

IGBT

Definition:

IGBT stands for Insulated Gate Bipolar Transistor. It's considered a combination between MOSFETS and BJT as it's fast switching and can handle high current and voltage. Some of its uses are in UPS (uninterruptible power supply) and in solar inverters.

Key parameters:

1. **Max voltage:** highest voltage it can handle between collector and emitter.
2. **Max current:** highest current it can handle without damaging.
3. **Switching speed:** the speed at which it can turn on and off.
4. **Max temperature:** highest temperature it can withstand without damaging.

Operating regions:

1. **Cutoff region:** where the IGBT is being off.
2. **Triode region:** where the IGBT is being on, controls current flow.
3. **Saturation region:** where the IGBT is being fully on with maximum current passing through it.