

Basic Firing Circuit For SCR

An SCR can be switched from off-state to on-state in several ways. These are forward voltage triggering, dv/dt triggering, temperature triggering, light triggering and gate triggering. The instant of turning on the SCR can not be controlled by the first three methods listed above. Light triggering is used in some applications, particularly in series connected string. Gate triggering is, however, the most common method of turning on the SCRs, because this method lends itself accurately for turning on the SCR at the desired instant of time in addition, gate triggering is an efficient and reliable method.

General Firing Circuit For Thyristor: As stated above, the most common method for controlling the onset of conduction in an SCR is by means of gate voltage control. The gate control circuit is also called firing, or triggering circuit. These gating circuits are usually low power electronic circuits. A firing circuit should fulfill the following two functions.

- (1) If power circuit has more than one SCR, the firing circuit should produce gating pulses for each SCR at the desired instant for proper operation of the power circuit. These pulses must be periodic in nature and the sequence of firing must correspond with the type of Thyristorised power controller. For example, in a single phase semiconductor using two SCRs. The triggering circuit must produce one firing pulse in each half cycle in a 3-phase full converter using six SCRs gating circuit must produce one trigger pulse after every 60° interval.
- (2) The control signal generated by a firing circuit may not be able to turn-on an SCR. It is therefore common to feed the voltage pulses to a driver circuit and then to gate cathode circuit. A driver circuit consists of a pulse amplifier and a pulse transformer.

A general firing circuit is consists of the DC power supply, pulse generator, pulse amplifier and pulse transformer. A regulated DC power supply is obtained from an alternating voltage source. Pulse generator, supplied from both AC and DC sources, gives out voltage pulses which are then fed to pulse amplifier for their amplification. Shielded cables transmit the amplified pulses to pulse transformers The function of pulse transformer is to isolate the low voltage gate-cathode circuit from the high voltage anode-cathode circuit.