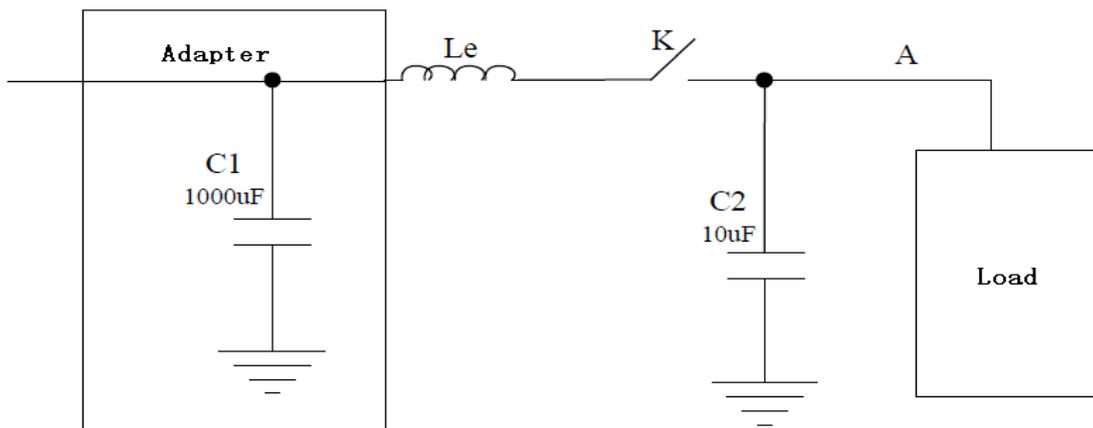


Input power supply filter capacitor may cause problems

Many electrical devices are adapters through a long power cord power supply, power supply filter capacitor in the electric device at one end. With the development of products to the direction of the small, portable, ceramic capacitors in the power filter has been a very wide range applications. But such a system on the input voltage electric instantaneous or input voltage peak, may cause problems. The following figure illustrates this problem:



In the above figure, the C1 is the power adapter output capacitor, inductor Le is the equivalent inductance of the power cord; capacitor C2 is the input filter capacitor of the electric device. The switch K is the switching of electrical devices or power plug.

Electric moment in the input voltage or peak of the input voltage is related with the power-on sequence. If the adapter is first connected to the power disconnect switch K and the capacitor C1 is the first to be charged. Switch K on moment, capacitor C1 will be a relatively large current charge to the capacitor C2 through the inductance Le, the energy stored in the inductor Le, when the charge after the end of the inductor current becomes smaller or become zero, Inductor current-voltage characteristics in the above point A will have a very high transient voltages, the transient high pressure may damage some of the circuit in the electrical equipment.

The moment of power on, if switched K on first, and then connect the adapter power, then there may be no problem. In order to solve the above problems, it should be on the power-on instant of the charging current of capacitor C2 be limited, this also limits the stored energy in the inductor. The resistor R1 in the following figure in order to achieve this goal. If re-generated transient high voltage capacitor C2 in parallel with a Zener diode to clamp, then, the protection would be better. Zener diode breakdown voltage should be less than the electric device can withstand a maximum voltage.

