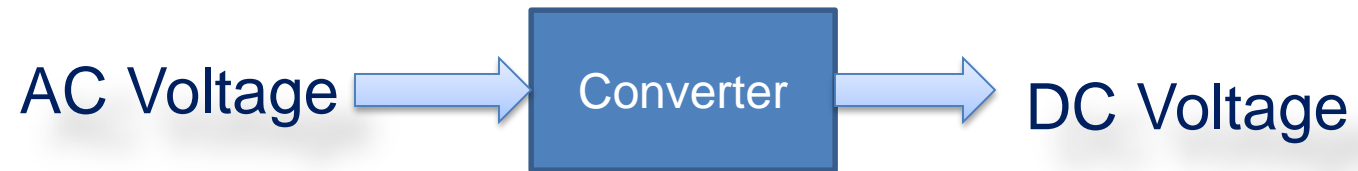
Conversion Process takes place by the PE Devices

- Converter
- Inverter
- Chopper
- Cyclo converter



Converters

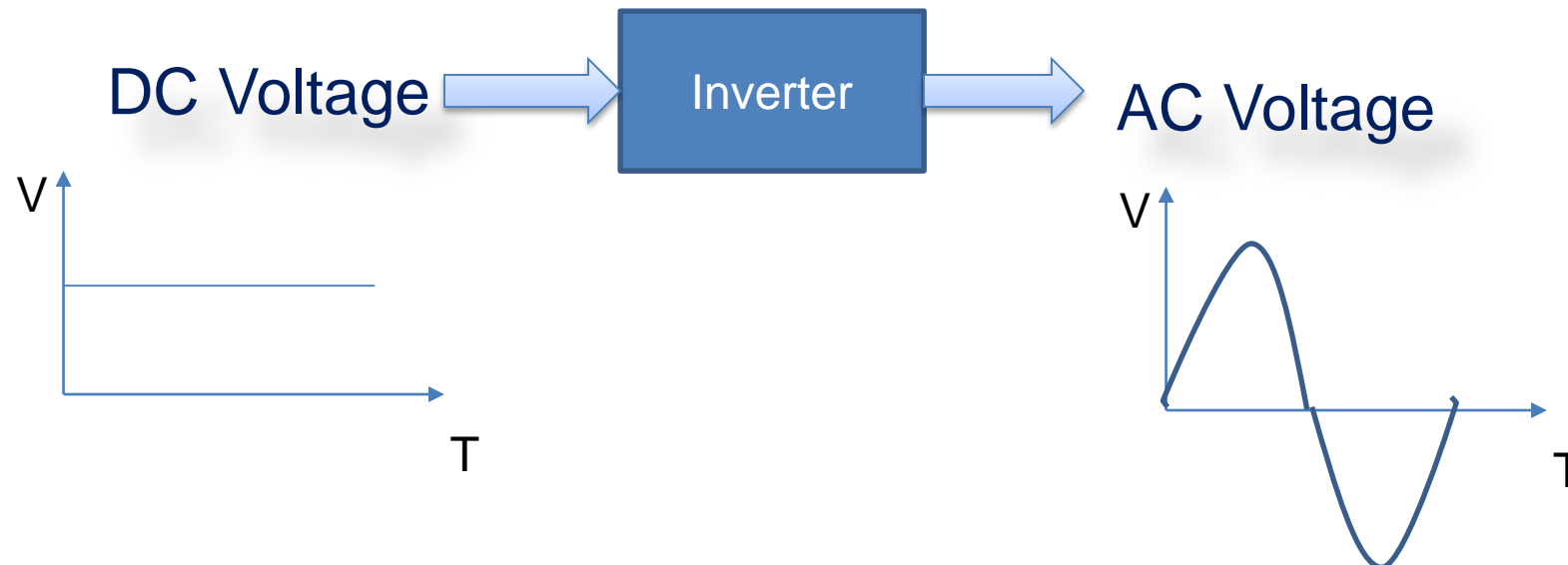
Converter is used to convert the AC Voltage into DC Voltage





Inverters

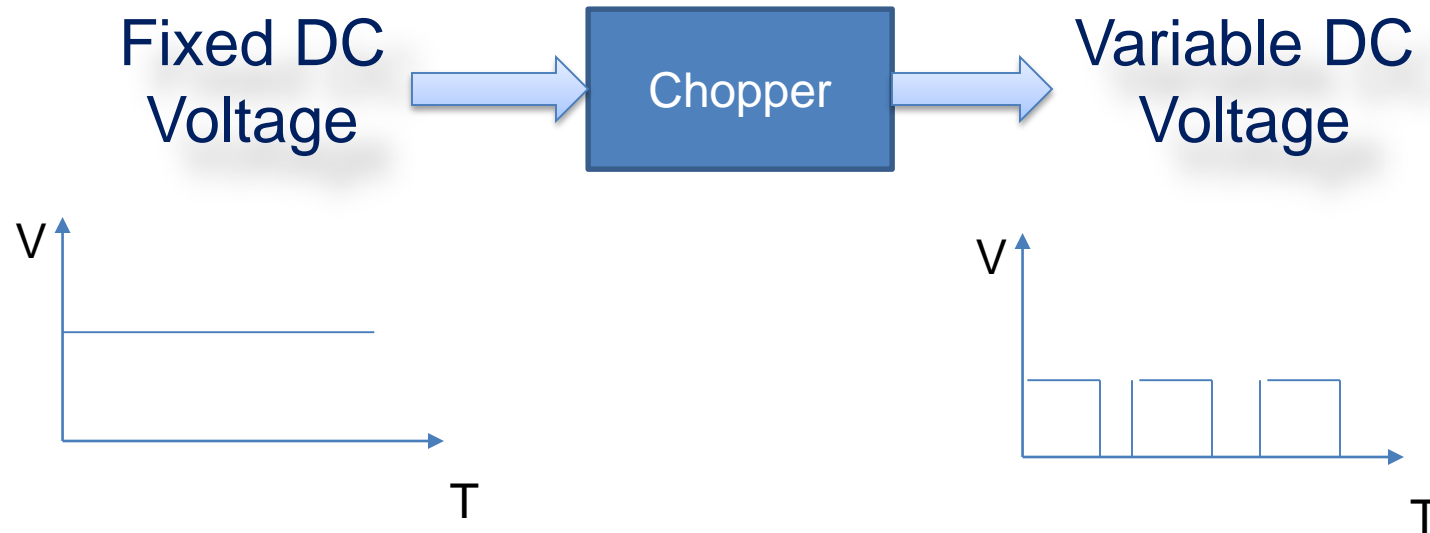
Inverter is used to convert the DC Voltage into AC Voltage





Chopper

Chopper is used to convert the fixed DC Voltage into Variable DC Voltage





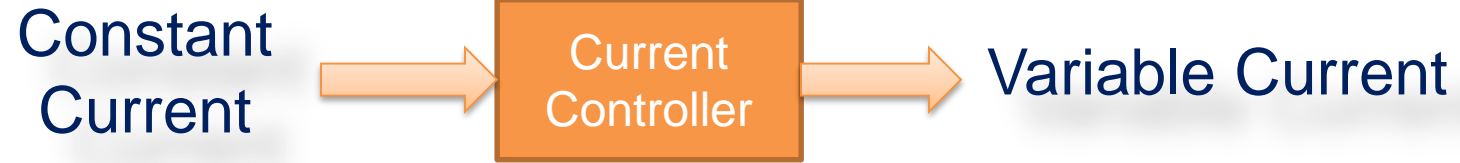
Cyclo Converters

Cyclo Converter is used to convert the Fixed AC Voltage into Variable AC Voltage



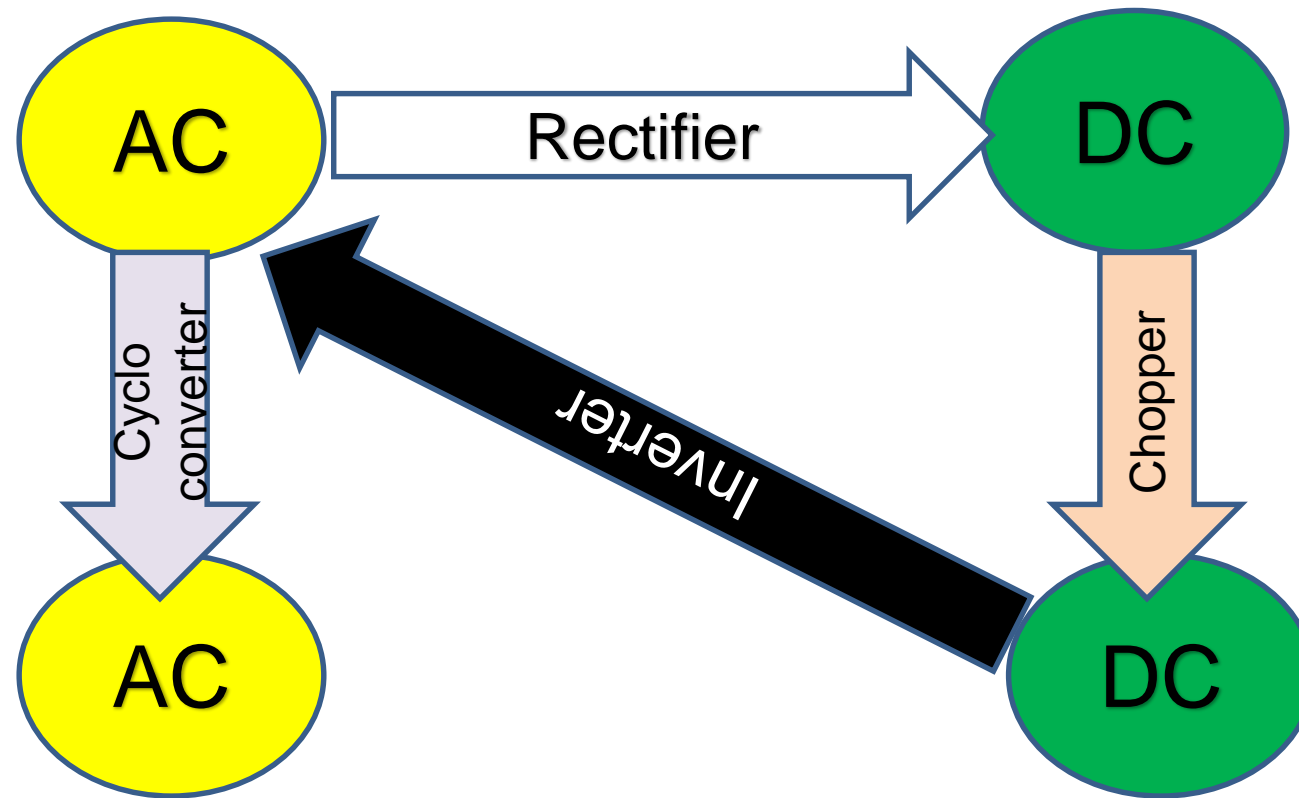


Control





Conversion Process





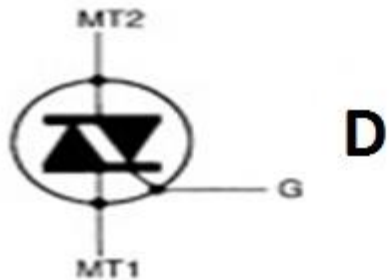
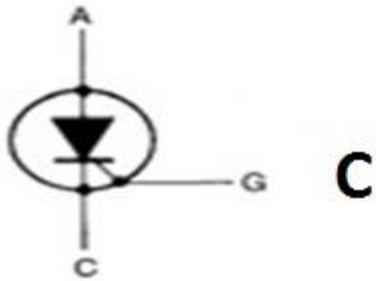
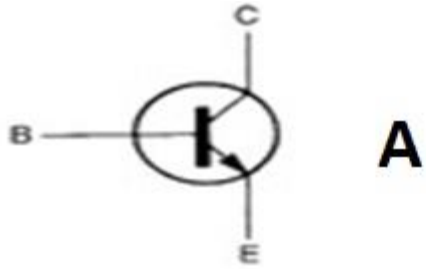
APPLICATIONS



CyberLink
PowerDirector



Find the name of the symbol...





References

1. https://www.google.com/search?q=4+quadrant+chopper&tbm=isch&ved=2ahUKEwi-0MGbn8zqAhVi23MBHW-cAb0Q2-cCegQIABAA&oq=4+quadrant+chopper&gs_lcp=CgNpbWcQA1DRhxNYtKoTYMerE2gAcAB4AIAB2wWIAdsFkgEDNi0xmAEAoAEBqgELZ3dzLXdpei1pbWc&sc=client=im&oi=7GFNY76cFOK2z7sP77iG6As&bih=657&biw=1366#imgrc=FMKXEVK-880joM
2. https://www.tutorialspoint.com/power_electronics/power_electronics=Power%20Electronics%20refers%20to%20the,efficiency%20and%0%25
3. <http://www.egr.unlv.edu/~eebag/EE-442-642%20Introduction%20F1>
4. <https://www.youtube.com/watch?v=djbJm-xWo2w>
5. <https://www.youtube.com/watch?v=jx5l2Fbil8U>

