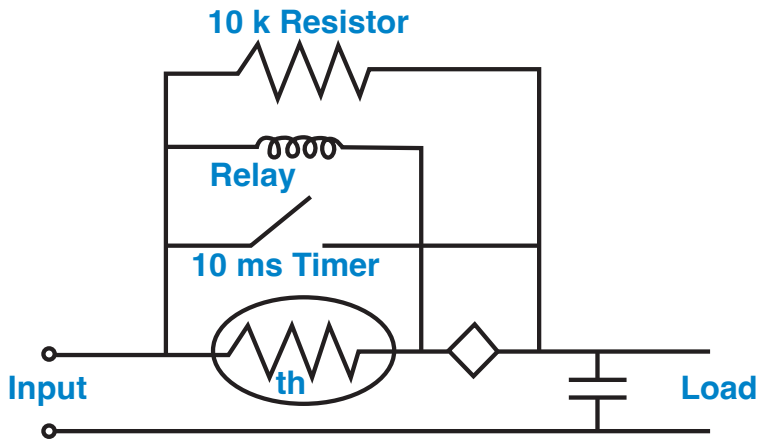
DID YOU KNOW?

NTC AND PTC INRUSH CURRENT LIMITER THERMAL TIME CONSTANT

The definition of thermal time constant for an inrush current limiter is the time required for it to change **63.2 % of the total difference between its initial temperature and final temperature when subjected to a step function change in temperature.** In other words, the **time that it takes an inrush current limiter to recover to 50 % of its initial resistance is called the thermal time constant.** This data can be found on all of the datasheets on our website. The thermal time constant is different for inrush current limiters based on their mass. If your application needs to be turned on and off repeatedly and you need to stop the inrush of current, then this circuit should work for you.



You need to choose the correct relay for your application to use with the inrush current limiter. The timer is half a cycle, or 10 ms, although you might need a longer one. **This circuit allows the inrush current limiter to drop the inrush and then it is completely taken out of the circuit.** Thus, it will take very little time to cool down.

Example:

Let the time constant of ICL = Tau = τ
Let the Tf = final body temperature of ICL
Let Ti = surrounding or ambient temperature
Then $\delta T = Tf - Ti$
Next 63.2 % of $\delta T = 0.632(\delta T)$
τ = time it will take for the body temperature to change from $Tf - 0.632(\delta T)$
That time is usually approximately the same as 50 % of the final resistance value = (resistance at 25 °C) (0.50)