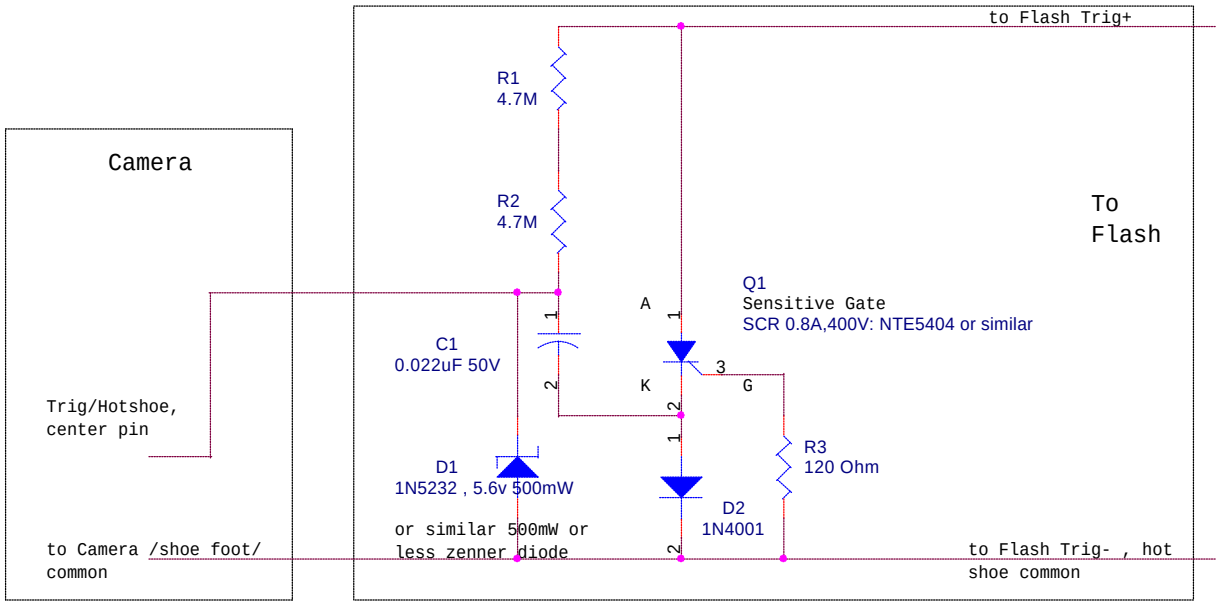

To build this adapter into a flash: Make sure all the capacitors inside flash, are discharged before working on the unit.
Warning: the capacitors may remain charged for many hours after the unit is switched off. Energy stored could cause severe shock injury, even in a small flash unit*

Cut the lead going to the centre pin of the hot shoe. Connect the lowvoltage side of this adapter to the wire going to the hotshoe pin. Connect the high voltage side to the other side of the cut wire, which goes to the flash electronics. Connect the common wire of this adapter to the frame or foot part of hot shoe.

(base view) many small SCR's in TO92/plastic look something like this. Pins may be in line rather than in triangle.

Operation : This circuit is very simple, but uses a cct trick with a diode to achieve good performance. The 5.6V zenner limits voltage across camera connector to 5.6V. R1,2 limit current to charge trigger capacitor C1. Two resistors are used to increase voltage capability as most resistors are not rated to more than about 150V. C1 is charged to ~5V by R1,2 through D2. Camera triggers flash by forcing cathode of SCR below ground via C1, when shorting out zenner D1. This forward biases gate of SCR through R3. SCR now switches on and triggers the flash. Current through SCR and D2 now reverse biases SCR gate forcing it to commutate off, after charge is removed from gate by current flowing back through R3. Without this diode (D2) arrangement, if the SCR current from flash stays above the scr cutoff current, it could just stay on, and then the cct would not be able to trigger the flash again after the first shot. This accomodates modern flash designs where the current from the trigger may never drop below a value of a few mA. Old hi voltage flashes usually have dc currents under 100uA so latching is not an issue.

To test unit before using on a camera:

Connect a high voltage flash to this circuit and wait for flash ready light to come on.
Do not connect camera yet.
Short camera side trigger pin to common.
Flash should fire. If it does not, check circuit and check flash polarity. (Common should be negative relative to trigger pin).

Now measure voltage on camera side trigger pin, using a digital voltmeter: it should be less than 6V. If it is greater than 6V check circuit connections or try replacing zenner diode. If it is a lot less than 6v check zenner diode polarity and zenner connections. The voltage may also be lower if the flash is not actually a higher voltage unit.

Although dfesigned for High voltage, this trigger circuit seems to typically work with flashes with trigger voltages down to about the 6V level (eg T32 Olympus). However some low voltage volage flash units may not work with it reliably. It depends on the particular flash and voltage levels used.

When testing the circuit, always use a DVM, as analog meters draw too much current to measure correctly on this circuit. Unlike some protector circuits, this unit will not "latch up" and prevent flashes which can deliver significant current after triggering from triggering again.

This circuit is meant to protect/convert high voltage (30-400V trigger voltage) flashes, for use on low voltage digital cameras. Trigger voltage is reduced to less than 6V using this circuit. This is safe for all modern cameras and meets the ISO flash standard.

Title: High Voltage to Low Volage Flash trigger Protector/adapter		
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