

Versatile Micropower Battery Protector

Categories: [Automobile](#)

Protect your expensive batteries from discharge damage with this mini-sized electronic cutout switch. It uses virtually no power and can be built to suit a wide range of battery voltages.

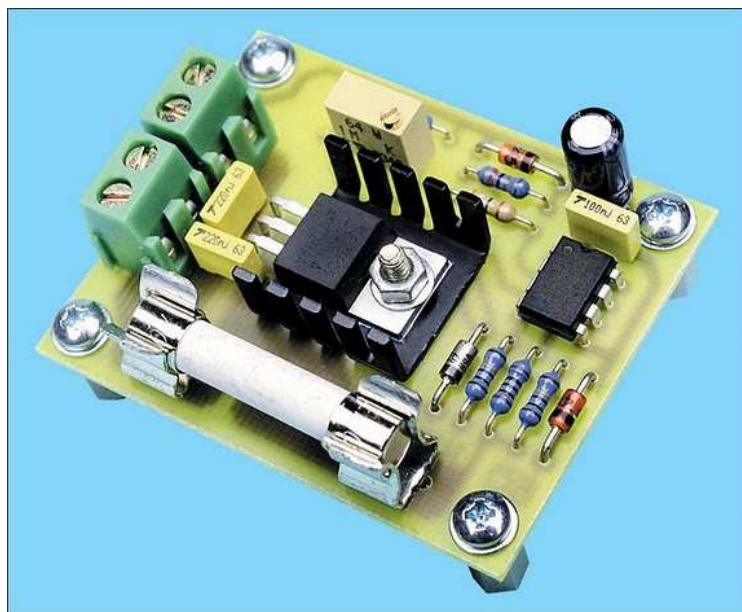
Main Features

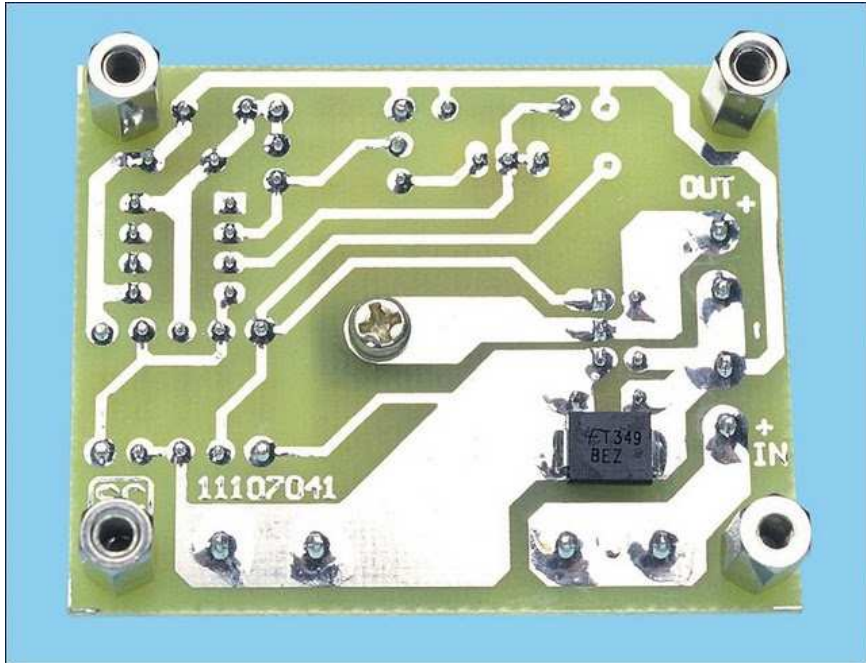
- Disconnects load at preset battery voltage
- Automatically reconnects load when battery recharged
- Ultra-low power consumption (<20ma)
- Miniature size
- 10A maximum rating
- Suitable for use with 4.8-12.5V batteries
- Transient voltage protection (optional)

Suitable for use in...

- Cars, boats & caravans
- Security systems
- Emergency lighting
- Small solar installations
- Camera battery packs
- Many other low-power applications

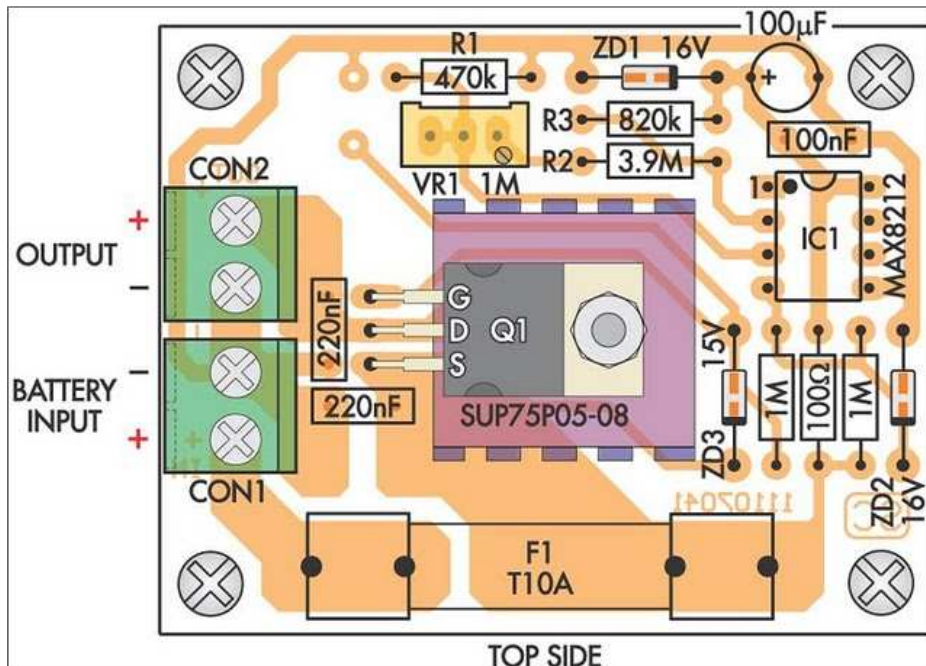
Picture of the project:

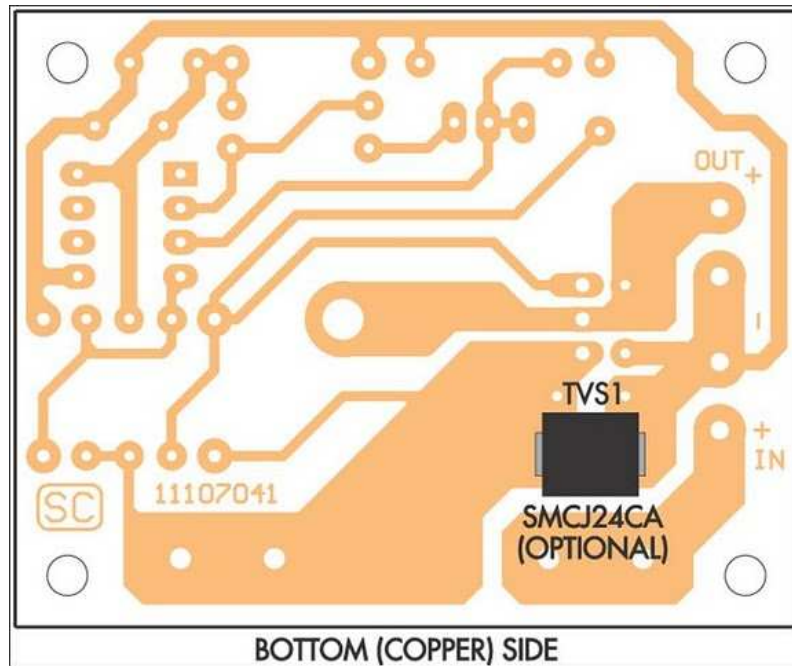




Back in May 2002, we (Silicon Chip) presented the "Battery Guardian", a project designed specifically for protecting 12V car batteries from over-discharge. This unit has proven to be very popular and is still available from kit suppliers. This new design does not supersede the Battery Guardian – at least not when it comes to 12V car batteries. Instead, it's a more flexible alternative that can be used with a wide range of battery voltages.

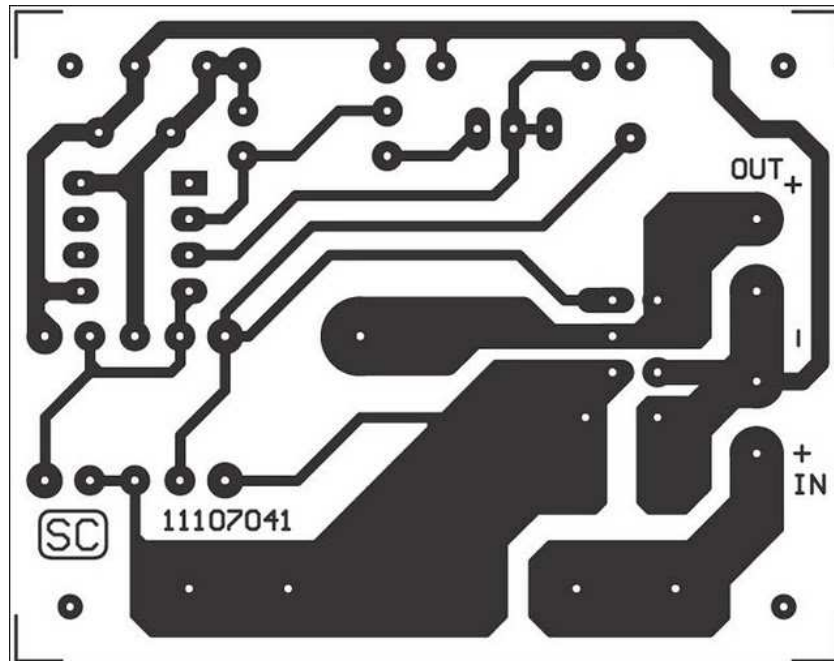
Parts layout:





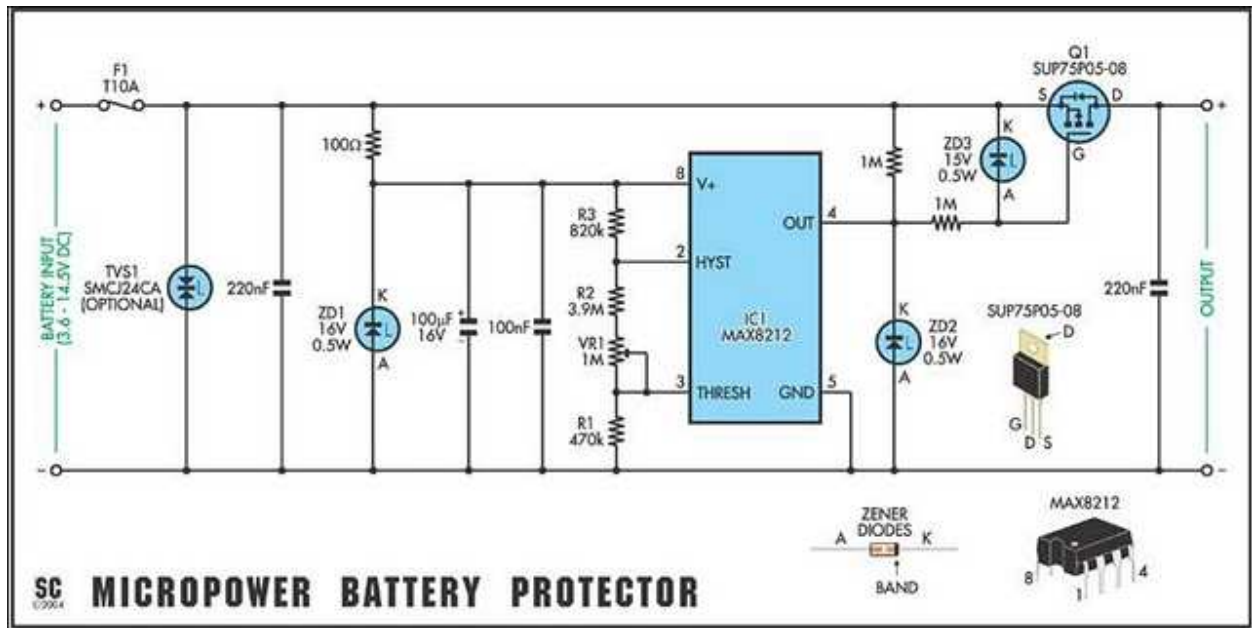
In this new "Micropower Battery Protector", we've dispensed with the low-battery warning circuitry and the relatively cheap N-channel MOSFET used in the Battery Guardian in favour of a physically smaller module that steals much less battery power. It costs a little more but can switch lower voltages, allowing it to be used with 6V & 12V lead-acid batteries and 4-cell to 10-cell NiCd and NiMH battery packs.

PCB layout:



Most battery-powered equipment provides no mechanism for disconnecting the batteries when they're exhausted. Even when the voltage drops too low for normal operation, battery drain usually continues until all available energy is expended. This is particularly true of equipment designed to be powered from alkaline or carbon cells but retro-fitted with rechargeables.

Circuit diagram:



Another example is emergency lighting and security equipment designed to be float-charged from the mains. In an extended blackout period, the batteries can be completely drained and may not recover when the mains power is finally restored.