

Ripple Voltage [273]

The ripple voltage (V_r) is the peak-to-peak swing of a filtered waveform.

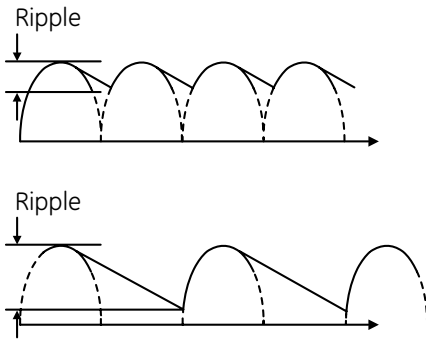


Fig 13.21 – Ripple Voltage

$$V_r = \frac{I_L t}{C}$$

where:

I_L = dc load current

C = filter capacitance, in farads

t = time between charging peaks

t @ 16.67ms for H W rectifiers

t @ 8.33ms for FW rectifiers

RMS Reverse Voltage [273]

The rating of a diode found by converting the **peak repetitive reverse voltage** rating to an rms value ($V_{rms} = 0.707V_{pk}$).

SCR

See **Silicon-Controlled Rectifier**.

Silicon-Controlled Rectifier [273]

A Silicon-controlled Rectifier (SCR) is a three-terminal, unidirectional device similar to the **silicon unilateral switch**. A third terminal, called the gate, provides another means of triggering the device. SCRs were designed primarily for half-wave ac control applications, such as motor controls, heating controls, and power supplies; or wherever half-wave silicon gate-controlled solid state devices are needed.

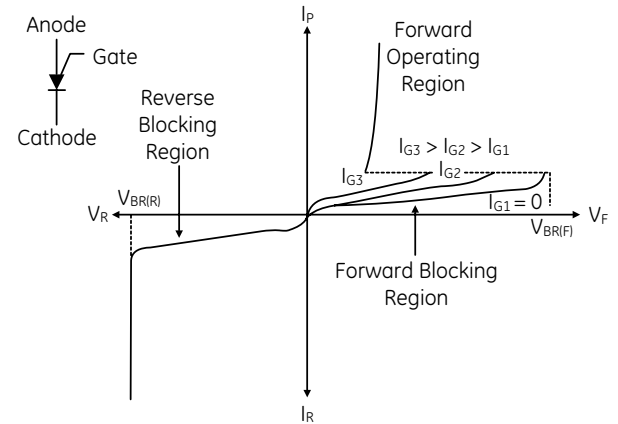


Fig 13.22 – Silicon-controlled Rectifier

Silicon Unilateral Switch [273]

The silicon unilateral switch (SUS) is a **thyristor** that is forced into conduction when the forward voltage across the device reaches a specified forward breakover voltage, $V_{BR(F)}$. Once triggered, the device becomes a low-impedance conductor. It remains in the on state (conducting state) until its forward current (I_F) drops below the holding current (I_H) rating of the device. At that time, the device returns to the off state (non-conducting state).

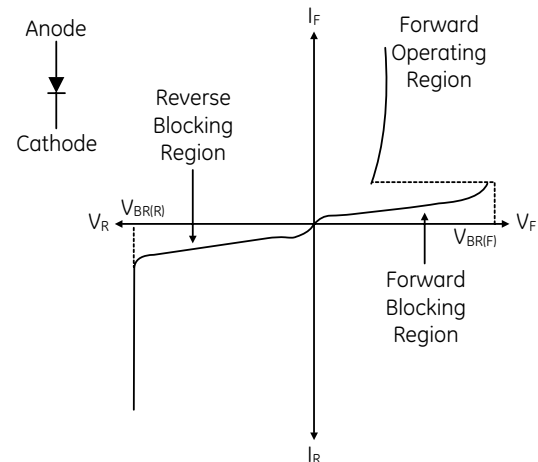


Fig 13.23 – Silicon Unilateral Switch