Triac Protection

Thyristors

Damage can occur to a thyristor if the thyristor's repetitive peak off-state voltage is exceeded. A thyristor's repetitive peak off-state voltage may be exceeded due to dirty AC power mains, inductive spikes, motor latch up, and so on.

Thyristor Reference Circuit

Figure 3.55 and Figure 3.56 show two different methods of protecting a triac. In Figure 3.55, a *SIDACtor* device is connected from MT2 to the gate of the triac. When the voltage applied to the triac exceeds the *SIDACtor* device's V_{DRM}, the *SIDACtor* device turns on, producing a gate current which turns the triac on.
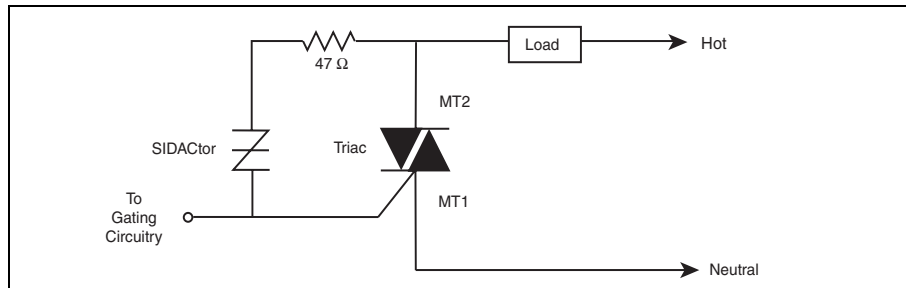

Figure 3.55   TRIAC Protection

The circuit in Figure 3.56 places a *SIDACtor* device across MT2 and MT1 of the triac. In this instance the *SIDACtor* device protects the triac by turning on and shunting the transient before it exceeds the V_{DRM} rating of the triac.
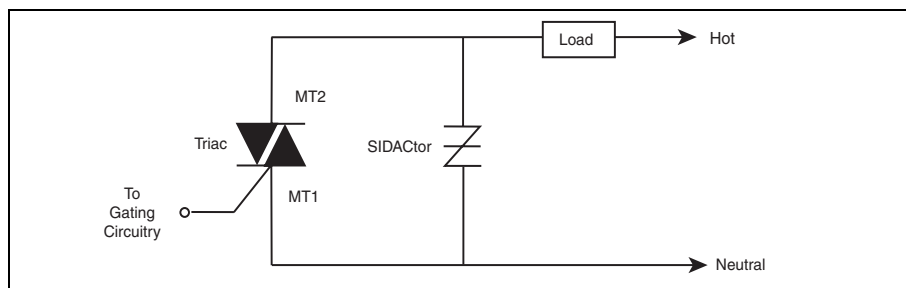

Figure 3.56   TRIAC Protection

With both methods, consider the following designs when using a *SIDACtor* device to protect a thyristor:
- V_{DRM} of the *SIDACtor* device < V_{DRM} of Triac
- *SIDACtor* device V_{DRM} > 120% $V_{PK(power supply)}$
- *SIDACtor* device must be placed behind the load